

# Quality of Surface Waters of the United States 1957

## Parts 1-4. North Atlantic Slope Basins to St. Lawrence River Basin

*Prepared under the direction of S. K. LOVE, Chief, Quality of Water Branch*

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of Alabama, Connecticut, Delaware,  
Florida, Georgia, Illinois, Indiana,  
Kentucky, Minnesota, New Jersey, New  
York, North Carolina, Ohio, Pennsyl-  
vania, South Carolina, West Virginia,  
and with other agencies*



**UNITED STATES DEPARTMENT OF THE INTERIOR**

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## PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, and West Virginia, and with other agencies by personnel of the Water Resources Division under the direction of L. B. Leopold, chief hydraulic engineer, and S. K. Love, chief, Quality of Water Branch. The data were collected and computed under the supervision of the following engineers or district chemists:

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# QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1957

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## PARTS 1-4

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### INTRODUCTION

The quality-of-water investigations of the United States Geological Survey are concerned with chemical and physical characteristics of the surface and ground water supplies of the Nation. Most of the investigations carried on in cooperation with States and other Federal agencies deal with the amounts of matter in solution and in suspension in streams.

The records of chemical analysis, suspended sediment, and temperature for surface waters given in this volume serve as a basis for determining the suitability of the waters examined for industrial, agricultural, and domestic uses insofar as such use is affected by the dissolved or suspended mineral matter in the waters. The discharge of a stream and, to a lesser extent, the chemical quality are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during the periods of high flow than during periods of low flow. The concentration in some streams may change materially with relatively small variations in flow, whereas for other streams the quality may remain relatively uniform throughout large ranges in discharge. The quantities of suspended sediment carried by streams are also related to discharge, and during flood periods the sediment concentrations in many streams vary over wide ranges.

Publication of annual records of chemical analyses, suspended sediment, and water temperature was begun by the Geological Survey in 1941. The records prior to 1948 were published each year in a single volume for the entire country. Beginning in 1948, the records were published in two volumes, and beginning in 1950, in four volumes, covering the drainage basins shown in Figure 1. The samples for which data are given in this volume were collected from October 1, 1956, to September 30, 1957. The records are arranged by drainage basins according to Geological Survey practice in reporting records of streamflow: Stations on tributary

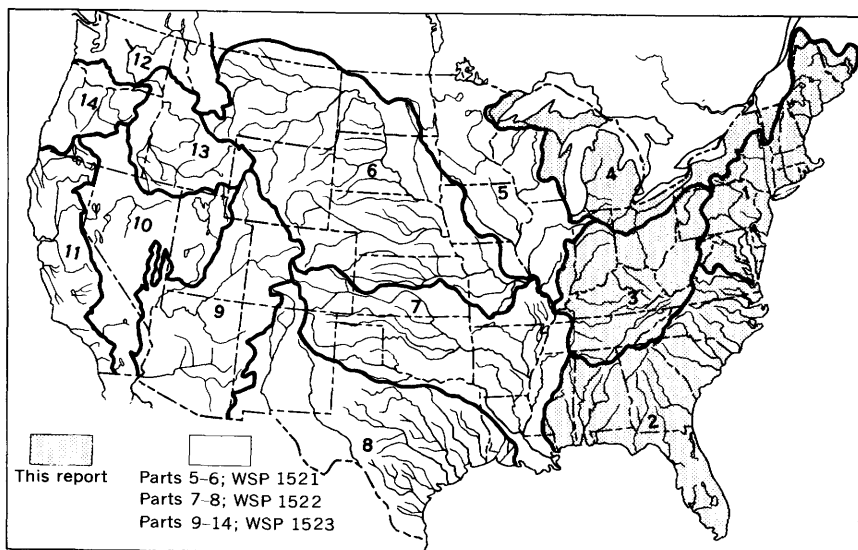


Figure 1.--Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1957. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

streams are listed between stations on the main stem in the order in which those tributaries enter the main stem. Descriptive statements are given for each sampling station for which regular series of chemical analyses, temperature observations, or sediment determinations have been made. These statements include the location of the stream-sampling station, drainage area, length of time for which records are available, extremes of mineralization, hardness, water temperature, sediment loads, and other pertinent data. Records of water discharge of the streams at or near the sampling period are included in most tables of analyses.

During the year ending September 30, 1957, 266 regular sampling stations on 194 streams for the study of the chemical character of surface waters were maintained by the Geological Survey in the area covered by this volume. Samples were collected less frequently during the year at many other points. Water temperatures were measured daily at 179 stations. Not all analyses of samples of surface water collected during the year have been included. Single analyses of an incomplete nature generally have been omitted. Also, analyses made of the daily samples before compositing have not been reported. The specific conductance of almost all daily samples was determined, and as noted in the table head-

ings this information is available for reference at the district offices listed under Division of Work, on page

Quantities of suspended sediment are reported for 41 stations during the year ending September 30, 1957. The sediment samples were collected one or more times daily at most stations, depending on the rate of flow and changes in stage of the stream. Sediment samples were collected less frequently during the year at many other points. In connection with measurements of sediment discharge, sizes of sediment particles were determined at 34 of the stations.

Material which is transported almost in continuous contact with the stream bed and the material that bounces along the bed in short skips or leaps is termed "bedload" and is not considered in this report. All other undissolved fragmental material in transport is termed "suspended sediment" and generally constitutes the major part of the total sediment load. At the present time no reliable routine method has been developed for determining bedload.

## COLLECTION AND EXAMINATION OF SAMPLES

### CHEMICAL QUALITY

Samples for chemical analyses were usually collected at or near points on streams where gaging stations are maintained for measurement of water discharge. Two methods of compositing water samples for analysis are used by the Geological Survey: (1) Equal volume method—Three composite samples were usually prepared each month by mixing together equal volumes of daily samples collected from the 1st to the 10th, from the 11th to the 20th, and from the 21st to the end of the month. Composite samples were prepared for shorter periods if the specific conductance of the daily samples indicated that the mineral content of the water had changed significantly. Conversely, composite samples were occasionally prepared for longer periods if the specific conductance of the daily samples indicated that the mineral content had remained nearly uniform. (2) Discharge method—Composite samples were prepared by mixing together a volume from each sample in proportion to the product of the rate of water discharge at the time of sampling and the time interval represented by that sample. Generally, each daily sample is assumed to represent an equal time interval; therefore, the volume from each sample is proportional only to the water discharge at the time of sampling. Compositing samples by the discharge method was limited to some streams west of the Mississippi River.

The samples were analyzed according to methods regularly used by the Geological Survey. These methods are essentially the same as, or are modifications of, methods described in recognized authoritative publications for the mineral analysis of water samples (Collins, 1928; Am. Public Health Assoc., 1955).

## TEMPERATURE

Daily water temperatures were measured at most of the stations when chemical quality or sediment samples were collected. So far as practicable, the water temperatures were taken at about the same time each day for an individual station in order that the data would be relatively unaffected by diurnal variations in temperature. Most large, swiftly flowing streams probably have a small diurnal variation in water temperature, whereas sluggish or shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining water temperature were accurate to plus or minus  $0.5^{\circ}\text{F}$ .

At stations where thermographs are located, the records consist of maximum and minimum temperatures for each day, and the monthly averages of maximum daily and minimum daily temperatures.

## SEDIMENT

In general, suspended-sediment samples were collected daily with U. S. depth-integrating cable-suspended samplers (U. S. Interagency, 1948, p. 70-76 and U. S. Interagency, 1952, p. 86-90) from a fixed sampling point at one vertical in the cross section. The US DH-48 hand sampler was used at many stations during periods of low flow. Depth-integrated samples were collected periodically at three or more verticals in the cross section to determine the cross-sectional distribution of the concentration of suspended sediment with respect to that at the daily sampling vertical. In streams where transverse distribution of sediment concentration ranges widely, samples were taken regularly at two or more verticals to determine the average concentration across the section. During periods of high flow, samples were taken two or more times throughout the day at many sampling stations, and during periods of rapidly changing flow samples were taken hourly at some stations.

Sediment concentrations were determined by filtration or evaporation of the samples as required. At many stations the daily mean concentration for some days was obtained by plotting the instantaneous concentrations on the original or copies of the original gage-height chart. The plotted concentrations, adjusted if necessary for cross-sectional distribution with respect to that at the daily sampling vertical, were connected or averaged by continuous curves

to obtain a concentration graph. This graph represented the estimated concentration at any time and, for most periods, daily mean concentrations were determined from the graph. When the concentration and water discharge were changing rapidly, the day was often subdivided for this computation. For some periods when the day-to-day variation in the concentration was negligible, the data were not plotted, and the average concentration of the samples was used as the mean concentration for the day. For certain stations, when the discharge and concentrations were relatively low and varied only slightly from day to day, the samples for a number of days were composited and the mean daily concentrations and mean daily loads are shown.

For some periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately preceding and following the periods, and suspended-sediment loads for other periods of similar discharge. The estimates were further guided by weather conditions and sediment discharge for other stations.

In many instances where there were no observations for several days, the suspended-sediment loads for individual days are not estimated, because numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates for individual days. However, estimated loads of suspended sediment for missing days in otherwise continuous period of sampling have been included in monthly and annual totals for most streams to provide a complete record. For some streams, samples were collected about weekly, monthly, or less frequently, and only rates of sediment discharge at the time of sampling are shown.

In addition to the records of quantities of suspended sediment transported, records of the particle sizes of sediment are included. The particle sizes of the suspended sediments for many of the stations, and the particle sizes of the bed material for some of the stations were determined periodically. As much of the material carried in suspension is finer than 0.062 mm, the pipet method (Kilmer and Alexander, 1949) or the bottom withdrawal tube method (U. S. Interagency, 1943, p. 82-90) were used in most of the analyses. For most samples, material between 1.0 mm and 0.062 mm was analyzed by the visual accumulation tube method (U. S. Interagency 1957). Separation of sand from the silt-clay-colloid fraction was by sieve. For some samples all sediment coarser than 0.062 mm was analyzed by the sieve method. For material finer than 0.062 mm the settling medium used was native water or distilled water to which a dispersing agent had been added. Because sedimentation diameters of the clay and colloidal fractions are often affected by the chemical character of the settling medium, analyses made with native water may more nearly simulate particle sizes existing in the stream. Results of analyses with dis-



tilled water containing a dispersing agent approximate ultimate particle sizes of the finer fractions. The concentration of sediment suspension for analysis was reduced to less than 5,000 parts per million where necessary by means of a sample splitter, in order to stay within limits recommended for the bottom-withdrawal tube or pipet method; therefore, the concentration of sediment for analyses was often different from the concentration in the stream. The concentration at which analyses were made is indicated in the appropriate tables.

## EXPRESSION OF RESULTS

The dissolved mineral constituents are reported in parts per million. A part per million is a unit weight of a constituent in a million unit weights of water. Equivalents per million are not given in this report although the expression of analyses in equivalents per million is sometimes preferred. An equivalent per million is a unit chemical combining weight of a constituent in a million unit weights of water. Equivalents per million are calculated by dividing the concentration in parts per million by the chemical combining weights of the individual constituents. For convenience in making this conversion the reciprocals of chemical combining weights of the most commonly reported constituents (ions) are given in the following table:

| Constituent                        | Factor | Constituent                          | Factor |
|------------------------------------|--------|--------------------------------------|--------|
| Iron ( $\text{Fe}^{++}$ ).....     | 0.0358 | Carbonate ( $\text{CO}_3^{--}$ ) ..  | 0.0333 |
| Iron ( $\text{Fe}^{+++}$ ).....    | .0537  | Bicarbonate ( $\text{HCO}_3^-$ ) .   | .0164  |
| Calcium ( $\text{Ca}^{++}$ ).....  | .0499  | Sulfate ( $\text{SO}_4^{--}$ ) ..... | .0208  |
| Magnesium ( $\text{Mg}^{++}$ ) ... | .0822  | Chloride ( $\text{Cl}^-$ ).....      | .0282  |
| Sodium ( $\text{Na}^+$ ) .....     | .0435  | Fluoride ( $\text{F}^-$ ) .....      | .0526  |
| Potassium ( $\text{K}^+$ ) .....   | .0256  | Nitrate ( $\text{NO}_3^-$ ) .....    | .0161  |

Results given in parts per million can be converted to grains per United States gallon by dividing by 17.12. A calculated quantity of sodium and potassium is given in some analyses and is the quantity of sodium needed in addition to the calcium and magnesium to balance the acid constituents.

The hardness, expressed in terms of an equivalent quantity of calcium carbonate ( $\text{CaCO}_3$ ), is calculated from the equivalents of calcium and magnesium, or is determined by direct titration. The hardness caused by calcium and magnesium (and other ions if significant) equivalent to the carbonate and bicarbonate is called carbonate hardness; the hardness in excess of this quantity is called noncarbonate hardness.

The value usually reported as dissolved solids is the residue

on evaporation after drying at 180°C for 1 hour. For some waters, particularly those containing moderately large quantities of soluble salts, the value reported is calculated from the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. The calculated sum of the constituents may be given instead of or in addition to the residue. In the analyses of most waters used for irrigation, the quantity of dissolved solids is given in tons per acre-foot as well as in parts per million.

Percent sodium is computed for those analyses where sodium and potassium are reported separately by dividing the equivalents per million of sodium by the sum of the equivalents per million of calcium, magnesium, sodium, and potassium and multiplying the quotient by 100. In analyses where sodium and potassium were calculated and reported as a combined value, the value reported for percent sodium will include the equivalent quantity of potassium. In most waters of moderate to high concentration the proportion of potassium is much smaller than that of sodium.

Specific conductance is given for most analyses and was determined by means of a conductance bridge and using a standard potassium chloride solution as reference. Specific conductance values are expressed in micromhos per centimeter at 25°C. Specific conductance in micromhos is 1 million times the reciprocal of specific resistance at 25°C. Specific resistance is the resistance in ohms of a column of water 1 centimeter long and 1 square centimeter in cross section. The discharge of the streams is reported in cubic feet per second (see Streamflow, p. 17) and the temperature in degrees Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892, p. 427-428). Hydrogen-ion concentration is expressed in terms of pH units. By definition the pH value of a solution is the negative logarithm of the concentration of gram ions of hydrogen. However, the pH meter that is generally used in Survey laboratories determines the activity of the hydrogen ions as distinguished from concentration.

An average of analyses for the water year is given for most daily sampling stations. Most of these averages are arithmetical or time-weighted; when analyses during a year are all on 10-day composites of daily samples with no missing days, the arithmetical and time-weighted averages are equivalent. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the river each day for the water year. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all of the water passing a given station during the year after thorough mixing in the reservoir. A discharge-weighted average is computed by multiplying the discharge for the sampling period by the concentrations of the individual constituents for the corresponding period and dividing the sum of the products

by the sum of the discharges. Discharge-weighted averages are usually lower than arithmetical averages for most streams because at times of high discharge the rivers generally have lower concentrations of dissolved solids.

The concentration of sediment in parts per million is computed as 1,000,000 times the ratio of the weight of sediment to the weight of water-sediment mixture. Daily sediment loads are expressed in tons per day and except for subdivided days are usually obtained by multiplying daily mean sediment concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 0.0027.

Particle-size analyses are expressed in percentages of material finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union subcommittee on Terminology (Lane and others, 1947, p. 937). Other data included as pertinent to the size analyses for many streams are the date of collection, the stream discharge and sediment concentration when sample was collected, the concentration of the suspension during analysis, and the method of analysis.

## COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some rock materials. The quantity of dissolved mineral matter in a natural water depends primarily on the type of rocks or soils with which the water has been in contact and the length of time of contact. Some streams are fed by both surface runoff and ground water from springs or seeps. Such streams reflect the chemical character of their concentrated underground sources during dry periods and are more dilute during periods of heavy rainfall. Ground water is generally more highly mineralized than surface runoff because it remains in contact with the rocks and soils for much longer periods. The concentration of dissolved solids in a river water is frequently increased by drainage from mines or oil fields, by the addition of industrial or municipal wastes, or--in irrigated regions--by drainage from irrigated lands.

The mineral constituents and physical properties of natural waters reported in the tables of analyses include those that have a practical bearing on the value of the waters for most purposes. The analyses generally include results for silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together as sodium), bicarbonate, sulfate, chloride, fluoride, nitrate, boron, pH, and dissolved solids. Aluminum, manganese, color, acidity, oxygen consumed, and other dissolved constituents and physical properties are reported for certain streams. Phenolic

material and minor elements including strontium, chromium, nickel, copper, lead, zinc, cobalt, arsenic, cadmium, and others are occasionally determined for a few streams in connection with specific problems in local areas and the results are reported when appropriate. The source and significance of the different constituents and properties of natural waters are discussed in the following paragraphs.

## MINERAL CONSTITUENTS IN SOLUTION

### Silica ( $\text{SiO}_2$ )

Silica is dissolved from practically all rocks. Some natural surface waters contain less than 5 parts per million of silica and a few contain more than 50 parts, but most waters contain from 1 to 30 parts per million. Silica affects the usefulness of a water because it contributes to the formation of boiler scale; it usually is removed from feed water for high-pressure boilers. Silica also forms troublesome deposits on the blades of stream turbines.

### Aluminum (Al)

Aluminum is generally present only in negligible quantities in natural waters except in areas where the waters have been in contact with the more soluble rocks of high aluminum content such as bauxite and certain shales. Acid waters often contain large amounts of aluminum. It may be troublesome in feed waters where it tends to be deposited as a scale on boiler tubes.

### Manganese (Mn)

Manganese is dissolved in appreciable quantities from rocks in some sections of the country. Waters impounded in large reservoirs may contain manganese that has been dissolved from the mud on the bottom of the reservoir by action of carbon dioxide produced by anaerobic fermentation of organic matter. Manganese is not regularly determined in areas where it is not present in the waters in appreciable amounts. It is especially objectionable in water used in laundry work and in textile processing. Concentrations as low as 0.2 part per million may cause a dark-brown or black stain on fabrics and porcelain fixtures. Appreciable quantities of manganese are often found in waters containing objectionable quantities of iron.

### Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to the air, normal basic waters that contain more than 1 part per million of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 part per million of dissolved iron, although some acid waters carry large quantities of iron in solution. Iron causes reddish-brown stains on white porcelain or enameled ware and fixtures and on fabrics washed in the water.

### Calcium (Ca)

Calcium is dissolved from almost all rocks and soils, but the highest concentrations are usually found in waters that have been in contact with limestone, dolomite, and gypsum. Calcium and magnesium make water hard and are largely responsible for the formation of boiler scale. Most waters associated with granite or silicious sands contain less than 10 parts per million of calcium; waters in areas where rocks are composed of dolomite and limestone contain from 30 to 100 parts per million; and waters that have come in contact with deposits of gypsum may contain several hundred parts per million.

### Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 parts per million, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 parts per million or more of magnesium.

### Sodium and potassium (Na and K)

Sodium and potassium are dissolved from almost all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the Western United States. Natural waters that contain only 3 or 4 parts per million of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 or 100 parts per million of the two may require careful operation of steam boilers

to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation.

### Carbonate and bicarbonate ( $\text{CO}_3$ and $\text{HCO}_3$ )

Bicarbonate occurs in waters largely through the action of carbon dioxide, which enables the water to dissolve carbonates of calcium and magnesium. Carbonate as such is not usually present in appreciable quantities in natural waters. The bicarbonate in waters that come from relatively insoluble rocks may amount to less than 50 parts per million; many waters from limestone contain from 200 to 400 parts per million. Bicarbonate in moderate concentrations in water has no effect on its value for most uses. Bicarbonate or carbonate is an aid in coagulation for the removal of suspended matter from water.

### Sulfate ( $\text{SO}_4$ )

Sulfate is dissolved from many rocks and soils but in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and is therefore present in considerable quantities in waters from mines. Sulfate in waters that contain much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water.

### Chloride (Cl)

Chloride is dissolved from rock materials in all parts of the country. Surface waters in the humid regions are usually low in chloride content, whereas streams in arid or semiarid regions may contain several hundred parts per million of chloride leached from soils and rocks, especially where the streams receive return drainage from irrigated lands or are affected by ground-water inflow carrying appreciable quantities of chloride. Large quantities of chloride may affect the industrial use of water by increasing the corrosiveness of waters that contain large quantities of calcium and magnesium.

### Fluoride (F)

Fluoride has been reported as being present in some rocks in about the same amount as chloride. However, the quantity of

fluoride in natural surface waters is ordinarily very small compared to that of chloride. Recent investigations indicate that the incidence of dental caries is less when there are small amounts of fluoride present in the water supply than when there is none. However, excess fluoride in water is associated with the dental defect known as mottled enamel if the water is used for drinking by young children during calcification or formation of the teeth (Dean, 1936, p. 1269-1272). This defect becomes increasingly noticeable as the quantity of fluoride in water increases above 1.5 to 2.0 parts per million.

### Nitrate ( $\text{NO}_3$ )

Nitrate in water is considered a final oxidation product of nitrogenous material and may indicate contamination by sewage or other organic matter. The quantities of nitrate present in surface waters are generally less than 5 parts per million (as  $\text{NO}_3$ ) and have no effect on the value of the water for ordinary uses.

It has been reported that as much as 2 parts per million of nitrate in boiler water tends to decrease intercrystalline cracking of boiler steel. Studies made in Illinois indicate that nitrates in excess of 70 parts per million (as  $\text{NO}_3$ ) may contribute to methemoglobinemia ("blue babies") (Faucett and Miller, 1946, p. 593), and more recent investigations conducted in Ohio show that drinking water containing nitrates in the range of 44 to 88 parts per million or more (as  $\text{NO}_3$ ) may cause methemoglobinemia (Waring, 1949). In a report published by the National Research Council, Maxcy (1950, p. 271) concludes that a nitrate content in excess of 44 parts per million (as  $\text{NO}_3$ ) should be regarded as unsafe for infant feeding.

### Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 part per million of boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions where irrigation is practiced or contemplated, but few of the surface waters analyzed have harmful concentrations of boron.

### Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Waters with less than 500 parts per million of dissolved solids are usually satisfactory for domestic and some industrial uses. Water containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 ppm is considered to be unsuitable for long-term irrigation under average conditions.

## PROPERTIES AND CHARACTERISTICS OF WATER

### Temperature

Large quantities of water are used in industrial operation; therefore temperature and seasonal fluctuations of that temperature are major considerations in planning the use of water for cooling in industrial plants. Water at high temperature can carry less oxygen in solution than at low temperature. Consequently water temperature can affect or determine the pollution characteristics of a stream. Temperature data are required in studies of water intended for aquatic life. A few degrees rise in temperature may seriously limit the capacity of a stream to support fish life.

### Oxygen consumed

The amount of oxygen consumed furnishes an approximation of the oxidizable matter in the unfiltered and filtered samples and gives a partial measure of polluting materials such as sewage and oxidizable industrial wastes. Waters of naturally high color may have relatively high values for oxygen consumed, and waters that are not noticeably colored may contain oxidizable material.

### Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters



that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 10 units generally passes unnoticed. Some swamp waters have natural color of 200 to 300 units or more.

### Hydrogen-ion concentration (pH)

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH (see p.7 ), is related to the corrosive properties of water and is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8. Some alkaline surface waters have pH values greater than 8.0, and waters containing free mineral acid usually have pH values less than 4.5.

### Specific conductance (micromhos per centimeter at 25°C)

The specific conductance of a water is a measure of its capacity to conduct a current of electricity (see p.7 ). The conductance varies with the concentration and degree of ionization of the different minerals in solution and with the temperature of the water. When considered in conjunction with results of determinations for other constituents, specific conductance is a useful determination and plays an important part in indicating changes in concentration of the total quantity of dissolved minerals in surface waters.

### Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and

pipes, with the resultant decrease in rate of heat transfer, possibility of boiler failure, and loss of flow.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect. Water that has less than 60 parts per million of hardness is usually rated as soft and suitable for many purposes without further softening. Waters with hardness ranging from 61 to 120 parts per million may be considered moderately hard, but this degree of hardness does not seriously interfere with the use of water for many purposes except for use in high-pressure steam boilers and in some industrial processes. Waters with hardness ranging from 121 to 200 parts per million are considered hard, and laundries and industries may profitably soften such supplies. Water with hardness above 200 parts per million generally requires some softening before being used for most purposes.

### Acidity

The acidity of a natural water represents the content of free carbon dioxide and other uncombined gases, organic acids, mineral acids and salts of strong acids and weak bases that hydrolyze to give hydrogen ions. Sulfates of iron and aluminum in mine and industrial wastes are common sources of acidity.

### Corrosiveness

The corrosiveness of a water is that property which makes the water aggressive to metal surfaces and frequently results in the appearance of the "red-water" caused by solution of iron. The disadvantages of iron in water have been discussed previously. Additionally, corrosion causes the deterioration of water pipes, steam boilers, and water-heating equipment. Many waters that do not appreciably corrode cold-water lines will aggressively attack hot-water lines. Oxygen, carbon dioxide, free acid, and acid-generating salts are the principal constituents in water that cause corrosion. In a general way, very soft waters of low mineral content tend to be more corrosive than hard waters containing appreciable quantities of carbonates and bicarbonates of calcium and magnesium.

### Percent sodium

The proportion of sodium to the total cation concentration is termed "percent sodium", and is reported in most of the analyses

of waters collected from streams in the western part of the country where irrigation is practiced extensively. The proportion of sodium to all the constituents in the water is explained on page 10 under "Sodium and potassium". Waters in which the percent sodium is more than 60 may be injurious when applied to certain types of soils, particularly when adequate drainage is not provided (Magistad and Christiansen, 1944, p. 8-9).

### Sodium-adsorption-ratio

Of more significance than percent sodium for use as an index of the sodium or alkali hazard to the soil is the sodium-adsorption-ratio because it relates more directly to the adsorption of sodium by the soil. The term, "sodium-adsorption-ratio (SAR)" was introduced by the U. S. Salinity Laboratory Staff (1954), and is a ratio expressing the relative activity of sodium ions in exchange reactions with the soil. It is expressed by the equation:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++} + Mg^{++}}{2}}}$$

where the concentrations of the ions are expressed in milliequivalents per liter (or equivalents per million for most irrigation waters).

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR and the specific conductance. At a conductance of 100 micromhos per centimeter the dividing points are at SAR values of 10, 18, and 26, but at 5,000 micromhos the corresponding dividing points are SAR values of approximately 2.5, 6.5, and 11. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

### SEDIMENT

Fluvial sediment is generally regarded as that sediment which is transported by, suspended in, or deposited by water. Suspended sediment is that part of it which remains in suspension in water owing to the upward components of turbulent currents or by colloidal suspension. Most fluvial sediment results from the normal process of erosion, which in turn is part of the geologic cycle of

rock transformation. In some instances, this normal process may have been accelerated by agricultural practices. Sediment also results from a number of industrial activities. In certain sections, waste materials from mining, logging, oil-field, and other industrial operations introduce large quantities of suspended as well as dissolved material.

The quantity of sediment, transported or available for transportation, is affected by climatic conditions, form or nature of precipitation, plant cover, topography, and land use. An important property of fluvial sediment is the fall velocity of the particles in transport. Particle sizes, as determined by various methods, represent mechanical diameters, which are related to sedimentation diameters indirectly. Sediment particles in the sand-size (larger than 0.062 mm) range do not appear to be affected by flocculation or dispersion resulting from the mineral constituents in solution. The sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

## STREAMFLOW

Most of the records of stream discharge, used in conjunction with the chemical analyses and in the computation of sediment loads in this volume, are published in Geological Survey reports on the surface-water supply of the United States. The discharge reported for a composite sample is usually the average of daily mean discharges for the composite period. The discharges reported in the tables of single analyses are either daily mean discharges or discharges for the time at which samples were collected, computed from a stage-discharge relation or from a discharge measurement.

## PUBLICATIONS

Reports giving records of chemical quality and temperatures of surface waters and suspended-sediment loads of streams in the

area covered by this volume for the water years 1941-57, are listed below:

Numbers of water-supply papers containing records for  
Parts 1-4, 1941-57

| Year | WSP  | Year | WSP  | Year | WSP  | Year | WSP  |
|------|------|------|------|------|------|------|------|
| 1941 | 942  | 1946 | 1050 | 1951 | 1197 | 1956 | 1450 |
| 1942 | 950  | 1947 | 1102 | 1952 | 1250 | 1957 | 1520 |
| 1943 | 970  | 1948 | 1132 | 1953 | 1290 |      |      |
| 1944 | 1022 | 1949 | 1162 | 1954 | 1350 |      |      |
| 1945 | 1030 | 1950 | 1186 | 1955 | 1400 |      |      |

Geological Survey reports containing chemical quality, temperature, and sediment data obtained before 1941 are listed below. Publications dealing largely with the quality of ground-water supplies and only incidentally covering the chemical composition of surface waters are not included. Publications that are out of print are preceded by an asterisk.

#### PROFESSIONAL PAPER

- \*135. Composition of river and lake waters of the United States, 1924.

#### BULLETINS

- \*479. The geochemical interpretation of water analyses, 1911.
- 770. The data of geochemistry, 1924.

#### WATER-SUPPLY PAPERS

- \*108. Quality of water in the Susquehanna River drainage basin, with an introductory chapter on physiographic features, 1904.
- \*161. Quality of water in the upper Ohio River basin and at Erie, Pa., 1906.
- \*193. The quality of surface waters in Minnesota, 1907.
- \*236. The quality of surface waters in the United States, Part 1, Analyses of waters east of the one hundredth meridian, 1909.
- \*237. The quality of the surface waters of California, 1910.
- \*239. The quality of the surface waters of Illinois, 1910.
- \*273. Quality of the water supplies of Kansas, with a preliminary report on stream pollution by mine waters in southeastern Kansas, 1911.

- \* 274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
- \* 339. Quality of the surface waters of Washington, 1914.
- \* 363. Quality of the surface waters of Oregon, 1914.
- \* 418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
- \* 596-B. Quality of water of Colorado River in 1925-26, 1928.
- \* 596-D. Quality of water of Pecos River in Texas, 1928.
- \* 596-E. Quality of the surface waters of New Jersey, 1928.
- \* 636-A. Quality of water of the Colorado River in 1926-28, 1930.
- \* 636-B. Suspended matter in the Colorado River in 1925-28, 1930.
- \* 638-D. Quality of water of the Colorado River in 1928-30, 1932.
- \* 839. Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
- \* 889-E. Chemical character of surface waters of Georgia, 1944.
- \* 998. Suspended sediment in the Colorado River, 1925-41, 1947.
- 1048. Discharge and sediment loads in the Boise River drainage basin, Idaho, 1939-40, 1948.
- 1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

Many of the reports listed are available for consultation in the larger public and institutional libraries. Copies of Geological Survey publications still in print may be purchased at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, upon request, furnish lists giving prices.

## COOPERATION

Many Municipal, State, and Federal agencies assisted in collecting records for these quality-of-water investigations. In addition to the cooperative programs, many stations were operated from funds appropriated directly to the Geological Survey.

The table on p. 20 lists State and local agencies that cooperated in quality-of-water investigations in the drainage basins included in this volume, and the locations of quality-of-water district offices responsible for the data collected.

## DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, L. B. Leopold, chief hydraulic engineer, and S. K. Love, chief, Quality of Water Branch. The records were collected and prepared for publication

| State       | Cooperating agency                                                                                                                                                                                                                           | Drainage basin                                      | District office                                                                 |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------|
| Alabama     | Alabama Geological Survey,<br>W. B. Jones, State Geologist.                                                                                                                                                                                  | South Atlantic slope and<br>Eastern Gulf of Mexico. | P. O. Box 607,<br>Bldg. 211<br>Roosevelt Village<br>Ocala, Fla.                 |
| Connecticut | State Water Resources Commission,<br>William S. Wise,<br>director.                                                                                                                                                                           | North Atlantic slope, New<br>York to York River.    | P. O. Box 68<br>Room 348 Federal Bldg.<br>Albany 1, N. Y.                       |
| Delaware    | Delaware Geological Survey<br>University of Delaware<br>Department of Geology and<br>Geography, Dr. Johan J.<br>Groot, State Geologist.                                                                                                      |                                                     | Room 1302<br>U. S. Custom House<br>2nd and Chestnut Sts.<br>Philadelphia 6, Pa. |
| Florida     | Florida Geological Survey,<br>Herman Gunter, director.<br>Central and Southern Florida<br>Flood Control District<br>W. T. Wallis, executive<br>director, succeeded by B. F.<br>Hyde, Jr.<br>Dade County, E. A. Anderson,<br>county engineer. | South Atlantic slope and<br>Eastern Gulf of Mexico. | P. O. Box 607<br>Roosevelt Village<br>Ocala, Fla.                               |

| State    | Cooperating agency                                                                                                                                                                                                                                                              | Drainage basin                                   | District office                                   |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|
| Florida  | <p>Hillsborough County, E. G. Simmons, chairman of county commissioners.</p> <p>City of Miami, C. F. Wertz, director of Department of Water and Sewers.</p> <p>City of Miami Beach, C. A. Renshaw, city manager.</p> <p>City of Pensacola, O. J. Semmes, Jr., city manager.</p> | South Atlantic slope and Eastern Gulf of Mexico. | P. O. Box 607<br>Roosevelt Village<br>Ocala, Fla. |
| Georgia  | Department of Mines, Mining, and Geology, Garland Peyton, director.                                                                                                                                                                                                             |                                                  |                                                   |
| Illinois | Ohio River Valley Water Sanitation Commission, Edward J. Cleary, executive director and chief engineer                                                                                                                                                                          | Ohio River                                       | 2822 E. Main Street<br>Columbus 9, Ohio           |
| Indiana  | Ohio River Valley Water Sanitation Commission, Edward J. Cleary, executive director and chief engineer.                                                                                                                                                                         |                                                  |                                                   |



| State          | Cooperating agency                                                                                                                                                                     | Drainage basin                                                                        | District office                                                                 |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Kentucky       | Kentucky Department of Economic Development, George W. Hubley, Jr., Commissioner.                                                                                                      | Ohio River                                                                            | 2822 E. Main Street<br>Columbus 9, Ohio                                         |
| Minnesota      | Iron Range Resources and Rehabilitation Commission, Kaarlo J. Otava, Commissioner.                                                                                                     | St. Lawrence River.                                                                   | 510 Rudge Guenzel Bldg.<br>Lincoln 8, Nebr.                                     |
| New Jersey     | Department of Conservation and Economic Development, Salvatore A. Bontempo, Commissioner.<br>Division of Water Policy and Supply, George Shanklin, acting director and chief engineer. | North Atlantic slope,<br>New York to York River.                                      | Room 1302<br>U. S. Custom House<br>2nd and Chestnut Sts.<br>Philadelphia 6, Pa. |
| New York       | New York State Department of Commerce, Bureau of Industrial Development, Ronald J. Peterson, director.                                                                                 | North Atlantic slope,<br>New York to York River,<br>Ohio River.<br>St. Lawrence River | P. O. Box 68<br>Room 348 Federal Bldg.<br>Albany 1, N. Y.                       |
| North Carolina | North Carolina Department of Conservation and Development, William P. Saunders, director.                                                                                              | South Atlantic slope, James River to Savannah River<br>Ohio River                     | P. O. Box 2857<br>Federal Bldg.<br>Raleigh, N. C.                               |

| State            | Cooperating agency                                                                                                                                                                                                                                                                                                                                                       | Drainage basin                                                                       | District office                                                                 |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Ohio             | Department of Natural Resources,<br>A. W. Marion, director,<br>succeeded by H. B. Eagon.                                                                                                                                                                                                                                                                                 | Ohio River,<br>St. Lawrence River.                                                   | 2822 E. Main St.<br>Columbus 9, Ohio                                            |
| Pennsylvania     | Pennsylvania Department of<br>Agriculture, Dr. William L.<br>Henning, secretary.<br>Pennsylvania Department of<br>Forest and Waters, Maurice<br>K. Goddard, secretary.<br>Soil Conservation Commission,<br>Dr. William L. Henning,<br>chairman.<br>City of Philadelphia, Richardson<br>Dilworth, Mayor, Department<br>of Water, Samuel S. Baxter,<br>Water Commissioner. | North Atlantic slope,<br>New York to York River<br>Ohio River,<br>St. Lawrence River | Room 1302<br>U. S. Custom House<br>2nd and Chestnut Sts.<br>Philadelphia 6, Pa. |
| South Carolina   | South Carolina State Develop-<br>ment Board, R. M. Cooper,<br>director.                                                                                                                                                                                                                                                                                                  | South Atlantic slope,<br>James River to Savannah<br>River.                           | P. O. Box 2857<br>Federal Bldg.<br>Raleigh, N. C.                               |
| West<br>Virginia | Ohio Valley Water Sanitation<br>Commission, Edward J. Cleary,<br>executive director and chief<br>engineer.                                                                                                                                                                                                                                                               | Ohio River                                                                           | 2822 E. Main St.<br>Columbus 9, Ohio                                            |

under the supervision of engineers or district chemists as follows: In Delaware, New Jersey, and Pennsylvania, N. H. Beamer; in Minnesota, P. C. Benedict (succeeded by D. M. Culbertson, acting district engineer); in North Carolina and South Carolina, G. A. Billingsley; Alabama, Georgia, and Florida, J. W. Geurin; in New York and New England, F. H. Pauszek; in Illinois, Indiana, Kentucky, Ohio, and West Virginia, G. W. Whetstone. Any additional information on file can be obtained by writing the responsible Survey district office.

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## CHEMICAL ANALYSES, WATER TEMPERATURES, AND SEDIMENT

## PART 1A. NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## STREAMS IN NEW ENGLAND

## MISCELLANEOUS ANALYSES OF STREAMS IN NEW ENGLAND

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                       | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| SHEEPSKOT RIVER BASIN                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| SHEEPSKOT RIVER AT NORTH WHITEFIELD, ME. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956.....                       | 322                  | 5.1                        | 0.15      | 3.9          | 1.4            | 2.2         | 0.7           | 11                              | 7.5                        | 2.8           | 0.0          | 0.4                        | 36                                                 | 16                            | 7             | 42                                        | 6.5 | 37    |
| KENNEBEC RIVER BASIN                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| COBBOSECONTEE STREAM AT GARDINER, ME.    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956.....                       | 220                  | 4.1                        | 0.11      | 6.0          | 1.3            | 3.4         | 1.1           | 17                              | 7.4                        | 5.1           | 0.0          | 0.5                        | 44                                                 | 20                            | 6             | 62                                        | 7.1 | 10    |
| KENNEBEC RIVER AT BATH, ME.              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 28, 1957.....                       |                      | 4.8                        | 0.32      | 8.6          | 4.4            | 33          | 1.9           | 19                              | 17                         | 55            | 0.0          | 0.6                        | 160                                                | 40                            | 24            | 258                                       | 6.3 | 38    |
| ANDROSCOGGIN RIVER BASIN                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| ANDROSCOGGIN RIVER NEAR AUBURN, ME.      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 20, 1956.....                       | 4,620                | 5.9                        | 0.54      | 8.0          | 1.2            | 8.4         | 0.7           | 20                              | 18                         | 6.6           | 0.0          | 0.6                        | 93                                                 | 25                            | 9             | 93                                        | 5.9 | 65    |
| SWIFT RIVER NEAR ROXBURY, ME.            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956.....                       | 97                   | 7.9                        | 0.00      | 2.6          | 0.9            | 1.8         | 0.4           | 7                               | 6.5                        | 1.2           | 0.0          | 0.0                        | 28                                                 | 10                            | 4             | 30                                        | 6.5 | 7     |
| ROYAL RIVER BASIN                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| ROYAL RIVER AT YARMOUTH, ME.             |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 20, 1956.....                       | 210                  | 7.6                        | 0.24      | 7.6          | 7.2            | 54          | 2.9           | 4                               | 21                         | 97            | 0.0          | 0.5                        | 216                                                | 49                            | 37            | 403                                       | 6.4 | 18    |

## SACO RIVER BASIN

## KENNEBUNK RIVER AT KENNEBUNK, ME.

|                    |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |    |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|
| Dec. 20, 1956..... | 7.2 | 0.28 | 2.8 | 1.6 | 3.8 | 0.6 | 8 | 7.5 | 5.2 | 0.0 | 0.2 | 42 | 14 | 7 | 42 | 7.0 | 50 |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|

## SACO RIVER AT BIDDEFORD, ME.

|                    |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |    |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|
| Dec. 20, 1956..... | 7.2 | 0.10 | 3.0 | 0.9 | 2.3 | 0.5 | 9 | 5.2 | 2.2 | 0.0 | 0.3 | 29 | 11 | 4 | 31 | 6.9 | 15 |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|

## PISCATAQUA RIVER BASIN

## SALMON FALLS RIVER AT SOUTH BERWICK, ME.

|                    |     |      |     |     |     |     |    |     |     |     |     |    |    |   |    |     |    |
|--------------------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|----|
| Dec. 20, 1956..... | 6.5 | 0.18 | 4.0 | 1.2 | 5.2 | 0.6 | 10 | 8.7 | 6.1 | 0.0 | 0.5 | 47 | 15 | 7 | 58 | 6.1 | 33 |
|--------------------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|----|

## PISCATAQUA RIVER AT PORTSMOUTH, N. H.

|                    |     |      |     |       |       |     |     |       |        |     |     |        |       |       |        |     |   |
|--------------------|-----|------|-----|-------|-------|-----|-----|-------|--------|-----|-----|--------|-------|-------|--------|-----|---|
| Mar. 28, 1957..... | 0.9 | 0.05 | 405 | 1,110 | 9,290 | 351 | 127 | 2,300 | 16,700 | 1.5 | 5.6 | 31,700 | 5,580 | 5,480 | 43,600 | 7.6 | 3 |
|--------------------|-----|------|-----|-------|-------|-----|-----|-------|--------|-----|-----|--------|-------|-------|--------|-----|---|

## MERRIMACK RIVER BASIN

## EAST BRANCH PENICUWASSET RIVER NEAR LINCOLN, N. H.

|                    |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |   |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|---|
| Mar. 28, 1957..... | 9.1 | 0.02 | 2.5 | 0.8 | 1.2 | 0.4 | 6 | 4.4 | 0.4 | 0.8 | 1.2 | 25 | 10 | 5 | 25 | 7.0 | 5 |
|--------------------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|---|

## MERRIMACK RIVER NEAR MANCHESTER, N. H.

|                    |       |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |    |
|--------------------|-------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|
| Mar. 28, 1957..... | 5.760 | 5.7 | 0.15 | 4.4 | 0.9 | 3.3 | 0.6 | 9 | 7.9 | 4.4 | 0.0 | 0.6 | 40 | 15 | 7 | 47 | 6.2 | 18 |
|--------------------|-------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|

## SQUAM RIVER AT ASHLAND, N. H.

|                    |    |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |   |
|--------------------|----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|---|
| Mar. 27, 1957..... | 73 | 3.4 | 0.05 | 3.2 | 0.7 | 2.0 | 0.5 | 9 | 5.4 | 2.4 | 0.0 | 0.2 | 24 | 11 | 4 | 34 | 6.7 | 3 |
|--------------------|----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|---|

## STREAMS IN NEW ENGLAND--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN NEW ENGLAND--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, Magnesium            | Non-carbonate |                                           |     |       |
| MERRIMACK RIVER BASIN--Continued                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| SMITH RIVER NEAR BRISTOL, N. H.                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                 | 197                  | 6.8                        | 0.11      | 3.4          | 0.8            | 2.0         | 0.4           | 7                               | 6.7                        | 2.0           | 0.0          | 0.9                        | 31                                                 | 12                            | 6             | 34                                        | 6.6 | 17    |
| Mar. 27, 1957.....                                 | 179                  | 6.3                        | .08       | 3.2          | .8             | 1.9         | .6            | 8                               | 6.3                        | 2.2           | .0           | .3                         | 28                                                 | 11                            | 5             | 36                                        | 6.7 | 17    |
| BEARDS BROOK NEAR HILLSBORO, N. H.                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                 | 110                  | 6.2                        | 0.13      | 3.3          | 0.8            | 2.0         | 0.4           | 6                               | 7.7                        | 2.2           | 0.0          | 0.7                        | 35                                                 | 12                            | 7             | 34                                        | 6.1 | 25    |
| BLACKWATER RIVER NEAR WEBSTER, N. H.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                 |                      | 6.7                        | 0.11      | 3.8          | 0.6            | 2.2         | 0.6           | 7                               | 6.5                        | 2.8           | 0.0          | 0.7                        | 32                                                 | 12                            | 6             | 38                                        | 7.1 | 17    |
| Mar. 27, 1957.....                                 | 260                  | 5.9                        | .09       | 3.8          | .9             | 2.2         | .5            | 8                               | 6.0                        | 3.2           | .0           | .5                         | 32                                                 | 13                            | 7             | 38                                        | 6.3 | 13    |
| EXETER RIVER AT EXETER, N. H.                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 20, 1956.....                                 |                      | 8.5                        | 0.17      | 5.5          | 1.6            | 3.8         | 1.2           | 9                               | 11                         | 6.6           | 0.0          | 1.2                        | 57                                                 | 20                            | 13            | 65                                        | 6.0 | 42    |
| PISCATAQUOG RIVER NEAR GOFFSTOWN, N. H.            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                 | 306                  | 7.2                        | 0.18      | 3.6          | 0.8            | 3.1         | 0.8           | 7                               | 6.9                        | 4.4           | 0.0          | 1.0                        | 39                                                 | 12                            | 7             | 44                                        | 6.2 | 25    |
| SO. BRANCH PISCATAQUOG RIVER NEAR GOFFSTOWN, N. H. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 27, 1957.....                                 | 200                  | 5.6                        | 0.12      | 2.6          | 0.6            | 2.5         | 0.5           | 7                               | 5.1                        | 3.0           | 0.0          | 0.4                        | 30                                                 | 9                             | 3             | 37                                        | 6.3 | 23    |
| SO. BRANCH NASHUA RIVER AT CLINTON, MASS..         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 25, 1957.....                                 |                      | 1.8                        | 0.03      | 5.3          | 0.8            | 2.9         | 1.0           | 13                              | 8.4                        | 4.0           | 0.1          | 0.4                        | 33                                                 | 17                            | 6             | 56                                        | 6.7 | 2     |

## MERRIMACK RIVER BASIN--Continued

## SQUANNAPOOK RIVER NEAR WEST GROTON, MASS.

|                    |     |     |      |     |     |     |     |    |     |     |     |     |    |    |   |    |     |    |
|--------------------|-----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|----|
| Dec. 17, 1956..... | 169 | 7.0 | 0.16 | 3.8 | 0.9 | 13  | 0.7 | 31 | 10  | 5.3 | 0.0 | 0.8 | 61 | 13 | 0 | 87 | 7.3 | 12 |
| Mar. 25, 1957..... | 125 | 5.6 | .10  | 3.0 | .8  | 4.4 | .7  | 8  | 7.0 | 5.9 | .0  | .4  | 36 | 11 | 4 | 50 | 6.6 | 7  |

## SUDBURY RIVER AT FRAMINGHAM CENTER, MASS.

|                    |  |     |      |     |     |     |     |   |    |    |     |     |     |    |    |     |     |    |
|--------------------|--|-----|------|-----|-----|-----|-----|---|----|----|-----|-----|-----|----|----|-----|-----|----|
| Dec. 17, 1956..... |  | 7.8 | 0.34 | 10  | 1.5 | 22  | 1.5 | 5 | 31 | 32 | 0.0 | 1.4 | 126 | 31 | 27 | 197 | 5.7 | 35 |
| Mar. 25, 1957..... |  | 3.2 | .28  | 7.4 | 1.4 | 9.3 | 1.3 | 8 | 18 | 15 | .0  | .8  | 67  | 24 | 18 | 110 | 6.2 | 22 |

## MERRIMACK RIVER AT NEWBURYPORT, MASS.

|                    |  |     |      |    |     |       |    |    |     |       |     |     |       |     |     |       |     |    |
|--------------------|--|-----|------|----|-----|-------|----|----|-----|-------|-----|-----|-------|-----|-----|-------|-----|----|
| Mar. 29, 1957..... |  | 4.4 | 0.17 | 46 | 130 | 1,100 | 42 | 26 | 274 | 1,980 | 0.3 | 1.5 | 3,880 | 650 | 628 | 6,500 | 6.6 | 21 |
|--------------------|--|-----|------|----|-----|-------|----|----|-----|-------|-----|-----|-------|-----|-----|-------|-----|----|

## IPWICH RIVER BASIN

## IPWICH RIVER AT SO. MIDDLETON, MASS.

|                    |    |     |      |     |     |     |     |   |    |    |     |     |    |    |    |    |     |    |
|--------------------|----|-----|------|-----|-----|-----|-----|---|----|----|-----|-----|----|----|----|----|-----|----|
| Mar. 29, 1957..... | 61 | 0.4 | 0.12 | 5.4 | 1.7 | 6.2 | 1.1 | 9 | 12 | 10 | 0.1 | 0.4 | 57 | 20 | 13 | 79 | 6.1 | 90 |
|--------------------|----|-----|------|-----|-----|-----|-----|---|----|----|-----|-----|----|----|----|----|-----|----|

## PROVIDENCE RIVER BASIN

## BLACKSTONE RIVER AT WOONSOCKET, R. I.

|                   |       |     |      |     |     |     |     |   |    |     |     |     |    |    |    |    |     |    |
|-------------------|-------|-----|------|-----|-----|-----|-----|---|----|-----|-----|-----|----|----|----|----|-----|----|
| Apr. 8, 1957..... | 2,310 | 4.6 | 0.52 | 6.4 | 0.7 | 6.1 | 1.9 | 8 | 14 | 8.4 | 0.2 | 2.9 | 57 | 19 | 13 | 85 | 5.9 | 25 |
|-------------------|-------|-----|------|-----|-----|-----|-----|---|----|-----|-----|-----|----|----|----|----|-----|----|

## PAWCATUCK RIVER BASIN

## WOOD RIVER AT HOPE VALLEY, R. I.

|                   |     |     |      |     |     |     |     |   |     |     |     |     |    |   |   |    |     |    |
|-------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|---|---|----|-----|----|
| Apr. 8, 1957..... | 482 | 4.5 | 0.12 | 2.1 | 0.7 | 2.4 | 0.7 | 4 | 5.4 | 3.3 | 0.1 | 0.5 | 31 | 8 | 5 | 33 | 5.6 | 43 |
|-------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|---|---|----|-----|----|



## THAMES RIVER BASIN

## WILLIMANTIC RIVER NEAR SOUTH COVENTRY, CONN.

LOCATION.--At highway bridge about 700 feet downstream from gaging station, 1 mile downstream from Mill Brook, 2.4 miles southeast of South Coventry, Tolland County.

DRAINAGE AREA.--121 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 89 ppm Sept. 21-30; minimum, 36 ppm Apr. 5-10.

Hardness: Maximum, 45 ppm Apr. 4; minimum, 14 ppm Apr. 5-10.

Specific conductance: Maximum daily, 141 micromhos Sept. 22; minimum daily, 39 micromhos Apr. 7.

Water temperatures: Maximum, 77°F July 23, 24; minimum, freezing point on several days during January.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1501. River frozen at regular sampling point Jan. 2-16. Samples collected half a mile upstream on Jan. 7-10, 11-16. No appreciable inflow between sampling site and gaging station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./l.               | Non-carbonate |                                          |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 91                   | 7.8                        | 0.37      | 5.7          | 1.2            | 5.8         | 2.0           | 14                              | 13                         | 5.6           | 0.0          | 2.7                        | 59                                                 | 19                            | 8             | 89                                       | 6.3 | 13    | 8               | 3        |
| Oct. 11-20         | 52                   | 8.4                        | .38       | 5.9          | 1.4            | 6.4         | 2.1           | 15                              | 14                         | 5.8           | .0           | 2.7                        | 63                                                 | 21                            | 8             | 97                                       | 6.3 | 17    | 6               | 3        |
| Oct. 21-31         | 58                   | 7.5                        | .44       | 5.9          | 1.3            | 7.0         | 2.2           | 17                              | 13                         | 6.0           | .0           | 3.8                        | 63                                                 | 20                            | 6             | 97                                       | 6.6 | 17    | 7               | 4        |
| Nov. 1-10          | 63                   | 8.7                        | .36       | 5.2          | 2.0            | 5.5         | 1.7           | 15                              | 12                         | 5.6           | .0           | 2.5                        | 59                                                 | 21                            | 9             | 83                                       | 6.6 | 22    | 7               | 5        |
| Nov. 11-20         | 95                   | 9.0                        | .31       | 4.9          | 1.8            | 5.8         | 1.7           | 14                              | 13                         | 5.8           | .0           | 2.4                        | 60                                                 | 20                            | 8             | 88                                       | 6.3 | 22    | 7               | 4        |
| Nov. 21-30         | 153                  | 9.7                        | .27       | 4.7          | 1.8            | 5.3         | .6            | 11                              | 13                         | 4.7           | .0           | 2.5                        | 54                                                 | 19                            | 10            | 71                                       | 6.3 | 25    | 8               | 7        |
| Dec. 1-10          | 100                  | 11                         | .27       | 5.2          | 1.8            | 4.8         | 1.4           | 12                              | 13                         | 4.9           | .0           | 2.9                        | 55                                                 | 21                            | 11            | 74                                       | 6.6 | 5     | 6               | 4        |
| Dec. 11-20         | 318                  | 10                         | .13       | 4.6          | 1.9            | 3.4         | 1.0           | 11                              | 12                         | 3.4           | .0           | 1.1                        | 46                                                 | 20                            | 11            | 58                                       | 6.4 | 7     | 7               | 4        |
| Dec. 21-31         | 270                  | 10                         | .13       | 4.6          | 1.8            | 3.1         | 1.0           | 12                              | 11                         | 3.4           | .0           | 1.4                        | 43                                                 | 19                            | 9             | 55                                       | 6.5 | 7     | 5               | 4        |
| Jan. 1, 1957       | 190                  | --                         | .16       | --           | --             | --          | --            | 9                               | --                         | 4.8           | --           | 1.7                        | --                                                 | a 20                          | 13            | 60                                       | 7.0 | --    | --              | --       |
| Jan. 1-10          | 144                  | 9.3                        | .40       | 4.6          | 1.8            | 7.2         | 1.0           | 0                               | 7.6                        | 3.4           | .0           | .1                         | 73                                                 | 19                            | 19            | 90                                       | 4.4 | 17    | 70              | 58       |
| Jan. 11-16         | 122                  | 8.7                        | .36       | 4.0          | 1.8            | 6.8         | .8            | 2                               | 8.6                        | 3.1           | .0           | .1                         | 65                                                 | 18                            | 16            | 83                                       | 4.6 | 17    | 77              | 63       |
| Jan. 17-20         | 96                   | --                         | .11       | --           | --             | --          | --            | 8                               | --                         | 4.1           | .0           | .7                         | --                                                 | a 21                          | 14            | 53                                       | 6.0 | --    | --              | --       |
| Jan. 21-31         | 361                  | 8.7                        | .13       | 3.4          | 1.9            | 2.8         | .8            | 9                               | 9.4                        | 3.2           | .0           | .9                         | 41                                                 | 17                            | 9             | 52                                       | 6.2 | 8     | 6               | 6        |
| Feb. 1-10          | 212                  | 8.7                        | .11       | 4.0          | 1.9            | 2.9         | 1.0           | 11                              | 9.4                        | 3.7           | .0           | 1.3                        | 42                                                 | 18                            | 9             | 54                                       | 6.2 | 10    | 5               | 3        |
| Feb. 11-20         | 202                  | 11                         | .14       | 4.7          | 2.0            | 3.8         | 1.1           | 13                              | 12                         | 3.8           | .0           | 1.5                        | 46                                                 | 19                            | 9             | 62                                       | 6.4 | 10    | 5               | 3        |
| Feb. 21-28         | 232                  | 8.9                        | .14       | 4.1          | 1.9            | 3.4         | 1.0           | 12                              | 9.0                        | 3.8           | .0           | 1.4                        | 39                                                 | 18                            | 8             | 57                                       | 6.5 | 7     | 4               | 3        |
| Mar. 1-3, 6-10     | 267                  | 7.8                        | .09       | 4.2          | 1.4            | 3.2         | .9            | 10                              | 10                         | 3.6           | .1           | 1.4                        | 42                                                 | 17                            | 7             | 53                                       | 6.4 | 12    | 8               | 4        |
| Mar. 11-20         | 294                  | 7.4                        | .10       | 3.9          | 1.6            | 3.1         | .8            | 11                              | 9.3                        | 3.4           | .1           | 1.0                        | 41                                                 | 16                            | 9             | 54                                       | 6.7 | 12    | 5               | 3        |
| Mar. 21-31         | 239                  | 6.8                        | .14       | 4.0          | 1.4            | 3.0         | .8            | 10                              | 8.9                        | 3.6           | .1           | 1.4                        | 39                                                 | 16                            | 8             | 54                                       | 6.6 | 12    | 4               | 3        |

|                         |     |     |      |     |     |     |     |     |     |     |     |     |    |     |    |     |     |    |    |    |
|-------------------------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|----|-----|-----|----|----|----|
| Apr. 1-3, 1956          | 316 | --  | 07   | --  | --  | --  | --  | 18  | --  | 4.7 | --  | 1.4 | -- | a21 | 6  | 66  | 6.7 | -- | -- | -- |
| Apr. 4-10               | 752 | 7.5 | 3.5  | 1.2 | 2.7 | 0.6 | 8   | 7.7 | 2.8 | 7.7 | .1  | .9  | 36 | 14  | 7  | 44  | 6.5 | 10 | 6  | 4  |
| Apr. 11-20              | 349 | --  | .08  | --  | --  | --  | b33 | 4.0 | 4.0 | --  | --  | --  | -- | a45 | 22 | 87  | 8.5 | -- | -- | -- |
| Apr. 21-28              | 338 | 7.2 | 3.9  | 1.3 | 3.1 | 1.9 | 10  | 9.1 | 3.4 | 9.1 | .9  | 39  | 49 | 15  | 7  | 52  | 6.8 | 15 | 4  | 3  |
| Apr. 29-30              | 196 | 6.7 | .26  | 4.2 | 1.2 | 3.7 | 1.0 | 8.6 | 3.6 | 8.6 | .1  | 1.5 | 42 | 16  | 5  | 57  | 6.8 | 15 | 5  | 4  |
| May 1-10                | 166 | --  | .40  | --  | --  | --  | 30  | --  | 4.5 | --  | --  | --  | -- | a25 | 0  | 84  | 7.2 | -- | -- | -- |
| May 11-16, 18-20        | 119 | 6.1 | .34  | 4.6 | 1.3 | 4.3 | 1.2 | 9.5 | 4.0 | 9.5 | .1  | 6   | 44 | 17  | 6  | 61  | 6.4 | 17 | 6  | 4  |
| May 17                  | 108 | 7.2 | .38  | 4.6 | 1.5 | 3.9 | 1.1 | 7.5 | 4.0 | 7.5 | .1  | 1.0 | 46 | 18  | 5  | 61  | 6.5 | 22 | 8  | 4  |
| May 21-29               | 105 | --  | .45  | --  | --  | --  | c56 | --  | 4.5 | --  | --  | --  | -- | a31 | 18 | 122 | 9.0 | -- | -- | -- |
| May 30                  | 101 | 6.7 | .51  | 5.6 | 1.5 | 5.1 | 1.3 | 9.5 | 4.3 | 9.5 | .1  | 3.5 | 52 | 20  | 5  | 72  | 6.7 | 12 | 6  | 4  |
| June 1-10               | 70  | --  | .26  | --  | --  | 9.4 | 49  | 4.4 | 4.6 | --  | --  | 2.3 | -- | a32 | 0  | 119 | 7.3 | -- | -- | -- |
| June 11-20              | 55  | 6.5 | .32  | 6.1 | 1.1 | 4.7 | 1.3 | 9.5 | 4.2 | 9.5 | .0  | 2.3 | 51 | 20  | 7  | 70  | 6.4 | 13 | 9  | 3  |
| June 21-30              | 38  | 6.9 | .42  | 6.4 | 1.4 | 7.1 | 2.1 | 12  | 4.2 | 12  | .1  | 3.1 | 62 | 22  | 3  | 92  | 6.5 | 12 | 8  | 4  |
| July 1-20               | 32  | 12  | .60  | 6.4 | 1.5 | 8.4 | 2.2 | 27  | 5.9 | 12  | .1  | 2.3 | 73 | 22  | 0  | 99  | 6.8 | 11 | 7  | 4  |
| July 21-31              | 24  | 7.9 | .44  | 6.8 | 1.9 | 7.6 | 2.0 | 8.6 | 7.2 | 8.6 | .1  | 4.6 | 72 | 25  | 6  | 93  | 6.4 | 9  | 10 | 4  |
| Aug. 1-20               | 19  | --  | .58  | --  | --  | 9.7 | 21  | 14  | 7.1 | --  | --  | 3.3 | -- | a23 | 6  | 93  | 6.2 | 9  | -- | -- |
| Aug. 21-31              | 17  | 7.1 | .61  | 6.1 | 1.1 | 8.8 | 2.4 | 14  | 6.7 | --  | .1  | 4.4 | 73 | 20  | 3  | 103 | 6.4 | 7  | 18 | 5  |
| Sept. 1-20              | 16  | --  | .53  | --  | --  | 7.1 | 20  | 13  | 6.9 | --  | --  | 5.0 | -- | a28 | 12 | 109 | 6.4 | 7  | -- | -- |
| Sept. 21-30             | 14  | 11  | .32  | 7.1 | 2.2 | 13  | 2.7 | 29  | 9.8 | --  | .2  | 5.5 | -- | 27  | 3  | 129 | 6.4 | 12 | -- | -- |
| Sept. 31-40             | 15  | 9.2 | .39  | 7.0 | 2.0 | 13  | 3.0 | 25  | 10  | --  | .2  | 7.3 | 89 | 26  | 5  | 130 | 6.4 | 17 | -- | -- |
| Time-weighted average d | 138 | 8.5 | 0.32 | 5.2 | 1.6 | 5.9 | 1.5 | 16  | 11  | 5.2 | 0.1 | 2.6 | 55 | 20  | 7  | 80  | --  | 12 | 10 | 6  |

a By compleximetric titration.

b Includes equivalent of 3 parts per million of carbonate ( $\text{CO}_3$ ).c Includes equivalent of 19 parts per million of carbonate ( $\text{CO}_3$ ).

d Represents 98 percent of days and 98 percent of runoff.

## NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## THAMES RIVER BASIN--Continued

## WILLIMANTIC RIVER NEAR SOUTH COVENTRY, CONN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 9 a. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 55   | 54   | 35   | 32   | 34   | 39   | 45   | 62  | 70   | 71   | 73   | 63    |
| 2       | 54   | 56   | 35   | --   | 34   | 38   | 45   | 60  | 71   | 71   | 72   | 64    |
| 3       | 54   | 55   | 38   | --   | 34   | 38   | 45   | 55  | 63   | 71   | 73   | 66    |
| 4       | 54   | 53   | 38   | --   | 35   | --   | 45   | 54  | 64   | 73   | 75   | 63    |
| 5       | 55   | 52   | 38   | --   | 35   | --   | 45   | 58  | 67   | 73   | 75   | 63    |
| 6       | 51   | 48   | 38   | --   | 36   | 38   | 44   | 58  | 70   | 71   | 68   | 64    |
| 7       | 56   | 49   | 42   | 32   | 36   | 39   | 43   | 61  | 69   | 71   | 65   | 63    |
| 8       | 54   | 50   | 42   | 32   | 36   | 39   | 43   | 62  | 74   | 71   | 62   | 63    |
| 9       | 55   | 48   | 40   | 32   | 36   | 40   | 45   | 64  | 70   | 70   | 71   | 63    |
| 10      | 53   | 45   | 38   | 32   | 37   | 39   | 45   | 64  | 71   | 70   | 72   | 64    |
| 11      | 50   | 40   | 39   | 32   | 37   | 40   | 46   | 62  | 65   | 70   | 73   | 64    |
| 12      | 48   | 44   | 39   | 32   | 37   | 41   | 48   | 61  | 66   | 72   | 66   | 65    |
| 13      | 48   | 44   | 39   | 32   | 36   | 41   | 48   | 62  | 67   | 72   | 65   | 68    |
| 14      | 48   | 45   | 38   | 32   | 36   | 41   | 48   | 64  | 68   | 71   | 65   | 68    |
| 15      | 50   | 47   | 38   | 32   | 35   | 42   | 50   | 64  | 70   | 70   | 63   | 68    |
| 16      | 53   | 46   | 38   | 32   | 35   | 42   | 49   | 64  | 70   | 70   | 70   | 68    |
| 17      | 55   | 45   | 38   | 32   | 36   | 44   | 51   | 64  | 70   | 70   | 66   | 67    |
| 18      | 57   | 44   | 37   | 32   | 36   | 44   | 52   | 65  | 71   | 71   | 67   | 67    |
| 19      | 51   | 43   | 37   | 32   | 35   | 44   | 52   | 65  | 71   | 71   | 66   | 66    |
| 20      | 54   | 43   | 37   | 33   | 35   | 44   | 54   | 65  | 71   | 73   | 67   | 66    |
| 21      | 49   | 43   | 37   | 33   | 36   | 44   | 55   | --  | 71   | --   | 66   | 67    |
| 22      | 50   | 44   | 37   | 33   | 36   | 45   | 57   | 65  | 71   | 75   | 66   | 69    |
| 23      | 56   | 44   | 37   | 32   | 36   | 45   | 59   | 65  | 72   | 77   | 65   | 66    |
| 24      | 54   | 35   | 37   | 32   | 36   | 45   | 61   | 65  | 72   | 77   | 66   | 63    |
| 25      | 52   | 35   | 38   | 33   | 38   | 45   | 62   | 65  | 72   | 75   | 67   | 60    |
| 26      | 51   | 38   | 38   | 33   | 40   | 46   | 62   | 65  | 72   | 75   | 66   | 60    |
| 27      | 52   | 36   | 38   | 33   | 39   | 46   | 62   | 66  | 72   | 73   | 68   | 59    |
| 28      | 51   | 36   | 37   | 33   | 39   | 46   | 62   | 66  | 72   | 72   | 63   | 56    |
| 29      | 48   | 35   | 37   | 33   | --   | 45   | 62   | 66  | 72   | 70   | 65   | 53    |
| 30      | 48   | 35   | 36   | 34   | --   | 45   | 58   | 66  | 72   | 70   | 63   | 50    |
| 31      | 50   | --   | 33   | 32   | --   | 44   | --   | 66  | --   | 73   | 65   | --    |
| Average | 52   | 44   | 38   | 32   | 36   | 42   | 51   | 63  | 70   | 72   | 68   | 64    |

THAMES RIVER BASIN--Continued  
SHETUCKET RIVER NEAR WILLIMANTIC, CONN.

LOCATION.--At gaging station at Bingham Bridge, 500 feet upstream from New York, New Haven and Hartford Railroad bridge, 500 feet downstream from Potash Brook, 1.3 miles downstream from confluence of Willimantic and Natchaug Rivers, and 1½ miles southeast of Willimantic, Windham County, and 16.5 miles above mouth. DRAINAGE AREA.--401 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.  
EXTREMES, 1956-57.--Dissolved solids: Maximum, 114 ppm Sept. 21, 24, 26-28, 30; minimum, 42 ppm Apr. 1-9.

Hardness: Maximum, 61 ppm Dec. 30; minimum, 16 ppm Mar. 11-20.

Specific conductance: Maximum daily, 234 micromhos Sept. 30; minimum daily, 46 micromhos Mar. 11. Apr. 11.

Water temperatures: Maximum, 81°F July 22, 23, Aug. 1; minimum, freezing point on several days during January.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1501.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color | Oxygen consumed |          |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|-----------------|----------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                          |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956..... | 294                  | 8.3                        | 0.28      | 6.7          | 1.4            | 6.2         | 2.0           | 16                              | 14                         | 6.7           | 0.0          | 2.9                        | 64                                                 | 23                            | 10            | 95                                       | 6.2 | 12    | 6               | 4        |
| Oct. 11-20.....      | 178                  | 8.0                        | .29       | 6.4          | 1.4            | 6.4         | 2.1           | 16                              | 13                         | 6.3           | .0           | 3.9                        | 65                                                 | 22                            | 9             | 96                                       | 6.1 | 17    | 6               | 4        |
| Oct. 21-31.....      | 153                  | 6.6                        | .38       | 6.2          | 1.1            | 7.2         | 2.2           | 15                              | 13                         | 7.0           | .0           | 5.3                        | 65                                                 | 20                            | 8             | 100                                      | 6.2 | 12    | 5               | 4        |
| Nov. 1-10.....       | 254                  | 8.2                        | .30       | 5.7          | 1.4            | 5.8         | 1.8           | 14                              | 12                         | 6.4           | .0           | 2.6                        | 58                                                 | 20                            | 9             | 88                                       | 6.6 | 22    | 6               | 4        |
| Nov. 11-20.....      | 276                  | 8.7                        | .32       | 5.7          | 1.7            | 5.7         | 1.6           | 15                              | 13                         | 6.5           | .0           | 2.4                        | 61                                                 | 21                            | 9             | 88                                       | 6.4 | 18    | 7               | 4        |
| Nov. 21-30.....      | 512                  | 9.6                        | .22       | 5.0          | 1.6            | 4.4         | 1.3           | 11                              | 13                         | 5.2           | .0           | 1.5                        | 57                                                 | 19                            | 10            | 74                                       | 6.6 | 27    | 7               | 6        |
| Dec. 1-10.....       | 319                  | 11                         | .20       | 5.6          | 2.0            | 5.2         | 1.5           | 13                              | 14                         | 5.4           | .0           | 3.1                        | 58                                                 | 22                            | 12            | 80                                       | 6.2 | 8     | 6               | 5        |
| Dec. 11-20.....      | 1,170                | 9.6                        | .15       | 4.9          | 1.8            | 3.7         | 1.2           | 10                              | 12                         | 4.6           | .0           | 1.8                        | 49                                                 | 20                            | 12            | 63                                       | 6.4 | 13    | 8               | 5        |
| Dec. 21-29, 31.....  | 960                  | 9.8                        | .11       | 4.8          | 1.8            | 3.3         | 1.0           | 9                               | 13                         | 4.0           | .0           | 1.8                        | 47                                                 | 20                            | 12            | 61                                       | 6.4 | 10    | 6               | 4        |
| Dec. 30.....         | 790                  | 11                         | .20       | --           | --             | --          | --            | 22                              | --                         | 7.7           | --           | 15                         | --                                                 | a61                           | 43            | 163                                      | 6.2 | --    | --              | --       |
| Jan. 1-10, 1957..... | 525                  | 11                         | .16       | 4.7          | 1.8            | 4.2         | 1.0           | 13                              | 12                         | 4.3           | .0           | 1.7                        | 51                                                 | 19                            | 9             | 71                                       | 6.6 | 7     | 5               | 4        |
| Jan. 11-20.....      | 362                  | 11                         | .19       | 5.1          | 1.6            | 4.7         | 1.1           | 13                              | 11                         | 4.6           | .0           | 2.2                        | 50                                                 | 19                            | 9             | 73                                       | 6.3 | 5     | 5               | 5        |
| Jan. 21-31.....      | 1,290                | 8.4                        | .17       | 3.7          | 1.8            | 3.4         | .9            | 9                               | 10                         | 3.8           | .0           | 1.7                        | 43                                                 | 17                            | 9             | 59                                       | 6.3 | 12    | 6               | 5        |
| Jan. 22.....         | 463                  | --                         | .18       | --           | --             | --          | --            | 13                              | --                         | 8.5           | --           | 2.8                        | --                                                 | a25                           | 14            | 82                                       | 6.3 | --    | --              | --       |
| Feb. 1-10.....       | 754                  | 9.7                        | .09       | 4.8          | 2.0            | 4.0         | 1.1           | 12                              | 11                         | 4.6           | .0           | 1.9                        | 49                                                 | 20                            | 10            | 65                                       | 6.6 | 10    | 4               | 3        |
| Feb. 11-20.....      | 772                  | 8.9                        | .10       | 4.5          | 1.8            | 3.9         | 1.1           | 12                              | 11                         | 4.2           | .0           | 1.7                        | 45                                                 | 19                            | 9             | 62                                       | 6.6 | 8     | 3               | 3        |
| Feb. 21-26.....      | 791                  | 8.3                        | .12       | 4.5          | 1.8            | 3.8         | 1.1           | 11                              | 10                         | 4.3           | .0           | 1.9                        | 45                                                 | 19                            | 10            | 62                                       | 6.6 | 8     | 3               | 3        |
| Mar. 1-10.....       | 942                  | 7.6                        | .06       | 4.1          | 1.6            | 3.6         | 1.1           | 10                              | 10                         | 4.2           | .1           | 1.4                        | 44                                                 | 17                            | 9             | 58                                       | 6.5 | 7     | 4               | 4        |
| Mar. 11-20.....      | 996                  | 7.2                        | .08       | 4.3          | 1.2            | 3.6         | 1.0           | 9                               | 9.8                        | 4.0           | .1           | 1.4                        | 43                                                 | 16                            | 8             | 57                                       | 6.8 | 12    | 5               | 4        |
| Mar. 21-31.....      | 819                  | 7.0                        | .11       | 5.0          | 1.3            | 3.6         | 1.0           | 12                              | 9.9                        | 4.0           | .1           | 1.6                        | 43                                                 | 18                            | 8             | 60                                       | 6.9 | 12    | 5               | 4        |

a By complexometric titration.

## THAMES RIVER BASIN--Continued

## SHETUCKET RIVER NEAR WILLIMANTIC, CONN.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Apr. 1-9, 1956.....          | 1,970                | 6.6                        | 0.07      | 4.6          | 1.3            | 3.3         | 0.9           | 11                              | 9.7                        | 3.9           | 0.1          | 1.4                        | 42                                                 | 17                            | 8             | 55                                        | 6.5 | 17    | 5               | 4        |
| Apr. 10.....                 | 2,590                | --                         | --        | --           | --             | --          | --            | 30                              | --                         | 3.8           | --           | 1.7                        | --                                                 | a24                           | 0             | 78                                        | 8.0 | --    | --              | --       |
| Apr. 11-20.....              | 1,140                | 8.0                        | 0.07      | 4.6          | 1.4            | 3.5         | 0.8           | 13                              | 9.1                        | 3.6           | --           | 1.4                        | 43                                                 | 18                            | 7             | 98                                        | 6.7 | 13    | 4               | 4        |
| Apr. 21-30.....              | 618                  | 5.4                        | 0.17      | 4.8          | 1.1            | 3.4         | 1.1           | 12                              | 8.8                        | 4.0           | 0.1          | 1.8                        | 43                                                 | 17                            | 7             | 39                                        | 6.5 | 13    | 4               | 4        |
| May 1-10.....                | 357                  | 6.7                        | 0.30      | 5.8          | 1.4            | 4.8         | 1.2           | 15                              | 9.3                        | 4.9           | 0.1          | 3.2                        | 49                                                 | 21                            | 8             | 70                                        | 6.6 | 15    | 6               | 4        |
| May 11-17, 19.....           | 313                  | 7.2                        | 0.36      | 5.8          | 1.4            | 4.9         | 1.3           | 17                              | 9.1                        | 4.5           | 0.1          | 1.0                        | 50                                                 | 21                            | 7             | 72                                        | 6.8 | 12    | 7               | 4        |
| May 18, 20.....              | 280                  | --                         | 0.42      | --           | --             | --          | --            | 38                              | --                         | 5.5           | --           | 2.6                        | --                                                 | a30                           | 0             | 109                                       | 7.1 | --    | --              | --       |
| May 21-31.....               | 294                  | 6.8                        | 0.31      | 5.3          | 1.4            | 4.3         | 1.2           | 15                              | 8.1                        | 5.3           | 0.1          | 1.0                        | 48                                                 | 19                            | 7             | 67                                        | 6.6 | 17    | 7               | 4        |
| June 1-6, 8-10.....          | 156                  | 7.2                        | 0.35      | 6.4          | 2.0            | 6.1         | 1.4           | 21                              | 9.9                        | 7.3           | 0.1          | 1.2                        | 59                                                 | 24                            | 7             | 88                                        | 6.7 | 17    | 6               | 4        |
| June 7.....                  | 142                  | --                         | 0.38      | --           | --             | --          | --            | 52                              | --                         | 6.0           | --           | 1.4                        | --                                                 | a36                           | 0             | 130                                       | 7.8 | --    | --              | --       |
| June 11-17.....              | 98                   | 5.8                        | 0.34      | 7.2          | 1.7            | 7.7         | 1.8           | 22                              | 12                         | 7.8           | 0.1          | 4.1                        | 64                                                 | 25                            | 7             | 99                                        | 6.7 | 12    | 5               | 3        |
| June 18-20.....              | 86                   | --                         | 0.42      | --           | --             | 14          | --            | 39                              | 15                         | 9.2           | --           | 4.6                        | --                                                 | a34                           | 2             | 131                                       | 6.7 | --    | --              | --       |
| June 21-30.....              | 78                   | 7.8                        | 0.46      | 7.8          | 1.8            | 10          | 2.3           | 27                              | 13                         | 9.0           | 0.1          | 3.6                        | 77                                                 | 27                            | 5             | 116                                       | 6.6 | 11    | 6               | 4        |
| July 1-20.....               | 54                   | 7.9                        | 0.28      | 6.8          | 1.8            | 9.7         | 2.2           | 20                              | 8.6                        | 9.6           | 0.1          | 8.3                        | 76                                                 | 25                            | 8             | 109                                       | 6.3 | 12    | 8               | 4        |
| July 21-31.....              | 40                   | --                         | 0.44      | --           | --             | 12          | --            | 22                              | 14                         | 12            | --           | 3.4                        | --                                                 | a27                           | 9             | 128                                       | 6.1 | 15    | --              | --       |
| Aug. 1-20.....               | 41                   | 8.6                        | 0.56      | 7.4          | 0.8            | 13          | 2.6           | 21                              | 17                         | 11            | 0.2          | 8.0                        | 95                                                 | 22                            | 5             | 135                                       | 6.4 | 10    | 18              | 5        |
| Aug. 21-31.....              | 50                   | 10                         | 0.43      | 8.3          | 2.3            | 16          | 2.8           | 24                              | --                         | 14            | 0.2          | 8.8                        | 102                                                | 30                            | 11            | 159                                       | 6.2 | 12    | --              | --       |
| Sept. 1, 2, 4, 8-10.....     | 43                   | 7.4                        | 0.38      | 8.6          | 2.1            | 14          | 2.5           | 22                              | --                         | 12            | 0.1          | 7.9                        | 90                                                 | 30                            | 12            | 145                                       | 6.1 | 12    | --              | --       |
| Sept. 3, 5-7.....            | 38                   | --                         | 0.37      | --           | --             | --          | --            | 36                              | --                         | 19            | --           | 11                         | --                                                 | a31                           | 2             | 194                                       | 6.3 | --    | --              | --       |
| Sept. 11, 12, 14-18.....     | 48                   | 12                         | 0.33      | 8.9          | 2.5            | 16          | 2.8           | 33                              | --                         | 14            | 0.2          | 8.8                        | 104                                                | 33                            | 6             | 163                                       | 6.3 | 15    | --              | --       |
| Sept. 13, 19-20.....         | 55                   | --                         | 0.36      | --           | --             | --          | --            | 58                              | --                         | 20            | --           | 13                         | --                                                 | a35                           | 0             | 221                                       | 6.6 | --    | --              | --       |
| Sept. 21, 24, 26-28, 30..... | 37                   | 9.0                        | 0.29      | 8.4          | 2.3            | 18          | 4.1           | 31                              | --                         | 17            | 0.2          | 16                         | 114                                                | 31                            | 5             | 187                                       | 6.4 | 17    | --              | --       |
| Sept. 22, 23, 25, 29.....    | 56                   | --                         | 0.29      | --           | --             | --          | --            | 25                              | --                         | 21            | --           | 9.5                        | --                                                 | a29                           | 9             | 137                                       | 6.2 | --    | --              | --       |
| Time-weighted average.....   | 465                  | 8.3                        | 0.26      | 5.8          | 1.6            | 6.6         | 1.6           | 17                              | 11                         | 7.2           | 0.1          | 4.1                        | 61                                                 | 22                            | 8             | 92                                        | --  | 13    | 6               | 4        |

a By compleximetric titration.

## THAMES RIVER BASIN--Continued

## SHETUCKET RIVER NEAR WILLIMANTIC, CONN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 60   | 58   | 36   | 33   | 34   | 36   | 47   | 60  | 64   | 77   | 81   | 73    |
| 2       | 58   | 58   | 36   | 32   | 34   | 37   | 47   | 59  | 65   | 73   | 78   | 67    |
| 3       | 59   | 56   | 37   | 32   | 33   | 37   | 47   | 56  | 66   | 74   | 78   | 69    |
| 4       | 59   | 56   | 37   | 32   | 35   | 37   | 45   | 56  | 64   | 77   | 76   | 73    |
| 5       | 60   | 55   | 38   | 33   | 35   | 37   | 46   | 56  | 65   | 77   | 75   | 75    |
| 6       | 58   | 54   | 40   | 32   | 35   | 38   | 46   | 58  | 65   | 78   | 80   | 73    |
| 7       | 58   | 53   | 42   | 34   | 35   | 38   | 41   | 58  | 65   | 74   | 75   | 71    |
| 8       | 57   | 53   | 42   | 32   | 35   | 38   | 43   | 62  | 64   | 77   | 73   | 70    |
| 9       | 57   | 52   | 40   | 34   | 34   | 38   | 42   | 65  | 65   | 75   | 77   | 70    |
| 10      | 56   | 51   | 38   | 33   | 36   | 38   | 42   | 67  | 63   | 78   | 74   | 70    |
| 11      | 55   | 48   | 38   | 33   | 34   | --   | 42   | 66  | 66   | 78   | 75   | 68    |
| 12      | 52   | 46   | 39   | 32   | 34   | 40   | 42   | 62  | 67   | 76   | 72   | 73    |
| 13      | 50   | 45   | 43   | 34   | 34   | 42   | 44   | 61  | 70   | 75   | 71   | 74    |
| 14      | 51   | 45   | 39   | 32   | 35   | 45   | 45   | 63  | 72   | 74   | 70   | 73    |
| 15      | 50   | 48   | 37   | 32   | 36   | 46   | 43   | 67  | 75   | 74   | 76   | 70    |
| 16      | 57   | 49   | 38   | 32   | 36   | 47   | 44   | 69  | 80   | 75   | 78   | 71    |
| 17      | 59   | 48   | --   | 32   | 36   | 46   | 42   | 67  | 79   | 77   | 77   | 73    |
| 18      | 59   | 45   | 36   | 32   | 36   | 45   | 48   | 63  | 79   | 77   | 71   | 73    |
| 19      | 57   | 43   | 35   | 32   | 37   | 40   | 52   | 60  | 80   | 78   | 70   | 74    |
| 20      | 56   | 41   | 36   | 32   | 35   | 42   | 53   | 56  | 76   | 80   | 72   | 74    |
| 21      | 55   | 44   | 36   | 33   | 36   | 41   | 52   | 53  | 74   | 78   | 72   | 74    |
| 22      | 56   | 54   | 36   | 34   | 36   | 42   | 52   | 53  | 73   | 81   | 74   | 72    |
| 23      | 59   | 53   | 36   | 35   | 37   | 44   | 53   | 58  | 74   | 81   | 72   | 70    |
| 24      | 60   | 39   | 37   | 33   | 38   | 47   | 61   | 64  | 74   | 77   | 70   | 70    |
| 25      | 57   | 37   | 36   | 33   | 40   | 47   | 60   | 64  | 77   | 77   | 68   | 68    |
| 26      | 53   | 39   | 34   | 33   | 43   | 46   | 57   | 67  | 78   | 78   | 68   | 67    |
| 27      | 54   | 38   | 36   | 34   | 44   | 47   | 58   | 68  | 78   | 74   | 72   | 65    |
| 28      | 54   | 39   | 36   | 34   | 39   | 46   | 61   | 67  | 80   | 75   | 69   | 64    |
| 29      | 53   | 38   | 33   | 34   | --   | 47   | 65   | 62  | 79   | 72   | 70   | 62    |
| 30      | 56   | 37   | 33   | 34   | --   | 47   | 63   | 66  | 80   | 78   | 70   | 60    |
| 31      | 56   | --   | 33   | 34   | --   | 46   | --   | 64  | --   | 79   | 74   | --    |
| Average | 56   | 47   | 37   | 33   | 36   | 42   | 49   | 62  | 72   | 77   | 73   | 70    |

THAMES RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN THAMES RIVER BASIN IN CONN.  
Chemical analyses, in parts per million, water year October 1956 to September 1957

Chemical analyses, in parts per million, taken from October 1956 to September 1957.

| Date of collection             | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| QUINEBAUG RIVER AT JEWETT CITY |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| July 8, 1957.....              | 135                  | 2.2                        | 0.12      | 7.4          | 2.1            | 15          | 2.2           | 40                              | 17                         | 8.2           | 0.2          | 2.5                        | 90                                                 | 27                            | 0             | 136                                       | 6.9 | 15    |
| July 15.....                   | 142                  | 4.5                        | .26       | 7.2          | .7             | 14          | 1.9           | 34                              | 14                         | 7.1           | .1           | 2.3                        | 76                                                 | 21                            | 0             | 114                                       | 6.5 | 13    |
| July 29.....                   | 116                  | 3.5                        | .22       | 8.1          | 1.0            | 11          | 1.9           | 32                              | 12                         | 8.1           | .1           | 2.5                        | 71                                                 | 24                            | 0             | 109                                       | 6.5 | 12    |
| Aug. 6.....                    | 112                  | 3.0                        | .21       | 7.1          | .8             | 16          | 2.1           | 39                              | 14                         | 8.0           | .1           | 2.6                        | 82                                                 | 21                            | 0             | 126                                       | 6.6 | 12    |
| Aug. 12.....                   | 79                   | 3.6                        | .18       | 6.9          | .6             | 16          | 2.2           | 38                              | 15                         | 7.9           | .2           | 2.4                        | 83                                                 | 20                            | 0             | 131                                       | 6.5 | 10    |
| Aug. 26.....                   | 154                  | 2.8                        | .18       | 7.4          | 1.6            | 20          | 2.5           | 44                              | 18                         | 10            | .1           | 3.1                        | 92                                                 | 25                            | 0             | 155                                       | 6.6 | 15    |
| Sept. 5.....                   | 129                  | 3.8                        | .21       | 8.2          | 1.5            | 22          | 2.8           | 46                              | 19                         | 12            | .2           | 2.6                        | 97                                                 | 27                            | 0             | 157                                       | 6.7 | 15    |

## SCANTIC RIVER AT BROAD BROOK, CONN.

LOCATION.--At bridge on State Highway 140, 300 feet downstream from gaging station, 1 mile southwest of town of Broad Brook, Hartford County, and 8½ miles upstream from mouth.

DRAINAGE AREA.--98.4 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1953 to September 1957.

Sediment records.--November 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 85°F June 18; minimum, freezing point on several days during December and January.

Sediment concentrations: Maximum daily 259 ppm Aug. 28; minimum daily, 2 ppm Oct. 13, 26, Feb. 24.

Sediment loads: Maximum daily, 185 tons Jan. 23; minimum daily 0.2 ton Oct. 26.

EXTREMES, 1952-57.--Water temperatures (1953-57): Maximum, 85°F June 18, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 721 ppm Oct. 16, 1955; minimum daily, 1 ppm Jan. 22, 23, 1953, Dec. 15, 1954.

Sediment loads: Maximum daily, 6,670 tons (estimated) Aug. 19, 1955; minimum daily, 0.2 ton Aug. 23, 1953, July 25, 1954, Aug. 4, 1955, Oct. 26, 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1501.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 55   | 55   | 38   | 32   | 35   | 38   | 48   | 66  | 71   | 75   | 76   | 59    |
| 2       | 52   | 59   | 36   | 32   | 36   | 36   | 48   | 60  | 70   | 66   | 79   | 64    |
| 3       | 61   | 55   | 39   | 33   | 37   | 39   | 48   | 52  | 68   | 75   | 80   | 67    |
| 4       | 54   | 53   | 43   | 32   | 37   | 39   | 45   | 57  | 69   | 77   | 72   | 73    |
| 5       | 55   | 53   | 40   | 34   | 34   | 40   | 42   | 56  | 69   | 73   | 69   | 68    |
| 6       | 55   | 50   | 45   | 32   | 35   | 41   | 40   | 62  | 65   | 77   | 72   | 70    |
| 7       | 58   | 54   | 43   | 34   | 36   | 41   | 42   | 57  | 65   | 68   | 74   | 68    |
| 8       | 56   | 52   | 47   | 35   | 36   | 40   | 44   | 70  | 69   | 70   | 75   | 68    |
| 9       | 55   | 49   | 43   | 35   | 35   | 39   | 40   | 72  | 64   | 72   | 74   | 70    |
| 10      | 50   | 44   | 37   | 35   | 38   | 38   | 40   | 68  | 70   | 72   | 74   | 64    |
| 11      | 48   | 41   | 39   | 34   | 34   | 40   | 42   | 69  | 73   | 70   | 67   | 65    |
| 12      | 46   | 44   | 42   | 32   | 33   | 42   | 50   | 58  | 67   | 72   | 73   | 70    |
| 13      | 51   | 48   | 43   | 32   | --   | 42   | 48   | 60  | 69   | 71   | 72   | 68    |
| 14      | 51   | 44   | 40   | 32   | 37   | 46   | 44   | 61  | 71   | 74   | 68   | 72    |
| 15      | 58   | 50   | 36   | 32   | 36   | 48   | 42   | 63  | 82   | 76   | 69   | 67    |
| 16      | 60   | 53   | 34   | 32   | 35   | 46   | 46   | 69  | 73   | 75   | 73   | 69    |
| 17      | 61   | 49   | 36   | 32   | 35   | 46   | 51   | 65  | 80   | 76   | 71   | 68    |
| 18      | 56   | 44   | 36   | 32   | 38   | 42   | 50   | 60  | 85   | 74   | 67   | 68    |
| 19      | 55   | 42   | 34   | 32   | 38   | 44   | 50   | 58  | 78   | 76   | 69   | 70    |
| 20      | 53   | --   | 37   | 32   | 37   | 39   | 60   | 54  | 72   | 76   | 69   | 70    |
| 21      | 57   | 50   | 36   | 34   | 39   | 39   | 55   | 52  | 75   | 73   | 69   | 70    |
| 22      | 56   | 46   | 39   | 44   | 38   | 42   | 65   | 55  | 75   | 78   | 70   | 68    |
| 23      | 57   | 43   | 36   | 36   | 42   | 52   | 65   | 60  | 70   | 74   | 69   | 67    |
| 24      | 57   | 46   | 37   | 32   | 38   | 47   | 67   | 65  | 79   | 69   | 67   | 61    |
| 25      | 54   | --   | 38   | 33   | 44   | 42   | 63   | 65  | 78   | 74   | 64   | 65    |
| 26      | 50   | 40   | 37   | 33   | 42   | 52   | 55   | 67  | 75   | 74   | 64   | 64    |
| 27      | 54   | 41   | 36   | 33   | 42   | 45   | 62   | 70  | 74   | 68   | 71   | 58    |
| 28      | 53   | 41   | 38   | 32   | 38   | 50   | 65   | 65  | 81   | 74   | 66   | 56    |
| 29      | 51   | 38   | 37   | 33   | --   | 49   | 70   | 64  | 75   | 68   | 69   | 49    |
| 30      | 48   | 38   | 32   | 35   | --   | 48   | 61   | 67  | 73   | 75   | 64   | --    |
| 31      | 51   | --   | 32   | 32   | --   | 48   | --   | 70  | --   | 73   | 62   | --    |
| Average | 54   | 47   | 38   | 33   | 37   | 43   | 52   | 62  | 73   | 73   | 70   | 66    |



## NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## CONNECTICUT RIVER BASIN--Continued

## SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | Mean dis-charge (cfs) | October                  |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         |                       | Suspended sediment       |              | Suspended sediment    |                          |              | Suspended sediment    |                          |              |
|         |                       | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 54                    | 11                       | 1.6          | 70                    | 17                       | 3.2          | 57                    | 6                        | 0.9          |
| 2.....  | 50                    | 20                       | 2.7          | 86                    | 21                       | 4.9          | 53                    | 4                        | .6           |
| 3.....  | 49                    | 38                       | 5.0          | 84                    | 18                       | 4.1          | 54                    | 7                        | 1.0          |
| 4.....  | 48                    | 9                        | 1.2          | 71                    | 15                       | 2.9          | 57                    | 14                       | 2.2          |
| 5.....  | 56                    | 10                       | 1.5          | 62                    | 11                       | 1.8          | 57                    | 4                        | .6           |
| 6.....  | 58                    | 12                       | 1.9          | 57                    | 14                       | 2.2          | 56                    | 10                       | 1.5          |
| 7.....  | 71                    | 14                       | 2.7          | 55                    | 14                       | 2.1          | 54                    | 9                        | 1.3          |
| 8.....  | 79                    | 54                       | 12           | 54                    | 14                       | 2.0          | 54                    | 28                       | a4.1         |
| 9.....  | 68                    | 32                       | 5.9          | 62                    | 6                        | 1.0          | 82                    | 27                       | s5.9         |
| 10..... | 56                    | 31                       | 4.7          | 62                    | 5                        | .8           | 111                   | 16                       | 4.8          |
| 11..... | 50                    | 6                        | .8           | 56                    | 5                        | .8           | 99                    | 11                       | 2.9          |
| 12..... | 49                    | 6                        | .8           | 55                    | 6                        | .9           | 149                   | 33                       | 13           |
| 13..... | 50                    | 2                        | .3           | 56                    | 11                       | 1.7          | 164                   | 22                       | s9.8         |
| 14..... | 54                    | 3                        | .4           | 56                    | 6                        | .9           | 164                   | 18                       | 8.0          |
| 15..... | 49                    | 5                        | .7           | 54                    | 4                        | .6           | 194                   | 18                       | 9.4          |
| 16..... | 47                    | 14                       | 1.8          | 52                    | 4                        | .6           | 210                   | 20                       | 11           |
| 17..... | 47                    | 30                       | 3.8          | 50                    | 20                       | 2.7          | 212                   | 16                       | 9.2          |
| 18..... | 41                    | 26                       | 2.9          | 80                    | 22                       | 4.8          | 188                   | 10                       | 5.1          |
| 19..... | 45                    | 12                       | 1.5          | 111                   | 12                       | 3.6          | 146                   | 7                        | 2.8          |
| 20..... | 44                    | 8                        | 1.0          | 98                    | 8                        | a2.1         | 114                   | 4                        | 1.2          |
| 21..... | 44                    | 8                        | 1.0          | 80                    | 6                        | 1.3          | 110                   | 5                        | 1.5          |
| 22..... | 45                    | 22                       | 2.7          | 135                   | 43                       | 16           | 114                   | 6                        | 1.8          |
| 23..... | 50                    | 17                       | 2.3          | 144                   | 16                       | 6.2          | 146                   | 9                        | 3.5          |
| 24..... | 49                    | 4                        | .5           | 129                   | 11                       | 3.8          | 164                   | 12                       | 5.3          |
| 25..... | 48                    | 18                       | 2.3          | 91                    | 5                        | 1.2          | 194                   | 14                       | 7.3          |
| 26..... | 46                    | 2                        | .2           | 81                    | 17                       | 3.7          | 172                   | 10                       | 4.6          |
| 27..... | 45                    | 6                        | .7           | 86                    | 6                        | 1.4          | 146                   | 6                        | 2.4          |
| 28..... | 45                    | 4                        | .5           | 83                    | 12                       | 2.7          | 122                   | 10                       | 3.3          |
| 29..... | 46                    | 4                        | .5           | 71                    | 8                        | 1.5          | 118                   | 7                        | 2.2          |
| 30..... | 46                    | 31                       | 3.9          | 62                    | 8                        | 1.3          | 114                   | 8                        | 2.5          |
| 31..... | 45                    | 32                       | 3.9          | --                    | --                       | --           | 100                   | 8                        | 2.2          |
| Total.  | 1,574                 | --                       | 71.7         | 2,293                 | --                       | 82.8         | 3,775                 | --                       | 131.9        |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| January |                       |                          | February     |                       |                          | March        |                       |                          |              |
| 1.....  | 106                   | 17                       | 4.9          | 118                   | 11                       | 3.5          | 204                   | 10                       | 5.5          |
| 2.....  | 99                    | 91                       | 24           | 116                   | 8                        | 2.5          | 153                   | 7                        | 2.9          |
| 3.....  | 87                    | 50                       | 12           | 107                   | 9                        | 2.6          | 144                   | 6                        | 2.3          |
| 4.....  | 85                    | 40                       | 9.2          | 120                   | 9                        | 2.9          | 132                   | 5                        | 1.8          |
| 5.....  | 85                    | 15                       | 3.4          | 130                   | 10                       | 3.5          | 116                   | 4                        | 1.3          |
| 6.....  | 79                    | 26                       | 5.5          | 124                   | 7                        | 2.3          | 111                   | 5                        | 1.5          |
| 7.....  | 79                    | 18                       | 3.8          | 119                   | 8                        | 2.6          | 111                   | 4                        | 1.2          |
| 8.....  | 80                    | 10                       | 2.2          | 120                   | 6                        | 1.9          | 126                   | 12                       | s4.2         |
| 9.....  | 80                    | 6                        | 1.3          | 131                   | 21                       | s8.3         | 227                   | 32                       | s20          |
| 10..... | 82                    | 6                        | 1.3          | 252                   | 38                       | s26          | 261                   | 17                       | 12           |
| 11..... | 68                    | 8                        | 1.5          | 227                   | 18                       | 11           | 219                   | 10                       | 5.9          |
| 12..... | 79                    | 12                       | 2.6          | 165                   | 8                        | 3.6          | 174                   | 8                        | 3.8          |
| 13..... | 81                    | 18                       | 3.9          | 126                   | 8                        | 2.7          | 153                   | 7                        | 2.9          |
| 14..... | 72                    | 14                       | 2.7          | 117                   | 4                        | 1.3          | 144                   | 8                        | 3.1          |
| 15..... | 68                    | 8                        | 1.5          | 111                   | 4                        | 1.2          | 141                   | 8                        | 3.0          |
| 16..... | 70                    | 7                        | 1.3          | 105                   | 3                        | .9           | 227                   | 33                       | s20          |
| 17..... | 70                    | 9                        | 1.7          | 103                   | 4                        | 1.1          | 244                   | 20                       | 13           |
| 18..... | 68                    | 7                        | 1.3          | 101                   | 3                        | .8           | 219                   | 14                       | 8.3          |
| 19..... | 69                    | 8                        | 1.5          | 100                   | 4                        | 1.1          | 168                   | 12                       | 5.4          |
| 20..... | 68                    | 10                       | 1.8          | 101                   | 4                        | 1.1          | 152                   | 7                        | 2.9          |
| 21..... | 74                    | 17                       | 3.4          | 93                    | 4                        | 1.0          | 168                   | 12                       | 5.4          |
| 22..... | 101                   | 45                       | s14          | 90                    | 4                        | 1.0          | 212                   | 9                        | 5.2          |
| 23..... | 366                   | 191                      | s185         | 89                    | 6                        | 1.4          | 204                   | 8                        | 4.4          |
| 24..... | 490                   | 96                       | s132         | 94                    | 2                        | .5           | 177                   | 7                        | 3.3          |
| 25..... | 452                   | 44                       | s56          | 96                    | 4                        | 1.0          | 150                   | 6                        | 2.4          |
| 26..... | 265                   | 30                       | 21           | 108                   | 7                        | 2.0          | 136                   | 4                        | 1.5          |
| 27..... | 174                   | 31                       | 15           | 235                   | 52                       | s34          | 129                   | 6                        | 2.1          |
| 28..... | 141                   | 26                       | 9.9          | 235                   | 19                       | 12           | 123                   | 6                        | 2.0          |
| 29..... | 136                   | 30                       | 11           | --                    | --                       | --           | 120                   | 4                        | 1.3          |
| 30..... | 125                   | 23                       | 7.8          | --                    | --                       | --           | 117                   | 4                        | 1.3          |
| 31..... | 118                   | 16                       | 5.1          | --                    | --                       | --           | 113                   | 6                        | 1.8          |
| Total.  | 4,017                 | --                       | 547.6        | 3,633                 | --                       | 133.8        | 5,077                 | --                       | 151.7        |

s Computed by subdividing day.

a Computed from estimated concentration graph.

## CONNECTICUT RIVER BASIN--Continued

## SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                       | April                 |                           |              | May                   |                           |              | June                  |                           |              |
|-------------------------------------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|                                           | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|                                           |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....                                    | 108                   | 18                        | 5.2          | 97                    | 10                        | 2.6          | 60                    | 16                        | 2.6          |
| 2.....                                    | 155                   | 30                        | s 13         | 95                    | 9                         | 2.3          | 59                    | 12                        | 1.9          |
| 3.....                                    | 235                   | 12                        | 7.6          | 89                    | 6                         | 1.4          | 67                    | 15                        | 2.7          |
| 4.....                                    | 212                   | 12                        | 6.9          | 89                    | 8                         | 1.9          | 64                    | 11                        | 1.9          |
| 5.....                                    | 282                   | 54                        | s 51         | 88                    | 10                        | 2.4          | 59                    | 8                         | 1.3          |
| 6.....                                    | 524                   | 99                        | s 140        | 88                    | 8                         | 1.9          | 57                    | 10                        | 1.5          |
| 7.....                                    | 613                   | 79                        | s 131        | 84                    | 10                        | 2.3          | 55                    | 14                        | 2.1          |
| 8.....                                    | 491                   | 41                        | 54           | 80                    | 8                         | 1.7          | 51                    | 12                        | 1.7          |
| 9.....                                    | 502                   | 34                        | 46           | 77                    | 11                        | 2.3          | 50                    | 22                        | 3.0          |
| 10.....                                   | 469                   | 25                        | 32           | 74                    | 12                        | 2.4          | 50                    | 13                        | 1.8          |
| 11.....                                   | 414                   | 20                        | 22           | 79                    | 14                        | 3.0          | 48                    | 10                        | 1.3          |
| 12.....                                   | 345                   | 21                        | 20           | 98                    | 16                        | 4.2          | 45                    | 11                        | 1.3          |
| 13.....                                   | 303                   | 16                        | 13           | 99                    | 20                        | 5.3          | 47                    | 12                        | 1.5          |
| 14.....                                   | 261                   | 12                        | 8.5          | 92                    | 17                        | 4.2          | 44                    | 11                        | 1.3          |
| 15.....                                   | 227                   | 12                        | 7.4          | 97                    | 19                        | 5.0          | 41                    | 10                        | 1.1          |
| 16.....                                   | 197                   | 8                         | 4.3          | 102                   | 19                        | 5.2          | 40                    | 12                        | 1.3          |
| 17.....                                   | 177                   | 8                         | 3.8          | 80                    | 17                        | 3.7          | 37                    | 9                         | .9           |
| 18.....                                   | 169                   | 12                        | 5.5          | 78                    | 18                        | 3.8          | 35                    | 11                        | 1.0          |
| 19.....                                   | 169                   | 11                        | 5.0          | 76                    | 16                        | 3.3          | 35                    | 20                        | 1.9          |
| 20.....                                   | 157                   | 10                        | 4.2          | 87                    | 17                        | s 4.0        | 35                    | 14                        | 1.3          |
| 21.....                                   | 150                   | 9                         | 3.6          | 118                   | 18                        | 5.7          | 34                    | 18                        | 1.7          |
| 22.....                                   | 140                   | 10                        | 3.8          | 111                   | 19                        | 5.7          | 32                    | 20                        | 1.7          |
| 23.....                                   | 130                   | 7                         | 2.5          | 91                    | 16                        | 3.9          | 32                    | 15                        | 1.3          |
| 24.....                                   | 126                   | 8                         | 2.7          | 85                    | 16                        | 3.7          | 30                    | 14                        | 1.1          |
| 25.....                                   | 121                   | 8                         | 2.6          | 75                    | 14                        | 2.8          | 31                    | 12                        | 1.0          |
| 26.....                                   | 120                   | 10                        | 3.2          | 68                    | 15                        | 2.8          | 30                    | 17                        | 1.4          |
| 27.....                                   | 126                   | 10                        | 3.4          | 69                    | 13                        | 2.4          | 31                    | 24                        | 2.0          |
| 28.....                                   | 120                   | 10                        | 3.2          | 77                    | 23                        | 4.8          | 31                    | 10                        | .8           |
| 29.....                                   | 109                   | 9                         | 2.6          | 77                    | 14                        | 2.9          | 33                    | 33                        | 2.9          |
| 30.....                                   | 100                   | 12                        | 3.2          | 67                    | 11                        | 2.0          | 32                    | 18                        | 1.6          |
| 31.....                                   | --                    | --                        | --           | 63                    | 8                         | 1.4          | --                    | --                        | --           |
| Total..                                   | 7,252                 | --                        | 611.2        | 2,650                 | --                        | 101.0        | 1,295                 | --                        | 48.9         |
| Day                                       | July                  |                           |              | August                |                           |              | September             |                           |              |
|                                           | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|                                           |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....                                    | 31                    | 10                        | 0.8          | 23                    | 41                        | 2.5          | 22                    | 111                       | 6.6          |
| 2.....                                    | 30                    | 20                        | 1.6          | 22                    | 12                        | .7           | 22                    | 130                       | 7.7          |
| 3.....                                    | 29                    | 26                        | 2.0          | 22                    | 7                         | .4           | 22                    | 109                       | 6.5          |
| 4.....                                    | 29                    | 7                         | .5           | 23                    | 25                        | 1.6          | 22                    | 105                       | 6.2          |
| 5.....                                    | 29                    | 14                        | 1.1          | 25                    | 6                         | .4           | 22                    | 34                        | 2.0          |
| 6.....                                    | 28                    | 39                        | 2.9          | 23                    | 36                        | 2.2          | 22                    | 66                        | 3.9          |
| 7.....                                    | 26                    | 15                        | 1.1          | 22                    | 12                        | .7           | 21                    | 30                        | 1.7          |
| 8.....                                    | 27                    | 78                        | 5.7          | 22                    | 29                        | 1.7          | 20                    | 19                        | 1.0          |
| 9.....                                    | 28                    | 30                        | 2.3          | 22                    | 74                        | 4.4          | 19                    | 131                       | 6.7          |
| 10.....                                   | 31                    | 54                        | 4.5          | 22                    | 71                        | 4.2          | 18                    | 34                        | 1.7          |
| 11.....                                   | 28                    | 15                        | 1.1          | 22                    | 35                        | 2.1          | 18                    | 72                        | 3.5          |
| 12.....                                   | 27                    | 44                        | 3.2          | 22                    | 46                        | 2.7          | 18                    | 18                        | .9           |
| 13.....                                   | 26                    | 64                        | 4.5          | 20                    | 72                        | 3.9          | 18                    | 12                        | .6           |
| 14.....                                   | 26                    | 30                        | 2.1          | 19                    | 22                        | 1.1          | 18                    | 108                       | 5.2          |
| 15.....                                   | 25                    | 62                        | 4.2          | 19                    | 65                        | 3.3          | 18                    | 109                       | 5.3          |
| 16.....                                   | 23                    | 42                        | 2.6          | 20                    | 62                        | 3.3          | 20                    | 18                        | 1.0          |
| 17.....                                   | 22                    | 27                        | 1.6          | 19                    | 57                        | 2.9          | 26                    | 24                        | 1.6          |
| 18.....                                   | 22                    | 22                        | 1.3          | 20                    | 29                        | 1.6          | 22                    | 40                        | 2.4          |
| 19.....                                   | 21                    | 24                        | 1.4          | 19                    | 35                        | 1.8          | 23                    | 40                        | 2.5          |
| 20.....                                   | 20                    | 37                        | 2.0          | 19                    | 32                        | 1.6          | 19                    | 82                        | 4.2          |
| 21.....                                   | 19                    | 19                        | 1.0          | 21                    | 64                        | 3.6          | 19                    | 49                        | 2.5          |
| 22.....                                   | 19                    | 10                        | .5           | 23                    | 31                        | 1.9          | 19                    | 39                        | 2.0          |
| 23.....                                   | 19                    | 17                        | .9           | 21                    | 39                        | 2.2          | 20                    | 20                        | 1.1          |
| 24.....                                   | 18                    | 10                        | .5           | 20                    | 24                        | 1.3          | 20                    | 10                        | .5           |
| 25.....                                   | 18                    | 72                        | 3.5          | 22                    | 63                        | 3.7          | 19                    | 31                        | 1.6          |
| 26.....                                   | 18                    | 31                        | 1.5          | 24                    | 26                        | 1.7          | 19                    | 30                        | 1.5          |
| 27.....                                   | 18                    | 14                        | .7           | 22                    | 20                        | 1.2          | 18                    | 20                        | 1.0          |
| 28.....                                   | 18                    | 13                        | .6           | 21                    | 259                       | 15           | 18                    | 41                        | 2.0          |
| 29.....                                   | 26                    | 57                        | s 4.3        | 21                    | 150                       | 8.5          | 18                    | 9                         | .4           |
| 30.....                                   | 25                    | 42                        | 2.8          | 22                    | 118                       | 7.0          | 20                    | 42                        | 2.3          |
| 31.....                                   | 23                    | 38                        | s 2.5        | 22                    | 40                        | 2.4          | --                    | --                        | --           |
| Total..                                   | 749                   | --                        | 65.3         | 664                   | --                        | 91.6         | 600                   | --                        | 86.1         |
| Total discharge for year (cfs-days) ..... |                       |                           |              |                       |                           |              |                       |                           | 33,579       |
| Total load for year (tons) .....          |                       |                           |              |                       |                           |              |                       |                           | 2,123.6      |

s Computed by subdividing day.

## CONNECTICUT RIVER BASIN--Continued

## SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date<br>of<br>Collection | Time <sup>a</sup> | Discharge<br>(cfs) | Water<br>tem-<br>per-<br>ature<br>(° F) | Suspended sediment                  |                                                     |                                                   |       |       |       |       |       |       |       |       |       | Methods<br>of<br>analysis |       |       |
|--------------------------|-------------------|--------------------|-----------------------------------------|-------------------------------------|-----------------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-------|-------|
|                          |                   |                    |                                         | Concentration<br>of sample<br>(ppm) | Concentration<br>of suspension<br>analyzed<br>(ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                           |       |       |
|                          |                   |                    |                                         |                                     |                                                     | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                           | 1.000 |       |
| Jan. 23, 1957.....       |                   |                    | 36                                      | 191                                 | 2,070                                               | 10                                                | 22    | 37    | 54    | 68    | 85    | 96    | 89    |       |       | 100                       | --    | SBWCM |
| Jan. 24.....             |                   |                    | 32                                      | 79                                  | 284                                                 | 1                                                 | 2     | 12    | 27    | 53    | 61    | 83    | 91    |       |       | 94                        | 100   | SBWCM |
| Mar. 16.....             |                   |                    | 46                                      | 31                                  | 137                                                 | 29                                                | 40    | 57    | 69    | 79    | 82    | 97    | 100   |       |       | --                        | --    | SBWCM |
| Apr. 2.....              |                   |                    | 48                                      | 34                                  | 244                                                 | 19                                                | 47    | 63    | 69    | 75    | 80    | 95    | 100   |       |       | --                        | --    | SBWCM |
| Apr. 5.....              |                   |                    | 42                                      | 68                                  | 478                                                 | 20                                                | 24    | 36    | 49    | 61    | 73    | 94    | 99    |       |       | 100                       | --    | SBWCM |
| Apr. 6.....              |                   |                    | 40                                      | 118                                 | 568                                                 | 6                                                 | 8     | 13    | 21    | 32    | 66    | 93    | 96    |       |       | 100                       | --    | SBWCM |
| July 29.....             |                   |                    | 68                                      | 192                                 | 542                                                 | 36                                                | 43    | 62    | 74    | 80    | 85    | 88    | 100   |       |       | --                        | --    | BWCM  |

<sup>a</sup> Composite samples collected at different times on date shown.

CONNECTICUT RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN CONNECTICUT RIVER BASIN

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                                | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| CONNECTICUT RIVER AT NORTH STRATFORD, N. H.       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 27, 1957.....                                | 1,130                | 5.6                        | 0.22      | 7.6          | 1.5            | 1.9         | 0.8           | 25                              | 6.1                        | 2.2           | 0.0          | 1.8                        | 42                                                 | 25                            | 5             | 64                                        | 7.2 | 8     |
| EAST BRANCH PASSUMPSIC RIVER NEAR EAST HAVEN, VT. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 27, 1957.....                                | 91                   | 8.1                        | 0.06      | 14           | 0.6            | 1.8         | 0.8           | 36                              | 7.6                        | 2.3           | 0.0          | 1.7                        | 59                                                 | 37                            | 8             | 86                                        | 7.4 | 12    |
| MOOSE RIVER AT VICTORY, VT.                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 26, 1957.....                                | 144                  | 5.9                        | 0.12      | 4.5          | 0.9            | 1.0         | 0.7           | 14                              | 6.3                        | 0.2           | 0.0          | 1.0                        | 33                                                 | 15                            | 4             | 33                                        | 6.9 | 21    |
| CONNECTICUT RIVER AT WELLS RIVER, VT.             |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 26, 1957.....                                | 7,370                | 5.9                        | 0.24      | 9.2          | 0.9            | 3.4         | 0.8           | 23                              | 11                         | 3.1           | 0.0          | 0.9                        | 62                                                 | 27                            | 8             | 77                                        | 6.5 | 32    |
| WELLS RIVER AT WELLS RIVER, VT.                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956.....                                | 64                   | 7.1                        | 0.24      | 18           | 1.2            | 3.0         | 0.7           | 52                              | 9.9                        | 4.0           | 0.0          | 1.0                        | 80                                                 | 50                            | 8             | 123                                       | 6.6 | --    |
| Mar. 26, 1957.....                                | 142                  | 6.5                        | .12       | 16           | .8             | 1.6         | 1.1           | 45                              | 8.4                        | 1.9           | .0           | .7                         | 65                                                 | 43                            | 6             | 100                                       | 7.1 | 7     |
| OMPOMANOUC RIVER AT UNION VILLAGE, VT.            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                | 198                  | 5.2                        | 0.32      | 25           | 1.7            | 1.4         | 1.6           | 63                              |                            | 1.4           | 0.0          | 0.3                        | 90                                                 | 69                            | 18            | 151                                       | 7.5 | 2     |
| MASCOMA RIVER AT WEST CANAAN, N. H.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                | 110                  | 6.7                        | 0.13      | 4.6          | 0.8            | 2.4         | 0.6           | 11                              | 6.8                        | 2.8           | 0.0          | 0.5                        | 36                                                 | 15                            | 6             | 43                                        | 6.6 | 12    |

## CONNECTICUT RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN CONNECTICUT RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                                | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nesium            | Non-carbonate |                                           |     |       |
| WILLIAMS RIVER AT BROCKWAY MILLS, VT.             |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                | 201                  | 5.6                        | 0.07      | 4.5          | 1.4            | 2.1         | 0.9           | 12                              | 7.5                        | 2.9           | 0.0          | 0.4                        | 34                                                 | 17                            | 7             | 48                                        | 6.9 | 8     |
| Mar. 26, 1957.....                                | 219                  | 5.5                        | .05       | 4.8          | 1.4            | 2.1         | .8            | 14                              | 7.4                        | 3.5           | .0           | .4                         | 35                                                 | 18                            | 6             | 52                                        | 6.8 | 5     |
| SAXTONS RIVER AT SAXTONS RIVER, VT.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                | 145                  | 5.2                        | 0.03      | 5.4          | 0.8            | 1.5         | 0.7           | 14                              | 4.9                        | 1.7           | 0.1          | 0.8                        | 35                                                 | 17                            | 5             | 49                                        | 6.5 | 7     |
| Mar. 26, 1957.....                                | 154                  | 5.3                        | .06       | 6.0          | 1.3            | 1.3         | .9            | 17                              | 8.2                        | 1.6           | .0           | .5                         | 35                                                 | 20                            | 6             | 51                                        | 6.9 | 5     |
| COLD RIVER AT DREWSVILLE, N. H.                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 18, 1956.....                                | 88                   | 6.1                        | 0.06      | 4.2          | 1.2            | 3.0         | 0.7           | 8                               | 8.8                        | 4.4           | 0.0          | 0.5                        | 39                                                 | 15                            | 9             | 51                                        | 6.3 | 7     |
| Mar. 26, 1957.....                                | 163                  | 5.9                        | .06       | 4.0          | 1.2            | 3.0         | .7            | 8                               | 8.1                        | 5.6           | .0           | .3                         | 36                                                 | 15                            | 8             | 48                                        | 6.7 | 7     |
| MILLERS RIVER NEAR WINCHENDON, MASS.              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 17, 1956.....                                | 184                  | 6.4                        | 0.17      | 4.0          | 1.3            | 4.1         | 0.9           | 4                               | 11                         | 6.6           | 0.0          | 1.2                        | 51                                                 | 15                            | 12            | 56                                        | 5.6 | 25    |
| MILLERS RIVER AT SOUTH ROYALSTON, MASS.           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 25, 1957.....                                | 470                  | 4.0                        | 0.26      | 4.0          | 1.2            | 3.5         | 0.7           | 11                              | 8.8                        | 4.4           | 0.0          | 0.5                        | 39                                                 | 15                            | 6             | 52                                        | 5.6 | 28    |
| NORTH RIVER AT SHATTUCKVILLE, MASS.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 17, 1956.....                                | 278                  | 5.2                        | 0.02      | 7.2          | 0.8            | 4.6         | 0.8           | 24                              | 9.8                        | 2.3           | 0.1          | 0.7                        | 47                                                 | 21                            | 2             | 67                                        | 7.1 | 7     |
| NORTH BRANCH MILL RIVER NEAR SIXTEEN ACRES, MASS. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 15, 1957.....                                |                      | 11                         | 0.13      | 18           | 3.9            | 3.9         | 1.0           | 58                              | 14                         | 4.0           | 0.0          | 1.6                        | 89                                                 | 61                            | 14            | 145                                       | 7.2 | 10    |
| Sept. 6, .....                                    |                      |                            | .18       |              |                |             |               | 57                              |                            |               |              |                            |                                                    | 268                           | 19            | 151                                       | 7.0 |       |

## MILL RIVER AT NORTHAMPTON, MASS.

|                     |     |     |      |     |     |     |     |    |     |     |     |     |    |    |   |    |     |   |
|---------------------|-----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|
| Dec. 17, 1956,..... | 128 | 7.6 | 0.13 | 7.5 | 0.7 | 2.6 | 0.8 | 16 | 9.6 | 3.7 | 0.0 | 1.4 | 44 | 22 | 8 | 60 | 6.7 | 6 |
|---------------------|-----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|

## CONNECTICUT RIVER AT HOLYOKE, MASS.

|                   |  |     |      |    |     |     |     |    |     |     |     |     |    |    |   |    |     |    |
|-------------------|--|-----|------|----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|----|
| May 7, 1957,..... |  | 4.4 | 0.16 | 10 | 0.9 | 3.1 | 1.0 | 28 | 9.8 | 3.4 | 0.1 | 0.9 | 59 | 29 | 6 | 84 | 6.8 | 12 |
|-------------------|--|-----|------|----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|----|

## WARE RIVER NEAR BARRE, MASS.

|                     |     |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |    |
|---------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|
| Mar. 25, 1957,..... | 129 | 4.5 | 0.10 | 2.7 | 0.9 | 1.8 | 0.7 | 6 | 5.6 | 2.3 | 0.0 | 0.4 | 29 | 10 | 6 | 33 | 5.9 | 23 |
|---------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|

## COOLEY BROOK NEAR CHICOPEE, MASS.

|                     |  |    |      |     |     |     |     |    |    |     |     |     |    |     |    |    |     |   |
|---------------------|--|----|------|-----|-----|-----|-----|----|----|-----|-----|-----|----|-----|----|----|-----|---|
| Aug. 14, 1957,..... |  | 15 | 0.48 | 9.8 | 1.3 | 5.7 | 1.4 | 31 | 12 | 3.8 | 0.0 | 2.1 | 67 | 30  | 5  | 95 | 6.9 | 5 |
| Sept. 5, 1957,..... |  |    | .73  |     |     |     | 28  |    |    |     |     |     |    | a33 | 10 | 93 | 6.6 |   |

## CHICOPEE RIVER AT INDIAN ORCHARD, MASS.

|                   |     |     |      |     |     |     |     |   |    |     |     |     |    |    |    |    |     |    |
|-------------------|-----|-----|------|-----|-----|-----|-----|---|----|-----|-----|-----|----|----|----|----|-----|----|
| May 7, 1957,..... | 690 | 4.4 | 0.77 | 5.8 | 0.8 | 4.6 | 1.2 | 8 | 16 | 5.0 | 0.1 | 1.2 | 56 | 18 | 12 | 70 | 6.1 | 21 |
|-------------------|-----|-----|------|-----|-----|-----|-----|---|----|-----|-----|-----|----|----|----|----|-----|----|

## EAST BRANCH SWIFT RIVER NEAR HARDWICK, MASS.

|                     |     |     |      |     |     |     |     |   |     |     |     |     |    |    |   |    |     |    |
|---------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|
| Dec. 17, 1956,..... | 155 | 4.3 | 0.28 | 3.1 | 1.0 | 2.3 | 0.8 | 6 | 8.0 | 3.1 | 0.1 | 1.0 | 34 | 12 | 7 | 40 | 6.2 | 15 |
|---------------------|-----|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|----|---|----|-----|----|

a By compleximetric titration.

## CONNECTICUT RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN CONNECTICUT RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                                                   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| MILL RIVER AT SPRINGFIELD, MASS.                                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 7, 1957.....                                                     |                      | 4.2                        | 0.16      | 16           | 2.6            | 6.0         | 1.4           | 43                              | 19                         | 7.7           | 0.1          | 1.3                        | 92                                                 | 51                            | 16            | 141                                       | 6.8 | 22    |
| Aug. 15.....                                                         |                      | 5.2                        | .24       | 16           | 3.5            | 5.9         | 1.6           | 48                              | 17                         | 7.6           | .1           | .9                         | 88                                                 | 55                            | 15            | 149                                       | 7.0 | 5     |
| Sept. 6 .....                                                        |                      | --                         | .33       | --           | --             | --          | --            | 50                              | --                         | --            | --           | --                         | --                                                 | a60                           | 19            | 162                                       | 6.8 | --    |
| WEST BRANCH WESTFIELD RIVER AT HUNTINGTON, MASS.                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 17, 1956.....                                                   | 407                  | 5.3                        | 0.05      | 5.6          | 1.2            | 1.7         | 0.6           | 10                              | 11                         | 2.9           | 0.1          | 0.9                        | 37                                                 | 19                            | 11            | 48                                        | 6.5 | 6     |
| Mar. 25, 1957 .....                                                  | 203                  | 5.4                        | .06       | 4.9          | 1.5            | 1.8         | .8            | 13                              | 8.9                        | 2.6           | .1           | .3                         | 36                                                 | 18                            | 8             | 50                                        | 6.9 | 5     |
| WESTFIELD LITTLE RIVER AT OUTLET OF COBBLE MOUNTAIN RESERVOIR, MASS. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 7, 1957.....                                                     |                      | 6.5                        | 0.04      | 3.1          | 1.1            | 1.5         | 0.7           | 7                               | 7.2                        | 1.3           | 0.1          | 0.3                        | 30                                                 | 12                            | 7             | 34                                        | 6.5 | 2     |
| WESTFIELD RIVER NEAR WESTFIELD, MASS.                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 7, 1957.....                                                     | 440                  | 4.4                        | 0.14      | 6.0          | 1.3            | 2.8         | 0.9           | 14                              | 10                         | 2.9           | 0.1          | 1.0                        | 43                                                 | 21                            | 9             | 64                                        | 6.9 | 7     |
| -- a By complexometric titration                                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |

a By compleximetric titration

## QUINNIPIAC RIVER BASIN

## QUINNIPIAC RIVER AT WALLINGFORD, CONN.

LOCATION.--At Quinnipiac Street Bridge, Wallingford, New Haven County, about 0.8 mile upstream from gaging station and 2.8 miles upstream from Worton Brook. DRAINAGE AREA.--109 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 174 ppm June 21-30; minimum, 103 ppm Apr. 11-20.

HARDNESS: Maximum, 95 ppm July 1-20; minimum, 46 ppm Apr. 6-10.

Specific conductance: Maximum daily, 285 micromhos June 24, Aug. 19; minimum daily, 110 micromhos Apr. 7.

Water temperatures: Maximum, 85°F June 18; minimum, freezing point on several days during January.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1501.

Chemical analyses. In parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956..... | 90                   | 11                         | 0.31      | 23           | 3.9            | 10          | 2.3           | 65                              | 25                         | 9.2           | 0.0          | 8.7                        | 131                                                | 74                            | 20            | 217                                       | 6.8 | 3     | 4               | 3        |
| Oct. 11-20.....      | 67                   | 12                         | .32       | 24           | 4.1            | 11          | 2.4           | 68                              | 26                         | 9.4           | .0           | 10                         | 140                                                | 77                            | 22            | 229                                       | 6.8 | 5     | 4               | 3        |
| Oct. 21-31.....      | 65                   | 12                         | .37       | 25           | 4.2            | 12          | 2.6           | 73                              | 25                         | 9.8           | .0           | 11                         | 145                                                | 80                            | 20            | 238                                       | 6.7 | 7     | 4               | 3        |
| Nov. 1-10.....       | 115                  | 12                         | .38       | 22           | 4.1            | 10          | 2.5           | 60                              | 25                         | 9.4           | .0           | 10                         | 132                                                | 72                            | 23            | 210                                       | 6.6 | 12    | 5               | 3        |
| Nov. 11-20.....      | 104                  | 13                         | .35       | 23           | 4.4            | 10          | 2.2           | 63                              | 26                         | 9.2           | .0           | 11                         | 138                                                | 76                            | 24            | 219                                       | 6.7 | 12    | 5               | 4        |
| Nov. 21-30.....      | 143                  | 13                         | .36       | 21           | 3.9            | 8.6         | 2.0           | 52                              | 26                         | 8.7           | .0           | 8.9                        | 124                                                | 69                            | 26            | 193                                       | 6.8 | 15    | 5               | 3        |
| Dec. 1-10.....       | 99                   | 18                         | .54       | 24           | 5.0            | 10          | 2.0           | 64                              | 26                         | 9.2           | .0           | 14                         | 142                                                | 81                            | 28            | 224                                       | 6.8 | 3     | 5               | 5        |
| Dec. 11-20.....      | 269                  | 13                         | .34       | 18           | 3.8            | 7.5         | 1.6           | 41                              | 25                         | 8.5           | .0           | 8.3                        | 108                                                | 61                            | 27            | 172                                       | 6.7 | 5     | 6               | 6        |
| Dec. 21-31.....      | 207                  | 15                         | .34       | 20           | 4.3            | 8.2         | 1.4           | 48                              | 27                         | 8.4           | .0           | 9.2                        | 118                                                | 68                            | 28            | 182                                       | 6.8 | 5     | 5               | 4        |
| Jan. 1-10, 1957..... | 126                  | 14                         | .42       | 22           | 5.0            | 9.6         | 1.6           | 61                              | 26                         | 9.2           | .0           | 12                         | 136                                                | 76                            | 26            | 214                                       | 6.7 | 2     | 5               | 5        |
| Jan. 11-20.....      | 102                  | 15                         | .40       | 24           | 4.6            | 11          | 1.6           | 64                              | 24                         | 9.8           | .0           | 14                         | 139                                                | 79                            | 27            | 222                                       | 6.6 | 3     | 4               | 3        |
| Jan. 21-22.....      | 116                  | --                         | .47       | --           | --             | --          | --            | 63                              | --                         | 11            | --           | 15                         | --                                                 | a82                           | 30            | 222                                       | 6.7 | --    | --              | --       |
| Jan. 23-31.....      | 230                  | 12                         | .31       | 16           | 3.9            | 9.0         | 1.6           | 39                              | 26                         | 10            | .0           | 8.4                        | 108                                                | 56                            | 24            | 169                                       | 6.7 | 10    | 6               | 4        |
| Feb. 1-10.....       | 183                  | 15                         | .30       | 21           | 4.7            | 11          | 1.7           | 55                              | 24                         | 13            | .1           | 9.8                        | 130                                                | 72                            | 27            | 208                                       | 7.1 | 3     | 3               | 2        |
| Feb. 11-20.....      | 173                  | 13                         | .32       | 19           | 4.4            | 7.8         | 1.7           | 49                              | 23                         | 8.3           | .1           | 9.0                        | 113                                                | 66                            | 26            | 179                                       | 7.1 | 5     | 3               | 3        |
| Feb. 21-28.....      | 180                  | 13                         | .30       | 21           | 4.2            | 8.6         | 1.7           | 56                              | 25                         | 8.7           | .1           | 10                         | 122                                                | 70                            | 24            | 199                                       | 7.1 | 7     | 4               | 3        |
| Mar. 1-10.....       | 198                  | 12                         | .24       | 20           | 4.0            | 8.8         | 1.4           | 48                              | 23                         | 12            | .1           | 7.7                        | 117                                                | 67                            | 27            | 187                                       | 6.7 | 8     | 4               | 4        |
| Mar. 11-20.....      | 215                  | 9.8                        | .22       | 19           | 3.9            | 7.0         | 1.4           | 46                              | 23                         | 8.2           | .1           | 7.4                        | 110                                                | 64                            | 26            | 175                                       | 6.9 | 8     | 4               | 4        |
| Mar. 21-31.....      | 171                  | 11                         | .28       | 21           | 4.6            | 8.1         | 1.4           | 56                              | 24                         | 9.1           | .1           | 7.6                        | 119                                                | 72                            | 26            | 191                                       | 7.0 | 8     | 4               | 4        |

a By complexometric titration.



## QUINNIPIAC RIVER BASIN--Continued

## QUINNIPIAC RIVER AT WALLINGFORD, CONN.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH  | Color | Oxygen consumed |          |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----|-------|-----------------|----------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./ml.              | Non-carbonate |     |       | Unfiltered      | Filtered |
| Apr. 1-5, 1957        | 249                  | 10                         | 0.29      | 21           | 3.9            | 8.2         | 1.3           | 57                              | 22                         | 8.8           | 0.1          | 7.2                        | 114                                                | 69                            | 22            | 185 | 7     | 4               | 4        |
| Apr. 6-10             | 699                  | --                         | .19       | --           | --             | --          | --            | 32                              | --                         | 6.5           | --           | 3.2                        | --                                                 | a 46                          | 20            | 123 | --    | --              | --       |
| Apr. 11-20            | 285                  | 10                         | .20       | 20           | 3.6            | 6.8         | 1.2           | 49                              | 24                         | 8.1           | .1           | 6.0                        | 103                                                | 65                            | 25            | 166 | 7     | 4               | 3        |
| Apr. 21-30            | 167                  | 12                         | .32       | 22           | 4.0            | 8.0         | 1.3           | 63                              | 21                         | 8.6           | .1           | 6.4                        | 117                                                | 72                            | 20            | 188 | 7     | 5               | 5        |
| May 1-20              | 110                  | 14                         | .37       | 24           | 4.6            | 9.4         | 1.7           | 72                              | 21                         | 8.6           | .2           | 9.0                        | 135                                                | 79                            | 20            | 214 | 7     | 6               | 3        |
| May 21-31             | 108                  | 11                         | .28       | 22           | 4.1            | 9.1         | 1.6           | 64                              | 20                         | 9.8           | .2           | 4.5                        | 127                                                | 72                            | 20            | 196 | 10    | 11              | 3        |
| June 1-10             | 67                   | 13                         | .21       | 24           | 4.7            | 9.6         | 2.3           | 76                              | 21                         | 10            | .2           | 3.7                        | 141                                                | 80                            | 17            | 222 | 8     | 6               | 3        |
| June 11-20            | 57                   | 13                         | .30       | 26           | 4.9            | 12          | 2.1           | 83                              | 24                         | 9.8           | .1           | 4.2                        | 145                                                | 85                            | 17            | 232 | 8     | 6               | 4        |
| June 21-30            | 60                   | 24                         | .22       | 27           | 5.7            | 12          | 2.2           | 93                              | 24                         | 9.7           | .2           | 7.6                        | 174                                                | 91                            | 15            | 255 | 8     | 5               | 3        |
| July 1-20             | 43                   | 17                         | .18       | 28           | 5.9            | 13          | 2.4           | 110                             | 19                         | 6.7           | .2           | 10                         | 161                                                | 95                            | 5             | 247 | 7     | 7               | 3        |
| July 21-31            | 44                   | --                         | .15       | --           | --             | --          | 12            | 94                              | 18                         | 13            | --           | 7.4                        | --                                                 | a 94                          | 17            | 255 | --    | --              | --       |
| Aug. 1-20             | 39                   | 15                         | .25       | 27           | 5.4            | 14          | 2.6           | 89                              | 25                         | 12            | .1           | 9.5                        | 162                                                | 90                            | 17            | 257 | 7     | 6               | 4        |
| Aug. 21-25            | 65                   | --                         | .35       | --           | --             | --          | 6.2           | 79                              | 18                         | 8.5           | --           | 5.9                        | --                                                 | a 88                          | 24            | 230 | 7     | --              | --       |
| Aug. 26-31            | 76                   | --                         | .35       | --           | --             | --          | 2.8           | 61                              | 16                         | 7.7           | --           | 4.4                        | --                                                 | a 73                          | 25            | 191 | 7     | --              | --       |
| Sept. 1-20            | 42                   | 11                         | .12       | 25           | 6.4            | 13          | 2.6           | 86                              | 29                         | 12            | .2           | 6.6                        | 152                                                | 89                            | 19            | 256 | 7     | 7               | --       |
| Sept. 21-30           | 45                   | 11                         | .20       | 24           | 5.9            | 14          | 2.7           | 87                              | 26                         | 12            | .2           | 7.7                        | 150                                                | 83                            | 13            | 254 | 7     | --              | --       |
| Time-weighted average | 126                  | 13                         | 0.29      | 23           | 4.7            | 10          | 2.0           | 68                              | 24                         | 9.6           | 0.1          | 8.5                        | 135                                                | 77                            | 21            | 214 | 7     | 5               | 4        |

a By compleximetric titration.

## QUINNIPIAC RIVER BASIN

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## QUINNIPIAC RIVER BASIN--Continued

## QUINNIPIAC RIVER AT WALLINGFORD, CONN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 12:35 p. m. /

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 58   | 57   | 37   | 33   | 36   | 37   | 49   | 65  | 70   | 76   | 76   | 71    |
| 2       | 58   | 59   | 38   | 33   | 35   | 38   | 49   | 62  | 70   | 75   | 79   | 70    |
| 3       | 59   | 55   | 39   | 33   | 36   | 39   | 48   | 58  | 70   | 74   | 78   | 71    |
| 4       | 59   | 55   | 40   | 34   | 36   | 38   | 47   | 58  | 68   | 74   | 77   | 72    |
| 5       | 59   | 55   | 40   | 35   | 36   | 38   | 43   | 59  | 70   | 76   | 77   | 72    |
| 6       | 58   | 55   | 41   | 35   | 37   | 40   | 39   | 59  | 71   | 77   | 76   | 72    |
| 7       | 59   | 54   | 44   | 34   | 37   | 40   | 43   | 61  | 70   | 77   | 74   | 70    |
| 8       | 58   | 54   | 47   | 35   | 38   | 40   | 45   | 65  | 70   | 80   | 74   | 69    |
| 9       | 60   | 53   | 44   | 35   | 38   | 40   | 43   | 67  | 68   | 80   | 76   | 70    |
| 10      | 58   | 48   | 40   | 35   | 37   | 40   | 44   | 69  | 69   | 77   | 75   | 69    |
| 11      | 55   | 40   | 38   | 34   | 35   | 39   | 45   | 68  | 71   | 76   | 76   | 70    |
| 12      | 54   | 46   | 42   | 33   | 34   | 38   | 49   | 64  | 71   | 77   | 74   | 71    |
| 13      | 53   | 47   | 44   | 34   | 35   | 44   | 49   | 64  | 75   | 74   | 73   | 72    |
| 14      | 53   | 47   | 41   | 33   | 36   | 47   | 48   | 67  | 76   | 75   | 71   | 73    |
| 15      | 56   | 47   | 38   | 32   | 36   | 47   | 49   | 66  | 82   | 77   | 70   | 73    |
| 16      | 58   | 49   | 39   | 32   | 38   | 48   | 50   | 65  | 77   | 77   | 72   | 73    |
| 17      | 59   | 50   | 38   | 32   | 37   | 47   | 51   | 68  | 84   | 78   | 73   | 72    |
| 18      | 58   | 47   | 39   | 32   | 38   | 48   | 54   | 65  | 85   | 78   | 73   | 71    |
| 19      | 55   | 45   | 36   | 33   | 39   | 46   | 57   | 62  | 81   | 80   | 71   | 70    |
| 20      | 54   | 44   | 37   | 32   | 37   | 41   | 57   | 57  | 79   | 78   | 72   | 69    |
| 21      | 54   | 45   | 37   | 32   | 38   | 43   | 60   | 55  | 77   | 81   | 72   | 69    |
| 22      | 55   | 47   | 38   | 33   | 39   | 46   | 62   | 57  | 77   | 81   | 70   | 70    |
| 23      | 58   | 44   | 37   | 36   | 40   | 47   | 61   | 61  | 76   | 80   | 70   | 70    |
| 24      | 59   | 40   | 38   | 33   | 40   | 49   | 65   | 68  | 79   | 79   | 69   | 70    |
| 25      | 55   | 38   | 39   | 33   | 42   | 48   | 64   | 69  | 78   | 78   | 69   | 68    |
| 26      | 52   | 40   | 38   | 34   | 44   | 48   | 62   | 68  | 76   | 76   | 67   | 66    |
| 27      | 51   | 42   | 37   | 34   | 45   | 48   | 62   | 70  | 77   | 76   | 67   | 63    |
| 28      | 54   | 40   | 37   | 35   | 40   | 49   | 64   | 69  | 77   | 75   | 69   | 60    |
| 29      | 55   | 39   | 38   | 34   | --   | 50   | 68   | 68  | 77   | 74   | 69   | 58    |
| 30      | 54   | 37   | 34   | 35   | --   | 48   | 66   | 68  | 77   | 75   | 68   | 57    |
| 31      | 54   | --   | 33   | 35   | --   | 48   | --   | 69  | --   | 76   | 70   | --    |
| Average | 56   | 47   | 39   | 34   | 38   | 44   | 53   | 64  | 75   | 77   | 72   | 69    |

## NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## HOUSATONIC RIVER BASIN

## HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

LOCATION.--At dam upstream from powerplant of Connecticut Power Co. and about 1.1 miles upstream from gaging station at Falls Village, Litchfield County.

DRAINAGE AREA.--632 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1956.

Water temperature: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F June 20; minimum, freezing point on many days during December, January, and February.

EXTREMES, 1955-57.--Water temperatures: Maximum 81°F June 20, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1501.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 54   | 51   | 32   | 32   | 32   | 34   | 43   | 62  | 65   | 75   | 74   | 68    |
| 2       | 55   | 54   | 33   | 32   | 32   | 35   | 44   | 59  | 57   | 73   | 74   | 67    |
| 3       | 54   | 54   | 34   | 32   | 32   | 36   | 43   | 57  | 64   | 73   | 74   | 69    |
| 4       | 54   | 52   | 35   | 32   | 33   | 35   | 43   | 55  | 64   | 74   | 76   | 69    |
| 5       | 54   | 52   | 35   | 32   | 33   | 34   | 40   | 53  | 65   | 74   | 75   | --    |
| 6       | 53   | 51   | 36   | 32   | 33   | 34   | 38   | 55  | 65   | 73   | 73   | --    |
| 7       | 55   | 51   | 38   | 32   | 33   | 36   | 38   | 56  | 66   | 73   | 72   | 67    |
| 8       | 54   | 51   | 40   | 32   | 33   | 37   | 40   | 58  | 65   | 75   | 70   | 67    |
| 9       | 54   | 49   | 40   | 32   | 33   | 36   | 38   | 61  | 64   | 75   | 71   | 65    |
| 10      | 54   | 45   | 37   | 33   | 34   | 36   | 38   | 64  | 64   | 74   | 73   | 66    |
| 11      | 52   | 42   | 35   | 33   | 33   | 35   | 39   | 64  | 66   | 72   | 72   | 66    |
| 12      | 52   | 41   | 37   | 32   | 32   | 37   | 42   | 62  | 68   | 72   | 73   | 66    |
| 13      | 50   | 41   | 39   | 32   | 32   | 37   | 41   | 61  | 69   | 72   | 73   | 69    |
| 14      | 49   | 42   | 38   | 32   | 32   | 38   | 41   | 62  | 71   | 71   | 72   | 68    |
| 15      | 50   | 42   | 35   | 32   | 32   | 41   | 41   | 61  | 73   | 72   | 72   | 69    |
| 16      | 52   | 44   | 35   | 32   | 33   | 41   | 41   | 62  | 76   | 72   | 73   | 70    |
| 17      | 48   | 45   | 36   | 32   | 33   | 40   | 44   | 61  | 76   | 72   | 72   | 68    |
| 18      | 52   | 44   | 35   | 32   | 33   | 40   | 46   | 61  | 79   | 73   | 72   | 68    |
| 19      | 53   | 40   | 33   | 32   | 34   | 40   | 50   | 60  | 79   | 74   | 72   | 68    |
| 20      | 52   | 39   | 33   | 32   | 34   | 39   | 51   | 54  | 81   | 74   | 70   | 67    |
| 21      | 51   | 39   | 34   | 32   | 33   | 38   | 52   | 50  | 76   | 79   | 69   | 68    |
| 22      | 51   | 42   | 34   | 33   | 34   | 38   | 57   | 54  | 75   | 79   | 70   | 67    |
| 23      | 53   | 40   | 34   | 33   | 34   | 40   | 57   | 55  | 75   | 79   | 70   | 69    |
| 24      | 54   | 36   | 35   | 32   | 34   | 42   | 60   | 59  | 77   | 77   | 68   | 67    |
| 25      | 53   | 34   | 36   | 32   | 35   | 42   | 60   | 58  | 77   | 76   | 70   | 66    |
| 26      | 52   | 35   | 34   | 32   | 36   | 43   | 58   | 65  | 78   | 75   | 69   | 64    |
| 27      | 50   | 36   | 34   | 33   | 40   | 43   | 58   | 65  | 77   | 74   | 70   | 60    |
| 28      | 51   | 35   | 34   | 32   | 35   | 43   | 60   | 64  | 76   | 73   | 69   | 58    |
| 29      | 50   | 35   | 35   | 33   | --   | 44   | 64   | 66  | 77   | 73   | 68   | 57    |
| 30      | 50   | 35   | 33   | 32   | --   | 44   | 64   | 65  | 75   | 73   | 68   | 56    |
| 31      | 50   | --   | 32   | 32   | --   | 44   | --   | 63  | --   | 73   | 68   | --    |
| Average | 52   | 43   | 35   | 32   | 32   | 39   | 48   | 60  | 71   | 76   | 71   | 66    |

HOUSATONIC RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN HOUSATONIC RIVER BASIN

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Chemical analyses, in parts per million, water year October 1950 to September 1951 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
|------------------------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
| Date of collection                                                                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|                                                                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| HOUSATONIC RIVER NEAR GREAT BARRINGTON, MASS.                                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 17, 1956 .....                                                                | 803                  | 4.0                        | 0.10      | 22           | 8.4            | 6.7         | 1.2           | 94                              | 18                         | 6.8           | 0.1          | 2.4                        | 120                                                | 90                            | 12            | 205                                       | 7.1 | 14    |
| HOUSATONIC RIVER AT FALLS VILLAGE, CONN.                                           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Sept. 3, 1957 .....                                                                | 121                  | 3.2                        | 0.26      | 35           | 14             | 11          | 2.3           | 160                             | 27                         | 9.3           | 0.0          | 2.8                        | 188                                                | 145                           | 14            | 331                                       | 7.2 | 10    |
| Sept. 15 .....                                                                     | 209                  | 4.0                        | .06       | 36           | 13             | 14          | 2.6           | 160                             | 24                         | 11            | .1           | 2.2                        | 191                                                | 144                           | 13            | 332                                       | 7.4 | 7     |
| Sept. 25 .....                                                                     | 406                  | 5.3                        | .11       | 35           | 13             | 14          | 2.4           | 158                             | 23                         | 11            | .2           | 2.6                        | 190                                                | 141                           | 12            | 329                                       | 7.3 | 7     |

## PART 1B. NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## HUDSON RIVER BASIN

## GLOWEGEE CREEK AT WEST MILTON, N. Y.

LOCATION.--Temperature recorder at gaging station at highway bridge, half a mile south of West Milton, Saratoga County, 1½ miles upstream from Kayaderosseras Creek and 4 miles northeast of Ballston Spa.

DRAINAGE AREA.--26.0 square miles

RECORDS AVAILABLE.--Chemical analyses: March 1953 to September 1956.

Water temperatures: March 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 78°F June 27; minimum, freezing point on several days during December, January and March.

EXTREMES, 1953-57.--Water temperatures: Maximum, 81°F July 1953; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, Magnesium            | Non-carbonate |                                           |     |       |
| Aug. 20, 1957..... | 1.8                  | 5.3                        | 0.09      | 28           | 9.9            | 2.8         | 0.8           | 128                             | 10                         | 3.5           | 0.2          | 0.8                        | 128                                                | 111                           | 6             | 230                                       | 7.3 | 4     |

HUDSON RIVER BASIN--Continued  
 GLOWEGEE CREEK AT WEST MILTON, N. Y.--Continued  
 Temperature (°F) of water, water year October 1956 to September 1957  
 (Recorded with temperature attachment/)

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 53      | 51  | 46       | 34  | 33       | 34  | 33      | 34  | 33       | 34  | 34    | 34  | 46    | 40  | 68  | 56  | 70   | 61  | 71   | 64  | 73     | 68  | 61        | 60  |
| 2.....       | 51      | 49  | 52       | 50  | 33       | 34  | 33      | 34  | 33       | 34  | 33    | 34  | 46    | 40  | 64  | 55  | 66   | 61  | 67   | 62  | 70     | 66  | 61        | 60  |
| 3.....       | 55      | 51  | 52       | 51  | 33       | 34  | 33      | 34  | 33       | 34  | 33    | 34  | 44    | 40  | 55  | 52  | 67   | 57  | 67   | 61  | 68     | 67  | 61        | 60  |
| 4.....       | 53      | 51  | 50       | 49  | 35       | 33  | 33      | 33  | 32       | 33  | 33    | 34  | 43    | 41  | 60  | 50  | 68   | 59  | 71   | 65  | 71     | 68  | 63        | 61  |
| 5.....       | 51      | 49  | 49       | 45  | 33       | 33  | 33      | 33  | 32       | 35  | 34    | 34  | 42    | 41  | 65  | 52  | 67   | 59  | 71   | 67  | 69     | 65  | 63        | 59  |
| 6.....       | 51      | 47  | 44       | 35  | 33       | 34  | 34      | 34  | 35       | 33  | 35    | 34  | 43    | 41  | 65  | 53  | 65   | 61  | 69   | 63  | 65     | 61  | 59        | 58  |
| 7.....       | 51      | 49  | 45       | 43  | 37       | 35  | 34      | 33  | 35       | 33  | 34    | 34  | 43    | 42  | 67  | 54  | 67   | 61  | 74   | 63  | 62     | 59  | 58        | 58  |
| 8.....       | 51      | 49  | 45       | 44  | 37       | 36  | 34      | 33  | 34       | 33  | 34    | 34  | 43    | 42  | 71  | 59  | 65   | 57  | 76   | 63  | 63     | 61  | 59        | 58  |
| 9.....       | 51      | 48  | 45       | 41  | 35       | 33  | 33      | 33  | 35       | 34  | 34    | 34  | 45    | 40  | 72  | 59  | 70   | 57  | 74   | 70  | 65     | 63  | 59        | 58  |
| 10.....      | 49      | 46  | 41       | 36  | 33       | 33  | 34      | 33  | 33       | 34  | 35    | 34  | 46    | 42  | 67  | 63  | 70   | 57  | 72   | 65  | 65     | 63  | 59        | 57  |
| 11.....      | 48      | 45  | 37       | 35  | 32       | 32  | 35      | 34  | 34       | 34  | 34    | 45  | 42    | 62  | 57  | 73  | 62   | 67  | 62   | 64  | 63     | 58  | 57        | 57  |
| 12.....      | 46      | 45  | 27       | 24  | 32       | 32  | 34      | 33  | 35       | 34  | 36    | 44  | 44    | 44  | 57  | 55  | 73   | 66  | 68   | 63  | 65     | 64  | 60        | 58  |
| 13.....      | 48      | 45  | 28       | 27  | 32       | 32  | 35      | 33  | 35       | 34  | 36    | 47  | 42    | 62  | 56  | 73  | 65   | 68  | 64   | 65  | 61     | 60  | 60        | 60  |
| 14.....      | 50      | 46  | 28       | 27  | 32       | 33  | 35      | 34  | 34       | 34  | 36    | 47  | 43    | 61  | 57  | 74  | 69   | 70  | 65   | 61  | 61     | 66  | 60        | 60  |
| 15.....      | 54      | 48  | 42       | 38  | 35       | 34  | 35      | 34  | 34       | 33  | 35    | 48  | 43    | 65  | 58  | 77  | 69   | 70  | 67   | 65  | 61     | 66  | 60        | 60  |
| 16.....      | 55      | 50  | 41       | 40  | 34       | 32  | 35      | 34  | 35       | 34  | 36    | 50  | 44    | 64  | 58  | 76  | 70   | 67  | 63   | 65  | 65     | 64  | 61        | 61  |
| 17.....      | 55      | 51  | 41       | 38  | 32       | 32  | 35      | 34  | 34       | 34  | 36    | 53  | 49    | 62  | 53  | 76  | 72   | 64  | 62   | 65  | 62     | 65  | 62        | 62  |
| 18.....      | 54      | 50  | 39       | 37  | 32       | 32  | 36      | 34  | 34       | 34  | 37    | 55  | 48    | 63  | 57  | 75  | 72   | 65  | 63   | 62  | 60     | 63  | 58        | 58  |
| 19.....      | 50      | 47  | 37       | 35  | 35       | 34  | 35      | 34  | 34       | 34  | 37    | 59  | 54    | 74  | 59  | 74  | 73   | 66  | 64   | 61  | 61     | 61  | 58        | 58  |
| 20.....      | 48      | 45  | 36       | 34  | 35       | 34  | 35      | 34  | 35       | 34  | 37    | 60  | 54    | 54  | 51  | 71  | 67   | 66  | 65   | 63  | 61     | 60  | 59        | 59  |
| 21.....      | 49      | 46  | 41       | 35  | 34       | 35  | 34      | 34  | 35       | 34  | 39    | 68  | 58    | 59  | 50  | 69  | 64   | 68  | 66   | 63  | 63     | 61  | 60        | 60  |
| 22.....      | 50      | 47  | 41       | 37  | 35       | 34  | 33      | 32  | 35       | 34  | 41    | 65  | 56    | 57  | 54  | 70  | 66   | 68  | 68   | 63  | 60     | 64  | 61        | 61  |
| 23.....      | 52      | 50  | 37       | 33  | 35       | 34  | 33      | 32  | 34       | 34  | 42    | 66  | 57    | 59  | 57  | 73  | 68   | 67  | 67   | 61  | 59     | 66  | 63        | 63  |
| 24.....      | 52      | 50  | 35       | 33  | 35       | 34  | 33      | 32  | 34       | 34  | 41    | 64  | 60    | 64  | 58  | 77  | 69   | 67  | 65   | 61  | 59     | 63  | 58        | 58  |
| 25.....      | 50      | 46  | 34       | 33  | 35       | 34  | 35      | 34  | 33       | 34  | 36    | 63  | 58    | 67  | 56  | 75  | 72   | 64  | 63   | 61  | 58     | 54  | 54        | 54  |
| 26.....      | 45      | 44  | 36       | 33  | 35       | 33  | 33      | 33  | 34       | 33  | 41    | 66  | 57    | 61  | 59  | 75  | 68   | 65  | 63   | 65  | 61     | 57  | 55        | 55  |
| 27.....      | 46      | 44  | 35       | 34  | 35       | 34  | 33      | 33  | 34       | 33  | 42    | 70  | 60    | 64  | 59  | 78  | 71   | 65  | 64   | 65  | 63     | 55  | 50        | 48  |
| 28.....      | 47      | 46  | 36       | 34  | 35       | 34  | 33      | 33  | 34       | 34  | 46    | 61  | 67    | 64  | 62  | 58  | 76   | 65  | 63   | 65  | 58     | 50  | 48        | 48  |
| 29.....      | 46      | 44  | 35       | 34  | 35       | 34  | 33      | 33  | --       | --  | 45    | 61  | 69    | 60  | 62  | 54  | 75   | 68  | 67   | 65  | 60     | 59  | 51        | 49  |
| 30.....      | 45      | 43  | 35       | 33  | 34       | 34  | 34      | 34  | --       | --  | 44    | 61  | 68    | 59  | 66  | 56  | 69   | 65  | 74   | 66  | 59     | 51  | 50        | 49  |
| 31.....      | 46      | 44  | --       | --  | 34       | 34  | 34      | 33  | --       | --  | 46    | 39  | --    | --  | 70  | 60  | --   | --  | 74   | 67  | 61     | 59  | --        | --  |
| Average..... | 50      | 47  | 41       | 38  | 34       | 33  | 34      | 33  | 34       | 34  | 38    | 35  | 54    | 49  | 63  | 56  | 72   | 65  | 69   | 65  | 64     | 62  | 60        | 58  |

## HUDSON RIVER BASIN--Continued

## KAYADEROSSERAS CREEK NEAR WEST MILTON, N.Y.

LOCATION.--Temperature recorder at gaging station, 500 feet downstream from Gloweege Creek, 1 mile east of West Milton, Saratoga County, and 3½ miles northwest of Ballston Spa, approximately.

DRAINAGE AREA.--90 square miles approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1955.

Water temperatures: October 1952 to September 1957.

Sediment records: February 1953 to June 1955.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82°F June 18; minimum, freezing point on many days during December, January, February and March.

EXTREMES, 1949-57.--Water temperatures: Maximum, 83°F July 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1302.

Chemical analyses, in parts per million, August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |     |       |
| Aug. 20, 1957..... | 20                   | 6.9                        | 0.07      | 21           | 7.0            | 2.5         | 0.7           | 92                              | 7.7                        | 3.0           | 0.2          | 0.7                        | 94                                                  | 82                            | 6             | 169                                        | 7.3 | 3     |

HUDSON RIVER BASIN--Continued  
 KAYADEROSSERAS CREEK NEAR WEST MILTON, N. Y.--Continued  
 Temperature (°F) of water, water year October 1956 to September 1957  
 (Recorded with temperature attachment)

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 53      | 50  | 51       | 47  | 33       | 33  | 32      | 32  | 33       | 33  | 32    | 32  | 44    | 38  | 61  | 54  | 69   | 62  | 72   | 66  | 74     | 69  | 67        | 61  |
| 2.....       | 51      | 48  | 53       | 51  | 33       | 33  | 32      | 32  | 33       | 32  | 33    | 32  | 44    | 41  | 59  | 53  | 67   | 62  | 72   | 63  | 75     | 69  | 66        | 62  |
| 3.....       | 54      | 50  | 53       | 52  | 33       | 33  | 32      | 32  | 33       | 32  | 33    | 32  | 41    | 38  | 53  | 49  | 66   | 59  | 69   | 62  | 77     | 69  | 69        | 64  |
| 4.....       | 51      | 50  | 52       | 50  | 35       | 33  | 32      | 32  | 33       | 32  | 33    | 32  | 40    | 39  | 54  | 47  | 66   | 60  | 69   | 66  | 75     | 71  | 69        | 65  |
| 5.....       | 51      | 48  | 51       | 47  | 34       | 33  | 32      | 32  | 33       | 33  | 33    | 33  | 39    | 38  | 59  | 50  | 66   | 60  | 69   | 66  | 71     | 66  | 67        | 62  |
| 6.....       | 49      | 47  | 48       | 46  | 36       | 33  | 32      | 32  | 33       | 33  | 33    | 33  | 39    | 38  | 59  | 51  | 64   | 62  | 68   | 66  | 73     | 63  | 65        | 60  |
| 7.....       | 51      | 49  | 46       | 45  | 37       | 36  | 32      | 32  | 34       | 33  | 34    | 33  | 39    | 39  | 62  | 53  | 66   | 61  | 71   | 64  | 68     | 61  | 65        | 59  |
| 8.....       | 52      | 50  | 46       | 46  | 38       | 37  | 32      | 32  | 33       | 33  | 35    | 34  | 40    | 39  | 65  | 56  | 64   | 58  | 73   | 66  | 71     | 63  | 65        | 61  |
| 9.....       | 51      | 49  | 46       | 42  | 37       | 33  | 32      | 32  | 33       | 33  | 35    | 33  | 42    | 38  | 67  | 59  | 68   | 58  | 72   | 69  | 73     | 67  | 64        | 57  |
| 10.....      | 50      | 47  | 42       | 36  | 32       | 32  | 32      | 32  | 33       | 33  | 36    | 34  | 43    | 39  | 65  | 62  | 69   | 59  | 70   | 66  | 72     | 69  | 61        | 56  |
| 11.....      | 46      | 44  | 36       | 35  | 32       | 32  | 32      | 32  | 33       | 33  | 36    | 34  | 41    | 40  | 62  | 57  | 72   | 63  | 68   | 62  | 73     | 67  | 62        | 58  |
| 12.....      | 45      | 42  | 39       | 36  | 33       | 32  | 32      | 32  | 34       | 33  | 37    | 36  | 42    | 41  | 57  | 55  | 73   | 67  | 61   | 63  | 73     | 69  | 64        | 58  |
| 13.....      | 47      | 43  | 39       | 38  | 35       | 33  | 32      | 32  | 33       | 33  | 38    | 36  | 44    | 40  | 61  | 53  | 74   | 66  | 68   | 64  | 69     | 63  | 66        | 63  |
| 14.....      | 49      | 45  | 40       | 39  | 34       | 32  | 32      | 32  | 33       | 33  | 40    | 36  | 44    | 40  | 61  | 57  | 73   | 69  | 73   | 66  | 69     | 64  | 68        | 64  |
| 15.....      | 52      | 48  | 43       | 40  | 32       | 32  | 32      | 32  | 33       | 33  | 37    | 35  | 44    | 39  | 62  | 58  | 77   | 69  | 72   | 68  | 76     | 67  | 65        | 60  |
| 16.....      | 54      | 50  | 43       | 42  | 33       | 32  | 32      | 32  | 33       | 33  | 36    | 34  | 44    | 39  | 62  | 58  | 80   | 70  | 72   | 66  | 73     | 69  | 63        | 60  |
| 17.....      | 54      | 50  | 42       | 40  | 34       | 33  | 32      | 32  | 33       | 33  | 35    | 33  | 47    | 44  | 60  | 54  | 79   | 72  | 73   | 64  | 70     | 65  | 64        | 61  |
| 18.....      | 53      | 50  | 41       | 39  | 34       | 32  | 32      | 32  | 33       | 33  | 36    | 34  | 49    | 44  | 61  | 56  | 82   | 72  | 75   | 66  | 70     | 63  | 63        | 57  |
| 19.....      | 50      | 46  | 39       | 36  | 32       | 32  | 32      | 32  | 33       | 33  | 36    | 34  | 53    | 46  | 60  | 55  | 79   | 73  | 76   | 67  | 70     | 64  | 63        | 57  |
| 20.....      | 46      | 43  | 36       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 35    | 35  | 54    | 49  | 55  | 51  | 75   | 68  | 77   | 68  | 73     | 66  | 62        | 58  |
| 21.....      | 49      | 45  | 41       | 36  | 33       | 32  | 32      | 32  | 33       | 32  | 38    | 35  | 60    | 52  | 56  | 50  | 75   | 65  | 79   | 72  | 71     | 66  | 64        | 61  |
| 22.....      | 50      | 47  | 41       | 39  | 33       | 32  | 32      | 32  | 32       | 32  | 39    | 36  | 58    | 52  | 54  | 54  | 78   | 67  | 78   | 74  | 70     | 62  | 67        | 63  |
| 23.....      | 54      | 50  | 39       | 35  | 33       | 32  | 32      | 32  | 32       | 32  | 40    | 36  | 59    | 52  | 58  | 57  | 76   | 69  | 75   | 71  | 69     | 61  | 67        | 62  |
| 24.....      | 54      | 50  | 35       | 34  | 35       | 33  | 32      | 32  | 33       | 32  | 41    | 38  | 59    | 56  | 64  | 58  | 74   | 70  | 72   | 66  | 68     | 61  | 62        | 58  |
| 25.....      | 50      | 45  | 34       | 34  | 35       | 34  | 32      | 32  | 33       | 32  | 40    | 37  | 58    | 54  | 65  | 58  | 75   | 72  | 72   | 65  | 67     | 64  | 59        | 53  |
| 26.....      | 45      | 41  | 34       | 34  | 34       | 32  | 32      | 32  | 33       | 32  | 40    | 39  | 60    | 53  | 63  | 61  | 73   | 69  | 73   | 64  | 67     | 65  | 58        | 54  |
| 27.....      | 46      | 44  | 36       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 40    | 39  | 63    | 55  | 64  | 61  | 76   | 71  | 72   | 67  | 69     | 65  | 54        | 49  |
| 28.....      | 46      | 46  | 36       | 35  | 33       | 32  | 33      | 32  | 32       | 32  | 42    | 39  | 61    | 59  | 63  | 59  | 76   | 72  | 67   | 67  | 67     | 59  | 52        | 46  |
| 29.....      | 46      | 43  | 36       | 34  | 34       | 33  | 33      | 32  | --       | --  | 42    | 39  | 62    | 56  | 62  | 53  | 75   | 69  | 68   | 66  | 65     | 60  | 52        | 48  |
| 30.....      | 45      | 42  | 34       | 33  | 32       | 32  | 32      | 32  | --       | --  | 41    | 39  | 61    | 55  | 56  | 56  | 70   | 66  | 72   | 68  | 65     | 62  | 55        | 49  |
| 31.....      | 47      | 44  | --       | --  | 32       | 32  | 33      | 32  | --       | --  | 42    | 36  | --    | --  | 68  | 61  | --   | --  | 73   | 68  | 67     | 63  | --        | --  |
| Average..... | 50      | 47  | 42       | 40  | 34       | 33  | 32      | 32  | 33       | 33  | 37    | 35  | 49    | 45  | 61  | 56  | 73   | 66  | 72   | 66  | 70     | 65  | 63        | 58  |



HUDSON RIVER BASIN--Continued

HUDSON RIVER AT MECHANICVILLE, N. Y.

LOCATION.--At west shore of Hudson River at West Virginia Pulp and Paper Co., Mechanicville, Saratoga County, N. Y.  
 DRAINAGE AREA.--4,500 square miles.  
 RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1957.  
 EXTREMES, 1956-57.--Water temperatures: Maximum, 80°F June 17-19, 21-28; minimum, freezing point on many days during November, December, January, February and March.  
 EXTREMES, 1954-57.--Water temperatures: Maximum, 82°F Aug. 5-7, 1955; minimum, freezing point on many days during winter months.  
 REMARKS.--Plant not in operation Oct. 1 to Nov. 25.

Chemical analyses, in parts per million, February to May 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) |    | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|----|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Feb. 7, 1957 ..... | 7,080                | 5.3                        | 0.17      | 9.2          | 1.8            | 4.0         | 0.7           | 25                              | 15                         | 3.3           | 0.0          | 0.7                        | 65                                                 | 65 | 30                            | 10            | 86                                        | 6.6 | 22    |
| May 23 .....       | 10,200               | 4.7                        | .30       | 11           | 2.2            | 2.7         | .7            | 34                              | 12                         | 2.8           | .2           | .4                         | 65                                                 | 65 | 37                            | 9             | 92                                        | 6.8 | 21    |

## HUDSON RIVER BASIN--Continued

## HUDSON RIVER AT MECHANICVILLE, N.Y.

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 8 a. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | --   | 32   | 32   | 32   | 34   | 44   | 58  | 67   | 75   | 77   | 72    |
| 2       | --   | --   | 32   | 32   | 32   | 35   | 43   | 57  | 66   | 75   | 77   | 72    |
| 3       | --   | --   | 32   | 32   | 32   | 34   | 43   | 56  | 68   | 75   | 77   | 72    |
| 4       | --   | --   | 32   | 32   | 32   | 32   | 41   | 58  | 67   | --   | 77   | 73    |
| 5       | --   | --   | 32   | 32   | 32   | 35   | 40   | 58  | 70   | --   | 77   | 69    |
| 6       | --   | --   | 32   | 32   | 32   | 35   | 41   | 59  | 68   | --   | 74   | 69    |
| 7       | --   | --   | 32   | --   | 32   | 35   | 40   | 58  | 67   | --   | 73   | 70    |
| 8       | --   | --   | 32   | --   | 32   | 35   | 40   | 59  | 68   | 75   | 73   | 69    |
| 9       | --   | --   | 32   | --   | 32   | 35   | 40   | 63  | 70   | 75   | 74   | 70    |
| 10      | --   | --   | 32   | --   | 32   | 35   | 40   | 63  | 70   | 75   | 76   | 67    |
| 11      | --   | --   | 32   | --   | 32   | 36   | 40   | 62  | 72   | 74   | 75   | 67    |
| 12      | --   | --   | 32   | --   | 32   | 35   | 42   | 61  | 72   | 75   | 77   | 67    |
| 13      | --   | --   | 32   | --   | 32   | 37   | 42   | 61  | 72   | 75   | 73   | 69    |
| 14      | --   | --   | 32   | 32   | 32   | 35   | 40   | 62  | 75   | 74   | 73   | 69    |
| 15      | --   | --   | 32   | 32   | 32   | 38   | 42   | 63  | 75   | 75   | 73   | 70    |
| 16      | --   | --   | 32   | 32   | 32   | 40   | 41   | 61  | 78   | 75   | 74   | 72    |
| 17      | --   | --   | 35   | 32   | 32   | 38   | 43   | 63  | 80   | 73   | 74   | 69    |
| 18      | --   | --   | 35   | 32   | 32   | 40   | 44   | 62  | 80   | 75   | 73   | 69    |
| 19      | --   | --   | 32   | 32   | 32   | 37   | 46   | 60  | 80   | 75   | 77   | 68    |
| 20      | --   | --   | 32   | 32   | 32   | 37   | 48   | 59  | 78   | 78   | 74   | 69    |
| 21      | --   | --   | 34   | 32   | 32   | 38   | 51   | 56  | 80   | --   | 73   | 69    |
| 22      | --   | --   | 34   | 32   | 32   | 39   | 53   | 58  | 80   | --   | 72   | 71    |
| 23      | --   | --   | 32   | 32   | 32   | 40   | 53   | 60  | 80   | --   | 72   | 73    |
| 24      | --   | --   | 32   | 32   | 32   | 40   | 55   | 59  | 80   | --   | 72   | 69    |
| 25      | --   | --   | 32   | 32   | 34   | 40   | 56   | 60  | 80   | --   | --   | 67    |
| 26      | --   | 32   | 32   | 32   | 36   | 41   | 56   | 60  | 80   | --   | 75   | 67    |
| 27      | --   | 32   | 32   | 32   | 35   | 40   | 58   | 62  | 80   | --   | 72   | 63    |
| 28      | --   | 32   | 32   | 32   | 34   | 42   | 60   | 62  | 80   | --   | 71   | 61    |
| 29      | --   | 32   | 32   | 32   | --   | 43   | 60   | 63  | 77   | 76   | 71   | 60    |
| 30      | --   | 32   | 32   | 32   | --   | 43   | 59   | 64  | 76   | 76   | 71   | 61    |
| 31      | --   | --   | 32   | 32   | --   | 43   | --   | 66  | --   | 76   | 71   | --    |
| Average | --   | --   | 32   | --   | 32   | 38   | 46   | 60  | 74   | --   | 74   | 68    |

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER NEAR LITTLE FALLS, N. Y.

LOCATION.-- At highway bridge about 3.2 miles upstream from gaging station, 2.9 miles from Rocky Rift dam, 5.2 miles upstream from East Canada Creek, and 1.3 miles southeast of Little Falls, Herkimer County.

DRAINAGE AREA.--1,348 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957

Water temperatures: October 1956 to September 1957

EXTREMES, 1956-57.--Dissolved solids: Maximum, 170 ppm Sept. 11-30, minimum, 122 ppm Oct. 21-31, Mar. 21-31.

Hardness: Maximum, 124 ppm Aug. 1-10, Sept. 11-30; minimum, 84 ppm Oct. 21-31.

Specific conductance: Maximum daily, 314 microhos Sept. 13; minimum daily, 163 microhos Oct. 1.

Water temperatures: Maximum, 78° June 19, July 22; freezing point on several days during January and February.

REMARKS.--No samples taken Jan. 1-10, Feb. 1-10, river frozen. Records of specific conductance and pH of daily samples available in district office at Albany, N.Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH  | Color | Oxygen consumed |          |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----|-------|-----------------|----------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |     |       | Unfiltered      | Filtered |
| Oct., 1-10, 1956.....  | 2,344                | 5.5                        | 0.16      | 29           | 4.3            | 4.1         | 1.3           | 86                              | 25                         | 4.5           | 0.0          | 1.4                        | 130                                                | 90                            | 20            | 215 | 17    | 7               | 4        |
| Oct. 11-20.....        | 1,857                | 5.8                        | .16       | 30           | 4.5            | 4.8         | 1.3           | 88                              | 27                         | 4.5           | .0           | 2.1                        | 134                                                | 94                            | 22            | 219 | 7.3   | 15              | 4        |
| Oct. 21-31.....        | 1,560                | 5.4                        | .18       | 27           | 4.0            | 4.7         | 1.3           | 79                              | 25                         | 4.2           | .0           | 1.7                        | 122                                                | 84                            | 20            | 200 | 7.2   | 14              | 7        |
| Nov. 1-10.....         | 1,407                | 11                         | .16       | 29           | 4.8            | 6.1         | 1.3           | 86                              | 24                         | 7.8           | .1           | 3.0                        | 133                                                | 92                            | 22            | 219 | 7.4   | 9               | 4        |
| Nov. 11-20.....        | 1,398                | 11                         | .17       | 30           | 4.7            | 6.7         | 1.3           | 88                              | 27                         | 7.2           | .1           | 3.3                        | 136                                                | 95                            | 23            | 227 | 7.2   | 7               | 4        |
| Nov. 21-30.....        | 2,096                | 6.0                        | .23       | 32           | 5.3            | 5.4         | 1.6           | 92                              | 29                         | 6.0           | .1           | 3.8                        | 138                                                | 102                           | 27            | 238 | 7.2   | 7               | 4        |
| Dec. 1-10.....         | 2,662                | 5.5                        | .38       | 32           | 5.5            | 6.3         | 1.5           | 92                              | 31                         | 7.0           | .1           | 3.9                        | 143                                                | 103                           | 27            | 244 | 7.0   | 7               | 4        |
| Dec. 11-20.....        | 3,564                | 5.1                        | .26       | 34           | 5.7            | 5.5         | 1.5           | 96                              | 29                         | 6.8           | .1           | 3.3                        | 146                                                | 109                           | 30            | 248 | 7.3   | 8               | 4        |
| Dec. 21-31.....        | 3,708                | 5.9                        | .15       | 34           | 6.8            | 4.7         | 1.3           | 100                             | 29                         | 5.5           | .2           | 3.8                        | 144                                                | 113                           | 31            | 241 | 7.4   | 5               | 3        |
| Jan. 1-20, 1957.....   | 1,640                | 6.6                        | .16       | 32           | 5.6            | 5.8         | 1.3           | 91                              | 28                         | 5.7           | .0           | 4.2                        | 141                                                | 103                           | 29            | 235 | 7.2   | 9               | 4        |
| Jan. 21-22, 24-30..... | 3,067                | 8.4                        | .24       | 33           | 5.6            | 5.6         | 1.7           | 96                              | 27                         | 6.1           | .0           | 4.4                        | 146                                                | 106                           | 27            | 241 | 7.4   | 12              | 4        |
| Feb. 11-20.....        | 2,203                | 6.5                        | .20       | 28           | 4.9            | 5.2         | 1.3           | 82                              | 25                         | 6.3           | .1           | 4.6                        | 126                                                | 90                            | 23            | 213 | 7.2   | 7               | 4        |
| Feb. 21-28.....        | 3,694                | 7.0                        | .16       | 30           | 4.8            | 5.4         | 1.5           | 87                              | 26                         | 6.2           | .0           | 3.1                        | 130                                                | 95                            | 23            | 221 | 7.4   | 11              | 6        |
| Mar. 1-10.....         | 2,796                | 6.6                        | .12       | 31           | 5.3            | 5.0         | 1.4           | 91                              | 26                         | 5.7           | .1           | 3.5                        | 133                                                | 100                           | 25            | 224 | 7.4   | 10              | 5        |
| Mar. 11-20.....        | 4,113                | 6.6                        | .10       | 30           | 5.3            | 4.2         | 1.4           | 92                              | 23                         | 5.2           | .0           | 3.4                        | 130                                                | 97                            | 22            | 215 | 7.3   | 6               | 5        |
| Mar. 21-31.....        | 2,858                | 5.8                        | .09       | 29           | 4.9            | 4.2         | 1.2           | 85                              | 23                         | 4.6           | .1           | 3.4                        | 122                                                | 92                            | 23            | 206 | 7.3   | 7               | 5        |
| Apr. 1-10.....         | 3,895                | 5.4                        | .09       | 31           | 5.1            | 4.4         | 1.2           | 92                              | 24                         | 4.9           | .0           | 3.2                        | 132                                                | 99                            | 23            | 218 | 7.4   | 11              | 7        |
| Apr. 11-30.....        | 3,066                | 4.7                        | .17       | 30           | 5.5            | 5.0         | 1.2           | 91                              | 24                         | 4.6           | .1           | 3.4                        | 128                                                | 98                            | 23            | 214 | 7.5   | 4               | 6        |
| May 1-20.....          | 1,798                | 4.2                        | .08       | 31           | 5.5            | 4.1         | 1.2           | 89                              | 29                         | 5.2           | .1           | 2.8                        | 136                                                | 100                           | 27            | 223 | 7.3   | 10              | 5        |
| May 21-31.....         | 2,676                | 4.8                        | .05       | 27           | 5.2            | 4.6         | 1.1           | 84                              | 26                         | 4.2           | .2           | 1.9                        | 125                                                | 89                            | 20            | 204 | 7.6   | 10              | 4        |

|                                          |       |     |      |    |     |     |     |     |    |     |     |     |     |      |    |     |     |    |    |    |
|------------------------------------------|-------|-----|------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----|-----|-----|----|----|----|
| June 1-20, 1957.....                     | 1,129 | 5.4 | .15  | 31 | 5.0 | 6.2 | 1.2 | 90  | 28 | 6.0 | .2  | 3.7 | 134 | 98   | 24 | 226 | 7.3 | 6  | 16 | 3  |
| June 21-30.....                          | 1,343 | 5.0 | .13  | 32 | 6.2 | 7.6 | 1.3 | 92  | 35 | 7.2 | .1  | 2.9 | 150 | 106  | 30 | 248 | 7.2 | 7  | 15 | 4  |
| July 1-10.....                           | 1,702 | 11  | .06  | 32 | 4.6 | 6.6 | 1.3 | 94  | 25 | 4.7 | .1  | 3.3 | 140 | 99   | 22 | 222 | 7.4 | 12 | 8  | 4  |
| July 11-31.....                          | 1,300 | 7.3 | .14  | 29 | 4.0 | 6.5 | 1.1 | 83  | 26 | 5.6 | .1  | 3.1 | 132 | 89   | 21 | 212 | 7.1 | 14 | 10 | 5  |
| Aug. 1-10.....                           | 1,981 | ..  | .08  | -- | --  | 3.9 | 1.5 | 104 | 34 | 6.4 | --  | 3.6 | --  | a124 | 39 | 257 | 7.2 | -- | -- | -- |
| Aug. 11-31.....                          | 972   | 6.8 | .08  | 35 | 6.4 | 7.0 | 1.5 | 100 | 34 | 7.3 | .1  | 4.1 | 155 | 114  | 32 | 266 | 7.2 | 3  | -- | -- |
| Sept. 1-10.....                          | 778   | 4.7 | .10  | 35 | 6.2 | 7.2 | 1.1 | 100 | 36 | 7.3 | .0  | 4.2 | 154 | 113  | 31 | 265 | 7.5 | 7  | -- | -- |
| Sept. 11-30.....                         | 993   | 7.2 | .05  | 38 | 7.0 | 7.6 | 1.7 | 110 | 37 | 7.7 | .2  | 3.6 | 170 | 124  | 34 | 284 | 7.4 | 8  | -- | -- |
| Time-weighted average <sup>b</sup> ..... | 2,103 | 6.4 | 0.14 | 31 | 5.3 | 5.7 | 1.3 | 92  | 28 | 5.9 | 0.1 | 3.3 | 138 | 101  | 26 | 231 | --  | 9  | 7  | 4  |

a By complexometric titration.

b Represents 94 percent of days, 93 percent of runoff.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER NEAR LITTLE FALLS, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 56   | 52   | 37   | --   | --   | 34   | 43   | 58  | 66   | 70   | 73   | 67    |
| 2       | 54   | 56   | 35   | --   | --   | 34   | 43   | 57  | 65   | 69   | 73   | 69    |
| 3       | 56   | 56   | 35   | --   | --   | 34   | 43   | 55  | 67   | 67   | 75   | 70    |
| 4       | 57   | 55   | 36   | --   | --   | 34   | 42   | 52  | 64   | 68   | 75   | 70    |
| 5       | 54   | 55   | 36   | --   | --   | 34   | 39   | 55  | 65   | 71   | 72   | 70    |
| 6       | 54   | 54   | 36   | --   | --   | 36   | 40   | 56  | 66   | 72   | 69   | 68    |
| 7       | 50   | 52   | 38   | --   | --   | 37   | 40   | 56  | 66   | 70   | 70   | 67    |
| 8       | 55   | 52   | 40   | --   | --   | 37   | 39   | 58  | 64   | 74   | 70   | 67    |
| 9       | 56   | 49   | 39   | --   | --   | 37   | 37   | 61  | 62   | 74   | 71   | 66    |
| 10      | 55   | 46   | 36   | --   | --   | 36   | 40   | 61  | 64   | 74   | 72   | 67    |
| 11      | 53   | 44   | 36   | 32   | 33   | 36   | 40   | 60  | 67   | 69   | 72   | 65    |
| 12      | 52   | 42   | 37   | 33   | 33   | 36   | 40   | 56  | 69   | 68   | 72   | 65    |
| 13      | 51   | 46   | 37   | 33   | 33   | 36   | 38   | 58  | 71   | 69   | 71   | 67    |
| 14      | 54   | 45   | 35   | 32   | 33   | 38   | 40   | 59  | 71   | 70   | 70   | 68    |
| 15      | 54   | 45   | 34   | 32   | 33   | 39   | 40   | 59  | --   | 71   | 72   | 67    |
| 16      | 55   | 48   | 37   | 32   | 34   | 39   | 42   | 62  | 70   | 73   | 72   | 67    |
| 17      | 56   | 47   | 37   | 32   | 33   | 39   | 45   | 60  | 74   | 73   | 73   | 66    |
| 18      | 56   | 46   | 36   | 32   | 34   | 39   | 43   | 59  | 76   | 72   | 70   | 66    |
| 19      | 56   | 42   | 34   | 33   | 35   | 39   | 48   | 57  | 78   | 73   | 70   | 66    |
| 20      | 52   | 41   | 35   | 33   | 34   | 37   | 53   | 55  | 75   | 75   | 71   | 67    |
| 21      | 54   | 40   | 36   | 34   | 33   | 37   | 56   | 53  | 71   | 75   | 72   | 67    |
| 22      | 54   | 46   | 39   | 34   | 34   | 38   | 56   | 56  | 72   | 78   | 72   | 70    |
| 23      | 53   | 41   | 37   | --   | 35   | 39   | 56   | 57  | 72   | 75   | 72   | 70    |
| 24      | 56   | 38   | 37   | 32   | 34   | 39   | 57   | 60  | 75   | 74   | 71   | 66    |
| 25      | 53   | 35   | 40   | 33   | 36   | 40   | 56   | 60  | 75   | 73   | 70   | 65    |
| 26      | 50   | 36   | 37   | 33   | 36   | 41   | 54   | 62  | 74   | 73   | 71   | 68    |
| 27      | 49   | 37   | 36   | 36   | 34   | 40   | 58   | 64  | 75   | 74   | 71   | 60    |
| 28      | 50   | 39   | 36   | 33   | 34   | 41   | 60   | 62  | 76   | 73   | 70   | 58    |
| 29      | 51   | 37   | 36   | 32   | --   | 42   | 60   | 59  | 75   | 71   | 68   | 58    |
| 30      | 50   | 36   | 32   | 32   | --   | 42   | 60   | 62  | 72   | 71   | 68   | 57    |
| 31      | 50   | --   | 33   | --   | --   | 43   | --   | 64  | --   | 72   | 69   | --    |
| Average | 53   | 45   | 36   | --   | --   | 38   | 47   | 58  | 68   | 72   | 71   | 66    |

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER AT VISCHER FERRY DAM, N. Y.

LOCATION --At bridge crossing headrace of Vischer Ferry powerplant operated by N. Y. State Department of Public Works.

DRAINAGE AREA 3,385 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1951 to September 1953.

Water temperature: January 1947 to September 1957.

EXTREMES, 1936-57 --Water temperature: Maximum, 82° F. June 24; minimum, freezing point on many days during December, January, and February.

EXTREMES, 1947-57 --Water temperatures: Maximum, 85° F. Aug. 5, 1955; minimum, freezing point on many days during winter months.

## Chemical analysis, in parts per million, August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium Magnesium             | Non-carbonate |                                            |     |       |
| Aug. 20, 1957..... |                      | 1.7                        | 0.12      | 40           | 6.1            | 12          | 2.1           | 110                             | 36                         | 13            | 0.2          | 4.2                        | 176                                                 | 125                           | 35            | 299                                        | 7.7 | 9     |

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER AT VISCHER FERRY DAM, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment<sup>7</sup>

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 59      | 58   | 54       | 55   | 35       | 36   | 32      | 32   | 32       | 32   | 33    | 33   | 42    | 45   | 63   | 64   | 65   | 63   | 65   | 63   | 77     | 79   | 74        | 74   |
| 2.....       | 57      | 57   | 55       | 55   | 34       | 37   | 32      | 32   | 32       | 32   | 33    | 34   | 44    | 45   | 62   | 62   | 64   | 67   | 76   | 75   | 78     | 78   | 72        | 73   |
| 3.....       | 58      | 59   | 55       | 54   | 37       | 37   | 32      | 32   | 32       | 32   | 33    | 34   | 45    | 45   | 62   | 58   | 65   | 70   | 75   | 75   | 78     | 79   | 72        | 74   |
| 4.....       | 58      | 57   | 54       | 55   | 35       | 35   | 32      | 32   | 32       | 32   | 33    | 34   | 43    | 44   | 58   | 60   | 67   | 68   | 76   | 76   | 78     | 79   | 74        | 74   |
| 5.....       | 57      | 57   | 54       | 55   | 34       | 35   | 32      | 32   | 32       | 32   | 33    | 33   | 43    | 41   | 57   | 60   | 65   | 70   | 78   | 78   | 79     | 74   | 74        | 74   |
| 6.....       | 56      | 57   | 54       | 55   | 35       | 35   | 32      | 32   | 32       | 32   | 33    | 34   | 42    | 41   | 59   | 60   | 65   | 70   | 76   | 76   | 77     | 74   | 72        | 72   |
| 7.....       | 57      | 56   | 54       | 55   | 35       | 35   | 32      | 32   | 32       | 32   | 34    | 34   | 42    | 38   | 60   | 61   | 68   | 67   | 75   | 76   | 75     | 78   | 71        | 72   |
| 8.....       | 56      | 56   | 54       | 55   | 35       | 35   | 32      | 32   | 32       | 32   | 34    | 34   | 39    | 39   | 60   | 63   | 68   | 67   | 75   | 78   | 75     | 78   | 71        | 72   |
| 9.....       | 57      | 57   | 53       | 53   | 35       | 35   | 32      | 32   | 32       | 32   | 34    | 34   | 40    | 41   | 62   | 63   | 68   | 70   | 77   | 78   | 75     | 75   | 72        | 72   |
| 10.....      | 57      | 55   | 51       | 50   | 35       | 35   | 32      | 32   | 32       | 32   | 34    | 34   | 42    | 41   | 62   | 65   | 68   | 68   | 75   | 76   | 76     | 78   | 71        | 72   |
| 11.....      | 55      | 58   | 49       | 50   | 35       | 36   | 32      | 31   | 32       | 32   | 34    | 34   | 42    | 40   | 63   | 64   | 70   | 73   | 75   | 76   | 78     | 78   | 71        | 72   |
| 12.....      | 53      | 55   | 48       | 50   | 35       | 36   | 32      | 32   | 32       | 32   | 34    | 34   | 42    | 43   | 63   | 64   | 71   | 75   | 76   | 76   | 77     | 78   | 70        | 72   |
| 13.....      | 55      | 56   | 47       | 50   | 35       | 35   | 32      | 32   | 32       | 32   | 35    | 36   | 40    | 43   | 63   | 63   | 73   | 74   | 76   | 75   | 75     | 70   | 71        | 72   |
| 14.....      | 55      | 56   | 48       | 49   | 35       | 35   | 32      | 32   | 32       | 32   | 36    | 37   | 40    | 42   | 62   | 63   | 73   | 77   | 76   | 78   | 75     | 70   | 71        | 72   |
| 15.....      | 55      | 57   | 47       | 49   | 34       | 34   | 32      | 32   | 32       | 32   | 36    | 35   | 42    | 44   | 63   | 64   | 75   | 77   | 76   | 77   | 76     | 76   | 70        | 70   |
| 16.....      | 55      | 57   | 49       | 49   | 35       | 35   | 32      | 32   | 32       | 32   | 37    | 38   | 44    | 44   | 61   | 64   | 76   | 78   | 75   | 76   | 75     | 76   | 70        | 70   |
| 17.....      | 55      | 57   | 47       | 47   | 35       | 35   | 32      | 32   | 32       | 32   | 37    | 39   | 44    | 44   | 62   | 63   | 78   | 78   | 73   | 75   | 73     | 69   | 70        | 70   |
| 18.....      | 56      | 56   | 47       | 45   | 35       | 34   | 32      | 32   | 32       | 32   | 38    | 39   | 44    | 45   | 64   | 63   | 80   | 80   | 73   | 78   | 76     | 69   | 71        | 70   |
| 19.....      | 53      | 54   | 45       | 45   | 33       | 33   | 32      | 32   | 32       | 32   | 39    | 39   | 47    | 47   | 64   | 63   | 80   | 78   | 78   | 73   | 73     | 70   | 70        | 70   |
| 20.....      | 54      | 55   | 43       | 44   | 34       | 33   | 32      | 32   | 32       | 32   | 38    | 38   | 47    | 47   | 61   | 62   | 78   | 78   | 77   | 78   | 76     | 73   | 70        | 70   |
| 21.....      | 54      | 56   | 43       | 44   | 34       | 34   | 32      | 32   | 32       | 32   | 38    | 38   | 51    | 50   | 59   | 63   | 78   | 79   | 78   | 80   | 75     | 75   | 71        | 71   |
| 22.....      | 55      | 55   | 43       | 43   | 34       | 34   | 32      | 32   | 32       | 33   | 38    | 39   | 50    | 50   | 55   | 57   | 78   | 79   | 80   | 80   | 74     | 76   | 72        | 72   |
| 23.....      | 55      | 55   | 43       | 43   | 34       | 34   | 32      | 32   | 32       | 32   | 40    | 40   | 50    | 52   | 56   | 60   | 78   | 79   | 80   | 73   | 75     | 71   | 71        | 71   |
| 24.....      | 55      | 55   | 39       | 40   | 34       | 36   | 32      | 32   | 32       | 32   | 40    | 40   | 56    | 53   | 57   | 64   | 79   | 82   | 78   | 80   | 75     | 75   | 70        | 71   |
| 25.....      | 54      | 54   | 36       | 39   | 34       | 35   | 32      | 32   | 32       | 32   | 39    | 40   | 56    | 56   | 60   | 63   | 79   | 79   | 79   | 80   | 75     | 75   | 69        | 69   |
| 26.....      | 54      | 54   | 38       | 38   | 34       | 34   | 31      | 32   | 33       | 33   | 39    | 43   | 58    | 60   | 60   | 61   | 79   | 81   | 78   | 80   | 72     | 74   | 68        | 68   |
| 27.....      | 54      | 54   | 38       | 38   | 34       | 34   | 31      | 32   | 33       | 33   | 43    | 42   | 57    | 60   | 67   | 64   | 80   | 81   | 78   | 80   | 73     | 75   | 66        | 66   |
| 28.....      | 54      | 55   | 39       | 38   | 34       | 35   | 32      | 32   | 33       | 33   | 42    | 42   | 58    | 62   | 62   | 64   | 80   | 81   | 78   | 80   | 72     | 74   | 63        | 67   |
| 29.....      | 54      | 55   | 37       | 37   | 34       | 34   | 32      | 32   | --       | --   | 42    | 42   | 62    | 63   | 62   | 63   | 80   | 80   | 78   | 78   | 72     | 73   | 63        | 67   |
| 30.....      | 54      | 54   | 37       | 35   | 32       | 32   | 32      | 32   | --       | --   | 43    | 44   | 62    | 63   | 64   | 65   | 79   | 79   | 77   | 79   | 72     | 73   | 63        | 64   |
| 31.....      | 54      | 54   | --       | --   | 32       | 32   | 32      | 32   | --       | --   | 43    | 44   | --    | --   | 65   | 68   | --   | --   | 78   | 79   | 73     | --   | --        | --   |
| Average..... | 55      | 58   | 47       | 47   | 34       | 35   | 32      | 32   | 32       | 32   | 37    | 37   | 47    | 48   | 61   | 63   | 74   | 75   | 78   | 78   | 75     | 76   | 70        | 71   |

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER AT COHOES, N. Y.

LOCATION.--On bridge on Route 4 highway, 1,200 feet downstream of gaging station at Cohoes, Albany County.

DRAINAGE AREA.--3,456 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1956 to September 1957.

Sediment records: January 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82°F July 21; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 102 ppm Jan. 24; minimum daily, 3 ppm Jan. 20.

Sediment loads: Maximum daily, 5,780 tons, Jan. 24, minimum daily, 1.7 tons Sept. 8.

EXTREMES, 1954-57.--Water temperatures (May 1956 to September 1957): Maximum, 82°F July 21,

1957; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,234 ppm Oct. 17, 1955; minimum daily, 1.0 ppm

July 18, 1954, and Jan. 6, 1956.

Sediment loads: Maximum daily, 300,000 tons Oct. 17, 1955; minimum daily, 0.8 ton Aug. 7,

1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

## Chemical analysis in parts per million, Aug. 20, 1957

|                                       |       |                                                           |     |
|---------------------------------------|-------|-----------------------------------------------------------|-----|
| Mean discharge .....                  | 1,700 | Fluoride (F) .....                                        | 0.2 |
| Silica (SiO <sub>2</sub> ) .....      | .7    | Nitrate (NO <sub>3</sub> ) .....                          | 3.9 |
| Iron (Fe) .....                       | .13   | Dissolved solids (residue on evaporation at 180° C) ..... | 159 |
| Manganese (Mn) .....                  | 38    | Hardness as CaCO <sub>3</sub> :                           |     |
| Calcium (Ca) .....                    | 5.5   | Calcium, magnesium .....                                  | 118 |
| Magnesium (Mg) .....                  | 6.9   | Noncarbonate .....                                        | 33  |
| Sodium (Na) .....                     | 1.9   |                                                           |     |
| Potassium (K) .....                   | 103   | Specific conductance (micromhos at 25°C.) .....           | 274 |
| Bicarbonate (HCO <sub>3</sub> ) ..... | 34    | pH .....                                                  | 6.9 |
| Sulfate (SO <sub>4</sub> ) .....      | 8.2   | Color .....                                               | 7   |
| Chloride (Cl) .....                   |       |                                                           |     |

## Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 37   | 32   | 32   | 32   | 32   | 43   | 59  | 64   | 76   | 75   | 72    |
| 2       | 55   | 35   | 32   | 32   | 32   | 32   | 46   | 58  | 61   | 70   | 76   | 73    |
| 3       | 55   | 35   | 33   | 32   | 32   | 32   | 43   | 58  | 61   | 71   | 80   | 74    |
| 4       | 55   | 37   | 32   | 32   | 32   | 32   | 42   | 58  | 63   | 73   | 77   | 73    |
| 5       | 53   | 34   | 34   | 32   | 32   | 32   | 41   | 59  | 65   | 74   | 78   | 72    |
| 6       | 56   | 37   | 34   | 32   | 34   | 34   | 42   | 56  | 66   | 74   | 74   | 74    |
| 7       | 54   | 40   | 32   | 32   | 34   | 39   | 56   | 66  | 77   | 71   | 75   | 75    |
| 8       | 54   | 39   | 32   | 32   | 33   | 39   | 59   | 67  | 75   | 71   | 75   | 75    |
| 9       | 50   | 39   | 32   | 32   | 32   | 38   | 60   | 70  | 75   | 76   | 70   | 70    |
| 10      | 48   | 32   | 32   | 33   | 32   | 39   | 62   | 67  | 73   | 76   | 68   | 68    |
| 11      | 46   | 36   | 32   | 32   | 32   | 39   | 59   | 71  | 72   | 75   | 70   | 70    |
| 12      | 48   | 38   | 32   | 32   | 33   | 40   | 59   | 69  | 72   | 74   | --   | --    |
| 13      | 45   | 37   | 32   | --   | --   | 40   | 60   | 70  | 74   | 71   | 67   | 67    |
| 14      | 40   | 35   | 32   | 33   | --   | 39   | 60   | 71  | 80   | 71   | 70   | 70    |
| 15      | 47   | 36   | --   | 32   | --   | 40   | 61   | 72  | --   | 72   | 71   | 71    |
| 16      | 46   | 36   | --   | 33   | 37   | 40   | 59   | 76  | 73   | 74   | 68   | 68    |
| 17      | 47   | 34   | --   | 33   | 38   | 43   | 58   | 74  | 72   | 74   | 68   | 68    |
| 18      | 45   | 36   | 32   | 33   | 39   | 43   | 61   | 78  | 74   | 78   | 67   | 67    |
| 19      | 41   | 35   | 32   | 32   | 37   | 45   | 60   | 79  | 74   | 72   | 66   | 66    |
| 20      | 43   | 35   | 32   | 32   | 38   | 48   | --   | 76  | 75   | 76   | 68   | 68    |
| 21      | 46   | 34   | 32   | 32   | 37   | 52   | 58   | 74  | 82   | 73   | 68   | 68    |
| 22      | 45   | 35   | 34   | 33   | 37   | 53   | 55   | 78  | 79   | 76   | 68   | 68    |
| 23      | 43   | 34   | 34   | 33   | 38   | 59   | 57   | 81  | 77   | --   | 67   | 67    |
| 24      | 41   | 35   | 32   | 33   | 40   | 56   | 59   | 78  | 74   | 79   | 65   | 65    |
| 25      | 43   | 37   | 32   | 33   | 39   | 55   | 59   | 78  | 73   | 69   | --   | --    |
| 26      | 39   | 34   | 32   | 34   | 40   | 56   | 61   | 79  | 73   | 73   | --   | --    |
| 27      | 40   | 35   | 32   | 34   | 42   | 59   | 62   | 79  | --   | 73   | --   | --    |
| 28      | 35   | 35   | 32   | 32   | 42   | 63   | 60   | 81  | --   | 72   | --   | --    |
| 29      | 40   | 34   | 32   | --   | 42   | 61   | 59   | 80  | 73   | 71   | --   | --    |
| 30      | 32   | 33   | 32   | --   | 43   | 59   | 60   | 78  | 74   | --   | --   | --    |
| 31      | --   | 32   | 32   | --   | 45   | --   | 62   | --  | 74   | 68   | --   | --    |
| Average | 46   | 36   | 32   | 32   | 37   | 47   | 59   | 72  | 74   | 74   | --   | --    |



## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER AT COHOES, N. Y.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 3,270                 | 19                        | 168          | 1,990                 | 12                        | 64           | 2,390                 | 12                        | 77           |
| 2.....  | 3,320                 | 18                        | 161          | 2,440                 | 14                        | 92           | 2,670                 | 10                        | 72           |
| 3.....  | 3,050                 | 18                        | 148          | 3,090                 | 14                        | 117          | 2,220                 | 8                         | 48           |
| 4.....  | 3,290                 | 14                        | 124          | 2,060                 | 10                        | 56           | 4,670                 | 8                         | 101          |
| 5.....  | 4,480                 | 18                        | 218          | 2,110                 | 12                        | 68           | 6,610                 | 8                         | 143          |
| 6.....  | 3,470                 | 18                        | 169          | 1,980                 | 12                        | 64           | 8,160                 | 8                         | 176          |
| 7.....  | 3,150                 | 16                        | 136          | 2,260                 | 11                        | 67           | 6,090                 | 10                        | 164          |
| 8.....  | 2,740                 | 16                        | 118          | 2,340                 | 16                        | 101          | 7,410                 | 10                        | 200          |
| 9.....  | 4,200                 | 20                        | 227          | 2,010                 | 14                        | 76           | 7,880                 | 13                        | 277          |
| 10..... | 3,000                 | 16                        | 130          | 1,770                 | 17                        | 81           | 5,590                 | 12                        | 181          |
| 11..... | 3,400                 | 17                        | 156          | 1,630                 | 16                        | 70           | 5,380                 | 12                        | 174          |
| 12..... | 2,330                 | 11                        | 69           | 1,490                 | 11                        | 44           | 6,580                 | 12                        | 213          |
| 13..... | 2,840                 | 14                        | 107          | 1,370                 | 9                         | 33           | 6,620                 | 14                        | 250          |
| 14..... | 1,570                 | 9                         | 38           | 1,370                 | 8                         | 30           | 6,360                 | 12                        | 206          |
| 15..... | 2,530                 | 12                        | 82           | 1,720                 | 6                         | 28           | 5,710                 | 15                        | 231          |
| 16..... | 2,280                 | 10                        | 62           | 1,560                 | 10                        | 42           | 5,420                 | 14                        | 205          |
| 17..... | 2,390                 | 10                        | 65           | 1,960                 | 12                        | 64           | 10,000                | 12                        | 324          |
| 18..... | 2,470                 | 14                        | 93           | 2,320                 | 13                        | 81           | 9,160                 | 9                         | 223          |
| 19..... | 2,440                 | 11                        | 72           | 2,520                 | 16                        | 109          | 7,820                 | 14                        | 296          |
| 20..... | 2,500                 | 13                        | 88           | 2,490                 | 11                        | 74           | 6,030                 | 14                        | 228          |
| 21..... | 2,270                 | 11                        | 67           | 2,660                 | 7                         | 50           | 5,480                 | 12                        | 178          |
| 22..... | 2,140                 | 11                        | 64           | 8,060                 | 13                        | 283          | 5,930                 | 11                        | 176          |
| 23..... | 1,920                 | 11                        | 57           | 7,440                 | 16                        | 334          | 8,930                 | 11                        | 265          |
| 24..... | 2,090                 | 15                        | 85           | 4,430                 | 13                        | 155          | 11,700                | 11                        | 347          |
| 25..... | 2,230                 | 18                        | 108          | 3,390                 | 10                        | 92           | 15,500                | 26                        | 1,090        |
| 26..... | 1,990                 | 16                        | 86           | 3,100                 | 10                        | 84           | 12,000                | 38                        | 1,230        |
| 27..... | 1,970                 | 14                        | 74           | 2,720                 | 9                         | 66           | 8,480                 | 32                        | 733          |
| 28..... | 2,050                 | 10                        | 55           | 3,260                 | 10                        | 88           | 6,810                 | 24                        | 441          |
| 29..... | 1,840                 | 10                        | 50           | 2,820                 | 13                        | 99           | 6,300                 | 16                        | 272          |
| 30..... | 1,860                 | 10                        | 50           | 2,950                 | 12                        | 96           | 5,390                 | 12                        | 175          |
| 31..... | 1,920                 | 10                        | 52           | --                    | --                        | --           | 3,600                 | 11                        | 107          |
| Total.  | 81,000                | --                        | 3,179        | 81,310                | --                        | 2,708        | 212,890               | --                        | 8,853        |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 2,700                 | 10                        | 73           | 4,110                 | 23                        | 255          | 11,800                | 68                        | 2,170        |
| 2.....  | 3,100                 | 11                        | 92           | 4,020                 | 17                        | 185          | 9,130                 | 48                        | 1,180        |
| 3.....  | 3,100                 | 10                        | 84           | 4,110                 | 12                        | 133          | 6,910                 | 33                        | 616          |
| 4.....  | 3,280                 | 13                        | 115          | 4,330                 | 10                        | 117          | 5,100                 | 26                        | 358          |
| 5.....  | 3,910                 | 13                        | 137          | 3,940                 | 18                        | 191          | 4,340                 | 25                        | 293          |
| 6.....  | 3,980                 | 20                        | 215          | 4,200                 | 16                        | 181          | 4,070                 | 27                        | 297          |
| 7.....  | 3,600                 | 19                        | 185          | 3,980                 | 20                        | 215          | 3,910                 | 16                        | 169          |
| 8.....  | 3,400                 | 21                        | 193          | 3,850                 | 10                        | 104          | 4,110                 | 11                        | 122          |
| 9.....  | 3,460                 | 16                        | 149          | 3,890                 | 7                         | 74           | 4,300                 | 10                        | 116          |
| 10..... | 3,700                 | 12                        | 120          | 3,940                 | 4                         | 43           | 4,640                 | 6                         | 75           |
| 11..... | 3,500                 | 11                        | 104          | 4,090                 | 23                        | 254          | 4,300                 | 8                         | 93           |
| 12..... | 3,460                 | 6                         | 56           | 4,580                 | 36                        | 445          | 4,140                 | 7                         | 78           |
| 13..... | 3,440                 | 6                         | 56           | 4,160                 | 20                        | 225          | 4,740                 | 6                         | 77           |
| 14..... | 3,200                 | 8                         | 69           | 3,850                 | 15                        | 156          | 8,840                 | 8                         | 191          |
| 15..... | 2,400                 | 10                        | a 65         | 3,760                 | 14                        | 142          | 12,800                | 19                        | s 657        |
| 16..... | 2,500                 | 8                         | a 54         | 3,520                 | 14                        | 133          | 15,900                | 83                        | sa 3,600     |
| 17..... | 2,100                 | 6                         | a 34         | 3,330                 | 8                         | 72           | 14,400                | 80                        | sa 3,170     |
| 18..... | 2,800                 | 6                         | 45           | 3,130                 | 8                         | 68           | 10,800                | 49                        | 1,430        |
| 19..... | 2,600                 | 4                         | 28           | 2,910                 | 24                        | 189          | 8,590                 | 26                        | 603          |
| 20..... | 2,250                 | 3                         | 18           | 3,300                 | 12                        | 107          | 7,580                 | 16                        | 327          |
| 21..... | 2,700                 | 6                         | 44           | 3,010                 | 13                        | 106          | 7,240                 | 11                        | 215          |
| 22..... | 2,960                 | 9                         | 72           | 2,800                 | 18                        | 136          | 6,870                 | 11                        | 204          |
| 23..... | 8,470                 | 16                        | 366          | 2,890                 | 9                         | 70           | 6,910                 | 10                        | 187          |
| 24..... | 20,900                | 102                       | sa 5,780     | 2,960                 | 6                         | 48           | 7,340                 | 11                        | 218          |
| 25..... | 15,400                | 92                        | 3,830        | 3,020                 | 7                         | 57           | 6,580                 | 12                        | 213          |
| 26..... | 11,400                | 63                        | 1,940        | 3,090                 | 17                        | 142          | 5,970                 | 12                        | 193          |
| 27..... | 8,550                 | 40                        | 923          | 10,800                | 26                        | 758          | 5,910                 | 14                        | 223          |
| 28..... | 6,180                 | 34                        | 567          | 16,100                | 79                        | sa 3,420     | 5,680                 | 14                        | 215          |
| 29..... | 5,100                 | 24                        | 330          | --                    | --                        | --           | 5,340                 | 12                        | 173          |
| 30..... | 4,560                 | 21                        | 259          | --                    | --                        | --           | 5,100                 | 14                        | 193          |
| 31..... | 4,340                 | 27                        | 316          | --                    | --                        | --           | 5,230                 | 15                        | 212          |
| Total.  | 153,040               | --                        | 16,319       | 121,670               | --                        | 8,026        | 218,570               | --                        | 17,868       |

s Computed by subdividing day.

a Computed from estimated concentration graph.

## HUDSON RIVER BASIN--Continued

## MOHAWK RIVER AT COHOES, N. Y.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 4,660                | 15                       | 189          | 3,840                | 34                       | 353          | 2,870                | 12                       | 93           |
| 2.....  | 4,910                | 16                       | 212          | 3,450                | 30                       | 279          | 1,550                | 11                       | 46           |
| 3.....  | 6,150                | 16                       | 266          | 2,880                | 26                       | 202          | 2,260                | 16                       | 98           |
| 4.....  | 7,500                | 15                       | 304          | 2,830                | 21                       | 160          | 2,090                | 12                       | 68           |
| 5.....  | 5,760                | 14                       | 218          | 2,020                | 18                       | 98           | 2,130                | 11                       | 63           |
| 6.....  | 13,500               | 20                       | 729          | 2,350                | 17                       | 108          | 1,960                | 10                       | 53           |
| 7.....  | 17,800               | 55                       | sa2,630      | 2,370                | 15                       | 96           | 2,270                | 10                       | 61           |
| 8.....  | 12,700               | 58                       | a1,990       | 2,200                | 12                       | 71           | 2,600                | 17                       | 119          |
| 9.....  | 10,500               | 41                       | 1,160        | 2,180                | 11                       | 65           | 906                  | 11                       | 27           |
| 10..... | 9,570                | 27                       | 698          | 2,310                | 15                       | 94           | 1,930                | 8                        | 42           |
| 11..... | 9,490                | 17                       | 436          | 2,510                | 21                       | 142          | 1,940                | 14                       | 73           |
| 12..... | 9,230                | 12                       | 299          | 3,050                | 20                       | 165          | 1,900                | 11                       | 56           |
| 13..... | 9,680                | 13                       | 340          | 3,580                | 22                       | 213          | 1,860                | 13                       | 65           |
| 14..... | 8,590                | 15                       | 348          | 3,890                | 18                       | 189          | 1,990                | 11                       | 59           |
| 15..... | 6,580                | 14                       | 249          | 4,500                | 19                       | 231          | 1,610                | 14                       | 61           |
| 16..... | 4,510                | 14                       | 170          | 4,020                | 21                       | 228          | 468                  | 7                        | 8.8          |
| 17..... | 3,540                | 15                       | 143          | 4,030                | 23                       | 250          | 1,600                | 10                       | 43           |
| 18..... | 3,110                | 16                       | 134          | 3,650                | 20                       | 197          | 1,860                | 10                       | 50           |
| 19..... | 5,930                | 17                       | 272          | 3,160                | 24                       | 205          | 1,460                | 10                       | 39           |
| 20..... | 5,250                | 20                       | 284          | 7,060                | 39                       | s946         | 1,110                | 11                       | 33           |
| 21..... | 6,110                | 24                       | 396          | 17,000               | 38                       | 1,740        | 1,380                | 10                       | 37           |
| 22..... | 5,750                | 25                       | 388          | 10,600               | 30                       | 859          | 705                  | 10                       | 19           |
| 23..... | 5,300                | 25                       | 358          | 7,960                | 31                       | 666          | 366                  | 8                        | 7.9          |
| 24..... | 3,740                | 24                       | 242          | 7,600                | 29                       | 595          | 1,520                | 10                       | 41           |
| 25..... | 5,140                | 32                       | 444          | 5,520                | 24                       | 358          | 1,570                | 21                       | 89           |
| 26..... | 5,560                | 32                       | 480          | 5,690                | 19                       | 292          | 2,710                | 24                       | 176          |
| 27..... | 3,510                | 25                       | 237          | 7,820                | 22                       | 465          | 2,890                | 19                       | 148          |
| 28..... | 3,380                | 20                       | 183          | 5,700                | 30                       | 462          | 3,180                | 19                       | 163          |
| 29..... | 3,550                | 21                       | 201          | 3,940                | 30                       | 319          | 2,250                | 16                       | 97           |
| 30..... | 4,250                | 25                       | 287          | 3,500                | 17                       | 161          | 1,780                | 15                       | 72           |
| 31..... | --                   | --                       | --           | 3,310                | 13                       | 116          | --                   | --                       | --           |
| Total.  | 205,250              | --                       | 14,287       | 144,520              | --                       | 10,325       | 54,715               | --                       | 2,007.7      |
|         | July                 |                          |              | August               |                          |              | September            |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....  | 2,080                | 18                       | 101          | 3,730                | 17                       | 171          | 447                  | 4                        | 4.8          |
| 2.....  | 2,170                | 15                       | 88           | 3,090                | 14                       | 117          | 304                  | 4                        | 3.3          |
| 3.....  | 1,750                | 12                       | 57           | 1,340                | 11                       | 40           | 1,660                | 14                       | 63           |
| 4.....  | 2,020                | 14                       | 76           | 1,940                | 13                       | 68           | 1,250                | 10                       | 34           |
| 5.....  | 2,530                | 13                       | 89           | 5,560                | 24                       | 360          | 1,290                | 16                       | 56           |
| 6.....  | 4,550                | 19                       | 233          | 3,800                | 20                       | 205          | 1,440                | 12                       | 47           |
| 7.....  | 3,920                | 18                       | 191          | 2,380                | 14                       | 90           | 582                  | 11                       | 17           |
| 8.....  | 3,240                | 15                       | 131          | 2,100                | 13                       | 74           | 103                  | 6                        | 1.7          |
| 9.....  | 2,790                | 18                       | 136          | 1,890                | 12                       | 61           | 1,210                | 6                        | 20           |
| 10..... | 2,570                | 17                       | 118          | 1,570                | 13                       | 55           | 1,210                | 8                        | 26           |
| 11..... | 1,270                | 12                       | 41           | 734                  | 10                       | 20           | 1,190                | 12                       | 39           |
| 12..... | 1,360                | 12                       | 44           | 2,100                | 11                       | 62           | 1,190                | 10                       | a32          |
| 13..... | 768                  | 10                       | 21           | 2,030                | 13                       | 71           | 1,240                | 9                        | 30           |
| 14..... | 394                  | 6                        | 6.4          | 1,830                | 12                       | 59           | 619                  | 8                        | 13           |
| 15..... | 1,850                | 7                        | 35           | 1,720                | 14                       | 65           | 104                  | 10                       | 2.8          |
| 16..... | 1,490                | 10                       | 40           | 1,580                | 8                        | 34           | 1,320                | 8                        | 29           |
| 17..... | 1,510                | 11                       | 45           | 780                  | 10                       | 21           | 2,160                | 14                       | 82           |
| 18..... | 1,490                | 9                        | 36           | 541                  | 7                        | 10           | 1,360                | 10                       | 37           |
| 19..... | 1,470                | 7                        | 28           | 1,690                | 14                       | 64           | 1,550                | 10                       | 42           |
| 20..... | 806                  | 10                       | 22           | 1,700                | 15                       | 69           | 1,380                | 9                        | 34           |
| 21..... | 115                  | 6                        | 1.9          | 1,460                | 15                       | 59           | 876                  | 11                       | 26           |
| 22..... | 1,760                | 7                        | 33           | 1,560                | 12                       | 51           | 420                  | 8                        | 9.1          |
| 23..... | 1,590                | 9                        | 39           | 1,200                | 10                       | a32          | 2,820                | 12                       | 91           |
| 24..... | 1,510                | 11                       | 45           | 580                  | 11                       | 17           | 3,410                | 20                       | 184          |
| 25..... | 1,490                | 10                       | 40           | 110                  | 8                        | 2.4          | 2,410                | 16                       | 104          |
| 26..... | 1,530                | 9                        | 37           | 1,530                | 13                       | 54           | 1,800                | 8                        | 39           |
| 27..... | 1,130                | 9                        | a27          | 1,520                | 14                       | 57           | 1,290                | 10                       | 35           |
| 28..... | 107                  | 7                        | a2.0         | 1,160                | 12                       | 38           | 779                  | 10                       | 21           |
| 29..... | 2,420                | 12                       | 78           | 1,160                | 11                       | 34           | 101                  | 8                        | 2.2          |
| 30..... | 5,570                | 24                       | 361          | 1,170                | 9                        | a28          | 1,670                | 11                       | 50           |
| 31..... | 4,560                | 16                       | 187          | 1,100                | 8                        | 24           | --                   | --                       | --           |
| Total.  | 61,808               | --                       | 2,399.3      | 54,655               | --                       | 2,112.4      | 37,185               | --                       | 1,174.9      |

Total discharge for year (cfs-days)..... 1,426,613

Total load for year (tons)..... 89,259.3

sComputed by subdividing day.

aComputed from estimated concentration graph.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## HUDSON RIVER BASIN--Continued

## HUDSON RIVER AT GREEN ISLAND, N. Y.

LOCATION.--At east shore of Green Island, Albany County, at Ford Motor Company power-plant, opposite Troy barge locks.

DRAINAGE AREA.--8,090 square miles, approximately (above gaging station).

RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 80°F June 26; minimum, freezing point on many days during January and February.

EXTREMES, 1954-57.--Water temperatures: Maximum, 80°F June 26, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature (°F) of water, water year October 1956 to September 1957

Once-daily measurement at approximately 8 a. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 57   | 53   | 38   | 35   | 32   | 33   | 44   | 61  | 64   | 75   | 74   | 72    |
| 2       | 57   | 54   | 37   | 35   | 32   | 34   | 46   | 61  | 65   | 74   | 74   | 72    |
| 3       | 58   | 55   | 36   | 34   | 32   | 33   | 45   | 61  | 66   | 74   | 74   | 72    |
| 4       | 58   | 55   | 37   | 32   | 32   | 33   | 45   | 61  | 67   | 75   | 74   | 72    |
| 5       | 59   | 55   | 38   | 32   | 32   | 33   | 45   | 62  | 67   | 75   | 75   | 71    |
| 6       | 59   | 55   | 39   | 32   | 32   | 33   | 44   | 62  | 68   | 76   | 75   | 71    |
| 7       | 58   | 55   | 40   | 32   | 32   | 33   | 43   | 62  | 68   | 76   | 75   | 71    |
| 8       | 58   | 54   | 40   | 32   | 32   | 34   | 42   | 63  | 68   | 75   | 75   | 70    |
| 9       | 58   | 54   | 40   | 32   | 32   | 34   | 40   | 63  | 69   | 74   | 73   | 70    |
| 10      | 57   | 52   | 39   | 32   | 32   | 34   | 40   | 63  | 69   | 75   | 71   | 69    |
| 11      | 56   | 50   | 39   | 32   | 32   | 34   | 40   | 63  | 70   | 74   | 70   | 68    |
| 12      | 55   | 50   | 39   | 32   | 32   | 34   | 40   | 63  | 71   | 74   | 72   | 68    |
| 13      | 55   | 49   | 39   | 32   | 32   | 35   | 41   | 63  | 72   | 74   | 74   | 68    |
| 14      | 55   | 49   | 39   | 32   | 32   | 35   | 40   | 63  | 73   | 75   | 74   | 69    |
| 15      | 56   | 48   | 38   | 32   | 33   | 35   | 40   | 62  | 74   | 76   | 75   | 69    |
| 16      | 55   | 47   | 38   | 32   | 33   | 36   | 41   | 63  | 76   | 76   | 75   | 68    |
| 17      | 54   | 46   | 37   | 32   | 33   | 36   | 42   | 62  | 77   | 76   | 75   | 68    |
| 18      | 53   | 46   | 37   | 32   | 33   | 37   | 44   | 60  | 78   | 76   | 75   | 68    |
| 19      | 52   | 45   | 37   | 32   | 33   | 37   | 46   | 60  | 78   | 76   | 74   | 68    |
| 20      | 51   | 45   | 36   | 32   | 33   | 37   | 48   | 61  | 78   | 76   | 74   | 69    |
| 21      | 51   | 44   | 36   | 33   | 33   | 38   | 50   | 60  | 77   | 77   | 74   | 70    |
| 22      | 52   | 44   | 36   | 33   | 33   | 38   | 53   | 61  | 77   | 77   | 74   | 71    |
| 23      | 52   | 42   | 36   | 33   | 33   | 38   | 54   | 61  | 78   | 78   | 73   | 72    |
| 24      | 53   | 41   | 36   | 33   | 33   | 39   | 55   | 62  | 78   | 77   | 73   | 70    |
| 25      | 55   | 40   | 37   | 33   | 33   | 39   | 56   | 62  | 79   | 76   | 74   | 68    |
| 26      | 54   | 40   | 37   | 33   | 34   | 41   | 57   | 62  | 80   | 76   | 74   | 67    |
| 27      | 53   | 40   | 37   | 33   | 34   | 42   | 58   | 63  | 79   | 75   | 74   | 66    |
| 28      | 54   | 40   | 38   | 33   | 33   | 43   | 59   | 62  | 78   | 76   | 73   | 65    |
| 29      | 54   | 40   | 37   | 33   | --   | 43   | 60   | 62  | 77   | 76   | 73   | 64    |
| 30      | 54   | 39   | 37   | 32   | --   | 43   | 61   | 62  | 75   | 75   | 73   | 63    |
| 31      | 53   | --   | 35   | 32   | --   | 42   | --   | 63  | --   | 75   | 73   | --    |
| Average | 55   | 48   | 38   | 32   | 33   | 37   | 47   | 62  | 73   | 75   | 74   | 69    |

HUDSON RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN HUDSON RIVER BASIN  
Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Mag-<br>nesium (Mg) | Sodium (Na) | Potas-<br>sium (K) | Bicar-<br>bonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evap-<br>oration at 180°C) | Hardness as CaCO <sub>3</sub> |                    | Specific conduct-<br>ance (micro-<br>mhos at 25°C) | pH  | Color |
|----------------------------------------------|----------------------|----------------------------|-----------|--------------|---------------------|-------------|--------------------|--------------------------------------|----------------------------|---------------|--------------|----------------------------|---------------------------------------------------------|-------------------------------|--------------------|----------------------------------------------------|-----|-------|
|                                              |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         | Calcium, nesium               | Non-carbon-<br>ate |                                                    |     |       |
| HOOSIC RIVER NEAR WILLIAMSTOWN, MASS.        |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Sept. 30, 1957 .....                         | 53                   | 5.9                        | 0.71      | 42           | 13                  | 26          | 2.9                | 148                                  | 23                         | 40            | 0.3          | 20                         | 262                                                     | 159                           | 37                 | 445                                                | 6.7 | 7     |
| HUDSON RIVER AT NORTH CREEK, N. Y.           |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Feb. 7, 1957 .....                           | 720                  | 6.9                        | 0.15      | 4.9          | 1.3                 | 1.0         | 0.6                | 12                                   | 7.4                        | 0.4           | 0.0          | 1.3                        | 37                                                      | 18                            | 8                  | 42                                                 | 6.6 | 15    |
| May 23, .....                                | 3,100                | 4.6                        | .08       | 4.9          | .8                  | 1.0         | .5                 | 10                                   | 7.1                        | .5            | .3           | .6                         | 35                                                      | 16                            | 8                  | 42                                                 | 6.5 | 29    |
| HUDSON RIVER AT HADLEY, N. Y.                |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Feb. 7, 1957 .....                           | 1,630                | 6.8                        | 0.12      | 5.8          | 1.0                 | 1.1         | 0.5                | 16                                   | 8.1                        | 0.7           | 0.0          | 0.9                        | 38                                                      | 19                            | 6                  | 48                                                 | 6.7 | 10    |
| May 23, .....                                | 5,610                | 5.2                        | .08       | 5.1          | .9                  | 1.0         | .4                 | 12                                   | 7.1                        | .3            | .1           | .4                         | 37                                                      | 16                            | 6                  | 40                                                 | 6.7 | 29    |
| EAST BRANCH SACADAGA RIVER AT GRIFFIN, N. Y. |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Feb. 7, 1957 .....                           | 76                   | 8.2                        | 0.08      | 4.6          | 0.5                 | 1.3         | 0.5                | 9                                    | 8.6                        | 1.0           | 0.0          | 1.1                        | 37                                                      | 14                            | 6                  | 43                                                 | 6.8 | 9     |
| May 23, .....                                | 446                  | 5.3                        | .11       | 4.0          | .8                  | .9          | .3                 | 7                                    | 7.6                        | .4            | .1           | .4                         | 31                                                      | 14                            | 8                  | 32                                                 | 6.5 | 24    |
| SACADAGA RIVER NEAR HOPE, N. Y.              |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Feb. 7, 1957 .....                           | 600                  | 5.8                        | 0.05      | 4.0          | 1.3                 | 1.0         | 0.5                | 10                                   | 7.1                        | 0.6           | 0.0          | 1.0                        | 32                                                      | 15                            | 7                  | 36                                                 | 6.7 | 11    |
| May 23, .....                                | 2,450                | 5.1                        | .10       | 4.0          | .8                  | .8          | .3                 | 8                                    | 6.8                        | .5            | .2           | .5                         | 33                                                      | 14                            | 7                  | 34                                                 | 6.6 | 25    |
| BATTEN KILL AT BATTENVILLE, N. Y.            |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                                         |                               |                    |                                                    |     |       |
| Feb. 7, 1957 .....                           | 564                  | 5.2                        | 0.04      | 24           | 6.6                 | 1.6         | 0.7                | 93                                   | 11                         | 2.0           | 0.0          | 2.0                        | 99                                                      | 87                            | 11                 | 180                                                | 7.8 | 2     |
| May 23, .....                                | 620                  | 3.4                        | .06       | 18           | 4.4                 | 1.3         | .7                 | 68                                   | 7.7                        | 1.6           | .1           | .9                         | 76                                                      | 63                            | 8                  | 129                                                | 7.5 | 13    |

## HUDSON RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN HUDSON RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| HOOSIC RIVER AT EAGLE BRIDGE, N. Y.          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 7, 1957 .....                           | 614                  | 4.9                        | 0.07      | 23           | 6.3            | 4.8         | 1.2           | 85                              | 14                         | 7.3           | 0.0          | 3.2                        | 110                                                | 83                            | 14            | 195                                       | 7.3 | 4     |
| May 23 .....                                 | 1,280                | 3.4                        | .09       | 16           | 4.0            | 2.5         | 1.0           | 56                              | 10                         | 3.5           | .1           | 2.6                        | 76                                                 | 57                            | 11            | 131                                       | 6.9 | 7     |
| WEST CANADA CREEK AT KAST BRIDGE, N. Y.      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 27, 1957 .....                           | 1,250                | 4.3                        | 0.07      | 17           | 2.5            | 1.1         | 0.4           | 54                              | 6.5                        | 0.6           | 0.1          | 1.0                        | 65                                                 | 53                            | 9             | 107                                       | 7.5 | 12    |
| EAST CANADA CREEK NEAR ST. JOHNSVILLE, N. Y. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 27, 1957 .....                           | --                   | 3.8                        | 0.11      | 7.2          | 2.0            | 1.2         | 0.3           | 23                              | 6.8                        | 0.6           | 0.1          | 0.5                        | 40                                                 | 26                            | 7             | 56                                        | 7.0 | 22    |
| SCHOCHARIE CREEK AT FORT HUNTER, N. Y.       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| May 27, 1957 .....                           | --                   | 4.0                        | 0.28      | 21           | 3.2            | 2.2         | 1.1           | 64                              | 13                         | 1.0           | 0.1          | 0.9                        | 84                                                 | 66                            | 13            | 139                                       | 7.5 | 15    |
| MOHAWK RIVER AT REXFORD, N. Y.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| August 20, 1957 .....                        | --                   | 3.0                        | 0.07      | 39           | 6.7            | 10          | 2.2           | 111                             | 36                         | 13            | 0.3          | 3.9                        | 184                                                | 125                           | 34            | 293                                       | 7.0 | 16    |
| RONDOUT CREEK NEAR ELLENVILLE, N. Y.         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| July 2, 1957 .....                           | --                   | 1.2                        | 0.18      | 5.6          | 0.8            | 1.4         | 0.5           | 15                              | 8.2                        | 1.7           | 0.0          | 0.3                        | 32                                                 | 18                            | 5             | 50                                        | 6.7 | 8     |
| OTTER KILL AT CAMPBELL, N. Y.                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| July 1, 1957 .....                           | --                   | 6.4                        | 0.15      | 42           | 7.6            | 29          | 2.3           | 129                             | 20                         | 53            | 0.3          | 0.6                        | 246                                                | 137                           | 31            | 408                                       | 8.3 | 31    |

## POCHUCK CREEK NEAR PINE ISLAND, N. Y.

|                    |    |     |      |    |    |     |     |     |    |     |     |     |     |     |    |     |     |   |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|---|
| July 2, 1957 ..... | 14 | 5.2 | 0.25 | 42 | 16 | 4.2 | 1.5 | 188 | 19 | 6.4 | 0.3 | 2.2 | 194 | 171 | 17 | 345 | 7.6 | 9 |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|---|

## WALLKILL RIVER NEAR PHILLIPSBURG, N. Y. .

|                    |    |     |      |    |    |     |     |     |    |    |     |     |     |     |    |     |     |    |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|
| July 1, 1957 ..... | 77 | 6.2 | 0.22 | 45 | 14 | 8.5 | 2.2 | 161 | 37 | 11 | 0.2 | 2.2 | 222 | 170 | 38 | 369 | 7.9 | 24 |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|

## WALLKILL RIVER AT WALDEN, N. Y.

|                    |    |     |      |    |    |     |     |     |    |    |     |     |     |     |    |     |     |    |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|
| July 1, 1957 ..... | -- | 4.5 | 0.09 | 47 | 14 | 9.0 | 2.2 | 170 | 39 | 12 | 0.1 | 1.9 | 233 | 175 | 36 | 377 | 7.5 | 23 |
|--------------------|----|-----|------|----|----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|----|

a Includes equivalent of 2 parts per million of carbonate (CO<sub>3</sub>).

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## RARITAN RIVER BASIN

## STONY BROOK AT PRINCETON, N. J.

LOCATION.--At gaging station at Lawrenceville road bridge on U. S. Highway 206, 4 miles upstream from Carnegie Lake, and 1.6 miles southwest of Princeton, Mercer County.

DRAINAGE AREA.--44.5 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1957.

Sediment records: January 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 80°F Aug. 27, and Sept. 4; minimum, freezing point on several days during November to February.

Sediment concentrations: Maximum daily, 347 ppm Apr. 5; minimum daily, 0 ppm several days in October.

Sediment loads: Maximum daily, 1,400 tons Apr. 5; minimum daily, 0 tons several days in October.

EXTREMES, January 1956 to September 1957.--Sediment concentrations: Maximum daily, 427 ppm Mar. 14, 1956; minimum daily, 0 ppm several days.

Sediment loads: Maximum daily, 1,880 tons Mar. 14, 1956; minimum daily, 0 tons several days.

REMARKS.--Station established January 1956 for the Stony Brook watershed project. Records of specific conductance and pH sampled on a periodic basis are available in the subdistrict office at Harrisburg, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1552.

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at varying hours/

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | 62   | 32   | 34   | 32   | 39   | 57   | 72  | 73   | 70   | --   | 71    |
| 2       | 65   | 65   | 32   | 33   | 32   | 35   | 50   | 68  | --   | 70   | 72   | 73    |
| 3       | 70   | 65   | 32   | 35   | 32   | 40   | 48   | 60  | 72   | 72   | 71   | 76    |
| 4       | 70   | 65   | 45   | 35   | 34   | 36   | 40   | 63  | 71   | 70   | 73   | 80    |
| 5       | 60   | 65   | 40   | 33   | 34   | 37   | 39   | --  | 72   | 73   | 70   | 75    |
| 6       | 60   | 66   | 40   | 35   | 34   | 36   | 41   | 69  | 72   | 71   | 70   | 70    |
| 7       | 65   | 66   | 40   | 34   | 34   | 37   | 49   | 63  | 72   | 71   | 70   | 73    |
| 8       | 60   | 55   | 50   | 34   | 34   | 35   | 48   | 67  | 69   | 73   | 70   | 70    |
| 9       | 60   | 50   | 44   | 34   | 33   | 46   | 40   | 70  | 70   | 73   | 76   | 72    |
| 10      | 60   | 40   | 45   | 32   | 40   | 47   | 40   | 72  | 71   | 70   | 75   | 72    |
| 11      | 60   | 45   | 40   | 37   | 36   | 36   | 50   | 65  | 70   | 70   | 72   | 75    |
| 12      | 60   | 50   | 40   | 39   | 38   | 38   | 50   | 62  | 73   | 70   | 76   | 74    |
| 13      | 55   | 50   | 50   | 38   | 37   | 38   | 50   | 73  | 72   | 69   | 72   | 78    |
| 14      | 60   | 50   | 37   | 35   | 36   | 38   | 40   | 70  | 74   | 71   | 74   | 73    |
| 15      | 60   | 54   | 40   | 36   | 38   | 43   | 40   | 75  | 73   | 72   | 74   | 74    |
| 16      | 60   | 56   | 45   | 37   | 38   | 38   | 40   | 63  | 74   | 74   | 73   | 76    |
| 17      | 65   | 50   | 40   | 32   | 37   | 40   | 39   | 70  | 74   | 76   | 65   | 75    |
| 18      | 65   | 40   | 40   | 35   | 36   | 44   | 45   | 70  | 74   | 78   | 60   | 74    |
| 19      | 55   | 45   | 40   | 35   | 40   | 36   | 40   | 60  | 74   | 76   | 65   | 76    |
| 20      | 55   | 45   | 40   | 35   | 37   | 47   | 40   | 60  | 72   | 74   | 68   | 74    |
| 21      | 60   | --   | 40   | 32   | 46   | 40   | 42   | 62  | 73   | 76   | 70   | 74    |
| 22      | 65   | 43   | 40   | 43   | 46   | 40   | 40   | 59  | 75   | 76   | 70   | 76    |
| 23      | 65   | 45   | 40   | 36   | 56   | 40   | 45   | 70  | 74   | 72   | 70   | 74    |
| 24      | 60   | 40   | 40   | 32   | 38   | 40   | 40   | 73  | 74   | 73   | 60   | 73    |
| 25      | 59   | 32   | 40   | 40   | 40   | 40   | 42   | 75  | 72   | 70   | 65   | 70    |
| 26      | 55   | 32   | 36   | 32   | 36   | 40   | 65   | 75  | 74   | 70   | 70   | 66    |
| 27      | 60   | 32   | 39   | 37   | 39   | 48   | 75   | 75  | 74   | 71   | 80   | 65    |
| 28      | 60   | 32   | 40   | 40   | 34   | 50   | 70   | 62  | 74   | 70   | 70   | 62    |
| 29      | 60   | 35   | 35   | 40   | --   | 52   | 70   | 72  | 73   | 72   | 70   | 63    |
| 30      | 65   | --   | 32   | 35   | --   | 46   | 70   | 70  | 70   | 71   | 70   | 62    |
| 31      | 65   | --   | 33   | 36   | --   | 53   | --   | 72  | --   | 72   | 75   | --    |
| Average | 61   | 49   | 40   | 36   | 37   | 41   | 48   | 68  | 73   | 72   | 71   | 72    |

## RARITAN RIVER BASIN--Continued

## STONY BROOK AT PRINCETON, N. J.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                                                 |              | November              |                                                 |              | December              |                                                 |              |
|---------|-----------------------|-------------------------------------------------|--------------|-----------------------|-------------------------------------------------|--------------|-----------------------|-------------------------------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1.4                   | 1                                               | (t)          | 32                    | 24                                              | s 3.8        | 15                    | 3                                               | 0.1          |
| 2.....  | .91                   |                                                 |              | 203                   | --                                              | a 65         | 14                    |                                                 |              |
| 3.....  | .77                   |                                                 |              | 52                    | 32                                              | s 4.9        | 14                    |                                                 |              |
| 4.....  | .91                   |                                                 |              | 27                    | 10                                              | .7           | 12                    |                                                 |              |
| 5.....  | 1.3                   |                                                 |              | 18                    | 4                                               | .2           | 11                    |                                                 |              |
| 6.....  | 1.1                   | 4                                               | (t)          | 14                    | 4                                               | .2           | 11                    | 14                                              | s 2.2        |
| 7.....  | 1.9                   |                                                 |              | 12                    |                                                 |              | 11                    |                                                 |              |
| 8.....  | 1.3                   |                                                 |              | 12                    |                                                 |              | 10                    |                                                 |              |
| 9.....  | 1.1                   | 0                                               | 0            | 11                    | 2                                               | (t)          | 27                    | 31                                              | s 9.1        |
| 10..... | 1.2                   | 1                                               | (t)          | 9.0                   |                                                 |              | 82                    |                                                 |              |
| 11..... | 1.1                   | 2                                               | (t)          | 7.6                   |                                                 |              | 36                    |                                                 |              |
| 12..... | .91                   | 1                                               | (t)          | 6.9                   |                                                 |              | 72                    |                                                 |              |
| 13..... | 1.2                   | 1                                               | (t)          | 6.6                   |                                                 |              | 73                    |                                                 |              |
| 14..... | 1.4                   | 1                                               | (t)          | 5.7                   | 40                                              | s 11         | 461                   | 40                                              | s 46         |
| 15..... | .99                   | 1                                               | (t)          | 5.2                   |                                                 |              | 390                   |                                                 |              |
| 16..... | .91                   | 1                                               | (t)          | 5.2                   |                                                 |              | 350                   |                                                 |              |
| 17..... | .91                   | 1                                               | (t)          | 5.2                   |                                                 |              | 129                   |                                                 |              |
| 18..... | 2.1                   | 3                                               | (t)          | 94                    |                                                 |              | 86                    | 6                                               | 2.1          |
| 19..... | 1.5                   | 1                                               | (t)          | 39                    | 19                                              | 2.0          | 60                    |                                                 |              |
| 20..... | 1.3                   | 1                                               | (t)          | 23                    | 19                                              | 1.2          | 54                    |                                                 |              |
| 21..... | 1.1                   | 0                                               | 0            | 21                    | 21                                              | 1.2          | 97                    | 6                                               | 1.5          |
| 22..... | 1.2                   | 3                                               | (t)          | 140                   | --                                              | a 27         | 102                   |                                                 |              |
| 23..... | 10                    | 12                                              | s .4         | 48                    | 48                                              | 6.2          | 120                   |                                                 |              |
| 24..... | 12                    | 3                                               | .1           | 30                    | 15                                              | 1.2          | 108                   |                                                 |              |
| 25..... | 6.0                   | 0                                               | 0            | 23                    | 6                                               | .4           | 118                   |                                                 |              |
| 26..... | 3.2                   | 0                                               | 0            | 33                    |                                                 |              | 70                    | 2                                               | .3           |
| 27..... | 2.9                   | 1                                               | (t)          | 29                    |                                                 |              | 56                    |                                                 |              |
| 28..... | 2.4                   | 1                                               | (t)          | 23                    |                                                 |              | 52                    |                                                 |              |
| 29..... | 2.1                   | 0                                               | 0            | 20                    |                                                 |              | 46                    |                                                 |              |
| 30..... | 2.0                   | 0                                               | 0            | 18                    | 4                                               | .2           | 30                    | --                                              | 345.1        |
| 31..... | 6.0                   | 3                                               | .1           | --                    | --                                              | --           | 33                    |                                                 |              |
| Total.  | 73.11                 | --                                              | 0.7          | 973.4                 | --                                              | 127.2        | 2,752                 | --                                              |              |
| Day     | January               |                                                 |              | February              |                                                 |              | March                 |                                                 |              |
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-tration (ppm) | Tons per day |
| 1.....  | 24                    | 1                                               | 0.1          | 36                    | 10                                              | 1.0          | 138                   | 11                                              | s 4.6        |
| 2.....  | 20                    |                                                 |              | 38                    | 11                                              | 1.1          | 173                   | 16                                              | s 7.5        |
| 3.....  | 20                    |                                                 |              | 29                    | 9                                               | .7           | 169                   | 4                                               | 1.3          |
| 4.....  | 19                    |                                                 |              | 198                   | 28                                              | s 41         | 111                   |                                                 |              |
| 5.....  | 20                    |                                                 |              | 173                   | 46                                              | s 25         | 80                    |                                                 |              |
| 6.....  | 16                    | 2                                               | .1           | 100                   | 21                                              | s 5.9        | 70                    | 2                                               | .4           |
| 7.....  | 17                    |                                                 |              | 110                   | 22                                              | s 7.2        | 63                    |                                                 |              |
| 8.....  | 16                    |                                                 |              | 98                    | 13                                              | 3.4          | 82                    |                                                 |              |
| 9.....  | 17                    |                                                 |              | 216                   | --                                              | a 36         | 435                   |                                                 |              |
| 10..... | 22                    |                                                 |              | 326                   | --                                              | a 55         | 189                   |                                                 |              |
| 11..... | 19                    | 2                                               | .1           | 132                   | 10                                              | s 3.8        | 103                   | 3                                               | .7           |
| 12..... | 18                    |                                                 |              | 74                    | 2                                               | .3           | 84                    |                                                 |              |
| 13..... | 16                    |                                                 |              | 62                    |                                                 |              | 66                    |                                                 |              |
| 14..... | 12                    |                                                 |              | 57                    |                                                 |              | 55                    |                                                 |              |
| 15..... | 9.0                   |                                                 |              | 57                    |                                                 |              | 51                    |                                                 |              |
| 16..... | 10                    | 4                                               | .1           | 51                    | 3                                               | .3           | 108                   | 4                                               | .7           |
| 17..... | 9.0                   |                                                 |              | 43                    |                                                 |              | 63                    |                                                 |              |
| 18..... | 6.6                   |                                                 |              | 35                    |                                                 |              | 51                    |                                                 |              |
| 19..... | 5.2                   |                                                 |              | 36                    |                                                 |              | 62                    |                                                 |              |
| 20..... | 5.0                   |                                                 |              | 32                    |                                                 |              | 88                    |                                                 |              |
| 21..... | 6.0                   | 120                                             | s 130        | 27                    | 4                                               | .3           | 66                    | 2                                               | .2           |
| 22..... | 14                    |                                                 |              | 26                    | 2                                               | .1           | 52                    |                                                 |              |
| 23..... | 315                   |                                                 |              | 26                    |                                                 |              | 45                    |                                                 |              |
| 24..... | 67                    |                                                 |              | 25                    |                                                 |              | 39                    |                                                 |              |
| 25..... | 43                    |                                                 |              | 26                    |                                                 |              | 34                    |                                                 |              |
| 26..... | 35                    | 8                                               | .8           | 119                   | 30                                              | s 30         | 37                    | 7                                               | 1.2          |
| 27..... | 30                    | 6                                               | .5           | 319                   | 78                                              | s 88         | 54                    |                                                 |              |
| 28..... | 28                    | 2                                               | .2           | 98                    | 7                                               | 1.9          | 66                    |                                                 |              |
| 29..... | 29                    |                                                 |              | --                    | --                                              | --           | 46                    |                                                 |              |
| 30..... | 43                    |                                                 |              | --                    | --                                              | --           | 44                    |                                                 |              |
| 31..... | 36                    |                                                 |              | --                    | --                                              | --           | 37                    |                                                 |              |
| Total.  | 946.8                 | --                                              | 141.2        | 2,569                 | --                                              | 303.4        | 2,761                 | --                                              | 148.8        |

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.



## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## RARITAN RIVER BASIN--Continued

## STONY BROOK AT PRINCETON, N. J.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 30                   | 2                        | 0.2          | 30                   |                          |              | 2.4                  | 2                        | (t)          |
| 2.....  | 334                  | 212                      | s 279        | 26                   |                          |              | 3.9                  | 13                       | s 0.2        |
| 3.....  | 136                  | 61                       | s 27         | 21                   |                          |              | 4.0                  |                          |              |
| 4.....  | 123                  | 17                       | s 8.2        | 19                   |                          |              | 3.2                  | 4                        | (t)          |
| 5.....  | 1,150                | 347                      | s 1,400      | 18                   | 3                        | 0.2          | 2.9                  |                          |              |
| 6.....  | 787                  | 228                      | s 574        | 16                   |                          |              | 2.7                  |                          |              |
| 7.....  | 191                  | 18                       | s 10         | 14                   |                          |              | 2.5                  |                          |              |
| 8.....  | 153                  | 13                       | s 6.7        | 12                   |                          |              | 2.4                  |                          |              |
| 9.....  | 270                  | 20                       | s 17         | 11                   |                          |              | 2.5                  |                          |              |
| 10..... | 115                  | 4                        | 1.2          | 9.8                  |                          |              | 2.1                  | 4                        | (t)          |
| 11..... | 86                   |                          |              | 9.4                  | 4                        | .1           | 1.7                  |                          |              |
| 12..... | 71                   | 4                        | .8           | 9.8                  |                          |              | 1.4                  |                          |              |
| 13..... | 60                   |                          |              | 9.4                  |                          |              | 1.3                  |                          |              |
| 14..... | 51                   | 1                        | .1           | 8.3                  |                          |              | 7.1                  | 14                       | s .8         |
| 15..... | 44                   |                          |              | 8.6                  |                          |              | 7.4                  | 20                       | .4           |
| 16..... | 38                   | 2                        | .2           | 7.2                  | 4                        | .1           | 4.1                  |                          |              |
| 17..... | 35                   |                          |              | 6.0                  |                          |              | 3.2                  |                          |              |
| 18..... | 59                   | 10                       | s 2.1        | 5.0                  |                          |              | 1.8                  |                          |              |
| 19..... | 327                  | 60                       | s 60         | 4.7                  |                          |              | 1.3                  |                          |              |
| 20..... | 106                  | 11                       | 3.1          | 6.0                  |                          |              | .99                  | 6                        | (t)          |
| 21..... | 78                   | 4                        | .8           | 9.0                  |                          |              | .91                  |                          |              |
| 22..... | 59                   |                          |              | 7.6                  | 3                        | .1           | .91                  |                          |              |
| 23..... | 56                   |                          |              | 6.3                  |                          |              | 1.7                  |                          |              |
| 24..... | 55                   |                          |              | 5.5                  |                          |              | 2.0                  |                          |              |
| 25..... | 44                   | 4                        | .5           | 4.2                  |                          |              | 8.2                  |                          |              |
| 26..... | 40                   |                          |              | 4.0                  |                          |              | 2.4                  | 5                        | (t)          |
| 27..... | 36                   |                          |              | 7.6                  |                          |              | 1.3                  |                          |              |
| 28..... | 38                   | 12                       | s 1.4        | 5.7                  | 4                        | (t)          | 1.2                  |                          |              |
| 29..... | 55                   | 10                       | 1.5          | 3.8                  |                          |              | 1.5                  |                          |              |
| 30..... | 39                   | 4                        | .4           | 2.9                  |                          |              | 1.2                  |                          |              |
| 31..... | --                   | --                       | --           | 2.5                  |                          |              | --                   | --                       | --           |
| Total.  | 4,666                | --                       | 2,398.7      | 310.3                | --                       | 3.5          | 80.21                | --                       | 2.1          |
|         | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 0.84                 | 1                        | (t)          | 1.5                  | 15                       | 0.1          | 0.64                 | 1                        | (t)          |
| 2.....  | .77                  |                          |              | .64                  |                          |              | .52                  |                          |              |
| 3.....  | .70                  |                          |              | .42                  | 4                        | (t)          | .38                  |                          |              |
| 4.....  | .70                  |                          |              | .44                  |                          |              | .34                  |                          |              |
| 5.....  | .77                  |                          |              | .90                  | 6                        | (t)          | .30                  |                          |              |
| 6.....  | .70                  | 5                        | (t)          | .52                  |                          |              | .24                  | 2                        | (t)          |
| 7.....  | .58                  |                          |              | .34                  |                          |              | .21                  |                          |              |
| 8.....  | .58                  |                          |              | .24                  |                          |              | .21                  |                          |              |
| 9.....  | 1.5                  |                          |              | .18                  | 5                        | (t)          | .34                  |                          |              |
| 10..... | 1.1                  |                          |              | .15                  |                          |              | 2.1                  | 7                        | (t)          |
| 11..... | .64                  |                          |              | .13                  |                          |              | 21                   | 27                       | s 1.8        |
| 12..... | .52                  |                          |              | .11                  |                          |              | 5.3                  |                          |              |
| 13..... | .58                  |                          |              | .09                  |                          |              | 2.9                  |                          |              |
| 14..... | .64                  |                          |              | .09                  |                          |              | 2.2                  |                          |              |
| 15..... | .64                  |                          |              | .15                  | 3                        | (t)          | 1.7                  | 2                        | (t)          |
| 16..... | .52                  | 2                        | (t)          | .38                  |                          |              | 1.3                  |                          |              |
| 17..... | .38                  |                          |              | .34                  |                          |              | 3.4                  |                          |              |
| 18..... | .34                  |                          |              | .30                  | 12                       | (t)          | 1.3                  |                          |              |
| 19..... | .27                  |                          |              | .21                  |                          |              | .84                  | 2                        | (t)          |
| 20..... | .18                  |                          |              | .18                  |                          |              | .84                  |                          |              |
| 21..... | .13                  |                          |              | .15                  |                          |              | .77                  |                          |              |
| 22..... | .11                  |                          |              | .13                  | 7                        | (t)          | .70                  |                          |              |
| 23..... | .11                  |                          |              | .15                  |                          |              | 3.6                  | 15                       | s .2         |
| 24..... | .18                  |                          |              | .13                  |                          |              | 1.3                  | 5                        | (t)          |
| 25..... | .21                  | 6                        | (t)          | .17                  |                          |              | .77                  |                          |              |
| 26..... | .21                  |                          |              | 3.4                  | 18                       | s .2         | .70                  |                          |              |
| 27..... | .15                  |                          |              | 2.9                  |                          |              | .64                  | 2                        | (t)          |
| 28..... | .43                  |                          |              | 2.2                  |                          |              | .52                  |                          |              |
| 29..... | .70                  | 9                        | (t)          | 1.3                  | 5                        | (t)          | .52                  |                          |              |
| 30..... | .34                  | 2                        | (t)          | .99                  |                          |              | .47                  |                          |              |
| 31..... | 1.7                  | 9                        | 0.1          | .77                  |                          |              | --                   | --                       | --           |
| Total.  | 17.22                | --                       | 0.2          | 19.60                | --                       | 0.5          | 56.05                | --                       | 2.2          |

Total discharge for year (cfs-days)..... 15,224.69

Total load for year (tons)..... 3,473.6

s Computed by subdividing day.

t Less than 0.05 ton.

RARITAN RIVER BASIN--Continued  
STONY BROOK AT PRINCETON, N. J.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection      | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment                     |                                            |                                                   |       |       |       |       |       |       |       |       | Methods of analysis |       |
|-------------------------|-------------|-----------------|-------------------------|----------------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                         |             |                 |                         | Concentration of sample analyzed (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |                     |       |
|                         |             |                 |                         |                                        |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 |                     | 0.500 |
| Jan. 23, 1957 . . . . . | 9:00 a. m.  | 703             |                         | 269                                    | 401                                        |                                                   | 50    | 70    | 86    | 96    | 99    |       |       |       |                     | BWCM  |
| Apr. 5 . . . . .        | 6:00 a. m.  | 1,050           |                         | 168                                    | 274                                        |                                                   | 23    | 44    | 58    | 83    | 97    |       |       |       |                     | BWCM  |
| Apr. 5 . . . . .        | 12:05 p. m. | 2,220           |                         | 833                                    | 1,870                                      |                                                   | 27    | 40    | 58    | 85    | 100   |       |       |       |                     | BWCM  |
| Apr. 5 . . . . .        | 4:00 p. m.  | 1,240           |                         | 305                                    | 560                                        |                                                   | 32    | 48    | 62    | 86    | 94    |       |       |       |                     | BWCM  |

RARITAN RIVER BASIN--Continued  
DELAWARE AND RARITAN CANAL AT TRENTON, N. J.

LOCATION.--At Rose Street and Holland Avenue in Trenton, Mercer County.

DRAINAGE AREA.--120 square miles

RECORDS AVAILABLE.--Chemical analyses: February 1956 to September 1957.

REMARKS.--Records of specific conductance and temperatures of daily samples for period October 1956 to July 1957 available in district office at Philadelphia, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-20, 1956    |                      | 4.7                        | 0.02      | 16           | 4.9            | 5.6         | 2.1           | 48                              | 25                         | 8.4           | 0.2          | 4.8                        | 107                                                | 60                            | 20            | 181                                       | 7.0 | 4     |
| Oct. 21-31         |                      | --                         | --        | --           | --             | 7.4         |               | 45                              | 24                         | 7.0           | .1           | 3.2                        | --                                                 | 59                            | 22            | 183                                       | 7.6 | 5     |
| Nov. 12-20         |                      | --                         | --        | --           | --             | 4.8         |               | 38                              | 25                         | 6.1           | .1           | 4.1                        | --                                                 | 53                            | 24            | 148                                       | 7.8 | 6     |
| Nov. 21-30         |                      | --                         | --        | --           | --             | 7.9         |               | 37                              | 29                         | 6.3           | .1           | 4.3                        | --                                                 | 56                            | 26            | 137                                       | 6.8 | 7     |
| Dec. 21-31         |                      | 8.2                        | .02       | 14           | 4.5            | 4.2         | 1.6           | 31                              | 26                         | 5.3           | .1           | 6.1                        | 94                                                 | 54                            | 28            | 137                                       | 6.6 | 3     |
| Jan. 21-31, 1957   |                      | --                         | --        | --           | --             | 4.8         |               | 29                              | 24                         | 6.1           | .1           | 4.5                        | --                                                 | 51                            | 27            | 143                                       | 6.8 | 5     |
| Feb. 1-8           |                      | --                         | --        | --           | --             | 4.8         |               | 24                              | 24                         | 5.6           | .1           | 5.3                        | --                                                 | 47                            | 26            | 137                                       | 7.6 | 5     |
| Feb. 9-28          |                      | --                         | --        | --           | --             | 6.9         |               | 34                              | 25                         | 5.9           | .1           | 4.8                        | --                                                 | 52                            | 24            | 137                                       | 7.1 | 5     |
| Mar. 1-19          |                      | --                         | --        | --           | --             | 8.0         |               | 28                              | 29                         | 5.8           | .1           | 5.2                        | --                                                 | 48                            | 25            | 136                                       | 7.4 | 5     |
| Mar. 20-Apr. 11    |                      | --                         | --        | --           | --             | 5.1         |               | 29                              | 23                         | 5.1           | .1           | 4.2                        | --                                                 | 48                            | 24            | 137                                       | 7.1 | 5     |
| Apr. 12-20         |                      | --                         | --        | --           | --             | 4.1         |               | 26                              | 20                         | 3.9           | .1           | 4.1                        | --                                                 | 43                            | 22            | 119                                       | 7.5 | 5     |
| Apr. 21-May 12     |                      | --                         | --        | --           | --             | 7.1         |               | 38                              | 22                         | 5.6           | .1           | 3.6                        | --                                                 | 50                            | 19            | 146                                       | 7.0 | 5     |
| May 13-25          |                      | --                         | --        | --           | --             | 8.7         |               | 45                              | 23                         | 6.2           | .1           | 8.4                        | --                                                 | 58                            | 21            | 150                                       | 7.3 | 2     |
| May 26-28          |                      | 5.6                        | .05       | 14           | 2.1            | 2.7         | 1.2           | 30                              | 18                         | 3.5           | .1           | 2.5                        | 70                                                 | 44                            | 19            | 107                                       | 6.0 | 12    |
| May 29-June 13     |                      | --                         | --        | --           | --             | 7.1         |               | 44                              | 21                         | 4.4           | .1           | 5.9                        | --                                                 | 54                            | 18            | 147                                       | 7.2 | 2     |
| June 14-30         |                      | --                         | --        | --           | --             | 11          |               | 49                              | 25                         | 8.2           | --           | .1                         | --                                                 | 60                            | 20            | 174                                       | 7.3 | 5     |
| July 1, 3, 5, 10   |                      | 5.4                        | .05       | 18           | 6.2            | 4.6         | 2.2           | 48                              | 28                         | 5.1           | .1           | 4.1                        | 104                                                | 71                            | 31            | 174                                       | 7.5 | 5     |
| Aug. 27            |                      | 2.8                        | .05       | 19           | 5.5            | 6.5         | 2.4           | 54                              | 28                         | 9.8           | .1           | 4.8                        | 120                                                | 70                            | 26            | 196                                       | 6.7 | 5     |
| Sept. 26           |                      | 3.9                        | .04       | 21           | 4.5            | 6.0         | 2.4           | 56                              | 25                         | 10            | .0           | 1.6                        | 112                                                | 71                            | 25            | 190                                       | 7.5 | 5     |

## DELAWARE RIVER AT PORT JERVIS, N. Y.

LOCATION.--At gaging station at bridge on U.S. Highways 6 and 209 at Port Jervis, Orange County, 1½ miles upstream from Neversink River and 6.5 miles downstream from Mongaup River.

DRAINAGE AREA.--3,076 square miles.

RECORDS AVAILABLE.--Water temperatures: February to September 1957.

Sediment records: February to September 1957.

EXTREMES, February to September 1957.--Water temperatures: Maximum, 82°F July 21, 22.

Sediment concentrations: Maximum daily, 213 ppm Apr. 6; minimum daily, 0.3 ppm Aug. 29.

Sediment loads: Maximum daily, 19,800 tons Apr. 7; minimum daily, 0.8 ton Aug. 29.

REMARKS.--Records of specific conductance of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature (°F) of water, February to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      |      |      |      | --   | 35   | 48   | 65  | 70   | 66   | 77   | 74    |
| 2       |      |      |      |      | --   | 36   | 45   | 50  | 68   | 73   | 78   | 73    |
| 3       |      |      |      |      | --   | 35   | --   | --  | 68   | 75   | 80   | 73    |
| 4       |      |      |      |      | --   | --   | --   | 53  | 68   | 78   | 76   | 73    |
| 5       |      |      |      |      | --   | 38   | 40   | 57  | 70   | 76   | 73   | 70    |
| 6       |      |      |      |      | --   | 38   | 40   | 60  | 70   | 78   | 73   | 72    |
| 7       |      |      |      |      | --   | 37   | 40   | 63  | 68   | 79   | 76   | 70    |
| 8       |      |      |      |      | --   | --   | 40   | 65  | 68   | 80   | 73   | 70    |
| 9       |      |      |      |      | --   | 36   | 39   | 68  | --   | 78   | 76   | 68    |
| 10      |      |      |      |      | --   | --   | 41   | 70  | 70   | 70   | 74   | 66    |
| 11      |      |      |      |      | --   | 37   | 45   | 62  | 73   | 75   | 79   | 70    |
| 12      |      |      |      |      | --   | 46   | --   | 63  | 72   | 70   | 74   | 69    |
| 13      |      |      |      |      | --   | 45   | 35   | 70  | 77   | --   | 73   | 72    |
| 14      |      |      |      |      | 33   | 50   | 41   | 65  | 74   | 74   | 72   | 71    |
| 15      |      |      |      |      | 37   | 41   | 39   | 71  | 74   | 76   | 71   | 71    |
| 16      |      |      |      |      | 34   | 46   | 47   | 66  | 77   | 72   | 73   | 72    |
| 17      |      |      |      |      | --   | 43   | 48   | 65  | 80   | 76   | 74   | 70    |
| 18      |      |      |      |      | --   | 43   | 50   | 63  | 77   | 78   | 73   | 70    |
| 19      |      |      |      |      | 36   | 39   | 53   | --  | --   | 72   | 70   | 70    |
| 20      |      |      |      |      | --   | --   | 59   | 54  | 76   | 80   | 72   | 69    |
| 21      |      |      |      |      | 35   | 38   | 60   | 54  | 76   | 82   | 72   | 70    |
| 22      |      |      |      |      | 36   | 43   | 62   | 55  | 75   | 82   | 70   | 70    |
| 23      |      |      |      |      | 37   | 45   | 69   | 55  | 77   | 77   | 73   | 69    |
| 24      |      |      |      |      | 37   | 45   | 61   | 63  | 79   | 77   | 69   | 66    |
| 25      |      |      |      |      | 40   | 40   | 58   | 68  | 80   | 76   | 69   | 66    |
| 26      |      |      |      |      | 39   | 43   | 65   | 70  | 77   | 77   | 71   | 61    |
| 27      |      |      |      |      | 36   | 43   | 65   | 68  | --   | 77   | 72   | 58    |
| 28      |      |      |      |      | 35   | 45   | 68   | 64  | 77   | 76   | 69   | 59    |
| 29      |      |      |      |      | --   | --   | 68   | 65  | 72   | 75   | 65   | 59    |
| 30      |      |      |      |      | --   | --   | 63   | 68  | 68   | 80   | 69   | 58    |
| 31      |      |      |      |      | --   | 47   | --   | 64  | --   | 80   | 70   | --    |
| Average |      |      |      |      | --   | 41   | 51   | 63  | 73   | 76   | 73   | 68    |

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT PORT JERVIS, N. Y.--Continued

Suspended sediment, February to September 1957

| Day     | February             |                          |              | March                |                          |              | April                |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | --                   | --                       | --           | 10,200               | 31                       | s 876        | 3,800                | 1                        | 10           |
| 2.....  | --                   | --                       | --           | 8,080                | 21                       | 458          | 4,640                | 2                        | 25           |
| 3.....  | --                   | --                       | --           | 6,750                | 19                       | 346          | 6,900                | 6                        | 112          |
| 4.....  | --                   | --                       | --           | 5,850                | 12                       | 190          | 6,820                | 6                        | 110          |
| 5.....  | --                   | --                       | --           | 4,930                |                          |              | 7,160                | 5                        | 97           |
| 6.....  | --                   | --                       | --           | 4,370                |                          |              | 22,300               | 213                      | s 18,200     |
| 7.....  | --                   | --                       | --           | 4,400                |                          |              | 34,300               | 198                      | s 19,800     |
| 8.....  | --                   | --                       | --           | 4,810                | 2                        | 25           | 24,300               | 56                       | 3,670        |
| 9.....  | --                   | --                       | --           | 4,700                |                          |              | 23,800               | 43                       | 2,760        |
| 10..... | --                   | --                       | --           | 4,670                |                          |              | 17,700               | 21                       | 1,000        |
| 11..... | --                   | --                       | --           | 4,260                |                          |              | 13,800               | 13                       | 484          |
| 12..... | --                   | --                       | --           | 4,300                |                          |              | 12,400               | 6                        | 201          |
| 13..... | --                   | --                       | --           | 4,860                | 4                        | 59           | 12,000               | 8                        | 259          |
| 14..... | 3,020                | 2                        | 16           | 5,940                |                          |              | 10,500               | 4                        | 113          |
| 15..... | 3,060                | 1                        | 8            | 6,810                |                          |              | 9,180                |                          |              |
| 16..... | 2,780                | 1                        | 8            | 9,860                | 31                       | s 914        | 8,060                |                          |              |
| 17..... | 2,240                | 1                        | 6            | 10,800               | 33                       | 962          | 7,200                | 5                        | 100          |
| 18..... | 2,620                | --                       | a 7          | 9,130                | 17                       | 419          | 6,910                |                          |              |
| 19..... | 2,960                |                          |              | 8,110                |                          |              | 6,710                |                          |              |
| 20..... | 3,150                |                          |              | 7,570                | 4                        | 77           | 6,540                |                          |              |
| 21..... | 2,620                | 1                        | 7            | 6,820                |                          |              | 5,770                | 8                        | 124          |
| 22..... | 2,000                |                          |              | 6,140                |                          |              | 5,720                |                          |              |
| 23..... | 1,890                |                          |              | 5,120                |                          |              | 5,790                |                          |              |
| 24..... | 2,060                |                          |              | 4,770                |                          |              | 5,500                |                          |              |
| 25..... | 2,480                |                          |              | 4,820                |                          |              | 5,570                |                          |              |
| 26..... | 3,610                | 13                       | 127          | 4,730                | 2                        | 24           | 5,370                | 5                        | 67           |
| 27..... | 12,400               | 127                      | s 5,320      | 4,740                |                          |              | 5,120                |                          |              |
| 28..... | 15,400               | 112                      | s 5,040      | 4,380                |                          |              | 4,260                |                          |              |
| 29..... | --                   | --                       | --           | 4,210                |                          |              | 4,840                |                          |              |
| 30..... | --                   | --                       | --           | 3,890                |                          |              | 4,320                |                          |              |
| 31..... | --                   | --                       | --           | 3,620                |                          |              | --                   | --                       | --           |
| Total.  | 62,290               | --                       | 10,581       | 183,640              | --                       | 5,100        | 297,280              | --                       | 48,282       |
| Day     | May                  |                          |              | June                 |                          |              | July                 |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 3,900                |                          |              | 2,240                |                          |              | 1,210                | 2                        | 6.7          |
| 2.....  | 3,580                |                          |              | 2,000                |                          |              | 1,280                |                          |              |
| 3.....  | 3,390                | 2                        | 17           | 2,290                | 3                        | 18           | 1,230                | 2                        | 7.1          |
| 4.....  | 2,830                |                          |              | 2,570                |                          |              | 1,400                |                          |              |
| 5.....  | 2,500                |                          |              | 2,350                |                          |              | 1,480                | 6                        | 25           |
| 6.....  | 2,680                |                          |              | 2,190                |                          |              | 1,610                |                          |              |
| 7.....  | 2,650                |                          |              | 2,250                |                          |              | 1,510                | 2                        | 8.4          |
| 8.....  | 2,550                |                          |              | 1,880                | 2                        | 10           | 1,580                |                          |              |
| 9.....  | 2,490                |                          | 13           | 1,540                |                          |              | 2,330                | 2                        | 12           |
| 10..... | 2,320                |                          |              | 1,470                | --                       | a 8          | 1,940                |                          |              |
| 11..... | 2,140                |                          |              | 1,870                |                          |              | 1,330                | 2                        | 7.6          |
| 12..... | 1,760                |                          |              | 2,030                |                          |              | 1,480                |                          |              |
| 13..... | 2,560                |                          |              | 1,880                |                          |              | 1,700                |                          |              |
| 14..... | 3,100                |                          |              | 2,220                |                          |              | 1,910                | 2                        | 10           |
| 15..... | 3,210                | 2                        | 15           | 2,190                | 1                        | 5            | 1,960                |                          |              |
| 16..... | 3,370                |                          |              | 1,660                |                          |              | 1,700                | 2                        | 7.9          |
| 17..... | 3,140                |                          |              | 1,640                |                          |              | 1,220                |                          |              |
| 18..... | 2,390                |                          |              | 2,300                |                          |              | 1,880                | 2                        | 10           |
| 19..... | 2,260                | --                       | a 6          | 2,390                |                          |              | 1,930                |                          |              |
| 20..... | 4,060                | 14                       | 153          | 1,670                |                          |              | 1,750                | 2                        | 7.8          |
| 21..... | 12,600               | 28                       | s 952        | 1,560                |                          |              | 1,140                |                          |              |
| 22..... | 11,400               | 20                       | 616          | 1,390                |                          |              | 1,360                | 2                        | 8.4          |
| 23..... | 8,600                | 16                       | 372          | 1,320                |                          |              | 1,750                |                          |              |
| 24..... | 7,260                | 7                        | 137          | 1,710                |                          |              | 1,500                | 2                        | 7.3          |
| 25..... | 5,400                |                          |              | 2,650                | 2                        | 10           | 1,200                |                          |              |
| 26..... | 4,390                |                          |              | 2,410                |                          |              | 1,190                | 2                        | 6.5          |
| 27..... | 4,230                |                          |              | 2,610                |                          |              | 1,220                |                          |              |
| 28..... | 3,960                | 2                        | 21           | 2,200                |                          |              | 1,100                | 2                        | 6.1          |
| 29..... | 3,410                |                          |              | 1,760                |                          |              | 1,170                |                          |              |
| 30..... | 2,850                |                          |              | 896                  |                          |              | 1,330                | 2                        | 7.4          |
| 31..... | 2,520                |                          |              | --                   | --                       | --           | 1,400                |                          |              |
| Total.  | 123,490              | --                       | 2,651        | 59,136               | --                       | 296          | 46,790               | --                       | 286.4        |

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT PORT JERVIS, N. Y. --Continued

Suspended sediment, February to September 1957--Continued

| Day     | August                          |                                     |                    | September                       |                                     |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment              |                                     |                    |
|---------|---------------------------------|-------------------------------------|--------------------|---------------------------------|-------------------------------------|--------------------|---------------------------------|---------------------------------|-------------------------------------|--------------------|
|         | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    |                                 | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    |
|         |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |
| 1.....  | 1,270                           | .6                                  | 3.3                | 946                             | 1                                   | 2.6                |                                 |                                 |                                     |                    |
| 2.....  | 1,190                           |                                     |                    | 966                             | 1                                   | 2.6                |                                 |                                 |                                     |                    |
| 3.....  | 1,240                           |                                     | 2.0                | 1,480                           | 2                                   | 8.0                |                                 |                                 |                                     |                    |
| 4.....  | 1,170                           |                                     | 6.3                | 2,020                           | 2                                   | 11                 |                                 |                                 |                                     |                    |
| 5.....  | 1,140                           |                                     | 9.2                | 1,690                           | 1                                   | 4.6                |                                 |                                 |                                     |                    |
| 6.....  | 1,130                           | 2                                   | 6.1                | 1,490                           | 1                                   | 4.0                |                                 |                                 |                                     |                    |
| 7.....  | 1,100                           | 15                                  | 45                 | 1,330                           | 1                                   | 3.6                |                                 |                                 |                                     |                    |
| 8.....  | 1,130                           | 2                                   | 6.1                | 981                             | .4                                  | 1.1                |                                 |                                 |                                     |                    |
| 9.....  | 1,110                           | 2                                   | 6.0                | 1,010                           | 1                                   | 2.7                |                                 |                                 |                                     |                    |
| 10..... | 1,050                           | 2                                   | 5.7                | 1,650                           | 1                                   | 4.5                |                                 |                                 |                                     |                    |
| 11..... | 1,020                           | 1                                   | 2.8                | 1,560                           | 1                                   | 4.2                |                                 |                                 |                                     |                    |
| 12..... | 1,150                           | 2                                   | 6.2                | 1,460                           | 2                                   | 7.9                |                                 |                                 |                                     |                    |
| 13..... | 1,170                           | 2                                   | 6.3                | 1,730                           | 1                                   | 4.7                |                                 |                                 |                                     |                    |
| 14..... | 1,020                           | 1                                   | 2.8                | 1,660                           | 2                                   | 9.0                |                                 |                                 |                                     |                    |
| 15..... | 1,170                           | 2                                   | 6.3                | 906                             | 2                                   | 4.9                |                                 |                                 |                                     |                    |
| 16..... | 1,070                           | 2                                   | 5.8                | 1,370                           | }                                   | 3.7                |                                 |                                 |                                     |                    |
| 17..... | 969                             | 2                                   | 5.2                | 2,020                           |                                     |                    |                                 |                                 |                                     |                    |
| 18..... | 930                             | 2                                   | 5.0                | 1,480                           |                                     |                    |                                 |                                 |                                     |                    |
| 19..... | 1,040                           | 2                                   | 5.6                | 1,440                           |                                     |                    |                                 |                                 |                                     |                    |
| 20..... | 982                             | 1                                   | 2.7                | 1,640                           |                                     |                    |                                 |                                 |                                     |                    |
| 21..... | 1,070                           | 3                                   | 8.7                | 1,600                           | }                                   | 3.6                |                                 |                                 |                                     |                    |
| 22..... | 1,020                           | 2                                   | 5.5                | 894                             |                                     |                    |                                 |                                 |                                     |                    |
| 23..... | 1,010                           | 1                                   | 2.7                | 1,150                           |                                     |                    |                                 |                                 |                                     |                    |
| 24..... | 956                             | 2                                   | 5.2                | 1,950                           |                                     |                    |                                 |                                 |                                     |                    |
| 25..... | 956                             | 2                                   | 5.2                | 1,730                           |                                     |                    |                                 |                                 |                                     |                    |
| 26..... | 1,210                           | 2                                   | 6.5                | 999                             | }                                   | 2.6                |                                 |                                 |                                     |                    |
| 27..... | 1,220                           | 1                                   | 3.3                | 963                             |                                     |                    |                                 |                                 |                                     |                    |
| 28..... | 969                             | 2                                   | 5.2                | 1,100                           |                                     |                    |                                 |                                 |                                     |                    |
| 29..... | 977                             | .3                                  | .8                 | 828                             |                                     |                    |                                 |                                 |                                     |                    |
| 30..... | 1,220                           | 1                                   | 3.3                | 894                             |                                     |                    |                                 |                                 |                                     |                    |
| 31..... | 1,010                           | 1                                   | 2.7                | --                              | --                                  | --                 |                                 |                                 |                                     |                    |
| Total.  | 33,669                          | --                                  | 190.8              | 40,937                          | --                                  | 129.5              |                                 |                                 |                                     |                    |

Total discharge for period February 14 to September 30 (cfs-days) ..... 847,232  
 Total load for period February 14 to September 30 (tons) ..... 67,516.7

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT MONTAGUE, N. J.

LOCATION --At center of toll bridge at Montague, N. J. Sussex County, 0.4 mile downstream from gaging station and approximately 1.2 miles downstream from Saw Kill.

DRAINAGE AREA--3,480 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1956 to September 1957.

WATER TEMPERATURES--October 1956 to September 1957.

EXTREMES, 1956-57.--Specific conductance: Maximum daily, 163 micromhos June 18; minimum daily, 46 micromhos Apr. 7.

WATER TEMPERATURES--Maximum 81°F July 22; minimum, freezing point Feb. 1.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956 .....             | 2,400                | 1.9                        | 0.02      | 6.5          | 2.2            | 2.6         |               | 20                              | 10                         | 2.6           | 0.1          | 0.4                        | 36                                                 | 25                            | 9             | 64                                        | 7.0 | 5     |
| Nov. 1-10 .....                   | 3,630                | 14                         | .01       | 6.6          | 1.8            | 1.4         | 1.1           | 18                              | 10                         | 2.5           | .1           | .5                         | 45                                                 | 24                            | 9             | 60                                        | 6.9 | 4     |
| Dec. 1-10 .....                   | 2,720                | 4.1                        | .02       | 7.2          | 1.4            | 2.5         | .9            | 13                              | 15                         | 2.4           | .2           | 1.6                        | 56                                                 | 24                            | 15            | 70                                        | 6.6 | 6     |
| Jan. 1-10, 1957 .....             | 4,560                | 6.4                        | .01       | 7.2          | 1.2            | 2.5         | .9            | 15                              | 11                         | 2.4           | .3           | 2.3                        | 58                                                 | 23                            | 10            | 65                                        | 6.7 | 6     |
| Jan. 11-23, 25-31 .....           | 4,390                |                            | --        | --           | --             | --          | --            | 16                              | 12                         | 2.5           | --           | 4.2                        | --                                                 | --                            | --            | 64                                        | 7.2 | 2     |
| Feb. 1-14, 16-20 .....            | 3,480                | 8.8                        | .03       | 7.5          | .9             | 2.8         | 1.0           | 14                              | 13                         | 2.4           | .0           | 1.8                        | 53                                                 | 22                            | 11            | 66                                        | 6.3 | 3     |
| Mar. 1-31 .....                   | 6,620                | --                         | --        | --           | --             | --          | --            | 12                              | 11                         | 2.6           | --           | 2.4                        | --                                                 | --                            | --            | 56                                        | 6.5 | 2     |
| Apr. 1-12, 14, 16-18, 29-30 ..... | 13,700               | --                         | --        | --           | --             | --          | --            | 12                              | 11                         | 2.4           | --           | 2.7                        | --                                                 | --                            | --            | 58                                        | 6.2 | 2     |
| Apr. 13-15 .....                  | 11,800               | --                         | --        | --           | --             | --          | --            | 1                               | 33                         | 2.8           | --           | .2                         | --                                                 | --                            | --            | 101                                       | 4.6 | 3     |
| May 1-31 .....                    | 4,160                | --                         | --        | --           | --             | --          | --            | 17                              | 9.8                        | 2.5           | --           | 1.8                        | --                                                 | --                            | --            | 56                                        | 6.9 | 3     |
| June 1-11 .....                   | 2,130                | 2.6                        | .04       | 7.9          | 1.0            | 2.5         | .7            | 15                              | 12                         | 1.9           | .0           | .9                         | 42                                                 | 24                            | 11            | 66                                        | 6.5 | 2     |
| June 12, 14, 16, 19, 30 .....     | 2,000                | --                         | --        | --           | --             | --          | --            | 18                              | 14                         | 3.0           | --           | 2.1                        | --                                                 | --                            | --            | 64                                        | 6.4 | 3     |
| July 1-10 .....                   | 1,750                | --                         | --        | --           | --             | --          | --            | 18                              | 13                         | 3.4           | --           | 2.1                        | --                                                 | --                            | --            | 65                                        | 6.7 | 2     |
| July 11-31 .....                  | 1,730                | --                         | --        | --           | --             | --          | --            | 15                              | 10                         | 2.7           | --           | 2.0                        | --                                                 | --                            | --            | 58                                        | 6.4 | 2     |
| Aug. 1-30 .....                   | 1,340                | 2.9                        | .02       | 7.5          | .8             | 1.5         | .8            | 16                              | 9.2                        | 2.8           | .0           | .9                         | 42                                                 | 22                            | 9             | 61                                        | 7.1 | 8     |
| Aug. 31-Sept. 3, 5-9, 13-29 ..... | 1,480                | --                         | --        | --           | --             | --          | --            | 17                              | 11                         | 2.4           | --           | 1.3                        | --                                                 | --                            | --            | 59                                        | 6.5 | 3     |
| Weighted-Average .....            | 3,990                | --                         | --        | --           | --             | --          | --            | 15                              | 11                         | 2.6           | --           | 1.9                        | --                                                 | --                            | --            | 61                                        | --  | 3     |

## DELAWARE RIVER BASIN

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## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT MONTAGUE, N. J.--Continued

Temperature(°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 58   | 57   | 37   | 34   | 32   | 34   | 45   | 64  | 68   | 71   | 77   | 70    |
| 2       | 59   | 59   | 37   | 33   | 33   | 37   | 48   | 60  | 68   | 71   | 76   | 69    |
| 3       | 59   | 52   | --   | 34   | 33   | 35   | 46   | 54  | 69   | 71   | 77   | 72    |
| 4       | 58   | 58   | --   | 35   | 33   | 34   | 41   | 54  | 67   | 75   | 77   | --    |
| 5       | 58   | 57   | --   | 34   | --   | 35   | 38   | 54  | 68   | 77   | 74   | 68    |
| 6       | 57   | 55   | 39   | 34   | --   | 37   | 39   | 57  | 67   | 75   | 71   | 68    |
| 7       | 57   | 53   | 41   | 33   | 34   | 35   | 40   | 58  | 69   | 76   | 70   | 68    |
| 8       | 56   | 53   | 42   | 34   | 34   | 38   | 41   | 60  | 66   | 76   | 70   | 69    |
| 9       | 56   | 48   | 40   | 34   | 35   | 36   | 45   | 64  | 66   | 77   | 71   | 68    |
| 10      | 54   | 44   | 37   | 34   | 34   | 36   | 47   | --  | 67   | 72   | 73   | --    |
| 11      | 52   | 42   | 38   | 34   | 35   | 37   | 46   | 63  | 70   | 71   | 73   | --    |
| 12      | 50   | 43   | 39   | 35   | 35   | 37   | 48   | 62  | 72   | 72   | 73   | --    |
| 13      | 51   | 43   | 40   | 34   | 34   | 42   | 47   | 66  | --   | 73   | 71   | 70    |
| 14      | 51   | 43   | 38   | 35   | 35   | 44   | 48   | 66  | --   | 73   | 70   | 71    |
| 15      | 56   | 45   | 38   | 34   | --   | 43   | 48   | 66  | 77   | 74   | 73   | 70    |
| 16      | 56   | 47   | 39   | 34   | 35   | 45   | 50   | 65  | 77   | 73   | 73   | 72    |
| 17      | 58   | 47   | 39   | 33   | 34   | 43   | 50   | 63  | --   | 72   | 71   | --    |
| 18      | 57   | 45   | --   | 34   | 35   | 42   | 51   | 63  | --   | 76   | 69   | 68    |
| 19      | 55   | 42   | 37   | 33   | 37   | 41   | 49   | 59  | 78   | 76   | 70   | 67    |
| 20      | 53   | 41   | 36   | 34   | 35   | 40   | 53   | 56  | 72   | 77   | 69   | 68    |
| 21      | 55   | 44   | 37   | 34   | 35   | 39   | 52   | 53  | 72   | 80   | 71   | 70    |
| 22      | 55   | --   | 38   | 35   | 36   | 39   | 54   | 55  | 74   | 81   | 71   | 71    |
| 23      | 57   | 40   | 39   | 35   | 37   | 44   | --   | 60  | --   | 78   | 69   | 71    |
| 24      | 57   | 37   | 40   | --   | 38   | 43   | 54   | 62  | 79   | 79   | 68   | 67    |
| 25      | 52   | 35   | 40   | 33   | 39   | --   | 55   | 65  | 79   | 73   | 69   | 64    |
| 26      | 51   | 36   | 39   | 33   | 39   | 43   | 54   | 66  | 77   | 73   | 69   | 63    |
| 27      | 51   | 37   | 37   | 33   | 38   | 43   | 56   | 69  | 77   | 74   | 70   | 57    |
| 28      | 53   | 37   | 37   | 33   | 34   | 45   | 56   | 69  | 77   | 75   | 68   | 56    |
| 29      | 52   | 37   | 37   | 33   | --   | 46   | 58   | 64  | 74   | 74   | 66   | 56    |
| 30      | 57   | 37   | 33   | 33   | --   | 47   | 60   | 65  | 73   | 75   | 67   | --    |
| 31      | 54   | --   | 34   | 33   | --   | 46   | --   | 67  | --   | 78   | 69   | --    |
| Average | 55   | 45   | 38   | 34   | 35   | 40   | 49   | 62  | 72   | 75   | 71   | --    |



## DELAWARE RIVER BASIN--Continued

## LEHIGH RIVER AT GLENDON, PA.

LOCATION.--At highway bridge in Glendon, Northampton County, approximately 1 mile below Chain Dam, and 2 1/4 miles above the junction of the Lehigh and Delaware Rivers.

DRAINAGE AREA.--1,350 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES 1956-57.--Hardness: Maximum, 132 ppm Aug. 16 to Sept. 5; minimum, 48 ppm Dec. 21-31; Apr. 8-14.

Specific conductance: Maximum daily, 388 micromhos Aug. 24; minimum daily, 111 micromhos Apr. 10.

Water temperatures: Maximum, 86°F June 18; minimum, 34°F Jan. 15, 16, 18.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 2, 8-10, 1956 | ...                  | 9.4                        | 0.04      | 21           | 9.0            | 11          | 9.0           | 48                              | 43                         | 7.6           | --           | 9.1                        | --                                                 | 79                            | 40            | 213                                       | 7.6 | 3     |
| Oct. 11-20         | ...                  | 8.8                        | .01       | 16           | 6.2            | 5.6         | 3.1           | 54                              | 43                         | 8.0           | 0.2          | 10                         | 142                                                | 89                            | 45            | 232                                       | 7.1 | 1     |
| Nov. 11-30         | ...                  | 8.2                        | .04       | 18           | 7.1            | 7.0         | 3.5           | 38                              | 35                         | 6.1           | .2           | 8.6                        | 128                                                | 66                            | 34            | 181                                       | 7.5 | 3     |
| Dec. 1-10          | ...                  | 9.8                        | .02       | 20           | 7.6            | 7.2         | 3.6           | 45                              | 36                         | 7.1           | .3           | 10                         | 133                                                | 74                            | 37            | 195                                       | 7.3 | 3     |
| Dec. 21-31         | ...                  | 9.0                        | .01       | 15           | 5.5            | 4.6         | 2.7           | 24                              | 29                         | 3.6           | --           | 5.7                        | --                                                 | 48                            | 28            | 133                                       | 7.6 | 3     |
| Jan. 11-20, 1957   | ...                  | 8.7                        | .01       | 15           | 5.3            | 4.6         | 3.0           | 47                              | 39                         | 8.3           | .2           | 13                         | 134                                                | 81                            | 42            | 218                                       | 7.5 | 4     |
| Feb. 11-20         | ...                  | 8.7                        | .01       | 15           | 5.3            | 4.6         | 3.0           | 34                              | 32                         | 5.7           | .2           | 8.2                        | 111                                                | 60                            | 32            | 169                                       | 6.9 | 4     |
| Mar. 1-27          | ...                  | --                         | --        | --           | --             | --          | 6.0           | 39                              | 30                         | 5.3           | .2           | 7.9                        | 113                                                | 60                            | 30            | 161                                       | 7.0 | 3     |
| Mar. 29-Apr. 7     | ...                  | 7.8                        | .03       | 13           | 3.8            | 2.5         | 1.7           | 22                              | 28                         | 3.4           | .2           | 6.0                        | 82                                                 | 57                            | 25            | 160                                       | 7.5 | 5     |
| Apr. 8-14          | ...                  | --                         | --        | --           | --             | 3.9         | 7.4           | 31                              | 28                         | 3.7           | --           | 5.2                        | --                                                 | 48                            | 30            | 125                                       | 7.4 | 4     |
| Apr. 15-30         | ...                  | --                         | --        | --           | --             | 12          | 7.4           | 35                              | 35                         | 6.0           | --           | 6.8                        | --                                                 | 55                            | 30            | 148                                       | 7.5 | 3     |
| May 1-14           | ...                  | --                         | --        | --           | --             | --          | --            | 50                              | 35                         | 5.6           | --           | 16                         | --                                                 | 72                            | 34            | 198                                       | 7.0 | 5     |
| May 15-June 5      | ...                  | --                         | --        | --           | --             | --          | --            | 68                              | 46                         | 9.3           | --           | 20                         | --                                                 | 73                            | 32            | 201                                       | 7.4 | 5     |
| June 6-26          | ...                  | 9.4                        | .02       | 23           | 9.1            | 7.4         | 5.5           | 58                              | 52                         | 8.1           | .2           | .6                         | 150                                                | 97                            | 42            | 269                                       | 7.5 | 6     |
| June 27-July 9     | ...                  | --                         | --        | --           | --             | 20          | 20            | 78                              | 56                         | 12            | --           | 23                         | --                                                 | 95                            | 48            | 244                                       | 7.6 | 3     |
| July 10-25         | ...                  | --                         | --        | --           | --             | 20          | 20            | 89                              | 55                         | 13            | --           | 24                         | --                                                 | 114                           | 50            | 312                                       | 7.0 | 5     |
| July 26-Aug. 15    | ...                  | --                         | --        | --           | --             | --          | --            | 94                              | 59                         | 15            | --           | .7                         | --                                                 | 124                           | 51            | 330                                       | 7.1 | 5     |
| Aug. 16-Sept. 5    | ...                  | 8.8                        | .01       | 31           | 12             | 11          | 7.0           | 86                              | 58                         | 13            | .3           | 27                         | 203                                                | 132                           | 55            | 356                                       | 7.1 | 5     |
| Sept. 6-30         | ...                  | --                         | --        | --           | --             | --          | --            | 56                              | 42                         | 8.2           | --           | 12                         | --                                                 | 127                           | 57            | 330                                       | 7.7 | 5     |
| Weighted-average   | ...                  | --                         | --        | --           | --             | --          | --            | --                              | --                         | --            | --           | --                         | --                                                 | 86                            | 40            | 232                                       | --  | 4     |

## DELAWARE RIVER BASIN--Continued

## LEHIGH RIVER AT GLENDON, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 63   | 41   | 37   | 39   | 41   | 49   | 65  | 72   | 75   | 82   | 78    |
| 2       | 64   | 56   | 42   | 35   | 39   | 39   | 52   | 65  | 74   | 74   | 82   | 79    |
| 3       | --   | 60   | 44   | 36   | 39   | 40   | 47   | 63  | 71   | 75   | 82   | 80    |
| 4       | --   | 59   | 45   | 37   | 40   | 41   | 44   | 58  | 71   | 77   | 84   | 81    |
| 5       | --   | 59   | 45   | 38   | 38   | 43   | 42   | 54  | 72   | 79   | 82   | 78    |
| 6       | --   | 57   | 48   | 37   | 40   | 44   | 43   | 57  | 71   | 77   | 79   | 76    |
| 7       | --   | 56   | 50   | 38   | 42   | 44   | 45   | 60  | 73   | 79   | 77   | 76    |
| 8       | 61   | 55   | 52   | 39   | 44   | 43   | 45   | 62  | 71   | 80   | 77   | 76    |
| 9       | 62   | 53   | 49   | 39   | 43   | 43   | 44   | 65  | 69   | 80   | 79   | 74    |
| 10      | 61   | 51   | 45   | 40   | 42   | 43   | 44   | 68  | 69   | 80   | 81   | 73    |
| 11      | 59   | 47   | 43   | 38   | 41   | 42   | 45   | 69  | 72   | 78   | 80   | 73    |
| 12      | 59   | 49   | 45   | 37   | 40   | 44   | 49   | 66  | 75   | 78   | 78   | 74    |
| 13      | 59   | 49   | 44   | 39   | 39   | 46   | 48   | 68  | 77   | 79   | 77   | 78    |
| 14      | 61   | 48   | 45   | 37   | 40   | 50   | 43   | 70  | 79   | 80   | 78   | 79    |
| 15      | 62   | 51   | 42   | 34   | 42   | 51   | 46   | 69  | 81   | 81   | 79   | 79    |
| 16      | 64   | 53   | 44   | 34   | 42   | 51   | 48   | 69  | 84   | 84   | 79   | 79    |
| 17      | 65   | 53   | 45   | 35   | 39   | 50   | 49   | 69  | 84   | 79   | 79   | 78    |
| 18      | 65   | 51   | 46   | 34   | 41   | 48   | 50   | 69  | 86   | 79   | 78   | 76    |
| 19      | 63   | 49   | 42   | 35   | 44   | 47   | 52   | 67  | 84   | 79   | 78   | 76    |
| 20      | 62   | 47   | 41   | 37   | 42   | 41   | 53   | --  | 81   | 81   | 77   | 76    |
| 21      | 63   | 50   | 44   | 40   | 44   | 44   | 57   | 59  | 79   | 84   | 76   | 77    |
| 22      | 64   | 49   | 44   | 42   | 43   | 46   | 59   | 59  | 79   | --   | 76   | 79    |
| 23      | 64   | 44   | 44   | 45   | 43   | 48   | 59   | 60  | 80   | 84   | 76   | 79    |
| 24      | 61   | 46   | 44   | 40   | 44   | 51   | 61   | 65  | 82   | 81   | 73   | 78    |
| 25      | 57   | 43   | 44   | 36   | 42   | 51   | 60   | 66  | 80   | 80   | 76   | 71    |
| 26      | 55   | 43   | 43   | 37   | 48   | 49   | 59   | 68  | 79   | 80   | 77   | 72    |
| 27      | 54   | 42   | 41   | 38   | 48   | 47   | 63   | 72  | 80   | 79   | 77   | 68    |
| 28      | 55   | 42   | 41   | 38   | 42   | --   | 66   | 68  | 81   | 80   | 75   | 66    |
| 29      | 56   | 44   | 42   | 39   | --   | 50   | 68   | 68  | 80   | 80   | 74   | 66    |
| 30      | 58   | 42   | 38   | 38   | --   | 49   | 65   | 69  | 76   | 79   | 75   | 65    |
| 31      | 61   | --   | 38   | 39   | --   | 49   | --   | 70  | --   | 81   | 78   | --    |
| Average | --   | 50   | 44   | 38   | 42   | 46   | 52   | 65  | 77   | 79   | 78   | 75    |

## DELAWARE RIVER BASIN--Continued

DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)

LOCATION.--At Calhoun Street Bridge, Bucks County, Pennsylvania side, 200 feet downstream from gaging station, which is half a mile upstream from Assunpink Creek. Chemical quality samples collected at Morrisville Filter Plant; sediment samples collected at midstream from bridge.

DRAINAGE AREA.--6,780 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to September 1957.

Water temperatures: October 1944 to January 1955, December 1955 to September 1957.

Sediment records: September 1949 to September 1957.

EXTREMES, 1956-57.--Hardness: Maximum, 68 ppm July 26 to Aug. 15; Aug. 27 to Sept. 14; minimum, 42 ppm May 23-29.

Specific conductance: Maximum daily, 307 microhmhos May 30; minimum daily, 82 microhmhos Apr. 10.

Water temperatures: Maximum, 93°F June 18; minimum, freezing point on many days during January.

Sediment concentrations: Maximum daily, 532 ppm Apr. 7; minimum daily, 2 ppm Feb. 22-26.

Sediment loads: Maximum daily, 100,000 tons Apr. 7; minimum daily, 14 tons Sept. 1-4.

EXTREMES, 1944-57.--Dissolved solids (1944-47, 1950-51, 1953-57): Maximum, 165 ppm Oct. 1-9, 1953; minimum, 44 ppm Mar. 21-31, 1945.

Hardness (1944-47, 1949-57): Maximum, 103 ppm Oct. 1-9, 1953; minimum, 25 ppm Apr. 1-10, 1955; Feb. 21-28, 1954.

Specific conductance: Maximum daily, 370 microhmhos Aug. 1, 1955; minimum daily, 58 microhmhos Apr. 1, 1951.

Water temperatures: Maximum, 93°F June 18, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations (1949-57): Maximum daily, 1,720 ppm Nov. 26, 1950; minimum daily, 0 ppm Oct. 21, 1952.

Sediment loads (1949-57): Maximum daily, 1,087,000 tons Aug. 20, 1955; minimum daily, 0 tons Oct. 21, 1952.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhmhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956 .....      | 4,870                | 16                         | 0.02      | 17           | 5.9            | 8.9         |               | 57                              | 26                         | 6.5           | 0.1          | 3.4                        | 114                                                | 67                            | 20            | 180                                       | 7.4 | 1     |
| Oct. 11-31 .....           | 5,530                | --                         | --        | --           | --             | 8.9         |               | 54                              | 26                         | 6.2           | --           | 4.0                        | --                                                 | 64                            | 20            | 175                                       | 7.3 | 5     |
| Nov. 1-30 .....            | 8,190                | --                         | --        | --           | --             | 7.7         |               | 39                              | 25                         | 5.4           | --           | 3.9                        | --                                                 | 52                            | 20            | 142                                       | 7.8 | 3     |
| Dec. 1-10 .....            | 6,180                | --                         | --        | --           | --             | 8.0         |               | 42                              | 25                         | 5.8           | --           | 4.6                        | --                                                 | 55                            | 21            | 148                                       | 7.9 | 4     |
| Dec. 11-31 .....           | 20,800               | --                         | --        | --           | --             | 4.8         |               | 28                              | 22                         | 3.9           | --           | 4.6                        | --                                                 | 46                            | 22            | 114                                       | 7.6 | 5     |
| Jan. 1-10, 1957 .....      | 9,690                | 6.2                        | .01       | 13           | 4.2            | 3.2         | 1.3           | 36                              | 22                         | 3.6           | .1           | 4.2                        | 85                                                 | 50                            | 20            | 131                                       | 6.5 | 3     |
| Feb. 21-28 .....           | 9,430                | 4.8                        | .02       | 15           | 4.8            | 4.2         |               | 44                              | 24                         | 5.4           | .1           | 3.6                        | 94                                                 | 57                            | 21            | 151                                       | 6.6 | 4     |
| Mar. 22-29 .....           | 11,400               | 4.1                        | .02       | 12           | 3.5            | 3.2         | 1.4           | 33                              | 19                         | 3.8           | .1           | 2.8                        | 82                                                 | 44                            | 18            | 116                                       | 6.8 | 4     |
| Mar. 30-Apr. 6 .....       | 19,100               | 5.3                        | .03       | 14           | 4.2            | 3.4         | 1.5           | 40                              | 22                         | 4.0           | .1           | 4.1                        | 94                                                 | 52                            | 20            | 131                                       | 6.8 | 5     |
| Apr. 11-28 .....           | 20,000               | --                         | --        | --           | --             | 3.9         |               | 28                              | 20                         | 3.4           | .1           | 3.4                        | --                                                 | 44                            | 21            | 111                                       | 7.2 | 2     |
| Apr. 29, May 1, 3-22 ..... | 7,710                | --                         | --        | --           | --             | 7.2         |               | 47                              | 24                         | 5.0           | .1           | 3.6                        | --                                                 | 58                            | 20            | 149                                       | 7.2 | 2     |
| May 23-29 .....            | 11,500               | --                         | --        | --           | --             | 4.8         |               | 30                              | 18                         | 3.4           | .1           | 4.9                        | --                                                 | 42                            | 18            | 111                                       | 7.1 | 2     |
| May 31-June 27 .....       | 4,340                | --                         | --        | --           | --             | 7.6         |               | 51                              | 24                         | 5.8           | .1           | 3.9                        | --                                                 | 62                            | 20            | 161                                       | 6.8 | 3     |
| June 28-July 25 .....      | 3,180                | 3.9                        | .01       | 17           | 5.7            | 4.6         | 2.2           | 49                              | 26                         | 6.5           | .1           | 3.9                        | 100                                                | 66                            | 26            | 172                                       | 6.8 | 2     |
| July 26-Aug. 15 .....      | 2,230                | --                         | --        | --           | --             | 11          |               | 58                              | 28                         | 8.6           | --           | 4.8                        | --                                                 | 68                            | 21            | 191                                       | 6.5 | 5     |
| Aug. 27-Sept. 14 .....     | 2,060                | --                         | --        | --           | --             | 12          |               | 58                              | 28                         | 9.2           | --           | 4.8                        | --                                                 | 68                            | 21            | 192                                       | 6.8 | 5     |
| Sept. 16-30 .....          | 2,370                | --                         | --        | --           | --             | 12          |               | 56                              | 26                         | 8.6           | --           | 4.7                        | --                                                 | 64                            | 18            | 184                                       | 6.9 | 7     |
| Weighted average....       | 7,980                | --                         | --        | --           | --             | --          | --            | 45                              | 24                         | 5.9           | --           | 4.1                        | --                                                 | 58                            | 21            | 155                                       | --  | 4     |

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous gas-actuated thermograph

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 62      | 57  | 61       | 59  | 37       | 36      | 34       | 33    | --    | 69  | 66   | 75   | 70     | 81        |
| 2.....       | 63      | 58  | 62       | 61  | 37       | 36      | 33       | 31    | --    | 68  | 65   | 75   | 71     | 81        |
| 3.....       | 65      | 59  | 61       | 59  | 40       | 37      | 32       | 31    | --    | 85  | 62   | 76   | 71     | 82        |
| 4.....       | 62      | 61  | 60       | 58  | 41       | 38      | 34       | 32    | --    | 82  | 58   | 75   | 69     | 83        |
| 5.....       | 65      | 60  | 59       | 57  | 41       | 38      | 34       | 33    | --    | 60  | 57   | 73   | 70     | 84        |
| 6.....       | 62      | 59  | 58       | 56  | 43       | 41      | 34       | 33    | --    | 63  | 58   | 76   | 70     | 84        |
| 7.....       | 62      | 59  | 56       | 55  | 45       | 42      | 34       | 33    | --    | 64  | 59   | 77   | 71     | 85        |
| 8.....       | 62      | 58  | 55       | 53  | 46       | 44      | 35       | 33    | --    | 67  | 61   | 74   | 68     | 86        |
| 9.....       | 63      | 58  | 53       | 51  | 45       | 42      | 35       | 34    | --    | 70  | 63   | 73   | 65     | 86        |
| 10.....      | 61      | 56  | 51       | 48  | 42       | 40      | 35       | 33    | --    | 72  | 66   | 78   | 67     | 83        |
| 11.....      | 59      | 54  | 48       | 46  | 41       | 40      | 34       | 32    | --    | 70  | 66   | 79   | 69     | 82        |
| 12.....      | 58      | 54  | 49       | 46  | 42       | 41      | 33       | 32    | --    | 70  | 64   | 83   | 72     | 85        |
| 13.....      | 59      | 53  | 47       | 45  | 43       | 42      | 35       | 33    | --    | 74  | 66   | 84   | 76     | 82        |
| 14.....      | 61      | 54  | 47       | 44  | 43       | 41      | 34       | 32    | --    | 73  | 69   | 85   | 77     | 87        |
| 15.....      | 63      | 57  | 48       | 44  | 42       | 40      | 34       | 32    | --    | 74  | 69   | 88   | 79     | 85        |
| 16.....      | 63      | 58  | 51       | 47  | 41       | 40      | 32       | 31    | 48    | 74  | 71   | 90   | 82     | 85        |
| 17.....      | 62      | 58  | 49       | 47  | 41       | 40      | 32       | 31    | 48    | 73  | 68   | 91   | 83     | 86        |
| 18.....      | 62      | 60  | 48       | 46  | 42       | 40      | 32       | 31    | 49    | 72  | 69   | 93   | 84     | 86        |
| 19.....      | 62      | 57  | 46       | 44  | 40       | 38      | 32       | 32    | 51    | 69  | 65   | 90   | 84     | 87        |
| 20.....      | 60      | 55  | 45       | 44  | 39       | 37      | 32       | 32    | 53    | 65  | 61   | 84   | 80     | 87        |
| 21.....      | 61      | 58  | 49       | 44  | 39       | 38      | 32       | 32    | 57    | 63  | 60   | 87   | 77     | 90        |
| 22.....      | 60      | 58  | 48       | 44  | 40       | 39      | 32       | 32    | 60    | 56  | 61   | 87   | 80     | 83        |
| 23.....      | 62      | 60  | 44       | 40  | 41       | 40      | 33       | 32    | 62    | 58  | 61   | 88   | 81     | 81        |
| 24.....      | 61      | 60  | 40       | 38  | 41       | 40      | 36       | 32    | 62    | 61  | 64   | 80   | 88     | 80        |
| 25.....      | 60      | 56  | 39       | 38  | 41       | 40      | 32       | 31    | 63    | 60  | 67   | 62   | 78     | 85        |
| 26.....      | 56      | 55  | 39       | 38  | 40       | 38      | 34       | 32    | 63    | 60  | 70   | 66   | 85     | 81        |
| 27.....      | 56      | 55  | 39       | 37  | 38       | 38      | 35       | 33    | 66    | 62  | 71   | 69   | 87     | 81        |
| 28.....      | 58      | 54  | 38       | 36  | 38       | 37      | 34       | 34    | 68    | 64  | 71   | 67   | 86     | 81        |
| 29.....      | 57      | 53  | 38       | 37  | 38       | 36      | 35       | 34    | 70    | 66  | 72   | 67   | 83     | 79        |
| 30.....      | 57      | 53  | 38       | 36  | 36       | 34      | 36       | 34    | 69    | 67  | 73   | 68   | 82     | 77        |
| 31.....      | 61      | 56  | --       | --  | 34       | 33      | --       | --    | --    | 75  | 69   | --   | --     | --        |
| Average..... | 61      | 57  | 49       | 47  | 41       | 39      | 34       | 32    | --    | 68  | 64   | 83   | 76     | 85        |
|              |         |     |          |     |          |         |          |       | --    | --  | --   | --   | 82     | 77        |
|              |         |     |          |     |          |         |          |       | --    | --  | --   | --   | 73     | 70        |

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Suspended sediment, water year October 1956 to September 1957

| Day      | October               |                           |              | November              |                           |              | December              |                           |              |
|----------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|          | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1. ....  | 5,300                 | 7                         | 100          | 7,120                 | 20                        | 384          | 7,120                 |                           |              |
| 2. ....  | 4,980                 | 5                         | 87           | 12,200                | 45                        | 1,480        | 6,600                 |                           |              |
| 3. ....  | 4,630                 | 5                         | 83           | 13,300                | 52                        | 1,870        | 5,820                 | 4                         | 66           |
| 4. ....  | 4,420                 | 4                         | 48           | 14,100                | 62                        | 2,360        | 5,540                 |                           |              |
| 5. ....  | 4,420                 | 5                         | 60           | 13,000                | 53                        | 1,860        | 5,620                 |                           |              |
| 6. ....  | 4,630                 | 5                         | 83           | 10,700                | 27                        | 780          | 5,700                 |                           |              |
| 7. ....  | 4,700                 | 5                         | 83           | 9,500                 | 22                        | 564          | 5,860                 |                           |              |
| 8. ....  | 5,420                 | 7                         | 102          | 8,650                 | 15                        | 350          | 5,660                 | 3                         | 46           |
| 9. ....  | 5,140                 | 7                         | 97           | 7,950                 | 15                        | 322          | 5,740                 |                           |              |
| 10. .... | 5,060                 | 5                         | 68           | 7,600                 |                           |              | 8,150                 |                           |              |
| 11. .... | 5,020                 | 5                         | 68           | 7,350                 |                           |              | 8,850                 | 3                         | 70           |
| 12. .... | 4,490                 | 5                         | 61           | 6,700                 |                           |              | 8,950                 |                           |              |
| 13. .... | 4,210                 |                           |              | 6,100                 |                           |              | 8,650                 |                           |              |
| 14. .... | 3,960                 |                           |              | 5,860                 | 4                         | 68           | 12,700                | 31                        | s 1,340      |
| 15. .... | 3,960                 | 4                         | 44           | 5,780                 |                           |              | 27,700                | 170                       | 12,700       |
| 16. .... | 4,000                 |                           |              | 5,740                 |                           |              | 32,700                | 178                       | 15,700       |
| 17. .... | 4,100                 |                           |              | 5,460                 |                           |              | 33,400                | 108                       | 9,740        |
| 18. .... | 4,140                 |                           |              | 6,550                 | 17                        | 301          | 31,300                | 60                        | 5,070        |
| 19. .... | 4,040                 |                           |              | 7,040                 | 15                        | 285          | 25,900                | 30                        | 2,100        |
| 20. .... | 4,000                 |                           |              | 6,220                 | 7                         | 118          | 21,200                | 15                        | 859          |
| 21. .... |                       | 3                         | 32           |                       |                           |              |                       |                           |              |
| 22. .... | 3,930                 |                           |              | 6,020                 |                           |              | 18,700                | 8                         | 404          |
| 23. .... | 3,900                 |                           |              | 7,250                 | 4                         | 77           | 18,600                | 7                         | 352          |
| 24. .... | 4,920                 | 10                        | s 141        | 8,050                 |                           |              | 21,800                | 14                        | 824          |
| 25. .... | 10,100                | 60                        | 1,640        | 9,100                 | 8                         | 197          | 26,100                | 25                        | 1,760        |
| 26. .... | 9,200                 | 50                        | 1,240        | 9,560                 | 13                        | 336          | 25,800                | 25                        | 1,740        |
| 27. .... | 7,800                 | 34                        | 716          | 8,100                 | 13                        | 284          | 25,400                | 13                        | 891          |
| 28. .... | 6,700                 | 13                        | 235          | 7,450                 | 13                        | 261          | 22,800                | 12                        | 739          |
| 29. .... | 6,140                 | 8                         | 133          | 8,100                 | 10                        | 219          | 20,100                | 9                         | 488          |
| 30. .... | 5,820                 | 7                         | 110          | 7,850                 | 10                        | 212          | 18,200                | 7                         | 344          |
| 31. .... | 5,700                 | 6                         | 92           | 7,350                 | 11                        | 218          | 16,400                | 8                         | 354          |
| 31. .... | 5,740                 | 5                         | 77           | --                    | --                        | --           | 14,300                | 5                         | 193          |
| Total.   | 160,570               | --                        | 5,624        | 245,750               | --                        | 13,176       | 501,360               | --                        | 56,392       |
|          |                       |                           |              |                       |                           |              |                       |                           |              |
| January  |                       |                           | February     |                       |                           | March        |                       |                           |              |
| 1. ....  | 12,700                |                           |              | 9,560                 | 5                         | 129          | 24,800                | 98                        | 6,560        |
| 2. ....  | 10,400                | 5                         | 147          | 9,320                 | 4                         | 98           | 19,500                | 38                        | 2,000        |
| 3. ....  | 9,500                 |                           |              | 8,750                 | 15                        | 354          | 16,900                | 25                        | 1,140        |
| 4. ....  | 10,300                |                           |              | 8,750                 | 66                        | 2,260        | 14,700                | 12                        | 476          |
| 5. ....  | 9,850                 |                           |              | 12,700                |                           |              | 12,700                | 8                         | 274          |
| 6. ....  | 9,560                 | 6                         | 151          | 11,100                | 30                        | 899          | 11,400                |                           |              |
| 7. ....  | 8,650                 |                           |              | 10,500                | 12                        | 340          | 10,300                |                           |              |
| 8. ....  | 8,100                 |                           |              | 10,100                | 5                         | 136          | 10,000                |                           |              |
| 9. ....  | 8,800                 | 7                         | 166          | 10,300                | 10                        | 278          | 13,400                | 6                         | 194          |
| 10. .... | 9,000                 | 6                         | 146          | 14,000                | 28                        | 1,060        | 14,400                |                           |              |
| 11. .... | 8,650                 | 5                         | 117          | 14,300                | 31                        | 1,200        | 12,200                |                           |              |
| 12. .... | 7,650                 | 3                         | 62           | 12,000                | 25                        | 810          | 11,000                |                           |              |
| 13. .... | 7,350                 | 4                         | 79           | 11,200                | 10                        | 302          | 10,600                |                           |              |
| 14. .... | 7,350                 |                           |              | 10,200                | 9                         | 248          | 11,000                |                           |              |
| 15. .... | 6,020                 |                           |              | 9,680                 | 5                         | 131          | 12,200                | 6                         | 208          |
| 16. .... | 4,500                 |                           |              | 9,320                 |                           |              | 14,000                |                           |              |
| 17. .... | 5,500                 |                           |              | 8,950                 |                           |              | 18,400                |                           |              |
| 18. .... | 5,450                 | --                        | e 90         | 8,000                 | 3                         | 67           | 19,000                | 26                        | 1,330        |
| 19. .... | 5,200                 |                           |              | 7,400                 |                           |              | 16,700                | 20                        | 902          |
| 20. .... | 5,300                 |                           |              | 7,950                 |                           |              | 15,700                |                           |              |
| 21. .... | 5,700                 |                           |              | 7,900                 |                           |              | 15,200                | 10                        | 391          |
| 22. .... | 5,100                 |                           |              | 7,400                 |                           |              | 14,100                |                           |              |
| 23. .... | 5,500                 | 38                        | 564          | 6,750                 |                           |              | 12,900                |                           |              |
| 24. .... | 19,100                | 45                        | 2,320        | 6,260                 |                           |              | 11,600                |                           |              |
| 25. .... | 27,300                | 108                       | 7,960        | 6,180                 | 2                         | 36           | 10,600                | 7                         | 203          |
| 26. .... | 18,000                | 33                        | 1,600        | 6,650                 |                           |              | 10,100                |                           |              |
| 27. .... | 14,800                | 20                        | 799          | 11,900                | 16                        | 514          | 10,500                |                           |              |
| 28. .... | 12,600                | 15                        | 510          | 22,400                | 75                        | 4,540        | 10,800                |                           |              |
| 29. .... | 11,300                | 8                         | 244          | --                    | --                        | --           | 10,500                | 4                         | 111          |
| 30. .... | 11,000                | 8                         | 238          | --                    | --                        | --           | 9,900                 |                           |              |
| 31. .... | 10,400                | 7                         | 197          | --                    | --                        | --           | 8,500                 |                           |              |
| Total.   | 300,630               | --                        | 17,008       | 279,520               | --                        | 13,970       | 414,600               | --                        | 17,822       |

e Estimated.

s Computed by subdividing day.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

## Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                           |                                     |                    | May                             |                                     |                    | June                            |                                     |                    |     |       |
|---------|---------------------------------|-------------------------------------|--------------------|---------------------------------|-------------------------------------|--------------------|---------------------------------|-------------------------------------|--------------------|-----|-------|
|         | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    |     |       |
|         |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |     |       |
| 1.....  | 8,950                           | 4                                   | 97                 | 10,700                          | 4                                   | 107                | 5,620                           | 5                                   | 68                 |     |       |
| 2.....  | 10,600                          | 6                                   | 172                | 9,850                           |                                     |                    | 5,300                           |                                     |                    |     |       |
| 3.....  | 16,700                          | 30                                  | 1,350              | 9,150                           |                                     |                    | 5,020                           |                                     |                    |     |       |
| 4.....  | 17,500                          | 48                                  | 2,270              | 8,550                           |                                     |                    | 4,660                           |                                     |                    |     |       |
| 5.....  | 29,200                          | 127                                 | 510,700            | 8,400                           |                                     |                    | 4,820                           |                                     |                    |     |       |
| 6.....  | 50,500                          | 366                                 | 49,900             | 7,650                           | 5                                   | 103                | 4,980                           | 5                                   | 61                 |     |       |
| 7.....  | 69,700                          | 532                                 | 100,00             | 7,200                           |                                     |                    | 4,700                           |                                     |                    |     |       |
| 8.....  | 63,400                          | 247                                 | 42,300             | 7,080                           |                                     |                    | 4,490                           |                                     |                    |     |       |
| 9.....  | 57,200                          | 106                                 | 16,400             | 6,880                           |                                     |                    | 4,460                           |                                     |                    |     |       |
| 10..... | 50,300                          | 84                                  | 11,400             | 6,600                           |                                     |                    | 4,180                           |                                     |                    |     |       |
| 11..... | 39,100                          | 52                                  | 5,490              | 6,260                           | 7                                   | 118                | 3,680                           | 7                                   | 76                 |     |       |
| 12..... | 32,100                          | 25                                  | 2,170              | 6,060                           |                                     |                    | 3,390                           |                                     |                    |     |       |
| 13..... | 28,500                          | 18                                  | 1,090              | 5,860                           |                                     |                    | 3,880                           |                                     |                    |     |       |
| 14..... | 26,400                          |                                     |                    | 5,580                           |                                     |                    | 5,150                           |                                     |                    |     |       |
| 15..... | 23,200                          |                                     |                    | 7,080                           |                                     |                    | 4,280                           |                                     |                    |     |       |
| 16..... | 20,400                          |                                     |                    | 7,160                           | 4,520                               |                    |                                 |                                     |                    |     |       |
| 17..... | 18,400                          |                                     |                    | 6,920                           | 4,240                               |                    |                                 |                                     |                    |     |       |
| 18..... | 17,300                          | 11                                  | 494                | 6,750                           | 8                                   | 141                | 3,800                           | 4                                   | 41                 |     |       |
| 19..... | 19,700                          |                                     |                    | 6,220                           |                                     |                    | 3,640                           |                                     |                    |     |       |
| 20..... | 18,400                          |                                     |                    | 5,740                           |                                     |                    | 4,100                           |                                     |                    |     |       |
| 21..... | 16,700                          |                                     |                    | 6,450                           |                                     |                    | 4,070                           |                                     |                    |     |       |
| 22..... | 15,200                          |                                     |                    | 15,700                          |                                     |                    | 3,420                           |                                     |                    |     |       |
| 23..... | 14,200                          | 9                                   | 318                | 16,200                          | 37                                  | s 1,670            | 3,110                           | 14                                  | 145                |     |       |
| 24..... | 15,600                          |                                     |                    | 13,600                          |                                     |                    | 21                              |                                     |                    | 771 | 3,000 |
| 25..... | 14,800                          |                                     |                    | 13,200                          |                                     |                    | 18                              |                                     |                    | 641 | 3,680 |
| 26..... | 14,000                          |                                     |                    | 11,000                          |                                     |                    | 7                               |                                     |                    | 177 | 4,820 |
| 27..... | 13,500                          |                                     |                    | 9,050                           |                                     |                    |                                 |                                     |                    |     | 5,100 |
| 28..... | 13,400                          | 8,000                               | 4,560              |                                 |                                     |                    |                                 |                                     |                    |     |       |
| 29..... | 11,700                          | 7,750                               | 4,700              |                                 |                                     |                    |                                 |                                     |                    |     |       |
| 30..... | 11,100                          | 7,000                               | 7                  | 133                             | 4,560                               |                    |                                 |                                     |                    |     |       |
| 31..... | --                              | --                                  |                    |                                 | 6,300                               | --                 | --                              | --                                  |                    |     |       |
| Total.  | 757,750                         | --                                  | 253,661            | 259,940                         | --                                  | 8,075              | 128,920                         | --                                  | 2,561              |     |       |
|         |                                 |                                     |                    |                                 |                                     |                    |                                 |                                     |                    |     |       |
| July    |                                 |                                     | August             |                                 |                                     | September          |                                 |                                     |                    |     |       |
| 1.....  | 4,280                           | 11                                  | 108                | 2,7200                          | 8                                   | 59                 | 1,710                           | 3                                   | 14                 |     |       |
| 2.....  | 3,000                           |                                     |                    | 2,550                           |                                     |                    | 1,860                           |                                     |                    |     |       |
| 3.....  | 2,690                           |                                     |                    | 2,440                           |                                     |                    | 1,590                           |                                     |                    |     |       |
| 4.....  | 2,830                           |                                     |                    | 2,250                           |                                     |                    | 1,650                           |                                     |                    |     |       |
| 5.....  | 2,550                           |                                     |                    | 2,160                           | 3                                   | 19                 | 1,980                           |                                     |                    |     |       |
| 6.....  | 2,660                           | 4                                   | 33                 | 2,250                           |                                     |                    | 2,900                           | 4                                   | 25                 |     |       |
| 7.....  | 2,860                           |                                     |                    | 2,190                           |                                     |                    | 2,660                           |                                     |                    |     |       |
| 8.....  | 2,110                           |                                     |                    | 2,160                           |                                     |                    | 2,250                           |                                     |                    |     |       |
| 9.....  | 3,110                           |                                     |                    | 2,100                           |                                     |                    | 2,160                           |                                     |                    |     |       |
| 10..... | 3,760                           |                                     |                    | 2,040                           | 4                                   | 22                 | 1,920                           | 10                                  | 62                 |     |       |
| 11..... | 3,760                           |                                     |                    | 2,100                           |                                     |                    | 1,890                           |                                     |                    |     |       |
| 12..... | 3,460                           |                                     |                    | 2,040                           |                                     |                    | 2,340                           |                                     |                    |     |       |
| 13..... | 2,800                           |                                     |                    | 2,010                           |                                     |                    | 2,430                           |                                     |                    |     |       |
| 14..... | 3,040                           |                                     |                    | 2,190                           |                                     |                    | 2,430                           |                                     |                    |     |       |
| 15..... | 3,390                           |                                     |                    | 2,190                           | 4                                   | 21                 | 2,430                           | 13                                  | 87                 |     |       |
| 16..... | 3,460                           | 4                                   | 32                 | 1,950                           |                                     |                    | 2,660                           |                                     |                    |     |       |
| 17..... | 3,220                           |                                     |                    | 1,920                           |                                     |                    | 2,160                           |                                     |                    |     |       |
| 18..... | 3,080                           |                                     |                    | 1,950                           |                                     |                    | 2,190                           |                                     |                    |     |       |
| 19..... | 2,370                           |                                     |                    | 1,740                           |                                     |                    | 3,040                           |                                     |                    |     |       |
| 20..... | 2,580                           |                                     |                    | 1,170                           | 4                                   | 18                 | 2,520                           |                                     |                    |     |       |
| 21..... | 2,970                           | 3                                   | 20                 | 1,650                           |                                     |                    | 2,190                           | 8                                   | 49                 |     |       |
| 22..... | 3,040                           |                                     |                    | 1,710                           |                                     |                    | 2,550                           |                                     |                    |     |       |
| 23..... | 2,400                           |                                     |                    | 1,650                           |                                     |                    | 2,660                           |                                     |                    |     |       |
| 24..... | 2,250                           |                                     |                    | 1,680                           |                                     |                    | 2,490                           |                                     |                    |     |       |
| 25..... | 2,970                           |                                     |                    | 1,740                           | 4                                   | 21                 | 2,340                           |                                     |                    |     |       |
| 26..... | 2,620                           |                                     |                    | 1,950                           |                                     |                    | 2,720                           |                                     |                    |     |       |
| 27..... | 2,280                           |                                     |                    | 2,070                           |                                     |                    | 2,720                           |                                     |                    |     |       |
| 28..... | 2,220                           |                                     |                    | 2,010                           |                                     |                    | 1,980                           |                                     |                    |     |       |
| 29..... | 2,340                           |                                     |                    | 2,040                           |                                     |                    | 1,590                           |                                     |                    |     |       |
| 30..... | 2,830                           |                                     |                    | 1,890                           | 4                                   | 21                 | 1,710                           |                                     |                    |     |       |
| 31..... | 2,720                           |                                     |                    | 1,740                           |                                     |                    | --                              | --                                  | --                 |     |       |
| Total.  | 90,110                          | --                                  | 1,046              | 62,570                          | --                                  | 665                | 67,630                          | --                                  | 1,517              |     |       |

Total discharge for year (cfs-days)..... 3,269,350

Total load for year (tons)..... 391,526

e Estimated.

s Computed by subdividing day.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection  | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|---------------------|-------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                     |             |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                     |             |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 16, 1956 . . . | 7:00 p. m.  | 25,000          | 43                      | 128                           | 183                                        | 14                                                | 26    | 43    | 59    | 72    | 85    | 93    |       |       |       | BWCM                |
| Jan. 24, 1957 . . . | 11:00 p. m. | 31,000          | 38                      | 52                            | 85                                         | 9                                                 | 40    | 66    | 81    | 95    | 99    | --    |       |       |       | BWCM                |
| Apr. 7 . . . . .    | 12:30 a. m. | 60,710          | 38                      | 499                           | 480                                        | 18                                                | 32    | 45    | 58    | 68    | 80    | 91    |       | 98    |       | BSWCM               |
| Apr. 7 . . . . .    | 7:00 p. m.  | 77,400          | 46                      | 365                           | 574                                        | 11                                                | 18    | 26    | 39    | 50    | 67    | 100   |       |       |       | BWCM                |

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT BRISTOL, PA.--BURLINGTON, N. J. BRIDGE

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82° F. June 27; minimum, 33° F. on several days during January.

EXTREMES, 1954-56.--Water temperatures: Maximum, 83° F. July 21-28, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color | Bio-chemical oxygen demand <sup>a</sup> | Dis-solved oxygen |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|-----------------------------------------|-------------------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |     |       |                                         |                   |
| Oct. 10, 1956      | 5,060                | 2.6                        | 0.00      | 16           | 5.3            | 10          |               | 48                              | 29                         | 7.0           | 0.1          | 6.0                        | 103                                                 | 62                            | 22            | 172                                        | 7.2 | 8     | 2.6                                     | 8.0               |
| Nov. 9             | 7,950                | --                         | --        | --           | --             | --          | --            | --                              | --                         | 5.4           | --           | --                         | --                                                  | --                            | --            | 132                                        | 6.5 | --    | 1.0                                     | 8.7               |
| Dec. 14            | 12,700               | 4.7                        | .00       | 15           | 5.1            | 8.3         |               | 41                              | 28                         | 6.4           | .1           | 5.4                        | 103                                                 | 58                            | 25            | 158                                        | 7.1 | 6     | .6                                      | 9.8               |
| Jan. 31, 1957      | 10,400               | 5.3                        | .08       | 12           | 2.7            | 4.2         | 1.6           | 24                              | 22                         | 5.2           | .1           | 5.5                        | 79                                                  | 41                            | 21            | 119                                        | 6.8 | 5     | .7                                      | 9.0               |
| Mar. 12            | 11,000               | --                         | --        | --           | --             | --          | --            | --                              | --                         | 5.4           | --           | --                         | --                                                  | --                            | --            | 136                                        | 6.8 | --    | 1.7                                     | 8.6               |
| Apr. 1             | 8,950                | 3.6                        | .05       | 12           | 4.3            | 3.6         | 1.7           | 31                              | 23                         | 4.8           | .1           | 2.8                        | 86                                                  | 48                            | 22            | 129                                        | 7.1 | 3     | --                                      | 8.0               |
| May 1              | 10,700               | 3.0                        | .01       | 13           | 4.5            | 3.5         | 1.4           | 38                              | 25                         | 4.4           | .2           | .7                         | 85                                                  | 51                            | 20            | 130                                        | 6.7 | 4     | 2.2                                     | 8.4               |
| June 25            | 3,680                | --                         | --        | --           | --             | 13          |               | 50                              | 32                         | 8.9           | --           | 7.5                        | --                                                  | 64                            | 23            | 196                                        | 6.3 | 2     | .1                                      | 4.8               |
| July 23            | 2,400                | --                         | --        | --           | --             | 15          |               | 50                              | 31                         | 8.8           | --           | 7.2                        | --                                                  | 60                            | 19            | 187                                        | 6.2 | 3     | 1.2                                     | 6.2               |
| Aug. 22            | 1,710                | .8                         | .02       | 20           | 6.4            | 11          | 2.9           | 54                              | 36                         | 12            | .2           | 5.4                        | 127                                                 | 77                            | 32            | 224                                        | 6.9 | 8     | 2.2                                     | 7.2               |
| Sept. 10           | 1,920                |                            |           | 20           | 7.7            | 10          | 2.9           | 58                              | 37                         | 12            | .2           | 4.9                        | 127                                                 | 82                            | 34            | 238                                        | 6.5 | 6     | 2.6                                     | 6.2               |

<sup>a</sup> Samples taken approximately 3 feet from surface.

$$\begin{aligned}
 & \frac{12}{7} = .024 \\
 & \frac{80.3}{11} = 7.3 \\
 & \frac{45.4}{9} = 5.0 \\
 & \frac{54.3}{9} = 6.0 \\
 & \frac{710}{7} = 101 \\
 & 6.2-7.2
 \end{aligned}$$



DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT BRISTOL, PA.--BURLINGTON, N. J. BRIDGE--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
/Recorder with temperature attachment, continuous mercury-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 60      | 59  | 57       | 56  | 39       | 38  | 37      | 36  | 35       | 42  | 42    | 40  | 47    | 47  | 63  | 63  | 68   | 67  | 75   | 77  | 80     | 77  | 76        |  |
| 2.....       | 60      | 58  | 57       | 38  | 38       | 37  | 36      | 36  | 36       | 42  | 40    | 47  | 47    | 63  | 62  | 68  | 68   | 77  | 75   | 80  | 77     | 76  |           |  |
| 3.....       | 60      | 59  | 58       | 38  | 38       | 36  | 35      | 36  | 36       | 40  | 38    | 48  | 47    | 62  | 61  | 68  | 68   | 77  | 75   | 81  | 78     | 76  |           |  |
| 4.....       | 60      | 60  | 59       | 59  | 38       | 38  | 35      | 34  | 36       | 36  | 38    | 37  | 48    | 48  | 61  | 60  | 69   | 68  | 77   | 74  | 80     | 78  |           |  |
| 5.....       | 61      | 60  | 59       | 58  | 38       | 38  | 34      | 36  | 35       | 38  | 37    | 48  | 48    | 60  | 59  | 69  | 68   | 77  | 75   | 80  | 78     | 74  |           |  |
| 6.....       | 61      | 61  | 58       | 58  | 40       | 38  | 34      | 34  | 36       | 36  | 38    | 38  | 48    | 46  | 60  | 59  | 69   | 69  | 74   | 79  | 77     | 76  |           |  |
| 7.....       | 62      | 61  | 58       | 57  | 41       | 40  | 34      | 34  | 36       | 36  | 38    | 38  | 46    | 44  | 59  | 59  | 70   | 69  | 74   | 79  | 76     | 75  |           |  |
| 8.....       | 61      | 61  | 57       | 57  | 42       | 41  | 34      | 33  | 37       | 36  | 38    | 44  | 43    | 60  | 59  | 70  | 68   | 77  | 75   | 79  | 76     | 75  |           |  |
| 9.....       | 61      | 60  | 57       | 55  | 43       | 42  | 34      | 34  | 38       | 37  | 39    | 44  | 43    | 61  | 60  | 69  | 68   | 77  | 76   | 79  | 77     | 75  |           |  |
| 10.....      | 60      | 60  | 55       | 54  | 43       | 43  | 34      | 36  | 38       | 39  | 39    | 44  | 43    | 63  | 61  | 69  | 68   | 79  | 77   | 79  | 77     | 73  |           |  |
| 11.....      | 60      | 59  | 54       | 52  | 43       | 43  | 34      | 34  | 39       | 38  | 39    | 44  | 43    | 63  | 63  | 69  | 69   | 78  | 77   | 79  | 76     | 74  |           |  |
| 12.....      | 59      | 59  | 52       | 51  | 43       | 43  | 35      | 34  | 38       | 38  | 39    | 45  | 44    | 64  | 63  | 70  | 69   | 80  | 77   | 78  | 76     | 74  |           |  |
| 13.....      | 59      | 59  | 51       | 48  | 43       | 43  | 34      | 34  | 38       | 38  | 39    | 46  | 45    | 65  | 64  | 71  | 70   | 78  | 78   | 76  | 76     | 75  |           |  |
| 14.....      | 59      | 58  | 49       | 48  | 43       | 43  | 34      | 34  | 38       | 37  | 40    | 39  | 46    | 66  | 65  | 72  | 71   | --  | --   | 78  | 76     | 75  |           |  |
| 15.....      | 59      | 58  | 48       | 48  | 43       | 42  | 34      | 33  | 37       | 42  | 40    | 46  | 46    | 67  | 65  | 73  | 72   | --  | --   | 78  | 76     | 76  |           |  |
| 16.....      | 59      | 58  | 49       | 48  | 42       | 42  | 33      | 33  | 37       | 43  | 42    | 46  | 46    | 67  | 66  | 75  | 73   | --  | --   | 77  | 76     | 74  |           |  |
| 17.....      | 59      | 58  | 49       | 48  | 42       | 41  | 33      | 33  | 37       | 45  | 43    | 47  | 46    | 68  | 67  | 77  | 75   | --  | --   | 77  | 75     | 76  |           |  |
| 18.....      | 59      | 59  | 48       | 48  | 41       | 41  | 33      | 33  | 37       | 46  | 45    | 47  | 47    | 68  | 67  | 78  | 77   | --  | --   | 76  | 74     | 75  |           |  |
| 19.....      | 59      | 59  | 48       | 47  | 41       | 40  | 33      | 33  | 37       | 46  | 46    | 48  | 47    | 68  | 67  | 79  | 78   | --  | --   | 77  | 74     | 76  |           |  |
| 20.....      | 59      | 59  | 48       | 47  | 40       | 39  | 33      | 32  | 37       | 46  | 45    | 49  | 48    | 67  | 65  | 80  | 79   | --  | --   | 76  | 74     | 74  |           |  |
| 21.....      | 59      | 59  | 47       | 47  | 40       | 39  | 33      | 33  | 37       | 45  | 44    | 52  | 49    | 65  | 64  | 80  | 79   | --  | --   | 76  | 74     | 76  |           |  |
| 22.....      | 59      | 58  | 48       | 47  | 39       | 39  | 33      | 33  | 36       | 44  | 43    | 54  | 52    | 64  | 62  | 80  | 79   | --  | --   | 77  | 75     | 76  |           |  |
| 23.....      | 60      | 59  | 47       | 46  | 39       | 39  | 34      | 33  | 38       | 43  | 43    | 56  | 54    | 62  | 61  | 80  | 79   | --  | --   | 76  | 73     | 73  |           |  |
| 24.....      | 60      | 59  | 46       | 45  | 40       | 39  | 35      | 34  | 38       | 44  | 43    | 57  | 56    | 61  | 60  | 80  | 79   | --  | --   | 75  | 73     | 75  |           |  |
| 25.....      | 59      | 58  | 45       | 43  | 41       | 40  | 35      | 34  | 39       | 45  | 44    | 58  | 57    | 62  | 61  | 80  | 78   | 81  | 79   | 75  | 73     | 71  |           |  |
| 26.....      | 58      | 57  | 43       | 42  | 41       | 40  | 35      | 33  | 39       | 46  | 45    | 59  | 58    | 63  | 62  | 80  | 79   | 81  | 79   | 74  | 72     | 70  |           |  |
| 27.....      | 57      | 56  | 42       | 41  | 40       | 40  | 33      | 33  | 41       | 39  | 46    | 45  | 59    | 58  | 64  | 83  | 82   | 78  | 81   | 79  | 75     | 72  |           |  |
| 28.....      | 56      | 56  | 41       | 40  | 40       | 40  | 34      | 33  | 42       | 41  | 46    | 45  | 61    | 59  | 65  | 64  | 81   | 78  | 80   | 78  | 74     | 72  |           |  |
| 29.....      | 56      | 55  | 40       | 40  | 40       | 39  | 34      | 34  | --       | --  | 46    | 45  | 62    | 61  | 66  | 63  | 79   | 80  | 78   | 75  | 74     | 68  |           |  |
| 30.....      | 56      | 55  | 40       | 39  | 40       | 39  | 35      | 34  | --       | --  | 46    | 45  | 63    | 62  | 67  | 66  | 79   | 80  | 77   | 75  | 72     | 68  |           |  |
| 31.....      | 56      | 55  | --       | --  | 39       | 38  | 35      | 35  | --       | --  | 47    | 45  | --    | --  | 67  | 66  | 78   | 80  | 77   | 75  | 72     | --  |           |  |
| Average..... | 59      | 58  | 50       | 49  | 41       | 40  | 34      | 34  | 38       | 42  | 41    | 51  | 50    | 64  | 63  | 74  | 73   | 79  | 77   | 77  | 75     | 74  | 72        |  |

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT TORRESDALE INTAKE, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

Water temperatures: October 1956 to September 1957.  
 EXTREMES.--Water temperatures: Maximum, 83° on several days during June and July; minimum, 33° on several days during January.  
 REMARKS.--Samples taken at Torresdale Intake at center of stream approximately 3 feet from bottom. Temperature recorder at Torresdale Filter Plant.  
 Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) at Trenton, N.J. | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH  | Color | Biochemical oxygen demand <sup>a</sup> | Dissolved oxygen |
|--------------------|---------------------------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----|-------|----------------------------------------|------------------|
|                    |                                       |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |     |       |                                        |                  |
| Oct. 10, 1956      | 5,060                                 |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               | 7.0 |       | 2.8                                    | 9.0              |
| Nov. 9             | 7,950                                 |                            |           |              |                |             |               |                                 |                            | 7.0           | 5.5          |                            |                                                    |                               |               | 7.1 |       | .9                                     | 8.2              |
| Dec. 14            | 12,700                                |                            |           |              |                |             |               |                                 |                            | 5.5           | 8.0          |                            |                                                    |                               |               | 6.7 |       | .9                                     | 9.6              |
| Jan. 31, 1957      | 10,400                                |                            |           |              |                |             |               |                                 |                            | 4.0           | 5.5          |                            |                                                    |                               |               | 7.2 |       | 1.5                                    | 9.2              |
| Mar. 12            | 11,000                                |                            |           |              |                |             |               |                                 |                            | 5.5           | 6.0          |                            |                                                    |                               |               | 7.0 |       | 1.6                                    | 8.0              |
| Apr. 1             | 8,950                                 |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               | 7.0 |       | .1                                     | 9.0              |
| May 1              | 10,700                                |                            |           |              |                |             |               |                                 |                            | 5.5           |              |                            |                                                    |                               |               | 7.1 |       | 2.1                                    | 8.4              |
| June 25            | 3,680                                 |                            |           |              |                |             |               |                                 |                            | 12            |              |                            |                                                    |                               |               | 6.9 |       | 2.4                                    | 3.2              |
| July 23            | 2,400                                 |                            |           |              |                |             |               |                                 |                            | 12            |              |                            |                                                    |                               |               | 6.9 |       | 2.4                                    | 3.6              |
| Aug. 22            | 1,710                                 |                            |           |              |                |             |               |                                 |                            | 20            |              |                            |                                                    |                               |               | 7.0 |       | 1.9                                    | 5.4              |
| Sept. 10           | 1,920                                 |                            |           |              |                |             |               |                                 |                            | 16            |              |                            |                                                    |                               |               | 6.8 |       | 2.3                                    | 6.0              |

<sup>a</sup> Samples taken approximately 3 feet from surface.

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT TORRESDALE FILTER PLANT, PHILADELPHIA, PA.

Temperature (°F) of water, water year October 1956 to September 1957  
Recorder with temperature attachment, continuous mercury-actuated thermometer

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 70      | 69  | 67       | 65  | 45       | 43  | 41      | 38  | 36       | 35  | 39    | 37  | 50    | 50  | 66  | 65  | 71   | 69  | 80   | 79  | 82     | 81  | 79        | 77  |
| 2.....       | 71      | 69  | 67       | 65  | 45       | 44  | 37      | 37  | --       | --  | 39    | 37  | 52    | 50  | 66  | 64  | 71   | 70  | 80   | 78  | 81     | 80  | 78        | 77  |
| 3.....       | 70      | 69  | 66       | 65  | 45       | 44  | 37      | 34  | --       | --  | 40    | 38  | 52    | 50  | 66  | 64  | 71   | 70  | 80   | 78  | 82     | 81  | 79        | 78  |
| 4.....       | 71      | 69  | 66       | 65  | 46       | 44  | 35      | 34  | 36       | 36  | 40    | 38  | 50    | 49  | 64  | 62  | 71   | 70  | 80   | 78  | 81     | 80  | 79        | 78  |
| 5.....       | 71      | 70  | 66       | 65  | 45       | 44  | 35      | 34  | 38       | 36  | --    | --  | 49    | 47  | 64  | 62  | 71   | 70  | 80   | 78  | 81     | 80  | 79        | 76  |
| 6.....       | 71      | 69  | 66       | 64  | 46       | 45  | 35      | 34  | 37       | 36  | --    | --  | 47    | 45  | 64  | 62  | 71   | 70  | 80   | 78  | 82     | 80  | 79        | 77  |
| 7.....       | 70      | 68  | 65       | 64  | 46       | 46  | 36      | 34  | 37       | 37  | 40    | 39  | 47    | 45  | 64  | 62  | 72   | 70  | 80   | 78  | 81     | 79  | 79        | 78  |
| 8.....       | 70      | 69  | 65       | 62  | 49       | 46  | 35      | 34  | 38       | 37  | 40    | 38  | 47    | 45  | 63  | 62  | 70   | 69  | 80   | 80  | 81     | 80  | 78        | 77  |
| 9.....       | 70      | 68  | 64       | 61  | 48       | 46  | 35      | 34  | 39       | 37  | 39    | 38  | 47    | 46  | 66  | 63  | 70   | 69  | 80   | 79  | 81     | 80  | 78        | 77  |
| 10.....      | 70      | 67  | 62       | 59  | 47       | 46  | 35      | 34  | 39       | 38  | 40    | 39  | 47    | 45  | 64  | 63  | 71   | 70  | 80   | 79  | 81     | 80  | 78        | 76  |
| 11.....      | 69      | 67  | 61       | 59  | 48       | 47  | 35      | 34  | 38       | 36  | 41    | 40  | 48    | 46  | 65  | 64  | 72   | 71  | 80   | 79  | 81     | 79  | 77        | 75  |
| 12.....      | 69      | 67  | 61       | 57  | 49       | 48  | 35      | 34  | 38       | 37  | 42    | 40  | 49    | 48  | 67  | 65  | 72   | 71  | 80   | 79  | 81     | 80  | 77        | 75  |
| 13.....      | 69      | 67  | 59       | 57  | 49       | 48  | 35      | 34  | 39       | 37  | 42    | 40  | 49    | 48  | 68  | 66  | 72   | 72  | 80   | 79  | 81     | 80  | 79        | 76  |
| 14.....      | 69      | 68  | 59       | 57  | 48       | 47  | 35      | 34  | 39       | 38  | 44    | 43  | 48    | 46  | 69  | 68  | 76   | 74  | 80   | 79  | 81     | 79  | 79        | 77  |
| 15.....      | 69      | 68  | 58       | 56  | 47       | 46  | 34      | 33  | 39       | 38  | 45    | 44  | 51    | 48  | 70  | 68  | 77   | 75  | 81   | 79  | 80     | 79  | 80        | 77  |
| 16.....      | 70      | 68  | 58       | 56  | 47       | 46  | 34      | 33  | 38       | 37  | 47    | 45  | 50    | 49  | --  | --  | 79   | 76  | 81   | 79  | 80     | 79  | 81        | 78  |
| 17.....      | 70      | 69  | 57       | 54  | 48       | 46  | 34      | 33  | 39       | 36  | 48    | 47  | 50    | 49  | 71  | 69  | 81   | 79  | 81   | 79  | 81     | 79  | 79        | 78  |
| 18.....      | 70      | 68  | 56       | 54  | 46       | 45  | 33      | 33  | 39       | 38  | 47    | 46  | 50    | 50  | 70  | 69  | 82   | 80  | 82   | 79  | 81     | 79  | 79        | 76  |
| 19.....      | 70      | 67  | 56       | 54  | --       | --  | 34      | 33  | 38       | 37  | 46    | 45  | 52    | 50  | 69  | 67  | 83   | 81  | 82   | 81  | 80     | 79  | 78        | 76  |
| 20.....      | 69      | 68  | 56       | 54  | 47       | 45  | 35      | 34  | 39       | 37  | 45    | 44  | 52    | 50  | 67  | 66  | 82   | 80  | 83   | 80  | 80     | 78  | 79        | 77  |
| 21.....      | 69      | 68  | 56       | 55  | 47       | 45  | 37      | 34  | 38       | 37  | 45    | 44  | 55    | 52  | 66  | 65  | 83   | 80  | 82   | 80  | 80     | 77  | 78        | 77  |
| 22.....      | 69      | 69  | 55       | 52  | 46       | 45  | 36      | 34  | 39       | 38  | 48    | 46  | 56    | 55  | 66  | 65  | 83   | 81  | 83   | 81  | 79     | 77  | 78        | 77  |
| 23.....      | 70      | 69  | 53       | 48  | 47       | 46  | --      | --  | 39       | 38  | 48    | 47  | 57    | 56  | 66  | 64  | 83   | 81  | 82   | 81  | 79     | 77  | 78        | 76  |
| 24.....      | 70      | 67  | 50       | 48  | 47       | 45  | 35      | 33  | 40       | 39  | 48    | 47  | 60    | 57  | 65  | 64  | 83   | 82  | 81   | 80  | 79     | 77  | 78        | 76  |
| 25.....      | 68      | 66  | 50       | 48  | 45       | 44  | 34      | 33  | 41       | 40  | 48    | 47  | 60    | 59  | 65  | 64  | 83   | 82  | 80   | 80  | 78     | 77  | 77        | 75  |
| 26.....      | 67      | 65  | 49       | 47  | 45       | 44  | 34      | 34  | 42       | 41  | 48    | 47  | 62    | 60  | 66  | 65  | 83   | 82  | 80   | 79  | 78     | 76  | 76        | 75  |
| 27.....      | 66      | 65  | 48       | 45  | --       | --  | 35      | 34  | 42       | 42  | 48    | 47  | 62    | 61  | 66  | 66  | 83   | 82  | 81   | 80  | 79     | 76  | 76        | 73  |
| 28.....      | 66      | 64  | 46       | 44  | 44       | 43  | 35      | 35  | 42       | 40  | 49    | 48  | 64    | 62  | 67  | 66  | 83   | 82  | 80   | 80  | 78     | 75  | 74        | 72  |
| 29.....      | 66      | 65  | 46       | 44  | 43       | 42  | 36      | 35  | 40       | 38  | 49    | 48  | 64    | 64  | 68  | 67  | 82   | 80  | 80   | 80  | 79     | 78  | 76        | 73  |
| 30.....      | 66      | 66  | 45       | 43  | 42       | 40  | 36      | 35  | --       | --  | 49    | 48  | 65    | 64  | 69  | 68  | 81   | 80  | 80   | 79  | 78     | 76  | 73        | 71  |
| 31.....      | 67      | 66  | --       | --  | 41       | 40  | 37      | 34  | --       | --  | 50    | 49  | --    | --  | 70  | 69  | --   | --  | 80   | 79  | 78     | 76  | --        | --  |
| Average..... | 69      | 68  | 58       | 56  | 46       | 45  | 35      | 34  | 39       | 38  | 45    | 43  | 53    | 52  | 67  | 65  | 73   | 72  | 81   | 79  | 80     | 78  | 78        | 76  |

## DELAWARE RIVER BASIN--Continued

DELAWARE RIVER AT LEHIGH AVENUE, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Discharge<br>at<br>Trenton<br>(cfs) | Chloride<br>(Cl) | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Biochemical<br>oxygen<br>demand <sup>a</sup> | Dissolved<br>oxygen <sup>a</sup> |
|---------------------|-------------------------------------|------------------|-------------------------------------------------------------|-----|----------------------------------------------|----------------------------------|
| Oct. 10, 1956 ..... | 5,060                               | 12               | 195                                                         | 6.7 | 4.6                                          | 4.0                              |
| Nov. 9 .....        | 7,950                               | 7.0              | 164                                                         | 7.3 | 1.6                                          | 5.9                              |
| Dec. 14 .....       | 12,700                              | 11               | 191                                                         | 6.4 | 2.8                                          | 6.2                              |
| Jan. 31, 1957 ..... | 10,400                              | 5.0              | 125                                                         | 7.6 | 2.8                                          | 9.2                              |
| Mar. 12 .....       | 11,000                              | 7.0              | 143                                                         | 6.5 | 2.3                                          | 8.8                              |
| Apr. 1 .....        | 8,950                               | 6.0              | 132                                                         | 7.1 | --                                           | 8.2                              |
| May 1 .....         | 10,700                              | 4.5              | 135                                                         | 6.9 | 3.4                                          | 6.3                              |
| June 25 .....       | 3,680                               | 13               | 231                                                         | 6.5 | .9                                           | 1.2                              |
| July 23 .....       | 2,400                               | 22               | 281                                                         | 6.5 | 2.7                                          | .8                               |
| Aug. 22 .....       | 1,710                               | 67               | 483                                                         | 6.4 | 3.6                                          | 2.0                              |
| Sept. 10 .....      | 1,920                               | 58               | 430                                                         | 6.5 | 2.4                                          | 1.4                              |

<sup>a</sup> Samples taken approximately 3 feet from surface.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT PHILADELPHIA, PA.--BENJAMIN FRANKLIN BRIDGE (PHILADELPHIA-CAMDEN BRIDGE)

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) at Trenton, N. J. | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) |               | Hardness as CaCO <sub>3</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color | Biochemical oxygen demand <sup>a</sup> | Dissolved oxygen |
|--------------------|----------------------------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|---------------|-------------------------------|-------------------------------------------|-----|-------|----------------------------------------|------------------|
|                    |                                        |                            |           |              |                |             |               |                                 |                            |               |              |                            | Calcium                                            | Non-magnesium |                               |                                           |     |       |                                        |                  |
| Oct. 10, 1956      | 5,060                                  | 0.9                        | 0.00      | 17           | 5.3            | 17          | --            | 41                              | 39                         | 13            | 0.2          | 9.1                        | 125                                                | 64            | 31                            | 213                                       | 7.7 | 7     | 4.4                                    | 2.2              |
| Nov. 9             | 7,950                                  | 6.8                        | .07       | 15           | 4.8            | 9.5         | --            | 35                              | 31                         | 8.9           | .2           | 7.1                        | 116                                                | 57            | 28                            | 171                                       | 6.9 | 12    | 2.3                                    | 5.2              |
| Dec. 14            | 12,700                                 | 5.2                        | .00       | 15           | 4.6            | 12          | --            | 32                              | 33                         | 10            | .2           | 8.9                        | 137                                                | 56            | 30                            | 182                                       | 7.3 | 5     | 3.2                                    | 7.2              |
| Jan. 31, 1957      | 10,400                                 | 4.5                        | .04       | 10           | 3.4            | 5.3         | 1.9           | 19                              | 22                         | 6.5           | .1           | 7.4                        | 77                                                 | 39            | 23                            | 122                                       | 6.6 | 6     | 3.1                                    | 9.4              |
| Mar. 12            | 11,000                                 | --                         | --        | --           | --             | --          | --            | --                              | --                         | 7.9           | --           | --                         | --                                                 | --            | --                            | 150                                       | 6.6 | --    | 2.8                                    | 7.6              |
| Apr. 1             | 8,950                                  | 3.9                        | .12       | 12           | 4.2            | 4.2         | 1.7           | 31                              | 23                         | 5.7           | .1           | 4.5                        | 107                                                | 48            | 22                            | 132                                       | 6.4 | 7     | 4                                      | 8.4              |
| May 1              | 10,700                                 | 2.2                        | .01       | 13           | 4.5            | 5.3         | 1.5           | 30                              | 28                         | 5.4           | .2           | 4.2                        | 86                                                 | 51            | 27                            | 134                                       | 6.4 | 5     | 2.4                                    | 6.2              |
| June 25            | 3,680                                  | --                         | --        | --           | --             | --          | --            | --                              | --                         | 13            | --           | --                         | --                                                 | --            | --                            | 227                                       | 6.5 | --    | 1.6                                    | 1.0              |
| July 23            | 2,400                                  | --                         | --        | --           | --             | 24          | 5.8           | 41                              | 48                         | 22            | --           | 16                         | --                                                 | 76            | 43                            | 284                                       | 6.0 | 8     | 3.6                                    | .8               |
| Aug. 22            | 1,710                                  | .8                         | .00       | 24           | 12             | 54          | 75            | 45                              | 75                         | 73            | .4           | 7.2                        | 297                                                | 109           | 72                            | 493                                       | 6.5 | 10    | 6.2                                    | 3.4              |
| Sept. 9            | 2,160                                  | --                         | --        | --           | --             | 127         | --            | 40                              | 100                        | 190           | --           | 13                         | --                                                 | 140           | 107                           | 934                                       | 6.0 | 7     | 5.1                                    | 1.4              |

<sup>a</sup> Samples taken approximately 3 feet from surface.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT WHARTON STREET, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>at<br>Trenton<br>(cfs) | Chloride<br>(Cl) | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Biochemical<br>oxygen<br>demand <sup>a</sup> | Dissolved<br>oxygen <sup>a</sup> |
|--------------------|-------------------------------------|------------------|-------------------------------------------------------------|-----|----------------------------------------------|----------------------------------|
| Oct. 8, 1956       | 5,420                               | 12               | 205                                                         | 6.6 | 2.8                                          | 3.8                              |
| Nov. 8             | 8,650                               | 10               | 175                                                         | 6.7 | 3.8                                          | 5.0                              |
| Dec. 13            | 8,650                               | 14               | 208                                                         | 6.3 | 4.4                                          | 6.0                              |
| Jan. 30, 1957      | 11,000                              | 5.5              | 137                                                         | 7.6 | 4.0                                          | 9.6                              |
| Mar. 11            | 12,200                              | 8.5              | 160                                                         | 6.9 | 2.0                                          | 7.0                              |
| Apr. 3             | 16,700                              | 7.0              | 137                                                         | 6.8 | 3.0                                          | 9.2                              |
| May 2              | 9,850                               | 6.0              | 146                                                         | 6.9 | 2.2                                          | 4.8                              |
| June 26            | 4,820                               | 13               | 230                                                         | 6.9 | 2.7                                          | 3.2                              |
| July 22            | 3,040                               | 22               | 284                                                         | 6.6 | 2.4                                          | 2.2                              |
| Aug. 23            | 1,650                               | 91               | 569                                                         | 6.3 | .2                                           | .8                               |
| Sept. 9            | 2,160                               | 69               | 480                                                         | 6.6 | 2.4                                          | 1.0                              |

<sup>a</sup> Samples taken approximately 3 feet from surface.

## DELAWARE RIVER AT LEAGUE ISLAND, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>at<br>Trenton<br>(cfs) | Chloride<br>(Cl) | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Biochemical<br>oxygen<br>demand <sup>a</sup> | Dissolved<br>oxygen <sup>a</sup> |
|--------------------|-------------------------------------|------------------|-------------------------------------------------------------|-----|----------------------------------------------|----------------------------------|
| Oct. 8, 1956       | 5,420                               | 14               | 232                                                         | 6.8 | 1.6                                          | 3.2                              |
| Nov. 8             | 8,650                               | 10               | 186                                                         | 6.7 | 4.6                                          | 4.4                              |
| Dec. 13            | 8,650                               | 16               | 241                                                         | 6.4 | 1.7                                          | 4.4                              |
| Jan. 30, 1957      | 11,000                              | 9.0              | 218                                                         | 7.2 | 3.2                                          | 8.6                              |
| Mar. 11            | 12,200                              | 9.0              | 163                                                         | 6.6 | 3.2                                          | 8.0                              |
| Apr. 3             | 16,700                              | 8.0              | 150                                                         | 6.9 | 3.6                                          | 9.0                              |
| May 2              | 9,850                               | 7.5              | 159                                                         | 6.8 | 2.2                                          | 2.8                              |
| June 26            | 4,820                               | 16               | 264                                                         | 6.5 | 2.0                                          | 2.5                              |
| July 22            | 3,040                               | 33               | 339                                                         | 6.6 | 3.0                                          | 3.0                              |
| Aug. 23            | 1,650                               | 218              | 1,020                                                       | 6.2 | 1.8                                          | 1.7                              |
| Sept. 9            | 2,160                               | 172              | 869                                                         | 6.6 | 1.5                                          | 1.4                              |

<sup>a</sup> Samples taken approximately 3 feet from surface.

## DELAWARE RIVER BASIN--Continued

## SCHULKILL RIVER AT BERNE, PA.

LOCATION.--At gaging station at highway bridge at Berne, Berks County, 0.5 mile upstream from Mill Creek, and 6.5 miles downstream from Little Schulkill River.

DRAINAGE AREA.--355 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1947 to February 1953, October 1956 to September 1957.

Water temperatures: February 1948 to April 1953, December 1956 to September 1957.

Sediment records: October 1947 to September 1957.

EXTREMES, 1956-57.--Specific conductance: Maximum daily, 940 micromhos Aug. 26; minimum daily, 152 micromhos Apr. 6.

Water temperatures: Maximum, 90°F June 17; minimum, freezing point on many days during January.

Sediment concentrations: Maximum daily, 470 ppm Apr. 6; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 11,300 tons Apr. 6; minimum daily, less than 0.50 ton during July, August, September.

EXTREMES, 1947-57.--Dissolved solids (1947-53): Maximum, 775 ppm Sept. 11-20, 1948; minimum, 155 ppm Dec. 11-14, 1952.

Hardness (1947-53): Maximum, 501 ppm Sept. 11-20, 1948; minimum, 98 ppm Nov. 21-31, 1950.

Specific conductance (1947-53) (1956-57): Maximum daily, 1,040 micromhos Oct. 23, 1951; minimum daily, 152 micromhos Apr. 6, 1957.

Water temperatures (1948-53, 1956-57): Maximum, 90°F June 17, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 8,030 ppm Nov. 4, 1947; minimum daily, 0 ppm many days during 1952 water year.

Sediment loads: Maximum daily, 90,180 tons Nov. 12, 1947; minimum daily, 0 tons on many days during 1952 water year.

REMARKS.--Records of specific conductance and pH of daily sample available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502. Flow affected by ice Jan. 2-4, 12-23.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as H+ | Specific conductance (micro-mhos at 25°C) | pH   | Color |
|---------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------|-------------------------------------------|------|-------|
|                     |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                     |                                           |      |       |
| Oct. 1-10, 1956 ... | 380                  |                  | 10                         | --            | 0.04      | --             | 42           | 27             | 11          | 1.8           | 0                               | 255                        | 7.6           | 0.1          | 1.2                        | 394                                                | 216                           | 216           | 0.8                 | 562                                       | 4.10 | 3     |
| Oct. 11-20 ...      | 314                  |                  | 12                         | 5.0           | .11       | 3.7            | 47           | 27             | 11          | 2.2           | 0                               | 288                        | 5.8           | .2           | 1.6                        | 429                                                | 267                           | 267           | --                  | 622                                       | 4.10 | 2     |
| Nov. 4-11 ...       | 1,180                |                  | 9.3                        | 2.5           | .04       | 1.6            | 24           | 14             | 5.5         | 2.1           | 0                               | 133                        | 2.6           | .1           | 2.5                        | 231                                                | 135                           | 135           | --                  | 326                                       | 4.40 | 3     |
| Dec. 1-11 ...       | 466                  |                  | 10                         | 3.8           | .07       | 3.0            | 43           | 25             | 10          | 2.7           | 0                               | 238                        | 4.9           | .1           | 2.9                        | 362                                                | 242                           | 242           | --                  | 538                                       | 3.95 | 1     |
| Jan. 1-10, 1957 ... | 598                  |                  | 10                         | 4.1           | .04       | 1.5            | 34           | 21             | 8.0         | 1.6           | 0                               | 210                        | 3.2           | .1           | 1.6                        | 312                                                | 198                           | 198           | --                  | 460                                       | 4.40 | 2     |
| Feb. 11-20 ...      | 819                  |                  | 7.3                        | 2.6           | .04       | 2.0            | 26           | 16             | 6.4         | 2.0           | 1                               | 151                        | 3.4           | .1           | 2.3                        | 224                                                | 149                           | 148           | --                  | 351                                       | 4.7  | 2     |
| Mar. 1-10 ...       | 756                  |                  | --                         | --            | --        | --             | --           | --             | 14          | --            | --                              | 154                        | 3.8           | --           | 1.9                        | --                                                 | 136                           | 136           | --                  | 368                                       | 4.40 | 3     |
| Mar. 11-20 ...      | 876                  |                  | --                         | --            | --        | --             | --           | --             | 14          | 18            | 0                               | 142                        | 3.2           | --           | 2.1                        | --                                                 | 114                           | 114           | --                  | 346                                       | 4.40 | 3     |
| Mar. 21-31 ...      | 687                  |                  | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 158                        | 3.4           | --           | 1.9                        | --                                                 | 138                           | 138           | --                  | 376                                       | 4.30 | 3     |
| Apr. 1-10 ...       | 3,460                |                  | 8.2                        | 2.0           | .01       | 1.2            | 19           | 13             | 3.0         | 1.4           | 0                               | 109                        | 4.5           | .1           | 1.1                        | 184                                                | 117                           | 117           | .6                  | 276                                       | 4.10 | 5     |
| May 1-10 ...        | 453                  |                  | 11                         | 5.2           | .02       | 3.1            | 46           | 28             | 6.6         | 1.8           | 0                               | 273                        | 4.5           | .1           | .7                         | 421                                                | 265                           | 265           | .6                  | 555                                       | 4.5  | 3     |
| June 1-10 ...       | 236                  |                  | 12                         | 6.6           | .07       | 4.0            | 57           | 34             | 12          | 2.4           | 0                               | 349                        | 5.0           | .2           | .9                         | 529                                                | 328                           | 328           | .8                  | 694                                       | 4.10 | 3     |
| July 1-10 ...       | 148                  |                  | 14                         | 9.4           | .17       | 6.6            | 63           | 42             | 15          | 2.4           | 0                               | 408                        | 6.0           | .2           | 9.7                        | 597                                                | 401                           | 401           | 1.0                 | 782                                       | 3.90 | 3     |
| Aug. 1-10 ...       | 118                  |                  | 13                         | 9.4           | .22       | 5.3            | 75           | 54             | 20          | 3.2           | 0                               | 465                        | 8.5           | .2           | .5                         | 682                                                | 478                           | 478           | 1.0                 | 890                                       | 3.95 | 4     |
| Sept. 1-10 ...      | 111                  |                  | 12                         | 8.9           | .07       | 5.1            | 87           | 45             | 24          | 3.1           | 0                               | 492                        | 9.5           | .2           | .8                         | 727                                                | 469                           | 469           | 1.0                 | 892                                       | 3.75 | 4     |

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT BERNE, PA.--Continued

Temperature (°F) of water, December 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      |      | --   | 35   | 37   | 39   | 50   | 65  | 77   | 79   | 81   | 82    |
| 2       |      |      | --   | 32   | 38   | 38   | 50   | 68  | 73   | 80   | 74   | 81    |
| 3       |      |      | --   | 32   | 37   | 40   | 48   | 69  | 72   | 76   | 79   | 75    |
| 4       |      |      | --   | 36   | 42   | 41   | 43   | 57  | 69   | 76   | 78   | 74    |
| 5       |      |      | --   | 35   | 39   | 41   | 42   | 60  | 68   | 84   | 79   | 68    |
| 6       |      |      | --   | 34   | 39   | 42   | 47   | 59  | 75   | 74   | 71   | 72    |
| 7       |      |      | --   | 36   | 39   | 42   | 45   | 60  | 77   | 80   | 70   | 68    |
| 8       |      |      | --   | 38   | 39   | 41   | 47   | 68  | 67   | 81   | 70   | 68    |
| 9       |      |      | --   | 38   | 39   | 41   | 45   | 66  | 65   | 81   | 79   | 68    |
| 10      |      |      | --   | 37   | 42   | 41   | 46   | 70  | 77   | 72   | 74   | 66    |
| 11      |      |      | --   | 33   | 41   | 42   | 53   | 68  | 79   | 80   | 77   | 70    |
| 12      |      |      | 45   | 35   | 36   | 43   | 53   | 67  | 81   | 80   | 75   | 75    |
| 13      |      |      | 46   | 37   | 38   | 52   | 48   | 70  | 84   | 78   | 80   | 73    |
| 14      |      |      | 42   | 33   | 39   | 50   | 47   | 66  | 77   | 84   | 70   | 72    |
| 15      |      |      | 42   | 32   | 41   | 49   | 50   | 66  | 77   | 82   | 72   | 78    |
| 16      |      |      | 43   | 32   | 38   | 49   | 49   | 67  | 82   | 75   | 78   | 76    |
| 17      |      |      | 48   | --   | 37   | 49   | 50   | 67  | 90   | 85   | 71   | 74    |
| 18      |      |      | 44   | --   | 40   | 49   | 52   | 68  | 84   | 85   | 78   | 73    |
| 19      |      |      | 39   | --   | 42   | 45   | 52   | 62  | 83   | 84   | 77   | 70    |
| 20      |      |      | 42   | --   | 37   | 44   | 55   | 57  | 80   | 81   | 77   | 72    |
| 21      |      |      | 43   | --   | 37   | 47   | 62   | 59  | 83   | 83   | 72   | 71    |
| 22      |      |      | 46   | --   | 39   | 47   | 62   | 59  | 81   | 89   | 67   | 78    |
| 23      |      |      | --   | 37   | 41   | 50   | 59   | 65  | 84   | 77   | 68   | 72    |
| 24      |      |      | 45   | 34   | 44   | 51   | 66   | 70  | 84   | 77   | 70   | 65    |
| 25      |      |      | 42   | 34   | 45   | 51   | 60   | 71  | 77   | 82   | 71   | 68    |
| 26      |      |      | 42   | 36   | 47   | 45   | 65   | 68  | 84   | 80   | 73   | 64    |
| 27      |      |      | 41   | 37   | 47   | 45   | 68   | 72  | 85   | 74   | 75   | 62    |
| 28      |      |      | 41   | 37   | 37   | 49   | 72   | 73  | 83   | 74   | 67   | 65    |
| 29      |      |      | 40   | 37   | --   | 49   | 69   | 70  | 79   | 79   | 77   | 62    |
| 30      |      |      | 36   | 37   | --   | 48   | 65   | 70  | 81   | 75   | 72   | 58    |
| 31      |      |      | 37   | 37   | --   | 51   | --   | 73  | --   | 81   | 75   | --    |
| Average |      |      | --   | 35   | 40   | 46   | 54   | 66  | 79   | 80   | 74   | 71    |



## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT BERNE, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 395                   | 1                        | 1            | 790                   | 2                        | 4            | 433                   | 2                        | 2            |
| 2.....  | 377                   |                          |              | 1,710                 | 71                       | s 523        | 433                   |                          |              |
| 3.....  | 365                   |                          |              | 2,920                 | 70                       | 552          | 426                   |                          |              |
| 4.....  | 359                   |                          |              | 2,040                 | 11                       | 61           | 401                   |                          |              |
| 5.....  | 383                   |                          |              | 1,600                 | 10                       | 43           | 401                   |                          |              |
| 6.....  | 359                   | 1                        | 1            | 1,300                 | 4                        | 12           | 395                   | 5                        | s 8          |
| 7.....  | 440                   |                          |              | 1,110                 |                          |              | 389                   |                          |              |
| 8.....  | 407                   |                          |              | 980                   |                          |              | 389                   |                          |              |
| 9.....  | 371                   |                          |              | 890                   |                          |              | 553                   |                          |              |
| 10..... | 347                   |                          |              | 781                   |                          |              | 700                   |                          |              |
| 11..... | 330                   | 1                        | 1            | 700                   | 4                        | 7            | 610                   | 3                        | 5            |
| 12..... | 325                   |                          |              | 667                   |                          |              | 625                   |                          |              |
| 13..... | 325                   |                          |              | 617                   |                          |              | 642                   |                          |              |
| 14..... | 325                   |                          |              | 572                   |                          |              | 1,690                 |                          |              |
| 15..... | 320                   |                          |              | 542                   |                          |              | 3,500                 |                          |              |
| 16..... | 320                   | 1                        | 1            | 510                   | 1                        | 1            | 3,500                 | 6                        | 614          |
| 17..... | 308                   |                          |              | 500                   |                          |              | 2,660                 |                          |              |
| 18..... | 303                   |                          |              | 587                   |                          |              | 2,040                 |                          |              |
| 19..... | 298                   |                          |              | 514                   |                          |              | 1,580                 |                          |              |
| 20..... | 287                   |                          |              | 459                   |                          |              | 1,370                 |                          |              |
| 21..... | 287                   | 46                       | s 219        | 459                   | 5                        | 9            | 1,320                 | 4                        | 14           |
| 22..... | 298                   |                          |              | 658                   |                          |              | 1,320                 |                          |              |
| 23..... | 1,570                 |                          |              | 542                   |                          |              | 1,540                 |                          |              |
| 24..... | 1,860                 |                          |              | 493                   |                          |              | 1,580                 |                          |              |
| 25..... | 1,240                 |                          |              | 472                   |                          |              | 1,640                 |                          |              |
| 26..... | 980                   | 2                        | 5            | 514                   | 2                        | 3            | 1,470                 | 7                        | 29           |
| 27..... | 920                   | 2                        | 5            | 514                   |                          |              | 1,370                 |                          |              |
| 28..... | 830                   | 3                        | 7            | 486                   |                          |              | 1,260                 |                          |              |
| 29..... | 718                   | 2                        | 4            | 466                   |                          |              | 1,130                 |                          |              |
| 30..... | 658                   | 2                        | 4            | 446                   |                          |              | 1,000                 |                          |              |
| 31..... | 683                   | 2                        | 4            | --                    | --                       | --           | 890                   | 4                        | 10           |
| Total.  | 16,988                | --                       | 387          | 24,843                | --                       | 1,325        | 37,257                | --                       | 2,087        |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 830                   | 3                        | 7            | 550                   | 1                        | 1            | 830                   | 6                        | 13           |
| 2.....  | 700                   | 4                        | 8            | 542                   | 11                       | 16           | 850                   | 6                        | 14           |
| 3.....  | 600                   | 5                        | 8            | 514                   |                          |              | 810                   | 4                        | 9            |
| 4.....  | 640                   | 2                        | 3            | 596                   |                          |              | 736                   | 4                        | 7            |
| 5.....  | 594                   | 2                        | 3            | 762                   |                          |              | 692                   |                          |              |
| 6.....  | 542                   | 3                        | 4            | 602                   |                          |              | 667                   |                          |              |
| 7.....  | 535                   |                          |              | 572                   | 3                        | 5            | 642                   |                          |              |
| 8.....  | 521                   |                          |              | 572                   |                          |              | 667                   |                          |              |
| 9.....  | 500                   |                          |              | 744                   |                          |              | 890                   | 5                        | 12           |
| 10..... | 521                   |                          |              | 1,390                 |                          |              | 772                   |                          |              |
| 11..... | 472                   | 4                        | 4            | 1,220                 | 8                        | 26           | 718                   | 4                        | 8            |
| 12..... | 440                   |                          |              | 1,030                 | 7                        | 19           | 700                   |                          |              |
| 13..... | 430                   |                          |              | 950                   | 7                        | 18           | 675                   |                          |              |
| 14..... | 400                   |                          |              | 880                   | 7                        | 17           | 625                   |                          |              |
| 15..... | 360                   |                          |              | 820                   | 6                        | 13           | 692                   |                          |              |
| 16..... | 320                   | --                       | e 6          | 763                   | 7                        | 14           | 1,270                 | 14                       | s 33         |
| 17..... | 310                   |                          |              | 700                   | 5                        | 9            | 1,130                 |                          |              |
| 18..... | 300                   |                          |              | 625                   | 3                        | 5            | 1,040                 |                          |              |
| 19..... | 300                   |                          |              | 610                   |                          |              | 970                   |                          |              |
| 20..... | 320                   |                          |              | 594                   |                          |              | 940                   |                          |              |
| 21..... | 400                   | 4                        | 7            | 542                   |                          |              | 860                   | 4                        | 10           |
| 22..... | 700                   |                          |              | 507                   |                          |              | 772                   |                          |              |
| 23..... | 1,450                 |                          |              | 500                   | 2                        | 3            | 718                   |                          |              |
| 24..... | 900                   |                          |              | 493                   |                          |              | 667                   |                          |              |
| 25..... | 772                   |                          |              | 479                   |                          |              | 625                   |                          |              |
| 26..... | 727                   | 4                        | 7            | 540                   | 8                        | s 13         | 634                   | 3                        | 5            |
| 27..... | 692                   |                          |              | 1,000                 | 13                       | 35           | 683                   |                          |              |
| 28..... | 642                   |                          |              | 830                   | 7                        | 16           | 718                   |                          |              |
| 29..... | 617                   |                          |              | --                    | --                       | --           | 634                   |                          |              |
| 30..... | 602                   |                          |              | --                    | --                       | --           | 634                   |                          |              |
| 31..... | 564                   |                          |              | --                    | --                       | --           | 617                   |                          |              |
| Total.  | 17,701                | --                       | 171          | 19,927                | --                       | 367          | 23,878                | --                       | 327          |

e Estimated.

s Computed by subdividing day.

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT BERNE, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                 |                           |              | May                   |                           |              | June                  |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 594                   | 3                         | 5            | 545                   |                           |              | 248                   |                           |              |
| 2.....  | 1,660                 | 66                        | s 347        | 515                   |                           |              | 248                   |                           |              |
| 3.....  | 1,830                 | 15                        | 74           | 493                   |                           |              | 248                   |                           |              |
| 4.....  | 1,680                 | 18                        | 82           | 470                   | 1                         | 1            | 227                   | 2                         | 6            |
| 5.....  | 4,230                 | 231                       | s 3,340      | 470                   |                           |              | 232                   |                           |              |
| 6.....  | 8,870                 | 470                       | s 11,300     | 456                   |                           |              | 232                   |                           |              |
| 7.....  | 5,180                 | 92                        | s 1,360      | 422                   |                           |              | 232                   |                           |              |
| 8.....  | 3,810                 | 40                        | 411          | 408                   |                           |              | 227                   | 2                         | 1            |
| 9.....  | 3,810                 | 30                        | 309          | 388                   |                           |              | 243                   |                           |              |
| 10..... | 2,920                 | 20                        | 159          | 362                   | 2                         | 2            | 227                   |                           |              |
| 11..... | 2,410                 |                           |              | 344                   |                           |              | 213                   | 6                         | 4            |
| 12..... | 1,960                 |                           |              | 356                   |                           |              | 243                   |                           |              |
| 13..... | 1,680                 | 9                         | 42           | 344                   |                           |              | 243                   |                           |              |
| 14..... | 1,420                 |                           |              | 331                   |                           |              | 291                   |                           |              |
| 15..... | 1,210                 |                           |              | 442                   |                           |              | 513                   | 12                        | s 20         |
| 16..... | 1,060                 |                           |              | 356                   | 6                         | 6            | 280                   |                           |              |
| 17..... | 970                   |                           |              | 320                   |                           |              | 269                   |                           |              |
| 18..... | 1,080                 | 4                         | 11           | 291                   |                           |              | 227                   |                           |              |
| 19..... | 1,080                 |                           |              | 297                   |                           |              | 217                   |                           |              |
| 20..... | 920                   |                           |              | 484                   |                           |              | 198                   | 2                         | 1            |
| 21..... | 870                   |                           |              | 478                   | 3                         | 3            | 198                   |                           |              |
| 22..... | 800                   |                           |              | 381                   |                           |              | 189                   |                           |              |
| 23..... | 790                   | 2                         | 4            | 356                   |                           |              | 184                   |                           |              |
| 24..... | 800                   |                           |              | 362                   |                           |              | 243                   |                           |              |
| 25..... | 745                   |                           |              | 325                   |                           |              | 365                   | 14                        | s 15         |
| 26..... | 718                   |                           |              | 314                   |                           |              | 297                   |                           |              |
| 27..... | 675                   |                           |              | 325                   |                           |              | 238                   |                           |              |
| 28..... | 658                   | 1                         | 2            | 280                   | 2                         | 2            | 280                   | 2                         | 2            |
| 29..... | 624                   |                           |              | 269                   |                           |              | 308                   |                           |              |
| 30..... | 569                   |                           |              | 264                   |                           |              | 291                   |                           |              |
| 31..... | --                    | --                        | --           | 258                   |                           |              | --                    | --                        | --           |
| Total.  | 55,623                | --                        | 17,681       | 11,706                | --                        | 86           | 7,651                 | --                        | 84           |
| Day     | July                  |                           |              | August                |                           |              | September             |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 248                   |                           |              | 125                   |                           |              | 110                   |                           |              |
| 2.....  | 213                   |                           |              | 118                   |                           |              | 103                   |                           |              |
| 3.....  | 194                   |                           |              | 122                   |                           |              | 129                   | 1                         | (t)          |
| 4.....  | 189                   |                           |              | 122                   | 1                         | (t)          | 114                   |                           |              |
| 5.....  | 180                   |                           |              | 118                   |                           |              | 103                   |                           |              |
| 6.....  | 171                   | 6                         | 3            | 110                   |                           |              | 95                    |                           |              |
| 7.....  | 171                   |                           |              | 110                   |                           |              | 103                   |                           |              |
| 8.....  | 171                   |                           |              | 114                   |                           |              | 122                   | 1                         | (t)          |
| 9.....  | 258                   |                           |              | 114                   |                           |              | 129                   |                           |              |
| 10..... | 208                   |                           |              | 122                   |                           |              | 103                   |                           |              |
| 11..... | 167                   |                           |              | 125                   |                           |              | 172                   | 5                         | s 2          |
| 12..... | 158                   |                           |              | 118                   | 1                         | (t)          | 133                   | 2                         | 1            |
| 13..... | 162                   |                           |              | 114                   |                           |              | 230                   | 11                        | s 8          |
| 14..... | 162                   |                           |              | 114                   |                           |              | 154                   |                           |              |
| 15..... | 158                   |                           |              | 114                   |                           |              | 137                   |                           |              |
| 16..... | 141                   | 1                         | (t)          | 114                   |                           |              | 129                   |                           |              |
| 17..... | 137                   |                           |              | 110                   |                           |              | 137                   | 1                         | (t)          |
| 18..... | 133                   |                           |              | 110                   |                           |              | 133                   |                           |              |
| 19..... | 129                   |                           |              | 106                   |                           |              | 122                   |                           |              |
| 20..... | 137                   |                           |              | 99                    | 1                         | (t)          | 118                   |                           |              |
| 21..... | 141                   |                           |              | 103                   |                           |              | 122                   |                           |              |
| 22..... | 133                   |                           |              | 103                   |                           |              | 154                   |                           |              |
| 23..... | 137                   |                           |              | 103                   |                           |              | 251                   | 5                         | s 4          |
| 24..... | 158                   |                           |              | 106                   |                           |              | 167                   |                           |              |
| 25..... | 141                   |                           |              | 110                   |                           |              | 133                   |                           |              |
| 26..... | 133                   | 3                         | 1            | 238                   | 3                         | s 2          | 125                   | 1                         | (t)          |
| 27..... | 133                   |                           |              | 175                   |                           |              | 114                   |                           |              |
| 28..... | 133                   |                           |              | 125                   | 1                         | (t)          | 110                   |                           |              |
| 29..... | 133                   |                           |              | 114                   |                           |              | 110                   |                           |              |
| 30..... | 133                   |                           |              | 110                   | 1                         | (t)          | 106                   |                           |              |
| 31..... | 137                   |                           |              | 110                   |                           |              | --                    | --                        | --           |
| Total.  | 4,999                 | --                        | 45           | 3,696                 | --                        | 11.2         | 3,968                 | --                        | 23.7         |

Total discharge for year (cfs-days) ..... 228,237  
 Total load for year (tons) ..... 22,594.9

s Computed by subdividing day.

t Less than 0.50 ton.

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT MANAYUNK, PHILADELPHIA, PA.

LOCATION.--At Green Lane Avenue Bridge, 5 miles upstream from gaging station at Fairmount Dam, Philadelphia County.

DRAINAGE AREA.--1,893 square miles (at Fairmount Dam.)

RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1957.

Sediment records: November 1947 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 92°F, June 19; minimum, freezing point on several days during January.

Sediment concentrations: Maximum daily 850 ppm, Apr. 6; minimum daily, 1 ppm Apr. 28.

Sediment loads: Maximum daily, estimated, 60,000 tons, Apr. 6; minimum daily 8 tons, Apr. 28.

EXTREMES, 1947-57.--Sediment concentrations: Maximum daily, 4,910 ppm Dec. 30, 1948; minimum daily, 1 ppm on several days during each year.

Sediment loads: Maximum daily, estimated 650,000 tons Aug. 19, 1955; minimum daily, 2 tons on several days during each year.

REMARKS.--Records of specific conductance and pH of random samples available at the Harrisburg subdistrict office. Records of discharge for water year October 1956 to September 1957 for the Schuylkill River at Philadelphia (Fairmount Dam) given in WSP 1502, and includes water diverted by the City of Philadelphia for municipal water supply.

Temperature (°F) of water, November 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      | --   | 43   | --   | 41   | 41   | .55  | 72  | 73   | 81   | 86   | 75    |
| 2       |      | 65   | 42   | 34   | 42   | 44   | 55   | 71  | 75   | 79   | 87   | 77    |
| 3       |      | 61   | 48   | 35   | 40   | 43   | 54   | 68  | 76   | 82   | 84   | 85    |
| 4       |      | 64   | 41   | 38   | 40   | 40   | 46   | 65  | 76   | 78   | 84   | 85    |
| 5       |      | 60   | 46   | 39   | 38   | 45   | 46   | 64  | 75   | 85   | 82   | 78    |
| 6       |      | 59   | 48   | 38   | 40   | 45   | 45   | 66  | 78   | 84   | 84   | 79    |
| 7       |      | 60   | 53   | 32   | 36   | 45   | 50   | 66  | 80   | 83   | 84   | 79    |
| 8       |      | 58   | 55   | 40   | 44   | 45   | 48   | 69  | 75   | 85   | 85   | 80    |
| 9       |      | 54   | 50   | 34   | 42   | 44   | 47   | --  | 73   | --   | 80   | 75    |
| 10      |      | 50   | --   | 40   | 43   | 42   | 50   | 78  | 75   | 82   | 80   | 75    |
| 11      |      | 48   | 45   | 38   | 40   | 42   | 50   | 70  | 75   | 80   | 85   | 80    |
| 12      |      | 52   | 47   | 39   | 40   | 46   | 56   | 70  | 82   | 86   | 84   | 78    |
| 13      |      | 50   | 50   | 36   | 38   | 52   | 51   | 76  | 82   | 81   | 84   | 83    |
| 14      |      | 52   | 47   | 35   | 42   | 50   | 50   | 76  | 82   | 80   | 85   | 83    |
| 15      |      | 58   | 43   | 35   | 43   | 53   | 50   | 78  | 88   | 75   | 85   | 86    |
| 16      |      | 56   | 44   | 32   | 40   | 55   | 54   | 75  | 87   | --   | 85   | --    |
| 17      |      | 52   | 45   | 32   | 43   | --   | 55   | 78  | --   | 85   | 78   | 82    |
| 18      |      | 51   | 45   | --   | 40   | 53   | 55   | 76  | 91   | 82   | 81   | 80    |
| 19      |      | 50   | 45   | 32   | 44   | 50   | 56   | 71  | 92   | 84   | 78   | 85    |
| 20      |      | 49   | 45   | 32   | 43   | 49   | 57   | 66  | 85   | 81   | 83   | 77    |
| 21      |      | 52   | 45   | 32   | 45   | 48   | 58   | 65  | 88   | 91   | 82   | 83    |
| 22      |      | 50   | 46   | 39   | 45   | 49   | 64   | 65  | 84   | 90   | 80   | 80    |
| 23      |      | 45   | 45   | 45   | 45   | 52   | 64   | 66  | 83   | 84   | 80   | 76    |
| 24      |      | 44   | 45   | 39   | 43   | 52   | 69   | 72  | --   | 84   | 75   | 76    |
| 25      |      | 39   | --   | 36   | 47   | 53   | 65   | 74  | 86   | 83   | 77   | 76    |
| 26      |      | 41   | 43   | 38   | 52   | 51   | --   | 72  | 90   | 84   | 76   | 75    |
| 27      |      | 44   | 42   | 38   | 50   | 50   | 69   | 78  | 88   | 83   | 80   | 68    |
| 28      |      | 42   | 44   | 39   | 45   | 51   | 69   | 70  | 89   | 85   | 80   | 65    |
| 29      |      | 45   | 42   | --   | --   | 52   | --   | 75  | 85   | 84   | 77   | 70    |
| 30      |      | 41   | 38   | 44   | --   | 51   | 73   | 76  | 81   | 85   | 82   | 68    |
| 31      |      | --   | 41   | 41   | --   | 53   | --   | 77  | --   | 87   | 80   | --    |
| Average |      | 51   | 45   | 37   | 43   | 48   | 56   | 72  | 82   | 83   | 82   | 78    |

## DELAWARE RIVER BASIN

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## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT MANAYUNK, PHILADELPHIA, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,270                | 10                       | 34           | 2,410                | 26                       | 169          | 1,760                |                          |              |
| 2.....  | 1,200                | 10                       | 32           | 8,000                | 260                      | a 5,600      | 1,660                |                          |              |
| 3.....  | 1,130                | 10                       | 31           | 13,300               | 185                      | a 6,600      | 1,680                |                          |              |
| 4.....  | 1,160                | 8                        | 25           | 8,000                | 125                      | a 2,700      | 1,640                |                          |              |
| 5.....  | 1,200                | 15                       | 49           | 6,090                | 48                       | a 800        | 1,550                | 6                        | 26           |
| 6.....  | 1,190                | 12                       | 39           | 4,800                | 24                       | a300         | 1,510                |                          |              |
| 7.....  | 1,410                | 15                       | 57           | 4,130                | 18                       | 201          | 1,490                |                          |              |
| 8.....  | 1,510                | 18                       | 73           | 3,570                | 12                       | 116          | 1,490                |                          |              |
| 9.....  | 1,240                | 15                       | 50           | 3,140                | 11                       | 93           | 1,730                |                          |              |
| 10..... | 1,120                | 10                       | 30           | 2,880                | 10                       | 78           | 3,950                | --                       | b 320        |
| 11..... | 1,040                | 11                       | 31           | 2,560                | 10                       | 69           | 3,330                | 12                       | 108          |
| 12..... | 994                  | 8                        | 21           | 2,350                | 10                       | 64           | 2,890                | 9                        | 70           |
| 13..... | 978                  | 18                       | 48           | 2,230                | 10                       | 60           | 3,080                | 9                        | 75           |
| 14..... | 990                  | 15                       | 40           | 2,000                | 10                       | 54           | 5,820                | 30                       | s 742        |
| 15..... | 985                  | 13                       | 35           | 1,860                | 10                       | 50           | 14,800               | 408                      | s16,800      |
| 16..... | 966                  | 16                       | 42           | 1,670                | 10                       | 45           | 12,200               | 210                      | 6,920        |
| 17..... | 939                  | 15                       | 38           | 1,510                | 10                       | 41           | 9,450                | 95                       | 2,430        |
| 18..... | 932                  | 16                       | 40           | 2,560                | 16                       | 111          | 7,120                | 40                       | 770          |
| 19..... | 936                  | 10                       | 25           | 3,290                | 16                       | 142          | 5,770                | 20                       | 312          |
| 20..... | 860                  | 10                       | 23           | 2,320                | 10                       | 63           | 4,880                | 12                       | 158          |
| 21..... | 833                  | 11                       | 25           | 1,570                | 9                        | 38           | 4,980                | 10                       | 135          |
| 22..... | 878                  | 8                        | 19           | 2,800                | 18                       | a 140        | 5,080                | 15                       | 206          |
| 23..... | 2,070                | 29                       | s 133        | 2,500                | 15                       | a 100        | 5,620                | 13                       | 197          |
| 24..... | 6,370                | 70                       | s 1,160      | 2,290                | 8                        | a 50         | 5,420                | 14                       | 205          |
| 25..... | 5,120                | 30                       | 415          | 2,090                |                          |              | 5,860                | 17                       | 269          |
| 26..... | 3,600                | 16                       | 156          | 2,140                |                          |              | 5,300                | 10                       | 143          |
| 27..... | 2,980                | 15                       | 121          | 2,320                | 6                        | 34           | 4,740                | 9                        | 115          |
| 28..... | 2,700                | 10                       | 73           | 2,180                |                          |              | 4,460                | 5                        | 60           |
| 29..... | 2,460                | 12                       | 80           | 2,050                |                          |              | 4,240                | 6                        | 69           |
| 30..... | 2,080                | 11                       | 62           | 1,900                |                          |              | 3,870                | 6                        | 63           |
| 31..... | 1,820                | 13                       | 64           | --                   |                          |              | 3,380                | 3                        | 27           |
| Total.  | 52,961               | --                       | 3,071        | 100,510              | --                       | 17,888       | 140,750              | --                       | 30,428       |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | January              |                          |              | February             |                          |              | March                |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 3,190                | 3                        | 26           | 2,510                |                          |              | 4,120                | 15                       | 167          |
| 2.....  | 2,900                | 2                        | 16           | 2,520                | 5                        | 34           | 4,710                | 13                       | 167          |
| 3.....  | 2,490                | 2                        | 13           | 2,300                |                          |              | 4,450                | 11                       | 132          |
| 4.....  | 2,480                |                          |              | 2,570                |                          |              | 3,840                |                          |              |
| 5.....  | 2,460                |                          |              | 5,910                | 80                       | s 1,290      | 3,500                | 8                        | 74           |
| 6.....  | 2,340                |                          |              | 4,240                | 47                       | 539          | 3,240                |                          |              |
| 7.....  | 2,230                | 5                        | 31           | 3,670                | 33                       | 327          | 3,120                |                          |              |
| 8.....  | 2,160                |                          |              | 3,550                | 15                       | 144          | 3,160                | 11                       | 94           |
| 9.....  | 2,160                |                          |              | 3,550                | 10                       | 96           | 5,980                | 62                       | s 1,180      |
| 10..... | 2,310                |                          |              | 7,150                | 66                       | s 1,290      | 5,560                | 56                       | 842          |
| 11..... | 2,360                |                          |              | 6,310                | 55                       | a 950        | 3,980                | 22                       | 237          |
| 12..... | 2,030                |                          |              | 5,010                | 30                       | a 400        | 3,640                | 13                       | 128          |
| 13..... | 1,980                |                          |              | 4,120                | 15                       | 170          | 3,500                |                          |              |
| 14..... | 1,890                | 5                        | 24           | 3,750                | 11                       | 111          | 3,220                | 7                        | 62           |
| 15..... | 1,640                |                          |              | 3,570                | 15                       | 145          | 3,080                |                          |              |
| 16..... | 1,440                |                          |              | 3,330                | 12                       | 108          | 3,590                | 18                       | 175          |
| 17..... | 1,410                |                          |              | 3,120                | 12                       | 101          | 4,210                | 22                       | 250          |
| 18..... | 1,360                |                          |              | 2,780                | 11                       | 83           | 3,670                |                          |              |
| 19..... | 1,320                |                          |              | 2,700                | 11                       | 80           | 3,580                |                          |              |
| 20..... | 1,280                | 6                        | a 24         | 2,640                | 11                       | 78           | 3,680                | 12                       | 115          |
| 21..... | 1,510                |                          |              | 2,500                | 10                       | 68           | 3,580                |                          |              |
| 22..... | 1,650                |                          |              | 2,360                | 7                        | 45           | 3,310                |                          |              |
| 23..... | 3,230                | 38                       | s 452        | 2,210                | 6                        | 36           | 3,060                |                          |              |
| 24..... | 7,020                | 111                      | a 2,100      | 2,190                | 6                        | 36           | 2,880                |                          |              |
| 25..... | 3,710                | 34                       | 341          | 2,130                | 6                        | 35           | 2,740                | 11                       | 85           |
| 26..... | 3,010                | 13                       | 106          | 2,560                | 4                        | 28           | 2,730                |                          |              |
| 27..... | 2,740                | 8                        | 59           | 5,120                | 22                       | s 311        | 2,820                |                          |              |
| 28..... | 2,600                |                          |              | 4,460                | 28                       | 338          | 3,060                | 11                       | 90           |
| 29..... | 2,480                | 6                        | 41           | --                   | --                       | --           | 3,020                |                          |              |
| 30..... | 2,580                |                          |              | --                   | --                       | --           | 2,820                | 13                       | 99           |
| 31..... | 2,550                |                          |              | --                   | --                       | --           | 2,700                | 12                       | 88           |
| Total.  | 74,510               | --                       | 3,789        | 98,830               | --                       | 6,945        | 110,550              | --                       | 5,219        |

s Computed by subdividing day.

b Computed from estimated concentration graph.

a Computed from estimated water discharge.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT MANAYUNK, PHILADELPHIA, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | April<br>Suspended sediment     |                                          |                    | May<br>Suspended sediment       |                                          |                    | June<br>Suspended sediment      |                                          |                    |
|---------|---------------------------------|------------------------------------------|--------------------|---------------------------------|------------------------------------------|--------------------|---------------------------------|------------------------------------------|--------------------|
|         | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day |
| 1.....  | 2,550                           | 11                                       | 76                 | 2,580                           |                                          |                    | 1,180                           |                                          |                    |
| 2.....  | 4,380                           | 35                                       | s 433              | 2,460                           |                                          |                    | 1,220                           |                                          |                    |
| 3.....  | 6,980                           | 85                                       | 1,600              | 2,310                           | 12                                       | 76                 | 1,180                           | 11                                       | 34                 |
| 4.....  | 5,560                           | 50                                       | 751                | 2,190                           |                                          |                    | 1,120                           |                                          |                    |
| 5.....  | 17,300                          | 400                                      | a19,000            | 2,130                           |                                          |                    | 1,080                           |                                          |                    |
| 6.....  | 26,300                          | 850                                      | a60,000            | 2,140                           |                                          |                    | 1,050                           |                                          |                    |
| 7.....  | 19,300                          | 580                                      | a30,000            | 2,100                           |                                          |                    | 1,060                           |                                          |                    |
| 8.....  | 12,300                          | 160                                      | a5,300             | 2,030                           | 8                                        | 42                 | 1,000                           | 9                                        | 26                 |
| 9.....  | 13,300                          | 120                                      | a4,300             | 1,900                           |                                          |                    | 1,160                           |                                          |                    |
| 10..... | 9,650                           | 80                                       | 2,090              | 1,790                           |                                          |                    | 1,130                           |                                          |                    |
| 11..... | 8,030                           | 55                                       | 1,190              | 1,700                           |                                          |                    | 1,040                           |                                          |                    |
| 12..... | 6,980                           | 40                                       | 755                | 1,660                           |                                          |                    | 1,050                           |                                          |                    |
| 13..... | 6,200                           | 40                                       | 670                | 1,670                           | 9                                        | 42                 | 1,200                           | 12                                       | 38                 |
| 14..... | 5,550                           | 35                                       | 525                | 1,640                           |                                          |                    | 1,220                           |                                          |                    |
| 15..... | 5,090                           | 25                                       | 344                | 1,670                           |                                          |                    | 1,330                           |                                          |                    |
| 16..... | 4,560                           | 15                                       | 185                | 1,940                           |                                          |                    | 1,990                           | 28                                       | s 183              |
| 17..... | 3,890                           | 12                                       | 126                | 1,700                           |                                          |                    | 1,460                           | 54                                       | s 222              |
| 18..... | 3,840                           | 8                                        | 83                 | 1,540                           |                                          |                    | 1,030                           |                                          |                    |
| 19..... | 5,130                           | 24                                       | 333                | 1,440                           | 12                                       | 55                 | 1,030                           |                                          |                    |
| 20..... | 4,900                           | 20                                       | 265                | 1,810                           |                                          |                    | 921                             | 10                                       | 25                 |
| 21..... | 4,300                           | 15                                       | 174                | 1,980                           |                                          |                    | 750                             |                                          |                    |
| 22..... | 3,890                           | 10                                       | 105                | 2,070                           |                                          |                    | 695                             |                                          |                    |
| 23..... | 3,480                           | 6                                        | 56                 | 1,710                           |                                          |                    | 669                             | 10                                       | 20                 |
| 24..... | 3,280                           | 4                                        | 35                 | 1,630                           |                                          |                    | 752                             |                                          |                    |
| 25..... | 3,180                           | 5                                        | 43                 | 1,540                           | 11                                       | 51                 | 907                             |                                          |                    |
| 26..... | 3,230                           | 8                                        | 70                 | 1,450                           |                                          |                    | 1,170                           |                                          |                    |
| 27..... | 3,270                           | 6                                        | 53                 | 1,960                           |                                          |                    | 1,170                           |                                          |                    |
| 28..... | 3,020                           | 1                                        | 8                  | 2,260                           | 15                                       | s 95               | 917                             | 16                                       | 44                 |
| 29..... | 3,620                           | 15                                       | 147                | 1,460                           |                                          |                    | 909                             |                                          |                    |
| 30..... | 2,950                           | 7                                        | 56                 | 1,270                           | 11                                       | 39                 | 889                             |                                          |                    |
| 31..... | --                              | --                                       | --                 | 1,210                           |                                          |                    | --                              | --                                       | --                 |
| Total.  | 206,010                         | --                                       | 128,773            | 56,940                          | --                                       | 1,635              | 32,279                          | --                                       | 1,295              |
|         |                                 |                                          |                    |                                 |                                          |                    |                                 |                                          |                    |
| Day     | July                            |                                          |                    | August                          |                                          |                    | September                       |                                          |                    |
|         | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day | Mean<br>dis-<br>charge<br>(cfs) | Mean<br>con-<br>cen-<br>tration<br>(ppm) | Tons<br>per<br>day |
| 1.....  | 869                             |                                          |                    | 581                             |                                          |                    | 401                             | 10                                       | 11                 |
| 2.....  | 798                             |                                          |                    | 494                             |                                          |                    | 392                             |                                          |                    |
| 3.....  | 743                             |                                          |                    | 467                             |                                          |                    | 400                             |                                          |                    |
| 4.....  | 640                             |                                          |                    | 454                             | 10                                       | 13                 | 394                             |                                          |                    |
| 5.....  | 651                             |                                          |                    | 470                             |                                          |                    | 400                             | 10                                       | 11                 |
| 6.....  | 565                             | 12                                       | 22                 | 445                             |                                          |                    | 380                             |                                          |                    |
| 7.....  | 565                             |                                          |                    | 444                             | --                                       | c 16               | 375                             |                                          |                    |
| 8.....  | 550                             |                                          |                    | 436                             |                                          |                    | 386                             |                                          |                    |
| 9.....  | 630                             |                                          |                    | 424                             |                                          |                    | 375                             | 8                                        | 10                 |
| 10..... | 719                             |                                          |                    | 454                             |                                          |                    | 599                             |                                          |                    |
| 11..... | 685                             |                                          |                    | 461                             | 14                                       | 17                 | 832                             |                                          |                    |
| 12..... | 581                             |                                          |                    | 458                             |                                          |                    | 523                             | 9                                        | 15                 |
| 13..... | 548                             |                                          |                    | 431                             |                                          |                    | 544                             |                                          |                    |
| 14..... | 566                             |                                          |                    | 415                             |                                          |                    | 624                             |                                          |                    |
| 15..... | 592                             |                                          |                    | 419                             |                                          |                    | 617                             |                                          |                    |
| 16..... | 555                             | 10                                       | 15                 | 460                             |                                          |                    | 515                             | 14                                       | 27                 |
| 17..... | 535                             |                                          |                    | 427                             | 10                                       | 11                 | 871                             |                                          |                    |
| 18..... | 511                             |                                          |                    | 420                             |                                          |                    | 883                             |                                          |                    |
| 19..... | 500                             |                                          |                    | 393                             |                                          |                    | 574                             | 9                                        | 13                 |
| 20..... | 484                             |                                          |                    | 392                             |                                          |                    | 484                             |                                          |                    |
| 21..... | 487                             |                                          |                    | 398                             |                                          |                    | 435                             | 9                                        | 11                 |
| 22..... | 460                             |                                          |                    | 388                             | 16                                       | 17                 | 440                             |                                          |                    |
| 23..... | 504                             |                                          |                    | 381                             |                                          |                    | 1,050                           | 31                                       | s 108              |
| 24..... | 543                             |                                          |                    | 372                             |                                          |                    | 467                             |                                          |                    |
| 25..... | 507                             | 11                                       | 16                 | 401                             |                                          |                    | 497                             | 10                                       | 13                 |
| 26..... | 514                             |                                          |                    | 1,110                           |                                          |                    | 485                             |                                          |                    |
| 27..... | 493                             |                                          |                    | 1,060                           | 13                                       | 23                 | 396                             | 24                                       | 26                 |
| 28..... | 515                             |                                          |                    | 636                             |                                          |                    | 396                             |                                          |                    |
| 29..... | 746                             |                                          |                    | 498                             |                                          |                    | 397                             |                                          |                    |
| 30..... | 617                             |                                          |                    | 430                             |                                          |                    | 397                             |                                          |                    |
| 31..... | 820                             | 11                                       | 24                 | 411                             |                                          |                    | --                              | --                                       | --                 |
| Total.  | 18,493                          | --                                       | 554                | 15,030                          | --                                       | 514                | 15,529                          | --                                       | 574                |

Total discharge for year (cfs-days)..... 922,392

Total load for year (tons)..... 200,685

s Computed by subdividing day.

a Computed from estimated water discharge.

c Computed from partly estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT MANAYUNK, PHILADELPHIA, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet ; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection   | Time        | Discharge (cfs) | Water temperature per-<br>ature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|----------------------|-------------|-----------------|---------------------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                      |             |                 |                                       | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                      |             |                 |                                       |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 16, 1956, ..... | 12:45 p. m. | 12,200          | 42                                    | 190                           | 389                                        |                                                   | 31    | 50    | 61    | 78    | 89    | 95    | 99    |       |       | BWCM                |
| Feb. 5, 1957, .....  | 12:45 p. m. | 5,660           | 38                                    | 84                            | 282                                        |                                                   | 34    | 80    | 95    | 100   | --    | --    | --    |       |       | BWCM                |
| Apr. 6, .....        | 11:00 a. m. | 34,600          | 45                                    | 821                           | 1,230                                      |                                                   | 27    | 45    | 59    | 73    | 85    | 90    | 96    |       |       | BWCM                |

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT BELMONT FILTER PLANT, PHILADELPHIA, PA.

LOCATION.--At Belmont Filter Plant, Philadelphia, Philadelphia County, 1.6 miles upstream from gaging station which is 40 feet upstream from Fairmount Dam.

DRAINAGE AREA, 893 square miles (above Fairmount Dam).

RECORDS AVAILABLE.--Chemical analyses October 1945 to September 1957.

Water temperatures: October 1945 to September 1957.

EXTREMES, 1956-57.--Hardness: Maximum, 242 ppm Aug. 13 to Sept. 4; minimum, 70 ppm Apr. 6-10.

Specific conductance: Maximum daily, 364 micromhos Aug. 25, 27, Sept. 1; minimum, 167 micromhos Apr. 7.

Water temperatures: Maximum, 87 F June 19, 20; minimum, 33 F Jan. 28.

EXTREMES, 1944-57.--Dissolved solids (1944-56): Maximum, 362 ppm Oct. 21-30, 1953; minimum, 94 ppm Feb. 1-10 and Feb. 21-28, 1951.

Hardness: Maximum, 231 ppm Oct. 4-9, 1951; minimum, 70 ppm Apr. 6-10, 1957.

Specific conductance: Maximum daily, 368 micromhos Oct. 7, 1951; minimum daily, 154 micromhos Apr. 29, 1952.

Water temperatures: Maximum, 88 F July 20, Aug. 7, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Samples collected at raw-water intake on west side of river at Belmont Filter Plant by City of Philadelphia. Records of specific

conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for Schuylkill River at Philadelphia

for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956.....  | 938                  | 7.3                        | 0.09      | 36           | 15             | 13          | 3.0           | 63                              | 90                         | 15            | 0.1          | 8.6                        | 232                                                | 152                           | 100           | 386                                       | 7.3 | 1     |
| Oct. 11-20.....       | 662                  | --                         | --        | --           | --             | 19          | --            | 67                              | 110                        | 18            | --           | 8.5                        | --                                                 | 160                           | 105           | 416                                       | 7.2 | 4     |
| Oct. 21-31.....       | 2,500                | --                         | --        | --           | --             | 14          | --            | 50                              | 95                         | 12            | --           | 8.1                        | --                                                 | 134                           | 93            | 349                                       | 7.9 | 3     |
| Nov. 1-10.....        | 5,330                | --                         | --        | --           | --             | 8.4         | --            | 43                              | 58                         | 8.5           | --           | 8.1                        | --                                                 | 96                            | 61            | 251                                       | 7.9 | 6     |
| Nov. 11-30.....       | 1,900                | --                         | --        | --           | --             | 12          | --            | 55                              | 84                         | 11            | --           | 9.2                        | --                                                 | 129                           | 84            | 333                                       | 7.9 | 4     |
| Dec. 1-10.....        | 1,550                | --                         | --        | --           | --             | 14          | --            | 61                              | 94                         | 14            | --           | 9.7                        | --                                                 | 144                           | 94            | 368                                       | 8.0 | 6     |
| Dec. 11-31.....       | 5,330                | --                         | --        | --           | --             | 9.2         | --            | 44                              | 61                         | 8.2           | --           | 9.7                        | --                                                 | 99                            | 63            | 252                                       | 7.6 | 4     |
| Jan. 1-10, 1957.....  | 2,160                | --                         | --        | --           | --             | 11          | --            | 52                              | 78                         | 9.5           | --           | 10                         | --                                                 | 121                           | 78            | 310                                       | 7.4 | 5     |
| Jan. 11-31.....       | 2,060                | --                         | --        | --           | --             | 15          | --            | 59                              | 89                         | 13            | --           | 11                         | --                                                 | 136                           | 88            | 342                                       | 7.6 | 5     |
| Feb. 21-28.....       | 2,620                | 11                         | .02       | 29           | 12             | 7.7         | 2.2           | 59                              | 70                         | 11            | .1           | 11                         | 197                                                | 122                           | 74            | 304                                       | 6.8 | 4     |
| Mar. 13-19.....       | 3,260                | 10                         | .02       | 27           | 9.8            | 7.4         | 1.9           | 34                              | 64                         | 9.0           | .1           | 9.0                        | 163                                                | 108                           | 14            | 272                                       | 6.8 | 3     |
| Apr. 6-10.....        | 15,900               | 8.7                        | .05       | 18           | 6.2            | 3.6         | 1.7           | 33                              | 61                         | 4.6           | .1           | 7.1                        | 106                                                | 70                            | 44            | 177                                       | 6.8 | 3     |
| Apr. 12-15.....       | 5,680                | 10                         | .02       | 25           | 6.9            | 5.7         | 1.8           | 35                              | 61                         | 3.4           | .1           | 7.4                        | 138                                                | 91                            | 63            | 231                                       | 7.2 | 5     |
| Apr. 16-May 4.....    | 3,190                | --                         | --        | --           | --             | --          | 4.6           | 50                              | 62                         | 7.7           | --           | --                         | --                                                 | 112                           | 71            | 280                                       | 7.7 | 4     |
| May 5-21.....         | 1,520                | --                         | --        | --           | --             | --          | 8.5           | 65                              | 84                         | 11            | --           | 7.2                        | --                                                 | 144                           | 90            | 361                                       | 7.3 | 3     |
| May 22-June 6.....    | 1,170                | --                         | --        | --           | --             | 11          | --            | 76                              | 82                         | 13            | --           | 8.2                        | --                                                 | 150                           | 88            | 381                                       | 7.7 | 3     |
| June 7-27.....        | 756                  | --                         | --        | --           | --             | --          | 9.9           | 82                              | 92                         | 15            | --           | 8.1                        | --                                                 | 168                           | 101           | 427                                       | 7.5 | 5     |
| June 28-July 27.....  | 286                  | 5.7                        | .02       | 43           | 18             | 17          | 3.4           | 86                              | 124                        | 17            | .2           | 6.2                        | 279                                                | 182                           | 111           | 449                                       | 8.0 | 5     |
| July 28-Aug. 12.....  | 194                  | --                         | --        | --           | --             | 31          | --            | 102                             | 133                        | 23            | --           | 6.1                        | 108                                                | 162                           | 108           | 517                                       | 7.0 | 4     |
| Aug. 13-Sept. 4.....  | 164                  | 8.2                        | .01       | 51           | 23             | 28          | 4.2           | 105                             | 147                        | 31            | .3           | 3.7                        | 356                                                | 222                           | 136           | 557                                       | 8.1 | 3     |
| Sept. 5-30.....       | 231                  | 8.3                        | .01       | 44           | 24             | 24          | 4.8           | 96                              | 132                        | 26            | --           | 6.4                        | 324                                                | 209                           | 130           | 509                                       | 8.0 | 5     |
| Weighted-average..... | 1,970                | --                         | --        | --           | --             | --          | --            | 69                              | 96                         | 15            | --           | 7.9                        | --                                                 | 152                           | 93            | 384                                       | --  | 4     |

## DELAWARE RIVER BASIN--Continued

SCHUYKILL RIVER AT BELMONT FILTER PLANT, PHILADELPHIA, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 63   | 61   | 47   | 41   | 41   | 47   | --   | 71  | 74   | 82   | 83   | 77    |
| 2       | 63   | 63   | 46   | 37   | 41   | 45   | --   | 70  | 74   | 80   | 82   | 78    |
| 3       | 63   | 63   | --   | 35   | 41   | 43   | --   | 69  | 74   | 79   | 83   | 78    |
| 4       | 66   | 62   | 48   | 35   | 40   | 42   | --   | 66  | 74   | 79   | 83   | 77    |
| 5       | 64   | 60   | 44   | 36   | 41   | 42   | --   | 65  | 75   | 80   | 83   | 77    |
| 6       | 65   | 58   | 46   | 37   | 40   | 43   | 48   | 64  | 75   | 79   | 82   | 76    |
| 7       | --   | 58   | 48   | 38   | 40   | 43   | 49   | 66  | 75   | 80   | 80   | 76    |
| 8       | 65   | 58   | 50   | 38   | 41   | 44   | 48   | 65  | 75   | 81   | 79   | 76    |
| 9       | 65   | 57   | 51   | 38   | 42   | 44   | 48   | 67  | 74   | 81   | 79   | 75    |
| 10      | 64   | 55   | 51   | 39   | 42   | 43   | 48   | 68  | 73   | 81   | 78   | 73    |
| 11      | 63   | 52   | 50   | 38   | 42   | --   | --   | 71  | 74   | 80   | 78   | 73    |
| 12      | 62   | 50   | --   | 38   | 41   | --   | 49   | 71  | 75   | 80   | 78   | 74    |
| 13      | 61   | 50   | 55   | 38   | 41   | 43   | 51   | 73  | 76   | 80   | 78   | 75    |
| 14      | 61   | 50   | 47   | 37   | 40   | 45   | 51   | 73  | 76   | 81   | 79   | 76    |
| 15      | 62   | 50   | 47   | 37   | 41   | 48   | 50   | 73  | 80   | 81   | 78   | 77    |
| 16      | 63   | 51   | --   | 35   | 40   | 51   | 51   | 75  | 82   | 81   | 78   | 79    |
| 17      | 64   | 53   | 45   | 35   | 41   | 53   | 51   | 74  | 85   | 81   | 77   | 79    |
| 18      | 64   | 52   | 48   | 34   | 41   | 53   | 52   | 74  | 85   | 81   | 78   | 77    |
| 19      | 64   | 48   | 45   | 37   | 41   | 52   | 52   | 73  | 87   | 81   | 78   | 77    |
| 20      | 64   | 50   | 45   | 34   | 41   | --   | 54   | 71  | 87   | 81   | 78   | 77    |
| 21      | 66   | 51   | 45   | 35   | 40   | 50   | 54   | 70  | 86   | 81   | 74   | 77    |
| 22      | 65   | 52   | 45   | 35   | 40   | 49   | 56   | 65  | 85   | 82   | 75   | 78    |
| 23      | 67   | 50   | 46   | 40   | 42   | 48   | 59   | 66  | 85   | 83   | 75   | 77    |
| 24      | 68   | 48   | 46   | 42   | 44   | 49   | 59   | 67  | 85   | 82   | 76   | 76    |
| 25      | 66   | 45   | 46   | 42   | 44   | 50   | 67   | 69  | 85   | 81   | 76   | 74    |
| 26      | 66   | 44   | 47   | 41   | 45   | 50   | 63   | 71  | 84   | 80   | 74   | 74    |
| 27      | 65   | 43   | 46   | 42   | 49   | 52   | 66   | 73  | --   | 80   | 74   | 73    |
| 28      | 58   | 46   | 45   | 33   | 49   | 51   | --   | 74  | 84   | 80   | 76   | 70    |
| 29      | 57   | 46   | 46   | 41   | --   | 51   | 70   | 74  | 84   | --   | 76   | 68    |
| 30      | 58   | 46   | 44   | 40   | --   | 51   | 71   | 73  | 82   | 80   | 76   | 67    |
| 31      | 59   | --   | 40   | 41   | --   | 52   | --   | 73  | --   | 83   | 77   | --    |
| Average | 63   | 52   | 47   | 38   | 42   | 48   | --   | 70  | 80   | 81   | 78   | 75    |



## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT EDDYSTONE, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from surface and 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Sampling station | Discharge at Trenton (cfs) | Chloride (Cl) | Specific conductance (micro-mhos at 25°C) | pH  | Biochemical oxygen demand | Dissolved oxygen |
|---------------------|------------------|----------------------------|---------------|-------------------------------------------|-----|---------------------------|------------------|
| Oct. 8, 1956 .....  | Top              | 5,420                      | 20            | 288                                       | 6.8 | 2.4                       | 2.4              |
|                     | Bottom           |                            | 20            | 288                                       | 6.8 | --                        | --               |
| Nov. 8 .....        | Top              | 8,650                      | 11            | 204                                       | 7.4 | 2.0                       | 3.6              |
|                     | Bottom           |                            | 10            | 206                                       | 7.3 | --                        | --               |
| Dec. 13 .....       | Top              | 8,650                      | 18            | 265                                       | 6.4 | .2                        | 4.6              |
|                     | Bottom           |                            | 17            | 260                                       | 6.4 | --                        | --               |
| Jan. 30, 1957 ..... | Top              | 11,000                     | 12            | 244                                       | 7.4 | 3.4                       | 6.4              |
|                     | Bottom           |                            | 12            | 244                                       | 7.4 | --                        | --               |
| Mar. 11 .....       | Top              | 12,200                     | 10            | 194                                       | 6.6 | .5                        | 4.4              |
|                     | Bottom           |                            | 10            | 194                                       | 6.6 | --                        | --               |
| Apr. 3 .....        | Top              | 16,700                     | 10            | 209                                       | 7.0 | 5.2                       | 3.6              |
|                     | Bottom           |                            | 10            | 190                                       | 6.8 | --                        | --               |
| May 2 .....         | Top              | 9,850                      | 8.0           | 192                                       | 6.8 | 2.6                       | 3.0              |
|                     | Bottom           |                            | 8.0           | 192                                       | 6.8 | --                        | --               |
| June 26 .....       | Top              | 4,820                      | 28            | 327                                       | 6.5 | 3.3                       | 1.8              |
|                     | Bottom           |                            | 28            | 329                                       | 6.4 | --                        | --               |
| July 22 .....       | Top              | 3,040                      | 163           | 854                                       | 6.4 | 2.1                       | 2.6              |
|                     | Bottom           |                            | 178           | 876                                       | 6.4 | --                        | --               |
| Aug. 23 .....       | Top              | 1,650                      | 720           | 2,710                                     | 6.0 | 1.4                       | 2.1              |
|                     | Bottom           |                            | 840           | 3,120                                     | 6.0 | --                        | --               |
| Sept. 9 .....       | Top              | 2,160                      | 760           | 2,830                                     | 6.3 | 5.4                       | 1.6              |
|                     | Bottom           |                            | 750           | 2,810                                     | 6.3 | --                        | --               |

DELAWARE RIVER BASIN--Continued  
DELAWARE RIVER AT MARCUS HOOK, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1957.  
REMARKS.--Samples taken at center of stream approximately 3 feet from surface and 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Sampling station | Discharge at Trenton (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Biochemical oxygen demand | Dissolved oxygen |
|--------------------|------------------|----------------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|---------------------------|------------------|
|                    |                  |                            |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |                           |                  |
| Oct. 8, 1956       | Top              | 5,420                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 86            | --           | --                         | --                                                 | --                            | --            | 545                                       | 6.7 | --    | 5.4                       | 3.0              |
|                    | Bottom           |                            |                            |           |              |                | 65          |               | 34                              | 88                         | 102           | --           | 8.8                        | --                                                 | 128                           | --            | 609                                       | 7.3 | 5     | --                        | --               |
| Nov. 8             | Top              | 8,650                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 14            | --           | --                         | --                                                 | --                            | --            | 236                                       | 6.6 | 3.4   | 3.4                       | 3.2              |
|                    | Bottom           |                            |                            |           |              |                | 14          |               | 35                              | 49                         | 13            | --           | 10                         | --                                                 | 76                            | --            | 233                                       | 6.5 | 6     | --                        | --               |
| Dec. 13            | Top              | 8,650                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 18            | --           | --                         | --                                                 | --                            | --            | 267                                       | 6.4 | 3.4   | 3.4                       | 5.4              |
|                    | Bottom           |                            |                            |           |              |                | --          |               | --                              | --                         | 17            | --           | --                         | --                                                 | --                            | --            | 264                                       | 7.0 | 7     | --                        | --               |
| Jan. 30, 1957      | Top              | 11,000                     | --                         | --        | --           | --             | --          | --            | --                              | --                         | 18            | --           | --                         | --                                                 | --                            | --            | 280                                       | 7.8 | 2.4   | 2.4                       | 6.0              |
|                    | Bottom           |                            |                            |           |              |                | --          |               | --                              | --                         | 20            | --           | --                         | --                                                 | --                            | --            | 277                                       | 6.0 | --    | --                        | --               |
| Mar. 11            | Top              | 12,200                     | --                         | --        | --           | --             | --          | --            | --                              | --                         | 10            | --           | --                         | --                                                 | --                            | --            | 203                                       | 6.6 | --    | 8                         | 6.8              |
|                    | Bottom           |                            | 6.3                        | 0.14      | 17           | 4.0            | 9.6         | 2.4           | 22                              | 42                         | 10            | 0.1          | 9.3                        | 127                                                | 59                            | 41            | 199                                       | 7.0 | 7     | --                        | --               |
| Apr. 3             | Top              | 16,700                     | --                         | --        | --           | --             | --          | --            | --                              | --                         | 10            | --           | --                         | --                                                 | --                            | --            | 190                                       | 6.6 | --    | 2.5                       | 6.0              |
|                    | Bottom           |                            | 6.2                        | .01       | 15           | 5.0            | 9.9         | 3.4           | 26                              | 40                         | 10            | .3           | 11                         | 121                                                | 58                            | 36            | 191                                       | 6.6 | 6     | --                        | --               |
| May 2              | Top              | 9,850                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 8.0           | --           | --                         | --                                                 | --                            | --            | 193                                       | 6.8 | --    | 2.0                       | 3.0              |
|                    | Bottom           |                            |                            | .01       | 19           | 4.5            | 8.8         | 2.0           | 34                              | 45                         | 9.1           | .3           | 2.5                        | 119                                                | 66                            | 38            | 191                                       | 6.5 | 7     | --                        | --               |
| June 26            | Top              | 4,820                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 266           | --           | --                         | --                                                 | --                            | --            | 1,180                                     | 5.3 | 3     | 3                         | 2.3              |
|                    | Bottom           |                            |                            |           |              |                | --          |               | --                              | --                         | 260           | --           | --                         | --                                                 | --                            | --            | 1,170                                     | --  | --    | --                        | --               |
| July 22            | Top              | 3,040                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 460           | --           | --                         | --                                                 | --                            | --            | 1,840                                     | 5.8 | --    | 1.5                       | 3.2              |
|                    | Bottom           |                            |                            |           |              |                | 290         |               | 4                               | 168                        | 490           | --           | 14                         | --                                                 | 240                           | 237           | 1,880                                     | 5.4 | 6     | --                        | --               |
| Aug. 23            | Top              | 1,650                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 1,680         | --           | --                         | --                                                 | --                            | --            | 5,910                                     | 5.6 | --    | 1.4                       | 2.6              |
|                    | Bottom           |                            |                            |           |              |                | --          |               | --                              | --                         | 1,720         | --           | --                         | --                                                 | --                            | --            | 5,920                                     | --  | --    | --                        | --               |
| Sept. 9            | Top              | 2,160                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 1,720         | --           | --                         | --                                                 | --                            | --            | 5,820                                     | 5.8 | --    | 2.1                       | 3.6              |
|                    | Bottom           |                            |                            |           |              |                | 972         |               | 2                               | 352                        | 1,660         | --           | 5.2                        | --                                                 | 600                           | 599           | 5,710                                     | 4.9 | 7     | --                        | --               |

DELAWARE RIVER BASIN--Continued  
BRANDYWINE CREEK AT WILMINGTON, DEL.

LOCATION.--At Henry Clay Bridge in Wilmington, New Castle County, 0.2 mile upstream from gaging station, and 4.4 miles upstream from mouth.  
DRAINAGE AREA.--314 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950, October 1952 to July 1953, March 1956 to September 1957.

Water temperatures: November 1956 to September 1957.

Sediment records: December 1946 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 86°F June 17; minimum, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 1,470 ppm Nov. 2; minimum daily, 1 ppm Sept. 16.

Sediment loads: Maximum daily, 21,600 tons Nov. 2; minimum daily, less than 0.50 ton Sept. 16.

EXTREMES, 1946-57.--Sediment concentrations: Maximum daily, 1,470 ppm Nov. 2, 1956; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 21,600 tons Nov. 2, 1956; minimum daily, less than 0.50 ton on many days.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 5, 1956       | 196                  | 10                         | 0.08      | 16           | 5.7            | 8.4         | 2.8           | 58                              | 23                         | 9.4           | 0.1          | 6.6                        | 119                                                | 63                            | 16            | 202                                       | 7.1 | 3     |
| Nov. 6             | 459                  | 15                         | .04       | 15           | 6.4            | 6.6         | 3.7           | 46                              | 26                         | 7.5           | .2           | 7.4                        | 118                                                | 64                            | 26            | 175                                       | 6.8 | 6     |
| Dec. 11            | 311                  | 12                         | .03       | 14           | 4.8            | 7.1         | 2.3           | 46                              | 21                         | 7.6           | .0           | 8.1                        | 98                                                 | 54                            | 17            | 166                                       | 7.9 | 2     |
| Jan. 8, 1957       | 337                  | 13                         | .02       | 16           | 5.0            | 6.8         | 2.0           | 49                              | 20                         | 7.0           | .1           | 9.4                        | 120                                                | 60                            | 20            | 169                                       | 7.9 | 2     |
| Apr. 4             | 536                  | 15                         | .04       | 11           | 4.7            | 9.0         |               | a20                             | 21                         | 6.7           | .2           | 3.6                        | 65                                                 | 47                            | 16            | 141                                       | 8.8 | 3     |
| May 2              | 344                  | 7.9                        | .04       | 13           | 5.4            | 7.0         | 1.6           | 46                              | 19                         | 7.1           | .1           | 7.7                        | 110                                                | 50                            | 17            | 154                                       | 7.4 | 5     |
| June 10            | 247                  | 13                         | .04       | 14           | 5.8            | 12          | 2.3           | 50                              | 28                         | 9.6           | .1           | 7.7                        | 130                                                | 59                            | 18            | 174                                       | 7.3 | 7     |
| July 2             | 131                  | 13                         | .04       | 14           | 5.4            | 10          | 2.5           | 55                              | 21                         | 10            | .1           | 5.7                        | 135                                                | 57                            | 12            | 179                                       | 7.2 | 5     |
| Aug. 6             | 76                   | --                         | --        | --           | --             | 16          |               | 70                              | 26                         | 12            | --           | 3.0                        | --                                                 | 70                            | 13            | 232                                       | 6.7 | 7     |
| Sept. 4            | 65                   | --                         | --        | --           | --             | 17          |               | 70                              | 37                         | 12            | --           | 3.0                        | --                                                 | 78                            | 21            | 237                                       | 6.7 | 5     |
| Sept. 5            | 65                   | --                         | --        | --           | --             | 9.2         |               | 64                              | 30                         | 3.2           | --           | 5.0                        | --                                                 | 72                            | 20            | 217                                       | 7.0 | 7     |

<sup>a</sup> Includes equivalent of 13 parts per million of carbonate (CO<sub>3</sub>).

## DELAWARE RIVER BASIN--Continued

## BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Temperature (°F) of water, November 1956 to September 1957

[Once-daily measurement at approximately 7 a.m.]

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      | --   | 32   | 34   | 38   | 39   | 47   | 62  | 69   | 74   | 78   | 74    |
| 2       |      | --   | 34   | 36   | 36   | 38   | 50   | 60  | 69   | 74   | 75   | 73    |
| 3       |      | --   | 40   | 32   | 36   | 40   | 49   | 57  | 72   | 78   | 75   | 72    |
| 4       |      | --   | 40   | 35   | --   | 41   | 48   | 54  | 67   | 72   | 75   | 76    |
| 5       |      | --   | 40   | 37   | 41   | 38   | 45   | 54  | 68   | --   | 75   | 72    |
| 6       |      | --   | 44   | 34   | --   | 38   | 48   | 56  | 66   | 75   | 72   | 70    |
| 7       |      | 53   | 45   | 36   | 39   | 40   | 47   | 57  | 69   | 74   | 70   | 71    |
| 8       |      | 53   | 50   | 35   | 39   | 42   | 42   | 60  | 70   | 74   | 70   | 70    |
| 9       |      | 50   | 50   | 34   | 40   | 41   | 50   | 63  | 60   | 75   | 72   | 70    |
| 10      |      | 47   | 40   | 39   | 42   | 39   | 46   | 66  | 67   | 75   | 74   | 69    |
| 11      |      | 42   | 40   | 34   | 41   | 42   | 45   | 70  | 67   | 71   | 72   | 67    |
| 12      |      | 46   | 44   | 32   | 33   | 40   | 51   | 64  | 72   | 73   | 74   | 70    |
| 13      |      | 46   | 47   | 34   | 37   | 42   | 50   | 70  | 75   | 75   | 71   | 70    |
| 14      |      | 44   | 45   | --   | 38   | 45   | 46   | 69  | 77   | 76   | --   | 74    |
| 15      |      | 46   | 43   | --   | 43   | 50   | 45   | 68  | 79   | 75   | 74   | 72    |
| 16      |      | 50   | 43   | 32   | 40   | 49   | 47   | 70  | 80   | 74   | 75   | 76    |
| 17      |      | 50   | 50   | 32   | 37   | 48   | 51   | 65  | 86   | 73   | 74   | 75    |
| 18      |      | 47   | 45   | 32   | --   | 51   | 53   | 66  | 81   | 72   | 72   | 72    |
| 19      |      | 49   | 39   | 32   | 39   | 47   | 54   | 65  | 82   | 73   | 73   | 69    |
| 20      |      | 39   | 39   | 34   | --   | 44   | 54   | 65  | 77   | 75   | 69   | 70    |
| 21      |      | 45   | 43   | 34   | 36   | 43   | 55   | 65  | 74   | 76   | 69   | 70    |
| 22      |      | 48   | 47   | 34   | 36   | 43   | 55   | 67  | 75   | 77   | 70   | 70    |
| 23      |      | 40   | 46   | 39   | 38   | 45   | 60   | 60  | 76   | 78   | 68   | 69    |
| 24      |      | 36   | 45   | 35   | 39   | 46   | 62   | 67  | 77   | 75   | 67   | 64    |
| 25      |      | 34   | 45   | 33   | --   | 51   | 61   | 67  | 79   | 72   | 70   | 63    |
| 26      |      | 42   | 42   | 35   | 46   | 46   | 59   | 69  | 78   | 73   | 70   | 60    |
| 27      |      | 38   | 38   | 37   | 50   | 45   | 66   | 65  | 78   | 76   | 68   | 58    |
| 28      |      | 36   | 39   | 37   | 46   | 45   | 66   | 66  | 79   | 75   | 68   | 58    |
| 29      |      | 38   | 40   | 37   | --   | 45   | 65   | 65  | 77   | 76   | 68   | 53    |
| 30      |      | 36   | 34   | 37   | --   | 46   | 65   | 66  | 75   | 75   | 70   | 55    |
| 31      |      | --   | 41   | 38   | --   | 44   | --   | --  | --   | 78   | 73   | --    |
| Average |      | 44   | 44   | a 35 | 40   | 44   | 53   | 64  | 74   | 75   | 72   | 68    |

a Includes estimated temperature, 32°F on missing days.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## DELAWARE RIVER BASIN--Continued

## BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 191                   | 8                         | 4            | 493                   | 168                       | s 371        | 280                   |                           |              |
| 2.....  | 173                   | 9                         | 4            | 5,650                 | 1,470                     | s 21,600     | 269                   |                           |              |
| 3.....  | 162                   | 8                         | 3            | 1,590                 | 180                       | 773          | 274                   |                           |              |
| 4.....  | 162                   | 10                        | 4            | 799                   | 50                        | 108          | 263                   |                           |              |
| 5.....  | 196                   | 13                        | 7            | 561                   | 28                        | 42           | 258                   |                           |              |
| 6.....  | 176                   | 7                         | 3            | 459                   | 14                        | 17           | 258                   | 3                         | 2            |
| 7.....  | 196                   | 10                        | 5            | 402                   | 21                        | 23           | 263                   |                           |              |
| 8.....  | 187                   | 10                        | 5            | 388                   | 15                        | 16           | 258                   |                           |              |
| 9.....  | 165                   | 8                         | 4            | 350                   |                           |              | 269                   |                           |              |
| 10..... | 155                   | 6                         | 3            | 330                   |                           |              | 395                   |                           |              |
| 11..... | 148                   | 7                         | 3            | 304                   |                           |              | 311                   |                           |              |
| 12..... | 145                   | 6                         | 2            | 302                   |                           |              | 311                   | 4                         | 3            |
| 13..... | 148                   | 6                         | 2            | 292                   | 5                         | 4            | 350                   |                           |              |
| 14..... | 148                   | 4                         | 2            | 274                   |                           |              | 943                   | 51                        | s 200        |
| 15..... | 148                   | 4                         | 2            | 274                   |                           |              | 1,670                 | 105                       | s 555        |
| 16..... | 148                   | 5                         | 2            | 269                   |                           |              | 1,260                 | 50                        | 136          |
| 17..... | 145                   | 4                         | 2            | 269                   |                           |              | 790                   | 20                        | 43           |
| 18..... | 176                   | 6                         | 3            | 621                   | 35                        | 59           | 595                   | 8                         | 13           |
| 19..... | 165                   | 6                         | 3            | 442                   | 15                        | 18           | 502                   |                           |              |
| 20..... | 148                   | 4                         | 2            | 337                   | 17                        | 15           | 468                   |                           |              |
| 21..... | 148                   | 5                         | 2            | 318                   | 13                        | 11           | 518                   |                           |              |
| 22..... | 311                   | 31                        | s 52         | 494                   | 20                        | 27           | 536                   | 6                         | 9            |
| 23..... | 1,020                 | 98                        | s 291        | 402                   | 10                        | 11           | 570                   |                           |              |
| 24..... | 578                   | 20                        | 31           | 324                   |                           |              | 570                   |                           |              |
| 25..... | 304                   | 9                         | 7            | 298                   |                           |              | 612                   |                           |              |
| 26..... | 242                   | 5                         | 3            | 365                   |                           |              | 510                   |                           |              |
| 27..... | 253                   | 5                         | 3            | 365                   | 4                         | 3            | 459                   |                           |              |
| 28..... | 247                   | 4                         | 3            | 318                   |                           |              | 442                   | 4                         | 5            |
| 29..... | 213                   | 9                         | 5            | 298                   |                           |              | 434                   |                           |              |
| 30..... | 205                   | 6                         | 3            | 292                   |                           |              | 395                   |                           |              |
| 31..... | 304                   | 8                         | 7            | --                    | --                        | --           | 358                   |                           |              |
| Total.  | 7,107                 | --                        | 472          | 17,882                | --                        | 23,148       | 15,391                | --                        | 1,069        |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 372                   |                           |              | 425                   |                           |              | 578                   |                           |              |
| 2.....  | 310                   |                           |              | 502                   | 15                        | 19           | 654                   |                           |              |
| 3.....  | 310                   |                           |              | 450                   |                           |              | 638                   |                           |              |
| 4.....  | 350                   | 2                         | 2            | 481                   |                           |              | 510                   | 6                         | 9            |
| 5.....  | 350                   |                           |              | 1,000                 | 108                       | s 311        | 459                   |                           |              |
| 6.....  | 330                   |                           |              | 518                   | 28                        | 39           | 425                   |                           |              |
| 7.....  | 337                   |                           |              | 493                   | 11                        | 15           | 425                   |                           |              |
| 8.....  | 337                   |                           |              | 468                   | 7                         | 9            | 442                   |                           |              |
| 9.....  | 344                   | 3                         | 3            | 468                   | 8                         | 10           | 646                   | 6                         | 8            |
| 10..... | 410                   |                           |              | 1,670                 | 321                       | s 1,520      | 518                   |                           |              |
| 11..... | 380                   |                           |              | 867                   | 150                       | s 248        | 425                   |                           |              |
| 12..... | 324                   |                           |              | 578                   | 30                        | 47           | 425                   |                           |              |
| 13..... | 330                   |                           |              | 518                   | 15                        | 21           | 402                   | 7                         | 7            |
| 14..... | 324                   |                           |              | 493                   |                           |              | 380                   |                           |              |
| 15..... | 247                   | 6                         | 5            | 502                   |                           |              | 442                   | 16                        | 19           |
| 16..... | 270                   |                           |              | 493                   | 6                         | 8            | 714                   | 36                        | 69           |
| 17..... | 250                   |                           |              | 459                   |                           |              | 493                   | 14                        | 19           |
| 18..... | 230                   |                           |              | 410                   |                           |              | 442                   |                           |              |
| 19..... | 260                   |                           |              | 410                   |                           |              | 442                   |                           |              |
| 20..... | 260                   | 4                         | 3            | 402                   | 5                         | 5            | 484                   | 8                         | 9            |
| 21..... | 298                   |                           |              | 372                   |                           |              | 450                   |                           |              |
| 22..... | 365                   |                           |              | 365                   |                           |              | 410                   |                           |              |
| 23..... | 705                   | 22                        | s 50         | 365                   |                           |              | 388                   |                           |              |
| 24..... | 606                   | 32                        | 52           | 365                   | 6                         | 6            | 372                   | 9                         | 9            |
| 25..... | 380                   | 23                        | 24           | 365                   |                           |              | 350                   |                           |              |
| 26..... | 350                   |                           |              | 476                   |                           |              | 350                   |                           |              |
| 27..... | 337                   |                           |              | 790                   | 36                        | 77           | 402                   |                           |              |
| 28..... | 337                   |                           |              | 518                   | 21                        | 29           | 425                   |                           |              |
| 29..... | 365                   | 26                        | 25           | --                    | --                        | --           | 372                   | 7                         | 7            |
| 30..... | 410                   |                           |              | --                    | --                        | --           | 372                   |                           |              |
| 31..... | 365                   |                           |              | --                    | --                        | --           | 350                   |                           |              |
| Total.  | 10,843                | --                        | 346          | 15,223                | --                        | 2,482        | 14,185                | --                        | 343          |

s Computed by subdividing day.

## DELAWARE RIVER BASIN--Continued

## BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 330                  | 25                       | 22           | 372                  |                          |              | 222                  |                          |              |
| 2.....  | 1,150                | 105                      | s 389        | 344                  |                          |              | 222                  |                          |              |
| 3.....  | 799                  | 71                       | s 163        | 330                  |                          |              | 227                  |                          |              |
| 4.....  | 536                  | 15                       | 22           | 330                  | 18                       | 17           | 218                  |                          |              |
| 5.....  | 1,310                | 118                      | s 600        | 337                  |                          |              | 222                  | 18                       | 11           |
| 6.....  | 2,420                | 557                      | s 3,700      | 330                  |                          |              | 236                  |                          |              |
| 7.....  | 1,150                | 140                      | 435          | 311                  |                          |              | 227                  |                          |              |
| 8.....  | 876                  | 40                       | 95           | 298                  |                          |              | 242                  |                          |              |
| 9.....  | 1,090                | 32                       | 94           | 292                  |                          |              | 330                  |                          |              |
| 10..... | 782                  |                          |              | 285                  | 12                       | 10           | 247                  |                          |              |
| 11..... | 663                  |                          |              | 292                  |                          |              | 205                  | 16                       | 10           |
| 12..... | 620                  | 14                       | 24           | 304                  |                          |              | 205                  |                          |              |
| 13..... | 578                  |                          |              | 304                  |                          |              | 205                  |                          |              |
| 14..... | 552                  |                          |              | 350                  | 27                       | 24           | 187                  |                          |              |
| 15..... | 527                  |                          |              | 365                  | 18                       | 18           | 180                  |                          |              |
| 16..... | 493                  |                          |              | 304                  |                          |              | 176                  |                          |              |
| 17..... | 493                  | 10                       | 14           | 274                  |                          |              | 227                  |                          |              |
| 18..... | 510                  |                          |              | 269                  |                          |              | 200                  |                          |              |
| 19..... | 595                  |                          |              | 280                  | 12                       | 10           | 173                  | 12                       | 6            |
| 20..... | 544                  |                          |              | 395                  |                          |              | 155                  |                          |              |
| 21..... | 510                  |                          |              | 380                  |                          |              | 142                  |                          |              |
| 22..... | 459                  |                          |              | 311                  |                          |              | 142                  |                          |              |
| 23..... | 476                  | 15                       | 19           | 304                  |                          |              | 142                  |                          |              |
| 24..... | 484                  |                          |              | 285                  | 10                       | 8            | 142                  |                          |              |
| 25..... | 459                  |                          |              | 253                  |                          |              | 158                  |                          |              |
| 26..... | 620                  |                          |              | 253                  |                          |              | 162                  | 20                       | 8            |
| 27..... | 527                  | 22                       | 31           | 263                  |                          |              | 162                  |                          |              |
| 28..... | 442                  |                          |              | 258                  |                          |              | 148                  |                          |              |
| 29..... | 561                  | 118                      | 179          | 231                  | 12                       | 8            | 173                  |                          |              |
| 30..... | 402                  | 27                       | 29           | 227                  |                          |              | 165                  |                          |              |
| 31..... | --                   | --                       | --           | 222                  |                          |              | --                   |                          |              |
| Total.  | 20,958               | --                       | 6,120        | 9,353                | --                       | 368          | 5,842                | --                       | 260          |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 136                  |                          |              | 88                   |                          |              | 73                   |                          |              |
| 2.....  | 131                  |                          |              | 84                   |                          |              | 69                   |                          |              |
| 3.....  | 120                  |                          |              | 76                   | 6                        | 1            | 71                   | 6                        | 1            |
| 4.....  | 117                  |                          |              | 74                   |                          |              | 65                   |                          |              |
| 5.....  | 115                  |                          |              | 84                   |                          |              | 65                   |                          |              |
| 6.....  | 115                  | 12                       | 4            | 76                   |                          |              | 60                   |                          |              |
| 7.....  | 110                  |                          |              | 74                   |                          |              | 62                   |                          |              |
| 8.....  | 115                  |                          |              | 69                   | 6                        | 1            | 80                   | 8                        | 2            |
| 9.....  | 131                  |                          |              | 71                   |                          |              | 78                   |                          |              |
| 10..... | 151                  |                          |              | 69                   |                          |              | 129                  |                          |              |
| 11..... | 120                  |                          |              | 73                   |                          |              | 265                  | 75                       | 54           |
| 12..... | 117                  |                          |              | 71                   |                          |              | 125                  | 28                       | 9            |
| 13..... | 115                  |                          |              | 64                   | 6                        | 1            | 128                  | 9                        | 3            |
| 14..... | 142                  |                          |              | 58                   |                          |              | 208                  | 14                       | 8            |
| 15..... | 128                  |                          |              | 58                   |                          |              | 155                  | 8                        | 3            |
| 16..... | 115                  | 10                       | 3            | 86                   |                          |              | 112                  | 1                        | (t)          |
| 17..... | 105                  |                          |              | 67                   |                          |              | 258                  | 20                       | 14           |
| 18..... | 100                  |                          |              | 58                   | 6                        | 1            | 183                  | 13                       | 6            |
| 19..... | 98                   |                          |              | 60                   |                          |              | 122                  |                          |              |
| 20..... | 94                   |                          |              | 62                   |                          |              | 108                  |                          |              |
| 21..... | 92                   |                          |              | 62                   |                          |              | 103                  | 8                        | 2            |
| 22..... | 90                   |                          |              | 57                   |                          |              | 100                  |                          |              |
| 23..... | 94                   |                          |              | 56                   | 9                        | 2            | 520                  | 140                      | s 226        |
| 24..... | 115                  |                          |              | 56                   |                          |              | 169                  | 65                       | 30           |
| 25..... | 100                  |                          |              | 86                   |                          |              | 125                  | 25                       | 8            |
| 26..... | 92                   | 8                        | 2            | 339                  | 32                       | 29           | 108                  |                          |              |
| 27..... | 90                   |                          |              | 139                  | 13                       | 5            | 100                  |                          |              |
| 28..... | 98                   |                          |              | 90                   |                          |              | 96                   | 16                       | 4            |
| 29..... | 103                  |                          |              | 80                   | 12                       | 3            | 94                   |                          |              |
| 30..... | 94                   |                          |              | 78                   |                          |              | 105                  |                          |              |
| 31..... | 90                   |                          |              | 74                   |                          |              | --                   | --                       | --           |
| Total.  | 3,433                | --                       | 92           | 2,538                | --                       | 76           | 3,936                | --                       | 404          |

Total discharge for year (cfs-days) ..... 126,691

Total load for year (tons) ..... 35,182

s Computed by subdividing day.

t Less than 0.50 ton.

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT MEMORIAL BRIDGE, WILMINGTON, DEL.

LOCATION.--Center of the navigation channel at the center of the Delaware Memorial Bridge, 1.9 miles downstream from the mouth of the Christina River.

DRAINAGE AREA.--11,030 square miles.

RECORDS AVAILABLE.--Chemical analyses: July 1955 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES: 1956-57.--Water temperatures: Maximum, 83°F June 26, 28; minimum, freezing point Jan. 17, 18, 21, 22.

REMARKS.--Maximum and minimum daily records of specific conductance taken from continuous conductivity recorder available in district office at Philadelphia, Pa. Records of discharge for gaging station at Trenton, N. J. for water year October 1956 to September 1957 in WSP 1502.

Chemical analyses in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) at Trenton, N. J. | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                                        |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 16, 1956      | 4,000                                  | 2.2                        | 0.00      | 52           | 83             | 766         | 15            | 13                              | 257                        | 1,310         | 0.7          | 5.0                        | 2,620                                              | 471                           | 459           | 4,580                                     | 6.8 | 5     |
| Nov. 20            | 6,220                                  | 4.6                        | 0.04      | 27           | 27             | 208         | 10            | 10                              | 142                        | 332           | .5           | 3.2                        | 771                                                | 178                           | 168           | 1,350                                     | 6.5 | 3     |
| Dec. 19            | 25,900                                 | 6.6                        | 0.05      | 21           | 5.8            | 20          | 10            | 62                              | 62                         | 22            | .5           | 6.9                        | 187                                                | 76                            | 60            | 302                                       | 6.6 | 2     |
| Jan. 8, 1957       | 8,100                                  | 7.1                        | 0.14      | 16           | 8.2            | 24          | 11            | 55                              | 55                         | 35            | .4           | 7.2                        | 187                                                | 74                            | 65            | 291                                       | 7.1 | 5     |
| Jan. 24            | 19,100                                 | 8.7                        | 0.13      | 21           | 10             | 64          | 4             | 82                              | 88                         | .5            | .5           | 4.0                        | 348                                                | 94                            | 90            | 553                                       | 5.4 | 5     |
| Feb. 15            | 9,680                                  | 6.3                        | 0.20      | 29           | 22             | 242         | 16            | 150                             | 150                        | 365           | .5           | 4.0                        | 827                                                | 163                           | 150           | 1,490                                     | 6.3 | 4     |
| Mar. 20            | 15,700                                 | 7.1                        | 0.03      | 17           | 4.8            | 14          | 12            | 51                              | 51                         | 16            | .3           | 8.5                        | 137                                                | 62                            | 52            | 226                                       | 6.0 | 6     |
| May 14             | 5,580                                  | 6.3                        | 0.08      | 27           | 32             | 223         | 16            | 111                             | 113                        | 390           | .4           | 4.6                        | 911                                                | 199                           | 186           | 1,590                                     | 6.4 | 7     |
| June 4             | 4,660                                  | 4.1                        | 0.05      | 32           | 17             | 104         | 10            | 113                             | 165                        | .5            | .5           | 8.1                        | 463                                                | 150                           | 142           | 811                                       | 5.6 | 6     |
| June 25            | 3,680                                  | 3.8                        | 0.01      | 48           | 54             | 466         | 8             | 198                             | 790                        | 7             | .7           | 4.6                        | 1,700                                              | 342                           | 336           | 2,880                                     | 5.5 | 5     |
| July 30            | 2,830                                  | 4.1                        | 0.04      | 71           | 137            | 1,390       | 14            | 444                             | 444                        | 2,380         | .9           | 5.2                        | 4,700                                              | 741                           | 730           | 7,680                                     | 5.8 | 5     |
| Sept. 5            | 1,980                                  | 2.4                        | 0.02      | 91           | 217            | 1,800       | 75            | 13                              | 553                        | 3,080         | 1.0          | 4.5                        | 6,060                                              | 1,120                         | 1,110         | 9,730                                     | 5.7 | 5     |

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT MEMORIAL BRIDGE, WILMINGTON, DEL.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 Recorder with temperature attachment, continuous mercury-actuated thermograph

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 64      | 63  | 59       | 57  | 44       | 42  | 39      | 38  | 36       | 35  | 41    | 40  | 47    | 46  | --  | --  | 70   | 68  | 80   | 79  | 77     | 76  | 74        | 72  |
| 2.....       | 64      | 63  | 60       | 58  | 43       | 42  | 38      | 36  | 37       | 35  | 41    | 40  | 46    | 44  | --  | --  | 70   | 69  | 77   | 75  | 77     | 76  | 74        | 72  |
| 3.....       | 65      | 63  | 59       | 58  | 44       | 42  | 37      | 36  | 37       | 36  | 42    | 40  | 45    | 44  | --  | --  | 69   | 69  | 76   | 75  | 79     | 77  | 74        | 73  |
| 4.....       | 65      | 63  | 59       | 58  | 43       | 42  | 37      | 36  | 37       | 36  | 41    | 40  | 45    | 44  | --  | --  | 70   | 69  | 78   | 75  | 79     | 77  | 75        | 73  |
| 5.....       | 65      | 63  | 59       | 58  | 43       | 42  | 36      | 35  | 37       | 36  | 42    | 40  | 46    | 45  | --  | --  | 70   | 68  | 76   | 75  | 79     | 77  | 75        | 73  |
| 6.....       | 64      | 63  | 59       | 58  | 44       | 42  | 36      | 35  | 37       | 37  | 42    | 40  | 46    | 45  | --  | --  | 69   | 68  | 76   | 75  | 78     | 76  | 74        | 72  |
| 7.....       | 64      | 63  | 59       | 58  | 44       | 43  | 37      | 36  | 38       | 37  | 42    | 40  | 46    | 45  | --  | --  | 71   | 70  | 76   | 75  | 76     | 74  | 75        | 72  |
| 8.....       | 63      | 62  | 59       | 58  | 44       | 43  | 37      | 36  | 38       | 37  | 41    | 40  | 46    | 45  | --  | --  | 71   | 69  | 76   | 75  | 76     | 74  | 74        | 71  |
| 9.....       | 63      | 62  | 58       | 56  | 44       | 43  | 36      | 35  | 38       | 37  | 41    | 40  | 47    | 46  | --  | --  | 70   | 69  | 76   | 76  | 76     | 75  | 74        | 71  |
| 10.....      | 62      | 61  | 56       | 54  | 44       | 43  | 36      | 35  | 39       | 37  | 41    | 40  | 47    | 46  | 64  | 62  | 70   | 70  | 76   | 75  | 77     | 75  | 73        | 70  |
| 11.....      | 62      | 60  | 55       | 53  | 44       | 43  | 37      | 35  | 39       | 37  | 41    | 40  | 47    | 46  | 63  | 62  | 71   | 70  | 76   | 75  | 78     | 74  | 73        | 70  |
| 12.....      | 61      | 60  | 55       | 54  | 44       | 43  | 37      | 35  | 38       | 36  | 41    | 40  | 47    | 47  | 63  | 62  | 71   | 71  | 76   | 75  | 77     | 75  | 73        | 70  |
| 13.....      | 61      | 60  | 54       | 51  | 44       | 43  | 36      | 35  | 38       | 37  | 42    | 41  | 47    | 47  | 64  | 63  | 72   | 71  | 76   | 75  | 76     | 74  | 74        | 71  |
| 14.....      | 61      | 60  | 53       | 51  | 44       | 43  | 34      | 33  | 39       | 37  | 43    | 42  | 47    | 46  | 65  | 64  | 74   | 72  | 77   | 75  | 76     | 74  | 73        | 72  |
| 15.....      | 62      | 61  | 53       | 52  | 44       | 43  | 35      | 33  | 39       | 37  | 43    | 47  | 46    | 64  | 63  | 75  | 74   | 77  | 76   | 77  | 74     | 74  | 73        | 72  |
| 16.....      | 61      | 59  | 51       | 44  | 43       | 34  | 33      | 39  | 37       | 44  | 43    | 48  | 46    | 65  | 63  | 76  | 75   | 77  | 76   | 77  | 75     | 74  | 73        | 70  |
| 17.....      | 61      | 60  | 52       | 50  | 44       | 44  | 33      | 32  | 39       | 38  | 44    | 44  | 47    | 47  | 65  | 64  | 77   | 76  | 77   | 75  | 76     | 74  | 75        | 73  |
| 18.....      | 61      | 60  | 52       | 50  | 44       | 43  | 33      | 32  | 39       | 38  | 44    | 44  | 47    | 47  | 66  | 65  | 79   | 77  | 77   | 76  | 76     | 74  | 74        | 73  |
| 19.....      | 61      | 59  | 51       | 50  | 43       | 43  | --      | --  | 38       | 37  | 44    | 44  | --    | --  | 66  | 65  | 81   | 79  | 77   | 76  | 75     | 74  | 74        | 73  |
| 20.....      | 60      | 59  | 51       | 50  | 43       | 43  | --      | --  | 39       | 38  | 44    | 44  | --    | --  | 66  | 65  | 82   | 81  | 78   | 77  | 75     | 73  | 74        | 72  |
| 21.....      | 60      | 60  | 51       | 50  | 43       | 43  | 32      | 32  | 39       | 38  | 45    | 44  | --    | --  | 66  | 65  | 82   | 81  | 78   | 76  | 75     | 72  | 74        | 72  |
| 22.....      | 61      | 60  | 50       | 49  | 43       | 43  | 33      | 32  | 39       | 38  | 45    | 44  | --    | --  | 67  | 66  | 82   | 82  | 80   | 78  | 75     | 72  | 74        | 72  |
| 23.....      | 61      | 60  | 49       | 49  | 43       | 43  | 34      | 33  | 40       | 39  | 45    | 45  | --    | --  | 67  | 66  | 82   | 81  | 80   | 78  | 74     | 72  | 74        | 72  |
| 24.....      | 60      | 59  | 49       | 48  | 43       | 43  | 34      | 33  | 40       | 39  | 46    | 45  | --    | --  | 68  | 67  | 82   | 81  | 78   | 77  | 74     | 72  | 73        | 71  |
| 25.....      | 59      | 57  | 47       | 45  | 43       | 42  | 34      | 33  | 41       | 39  | 46    | 45  | --    | --  | 68  | 67  | 82   | 81  | 78   | 76  | 73     | 71  | 73        | 70  |
| 26.....      | 58      | 57  | 47       | 45  | 42       | 41  | 35      | 34  | 41       | 40  | 46    | 45  | --    | --  | 68  | 66  | 83   | 82  | 78   | 77  | 73     | 71  | 72        | 70  |
| 27.....      | 57      | 56  | 47       | 45  | 42       | 41  | 36      | 34  | 42       | 40  | 46    | 45  | --    | --  | 68  | 67  | 83   | 81  | 78   | 76  | 73     | 72  | 70        | 67  |
| 28.....      | 57      | 56  | 45       | 45  | 42       | 41  | 36      | 34  | 41       | 40  | 47    | 45  | --    | --  | --  | --  | 82   | 81  | 77   | 76  | 73     | 70  | 69        | 67  |
| 29.....      | 57      | 57  | 45       | 43  | 41       | 39  | 36      | 34  | --       | --  | 47    | 45  | --    | --  | --  | --  | 82   | 81  | 76   | 75  | 73     | 71  | 67        | 66  |
| 30.....      | 57      | 57  | 44       | 43  | 39       | 38  | 36      | 34  | --       | --  | 47    | 45  | --    | --  | --  | --  | 81   | 80  | 77   | 76  | 73     | 71  | 67        | 65  |
| 31.....      | 57      | 57  | --       | --  | 39       | 38  | 36      | 35  | --       | --  | 47    | 45  | --    | --  | 70  | 68  | --   | --  | 78   | 76  | 74     | 72  | --        | --  |
| Average..... | 61      | 60  | 53       | 52  | 43       | 42  | 35      | 34  | 39       | 38  | 44    | 43  | --    | --  | --  | --  | 78   | 77  | 77   | 76  | 76     | 74  | 73        | 71  |



## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT REEDY POINT, DEL.

LOCATION.--One hundred yards west of buoy "IN", 0.8 mile southeast of the Chesapeake and Delaware Canal and 2.1 miles south of Pea Patch Island.  
DRAINAGE AREA.--11,220 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1956 to September 1957. Maximum daily, 19.100 micromhos Aug. 27; minimum daily, 222 micromhos Apr. 16.  
EXTREMES, 1956-57.--Specific conductance: Maximum, 85°F June 17; minimum, freezing point Jan. 17, 28.

Water temperatures: Maximum, 85°F June 17; minimum, freezing point Jan. 17, 28.  
REMARKS.--Composited samples selected from representative daily samples collected one hour prior to high-water slack, 3 feet below surface. Single-dated samples collected at center of channel 3 feet from bottom, during course of service trips. Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for gaging station at Trenton, N. J. for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./nesium           | Non-carbonate |                                           |     |       |
| Oct. 3-10, 1956    | 4,800                | 6.2                        | 0.09      | 93           | 235            |             | 2,060         | 39                              | 553                        | 3,600         | 0.6          | 0.9                        | 6,820                                              | 1,200                         | 1,170         | 11,200                                    | 6.8 | 7     |
| Oct. 16            | 4,000                | 2.6                        | .00       | 112          | 299            |             | 2,640         | 46                              | 684                        | 4,600         | .7           | .9                         | 8,670                                              | 1,510                         | 1,470         | 13,800                                    | 7.4 | 6     |
| Nov. 1-10          | 10,400               | 4.0                        | .01       | 66           | 149            |             | 1,230         | 25                              | 371                        | 2,160         | .5           | 1.7                        | 4,380                                              | 780                           | 762           | 7,180                                     | 6.8 | 7     |
| Nov. 20            | 6,220                | 3.8                        | .05       | 81           | 187            |             | 1,590         | 36                              | 434                        | 2,790         | .5           | 1.0                        | 5,380                                              | 971                           | 942           | 8,830                                     | 6.8 | 4     |
| Dec. 11-20         | 21,100               | 6.4                        | .05       | 52           | 89             |             | 750           | 20                              | 248                        | 1,310         | .5           | 3.0                        | 2,590                                              | 496                           | 479           | 4,470                                     | 6.8 | 2     |
| Dec. 19            | 25,900               | 6.1                        | .04       | 31           | 37             |             | 296           | 16                              | 156                        | 490           | .5           | 5.9                        | 1,130                                              | 230                           | 216           | 1,940                                     | 6.5 | 4     |
| Feb. 15, 1957      | 9,680                | 7.7                        | .17       | 66           | 154            |             | 1,390         | 39                              | 386                        | 2,400         | .4           | 1.0                        | 4,580                                              | 798                           | 766           | 7,850                                     | 6.9 | 2     |
| Mar. 20            | 15,700               | 7.2                        | .03       | 56           | 107            |             | 912           | 25                              | 271                        | 1,600         | .3           | 2.9                        | 3,260                                              | 580                           | 559           | 5,350                                     | 6.4 | 8     |
| Apr. 1-3, 5-10     | 39,600               | 7.5                        | .01       | 32           | 49             |             | 450           | 24                              | 155                        | 755           | .4           | 5.8                        | 1,580                                              | 282                           | 264           | 2,850                                     | 6.4 | 2     |
| May 5-9            | 7,440                | 7.9                        | .01       | 38           | 67             |             | 600           | 24                              | 183                        | 1,010         | .4           | 4.5                        | 2,060                                              | 370                           | 354           | 3,580                                     | 6.3 | 3     |
| May 14             | 5,580                | 4.9                        | .03       | 62           | 159            |             | 1,370         | 33                              | 365                        | 2,400         | .3           | .6                         | 4,770                                              | 810                           | 782           | 7,890                                     | 6.8 | 8     |
| June 4-9           | 4,680                |                            | --        | --           | --             |             | 1,200         | 26                              | 348                        | 2,150         | --           | 3.4                        | --                                                 | 820                           | 799           | 6,950                                     | 6.1 | 8     |
| June 25            | 3,680                | --                         | --        | 79           | 200            |             | 1,780         | 70                              | 482                        | 3,150         | .7           | --                         | --                                                 | 1,020                         | 994           | 10,000                                    | 6.1 | --    |
| July 1-10          | 3,030                | --                         | --        | --           | --             |             | 1,880         | 34                              | 522                        | 3,280         | --           | 1.4                        | --                                                 | 1,100                         | 1,070         | 10,100                                    | 6.3 | 8     |
| July 30            | 2,830                | 9.4                        | .01       | 111          | 283            |             | 2,710         | 105                             | 33                         | 4,560         | .7           | 1.8                        | 8,960                                              | 1,480                         | 1,460         | 14,200                                    | 7.3 | 5     |
| Aug. 2-5, 7-10     | 2,230                | 4.3                        | .01       | 123          | 300            |             | 2,710         | 108                             | 700                        | 4,780         | .7           | .8                         | 9,240                                              | 1,540                         | 1,510         | 14,400                                    | 7.5 | 3     |
| Sept. 1-3, 5-10    | 2,110                | 6.0                        | .05       | 142          | 374            |             | 3,390         | 129                             | 871                        | 5,680         | .7           | 7                          | 10,800                                             | 1,890                         | 1,850         | 17,100                                    | 6.6 | 5     |

## DELAWARE RIVER BASIN

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## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT REEDY POINT, DEL.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement, one hour prior to high-water slack/

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | --   | 42   | 41   | 35   | 40   | 48   | 64  | 74   | 81   | --   | 64    |
| 2       | 64   | --   | 44   | 39   | 35   | 41   | 51   | 65  | 73   | 81   | 74   | 61    |
| 3       | 64   | --   | 46   | --   | 37   | 43   | 51   | 62  | 71   | 82   | 74   | 62    |
| 4       | 63   | --   | 46   | 39   | 38   | 41   | --   | 57  | 70   | 75   | 72   | --    |
| 5       | 67   | --   | 46   | 37   | 36   | 41   | 50   | 60  | 69   | 75   | 70   | 62    |
| 6       | 64   | --   | 46   | 37   | 37   | --   | 47   | 63  | 70   | 75   | --   | 61    |
| 7       | 63   | --   | 46   | --   | 38   | 41   | 50   | 61  | 70   | 75   | 74   | 61    |
| 8       | 64   | --   | 50   | 38   | 38   | 42   | 50   | 62  | 69   | 78   | 71   | 60    |
| 9       | 63   | --   | 46   | 37   | 39   | 42   | 51   | 62  | 69   | 78   | 68   | 59    |
| 10      | 60   | --   | 44   | 37   | 38   | 40   | 50   | 64  | 69   | 77   | 70   | 58    |
| 11      | 60   | 55   | 44   | --   | 38   | 40   | 49   | 66  | 70   | 75   | 71   | 59    |
| 12      | 58   | 54   | 44   | 35   | 37   | 42   | 51   | 65  | 70   | 78   | 70   | 61    |
| 13      | 58   | 55   | 44   | 37   | 38   | 43   | --   | 67  | 74   | 78   | 69   | 61    |
| 14      | 60   | 54   | 44   | 35   | 39   | 45   | 52   | --  | 76   | 78   | --   | 60    |
| 15      | 62   | 54   | 44   | 35   | 40   | 45   | 51   | 67  | 78   | 80   | 68   | 65    |
| 16      | 62   | 55   | 45   | 34   | 39   | 45   | 52   | 70  | 80   | 79   | 70   | 63    |
| 17      | 63   | 54   | 47   | 32   | 38   | 47   | 51   | 70  | 85   | 78   | --   | 60    |
| 18      | 62   | 54   | 43   | 36   | 40   | 47   | --   | 71  | 83   | --   | --   | 63    |
| 19      | 62   | 54   | 44   | 36   | 40   | 46   | 54   | --  | 82   | 73   | 65   | 59    |
| 20      | 61   | 53   | 46   | --   | 38   | 45   | 53   | 71  | 82   | 74   | 63   | 60    |
| 21      | 62   | 51   | 46   | --   | 39   | --   | 55   | 63  | --   | 76   | 63   | 60    |
| 22      | 64   | 51   | --   | --   | 39   | 47   | 54   | 65  | 79   | 78   | 64   | 60    |
| 23      | 62   | 45   | 45   | --   | 39   | 47   | 55   | 65  | 83   | 75   | 64   | --    |
| 24      | 62   | 45   | 46   | --   | 40   | 47   | 55   | 68  | --   | 76   | 63   | --    |
| 25      | 62   | 45   | --   | 35   | 40   | 45   | 57   | 68  | 83   | 73   | 61   | --    |
| 26      | 62   | 46   | 46   | 33   | 40   | --   | 59   | 65  | 83   | --   | 63   | 57    |
| 27      | 58   | 56   | 43   | 34   | 40   | 45   | 60   | 70  | 81   | 72   | 63   | 55    |
| 28      | 59   | 45   | 43   | 32   | 40   | 49   | 62   | 68  | 81   | 71   | --   | 62    |
| 29      | 58   | 45   | 44   | 34   | --   | 49   | 49   | 70  | 81   | 74   | --   | 50    |
| 30      | 58   | 44   | --   | 34   | --   | 50   | 63   | 70  | 81   | 74   | --   | 50    |
| 31      | 58   | --   | 42   | 34   | --   | 49   | --   | 71  | --   | 74   | 63   | --    |
| Average | 62   | --   | 45   | --   | 38   | 44   | 53   | 66  | 76   | 76   | --   | 60    |

DELAWARE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN DELAWARE RIVER BASIN IN NEW YORK

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, magnesium            | Non-carbonate |                                            |    |       |

CALLICOON CREEK AT CALLICOON

|                   |    |     |      |     |     |     |     |    |     |     |     |     |    |    |   |    |     |   |
|-------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|
| July 2, 1957..... | 18 | 1.7 | 0.05 | 9.3 | 1.2 | 2.3 | 1.3 | 25 | 9.7 | 3.2 | 0.1 | 0.5 | 48 | 28 | 8 | 80 | 6.8 | 5 |
|-------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|

MONGAUP RIVER NEAR MONGAUP

|                    |    |     |      |     |     |     |     |    |     |     |     |     |    |    |    |    |     |   |
|--------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|----|----|-----|---|
| July 2, 1957 ..... | 62 | 2.5 | 0.03 | 5.4 | 1.1 | 1.9 | 0.8 | 10 | 8.9 | 2.4 | 0.1 | 0.6 | 34 | 18 | 10 | 51 | 6.3 | 8 |
|--------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|----|----|-----|---|

DELAWARE RIVER AT SPARROW BUSH

|                    |    |     |      |     |     |     |     |    |     |     |     |     |    |    |   |    |     |   |
|--------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|
| July 2, 1957 ..... | -- | 1.4 | 0.08 | 6.2 | 1.1 | 2.0 | 0.5 | 18 | 8.8 | 2.6 | 0.0 | 0.4 | 37 | 20 | 5 | 59 | 6.9 | 6 |
|--------------------|----|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|----|-----|---|

DELAWARE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN DELAWARE RIVER BASIN IN PENNSYLVANIA  
Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|-----------------------------------|----------------------|----------------------------|-----------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                   |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
| SAW KILL AT MILFORD               |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 23, 1957 .....               |                      |                            |           |                      |                        |                | 3.2                   | 10                                      | 10                            |                  |                 |                               |                                                                     | 24                               | 16                     | 46                                                          | 6.4 | 15    |
| June 17 .....                     |                      |                            |           |                      |                        |                |                       | 18                                      | 8.3                           | 2.5              |                 | 1.1                           |                                                                     | 21                               | 6                      | 58                                                          | 7.2 | 2     |
| DELAWARE RIVER AT DINGMANS FERRY  |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 31, 1956 .....               |                      |                            |           |                      |                        |                | 4.9                   | 20                                      | 12                            | 2.2              |                 | 0.9                           |                                                                     | 22                               | 6                      | 68                                                          | 6.3 | 4     |
| SAW CREEK AT WINONA FALLS         |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 31, 1956 .....               |                      |                            |           |                      |                        |                | 3.3                   | 12                                      | 9.4                           | 1.9              |                 | 0.9                           |                                                                     | 16                               | 6                      | 49                                                          | 6.4 | 22    |
| BUSH KILL AT SHOEMAKERS           |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 31, 1956 .....               |                      |                            |           |                      |                        |                | 1.4                   | 10                                      | 10                            | 1.4              |                 | 0.7                           |                                                                     | 18                               | 10                     | 45                                                          | 6.4 | 16    |
| McMICHAELS CREEK NEAR STROUDSBURG |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 30, 1956 .....               |                      |                            |           |                      |                        |                | 3.8                   | 24                                      | 11                            | 1.5              |                 | 1.4                           |                                                                     | 26                               | 6                      | 75                                                          | 6.6 | 3     |
| POCONO CREEK AT STROUDSBURG       |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 30, 1956 .....               |                      |                            |           |                      |                        |                | 5.1                   | 18                                      | 13                            | 1.5              |                 | 0.9                           |                                                                     | 20                               | 5                      | 57                                                          | 6.6 | 7     |
| MARSHALL CREEK AT MINISINK HILLS  |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 30, 1956 .....               |                      |                            |           |                      |                        |                | 1.7                   | 22                                      | 13                            | 2.5              |                 | 0.8                           |                                                                     | 32                               | 14                     | 83                                                          | 6.6 | 8     |

## DELAWARE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN DELAWARE RIVER BASIN IN PENNSYLVANIA--Continued

| Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
|-----------------------------------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
| Date of collection                                                                            | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|                                                                                               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| BRODHEAD CREEK AT MINISINK HILLS                                                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 1.6         | 18            | 15                              | 2.5                        |               |              | 2.1                        |                                                    | 32                            | 17            | 78                                        | 6.3 | 2     |
| MARTINS CREEK AT MARTINS CREEK                                                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 14          | 54            | 73                              | 8.0                        |               |              | 7.7                        |                                                    | 108                           | 64            | 278                                       | 7.2 | 6     |
| DELAWARE RIVER AT EASTON                                                                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 1-10, 1956 .....                                                                         | 2.4                  | 0.00                       | 12        | 3.1          | 2.9            | 36          | 14            | 2.8                             | 0.1                        |               | 1.0          | 76                         | 42                                                 | 13                            | 102           | 6.6                                       | 3   |       |
| Oct. 30 .....                                                                                 | --                   | --                         | --        | --           | 3.4            | 40          | 16            | 2.0                             | --                         |               | 1.5          | --                         | 46                                                 | 13                            | 107           | 6.8                                       | 4   |       |
| Jan. 21-31, 1957 .....                                                                        | 3.9                  | .03                        | 12        | 3.7          | 2.9            | 37          | 16            | 3.2                             | .1                         |               | 2.9          | 65                         | 45                                                 | 17                            | 110           | 7.4                                       | 5   |       |
| Apr. 1-10 .....                                                                               | 3.4                  | .03                        | 9.8       | 2.3          | 2.5            | 0.8         | 24            | 2.5                             | .2                         |               | 2.5          | 57                         | 34                                                 | 14                            | 82            | 6.4                                       | 6   |       |
| July 1-31 .....                                                                               | --                   | --                         | --        | --           | 2.8            | 34          | 15            | 3.2                             | --                         |               | 1.3          | --                         | 43                                                 | 15                            | 101           | 6.7                                       | 2   |       |
| DELAWARE RIVER AT RIEGELSVILLE                                                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 4.1         | 40            | 21                              | 3.5                        |               | 4.0          |                            | 54                                                 | 21                            | 140           | 6.8                                       | 3   |       |
| COCKS CREEK NEAR RIEGELSVILLE                                                                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 5.1         | 124           | 21                              | 2.5                        |               | 5.1          |                            | 120                                                | 18                            | 262           | 7.1                                       | 4   |       |
| TOHICKEN CREEK AT POINT PLEASANT                                                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 11          | 58            | 43                              | 11                         |               | 2.5          |                            | 86                                                 | 38                            | 234           | 6.9                                       | 27  |       |
| DELAWARE RIVER AT LUMBERVILLE                                                                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Oct. 30, 1956 .....                                                                           |                      |                            |           |              |                | 6.0         | 42            | 23                              | 4.5                        |               | 5.5          |                            | 56                                                 | 22                            | 150           | 6.5                                       | 6   |       |

## DELAWARE RIVER AT YARDLEY

|                     |  |  |  |  |  |     |    |    |     |  |     |  |    |    |     |     |   |
|---------------------|--|--|--|--|--|-----|----|----|-----|--|-----|--|----|----|-----|-----|---|
| Oct. 31, 1956 ..... |  |  |  |  |  | 4.1 | 42 | 23 | 3.5 |  | 4.5 |  | 58 | 24 | 138 | 6.6 | 7 |
|---------------------|--|--|--|--|--|-----|----|----|-----|--|-----|--|----|----|-----|-----|---|

## NESHAMINY CREEK AT LANGHORNE

|                    |  |  |  |  |  |    |    |    |    |  |    |  |    |    |     |     |   |
|--------------------|--|--|--|--|--|----|----|----|----|--|----|--|----|----|-----|-----|---|
| Jan. 8, 1957 ..... |  |  |  |  |  | 18 | 41 | 38 | 12 |  | 14 |  | 62 | 29 | 221 | 6.3 | 2 |
|--------------------|--|--|--|--|--|----|----|----|----|--|----|--|----|----|-----|-----|---|

## NESHAMINY CREEK NEAR OAKFORD

|                     |  |  |  |  |  |    |    |    |    |  |     |  |    |    |     |     |   |
|---------------------|--|--|--|--|--|----|----|----|----|--|-----|--|----|----|-----|-----|---|
| Oct. 30, 1956 ..... |  |  |  |  |  | 11 | 58 | 36 | 12 |  | 6.5 |  | 84 | 36 | 234 | 6.8 | 8 |
|---------------------|--|--|--|--|--|----|----|----|----|--|-----|--|----|----|-----|-----|---|

## POQUESSING CREEK AT BYBERRY

|                     |  |  |  |  |  |    |    |    |    |  |     |  |    |    |     |     |   |
|---------------------|--|--|--|--|--|----|----|----|----|--|-----|--|----|----|-----|-----|---|
| Oct. 30, 1956 ..... |  |  |  |  |  | 12 | 48 | 21 | 11 |  | 7.8 |  | 58 | 19 | 179 | 6.5 | 8 |
|---------------------|--|--|--|--|--|----|----|----|----|--|-----|--|----|----|-----|-----|---|

## PENNYPACK CREEK AT PHILADELPHIA

|                     |  |  |  |  |  |    |    |    |    |  |    |  |    |    |     |     |   |
|---------------------|--|--|--|--|--|----|----|----|----|--|----|--|----|----|-----|-----|---|
| Oct. 30, 1956 ..... |  |  |  |  |  | 20 | 70 | 36 | 17 |  | 12 |  | 84 | 27 | 279 | 7.0 | 7 |
|---------------------|--|--|--|--|--|----|----|----|----|--|----|--|----|----|-----|-----|---|

SUSQUEHANNA RIVER BASIN  
UNADILLA RIVER AT ROCKDALE, N. Y.

LOCATION.-- At gaging station at highway bridge, Rockdale, Chenango County and three-quarters of mile downstream from Kent Brook.  
DRAINAGE AREA.-- 518 square miles.

RECORDS AVAILABLE.-- Chemical analyses: October 1956 to September 1957.  
Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 144 ppm Aug. 21-31; minimum, 83 ppm Dec. 11-20.  
Hardness: Maximum, 119 ppm Aug. 21-31; minimum, 46 ppm Jan. 23-24.

Specific conductance: Maximum daily, 260 micromhos Aug. 22; minimum daily, 93 micromhos Jan. 23.

Water temperatures: Maximum 79°F July 22, 23, 28; minimum, freezing point on many days during December, January, February and March.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N.Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 100°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium magnesium             | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 374                  | 5.1                        | 0.13      | 29           | 3.3            | 2.8         | 1.2           | 89                              | 16                         | 3.1           | 0.1          | 0.9                        | 109                                                | 86                            | 13            | 188                                       | 7.4 | 5     | 4               | 3        |
| Oct. 11-20         | 240                  | 3.5                        | .15       | 30           | 3.4            | 2.9         | 1.2           | 95                              | 15                         | 3.3           | .1           | .7                         | 111                                                | 89                            | 11            | 195                                       | 7.4 | 4     | 5               | 2        |
| Oct. 21-31         | 196                  | 4.0                        | .24       | 32           | 3.7            | 3.2         | 1.2           | 103                             | 15                         | 3.5           | .1           | .7                         | 119                                                | 95                            | 11            | 209                                       | 7.5 | 4     | 3               | 2        |
| Nov. 1-10          | 248                  | 5.2                        | .16       | 30           | 3.6            | 3.1         | 1.3           | 95                              | 15                         | 3.5           | .0           | .9                         | 114                                                | 90                            | 12            | 193                                       | 7.3 | 5     | 7               | 2        |
| Nov. 11-20         | 269                  | 4.8                        | .18       | 29           | 3.4            | 3.0         | 1.1           | 91                              | 15                         | 3.5           | .0           | 1.0                        | 108                                                | 86                            | 12            | 185                                       | 7.4 | 3     | 12              | 2        |
| Nov. 21-30         | 618                  | 6.0                        | .15       | 24           | 3.0            | 2.4         | 1.1           | 71                              | 14                         | 3.0           | .0           | 1.7                        | 94                                                 | 72                            | 14            | 158                                       | 7.3 | 6     | 5               | 2        |
| Dec. 1-10          | 574                  | 5.6                        | .22       | 26           | 3.2            | 2.6         | 1.0           | 77                              | 15                         | 4.6           | .2           | 2.1                        | 100                                                | 78                            | 15            | 163                                       | 7.4 | 3     | 8               | 2        |
| Dec. 11-20         | 1,417                | 5.5                        | .12       | 21           | 2.6            | 2.0         | 1.0           | 58                              | 14                         | 2.3           | .2           | 2.3                        | 83                                                 | 63                            | 16            | 135                                       | 7.4 | 6     | 3               | 3        |
| Dec. 21-31         | 1,874                | 6.1                        | .13       | 22           | 2.6            | 2.0         | .9            | 62                              | 13                         | 2.3           | .2           | 2.7                        | 87                                                 | 66                            | 15            | 141                                       | 7.4 | 4     | 3               | 3        |
| Jan. 1-10, 1957    | 674                  | 6.6                        | .10       | 29           | 2.9            | 2.2         | .9            | 84                              | 16                         | 2.6           | .0           | 3.4                        | 105                                                | 84                            | 15            | 180                                       | 7.3 | 4     | 3               | 2        |
| Jan. 11-20         | 548                  | 7.8                        | .10       | 32           | 3.3            | 3.0         | 1.0           | 93                              | 16                         | 3.2           | .0           | 3.4                        | 119                                                | 93                            | 17            | 199                                       | 7.4 | 3     | 6               | 2        |
| Jan. 21-31         | 280                  | 6.8                        | .11       | 27           | 2.6            | 2.5         | 1.1           | 106                             | 28                         | 3.5           | --           | 2.9                        | 101                                                | a110                          | 23            | 222                                       | 7.3 | --    | --              | 3        |
| Jan. 22-25-31      | 1,134                | --                         | .12       | 27           | --             | --          | --            | 106                             | 14                         | 2.7           | --           | 3.3                        | 101                                                | 78                            | 14            | 171                                       | 7.3 | 5     | 4               | 3        |
| Jan. 23-24         | 4,300                | --                         | .38       | --           | --             | 2.9         | --            | 34                              | 18                         | 3.7           | --           | 3.1                        | --                                                 | 446                           | 18            | 96                                        | 6.9 | --    | --              | --       |
| Feb. 1-10          | 657                  | 7.5                        | .15       | 31           | 3.0            | 2.6         | 1.0           | 82                              | 15                         | 3.7           | .1           | 3.7                        | 115                                                | 90                            | 14            | 195                                       | 7.5 | 3     | 4               | 2        |
| Feb. 11-20         | 436                  | 8.0                        | .10       | 32           | 3.2            | 2.7         | 1.0           | 94                              | 16                         | 3.2           | .1           | 2.9                        | 119                                                | 93                            | 16            | 199                                       | 7.7 | 4     | 3               | 1        |
| Feb. 21-26         | 494                  | 6.9                        | .10       | 33           | 3.2            | 2.9         | 1.0           | 95                              | 17                         | 3.2           | .0           | 3.3                        | 119                                                | 96                            | 18            | 200                                       | 7.7 | 4     | 3               | 1        |
| Feb. 27-28         | 3,110                | --                         | .18       | --           | --             | 2.0         | --            | 50                              | 11                         | 2.3           | --           | 3.9                        | --                                                 | a84                           | 13            | 121                                       | 7.0 | --    | --              | --       |
| Mar. 1-10          | 877                  | 9.5                        | .10       | 26           | 3.0            | 2.7         | .9            | 78                              | 14                         | 2.8           | .0           | 3.1                        | 102                                                | 77                            | 13            | 166                                       | 7.5 | 3     | 4               | 2        |
| Mar. 11-20         | 1,362                | 5.5                        | .07       | 24           | 2.3            | 1.9         | 1.0           | 69                              | 12                         | 2.6           | .0           | 2.4                        | 89                                                 | 69                            | 13            | 151                                       | 7.4 | 4     | 5               | 2        |
| Mar. 21-31         | 868                  | 4.8                        | .09       | 27           | 2.2            | 2.7         | .8            | 78                              | 13                         | 2.5           | .1           | 2.3                        | 97                                                 | 76                            | 13            | 164                                       | 7.5 | 6     | 3               | 2        |

|                       |       |     |      |    |     |     |     |     |     |     |     |     |     |     |    |     |     |    |    |    |
|-----------------------|-------|-----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|----|----|
| Apr. 1-10.....        | 1,753 | 5.3 | .06  | 22 | 2.2 | 2.2 | .9  | 64  | 12  | 2.5 | .1  | 2.0 | 88  | 64  | 12 | 140 | 7.3 | 10 | 4  | 2  |
| Apr. 11-30.....       | 1,221 | 7.1 | .13  | 27 | 2.7 | 2.5 | .9  | 82  | 12  | 2.8 | .2  | 2.2 | 101 | 79  | 12 | 163 | 7.5 | 7  | 4  | 2  |
| May 1-10.....         | 1,374 | 3.5 | .25  | 31 | 3.4 | 2.6 | .9  | 99  | 14  | 2.8 | .1  | 4.1 | 114 | 92  | 11 | 198 | 7.7 | 7  | 3  | 2  |
| May 11-18.....        | 486   | 3.9 | .10  | 29 | 3.2 | 2.5 | .9  | 87  | 13  | 2.7 | .1  | 2.3 | 106 | 86  | 14 | 179 | 7.3 | 8  | 4  | 3  |
| May 19-20.....        | 1,108 | --  | .22  | -- | --  | --  | .7  | 55  | 9.0 | 1.2 | --  | 1.6 | --  | 356 | 11 | 121 | 7.0 | -- | -- | -- |
| May 21-31.....        | 899   | 4.2 | .11  | 26 | 2.5 | 2.2 | .9  | 77  | 12  | 2.0 | .1  | 1.8 | 94  | 76  | 13 | 155 | 7.4 | 11 | 4  | 3  |
| June 1-20.....        | 304   | 6.5 | .08  | 30 | 3.4 | 3.3 | 1.0 | 97  | 13  | 3.0 | .1  | 1.1 | 115 | 89  | 10 | 192 | 7.8 | 10 | 4  | 3  |
| June 21-30.....       | 289   | 14  | .14  | 28 | 3.4 | 4.7 | 1.2 | 92  | 12  | 3.1 | .1  | .8  | 120 | 84  | 9  | 181 | 7.7 | 9  | 4  | 3  |
| July 1-20.....        | 192   | 6.3 | .11  | 30 | 3.5 | 3.7 | 1.1 | 95  | 13  | 3.2 | .1  | .8  | 117 | 90  | 12 | 191 | 7.6 | 8  | 4  | 3  |
| July 21-31.....       | 194   | 13  | .20  | 30 | 3.0 | 4.7 | 1.1 | 96  | 15  | 3.6 | .1  | .9  | 123 | 88  | 9  | 194 | 7.7 | 7  | 5  | 4  |
| Aug. 1-20.....        | 384   | 5.4 | .12  | 37 | 3.3 | 2.7 | 1.2 | 112 | 15  | 3.0 | .1  | 1.5 | 127 | 106 | 14 | 219 | 7.7 | 8  | 8  | 7  |
| Aug. 21-31.....       | 155   | 8.0 | .06  | 39 | 5.2 | 3.5 | 1.1 | 122 | --  | 3.2 | .2  | .9  | 144 | 119 | 16 | 248 | 7.7 | 6  | -- | -- |
| Sept. 1-10.....       | 127   | 9.0 | .04  | 37 | 4.5 | 3.1 | 1.6 | 118 | 19  | 4.0 | .1  | .8  | 141 | 111 | 13 | 234 | 7.9 | 5  | -- | -- |
| Sept. 11-30.....      | 242   | 5.9 | --   | 35 | 4.5 | 2.4 | 1.4 | 119 | --  | 3.5 | .2  | .9  | 140 | 106 | 9  | 240 | 8.0 | 8  | -- | -- |
| Sept. 13-30.....      | --    | --  | .10  | -- | --  | --  | --  | --  | --  | --  | --  | --  | --  | --  | -- | --  | --  | -- | -- | -- |
| Time-weighted average | 630   | 6.5 | 0.13 | 30 | 3.2 | 2.8 | 1.1 | 90  | 14  | 3.1 | 0.1 | 1.8 | 112 | 87  | 13 | 186 | --  | 6  | 5  | 3  |

a By compleximetric titration



## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## SUSQUEHANNA RIVER BASIN--Continued

## UNADILLA RIVER AT ROCKDALE, N. Y.--Continued

Temperature(°F) of water, water year October 1956 to September 1957.  
 /Once-daily measurement at approximately 7 a. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 56   | 55   | 34   | 32   | 32   | 33   | 41   | 60  | 68   | 68   | 76   | 68    |
| 2       | 54   | 54   | 34   | 32   | 32   | 37   | 42   | 56  | 67   | 70   | 74   | 69    |
| 3       | 56   | 55   | 35   | 32   | 32   | 33   | 41   | 55  | 69   | 73   | 67   | 68    |
| 4       | 55   | 56   | 35   | 33   | 33   | 32   | 41   | 55  | 68   | 75   | 74   | 67    |
| 5       | 53   | 56   | 35   | 33   | 32   | 32   | 41   | 49  | 68   | 71   | 65   | 66    |
| 6       | 50   | 53   | 37   | 32   | 33   | 32   | 41   | 49  | 70   | 70   | 63   | 67    |
| 7       | 56   | 49   | 37   | 33   | 34   | 33   | 41   | 50  | 68   | 73   | 65   | 65    |
| 8       | 52   | 50   | 42   | 34   | 33   | 33   | 39   | 56  | 69   | 75   | 67   | 65    |
| 9       | 52   | 47   | 42   | 33   | 34   | --   | 38   | 58  | 69   | 77   | 67   | 69    |
| 10      | 50   | 43   | 40   | 33   | 34   | 32   | 36   | 60  | 70   | 78   | 69   | 69    |
| 11      | 46   | 39   | 35   | 32   | 32   | 33   | 36   | 59  | 70   | 76   | 70   | --    |
| 12      | 46   | 40   | 37   | 33   | 32   | 35   | 40   | 58  | 70   | 74   | 68   | --    |
| 13      | 47   | 41   | 40   | 32   | 32   | 36   | 38   | 60  | 70   | 74   | 67   | 66    |
| 14      | 48   | 40   | 39   | 32   | 36   | 38   | 39   | 60  | 71   | 73   | 69   | 66    |
| 15      | 50   | 43   | 34   | 32   | 34   | 40   | 38   | 58  | 72   | 73   | 75   | 67    |
| 16      | 51   | 46   | 41   | 32   | 34   | 40   | 39   | 57  | 73   | 76   | 68   | --    |
| 17      | 52   | 43   | 39   | 32   | 32   | 38   | 45   | 55  | 78   | 76   | 66   | 68    |
| 18      | 53   | 43   | 37   | 32   | 33   | 38   | 45   | 53  | 78   | 75   | 66   | 67    |
| 19      | 51   | 39   | 33   | 32   | 33   | 39   | 50   | 53  | 78   | 78   | 66   | 68    |
| 20      | 47   | 39   | 34   | 32   | 32   | 39   | 44   | 51  | 76   | 73   | 69   | 65    |
| 21      | 50   | 42   | 34   | 32   | 32   | 40   | 50   | 60  | 75   | 77   | --   | 65    |
| 22      | 51   | 42   | 34   | 32   | 32   | 35   | 57   | 59  | 78   | 79   | 68   | 55    |
| 23      | 58   | 38   | 38   | 35   | 33   | 40   | 56   | 60  | 73   | 79   | 72   | 62    |
| 24      | 53   | 35   | 38   | 34   | 35   | 40   | 59   | 61  | 73   | 78   | 69   | 54    |
| 25      | 49   | 32   | 36   | 33   | 35   | 40   | 59   | 61  | 74   | 75   | 69   | 62    |
| 26      | 49   | 35   | 36   | 35   | 35   | 40   | 60   | 62  | 73   | 76   | 72   | 58    |
| 27      | 48   | 36   | 37   | 34   | 39   | 41   | 60   | 62  | 74   | 74   | 71   | 62    |
| 28      | 55   | 35   | 33   | 32   | 32   | 40   | 63   | 60  | 72   | 79   | 70   | 62    |
| 29      | 48   | 35   | 36   | 35   | --   | 45   | 60   | 61  | 70   | 75   | 70   | 61    |
| 30      | 48   | 33   | 33   | 33   | --   | 40   | 61   | 62  | 68   | 76   | 71   | 52    |
| 31      | 49   | --   | 32   | 32   | --   | 40   | --   | 60  | --   | 75   | 69   | --    |
| Average | 51   | 43   | 36   | 33   | 33   | 37   | 47   | 57  | 72   | 75   | 69   | 64    |

## SUSQUEHANNA RIVER BASIN--Continued

## CHENANGO RIVER AT GREENE, N. Y.

LOCATION.--At highway bridge about 1,700 feet upstream from gaging station, at Greene, Chenango County and about 940 feet downstream from Birdsall Creek. DRAINAGE AREA.--598 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 163 ppm Sept. 1-20; minimum, 83 ppm Dec. 11-20.

Hardness: Maximum, 136 ppm Sept. 1-20; minimum, 44 ppm Jan. 23, 24.

Specific conductance: Maximum daily, 326 micromhos Sept. 17; minimum daily, 91 micromhos Jan. 23.

Water temperatures: Maximum, 77°F June 19; minimum, freezing point Jan. 5, 14, 19, 20.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502. No appreciable inflow between sampling site and gaging station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 507                  | 4.7                        | 0.12      | 27           | 4.4            | 3.5         | 1.5           | 91                              | 14                         | 4.1           | 0.0          | 1.8                        | 109                                                | 86                            | 11            | 191                                       | 7.2 | 6     | 4               | 3        |
| Oct. 11-20         | 308                  | 3.8                        | .08       | 29           | 5.2            | 4.0         | 1.5           | 103                             | 14                         | 5.0           | .1           | 1.6                        | 120                                                | 94                            | 10            | 214                                       | 7.4 | 5     | 6               | 2        |
| Oct. 21-31         | 293                  | 3.5                        | .10       | 30           | 5.1            | 4.0         | 1.6           | 106                             | 13                         | 5.2           | .1           | 1.8                        | 122                                                | 96                            | 9             | 216                                       | 7.3 | 6     | 5               | 3        |
| Nov. 1-10          | 348                  | 5.2                        | .18       | 29           | 4.5            | 3.9         | 1.6           | 100                             | 13                         | 5.0           | .1           | 2.0                        | 118                                                | 91                            | 9             | 207                                       | 7.4 | 4     | 3               | 3        |
| Nov. 11-20         | 316                  | 3.2                        | .16       | 29           | 4.6            | 3.8         | 1.2           | 100                             | 14                         | 4.3           | .1           | 1.4                        | 115                                                | 92                            | 10            | 207                                       | 7.5 | 3     | 4               | 3        |
| Nov. 21-30         | 618                  | 5.4                        | .13       | 23           | 3.9            | 2.8         | 1.3           | 76                              | 13                         | 3.9           | .1           | 2.7                        | 98                                                 | 74                            | 11            | 171                                       | 7.3 | 3     | 3               | 3        |
| Dec. 1-10          | 614                  | 4.8                        | .12       | 25           | 4.0            | 3.1         | 1.2           | 80                              | 13                         | 4.0           | .1           | 2.8                        | 102                                                | 79                            | 14            | 178                                       | 7.2 | 3     | 4               | 3        |
| Dec. 11-20         | 1,542                | 4.6                        | .14       | 20           | 2.9            | 2.4         | 1.1           | 58                              | 13                         | 3.3           | .1           | 2.5                        | 83                                                 | 62                            | 15            | 141                                       | 7.2 | 4     | 5               | 5        |
| Dec. 21-31         | 1,697                | 5.4                        | .10       | 21           | 3.2            | 2.2         | 1.1           | 61                              | 14                         | 3.3           | .0           | 2.9                        | 85                                                 | 66                            | 16            | 139                                       | 7.3 | 7     | 4               | 3        |
| Jan. 1-10, 1957    | 682                  | 5.4                        | .18       | 28           | 4.9            | 2.5         | 1.1           | 89                              | 15                         | 3.8           | .0           | 3.5                        | 108                                                | 90                            | 17            | 186                                       | 7.5 | 4     | 4               | 2        |
| Jan. 11-20         | 331                  | 7.9                        | .10       | 32           | 5.3            | 3.9         | 1.2           | 104                             | 15                         | 4.3           | .0           | 4.1                        | 128                                                | 102                           | 17            | 222                                       | 7.4 | 2     | 4               | 3        |
| Jan. 21-32, 25-31  | 1,461                | 7.3                        | .11       | 27           | 4.5            | 3.0         | 1.2           | 82                              | 15                         | 4.1           | .0           | 6.4                        | 109                                                | 86                            | 19            | 183                                       | 7.4 | 6     | 5               | 3        |
| Jan. 23, 24        | 5,260                | --                         | .39       | --           | --             | 3.9         | --            | 34                              | 18                         | 2.2           | --           | 3.6                        | --                                                 | a 44                          | 16            | 97                                        | 6.9 | --    | --              | --       |
| Feb. 1-10          | 774                  | 7.5                        | .15       | 31           | 4.8            | 3.2         | 1.1           | 97                              | 15                         | 5.1           | .1           | 4.4                        | 119                                                | 97                            | 18            | 205                                       | 7.4 | 4     | 4               | 2        |
| Feb. 11-20         | 486                  | 6.2                        | .15       | 33           | 5.2            | 2.9         | 1.1           | 104                             | 16                         | 5.1           | .0           | 4.2                        | 126                                                | 104                           | 19            | 219                                       | 7.7 | 4     | 5               | 3        |
| Feb. 21-26         | 512                  | 6.3                        | .07       | 33           | 5.3            | 3.5         | 1.2           | 107                             | 16                         | 4.8           | .1           | 4.3                        | 128                                                | 105                           | 17            | 222                                       | 7.6 | 5     | 3               | 2        |
| Feb. 27-28         | 3,280                | --                         | .14       | --           | --             | 1.7         | --            | 44                              | 11                         | 2.5           | --           | --                         | --                                                 | a 50                          | 14            | 109                                       | 7.1 | --    | --              | --       |
| Mar. 1-10          | 1,019                | 6.5                        | .09       | 25           | 4.3            | 2.7         | .9            | 80                              | 13                         | 3.8           | .0           | 3.6                        | 104                                                | 80                            | 15            | 174                                       | 7.3 | 4     | 4               | 2        |
| Mar. 11-20         | 1,568                | 8.0                        | .05       | 22           | 3.7            | 2.9         | 1.0           | 69                              | 12                         | 3.8           | .0           | 2.8                        | 96                                                 | 70                            | 14            | 159                                       | 7.4 | 5     | 4               | 3        |
| Mar. 21-31         | 954                  | 7.6                        | .06       | 25           | 4.1            | 3.3         | 1.1           | 83                              | 13                         | 3.8           | .0           | 3.1                        | 106                                                | 80                            | 12            | 176                                       | 7.5 | 7     | 5               | 2        |
| Apr. 1, 2, 6-10    | 2,310                | 6.1                        | .06       | 20           | 3.3            | 3.2         | 2.8           | 63                              | 13                         | 3.5           | .0           | 5.4                        | 94                                                 | 64                            | 12            | 151                                       | 7.0 | 9     | 5               | 4        |
| Apr. 3-5           | 1,313                | --                         | .09       | --           | --             | .7          | --            | 38                              | 13                         | 1.8           | --           | 3.0                        | --                                                 | a 48                          | 17            | 102                                       | 7.1 | --    | --              | --       |
| Apr. 11-20         | 1,695                | 4.6                        | .05       | 21           | 3.2            | 2.7         | 1.0           | 66                              | 12                         | 3.4           | .0           | 2.8                        | 89                                                 | 66                            | 12            | 148                                       | 7.4 | 9     | 5               | 2        |
| Apr. 21-30         | 924                  | 4.6                        | .25       | 26           | 4.2            | 2.8         | 1.1           | 85                              | 13                         | 4.1           | .1           | 3.5                        | 107                                                | 83                            | 13            | 181                                       | 7.4 | 7     | 5               | 3        |

a By complexometric titration.

SUSQUEHANNA RIVER BASIN--Continued  
CHENANGO RIVER AT GREENE, N. Y.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--C continued

| Date of collection                       | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color | Oxygen consumed |          |
|------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|-----------------|----------|
|                                          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium magnesium             | Non-carbonate |                                            |     |       | Unfiltered      | Filtered |
| May 1-10, 1957.....                      | 403                  | 4.3                        | 0.13      | 32           | 6.5            | 3.4         | 1.2           | 116                             | 14                         | 4.5           | 0.1          | 2.6                        | 138                                                 | 107                           | 12            | 231                                        | 7.4 | 7     | 4               | 3        |
| May 11-20.....                           | 756                  | 5.9                        | .11       | 26           | 5.0            | 3.6         | 1.2           | 92                              | 15                         | 4.0           | .1           | 3.3                        | 126                                                 | 86                            | 10            | 191                                        | 7.3 | 15    | 7               | 3        |
| May 22-28.....                           | 959                  | 7.0                        | .16       | 22           | 3.3            | 3.1         | 1.0           | 72                              | 11                         | 4.3           | .1           | 3.1                        | 94                                                  | 69                            | 10            | 153                                        | 7.3 | 6     | 6               | 3        |
| June 11-30.....                          | 302                  | 8.1                        | .09       | 33           | 5.7            | 4.6         | 1.2           | 116                             | 12                         | 4.2           | .1           | 1.9                        | 134                                                 | 106                           | 11            | 224                                        | 7.7 | 11    | 5               | 4        |
| July 1-10.....                           | 347                  | 12                         | .09       | 30           | 5.0            | 4.6         | 1.2           | 108                             | 12                         | 3.2           | .1           | 1.3                        | 126                                                 | 96                            | 7             | 207                                        | 7.9 | 9     | 4               | 3        |
| July 11-23, 26-31.....                   | 217                  | 4.2                        | .10       | 34           | 5.9            | 4.4         | 1.2           | 122                             | 12                         | 6.2           | .1           | 2.0                        | 129                                                 | 110                           | 10            | 235                                        | 7.8 | 4     | 6               | 3        |
| July 24, 25.....                         | 270                  | --                         | .84       | --           | --             | 6.0         | 77            | 19                              | 19                         | 3.0           | --           | 2.2                        | --                                                  | a 76                          | 13            | 156                                        | 7.3 | --    | --              | --       |
| Aug. 1-20.....                           | 312                  | 5.2                        | .12       | 36           | 5.9            | 4.0         | 1.5           | 125                             | 14                         | 6.1           | .1           | 2.0                        | 141                                                 | 114                           | 12            | 242                                        | 7.8 | 9     | 8               | 5        |
| Aug. 21-31.....                          | 121                  | 4.8                        | .11       | 41           | 7.8            | 4.5         | 1.5           | 145                             | 15                         | 7.2           | .1           | 1.7                        | 158                                                 | 135                           | 16            | 285                                        | 7.8 | 6     | --              | --       |
| Sept. 1-20.....                          | 100                  | 4.7                        | .08       | 41           | 8.2            | 5.0         | 1.7           | 151                             | --                         | 7.5           | .1           | 1.0                        | 163                                                 | 136                           | 13            | 299                                        | 8.0 | 6     | --              | --       |
| Sept. 21-23, 26-30.....                  | 276                  | 8.7                        | .08       | 33           | 6.4            | 3.7         | 1.8           | 116                             | --                         | 5.0           | .2           | 1.2                        | 139                                                 | 109                           | 14            | 242                                        | 7.9 | 12    | --              | --       |
| Sept. 24, 25.....                        | 665                  | --                         | .11       | --           | --             | --          | --            | 67                              | --                         | 3.3           | --           | 1.9                        | --                                                  | a 82                          | 27            | 158                                        | 7.6 | --    | --              | --       |
| Time-weighted average <sup>b</sup> ..... | 708                  | 5.8                        | 0.12      | 29           | 5.0            | 3.6         | 1.3           | 98                              | 14                         | 4.6           | 0.1          | 2.7                        | 120                                                 | 93                            | 13            | 204                                        | --  | 6     | 5               | 3        |

a By complexometric titration.

b Represents 96 percent of days and 97 percent of runoff.

## SUSQUEHANNA RIVER BASIN--Continued

## CHENANGO RIVER AT GREENE, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 58   | 55   | 33   | 34   | 36   | 40   | 54   | 60  | --   | 66   | 71   | 63    |
| 2       | 56   | 60   | 36   | 33   | 36   | 40   | 54   | --  | --   | 65   | 70   | 65    |
| 3       | 58   | 57   | 38   | 34   | 36   | 40   | 55   | --  | --   | 64   | 71   | 68    |
| 4       | 60   | 60   | 38   | 34   | 36   | 35   | 55   | --  | --   | 67   | 74   | 69    |
| 5       | 56   | 54   | 38   | 32   | 36   | 40   | 55   | 60  | --   | 68   | 69   | 65    |
| 6       | 53   | 53   | 40   | 34   | 38   | 40   | 55   | 60  | --   | 66   | 65   | 63    |
| 7       | 53   | 50   | 44   | 34   | 36   | 40   | 50   | 60  | --   | 66   | 63   | 63    |
| 8       | 54   | 50   | 43   | 34   | 40   | 38   | 50   | 62  | --   | 69   | 65   | 63    |
| 9       | 52   | 45   | 40   | 34   | 38   | 40   | 50   | 68  | --   | 70   | 66   | 63    |
| 10      | 50   | 43   | 38   | 33   | 36   | 40   | 50   | --  | --   | 68   | 69   | 64    |
| 11      | 50   | 42   | 35   | 34   | 36   | 40   | 50   | 65  | 66   | 65   | 67   | 63    |
| 12      | 48   | 43   | 35   | 34   | 34   | 40   | 50   | 67  | 69   | 66   | 70   | 64    |
| 13      | 52   | 40   | --   | 33   | 36   | 40   | 44   | 60  | 66   | 68   | 67   | 67    |
| 14      | 50   | 40   | 35   | 32   | 36   | 48   | 44   | 62  | 68   | 65   | 66   | 66    |
| 15      | 55   | 45   | 33   | 33   | 38   | 48   | 45   | 64  | 69   | 69   | 70   | 62    |
| 16      | 50   | 45   | 38   | 33   | 38   | 46   | 45   | 64  | 71   | 61   | 72   | 67    |
| 17      | 54   | 45   | 38   | 33   | 38   | 45   | 45   | 64  | 71   | 66   | 67   | 64    |
| 18      | 58   | 45   | 37   | 34   | 40   | 44   | 57   | 65  | 74   | 69   | 65   | 62    |
| 19      | 50   | 40   | 34   | 32   | 38   | 45   | 55   | 68  | 77   | 70   | 66   | 61    |
| 20      | 55   | 38   | --   | 32   | 40   | 45   | 55   | 69  | 69   | 72   | 67   | 63    |
| 21      | 50   | 42   | 36   | 36   | 40   | 40   | 55   | --  | 67   | 74   | 67   | 66    |
| 22      | 55   | 40   | 35   | 35   | 40   | 40   | 60   | 70  | 69   | 76   | 65   | 68    |
| 23      | 55   | 37   | 36   | 35   | 42   | 46   | 60   | 60  | 72   | 71   | 65   | 68    |
| 24      | 56   | 35   | 43   | 34   | 38   | 44   | 58   | 68  | 71   | 67   | 64   | 60    |
| 25      | 50   | 35   | 38   | 34   | 40   | 44   | 60   | 65  | 73   | 65   | 66   | 57    |
| 26      | 50   | 35   | 40   | 34   | 42   | 44   | 60   | 60  | 69   | 67   | 68   | 57    |
| 27      | 53   | 55   | 40   | 34   | 40   | 44   | 60   | 60  | 70   | 68   | 66   | 51    |
| 28      | 52   | 36   | 38   | 34   | 40   | 44   | 60   | 70  | 70   | 68   | 63   | 50    |
| 29      | 48   | 40   | 40   | 35   | --   | 46   | 55   | --  | 71   | 71   | 62   | 51    |
| 30      | 48   | 45   | 34   | 34   | --   | 46   | --   | --  | 66   | 71   | 63   | 52    |
| 31      | 55   | --   | 38   | 36   | --   | 44   | --   | --  | --   | 72   | 62   | --    |
| Average | 53   | 45   | 38   | 34   | 38   | 42   | 53   | --  | --   | 68   | 67   | 62    |

SUSQUEHANNA RIVER BASIN--Continued  
 TIOUGHNIOGA RIVER AT CORTLAND, N. Y.

LOCATION --At bridge on highway 11 at Cortland, Cortland County, about 0.3 mile downstream from gaging station and about 0.7 mile from confluence of East and West Branches.  
 DRAINAGE AREA --296 square miles (including 16 square miles, the flow from which may be diverted into DeRuyter Reservoir in Oswego River basin).  
 RECORDS AVAILABLE --Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES 1956-57 Dissolved solids: Maximum, 180 ppm Sept. 1-10; minimum, 87 ppm Dec. 21-29.

HARDNESS: Maximum 166 ppm Jan. 21; minimum, 40 ppm Apr. 6, 7.

Specific conductance: Maximum 411, 353 micromhos at 25°C, 41, 35 micromhos at 25°C, 23 micromhos at 25°C, 23 micromhos at 25°C.

Water temperatures: Maximum 74°F, July 22; minimum, freezing point on many days during winter months.

REMARKS --Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP-1502. No appreciable inflow between gaging station and sampling site.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, nesium               | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 142                  | 5.1                        | 0.12      | 42           | 7.0            | 3.8         | 1.1           | 144                             | 17                         | 6.0           | 0.1          | 1.6                        | 161                                                | 134                           | 16            | 283                                       | 7.7 | 5     | 5               | 2        |
| Oct. 11-20         | 104                  | 5.9                        | .12       | 42           | 7.3            | 3.9         | 1.2           | 147                             | 17                         | 6.2           | .1           | 1.5                        | 165                                                | 135                           | 15            | 292                                       | 7.7 | 6     | 4               | 2        |
| Oct. 21-31         | 107                  | 6.4                        | .18       | 42           | 8.2            | 4.0         | 1.1           | 148                             | 17                         | 5.6           | .1           | 1.5                        | 166                                                | 139                           | 17            | 288                                       | 7.6 | 5     | 4               | 2        |
| Nov. 1-10          | 101                  | 5.8                        | .16       | 40           | 7.9            | 3.7         | 1.1           | 137                             | 18                         | 5.6           | .1           | 1.1                        | 155                                                | 133                           | 20            | 271                                       | 7.8 | 5     | 4               | 2        |
| Nov. 11-20         | 102                  | 5.9                        | .13       | 41           | 7.3            | 3.3         | 1.1           | 139                             | 17                         | 5.3           | .0           | 3.6                        | 156                                                | 133                           | 19            | 273                                       | 7.6 | 6     | 5               | 2        |
| Nov. 21            | 156                  | --                         | .11       | --           | --             | 1.4         | --            | 137                             | 11                         | 8.6           | --           | 4.0                        | --                                                 | a 136                         | 24            | 283                                       | 7.4 | --    | --              | --       |
| Nov. 22-30         | 251                  | 6.7                        | .16       | 28           | 4.6            | 2.3         | 1.1           | 90                              | 15                         | 3.5           | .0           | 3.6                        | 112                                                | 89                            | 15            | 188                                       | 7.5 | 11    | 5               | 3        |
| Dec. 1-6           | 219                  | 7.6                        | .19       | 32           | 6.0            | 3.1         | .9            | 106                             | 17                         | 4.6           | .0           | 3.8                        | 129                                                | 105                           | 18            | 216                                       | 7.6 | 3     | 2               | 2        |
| Dec. 7-10          | 652                  | --                         | .16       | --           | --             | 2.6         | --            | 62                              | 16                         | 2.8           | --           | 3.0                        | --                                                 | a 68                          | 17            | 146                                       | 7.3 | --    | --              | --       |
| Dec. 11-20         | 758                  | 5.7                        | .10       | 21           | 4.0            | 2.0         | .9            | 64                              | 15                         | 2.7           | .0           | 3.2                        | 90                                                 | 69                            | 17            | 148                                       | 7.3 | 3     | 4               | 2        |
| Dec. 21-29         | 912                  | 6.2                        | .10       | 22           | 3.7            | 1.9         | 1.0           | 65                              | 15                         | 2.9           | .0           | 2.4                        | 87                                                 | 70                            | 17            | 149                                       | 7.3 | 6     | 4               | 2        |
| Dec. 30, 31        | 494                  | --                         | .11       | --           | --             | .8          | --            | 90                              | 19                         | 3.5           | --           | 3.1                        | --                                                 | a 97                          | 23            | 191                                       | 7.3 | --    | --              | --       |
| Jan. 1-10, 1957    | 402                  | 6.1                        | .08       | 31           | 5.5            | 2.3         | .9            | 100                             | 16                         | 3.6           | .0           | 3.8                        | 117                                                | 100                           | 18            | 208                                       | 7.5 | 4     | 3               | 2        |
| Jan. 11-20         | 284                  | 6.9                        | .09       | 37           | 6.6            | 2.6         | .9            | 121                             | 17                         | 4.2           | .0           | 4.0                        | 144                                                | 120                           | 21            | 241                                       | 7.6 | 4     | 4               | 2        |
| Jan. 21            | 231                  | --                         | .10       | --           | --             | 4.3         | --            | 159                             | 28                         | 7.8           | --           | 6.0                        | --                                                 | a 166                         | 36            | 310                                       | 7.4 | --    | --              | --       |
| Jan. 22-27-31      | 664                  | 5.8                        | .08       | 35           | 6.5            | 2.9         | 1.0           | 112                             | 17                         | 4.7           | .0           | 5.2                        | 136                                                | 114                           | 22            | 239                                       | 7.7 | 5     | 7               | 2        |
| Jan. 23-24         | 3,095                | --                         | .33       | --           | --             | 2.4         | --            | 38                              | 20                         | 2.1           | --           | 3.0                        | --                                                 | a 52                          | 21            | 106                                       | 7.0 | --    | --              | --       |
| Jan. 25-26         | 1,365                | --                         | .12       | --           | --             | 2.4         | --            | 76                              | 22                         | 3.0           | --           | 3.5                        | --                                                 | a 87                          | 25            | 172                                       | 7.4 | --    | --              | --       |
| Feb. 1-10          | 431                  | 6.5                        | .13       | 35           | 6.3            | 2.6         | .9            | 118                             | 17                         | 4.0           | .0           | 5.2                        | 140                                                | 114                           | 17            | 240                                       | 7.6 | 3     | 4               | 4        |
| Feb. 11-20         | 320                  | 6.0                        | .13       | 37           | 6.4            | 2.5         | .9            | 123                             | 17                         | 4.0           | .1           | 5.0                        | 141                                                | 119                           | 18            | 246                                       | 7.7 | 3     | 10              | 6        |
| Feb. 21-26         | 343                  | 5.8                        | .09       | 38           | 6.2            | 2.7         | .9            | 123                             | 17                         | 4.2           | .0           | 3.9                        | 141                                                | 121                           | 19            | 245                                       | 7.7 | 4     | 4               | 2        |
| Feb. 27-28         | 2,035                | --                         | .16       | --           | --             | 3.3         | --            | 46                              | 12                         | 2.0           | --           | 2.8                        | --                                                 | a 48                          | 10            | 109                                       | 7.2 | --    | --              | --       |
| Mar. 1-8           | 702                  | 6.2                        | .06       | 28           | 4.6            | 2.1         | .9            | 88                              | 15                         | 3.4           | .1           | 3.3                        | 109                                                | 89                            | 17            | 190                                       | 7.7 | 5     | 4               | 2        |
| Mar. 9-10          | 482                  | --                         | .06       | --           | --             | 2.9         | --            | 119                             | 16                         | 5.0           | --           | 4.0                        | --                                                 | a 118                         | 21            | 240                                       | 7.9 | --    | --              | --       |

|                       |       |     |    |     |     |     |     |     |     |     |    |      |     |     |     |    |    |
|-----------------------|-------|-----|----|-----|-----|-----|-----|-----|-----|-----|----|------|-----|-----|-----|----|----|
| Mar. 11-12, 1957      | 478   | .04 | -- | --  | 3.5 | 113 | 16  | 3.5 | --  | 3.0 | -- | a109 | 16  | 225 | 7.7 | -- | -- |
| Mar. 15-16, .....     | 2,045 | .11 | -- | --  | 2.0 | 45  | 11  | 1.0 | --  | 2.1 | -- | a47  | 10  | 107 | 7.2 | -- | -- |
| Mar. 18-19, 17-20, .. | 1,178 | .04 | 23 | 4.1 | 2.1 | 74  | 12  | 3.0 | 0.1 | 3.3 | 4  | 75   | 14  | 161 | 7.7 | 4  | 2  |
| Mar. 21-31, .....     | 653   | .06 | 28 | 4.4 | 2.4 | 89  | 14  | 3.2 | .1  | 3.4 | 3  | 109  | 15  | 186 | 7.7 | 6  | 3  |
| Apr. 1-5, 8-10, ..... | 841   | .09 | 24 | 4.1 | 3.0 | 80  | 13  | 3.0 | .0  | 2.6 | 5  | 77   | 12  | 169 | 7.7 | 3  | 2  |
| Apr. 6, 7, .....      | 1,700 | .11 | -- | --  | 4.6 | 47  | 12  | 1.3 | --  | 2.5 | 3  | a40  | 2   | 108 | 7.2 | -- | -- |
| Apr. 11-12, .....     | 833   | .15 | 25 | 3.8 | 2.3 | 80  | 13  | 3.3 | .1  | 3.3 | 4  | 102  | 13  | 169 | 7.6 | 3  | 2  |
| Apr. 21-30, .....     | 523   | .21 | 30 | 3.1 | 2.5 | 9   | 104 | 14  | .1  | 3.4 | 9  | 98   | 11  | 205 | 7.7 | 6  | 2  |
| May 1-10, .....       | 238   | .23 | 39 | 6.8 | 2.7 | 9   | 128 | 15  | .1  | 2.2 | 8  | 122  | 21  | 281 | 7.6 | 8  | 2  |
| May 11-19, .....      | 264   | .13 | 40 | 6.9 | 3.2 | .9  | 136 | 15  | .1  | 3.5 | 6  | 156  | 17  | 261 | 7.7 | 3  | 2  |
| May 20, .....         | 1,400 | .12 | -- | --  | 4.8 | 81  | 19  | 3.8 | --  | 3.0 | -- | 153  | 17  | 201 | 7.7 | 3  | 2  |
| May 21, .....         | 1,220 | .14 | -- | --  | 4.8 | 65  | 18  | 3.0 | --  | 2.8 | -- | a64  | 18  | 171 | 7.3 | -- | -- |
| May 22-27, 29, .....  | 503   | .14 | 29 | 4.8 | 2.6 | .8  | 92  | 13  | .1  | 2.9 | -- | a68  | 15  | 139 | 7.2 | -- | 3  |
| May 28, 30, 31, ..... | 289   | .19 | -- | --  | 4.4 | 121 | 22  | 4.8 | --  | 4.5 | -- | a120 | 21  | 236 | 7.5 | -- | -- |
| June 1-10, .....      | 191   | .20 | 41 | 7.2 | 3.3 | .9  | 136 | 15  | .1  | 4.2 | 5  | 151  | 21  | 266 | 7.7 | 3  | 2  |
| June 11-13, 16-20, .. | 227   | .12 | 39 | 7.5 | 3.5 | 1.1 | 134 | 15  | .1  | 3.3 | 4  | 151  | 19  | 261 | 7.5 | 11 | 3  |
| June 14, 15, .....    | 888   | .68 | -- | --  | 2.1 | 75  | 12  | 2.7 | --  | 2.8 | -- | a76  | 15  | 160 | 7.0 | -- | -- |
| June 21-30, .....     | 244   | .16 | 37 | 6.5 | 2.7 | 1.1 | 124 | 13  | .1  | 2.3 | 4  | 138  | 18  | 237 | 7.7 | 14 | 4  |
| July 1-10, .....      | 396   | .19 | 32 | 5.1 | 2.4 | 1.2 | 106 | 12  | .1  | 2.6 | 5  | 125  | 14  | 210 | 7.7 | 15 | 4  |
| July 11-20, .....     | 195   | .14 | 40 | 7.0 | 3.2 | 1.0 | 135 | 15  | .1  | 3.1 | 4  | 148  | 19  | 255 | 7.9 | 8  | 3  |
| July 21-31, .....     | 163   | .19 | 41 | 7.2 | 3.0 | 1.0 | 138 | 15  | .1  | 3.2 | 5  | 159  | 132 | 266 | 7.9 | 3  | 3  |
| Aug. 1-4, 7-20, ..... | 179   | .14 | 43 | 7.6 | 3.3 | 1.0 | 148 | 15  | .1  | 2.6 | 6  | 165  | 18  | 278 | 7.9 | 4  | 4  |
| Aug. 5, 6, .....      | 533   | .10 | -- | --  | 9.7 | 92  | 29  | 2.0 | --  | 1.9 | -- | a89  | 14  | 172 | 7.7 | -- | -- |
| Aug. 21-31, .....     | 85    | .12 | 47 | 10  | 4.0 | 1.1 | 164 | --  | --  | 4.7 | -- | 183  | 199 | 330 | 7.7 | 3  | -- |
| Sept. 1-10, .....     | 74    | .02 | 47 | 11  | 3.7 | 1.6 | 170 | 19  | .1  | 5.0 | -- | 190  | 163 | 330 | 7.8 | 5  | -- |
| Sept. 11-30, .....    | 104   | .13 | 45 | 9.8 | 3.9 | 1.4 | 160 | 18  | .2  | 3.3 | -- | 177  | 22  | 312 | 7.9 | 5  | -- |
| Time-weighted average | 404   | .14 | 36 | 6.6 | 3.0 | 1.0 | 119 | 16  | 0.1 | 3.3 | -- | 141  | 115 | 237 | --  | 6  | 3  |

a By compleximetric titration.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## SUSQUEHANNA RIVER BASIN--Continued

## TIOUGHNIOGA RIVER AT CORTLAND, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement approximately 10 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 54   | 52   | 34   | 32   | 32   | 32   | 42   | 55  | 63   | 64   | 69   | 62    |
| 2       | 52   | 58   | 34   | 32   | 32   | 36   | 45   | 58  | 62   | 62   | 68   | 64    |
| 3       | 55   | 54   | 37   | 32   | 34   | 33   | 39   | 49  | 62   | 65   | 69   | 67    |
| 4       | 54   | 56   | 37   | 33   | 32   | 32   | 41   | 48  | 63   | 65   | 70   | 66    |
| 5       | 54   | 56   | 35   | 33   | 32   | 32   | 37   | 49  | 65   | 68   | 67   | 59    |
| 6       | 50   | 54   | 41   | 32   | 32   | 33   | 40   | 50  | 64   | --   | 63   | 61    |
| 7       | 48   | 52   | 44   | 34   | 36   | 36   | 39   | 52  | 65   | 65   | 66   | 60    |
| 8       | 50   | 50   | --   | 34   | 36   | 38   | 40   | 56  | 59   | 67   | 63   | 60    |
| 9       | 52   | 45   | 37   | 35   | 38   | 36   | 36   | 59  | 60   | 67   | 64   | 57    |
| 10      | 50   | 40   | 35   | 33   | 33   | 35   | 34   | 60  | 65   | 65   | 66   | 61    |
| 11      | 46   | 39   | 35   | 33   | 34   | 34   | 40   | 58  | 66   | 62   | 66   | 62    |
| 12      | 46   | 35   | 38   | 33   | 33   | 40   | 40   | 66  | 68   | 63   | 69   | 60    |
| 13      | 47   | 41   | 40   | 33   | 34   | 40   | --   | 58  | 65   | 65   | 64   | 65    |
| 14      | 50   | 43   | --   | 32   | 36   | 39   | 38   | 58  | 66   | 65   | 64   | 64    |
| 15      | 53   | 45   | 37   | 32   | 35   | 42   | 39   | 59  | 63   | 66   | 66   | 62    |
| 16      | 52   | 49   | 40   | 33   | 36   | 40   | 43   | 57  | 70   | 66   | 67   | 65    |
| 17      | 53   | 44   | 39   | 33   | 32   | 39   | 45   | 54  | 70   | 64   | 66   | 61    |
| 18      | 53   | 42   | 36   | 33   | 34   | 38   | 46   | 54  | 72   | 65   | 61   | 59    |
| 19      | 49   | 38   | 34   | 33   | 35   | 39   | 50   | 53  | 73   | 68   | 62   | 59    |
| 20      | 48   | 38   | 35   | 33   | 33   | 38   | 49   | 49  | 66   | 70   | 64   | 63    |
| 21      | 52   | 42   | 38   | 35   | 34   | 38   | 56   | 46  | 69   | 71   | 64   | 66    |
| 22      | 53   | 42   | 43   | 34   | 34   | 40   | 58   | 56  | 67   | 74   | 59   | 67    |
| 23      | 55   | 36   | 40   | 35   | 36   | 41   | 58   | 55  | 71   | 70   | 64   | 63    |
| 24      | 54   | 33   | 42   | 33   | 36   | 42   | 60   | 58  | 70   | 67   | 61   | 60    |
| 25      | 49   | 34   | 42   | 34   | 40   | 40   | 60   | 57  | 70   | 66   | 63   | 57    |
| 26      | 47   | 34   | 36   | 34   | 38   | 41   | 61   | 60  | 68   | 66   | 64   | 57    |
| 27      | 50   | 35   | 31   | 35   | 32   | 41   | 63   | 62  | 68   | 63   | 64   | 51    |
| 28      | 51   | 35   | 38   | 34   | 32   | 42   | 61   | 56  | 69   | 66   | 59   | 49    |
| 29      | 49   | 37   | 32   | 35   | --   | 42   | 60   | 54  | 69   | 68   | 59   | 49    |
| 30      | 50   | 34   | 32   | 36   | --   | 41   | 56   | 58  | 65   | 69   | 60   | 50    |
| 31      | 54   | --   | 34   | 35   | --   | 41   | --   | 62  | --   | 70   | 64   | --    |
| Average | 51   | 43   | 37   | 33   | 34   | 38   | 47   | 56  | 66   | 64   | 64   | 60    |

## SUSQUEHANNA RIVER BASIN--Continued

## SUSQUEHANNA RIVER AT JOHNSON CITY, N. Y.

LOCATION.--At the New York State Electric and Gas Corp., Goudy Station, Johnson City, N. Y.

DRAINAGE AREA.--3,916 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F June 19, July 22; minimum, freezing point Jan. 7-8, 28, Feb. 12, 28.

EXTREMES, 1955-57.--Water temperatures: Maximum, 81°F June 19, July 22, 1957, minimum, freezing point on many days during winter months.

REMARKS.--Water is brought to plant underground through tubes. Measurements are made at plant which is approximately 200 feet from river. Readings made by employees of plant.

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 8 a. m. /

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 56   | 53   | 33   | 33   | 33   | 33   | 42   | 59  | 68   | 69   | 77   | 66    |
| 2       | 55   | 57   | 34   | 33   | 33   | 33   | 45   | 58  | 69   | 68   | 75   | 68    |
| 3       | 56   | 57   | 34   | 34   | 33   | 33   | 42   | 55  | 66   | 68   | 77   | 70    |
| 4       | 57   | 57   | 36   | 34   | 33   | 33   | 42   | 51  | 67   | 72   | 77   | 72    |
| 5       | 54   | 56   | 35   | 33   | 33   | 33   | 37   | 50  | 67   | 74   | 73   | 67    |
| 6       | 53   | 54   | 37   | 33   | 33   | 33   | 37   | 53  | 68   | 71   | 68   | 67    |
| 7       | 53   | 52   | 31   | 32   | 33   | 36   | 40   | 55  | 69   | 71   | 66   | 68    |
| 8       | 52   | 51   | 42   | 32   | 35   | 37   | 40   | 58  | 67   | 72   | 70   | 68    |
| 9       | 53   | 49   | 40   | 33   | 33   | 37   | 37   | 61  | 66   | 73   | 70   | 66    |
| 10      | 52   | 43   | 36   | 33   | 35   | 35   | 38   | 65  | 67   | 72   | 72   | 67    |
| 11      | 49   | 40   | 34   | 33   | 33   | 33   | 38   | 65  | 69   | 69   | 71   | 66    |
| 12      | 48   | 40   | 35   | 33   | 32   | 36   | 40   | 60  | 73   | 70   | 74   | 68    |
| 13      | 47   | 41   | 38   | 33   | 33   | 37   | 39   | 62  | 71   | 72   | 71   | 70    |
| 14      | 50   | 40   | 37   | 33   | 33   | 38   | 39   | 63  | 74   | 71   | 71   | 71    |
| 15      | 52   | 43   | 35   | 33   | 33   | 41   | 38   | 62  | 74   | 74   | 73   | 70    |
| 16      | 54   | 46   | 37   | 33   | 34   | 40   | 41   | 62  | 76   | 72   | 75   | 70    |
| 17      | 55   | 43   | 37   | 33   | 33   | 39   | 44   | 60  | 77   | 71   | 70   | 68    |
| 18      | 56   | 42   | 37   | 33   | 33   | 38   | 46   | 61  | 80   | 73   | 69   | 67    |
| 19      | 54   | 39   | 34   | 33   | 35   | 39   | 48   | 59  | 81   | 74   | 69   | 66    |
| 20      | 52   | 39   | 34   | 33   | 33   | 37   | 51   | 51  | 74   | 76   | 70   | 68    |
| 21      | 51   | 41   | 34   | 33   | 33   | 37   | 56   | 49  | 72   | 79   | 70   | 69    |
| 22      | 54   | 41   | 37   | 33   | 33   | 37   | 57   | 53  | 76   | 81   | 68   | 71    |
| 23      | 55   | 38   | 39   | 33   | 35   | 39   | 57   | 54  | 76   | 78   | 69   | 77    |
| 24      | 56   | 34   | 39   | 33   | 35   | 41   | 60   | 58  | 77   | 73   | 70   | 65    |
| 25      | 52   | 33   | 40   | 33   | 37   | 40   | 62   | 60  | 76   | 71   | 71   | 61    |
| 26      | 50   | 33   | 37   | 33   | 39   | 42   | 59   | 63  | 73   | 72   | 71   | 61    |
| 27      | 51   | 35   | 36   | 33   | 35   | 41   | 62   | 65  | 74   | 74   | 70   | 56    |
| 28      | 51   | 35   | 35   | 32   | 32   | 41   | 64   | 62  | 75   | 73   | 68   | 53    |
| 29      | 51   | 36   | 35   | 33   | --   | 43   | 62   | 59  | 76   | 75   | 66   | 55    |
| 30      | 51   | 34   | 33   | 33   | --   | 43   | 61   | 63  | 71   | 75   | 66   | 55    |
| 31      | 51   | --   | 33   | 33   | --   | 40   | --   | 65  | --   | 77   | 66   | --    |
| Average | 53   | 43   | 36   | 33   | 34   | 38   | 47   | 59  | 72   | 73   | 71   | 66    |



## SUSQUEHANNA RIVER BASIN--Continued

## COREY CREEK NEAR MAINESBURG, PA.

LOCATION.--At gaging station, 1.1 miles downstream from Mainesburg, Tioga County, 3½ miles east of Mansfield, and 4½ miles upstream from mouth.

DRAINAGE AREA.--12.2 square miles.

RECORDS AVAILABLE.--Sediment records: May 1954 to September 1957.

EXTREMES, 1956-57.--Sediment concentrations: Maximum daily, 1,440 ppm Apr. 5; minimum daily, 0 ppm Aug. 17-19.

Sediment loads: Maximum daily, 1,460 tons Apr. 5; minimum daily, 0 tons Aug. 17-19.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 1,440 ppm Apr. 5, 1957; minimum daily, 0 ppm on many days.

Sediment loads: Maximum daily, 1,940 tons Oct. 14, 1955; minimum daily, 0 tons on many days.

REMARKS.--Records of specific conductance and pH of periodic sediment samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502. Flow affected by ice Nov. 23-27, Nov. 30 to Dec. 4, Dec. 10-12, Dec. 29 to Jan. 23, Jan. 25 to Feb. 6, Feb. 12-23, Mar. 2-7.

## Chemical analysis, in parts per million, Dec. 10, 1956

|                                 |     |                                          |     |
|---------------------------------|-----|------------------------------------------|-----|
| Silica (SiO <sub>2</sub> )      | 4.6 | Nitrate (NO <sub>3</sub> )               | 1.6 |
| Iron (Fe)                       | .01 | Dissolved solids (residue at 180°C)      | 78  |
| Manganese (Mn)                  | .00 | Hardness as CaCO <sub>3</sub>            |     |
| Calcium (Ca)                    | 15  | Calcium, magnesium                       | 47  |
| Magnesium (Mg)                  | 2.3 | Noncarbonate                             | 16  |
| Sodium (Na)                     | 2.0 | Specific conductance (micromhos at 25°C) | 113 |
| Potassium (K)                   | 1.7 | pH                                       | 7.8 |
| Bicarbonate (HCO <sub>3</sub> ) | 38  | Color                                    | 3   |
| Sulfate (SO <sub>4</sub> )      | 18  |                                          |     |
| Chloride (Cl)                   | 2.7 |                                          |     |
| Fluoride (F)                    | .1  |                                          |     |

## Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 0.8                  |                          |              | 2.5                  | 6                        | (t)          | 4.5                  |                          |              |
| 2.....  | .8                   |                          |              | 118                  | 522                      | s 176        | 4.0                  |                          |              |
| 3.....  | .9                   |                          |              | 50                   | 26                       | s 3.9        | 4.5                  |                          |              |
| 4.....  | 2.5                  |                          |              | 25                   |                          |              | 5.0                  | 3                        | (t)          |
| 5.....  | 2.0                  |                          |              | 18                   |                          |              | 6.2                  |                          |              |
| 6.....  | 1.3                  | 3                        | (t)          | 13                   |                          |              | 7.9                  |                          |              |
| 7.....  | 4.6                  |                          |              | 11                   |                          |              | 9.6                  |                          |              |
| 8.....  | 2.3                  |                          |              | 9.0                  | 4                        | .1           | 14                   |                          |              |
| 9.....  | 1.8                  |                          |              | 7.2                  |                          |              | 19                   | 5                        | 0.2          |
| 10..... | 1.5                  |                          |              | 5.8                  |                          |              | 15                   |                          |              |
| 11..... | 1.3                  |                          |              | 4.9                  |                          |              | 13                   |                          |              |
| 12..... | 1.2                  |                          |              | 4.7                  |                          |              | 14                   | 25                       | .9           |
| 13..... | 1.3                  |                          |              | 4.1                  |                          |              | 30                   | 12                       | 1.0          |
| 14..... | 1.0                  |                          |              | 3.9                  |                          |              | 59                   | 125                      | s 34         |
| 15..... | 1.0                  |                          |              | 3.7                  |                          |              | 51                   | 59                       | s 8.3        |
| 16..... | .9                   |                          |              | 5.1                  |                          |              | 42                   | 12                       | 1.4          |
| 17..... | .9                   | 6                        | (t)          | 4.9                  | 4                        | .1           | 31                   | 9                        | .8           |
| 18..... | .8                   |                          |              | 4.4                  |                          |              | 25                   | 16                       | 1.1          |
| 19..... | .8                   |                          |              | 3.9                  |                          |              | 20                   | 6                        | .3           |
| 20..... | .8                   |                          |              | 3.7                  |                          |              | 17                   | 6                        | .3           |
| 21..... | .9                   |                          |              | 7.9                  |                          |              | 54                   | 124                      | s 24         |
| 22..... | .8                   |                          |              | 12                   |                          |              | 72                   | 122                      | s 33         |
| 23..... | 3.0                  | 16                       | 0.1          | 7.5                  |                          |              | 52                   | 10                       | s 1.3        |
| 24..... | 1.8                  |                          |              | 6.5                  |                          |              | 58                   | 46                       | 7.2          |
| 25..... | 1.4                  |                          |              | 5.5                  |                          |              | 40                   | 12                       | 1.3          |
| 26..... | 1.3                  |                          |              | 5.5                  | 3                        | .1           | 27                   |                          |              |
| 27..... | 3.8                  | 2                        | (t)          | 5.0                  |                          |              | 23                   |                          |              |
| 28..... | 3.4                  |                          |              | 4.9                  |                          |              | 21                   | 7                        | .4           |
| 29..... | 2.5                  |                          |              | 4.9                  |                          |              | 19                   |                          |              |
| 30..... | 2.0                  |                          |              | 5.0                  |                          |              | 17                   |                          |              |
| 31..... | 2.0                  |                          |              | --                   |                          |              | 15                   |                          |              |
| Total.  | 51.4                 | --                       | 0.5          | 367.5                | --                       | 182.6        | 789.7                | --                       | 118.5        |

s Computed by subdividing day.

t Less than 0.05 ton.

## SUSQUEHANNA RIVER BASIN--Continued

COREY CREEK NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | January              |                          |              | February             |                          |              | March                |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Suspended sediment   |                          |              | Suspended sediment   |                          |              | Suspended sediment   |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 13                   | 5                        | 0.2          | 9.0                  | 6                        | 0.1          | 18                   |                          |              |
| 2.....  | 12                   | 8                        | .3           | 8.5                  |                          |              | 17                   | 8                        | 0.3          |
| 3.....  | 11                   | 4                        | .1           | 8.0                  |                          |              | 15                   |                          |              |
| 4.....  | 10                   |                          |              | 7.5                  | --                       | b .2         | 13                   |                          |              |
| 5.....  | 9.0                  |                          |              | 7.5                  |                          |              | 12                   | 16                       | .5           |
| 6.....  | 8.5                  | 4                        | .1           | 7.5                  | 8                        | .2           | 11                   |                          |              |
| 7.....  | 8.0                  |                          |              | 10                   | 22                       | s .8         | 10                   |                          |              |
| 8.....  | 7.5                  |                          |              | 10                   | 15                       | .4           | 11                   |                          |              |
| 9.....  | 7.0                  |                          |              | 13                   |                          |              | 12                   | 8                        | .3           |
| 10..... | 7.0                  | 9                        | .2           | 20                   |                          |              | 19                   |                          |              |
| 11..... | 6.5                  |                          |              | 11                   | 4                        | .1           | 15                   |                          |              |
| 12..... | 6.5                  |                          |              | 8.0                  |                          |              | 64                   | --                       | b 110        |
| 13..... | 6.0                  |                          |              | 7.0                  |                          |              | 67                   | --                       | b 60         |
| 14..... | 6.0                  |                          |              | 6.0                  |                          |              | 43                   | --                       | a 10         |
| 15..... | 5.5                  |                          |              | 6.0                  |                          |              | 47                   | 57                       | 7.2          |
| 16..... | 5.5                  | --                       | e .2         | 5.5                  | 2                        | (t)          | 37                   |                          |              |
| 17..... | 5.0                  |                          |              | 5.0                  |                          |              | 27                   | 33                       | 2.5          |
| 18..... | 5.0                  |                          |              | 4.5                  |                          |              | 21                   |                          |              |
| 19..... | 4.5                  |                          |              | 4.0                  |                          |              | 21                   |                          |              |
| 20..... | 4.5                  |                          |              | 4.0                  |                          |              | 21                   |                          |              |
| 21..... | 5.0                  |                          |              | 3.5                  | 5                        | .1           | 17                   | 6                        | .3           |
| 22..... | 12                   | --                       | e 4.9        | 3.5                  |                          |              | 15                   |                          |              |
| 23..... | 100                  |                          |              | 3.5                  |                          |              | 13                   |                          |              |
| 24..... | 31                   |                          |              | 4.4                  |                          |              | 12                   |                          |              |
| 25..... | 20                   | --                       | e 6.3        | 7.8                  | 30                       | .6           | 11                   | 4                        | .1           |
| 26..... | 15                   |                          |              | 31                   | 228                      | s 29         | 12                   |                          |              |
| 27..... | 13                   |                          |              | 46                   | 201                      | s 32         | 16                   | --                       | a 1.1        |
| 28..... | 12                   | 55                       | 1.8          | 24                   | 15                       | 1.0          | 19                   |                          |              |
| 29..... | 11                   | 25                       | .7           | --                   | --                       | --           | 19                   |                          |              |
| 30..... | 10                   | 3                        | .1           | --                   | --                       | --           | 34                   | 5                        | .3           |
| 31..... | 9.5                  |                          |              | --                   | --                       | --           | 23                   |                          |              |
| Total.  | 386.5                | --                       | 42.7         | 285.7                | --                       | 66.2         | 692                  | --                       | 202.3        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|         | Suspended sediment   |                          |              | Suspended sediment   |                          |              | Suspended sediment   |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 20                   |                          |              | 14                   |                          |              | 3.0                  |                          |              |
| 2.....  | 53                   | 10                       | 0.9          | 12                   |                          |              | 3.2                  |                          |              |
| 3.....  | 34                   |                          |              | 9.9                  |                          |              | 2.8                  |                          |              |
| 4.....  | 31                   |                          |              | 9.9                  |                          |              | 2.4                  |                          |              |
| 5.....  | 268                  | 1,440                    | s 1,460      | 8.8                  | 5                        | 0.1          | 2.1                  | 10                       | 0.1          |
| 6.....  | 150                  | 950                      | s 439        | 7.2                  |                          |              | 1.8                  |                          |              |
| 7.....  | 57                   | 190                      | s 33         | 6.0                  |                          |              | 1.8                  |                          |              |
| 8.....  | 53                   | 15                       | 2.1          | 5.2                  | 2                        | (t)          | 1.6                  |                          |              |
| 9.....  | 48                   | 20                       | 2.6          | 4.5                  | 23                       | .3           | 1.6                  |                          |              |
| 10..... | 55                   | 66                       | s 12         | 4.3                  | 17                       | .2           | 1.2                  |                          |              |
| 11..... | 94                   | 232                      | s 85         | 5.2                  |                          |              | 1.2                  |                          |              |
| 12..... | 69                   | 148                      | s 31         | 4.7                  |                          |              | 1.6                  |                          |              |
| 13..... | 39                   |                          |              | 4.0                  | 16                       | .2           | 1.3                  |                          |              |
| 14..... | 31                   | 6                        | .5           | 4.7                  |                          |              | 1.6                  |                          |              |
| 15..... | 26                   |                          |              | 12                   | 217                      | s 7.1        | 1.3                  | 5                        | (t)          |
| 16..... | 21                   | 85                       | c 4.8        | 8.2                  | 88                       | 1.9          | 1.2                  |                          |              |
| 17..... | 20                   |                          |              | 5.7                  |                          |              | .9                   |                          |              |
| 18..... | 42                   | 8                        | .8           | 5.5                  | 18                       | .3           | .8                   |                          |              |
| 19..... | 46                   |                          |              | 12                   | 146                      | s 5.5        | .7                   |                          |              |
| 20..... | 33                   |                          |              | 30                   | 251                      | s 24         | .7                   | 33                       | .1           |
| 21..... | 30                   |                          |              | 24                   | 22                       | s 1.6        | .7                   |                          |              |
| 22..... | 22                   | 4                        | .3           | 19                   |                          |              | .5                   |                          |              |
| 23..... | 26                   |                          |              | 15                   | 12                       | .5           | .4                   |                          |              |
| 24..... | 21                   |                          |              | 12                   |                          |              | .7                   |                          |              |
| 25..... | 103                  | --                       | b 44         | 9.5                  | 7                        | .2           | 1.6                  | 11                       | (t)          |
| 26..... | 50                   |                          |              | 7.8                  |                          |              | 1.2                  |                          |              |
| 27..... | 34                   |                          |              | 6.3                  |                          |              | .8                   |                          |              |
| 28..... | 30                   | 8                        | .7           | 5.5                  |                          |              | 1.7                  |                          |              |
| 29..... | 22                   |                          |              | 4.5                  | 6                        | .1           | 16                   | 24                       | s 1.8        |
| 30..... | 18                   |                          |              | 4.0                  |                          |              | 2.4                  | 11                       | .1           |
| 31..... | --                   | --                       | --           | 3.4                  |                          |              | --                   | --                       | --           |
| Total.  | 1,546                | --                       | 2,126.0      | 284.8                | --                       | 45.0         | 58.8                 | --                       | 3.4          |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

c Computed from estimated water discharge.

## SUSQUEHANNA RIVER BASIN--Continued

## COREY CREEK NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1.6                  |                          |              | 0.5                  |                          |              | 0.2                  |                          |              |
| 2.....  | 1.3                  |                          |              | .3                   |                          |              | .2                   |                          |              |
| 3.....  | 1.0                  |                          |              | .3                   |                          |              | .4                   |                          |              |
| 4.....  | 1.6                  |                          |              | .4                   | 12                       | (t)          | .4                   |                          |              |
| 5.....  | 2.2                  |                          |              | .3                   |                          |              | .3                   | 7                        | (t)          |
| 6.....  | 1.3                  | 4                        | (t)          | .2                   |                          |              | .2                   |                          |              |
| 7.....  | 1.2                  |                          |              | .2                   |                          |              | .2                   |                          |              |
| 8.....  | 1.0                  |                          |              | .1                   |                          |              | .1                   |                          |              |
| 9.....  | 1.1                  |                          |              | .1                   |                          |              | .1                   |                          |              |
| 10..... | .7                   |                          |              | .2                   | 4                        | (t)          | .1                   |                          |              |
| 11..... | .5                   |                          |              | .3                   |                          |              | .3                   | 2                        | (t)          |
| 12..... | .4                   |                          |              | .3                   |                          |              | .3                   |                          |              |
| 13..... | 1.9                  |                          |              | .3                   |                          |              | .4                   |                          |              |
| 14..... | 1.6                  |                          |              | .1                   |                          |              | .4                   |                          |              |
| 15..... | .9                   |                          |              | .1                   | 6                        | (t)          | .4                   |                          |              |
| 16..... | 1.0                  | 25                       | 0.1          | .2                   |                          |              | .7                   |                          |              |
| 17..... | .7                   |                          |              | 0                    |                          |              | .6                   |                          |              |
| 18..... | .4                   |                          |              | 0                    | --                       | 0            | .5                   | 4                        | (t)          |
| 19..... | .4                   |                          |              | 0                    |                          |              | .4                   |                          |              |
| 20..... | .3                   |                          |              | .6                   |                          |              | .3                   |                          |              |
| 21..... | .4                   |                          |              | 2.0                  |                          |              | .6                   |                          |              |
| 22..... | 5.2                  |                          |              | 1.3                  | 6                        | (t)          | 23                   | 14                       | s 2.2        |
| 23..... | 4.9                  |                          |              | .4                   |                          |              | 20                   | 22                       | s 1.3        |
| 24..... | 1.3                  |                          |              | .2                   |                          |              | 3.2                  |                          |              |
| 25..... | .7                   |                          |              | .1                   |                          |              | 1.4                  |                          |              |
| 26..... | .4                   | 8                        | .1           | .3                   |                          |              | 1.0                  |                          |              |
| 27..... | 7.6                  |                          |              | .2                   |                          |              | .8                   | 3                        | (t)          |
| 28..... | 15                   |                          |              | .2                   |                          |              | .6                   |                          |              |
| 29..... | 3.2                  |                          |              | .2                   | 5                        | (t)          | .4                   |                          |              |
| 30..... | 1.6                  |                          |              | .3                   |                          |              | .4                   |                          |              |
| 31..... | 1.1                  | --                       | b (t)        | .3                   |                          |              | --                   | --                       | --           |
| Total.  | 62.5                 | --                       | 2.1          | 10.2                 | --                       | 0.2          | 57.9                 | --                       | 3.6          |

Total discharge for year (cfs-days) ..... 4,593.0

Total load for year (tons) ..... 2,793.1

s Computed by subdividing day.

b Computed from estimated concentration graph.

t Less than 0.05 ton.

## SUSQUEHANNA RIVER BASIN--Continued

## COREY CREEK NEAR MAINESBURG, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection   | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |                     |       | Methods of analysis |
|----------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|---------------------|
|                      |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       | Methods of analysis |       |                     |
|                      |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350               | 0.500 | 1.000               |
| Nov. 2, 1956 . . . . | 9:00 a. m. | 182             |                        | 930                           | 1,780                                      |                                                   | 20    | 34    | 49    | 66    | 84    | 95    | 99    |                     | 100   | BSWCM               |
| Nov. 2 . . . . .     | 4:00 p. m. | 329             |                        | 477                           | 943                                        |                                                   | 19    | 30    | 45    | 60    | 77    | 90    | 98    |                     | 99    | BSWCM               |
| Apr. 5, 1957 . . . . | 6:30 p. m. | 940             |                        | 2,240                         | 4,050                                      |                                                   | 17    | 30    | 44    | 59    | 75    | 89    | 97    |                     | 100   | BSWCM               |

## SUSQUEHANNA RIVER BASIN--Continued

## ELK RUN NEAR MAINESBURG, PA.

LOCATION.--At gaging station, 2.7 miles northeast of Mainesburg, Tioga County, 5½ miles upstream from mouth, and 5.8 miles east of Mansfield.

DRAINAGE AREA.--10.2 square miles.

RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1957.

Sediment records: May 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 83°F June 17; minimum, freezing point on several days.

Sediment concentrations: Maximum daily, 885 ppm Apr. 5; minimum daily, 0 ppm on many days during August and September.

Sediment loads: Maximum daily, 852 tons Apr. 5; minimum daily, 0 tons on many days during August and September.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 885 ppm Apr. 5, 1957; minimum daily, 0 ppm on many days.

Sediment loads: Maximum daily, 852 tons Apr. 5, 1957; minimum daily, 0 tons on many days.

REMARKS.--Records of specific conductance and pH of periodic sediment samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502. Flow affected by ice Nov. 20-26, Dec. 10-12, 19, Dec. 24 to Feb. 8, Feb. 12-22, Feb. 28 to Mar. 7.

## Chemical analysis, in parts per million, Dec. 10, 1956

|                                 |     |                                          |     |
|---------------------------------|-----|------------------------------------------|-----|
| Silica (SiO <sub>2</sub> )      | 5.5 | Nitrate (NO <sub>3</sub> )               | 1.0 |
| Iron (Fe)                       | .02 | Dissolved solids (residue at 180°C)      | 58  |
| Manganese (Mn)                  | .00 | Hardness as CaCO <sub>3</sub>            |     |
| Calcium (Ca)                    | 14  | Calcium, magnesium                       | 42  |
| Magnesium (Mg)                  | 1.8 | Noncarbonate                             | 14  |
| Sodium (Na)                     | 1.8 |                                          |     |
| Potassium (K)                   | 1.2 |                                          |     |
| Bicarbonate (HCO <sub>3</sub> ) | 34  | Specific conductance (micromhos at 25°C) | 100 |
| Sulfate (SO <sub>4</sub> )      | 16  | pH                                       | 7.6 |
| Chloride (Cl)                   | 2.5 | Color                                    | 3   |
| Fluoride (F)                    | 0.0 |                                          |     |

## Temperature (°F) of water, November 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      | --   | 32   | 32   | 34   | 35   | 39   | 50  | 65   | 70   | 72   | 57    |
| 2       |      | --   | 35   | 33   | 33   | 38   | 44   | 47  | 70   | 55   | 76   | --    |
| 3       |      | --   | 36   | 33   | 34   | 35   | 34   | 48  | 52   | 73   | 68   | 67    |
| 4       |      | --   | 33   | 35   | 35   | 35   | 35   | 44  | 49   | 74   | 71   | --    |
| 5       |      | 55   | 32   | 33   | 34   | 34   | 40   | 55  | 58   | 70   | 67   | 57    |
| 6       |      | 48   | 44   | 33   | 35   | 34   | 42   | 55  | 60   | 65   | 68   | --    |
| 7       |      | 50   | 44   | 35   | 35   | 35   | 40   | 48  | 62   | 74   | 59   | --    |
| 8       |      | 50   | 45   | 35   | 34   | 35   | 36   | 50  | 60   | 68   | --   | --    |
| 9       |      | 46   | 36   | 34   | 35   | 33   | 38   | 69  | 69   | 68   | --   | --    |
| 10      |      | 38   | 34   | 34   | 36   | 33   | 43   | 63  | 71   | 66   | --   | --    |
| 11      |      | 38   | 37   | 33   | 35   | 34   | 41   | 57  | 77   | 68   | 64   | --    |
| 12      |      | 46   | 38   | 33   | 33   | 36   | 41   | 66  | --   | 76   | 72   | --    |
| 13      |      | 40   | 41   | 33   | 34   | 42   | 32   | 65  | 69   | 65   | 70   | --    |
| 14      |      | 38   | 36   | 33   | 36   | 41   | 35   | 60  | 73   | 73   | --   | --    |
| 15      |      | 52   | 38   | 33   | 37   | 42   | 44   | 60  | 68   | 76   | 75   | --    |
| 16      |      | 50   | 43   | 33   | 50   | 38   | 38   | 57  | --   | 75   | 77   | --    |
| 17      |      | 38   | 40   | 33   | --   | 37   | 44   | 62  | 83   | 75   | --   | --    |
| 18      |      | 43   | 36   | 33   | 34   | 33   | 49   | 55  | 75   | 68   | --   | --    |
| 19      |      | 40   | 34   | 33   | 34   | 37   | 49   | 54  | 70   | 74   | --   | --    |
| 20      |      | 38   | 43   | 34   | 33   | 48   | 52   | 50  | 66   | 70   | 74   | --    |
| 21      |      | 48   | 38   | 35   | 34   | 36   | 57   | 49  | 79   | 73   | 60   | --    |
| 22      |      | 40   | 46   | 38   | 34   | 41   | 54   | 53  | 63   | 79   | 66   | 71    |
| 23      |      | 34   | 42   | 35   | 35   | 32   | 55   | 54  | 68   | 76   | 73   | 61    |
| 24      |      | --   | 43   | 33   | 39   | 38   | 59   | 65  | 70   | 68   | --   | 56    |
| 25      |      | 35   | --   | 34   | 40   | 44   | 58   | 52  | 70   | 62   | --   | 50    |
| 26      |      | 34   | 35   | 33   | 40   | 38   | 54   | 60  | 63   | 69   | 74   | 53    |
| 27      |      | 35   | 38   | 34   | 35   | 37   | 61   | 67  | 80   | 66   | 63   | 43    |
| 28      |      | 33   | --   | 33   | 34   | 37   | 60   | 62  | 80   | 72   | 63   | --    |
| 29      |      | 36   | 34   | 34   | --   | 43   | 53   | --  | 66   | 77   | 58   | 44    |
| 30      |      | 34   | 33   | 34   | --   | 38   | 51   | 70  | 67   | 72   | 65   | 45    |
| 31      |      | --   | 34   | 33   | --   | 40   | --   | 70  | --   | 80   | --   | --    |
| Average |      | 42   | 38   | 34   | 36   | 37   | 46   | 57  | 68   | 71   | --   | --    |

## SUSQUEHANNA RIVER BASIN--Continued

## ELK RUN NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                                                |              | November             |                                                |              | December             |                                                |              |
|---------|----------------------|------------------------------------------------|--------------|----------------------|------------------------------------------------|--------------|----------------------|------------------------------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day |
| 1.....  | 1.4                  | 4                                              | (ct)         | 4.9                  | 6                                              | 0.1          | 4.1                  |                                                |              |
| 2.....  | 1.4                  |                                                | --           | 122                  | 503                                            | s196         | 4.2                  |                                                |              |
| 3.....  | 1.5                  | 4                                              | (t)          | 63                   | 70                                             | s16          | 5.9                  |                                                |              |
| 4.....  | 4.1                  | 13                                             | 0.1          | 33                   | 10                                             | .9           | 6.5                  | 2                                              | (t)          |
| 5.....  | 2.9                  | 12                                             | .1           | 23                   |                                                |              | 5.3                  |                                                |              |
| 6.....  | 2.0                  | 5                                              | (t)          | 16                   |                                                |              | 7.8                  |                                                |              |
| 7.....  | 7.8                  | 20                                             | s.5          | 13                   |                                                |              | 8.9                  | 20                                             | 0.5          |
| 8.....  | 3.7                  | --                                             | a.1          | 10                   |                                                |              | 14                   | 12                                             | .5           |
| 9.....  | 2.5                  |                                                |              | 8.3                  | 2                                              | .1           | 17                   | 6                                              | .3           |
| 10..... | 2.2                  |                                                |              | 6.9                  |                                                |              | 14                   | 6                                              | .2           |
| 11..... | 2.2                  |                                                |              | 5.6                  |                                                |              | 12                   | 7                                              | .2           |
| 12..... | 2.3                  |                                                |              | 5.3                  |                                                |              | 13                   | 26                                             | .9           |
| 13..... | 2.3                  | 6                                              | (t)          | 4.6                  |                                                |              | 25                   | 12                                             | .8           |
| 14..... | 2.3                  |                                                |              | 3.9                  |                                                |              | 44                   | 131                                            | s28          |
| 15..... | 2.2                  |                                                |              | 3.7                  |                                                |              | 44                   |                                                |              |
| 16..... | 2.0                  |                                                |              | 5.4                  |                                                |              | 40                   |                                                |              |
| 17..... | 1.8                  |                                                |              | 4.9                  | 3                                              | (t)          | 31                   | 6                                              | .5           |
| 18..... | 2.0                  |                                                |              | 4.2                  |                                                |              | 24                   |                                                |              |
| 19..... | 2.3                  |                                                |              | 3.7                  |                                                |              | 20                   |                                                |              |
| 20..... | 2.3                  | 4                                              | (t)          | 3.3                  |                                                |              | 16                   |                                                |              |
| 21..... | 2.3                  |                                                |              | 4.0                  | 2                                              | (t)          | 42                   | 31                                             | s5.0         |
| 22..... | 2.5                  |                                                |              | 11                   |                                                |              | 54                   | 38                                             | s7.4         |
| 23..... | 9.1                  | 12                                             | .3           | 8.5                  |                                                |              | 40                   | 13                                             | s1.6         |
| 24..... | 4.9                  | 8                                              | .1           | 7.0                  |                                                |              | 47                   | 23                                             | s3.3         |
| 25..... | 3.2                  | 6                                              | .1           | 6.0                  |                                                |              | 35                   | --                                             | a1.5         |
| 26..... | 2.5                  | --                                             | (at)         | 5.5                  | 2                                              | (t)          | 24                   |                                                |              |
| 27..... | 7.4                  | --                                             | .3           | 5.3                  |                                                |              | 21                   |                                                |              |
| 28..... | 6.9                  | --                                             | a.3          | 4.9                  |                                                |              | 19                   |                                                |              |
| 29..... | 4.6                  | 13                                             | .2           | 4.9                  |                                                |              | 16                   | 9                                              | .4           |
| 30..... | 3.7                  | 13                                             | .1           | 4.1                  |                                                |              | 14                   |                                                |              |
| 31..... | 2.7                  | 8                                              | .1           | --                   | --                                             | --           | 12                   |                                                |              |
| Total.  | 101.0                | --                                             | 3.0          | 405.9                | --                                             | 214.5        | 680.7                | --                                             | 55.8         |
|         |                      |                                                |              |                      |                                                |              |                      |                                                |              |
| Day     | January              |                                                |              | February             |                                                |              | March                |                                                |              |
|         | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Suspended sediment<br>Mean concentration (ppm) | Tons per day |
| 1.....  | 11                   |                                                |              | 8.5                  |                                                |              | 20                   | 5                                              | 0.3          |
| 2.....  | 10                   |                                                |              | 8.0                  |                                                |              | 15                   | 7                                              | .3           |
| 3.....  | 9.0                  | 4                                              | 0.1          | 8.0                  | 3                                              | 0.1          | 13                   |                                                |              |
| 4.....  | 8.0                  |                                                |              | 7.5                  |                                                |              | 11                   |                                                |              |
| 5.....  | 7.5                  |                                                |              | 7.5                  |                                                |              | 9.0                  | 6                                              | .1           |
| 6.....  | 7.0                  |                                                |              | 7.5                  |                                                |              | 7.0                  |                                                |              |
| 7.....  | 6.5                  |                                                |              | 9.0                  | 18                                             | .4           | 6.0                  |                                                |              |
| 8.....  | 6.0                  |                                                |              | 9.5                  | 14                                             | .4           | 12                   | 4                                              | .2           |
| 9.....  | 5.5                  | 2                                              | (t)          | 13                   | 8                                              | .3           | 16                   |                                                |              |
| 10..... | 5.5                  |                                                |              | 18                   | 18                                             | .9           | 21                   | 12                                             | .5           |
| 11..... | 5.0                  |                                                |              | 10                   |                                                |              | 12                   |                                                |              |
| 12..... | 5.0                  |                                                |              | 6.0                  |                                                |              | 40                   | 161                                            | s38          |
| 13..... | 4.5                  |                                                |              | 5.0                  |                                                |              | 62                   | 209                                            | s63          |
| 14..... | 4.5                  | 4                                              | (t)          | 4.5                  | 4                                              | .1           | 34                   | 33                                             | s3.3         |
| 15..... | 4.0                  |                                                |              | 4.5                  |                                                |              | 36                   | 33                                             | s3.3         |
| 16..... | 4.0                  |                                                |              | 4.0                  |                                                |              | 27                   | 15                                             | 1.1          |
| 17..... | 3.5                  |                                                |              | 3.5                  | --                                             | (at)         | 18                   |                                                |              |
| 18..... | 3.5                  |                                                |              | 3.5                  | 6                                              | .1           | 14                   |                                                |              |
| 19..... | 3.0                  | 1                                              | (t)          | 3.0                  |                                                |              | 14                   | 6                                              | .2           |
| 20..... | 3.0                  |                                                |              | 2.5                  |                                                |              | 14                   |                                                |              |
| 21..... | 3.5                  |                                                |              | 2.5                  | 8                                              | .1           | 10                   |                                                |              |
| 22..... | 10                   | 292                                            | 7.9          | 2.0                  |                                                |              | 7.4                  |                                                |              |
| 23..... | 90                   | 124                                            | 30           | 2.0                  |                                                |              | 6.5                  |                                                |              |
| 24..... | 30                   | 11                                             | .9           | 2.2                  |                                                |              | 5.3                  | 4                                              | .1           |
| 25..... | 20                   | 10                                             | .5           | 3.7                  |                                                |              | 4.6                  |                                                |              |
| 26..... | 15                   |                                                |              | 23                   | 4                                              | .2           | 5.3                  |                                                |              |
| 27..... | 12                   |                                                |              | 36                   |                                                |              | 10                   | 15                                             | s.5          |
| 28..... | 11                   |                                                |              | 30                   |                                                |              | 8.9                  |                                                |              |
| 29..... | 10                   | 3                                              | .1           | --                   | --                                             | --           | 8.9                  | 4                                              | .1           |
| 30..... | 9.5                  |                                                |              | --                   | --                                             | --           | 14                   |                                                |              |
| 31..... | 9.0                  |                                                |              | --                   | --                                             | --           | 9.7                  |                                                |              |
| Total.  | 336.0                | --                                             | 40.9         | 244.4                | --                                             | 4.8          | 491.6                | --                                             | 113.6        |

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

c Computed from estimated water discharge.

## SUSQUEHANNA RIVER BASIN--Continued

## ELK RUN NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                     | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                              | 9.4                  | 5                        | 0.1          | 12                   |                          |              | 2.3                  |                          |              |
| 2.....                              | 27                   | 44                       | s 3.6        | 9.8                  |                          |              | 2.6                  |                          |              |
| 3.....                              | 16                   | 6                        | .3           | 8.7                  |                          |              | 2.3                  |                          |              |
| 4.....                              | 77                   | --                       | b 15         | 8.7                  | 2                        | (t)          | 1.9                  |                          |              |
| 5.....                              | 215                  | 885                      | s 852        | 7.6                  |                          |              | 1.7                  |                          |              |
| 6.....                              | 140                  | 192                      | s 104        | 6.3                  |                          |              | 1.6                  | 4                        | (t)          |
| 7.....                              | 56                   | 18                       | 2.7          | 5.0                  |                          |              | 1.6                  |                          |              |
| 8.....                              | 47                   | 9                        | 1.1          | 4.7                  |                          |              | 1.2                  |                          |              |
| 9.....                              | 40                   | 9                        | 1.0          | 4.0                  |                          |              | 1.1                  |                          |              |
| 10.....                             | 41                   | 26                       | s 3.7        | 4.0                  |                          |              | 1.0                  |                          |              |
| 11.....                             | 74                   | 89                       | s 30         | 5.0                  | 3                        | (t)          | .9                   |                          |              |
| 12.....                             | 55                   | 15                       | s 2.3        | 4.7                  |                          |              | 1.0                  |                          |              |
| 13.....                             | 38                   |                          |              | 4.0                  |                          |              | .9                   |                          |              |
| 14.....                             | 30                   |                          |              | 4.6                  |                          |              | .9                   |                          |              |
| 15.....                             | 24                   | 2                        | .1           | 11                   | 8                        | 0.2          | .7                   |                          |              |
| 16.....                             | 20                   |                          |              | 7.6                  |                          |              | .6                   | 5                        | (t)          |
| 17.....                             | 20                   |                          |              | 5.0                  | 3                        | (t)          | .6                   |                          |              |
| 18.....                             | 36                   | 30                       | s 6          | 4.7                  |                          |              | .5                   |                          |              |
| 19.....                             | 41                   | 21                       | s 3.1        | 12                   | 18                       | .6           | .5                   |                          |              |
| 20.....                             | 30                   |                          |              | 28                   | 49                       | s 6          | .4                   |                          |              |
| 21.....                             | 26                   |                          |              | 22                   | 8                        | .5           | .4                   |                          |              |
| 22.....                             | 19                   | 6                        | .4           | 17                   | 2                        | .1           | .4                   |                          |              |
| 23.....                             | 23                   |                          |              | 15                   | 2                        | .1           | .4                   |                          |              |
| 24.....                             | 17                   |                          |              | 12                   |                          |              | .4                   |                          |              |
| 25.....                             | 55                   | 87                       | s 23         | 9.3                  |                          |              | .7                   | 5                        | (t)          |
| 26.....                             | 36                   | 18                       | 1.8          | 8.2                  |                          |              | .6                   |                          |              |
| 27.....                             | 30                   |                          |              | 6.3                  | 4                        | .1           | .5                   |                          |              |
| 28.....                             | 29                   | 4                        | .3           | 5.4                  |                          |              | .5                   |                          |              |
| 29.....                             | 22                   |                          |              | 4.3                  |                          |              | 12                   | 47                       | s 2.1        |
| 30.....                             | 16                   | --                       | --           | 3.6                  |                          |              | 1.9                  | 6                        | (t)          |
| 31.....                             | --                   | --                       | --           | 2.6                  |                          |              | --                   | --                       | --           |
| Total.                              | 1,309.4              | --                       | 1,053.4      | 263.1                | --                       | 9.0          | 42.1                 | --                       | 2.5          |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| Day                                 | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                     | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                              | 1.1                  |                          |              | 0.4                  |                          |              | 0.2                  |                          |              |
| 2.....                              | .9                   |                          |              | .3                   |                          |              | .2                   |                          |              |
| 3.....                              | .7                   |                          |              | .2                   |                          |              | .3                   |                          |              |
| 4.....                              | 1.1                  |                          |              | .3                   | 4                        | (t)          | .2                   | 6                        | (t)          |
| 5.....                              | 1.4                  |                          |              | .2                   |                          |              | .1                   |                          |              |
| 6.....                              | 1.1                  | 3                        | (t)          | .1                   |                          |              | 0                    |                          |              |
| 7.....                              | 1.1                  |                          |              | .1                   | 3                        | (t)          | 0                    |                          |              |
| 8.....                              | .9                   |                          |              | 0                    |                          |              | 0                    |                          |              |
| 9.....                              | .7                   |                          |              | 0                    |                          | 0            | 0                    |                          |              |
| 10.....                             | .5                   |                          |              | 0                    |                          |              | 0                    |                          |              |
| 11.....                             | .4                   |                          |              | .1                   |                          |              | 0                    |                          |              |
| 12.....                             | .4                   |                          |              | .1                   | 3                        | (t)          | 0                    |                          |              |
| 13.....                             | 1.0                  |                          |              | .1                   |                          |              | 0                    |                          |              |
| 14.....                             | 1.4                  |                          |              | 0                    |                          | 0            | 0                    | --                       | 0            |
| 15.....                             | .7                   |                          |              | .2                   |                          |              | 0                    |                          |              |
| 16.....                             | .6                   | 4                        | (t)          | .1                   | 6                        | (t)          | 0                    |                          |              |
| 17.....                             | .5                   |                          |              | 0                    |                          |              | 0                    |                          |              |
| 18.....                             | .4                   |                          |              | 0                    |                          | 0            | 0                    |                          |              |
| 19.....                             | .3                   |                          |              | 0                    |                          |              | 0                    |                          |              |
| 20.....                             | .3                   |                          |              | .2                   |                          |              | 0                    |                          |              |
| 21.....                             | .3                   | 7                        | (t)          | .6                   |                          |              | 0                    |                          |              |
| 22.....                             | 1.5                  | 13                       | s 0.1        | .9                   | 5                        | (t)          | 11                   | 9                        | 0.3          |
| 23.....                             | 1.7                  |                          |              | .4                   |                          |              | 14                   | 10                       | s .5         |
| 24.....                             | .9                   |                          |              | .3                   |                          |              | 2.8                  |                          |              |
| 25.....                             | .6                   |                          |              | .2                   |                          |              | 1.7                  |                          |              |
| 26.....                             | .5                   | 4                        | (t)          | .3                   |                          |              | 1.4                  |                          |              |
| 27.....                             | .6                   |                          |              | .2                   |                          |              | 1.2                  | 2                        | (t)          |
| 28.....                             | 2.9                  |                          |              | .2                   | 10                       | (t)          | 1.1                  |                          |              |
| 29.....                             | 1.1                  |                          |              | .1                   |                          |              | 1.0                  |                          |              |
| 30.....                             | .7                   | 3                        | (t)          | .2                   |                          |              | .9                   |                          |              |
| 31.....                             | .6                   |                          |              | .3                   | --                       | (at)         | --                   | --                       | --           |
| Total.                              | 26.9                 | --                       | 0.4          | 6.1                  | --                       | 0.1          | 36.1                 | --                       | 0.9          |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days) |                      |                          |              |                      |                          |              |                      |                          | 3,943.4      |
| Total load for year (tons)          |                      |                          |              |                      |                          |              |                      |                          | 1,498.9      |

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

t Less than 0.05 ton.

b Computed from estimated concentration graph.

SUSQUEHANNA RIVER BASIN--Continued  
ELK RUN NEAR MAINESBURG, PA.--Continued

Particle-size analyses of suspended sediment, water, year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection              | Time      | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       | Methods of analysis |
|---------------------------------|-----------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                                 |           |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |                     |
|                                 |           |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 |                     |
| Mar. 12, 1957...<br>Apr. 5..... | 6:24 p.m. | 139             | 35                      | 503                           | 722                                        | 18                                                | 36    | 49    | 65    | 84    | 96    | 98    |       |       | BWCM                |
|                                 | 6:23 p.m. | 578             | 38                      | 2,840                         | 2,840                                      | 25                                                | 29    | 42    | 52    | 72    | 88    | 98    |       |       | BSWCM               |



SUSQUEHANNA RIVER BASIN--Continued  
CANISTEO RIVER AT WEST CAMERON, N. Y.

LOCATION.--At bridge 250 feet upstream from gaging station, a quarter of a mile southeast of West Cameron, Steuben County, and 2 miles upstream from Cameron. DRAINAGE AREA.--342 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES 1956-57.--Dissolved solids: Maximum, 267 ppm Sept. 1-10; minimum, 97 ppm Apr. 11-20.

Hardness: Maximum, 197 ppm Sept. 1-10; minimum, 54 ppm Jan. 23.

Specific conductance: Maximum daily, 477 microhos Sept. 1; minimum daily, 108 microhos Jan. 23.

Water temperatures: Maximum, 84°F June 18; minimum, freezing point on many days during December, January and February.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1956 to September 1957 given in WSP 1502. River frozen Jan. 14-21. No appreciable inflow between sampling site and gaging station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhos at 25°C) | pH  | Color | Oxygen consumed |          |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----------------------------------------|-----|-------|-----------------|----------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                         |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956..... | 113                  | 5.0                        | 0.29      | 42           | 9.0            | 10          | 2.4           | 153                             | 26                         | 10            | 0.1          | 1.2                        | 190                                                | 142                           | 17            | 325                                     | 7.4 | 3     | 3               | 2        |
| Oct. 11-20.....      | 81                   | 3.0                        | .42       | 44           | 10             | 10          | 2.4           | 164                             | 25                         | 13            | .1           | 1.0                        | 200                                                | 151                           | 17            | 354                                     | 7.5 | 4     | 4               | 2        |
| Oct. 21-31.....      | 84                   | 4.0                        | .32       | 47           | 11             | 10          | 2.4           | 172                             | 27                         | 14            | .1           | 1.1                        | 207                                                | 163                           | 22            | 365                                     | 7.6 | 4     | 3               | 2        |
| Nov. 1-10.....       | 76                   | 3.5                        | .35       | 41           | --             | --          | --            | 179                             | 27                         | 15            | --           | --                         | --                                                 | 168                           | 21            | --                                      | 376 | 7.3   | 3               | --       |
| Nov. 2-10.....       | 240                  | 6.3                        | .33       | 34           | 7.0            | 7.0         | 2.3           | 119                             | 21                         | 8.0           | .1           | 1.8                        | 153                                                | 114                           | 17            | 258                                     | 7.6 | 6     | 4               | 2        |
| Nov. 11-20.....      | 101                  | 3.5                        | .18       | 41           | 8.9            | 7.8         | 2.1           | 146                             | 24                         | 8.4           | .0           | 2.1                        | 174                                                | 139                           | 20            | 306                                     | 7.6 | 6     | 4               | 2        |
| Nov. 21-30.....      | 190                  | 4.5                        | .12       | 34           | 7.2            | 5.8         | 1.9           | 118                             | 23                         | 6.6           | .0           | 1.9                        | 146                                                | 115                           | 20            | 254                                     | 7.5 | 4     | 4               | 2        |
| Nov. 31.....         | 715                  | --                         | .84       | --           | --             | 1.2         | --            | 65                              | 15                         | 3.9           | --           | 2.9                        | --                                                 | 474                           | 21            | 160                                     | 6.9 | --    | --              | --       |
| Dec. 1-6.....        | 234                  | 4.5                        | .12       | 33           | 7.9            | 7.0         | 1.7           | 114                             | 25                         | 7.6           | .0           | 2.4                        | 148                                                | 115                           | 22            | 256                                     | 7.4 | 2     | 3               | 2        |
| Dec. 7-10.....       | 596                  | --                         | .18       | --           | --             | 2.1         | --            | 71                              | 20                         | 4.9           | --           | 2.2                        | 111                                                | 83                            | 25            | 174                                     | 7.3 | --    | --              | --       |
| Dec. 11-20.....      | 701                  | 7.1                        | .13       | 23           | 5.6            | 4.2         | 1.5           | 72                              | 21                         | 5.2           | .0           | 2.3                        | 117                                                | 80                            | 22            | 184                                     | 7.3 | 4     | 3               | 2        |
| Dec. 21-31.....      | 593                  | 5.8                        | .21       | 27           | 5.3            | 4.4         | 1.6           | 81                              | 23                         | 6.0           | .0           | 1.9                        | 117                                                | 80                            | 22            | 200                                     | 7.5 | 6     | 4               | 2        |
| Jan. 1-10, 1957..... | 224                  | 5.1                        | .14       | 34           | 7.0            | 6.1         | 1.7           | 110                             | 26                         | 7.4           | .0           | 2.3                        | 145                                                | 114                           | 24            | 253                                     | 7.5 | 3     | 3               | 2        |
| Jan. 11-13.....      | --                   | --                         | --        | --           | --             | --          | --            | 119                             | 27                         | 7.4           | .0           | 2.6                        | --                                                 | 132                           | 34            | 269                                     | 7.7 | --    | --              | --       |
| Jan. 14-23.....      | 650                  | 6.8                        | .35       | 31           | 6.0            | 5.6         | 1.9           | 94                              | 26                         | 7.1           | .0           | 3.1                        | 139                                                | 102                           | 25            | 232                                     | 7.3 | 9     | 6               | 3        |
| Jan. 24-31.....      | 5,880                | --                         | 2.1       | --           | --             | 2.2         | --            | 40                              | 20                         | 2.6           | --           | 2.5                        | --                                                 | 434                           | 22            | 108                                     | 6.8 | --    | --              | --       |
| Feb. 1-9.....        | 220                  | 6.8                        | .15       | 35           | 7.3            | 7.1         | 1.7           | 105                             | 28                         | 9.6           | .1           | 4.0                        | 158                                                | 118                           | 32            | 273                                     | 7.3 | 2     | 6               | 2        |
| Feb. 10.....         | 845                  | --                         | .13       | --           | --             | --          | --            | 90                              | --                         | --            | --           | 2.8                        | --                                                 | 476                           | 27            | 154                                     | 7.3 | --    | --              | --       |
| Feb. 11.....         | 367                  | --                         | --        | --           | --             | --          | --            | 96                              | --                         | 6.1           | --           | 2.6                        | --                                                 | 495                           | 33            | 196                                     | 7.1 | --    | --              | --       |
| Feb. 12-20.....      | 169                  | 5.9                        | .13       | 37           | 7.2            | 6.3         | 1.9           | 111                             | 29                         | 8.4           | .0           | 3.8                        | 158                                                | 122                           | 31            | 283                                     | 7.4 | 3     | 3               | 1        |
| Feb. 21-28.....      | 1,549                | 5.2                        | .14       | 39           | 7.9            | 6.9         | 1.9           | 127                             | 29                         | 9.1           | .0           | 2.5                        | 167                                                | 130                           | 26            | 289                                     | 7.6 | 3     | 8               | 1        |
| Feb. 29-28.....      | 1,549                | --                         | .93       | --           | --             | 2.2         | --            | 92                              | 26                         | 4.4           | .0           | 2.1                        | --                                                 | 468                           | 20            | 135                                     | 7.3 | --    | --              | --       |
| Mar. 1-10.....       | 350                  | 5.5                        | .10       | 30           | 6.2            | 6.8         | 1.5           | 99                              | 18                         | 9.3           | .0           | 3.1                        | 137                                                | 101                           | 25            | 237                                     | 7.4 | 3     | 3               | 2        |
| Mar. 11-12.....      | 650                  | --                         | --        | --           | --             | 8.1         | --            | 107                             | 30                         | 9.1           | .0           | 2.3                        | --                                                 | 116                           | 28            | 263                                     | 7.4 | --    | --              | --       |
| Mar. 13-20.....      | 1,426                | 5.7                        | .18       | 21           | 4.3            | 3.6         | 1.5           | 62                              | 21                         | 4.8           | .1           | 2.2                        | 101                                                | 70                            | 19            | 167                                     | 7.3 | 6     | 6               | 3        |
| Mar. 21-31.....      | 1,392                | 4.2                        | .08       | 28           | 5.6            | 5.1         | 1.6           | 87                              | 24                         | 6.6           | .0           | 2.3                        | 126                                                | 93                            | 22            | 215                                     | 7.4 | 5     | 9               | 2        |

|                                 |       |     |      |    |     |     |     |     |    |     |     |     |     |      |    |     |     |    |    |    |
|---------------------------------|-------|-----|------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----|-----|-----|----|----|----|
| Apr. 1-5, 9-10, 1957...         | 702   | 5.2 | .07  | 25 | 5.0 | 4.6 | 1.5 | 76  | 21 | 6.2 | .0  | 1-8 | 115 | 83   | 21 | 191 | 7.5 | 8  | 6  | 2  |
| Apr. 6-8, .....                 | 3,057 | --  | .24  | -- | --  | 3.9 | 1.4 | 50  | 18 | 3.6 | --  | 2.7 | --  | a58  | 17 | 138 | 7.1 | -- | -- | -- |
| Apr. 11-20, .....               | 1,482 | 5.8 | .26  | 21 | 4.1 | 3.3 | 1.4 | 60  | 20 | 4.8 | .1  | 2.5 | 97  | 70   | 20 | 159 | 7.5 | 9  | 5  | 3  |
| Apr. 21-30, .....               | 818   | 5.7 | .21  | 24 | 4.9 | 3.8 | 1.8 | 78  | 20 | 5.2 | .1  | 1.9 | 112 | 80   | 16 | 185 | 7.5 | 7  | 5  | 3  |
| May 1-10, .....                 | 237   | 5.0 | .10  | 36 | 7.0 | 6.1 | 1.9 | 121 | 25 | 7.5 | .1  | 1.3 | 149 | 119  | 20 | 263 | 8.0 | 5  | 4  | 3  |
| May 11, 13-19, .....            | 694   | 8.8 | .10  | 29 | 6.0 | 5.1 | 1.8 | 99  | 22 | 5.0 | .1  | 1.5 | 137 | 97   | 16 | 220 | 7.5 | 7  | 6  | 6  |
| May 12, 20, .....               | 2,110 | 8.8 | .77  | -- | --  | 2.8 | 1.8 | 62  | 17 | 1.9 | --  | 1.5 | --  | a66  | 15 | 147 | 7.3 | -- | -- | -- |
| May 21-27, .....                | 823   | 4.8 | .16  | 31 | 5.8 | 4.4 | 1.7 | 95  | 22 | 5.3 | .1  | 1.6 | 137 | 102  | 24 | 220 | 7.8 | 15 | 6  | 5  |
| May 28-31, .....                | 250   | --  | .12  | -- | --  | 5.5 | 1.7 | 130 | 27 | 7.1 | --  | .8  | --  | a133 | 27 | 280 | 8.2 | -- | -- | -- |
| June 1-10, .....                | 160   | 5.1 | .16  | 46 | 8.9 | 8.4 | 2.0 | 150 | 27 | 11  | .1  | 2.0 | 187 | 152  | 29 | 322 | 7.9 | 6  | 5  | 3  |
| June 11-20, .....               | 92    | 4.3 | .18  | 50 | 10  | 14  | 2.4 | 170 | 30 | 18  | .1  | 2.5 | 220 | 166  | 27 | 383 | 7.9 | 6  | 4  | 3  |
| June 21-30, .....               | 73    | 4.9 | .16  | 50 | 11  | 17  | 2.4 | 180 | 32 | 22  | .1  | .9  | 237 | 170  | 22 | 411 | 7.9 | 7  | 3  | 3  |
| July 1-10, .....                | 78    | 4.3 | .14  | 47 | 10  | 13  | 2.3 | 168 | 28 | 16  | .1  | .8  | 212 | 159  | 23 | 370 | 8.0 | 6  | 3  | 2  |
| July 11-20, .....               | 61    | 3.2 | .21  | 53 | 11  | 15  | 2.3 | 186 | 30 | 21  | .1  | 1.6 | 235 | 177  | 25 | 409 | 8.0 | 4  | 4  | 3  |
| July 21-31, .....               | 74    | --  | .17  | -- | --  | 10  | 2.3 | 174 | 18 | 28  | --  | 1.6 | --  | a180 | 38 | 387 | 8.0 | -- | -- | -- |
| Aug. 1-10, .....                | 49    | --  | .18  | -- | --  | 12  | 2.7 | 188 | 26 | 20  | --  | 1.5 | --  | a184 | 30 | 405 | 8.0 | -- | -- | -- |
| Aug. 11-31, .....               | 33    | 4.5 | .12  | 55 | 13  | 20  | 2.7 | 214 | 33 | 25  | .1  | 1.5 | 261 | 191  | 15 | 454 | 7.8 | 2  | -- | -- |
| Sept. 1-10, .....               | 30    | 6.9 | .14  | 56 | 14  | 20  | 3.8 | 210 | 34 | 24  | .1  | 2.6 | 287 | 197  | 23 | 464 | 7.8 | 5  | -- | -- |
| Sept. 11-30, .....              | 36    | 5.3 | .12  | 52 | 14  | 18  | 3.0 | 199 | 33 | 24  | .2  | 3.0 | 255 | 187  | 24 | 450 | 7.9 | 5  | -- | -- |
| Time-weighted average, b, ..... | 377   | 5.2 | 0.19 | 39 | 8.5 | 9.5 | 2.1 | 133 | 26 | 12  | 0.1 | 2.1 | 176 | 132  | 23 | 301 | --  | 5  | 4  | 2  |

a By compleximetric titration.

b Represents 99 percent of days and 99 percent of runoff.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## SUSQUEHANNA RIVER BASIN--Continued

## CANISTEO RIVER AT WEST CAMERON, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 60   | 60   | 35   | 32   | 32   | 34   | 45   | 61  | 66   | 72   | 78   | 68    |
| 2       | 59   | 58   | 36   | 32   | 33   | 35   | 43   | 58  | 65   | 73   | 77   | 70    |
| 3       | 60   | 58   | 38   | 32   | 33   | 35   | 40   | 51  | 66   | 76   | 81   | 76    |
| 4       | 58   | 57   | 38   | 32   | 36   | 35   | 33   | 50  | 70   | 74   | 76   | 72    |
| 5       | 59   | 56   | 37   | 32   | 34   | 36   | 36   | 54  | 70   | 78   | 73   | 70    |
| 6       | 54   | --   | 42   | 32   | 34   | 38   | 38   | 51  | 68   | 79   | 69   | 70    |
| 7       | 54   | 57   | 45   | 33   | 37   | 35   | 38   | 60  | 66   | 75   | 70   | 68    |
| 8       | 55   | 53   | 42   | 33   | 38   | 34   | 36   | 63  | 65   | 73   | 71   | 65    |
| 9       | 54   | 47   | 33   | 33   | 37   | 35   | 37   | 67  | 68   | 74   | 73   | 69    |
| 10      | 53   | 59   | 34   | 32   | 34   | 36   | 39   | 67  | 72   | 73   | 73   | 64    |
| 11      | 50   | 39   | 36   | 32   | 33   | 34   | 40   | 64  | 74   | 76   | 74   | 70    |
| 12      | 50   | 44   | 38   | 32   | 33   | 41   | 38   | 60  | 71   | 76   | 72   | 73    |
| 13      | 53   | 42   | 37   | 32   | 34   | 38   | 39   | 64  | 75   | 70   | 73   | 70    |
| 14      | 54   | 46   | 35   | --   | 34   | 39   | 38   | 60  | 75   | 74   | 75   | 70    |
| 15      | 59   | 48   | 37   | --   | 36   | 41   | 42   | 63  | 80   | --   | 78   | 65    |
| 16      | 59   | 50   | 39   | --   | 35   | 40   | 42   | 60  | 82   | 77   | 75   | 69    |
| 17      | 61   | 46   | 38   | --   | 32   | 39   | 43   | 57  | 82   | 77   | 73   | 70    |
| 18      | 56   | 42   | 36   | --   | 34   | 40   | 43   | 58  | 84   | 78   | 71   | 70    |
| 19      | 53   | 41   | 34   | --   | 34   | 38   | 49   | 52  | 80   | 80   | 73   | 71    |
| 20      | 53   | 41   | 37   | --   | 32   | 38   | 55   | 49  | 73   | 83   | 75   | 70    |
| 21      | 57   | 44   | 39   | --   | 34   | 40   | 58   | 53  | 78   | --   | 70   | 73    |
| 22      | 53   | 41   | 42   | 32   | 36   | 42   | 58   | 52  | 78   | 80   | 72   | 72    |
| 23      | 58   | 35   | 40   | 32   | 37   | 45   | 59   | 59  | 78   | 74   | 72   | 68    |
| 24      | 56   | 53   | 42   | 32   | 39   | 42   | 62   | 62  | 80   | 73   | 73   | 64    |
| 25      | 58   | 34   | 38   | 32   | 44   | 43   | 61   | 63  | 75   | 74   | 68   | 64    |
| 26      | 50   | 35   | 35   | 32   | 40   | 40   | 62   | 64  | 80   | 75   | 75   | 63    |
| 27      | 53   | 36   | 36   | 33   | 34   | 40   | 64   | 64  | 80   | 74   | 73   | 57    |
| 28      | 55   | 37   | 37   | 32   | 34   | 40   | 60   | 61  | 78   | 74   | 71   | 57    |
| 29      | 52   | 37   | 35   | 33   | --   | 42   | 59   | 62  | 74   | 77   | 66   | 58    |
| 30      | 55   | 35   | 32   | 32   | --   | 44   | 60   | 68  | 71   | 77   | 66   | 56    |
| 31      | 56   | --   | 33   | 32   | --   | 43   | --   | 68  | --   | 78   | 69   | --    |
| Average | 55   | 46   | 37   | --   | 35   | 39   | 47   | 60  | 74   | 76   | 73   | 67    |

## SUSQUEHANNA RIVER BASIN--Continued

## SUSQUEHANNA RIVER AT DANVILLE, PA.

LOCATION.--At gaging station at Mill Street Bridge on state highway 54 at Danville, Montour County, 0.8 mile upstream from Mahoning Creek.  
DRAINAGE AREA.--11,220 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: September 1956 to September 1957.  
water temperatures: October 1945 to June 1953, October 1945 to June 1953, February 1956 to September 1957.  
EXTREMES, 1956-57.--Hardness: Maximum, 220 ppm Sept. 1-27; minimum, 42 ppm Apr. 6-14.  
Specific conductance: Maximum daily, 556 micromhos Sept. 22; minimum daily, 100 micromhos Apr. 7.  
Water temperature: Maximum, 86° F June 17, 18; minimum, freezing point Jan. 15, 18.  
EXTREMES, 1945-53, 1956-57.--Dissolved solids (1945-53): Maximum, 334 ppm Sept. 11-20, 1946; minimum, 68 ppm May 21-31, 1946.  
Hardness (1945-47, 1949-53, 1956-57): Maximum, 232 ppm Nov. 1-10, 1952; minimum, 42 ppm Apr. 1-10, 1950, Apr. 6-14, 1957.  
Specific conductance: Maximum daily, 557 micromhos Oct. 13, 1948; minimum daily, 94 micromhos Dec. 6, 1950.  
Water temperatures: Maximum, 87° F Aug. 9, 10, 1949; minimum, freezing point on many days during winter months.  
REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956      | 6,420                | 2.4                        | 0.01      | 27           | 9.2            | 6.7         | 1.5           | 37                              | 81                         | 8.0           | 0.1          | 2.2                        | 170                                                | 105                           | 75            | 268                                       | 7.5 | 4     |
| Oct. 11-31           | 5,900                | --                         | --        | --           | --             | 15          | --            | 42                              | 85                         | 9.6           | --           | 1.0                        | --                                                 | 104                           | 70            | 293                                       | 7.9 | 4     |
| Nov. 1-10            | 7,210                | 6.0                        | 0.00      | 27           | 9.5            | 9.0         | 1.4           | 43                              | 74                         | 8.4           | .1           | 2.7                        | 167                                                | 108                           | 72            | 271                                       | 7.3 | 3     |
| Dec. 11-31           | 32,900               | 6.5                        | .04       | 17           | 4.5            | 4.8         | 1.3           | 31                              | 31                         | 4.8           | .1           | 5.0                        | 93                                                 | 61                            | 36            | 141                                       | 6.8 | 5     |
| Jan. 1-10, 1957      | 13,500               | --                         | --        | --           | --             | --          | 9.9           | 37                              | 51                         | 6.0           | --           | 4.6                        | --                                                 | 74                            | 44            | 204                                       | 7.1 | 4     |
| Jan. 11-20           | 6,260                | --                         | --        | --           | --             | 14          | --            | 44                              | 77                         | 7.4           | --           | 3.8                        | --                                                 | 100                           | 64            | 272                                       | 6.6 | 5     |
| Jan. 21-28           | 43,500               | --                         | --        | --           | --             | 28          | 6.0           | 26                              | 24                         | 5.1           | --           | 4.7                        | --                                                 | 46                            | 23            | 132                                       | 7.0 | 4     |
| Jan. 29-31, Feb. 2-4 | 16,400               | --                         | --        | --           | --             | --          | 7.8           | 38                              | 38                         | 6.4           | --           | 4.8                        | --                                                 | 65                            | 36            | 178                                       | 7.4 | 7     |
| Feb. 5-20            | 12,300               | --                         | --        | --           | --             | --          | 16            | 44                              | 64                         | 7.9           | --           | 3.9                        | --                                                 | 82                            | 46            | 226                                       | 7.3 | 4     |
| Feb. 21-27           | 7,970                | --                         | --        | --           | --             | 14          | --            | 43                              | 74                         | 12            | --           | 4.3                        | --                                                 | 102                           | 66            | 290                                       | 7.2 | 5     |
| Mar. 1-9             | 23,500               | --                         | --        | --           | --             | --          | 8.0           | 33                              | 32                         | 7.0           | --           | 3.5                        | --                                                 | 56                            | 29            | 162                                       | 6.7 | 5     |
| Mar. 10-15           | 19,000               | --                         | --        | --           | --             | 9.9         | --            | 42                              | 41                         | 10            | --           | 3.4                        | --                                                 | 72                            | 38            | 203                                       | 6.9 | 5     |
| Mar. 16-28           | 27,200               | --                         | --        | --           | --             | --          | 9.0           | 35                              | 31                         | 7.0           | --           | 2.9                        | --                                                 | 554                           | 26            | 159                                       | 6.9 | 8     |
| Mar. 29-Apr. 5       | 20,900               | --                         | --        | --           | --             | 14          | --            | 42                              | 44                         | 9.8           | --           | 3.7                        | --                                                 | 66                            | 32            | 190                                       | 7.3 | 4     |
| Apr. 6-14            | 73,400               | .8                         | .00       | 12           | 3.0            | 4.2         | 1.0           | 22                              | 26                         | 4.9           | .1           | 2.8                        | 90                                                 | 42                            | 25            | 122                                       | 7.3 | 2     |
| Apr. 15-May 1        | 28,000               | --                         | --        | --           | --             | 12          | --            | 38                              | 42                         | 7.4           | --           | 2.5                        | --                                                 | 82                            | 31            | 178                                       | 7.0 | 7     |
| May 2-5              | 13,500               | --                         | --        | --           | --             | 11          | --            | 44                              | 58                         | 9.2           | --           | 3.0                        | --                                                 | 88                            | 52            | 237                                       | 7.0 | 6     |
| May 6-20             | 9,980                | --                         | --        | --           | --             | 20          | --            | 48                              | 82                         | 13            | --           | 3.0                        | --                                                 | 102                           | 63            | 290                                       | 7.0 | 6     |
| May 22-27            | 31,400               | --                         | --        | --           | --             | --          | 8.3           | 36                              | 28                         | 5.0           | --           | 3.1                        | --                                                 | 50                            | 21            | 142                                       | 7.6 | 2     |

SUSQUEHANNA RIVER BASIN--Continued  
SUSQUEHANNA RIVER AT DANVILLE, PA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, magnesium            | Non-carbonate |                                            |     |       |
| June 1-9, 1957.....  | 7,050                | --                         | --        | --           | --             | 13          |               | 48                              | 74                         | 12            | --           | 3.8                        | --                                                  | 108                           | 69            | 289                                        | 7.0 | 2     |
| June 10-July 6.....  | 4,490                | 5.4                        | 0.02      | 37           | 13             | 14          | 1.5           | 55                              | 103                        | 17            | 0.1          | 2.1                        | 230                                                 | 146                           | 101           | 371                                        | 6.9 | 3     |
| July 7-21.....       | 3,550                | --                         | --        | --           | --             | 20          |               | 28                              | 117                        | 16            | --           | 2.1                        | --                                                  | 144                           | 102           | 385                                        | 7.0 | 2     |
| July 22-Aug. 10..... | 2,580                | --                         | --        | --           | --             | 23          |               | 50                              | 147                        | 19            | --           | 2.0                        | --                                                  | 172                           | 131           | 457                                        | 6.9 | 2     |
| Aug. 11-31.....      | 2,020                | 3.6                        | .04       | 46           | 17             | 14          | 1.9           | 49                              | 157                        | 15            | .1           | 3.0                        | 290                                                 | 185                           | 145           | 446                                        | 7.1 | 3     |
| Sept. 1-27.....      | 1,680                | --                         | --        | --           | --             | 20          | --            | 32                              | 207                        | 14            | --           | 2.7                        | --                                                  | 220                           | 194           | 508                                        | 6.7 | 3     |
| Sept. 28-30.....     | 3,260                | --                         | --        | --           | --             | --          | --            | 68                              | 121                        | --            | --           | --                         | --                                                  | --                            | --            | 418                                        | 6.8 | --    |
| Weighted average...  | 13,400               | --                         | --        | --           | --             | 15          |               | 41                              | 87                         | 10            | --           | 3.0                        | --                                                  | 111                           | 78            | 292                                        | --  | 4     |

## SUSQUEHANNA RIVER BASIN--Continued

## SUSQUEHANNA RIVER AT DANVILLE, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 58   | 58   | 36   | 33   | --   | 37   | 48   | 68  | 71   | 71   | 81   | 76    |
| 2       | 58   | 60   | 36   | 33   | 35   | 38   | 46   | 66  | 70   | 74   | 82   | 78    |
| 3       | 59   | 57   | 40   | 34   | 36   | 36   | 46   | 65  | 70   | 76   | 78   | 80    |
| 4       | 60   | 59   | 38   | 33   | 36   | 39   | 43   | --  | 70   | 79   | 78   | 75    |
| 5       | 58   | 56   | 38   | 34   | 37   | 39   | 43   | 68  | 70   | 78   | 74   | 72    |
| 6       | 58   | 53   | 40   | 35   | 37   | 38   | 43   | 68  | 72   | 72   | 73   | 74    |
| 7       | 58   | 56   | 41   | 36   | 36   | 39   | 43   | 62  | 73   | 80   | 75   | 74    |
| 8       | 55   | 55   | 44   | 34   | 39   | 40   | 40   | 65  | 62   | 77   | 75   | 74    |
| 9       | 55   | 53   | 38   | 35   | 38   | 39   | 41   | 66  | 68   | 78   | 73   | 71    |
| 10      | 54   | 48   | 38   | 37   | 39   | 38   | 42   | 69  | 72   | 75   | 73   | 68    |
| 11      | 53   | 45   | 38   | 34   | --   | 39   | 45   | 67  | 74   | 75   | 78   | 74    |
| 12      | 52   | 45   | 38   | 38   | 37   | 41   | 45   | 67  | 76   | 76   | 76   | 75    |
| 13      | 53   | --   | 40   | 35   | 37   | 41   | 44   | 68  | 80   | 76   | 77   | 76    |
| 14      | 55   | 44   | 40   | 33   | 38   | 42   | 43   | 68  | 80   | --   | 78   | 75    |
| 15      | 55   | 45   | 40   | 32   | 38   | 43   | 45   | 71  | 84   | 79   | 73   | 75    |
| 16      | 56   | 45   | 42   | 33   | 37   | 44   | 45   | 68  | 84   | 76   | 79   | 74    |
| 17      | 58   | 45   | 40   | 33   | 38   | 42   | 46   | 67  | 86   | 79   | 75   | 74    |
| 18      | 58   | 48   | 41   | 32   | 37   | 45   | 47   | 68  | 86   | 80   | 74   | 73    |
| 19      | 54   | 43   | 38   | 34   | 38   | 42   | 52   | 69  | 81   | 81   | 77   | 74    |
| 20      | 54   | 43   | 40   | 34   | 38   | 42   | 53   | 65  | 77   | 83   | 74   | 72    |
| 21      | 57   | 43   | 39   | 35   | 42   | 45   | 56   | --  | 80   | 81   | 76   | 75    |
| 22      | 57   | 43   | 41   | 35   | 40   | 45   | 58   | 59  | 81   | 84   | 76   | 78    |
| 23      | 59   | 36   | 40   | 39   | 39   | 45   | 60   | 65  | 81   | 80   | 78   | 75    |
| 24      | 60   | 38   | 43   | 34   | 39   | 44   | 63   | 69  | 80   | 78   | 77   | 68    |
| 25      | 56   | 40   | 41   | 35   | 41   | 44   | 61   | 68  | 78   | 79   | 73   | 75    |
| 26      | 54   | 38   | 40   | 34   | 39   | 43   | 65   | 63  | 80   | 80   | 74   | 65    |
| 27      | 59   | 38   | 38   | 35   | 42   | 45   | 66   | 67  | 78   | 78   | 75   | 62    |
| 28      | 57   | 37   | 39   | 37   | --   | 46   | 68   | --  | 79   | 77   | 73   | 64    |
| 29      | 58   | 38   | 38   | 34   | --   | 45   | 68   | --  | 76   | 81   | 74   | 63    |
| 30      | 60   | 35   | 33   | 36   | --   | 46   | 68   | --  | 73   | 83   | 74   | 61    |
| 31      | 64   | --   | 36   | 38   | --   | 47   | --   | --  | --   | 81   | 76   | --    |
| Average | 57   | 46   | 39   | 35   | 38   | 42   | 51   | --  | 76   | 78   | 76   | 72    |

## SUSQUEHANNA RIVER BASIN--Continued

## NORTH BALD EAGLE CREEK BELOW SPRING CREEK, AT MILESBURG, PA.

LOCATION.--At bridge on U. S. Highway 220, in Milesburg, Centre County, 130 feet upstream from gaging station and 120 feet downstream from Spring Creek.

DRAINAGE AREA.--265 square miles.

RECORDS AVAILABLE.--Temperature records: November 1956 to September 1957.

Sediment records: December 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82°F July 21, 22; minimum, 35°F Mar. 8.

Sediment concentrations: Maximum daily, 157 ppm Apr. 6; minimum daily, 2 ppm on several days during the year.

Sediment loads: Maximum daily, 1,180 tons Apr. 6; minimum daily, 1 ton on several days during October and September.

EXTREMES, 1955-57.--Sediment concentrations: Maximum daily, 788 ppm Feb. 25, 1956; minimum daily, 1 ppm July 12, 1956.

Sediment loads: Maximum daily, 6,250 tons Feb. 25, 1956; minimum daily, 1 ton on several days.

REMARKS.--Records of discharge for period October 1956 to September 1957 given in WSP 1502.

## Chemical analyses, in parts per million, October 1956, January 1957

| Constituent                           | Oct. 11, 1956 | Jan. 30, 1957 | Constituent                                     | Oct. 11, 1956 | Jan. 30, 1957 |
|---------------------------------------|---------------|---------------|-------------------------------------------------|---------------|---------------|
| Mean discharge (cfs) .....            | 226           | 511           | Nitrate (NO <sub>3</sub> ) .....                | 9.7           | 3.4           |
| Silica (SiO <sub>2</sub> ) .....      | 7.1           | --            | Dissolved solids<br>(residues at 180°C) .....   | 192           | --            |
| Iron (Fe) .....                       | .01           | --            | Hardness as CaCO <sub>3</sub> .....             |               |               |
| Calcium (Ca) .....                    | 48            | --            | Calcium, magnesium .....                        | 178           | 75            |
| Magnesium (Mg) .....                  | 14            | --            | Noncarbonate .....                              | 16            | 13            |
| Sodium (Na) .....                     | 3.0           | 6.0           |                                                 |               |               |
| Potassium (K) .....                   | 1.7           |               | Specific conductance<br>(micromhos at 25°C) ... | 352           | 192           |
| Bicarbonate (HCO <sub>3</sub> ) ..... | 196           | 76            | pH .....                                        | 8.6           | 7.9           |
| Sulfate (SO <sub>4</sub> ) .....      | 17            | 17            | Color .....                                     | 2             | 3             |
| Chloride (Cl) .....                   | 5.7           | 3.8           |                                                 |               |               |
| Fluoride (F) .....                    | .0            | --            |                                                 |               |               |

a Includes equivalent of 16 parts per million of carbonate (CO<sub>3</sub>).

## Temperature (°F) of water, November 1956 to September 1957

Once-daily measurement between 4 p. m. and 5 p. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | --   | 46   | 42   | 41   | 39   | 47   | 65  | 70   | 70   | 78   | --    |
| 2       | --   | --   | 45   | 38   | 46   | 38   | 46   | 64  | 69   | 72   | 78   | 74    |
| 3       | --   | --   | 49   | 40   | 39   | 40   | 46   | 55  | 68   | 73   | 80   | 76    |
| 4       | --   | --   | 50   | 40   | 40   | 40   | 41   | 53  | 68   | 76   | --   | 72    |
| 5       | --   | --   | 51   | 40   | 39   | 42   | 45   | 58  | 70   | --   | 70   | 72    |
| 6       | --   | --   | 54   | 42   | 42   | 42   | 44   | 60  | 70   | --   | 72   | 71    |
| 7       | --   | --   | 54   | 46   | 44   | 38   | 48   | 66  | 72   | 72   | 73   | 72    |
| 8       | 52   | 52   | 44   | 46   | 35   | 48   | 68   | 62  | 72   | 71   | 70   | 70    |
| 9       | 51   | 45   | 44   | 44   | 38   | 40   | 70   | 68  | 71   | 80   | 66   | 66    |
| 10      | 51   | 48   | 46   | 42   | --   | 48   | 70   | 72  | 73   | 70   | 65   |       |
| 11      | 51   | 45   | 39   | 42   | 42   | 52   | 70   | 72  | 74   | --   | 70   |       |
| 12      | --   | --   | 51   | 42   | 41   | --   | 45   | 70  | 68   | 73   | 74   | 70    |
| 13      | 51   | 52   | 40   | 42   | 48   | 45   | 70   | 72  | 74   | 74   | --   | --    |
| 14      | 53   | 41   | 42   | 41   | --   | 46   | 68   | 74  | 72   | 80   | 68   | 68    |
| 15      | 57   | 48   | 39   | 42   | --   | 44   | 71   | 76  | 75   | 76   | 70   |       |
| 16      | 48   | 49   | 38   | 42   | 47   | 50   | 60   | 79  | 77   | --   | 70   |       |
| 17      | 49   | 49   | 40   | 40   | 45   | 49   | 66   | 80  | 77   | 71   | 69   |       |
| 18      | 50   | 47   | 40   | 42   | 45   | 50   | 64   | 80  | 75   | 72   | 69   |       |
| 19      | 50   | 40   | 44   | 40   | 46   | 54   | 56   | 76  | 80   | --   | 70   |       |
| 20      | 50   | 45   | 44   | 43   | 43   | 62   | 58   | 72  | 81   | 74   | 68   |       |
| 21      | 50   | 50   | 46   | 44   | 46   | 62   | 58   | --  | 82   | 72   | 72   |       |
| 22      | 48   | 51   | 50   | 50   | 46   | 62   | 60   | 74  | 82   | 71   | --   | --    |
| 23      | 47   | 50   | 49   | 48   | 52   | 65   | 71   | 80  | 75   | 70   | --   | --    |
| 24      | 46   | --   | 37   | 46   | 52   | 65   | 68   | 68  | 70   | 73   | 67   |       |
| 25      | 45   | --   | 48   | 47   | 51   | --   | 68   | 68  | 75   | 71   | 68   |       |
| 26      | --   | --   | 38   | 47   | 44   | 66   | 68   | 73  | 75   | 73   | 66   |       |
| 27      | 47   | 45   | 37   | 44   | 41   | 70   | 67   | 72  | 75   | 72   | 66   |       |
| 28      | 48   | 44   | 42   | 36   | 44   | 69   | 68   | 72  | 79   | 70   | --   | --    |
| 29      | 46   | 45   | --   | --   | 44   | 70   | 68   | 71  | 80   | 72   | 64   |       |
| 30      | 45   | 45   | 38   | --   | 45   | 67   | 69   | 69  | 80   | 74   | 66   |       |
| 31      | --   | --   | 43   | 40   | --   | 47   | --   | 72  | --   | 72   | --   | --    |
| Average | --   | --   | 48   | 42   | 43   | 44   | 53   | 65  | 72   | 75   | 73   | 69    |

## SUSQUEHANNA RIVER BASIN--Continued

NORTH BALD EAGLE CREEK BELOW SPRING CREEK, AT MILESBERG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 226                   | 8                         | 5            | 356                   | 14                        | 13           | 276                   |                           |              |
| 2.....  | 220                   | 7                         | 4            | 1,210                 | 79                        | s 296        | 276                   |                           |              |
| 3.....  | 214                   | 2                         | 1            | 934                   | 32                        | 81           | 279                   |                           |              |
| 4.....  | 324                   | 10                        | s 10         | 744                   | 20                        | 40           | 288                   | 8                         | 6            |
| 5.....  | 296                   | 8                         | s 7          | 641                   | 24                        | 42           | 273                   |                           |              |
| 6.....  | 249                   | 7                         | 5            | 541                   | 16                        | 23           | 270                   |                           |              |
| 7.....  | 288                   | 4                         | 3            | 476                   | 18                        | 23           | 276                   | 9                         | 7            |
| 8.....  | 267                   | 2                         | 1            | 432                   | 22                        | 26           | 323                   | 14                        | 12           |
| 9.....  | 243                   | 5                         | 3            | 396                   | 16                        | 17           | 761                   | --                        | b 95         |
| 10..... | 228                   | 11                        | 7            | 374                   | 16                        | 16           | 764                   | 20                        | 41           |
| 11..... | 226                   | 9                         | 5            | 350                   | 16                        | 15           | 616                   | 5                         | 8            |
| 12..... | 220                   | 7                         | 4            | 339                   | 10                        | 9            | 546                   | 5                         | 7            |
| 13..... | 217                   | 9                         | 5            | 326                   | 10                        | 9            | 494                   | 8                         | 11           |
| 14..... | 214                   | 11                        | 6            | 314                   | 14                        | 12           | 984                   | --                        | a 240        |
| 15..... | 214                   | 8                         | 5            | 301                   | 16                        | 13           | 1,420                 | 90                        | 345          |
| 16..... | 211                   | 8                         | 5            | 323                   | 12                        | 10           | 1,240                 | 35                        | 117          |
| 17..... | 208                   | 12                        | 7            | 323                   | 10                        | 9            | 1,000                 | 18                        | 49           |
| 18..... | 208                   | 11                        | 6            | 295                   | 8                         | 6            | 818                   | 20                        | 44           |
| 19..... | 200                   | 7                         | 4            | 279                   | 7                         | 5            | 654                   | 15                        | 26           |
| 20..... | 200                   | 7                         | 4            | 273                   | 6                         | 4            | 592                   | 12                        | 19           |
| 21..... | 197                   | 7                         | 4            | 298                   | 10                        | s 8          | 814                   | 26                        | s 59         |
| 22..... | 206                   | 12                        | 7            | 400                   | 16                        | s 19         | 915                   | 33                        | s 97         |
| 23..... | 2,310                 | 112                       | s 820        | 323                   | 2                         | 2            | 1,070                 | 37                        | 107          |
| 24..... | 866                   | 14                        | 33           | 301                   | 8                         | 7            | 1,040                 | 27                        | 76           |
| 25..... | 525                   | 14                        | 20           | 295                   | 8                         | 6            | 900                   | 21                        | 51           |
| 26..... | 419                   | 5                         | 6            | 320                   | 11                        | 10           | 764                   | 22                        | 45           |
| 27..... | 432                   | 10                        | 12           | 310                   | 16                        | 13           | 705                   |                           |              |
| 28..... | 374                   | 12                        | 12           | 298                   | 19                        | 15           | 654                   |                           |              |
| 29..... | 336                   | 14                        | 13           | 288                   | 10                        | 8            | 604                   | 12                        | 19           |
| 30..... | 323                   | 12                        | 10           | 279                   | 6                         | 5            | 494                   |                           |              |
| 31..... | 326                   | --                        | a 11         | --                    | --                        | --           | 462                   |                           |              |
| Total.  | 10,985                | --                        | 1,045        | 12,339                | --                        | 762          | 20,608                | --                        | 1,581        |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 428                   | 11                        | 13           | 409                   |                           |              | 742                   | 8                         | 16           |
| 2.....  | 360                   | 5                         | 5            | 378                   | 2                         | 2            | 633                   | 10                        | 17           |
| 3.....  | 367                   | 3                         | 3            | 365                   |                           |              | 589                   | 8                         | 13           |
| 4.....  | 370                   | 3                         | 3            | 883                   | --                        | b 120        | 506                   |                           |              |
| 5.....  | 360                   | 4                         | 4            | 722                   |                           |              | 467                   |                           |              |
| 6.....  | 336                   | 3                         | 3            | 655                   | 42                        | 72           | 452                   | 12                        | 15           |
| 7.....  | 336                   | 3                         | 3            | 600                   |                           |              | 462                   |                           |              |
| 8.....  | 326                   | 4                         | 4            | 568                   |                           |              | 472                   | 12                        | 15           |
| 9.....  | 323                   | 5                         | 4            | 754                   | 21                        | s 51         | 481                   |                           |              |
| 10..... | 350                   | 12                        | 11           | 1,060                 | 26                        | 74           | 438                   | 10                        | 12           |
| 11..... | 314                   | 3                         | 3            | 928                   | 33                        | 83           | 414                   |                           |              |
| 12..... | 304                   | 4                         | 3            | 736                   | 21                        | 42           | 580                   | 88                        | s 189        |
| 13..... | 320                   | 8                         | 7            | 666                   | 9                         | 16           | 1,040                 | 80                        | s 227        |
| 14..... | 273                   | 5                         | 4            | 595                   | 9                         | 14           | 1,120                 | 35                        | 106          |
| 15..... | 258                   | 5                         | 3            | 516                   | 9                         | 13           | 1,160                 | 36                        | 113          |
| 16..... | 276                   | 3                         | 2            | 476                   | 11                        | 14           | 1,090                 | 27                        | 79           |
| 17..... | 264                   |                           |              | 428                   |                           |              | 864                   | 8                         | 19           |
| 18..... | 252                   | 8                         | 5            | 400                   |                           |              | 730                   | 14                        | 28           |
| 19..... | 252                   |                           |              | 414                   | 3                         | 3            | 666                   | --                        | e 22         |
| 20..... | 249                   |                           |              | 369                   |                           |              | 633                   | 12                        | 21           |
| 21..... | 252                   | 10                        | 7            | 356                   |                           |              | 558                   |                           |              |
| 22..... | 347                   | 20                        | s 23         | 348                   |                           |              | 496                   |                           |              |
| 23..... | 1,800                 | --                        | b 1,100      | 348                   | 7                         | 7            | 462                   | 12                        | 15           |
| 24..... | 1,110                 | 31                        | s 94         | 344                   |                           |              | 419                   |                           |              |
| 25..... | 771                   | 26                        |              | 369                   |                           |              | 400                   |                           |              |
| 26..... | 633                   | 10                        | 17           | 599                   | --                        | a 100        | 438                   | 11                        | 13           |
| 27..... | 537                   | 7                         | 10           | 1,160                 | 30                        | 94           | 622                   |                           |              |
| 28..... | 467                   | 6                         | 8            | 864                   | 11                        | 26           | 712                   | 20                        | 36           |
| 29..... | 532                   | --                        | e 20         | --                    | --                        | --           | 864                   | 26                        | 61           |
| 30..... | 511                   |                           |              | --                    | --                        | --           | 928                   | 25                        | 63           |
| 31..... | 424                   | 2                         | 3            | --                    | --                        | --           | 759                   | 14                        | 29           |
| Total.  | 13,702                | --                        | 1,434        | 16,310                | --                        | 984          | 20,197                | --                        | 1,274        |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.



## SUSQUEHANNA RIVER BASIN--Continued

NORTH BALD EAGLE CREEK BELOW SPRING CREEK, AT MILESBURG, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                       | April                |                          |              | May                  |                          |              | June                 |                          |              |      |       |      |     |    |
|-------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|------|-------|------|-----|----|
|                                           | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |      |       |      |     |    |
|                                           |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |      |       |      |     |    |
| 1.....                                    | 677                  | 16                       | s 30         | 506                  | 12                       | 15           | 239                  | 12                       | 8            |      |       |      |     |    |
| 2.....                                    | 1,840                | 138                      | s 712        | 472                  |                          |              | 236                  |                          |              |      |       |      |     |    |
| 3.....                                    | 1,440                | 44                       | s 172        | 442                  |                          |              | 226                  |                          |              |      |       |      |     |    |
| 4.....                                    | 1,260                | 57                       | 194          | 424                  |                          |              | 220                  |                          |              |      |       |      |     |    |
| 5.....                                    | 1,410                | 45                       | s 179        | 409                  |                          |              | 220                  |                          |              |      |       |      |     |    |
| 6.....                                    | 2,750                | 157                      | s 1,180      | 382                  | 8                        | 8            | 220                  | 9                        | 5            |      |       |      |     |    |
| 7.....                                    | 2,920                | 99                       | s 808        | 356                  |                          |              | 236                  |                          |              |      |       |      |     |    |
| 8.....                                    | 3,150                | 120                      | s 1,100      | 344                  |                          |              | 236                  |                          |              |      |       |      |     |    |
| 9.....                                    | 3,180                | 112                      | s 1,020      | 327                  |                          |              | 236                  |                          |              |      |       |      |     |    |
| 10.....                                   | 2,060                | 55                       | 306          | 315                  |                          |              | 213                  |                          |              |      |       |      |     |    |
| 11.....                                   | 1,570                | 40                       | 170          | 307                  | 10                       | 8            | 216                  | 6                        | 3            |      |       |      |     |    |
| 12.....                                   | 1,360                | 32                       | 118          | 307                  |                          |              | 540                  |                          |              | 111  | s 196 |      |     |    |
| 13.....                                   | 1,160                | 31                       | 97           | 296                  |                          |              | 288                  |                          |              | 14   | 11    |      |     |    |
| 14.....                                   | 992                  | 30                       | 80           | 315                  |                          |              | 277                  |                          |              | 13   | 10    |      |     |    |
| 15.....                                   | 832                  | 45                       | 101          | 503                  |                          |              | 46                   |                          |              | s 67 | 242   |      |     |    |
| 16.....                                   | 747                  | 42                       | 85           | 576                  | 62                       | s 104        | 223                  | 10                       | 6            |      |       |      |     |    |
| 17.....                                   | 706                  | 52                       | 99           | 382                  |                          |              | 216                  |                          |              |      |       |      |     |    |
| 18.....                                   | 992                  |                          |              | 365                  |                          |              | 204                  |                          |              |      |       |      |     |    |
| 19.....                                   | 864                  |                          |              | 348                  |                          |              | 201                  |                          |              |      |       |      |     |    |
| 20.....                                   | 802                  | 27                       | 58           | 365                  |                          |              | 12                   |                          |              | 12   | 195   |      |     |    |
| 21.....                                   | 759                  |                          |              |                      | 352                      |              |                      | 192                      |              |      |       |      |     |    |
| 22.....                                   | 684                  |                          |              |                      | 331                      |              |                      | 189                      |              |      |       |      |     |    |
| 23.....                                   | 666                  |                          |              |                      | 336                      | 14           | 11                   | 186                      | 17           | 9    |       |      |     |    |
| 24.....                                   | 689                  |                          |              |                      | 331                      |              |                      | 239                      |              |      | --    | a 26 |     |    |
| 25.....                                   | 644                  |                          | 300          | 288                  | 28                       |              |                      | 22                       |              |      |       |      |     |    |
| 26.....                                   | 622                  | 21                       | 37           | 292                  |                          |              |                      | 213                      |              |      | 12    | 7    |     |    |
| 27.....                                   | 802                  |                          |              | 288                  | 201                      |              |                      | 10                       |              |      |       |      | 7   |    |
| 28.....                                   | 638                  |                          |              | 274                  | 207                      |              |                      |                          |              |      |       |      |     |    |
| 29.....                                   | 584                  |                          |              | 263                  | 497                      | --           | a 100                |                          |              |      |       |      |     |    |
| 30.....                                   | 542                  |                          |              |                      | 256                      | 7            | 7                    | 270                      | 14           | 10   |       |      |     |    |
| 31.....                                   | --                   | --                       | --           | 246                  |                          | --           | --                   | --                       | --           |      |       |      |     |    |
| Total.                                    | 37,342               | --                       | 7,058        | 11,010               | --                       | 470          | 7,366                | --                       | 515          |      |       |      |     |    |
| July                                      |                      |                          |              |                      |                          |              |                      |                          |              |      |       |      |     |    |
| 1.....                                    | 226                  | 8                        | 5            | 147                  | August                   |              | 126                  | September                |              |      |       |      |     |    |
| 2.....                                    | 210                  | 15                       | 8            | 144                  | 8                        | 3            | 126                  | 9                        | 3            |      |       |      |     |    |
| 3.....                                    | 201                  |                          |              | 142                  |                          |              | 131                  |                          |              |      |       |      |     |    |
| 4.....                                    | 195                  |                          |              | 149                  |                          |              | 126                  |                          |              |      |       |      |     |    |
| 5.....                                    | 195                  |                          |              | 147                  |                          |              | 126                  |                          |              |      |       |      |     |    |
| 6.....                                    | 186                  |                          |              | 8                    |                          |              | 4                    |                          |              | 147  | 7     | 3    | 126 | 10 |
| 7.....                                    | 183                  | 142                      | 121          |                      |                          |              |                      |                          |              |      |       |      |     |    |
| 8.....                                    | 183                  | 139                      | 119          |                      |                          |              |                      |                          |              |      |       |      |     |    |
| 9.....                                    | 183                  | 139                      | 121          |                      |                          |              |                      |                          |              |      |       |      |     |    |
| 10.....                                   | 174                  | 139                      | 134          |                      |                          |              |                      |                          |              |      |       |      |     |    |
| 11.....                                   | 172                  | 8                        | 4            | 139                  | 10                       | 4            | 131                  | 7                        | 3            |      |       |      |     |    |
| 12.....                                   | 169                  |                          |              | 139                  |                          |              | 131                  |                          |              |      |       |      |     |    |
| 13.....                                   | 174                  |                          |              | 136                  |                          |              | 131                  |                          |              |      |       |      |     |    |
| 14.....                                   | 174                  |                          |              | 134                  |                          |              | 134                  |                          |              |      |       |      |     |    |
| 15.....                                   | 169                  |                          |              | 160                  |                          |              | 150                  |                          |              |      |       |      |     |    |
| 16.....                                   | 166                  | 12                       | 5            | 142                  | 10                       | 4            | 177                  | 9                        | a 8          |      |       |      |     |    |
| 17.....                                   | 160                  |                          |              | 136                  |                          |              | 147                  |                          |              | 4    | 7     | 3    |     |    |
| 18.....                                   | 160                  |                          |              | 134                  |                          |              | 139                  |                          |              |      |       |      | 16  | 7  |
| 19.....                                   | 155                  |                          |              | 134                  |                          |              | 134                  |                          |              |      |       |      |     |    |
| 20.....                                   | 152                  |                          |              |                      |                          |              | 144                  |                          |              | 142  | --    | --   |     |    |
| 21.....                                   | 155                  | 8                        | 3            | 136                  | 10                       | 3            | 144                  | 4                        | 1            |      |       |      |     |    |
| 22.....                                   | 152                  |                          |              | 136                  |                          |              | 168                  |                          |              |      |       |      |     |    |
| 23.....                                   | 195                  |                          |              | 131                  |                          |              | 172                  |                          |              |      |       |      |     |    |
| 24.....                                   | 174                  |                          |              | 131                  |                          |              | 142                  |                          |              |      |       |      |     |    |
| 25.....                                   | 160                  |                          |              | 131                  |                          |              | 136                  |                          |              |      |       |      |     |    |
| 26.....                                   | 155                  | --                       | a 4          | 131                  |                          |              | 134                  | --                       | --           |      |       |      |     |    |
| 27.....                                   | 158                  |                          |              | 126                  | 129                      |              |                      |                          |              |      |       |      |     |    |
| 28.....                                   | 158                  |                          |              | 126                  | 126                      |              |                      |                          |              |      |       |      |     |    |
| 29.....                                   | 152                  |                          |              | 126                  | 129                      |              |                      |                          |              |      |       |      |     |    |
| 30.....                                   | 152                  |                          |              | 126                  | 129                      |              |                      |                          |              |      |       |      |     |    |
| 31.....                                   | 149                  |                          | 126          |                      |                          | --           | --                   | --                       | --           |      |       |      |     |    |
| Total.                                    | 5,347                | --                       | 147          | 4,259                | --                       | 105          | 4,086                | --                       | 99           |      |       |      |     |    |
| Total discharge for year (cfs-days) ..... |                      |                          |              |                      |                          |              |                      |                          | 163,551      |      |       |      |     |    |
| Total load for year (tons) .....          |                      |                          |              |                      |                          |              |                      |                          | 15,474       |      |       |      |     |    |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

## NORTH BALD EAGLE CREEK AT BLANCHARD, PA.

LOCATION.--At gaging station, 0.7 mile upstream from Marsh Creek, and 0.9 mile south of Blanchard, Centre County.

DRAINAGE AREA.--339 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1957.

Sediment records: December 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 91°F June 30; minimum, freezing point Jan. 13, 14.

Sediment concentrations: Maximum daily, 203 ppm Apr. 6; minimum daily, 1 ton on many days.

Sediment loads: Maximum daily, 1,800 tons Apr. 6; minimum daily, 1 ton on many days.

EXTREMES, 1955-57.--Sediment concentrations: Maximum daily, 349 ppm Feb. 25, 1956;

minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 2,340 tons Mar. 8, 1956; minimum daily, less than 0.5 ton Jan. 1-5, 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

## Chemical analyses, in parts per million, October 1956, January 1957

| Constituent                          | Oct. 11, 1956 | Jan. 30, 1957 | Constituent                     | Oct. 11, 1956 | Jan. 30, 1957 |
|--------------------------------------|---------------|---------------|---------------------------------|---------------|---------------|
| Mean discharge (cfs) ....            | 246           | 425           | Nitrate (NO <sub>3</sub> )..... | 6.1           | 7.0           |
| Silica (SiO <sub>2</sub> ) .....     | 6.1           | 7.6           | Dissolved solids                |               |               |
| Iron (Fe) .....                      | .01           | .02           | (residues at 180°C)...          | 184           | 164           |
| Calcium (Ca) .....                   | 42            | 37            | Hardness as CaCO <sub>3</sub> ) |               |               |
| Magnesium (Mg) .....                 | 13            | 11            | Calcium, magnesium ..           | 158           | 137           |
| Sodium (Na) .....                    | 3.6           | 2.5           | Noncarbonate .....              | 22            | 20            |
| Potassium (K) .....                  | 1.8           | 1.5           |                                 |               |               |
| Bicarbonate (HCO <sub>3</sub> )..... | a 167         | b 144         | Specific conductance            |               |               |
| Sulfate (SO <sub>4</sub> ) .....     | 19            | 19            | (micromhos at 25°C)...          | 325           | 281           |
| Chloride (Cl) .....                  | 5.0           | 3.8           | pH .....                        | 8.5           | 8.4           |
| Fluoride (F) .....                   | .1            | .1            | Color .....                     | 3             | 3             |

a Includes equivalent of 2 parts per million of carbonate (CO<sub>3</sub>).

b Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).

## Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 68   | 39   | 36   | 34   | 39   | 49   | 67  | 70   | 72   | 79   | 72    |
| 2       | --   | 66   | 41   | 34   | 39   | 42   | 48   | 62  | 70   | 72   | 79   | 72    |
| 3       | --   | 64   | --   | 39   | 39   | 40   | 47   | 52  | 69   | --   | 78   | 76    |
| 4       | --   | 65   | 45   | 39   | 44   | --   | 39   | 55  | 71   | 77   | 78   | 74    |
| 5       | --   | 66   | 47   | 39   | 38   | 44   | 39   | 57  | --   | --   | 78   | 72    |
| 6       | --   | 61   | 47   | 36   | 39   | 44   | 41   | 62  | 71   | 74   | 72   | 65    |
| 7       | --   | --   | 52   | 39   | 41   | 41   | 46   | 65  | 71   | 74   | 71   | 72    |
| 8       | --   | 60   | 50   | 39   | 43   | 41   | 43   | 68  | 61   | 70   | 78   | 72    |
| 9       | --   | 56   | 40   | 39   | 40   | 40   | 46   | 65  | 56   | --   | 78   | 66    |
| 10      | --   | 54   | 39   | 36   | 39   | 39   | 47   | 70  | 71   | --   | 74   | 67    |
| 11      | --   | 56   | 39   | 36   | 39   | 39   | 50   | 63  | 77   | --   | 80   | 72    |
| 12      | --   | 58   | 42   | 33   | 38   | 49   | 49   | 66  | 71   | --   | 78   | 72    |
| 13      | --   | 57   | 46   | 31   | 39   | 53   | 43   | --  | 71   | --   | 73   | 72    |
| 14      | --   | 58   | 41   | 32   | 38   | 53   | 43   | 60  | 71   | --   | 74   | --    |
| 15      | --   | 60   | 42   | 37   | 40   | 51   | 55   | 63  | 80   | --   | 72   | --    |
| 16      | 65   | 58   | 45   | 40   | 40   | 47   | 48   | 62  | --   | --   | 75   | 72    |
| 17      | 68   | 55   | 45   | 40   | --   | 45   | 50   | --  | 80   | --   | 72   | --    |
| 18      | 67   | 56   | 44   | 36   | 42   | 48   | 52   | --  | 82   | --   | 70   | --    |
| 19      | 64   | 55   | 38   | 36   | 41   | 46   | 52   | --  | 82   | --   | 69   | --    |
| 20      | 63   | 54   | 43   | 35   | 41   | 45   | 52   | 56  | 91   | --   | 74   | --    |
| 21      | 65   | 59   | 44   | 41   | 44   | 50   | 61   | 58  | 86   | --   | 70   | 76    |
| 22      | 65   | 49   | 46   | 43   | 47   | 48   | 61   | 58  | --   | --   | 73   | 76    |
| 23      | 64   | 48   | 45   | 37   | 45   | 53   | 57   | --  | --   | --   | 72   | 69    |
| 24      | 65   | 58   | 45   | 38   | 42   | 57   | 75   | --  | --   | --   | 72   | 64    |
| 25      | 59   | 65   | 42   | 37   | 51   | 46   | --   | 70  | --   | --   | 74   | 66    |
| 26      | 58   | 68   | 39   | 34   | 47   | 44   | --   | 74  | --   | --   | 71   | 66    |
| 27      | 59   | 44   | 39   | 37   | 44   | 45   | 63   | 68  | --   | --   | 72   | 63    |
| 28      | 61   | 44   | 39   | --   | 37   | 44   | 68   | 68  | --   | --   | 70   | 62    |
| 29      | 64   | 42   | 39   | 39   | --   | 48   | 71   | 69  | --   | --   | 74   | 60    |
| 30      | 64   | 38   | 35   | 38   | --   | 45   | --   | 75  | 72   | --   | 70   | 58    |
| 31      | 61   | --   | 36   | 38   | --   | 49   | --   | 71  | --   | 75   | 72   | --    |
| Average | --   | 57   | 42   | 37   | 41   | 46   | 52   | --  | --   | --   | 74   | --    |

## SUSQUEHANNA RIVER BASIN--Continued

## NORTH BALD EAGLE CREEK AT BLANCHARD, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 232                   | 6                         | 4            | 449                   | 11                        | 13           | 302                   | 9                         | 7            |
| 2.....  | 222                   |                           |              | 1,330                 | 99                        | s 363        | 312                   | 7                         | 6            |
| 3.....  | 218                   |                           |              | 972                   | 35                        | 92           | 318                   | --                        | a 6          |
| 4.....  | 351                   | 15                        | 14           | 797                   | 22                        | 47           | 329                   | 9                         | 8            |
| 5.....  | 385                   | --                        | a 8          | 700                   | 14                        | 26           | 307                   | 8                         | 7            |
| 6.....  | 281                   | 6                         | 5            | 621                   | 9                         | 15           | 302                   | 9                         | 7            |
| 7.....  | 340                   | 3                         | 3            | 571                   | --                        | a 12         | 307                   | 13                        | 11           |
| 8.....  | 323                   | 1                         | 1            | 528                   | 8                         | 11           | 379                   | 18                        | 18           |
| 9.....  | 281                   | 1                         | 1            | 479                   | }                         | }            | 754                   | 43                        | 88           |
| 10..... | 260                   | 1                         | 1            | 449                   |                           |              | 811                   | 22                        | 48           |
| 11..... | 246                   | 1                         | 1            | 420                   |                           |              | 700                   | 11                        | 21           |
| 12..... | 241                   | 1                         | 1            | 402                   | 6                         | 7            | 640                   | 9                         | 16           |
| 13..... | 236                   | 1                         | 1            | 391                   |                           |              | 590                   | 9                         | 14           |
| 14..... | 236                   | 1                         | 1            | 368                   |                           |              | 908                   | 75                        | s 257        |
| 15..... | 232                   | 1                         | 1            | 351                   | }                         | }            | 1,400                 | 58                        | 219          |
| 16..... | 227                   | 3                         | 2            | 368                   |                           |              | 1,190                 | 20                        | 64           |
| 17..... | 222                   | 3                         | 2            | 379                   | 7                         | 7            | 964                   | 20                        | 52           |
| 18..... | 218                   | 2                         | 1            | 368                   | 4                         | 4            | 818                   | }                         | 23           |
| 19..... | 214                   | 2                         | 1            | 318                   | 2                         | 2            | 686                   |                           |              |
| 20..... | 209                   | 2                         | 1            | 307                   | 4                         | 3            | 640                   |                           |              |
| 21..... | 214                   | 3                         | 2            | 334                   | 15                        | 14           | 804                   | 19                        | 41           |
| 22..... | 218                   | 4                         | 2            | 479                   | 25                        | 32           | 924                   | 33                        | 82           |
| 23..... | 2,000                 | 199                       | s 1,230      | 391                   | }                         | }            | 1,030                 | 31                        | 86           |
| 24..... | 900                   | 32                        | 78           | 340                   |                           |              | 1,010                 | 25                        | 68           |
| 25..... | 602                   | 13                        | 21           | 334                   |                           |              | 900                   | 19                        | 46           |
| 26..... | 503                   | 10                        | 14           | 368                   | }                         | 6            | 775                   | 17                        | 36           |
| 27..... | 509                   | 10                        | 14           | 362                   |                           |              | 727                   | 12                        | 24           |
| 28..... | 467                   | 9                         | 11           | 345                   |                           |              | 693                   | }                         | 17           |
| 29..... | 408                   | 6                         | 7            | 340                   | }                         | }            | 654                   |                           |              |
| 30..... | 385                   | 6                         | 6            | 318                   |                           |              | 577                   |                           |              |
| 31..... | 379                   | 8                         | 8            | --                    | --                        | --           | 528                   |                           |              |
| Total.  | 11,759                | --                        | 1,450        | 14,179                | --                        | 740          | 21,279                | --                        | 1,369        |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 515                   | 9                         | 13           | 479                   | }                         | }            | 822                   | }                         | 24           |
| 2.....  | 425                   | 5                         | 6            | 452                   |                           |              | 732                   |                           |              |
| 3.....  | 425                   | 3                         | 3            | 421                   |                           |              | 684                   |                           |              |
| 4.....  | 425                   | }                         | }            | 878                   | 41                        | s 119        | 591                   | }                         | a 14         |
| 5.....  | 420                   |                           |              | 924                   | 21                        | 52           | 548                   |                           |              |
| 6.....  | 391                   |                           |              | 748                   | 10                        | 20           | 533                   |                           |              |
| 7.....  | 391                   | 3                         | 3            | 684                   | 8                         | 15           | 541                   | }                         | 10           |
| 8.....  | 368                   |                           |              | 668                   | 11                        | 20           | 555                   |                           |              |
| 9.....  | 362                   |                           |              | 764                   | 29                        | 60           | 584                   |                           |              |
| 10..... | 391                   | 5                         | 5            | 1,150                 | 42                        | 130          | 533                   | }                         | }            |
| 11..... | 362                   | 4                         | 4            | 1,020                 | 19                        | 52           | 506                   |                           |              |
| 12..... | 329                   |                           |              | 830                   | 15                        | 34           | 628                   |                           |              |
| 13..... | 368                   |                           |              | 740                   | 14                        | 28           | 1,140                 | 62                        | s 135        |
| 14..... | 312                   | 1                         | 1            | 668                   | }                         | }            | 1,220                 | 66                        | 203          |
| 15..... | 281                   | 1                         | 1            | 591                   |                           |              | 1,270                 | 45                        | 148          |
| 16..... | 296                   | 1                         | 1            | 541                   |                           |              | 1,270                 | 34                        | 117          |
| 17..... | 286                   | --                        | a 1          | 492                   | 5                         | 7            | 1,220                 | 40                        | 132          |
| 18..... | 281                   | }                         | }            | 452                   |                           |              | 966                   | 19                        | 50           |
| 19..... | 270                   |                           |              | 472                   |                           |              | 822                   | }                         | }            |
| 20..... | 265                   |                           |              | 433                   | }                         | }            | 746                   |                           |              |
| 21..... | 265                   | 4                         | 3            | 409                   |                           |              | 724                   |                           |              |
| 22..... | 296                   | }                         | }            | 396                   | 6                         | 6            | 645                   | }                         | }            |
| 23..... | 1,720                 | --                        | a 6          | 390                   |                           |              | 577                   |                           |              |
| 24..... | 1,180                 | 193                       | s 310        | 390                   |                           |              | 533                   |                           |              |
| 25..... | 872                   | 28                        | 89           | 390                   | }                         | }            | 492                   | }                         | }            |
| 26..... | 724                   | 9                         | 21           | 421                   |                           |              | 465                   |                           |              |
| 27..... | 724                   | 3                         | 6            | 637                   |                           |              | 492                   | }                         | }            |
| 28..... | 606                   | 2                         | 3            | 1,270                 | 68                        | s 156        | 724                   |                           |              |
| 29..... | 541                   | --                        | a 3          | 966                   | 57                        | 195          | 830                   | 18                        | 35           |
| 30..... | 599                   | 5                         | 8            | --                    | 14                        | 37           | 915                   | 16                        | 36           |
| 31..... | 622                   | 9                         | 15           | --                    | --                        | --           | 915                   | 17                        | 42           |
| 31..... | 499                   | 5                         | 7            | --                    | --                        | --           | 1,010                 | 19                        | 52           |
| Total.  | 15,087                | --                        | 535          | 18,286                | --                        | 1,012        | 22,897                | --                        | 1,251        |

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

## NORTH BALD EAGLE CREEK AT BLANCHARD, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |         |      |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|---------|------|
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |         |      |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |         |      |
| 1.....                                   | 764                  | 6                        | 12           | 584                  | 14                       | 21           | 257                  | 4                        | 3            |         |      |
| 2.....                                   | 1,800                | 159                      | s 801        | 541                  |                          |              | 257                  |                          |              |         |      |
| 3.....                                   | 1,560                | 47                       | 198          | 512                  |                          |              | 248                  |                          |              |         |      |
| 4.....                                   | 1,320                | 27                       | 96           | 492                  |                          |              | 244                  |                          |              |         |      |
| 5.....                                   | 1,510                | 36                       | s 155        | 465                  | 7                        | 8            | 244                  | --                       | a 3          |         |      |
| 6.....                                   | 3,220                | 203                      | s 1,800      | 440                  |                          |              | 244                  |                          |              |         |      |
| 7.....                                   | 3,450                | 144                      | 1,340        | 402                  |                          |              | 257                  |                          |              |         |      |
| 8.....                                   | 3,590                | 112                      | 1,090        | 384                  |                          |              | 257                  |                          |              |         |      |
| 9.....                                   | 3,820                | 130                      | s 1,420      | 368                  | 9                        | 6            | 270                  | 9                        | 6            |         |      |
| 10.....                                  | 2,410                | 46                       | 299          | 351                  |                          |              | 244                  |                          |              |         |      |
| 11.....                                  | 1,660                | 38                       | 170          | 345                  |                          |              | 235                  |                          |              |         |      |
| 12.....                                  | 1,410                | 28                       | 91           | 345                  |                          |              | 516                  | 120                      | s 183        |         |      |
| 13.....                                  | 1,180                |                          |              | 329                  |                          |              | 345                  |                          |              | 53      | 49   |
| 14.....                                  | 1,040                |                          |              | 334                  |                          |              | 324                  |                          |              | 37      | 32   |
| 15.....                                  | 924                  |                          |              | 541                  | 60                       | 88           | 275                  |                          |              |         |      |
| 16.....                                  | 830                  | 19                       | 43           | 562                  |                          |              | 53                   | 80                       | 252          | 20      | 12   |
| 17.....                                  | 781                  |                          |              | 415                  |                          |              | 14                   | 16                       | 239          |         |      |
| 18.....                                  | 1,040                |                          |              | 379                  |                          |              | 379                  | 231                      |              |         |      |
| 19.....                                  | 974                  |                          |              | 362                  | 223                      |              |                      |                          |              |         |      |
| 20.....                                  | 881                  | 28                       | 68           | 379                  | 219                      |              |                      |                          |              |         |      |
| 21.....                                  | 856                  | 43                       | 87           | 373                  | 8                        | 8            | 215                  | 15                       | 9            |         |      |
| 22.....                                  | 773                  |                          |              | 345                  |                          |              | 211                  |                          |              | 58      | 54   |
| 23.....                                  | 789                  |                          |              | 340                  |                          |              | 207                  |                          |              | 26      | 17   |
| 24.....                                  | 764                  |                          |              | 379                  |                          |              | 227                  |                          |              | 9       | 5    |
| 25.....                                  | 740                  |                          |              | 319                  | 345                      | 7            | 4                    |                          |              |         |      |
| 26.....                                  | 700                  |                          |              | 40                   | 85                       | 304          | 4                    |                          |              | 3       | 248  |
| 27.....                                  | 924                  | 309                      | 223          |                      |                          | 231          |                      |                          |              |         |      |
| 28.....                                  | 756                  | 289                      | 460          |                      |                          | 33           |                      | 28                       |              |         |      |
| 29.....                                  | 684                  | 280                      | --           |                      |                          | --           |                      |                          |              |         |      |
| 30.....                                  | 622                  | --                       | a 34         | 270                  | 314                      |              |                      |                          |              |         |      |
| 31.....                                  | --                   | --                       | --           | 262                  | --                       | --           |                      | --                       | --           |         | --   |
| Total.                                   | 41,772               | --                       | 8,760        | 12,000               | --                       | 396          | 8,062                | --                       | 689          |         |      |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |         |      |
| July                                     |                      |                          |              | August               |                          |              | September            |                          |              |         |      |
| 1.....                                   | 252                  | 19                       | 11           | 157                  | 17                       | 7            | 135                  | 12                       | 4            |         |      |
| 2.....                                   | 231                  |                          |              | 157                  |                          |              | 135                  |                          |              |         |      |
| 3.....                                   | 223                  |                          |              | 154                  |                          |              | 144                  |                          |              |         |      |
| 4.....                                   | 223                  |                          |              | 163                  |                          |              | 141                  |                          |              |         |      |
| 5.....                                   | 211                  |                          |              | 157                  |                          |              | 138                  |                          |              |         |      |
| 6.....                                   | 207                  | 8                        | 4            | 154                  | 16                       | 6            | 138                  | 12                       | 5            |         |      |
| 7.....                                   | 203                  |                          |              | 148                  |                          |              | 135                  |                          |              |         |      |
| 8.....                                   | 203                  |                          |              | 148                  |                          |              | 132                  |                          |              |         |      |
| 9.....                                   | 211                  |                          |              | 151                  |                          |              | 135                  |                          |              |         |      |
| 10.....                                  | 195                  |                          |              | 154                  |                          |              | 144                  |                          |              |         |      |
| 11.....                                  | 188                  | 17                       | 8            | 151                  | 9                        | 4            | 154                  | 14                       | 6            |         |      |
| 12.....                                  | 188                  |                          |              | 148                  |                          |              | 148                  |                          |              |         |      |
| 13.....                                  | 192                  |                          |              | 144                  |                          |              | 148                  |                          |              |         |      |
| 14.....                                  | 207                  |                          |              | 144                  |                          |              | 151                  |                          |              |         |      |
| 15.....                                  | 185                  |                          |              | 170                  |                          |              | 170                  |                          |              | 20      | 9    |
| 16.....                                  | 177                  | 15                       | 7            | 157                  | 11                       | 4            | 219                  | 8                        | 3            |         |      |
| 17.....                                  | 174                  |                          |              | 144                  |                          |              | 167                  |                          |              | 50      | 30   |
| 18.....                                  | 170                  |                          |              | 141                  |                          |              | 157                  |                          |              | 14      | 6    |
| 19.....                                  | 167                  |                          |              | 141                  |                          |              | 151                  |                          |              | 14      | 6    |
| 20.....                                  | 163                  |                          |              | 151                  |                          |              | 157                  |                          |              | 14      | 6    |
| 21.....                                  | 160                  | 17                       | 8            | 144                  | 9                        | 4            | 163                  | 23                       | 11           |         |      |
| 22.....                                  | 167                  |                          |              | 148                  |                          |              | 190                  |                          |              | 48      | s 33 |
| 23.....                                  | 203                  |                          |              | 144                  |                          |              | 231                  |                          |              | 115     | 72   |
| 24.....                                  | 192                  |                          |              | 141                  |                          |              | 170                  |                          |              | 23      | 11   |
| 25.....                                  | 174                  |                          |              | 138                  |                          |              | 157                  |                          |              | 23      | 11   |
| 26.....                                  | 167                  | 15                       | 7            | 141                  | 11                       | 4            | 151                  | 8                        | 3            |         |      |
| 27.....                                  | 167                  |                          |              | 135                  |                          |              | 148                  |                          |              | 8       | 3    |
| 28.....                                  | 170                  |                          |              | 135                  |                          |              | 144                  |                          |              | 8       | 3    |
| 29.....                                  | 167                  |                          |              | 135                  |                          |              | 144                  |                          |              | 8       | 3    |
| 30.....                                  | 163                  |                          |              | 135                  |                          |              | 144                  |                          |              | 8       | 3    |
| 31.....                                  | 160                  | --                       | --           | 135                  |                          |              | --                   |                          |              | --      | --   |
| Total.                                   | 5,860                | --                       | 233          | 4,565                | --                       | 172          | 4,641                | --                       | 267          |         |      |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      |                          |              | 180,387 |      |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      |                          |              | 16,874  |      |

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

## MARSH CREEK AT BLANCHARD, PA.

LOCATION.--At gaging station on highway bridge, 0.5 mile southwest of Blanchard, Centre County, and 0.6 mile upstream from mouth.

DRAINAGE AREA.--44.1 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1957.

Sediment records: November 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F June 15, 17, 18; minimum, freezing point on several days during January.

Sediment concentrations: Maximum daily, 197 ppm Apr. 8; minimum daily, 0 ppm on several days during October.

Sediment loads: Maximum daily, 428 tons Apr. 8; minimum daily, 0 tons on several days during October.

EXTREMES, 1955-57.--Sediment concentrations: Maximum daily, 682 ppm Feb. 18, 1956; minimum daily, 0 ppm on many days.

Sediment loads: Maximum daily, 939 tons Feb. 25, 1956, minimum daily, 0 tons on many days.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502. Flow affected by ice Jan. 11-25.

## Chemical analysis, in parts per million, Jan. 30, 1957

|                                       |     |                                 |     |
|---------------------------------------|-----|---------------------------------|-----|
| Sodium (Na) .....                     | 5.3 | Calcium, magnesium, .....       | 18  |
| Potassium (K) .....                   | 12  | Noncarbonate, .....             | 8   |
| Bicarbonate (HCO <sub>3</sub> ) ..... | 13  |                                 |     |
| Sulfate (SO <sub>4</sub> ) .....      | 2.0 | Specific conductance (micromhos | 61  |
| Chloride (Cl) .....                   | 3.6 | at 25°C) .....                  | 6.0 |
| Nitrate (NO <sub>3</sub> ) .....      |     | pH .....                        | 2   |
| Hardness as CaCO <sub>3</sub> .....   |     | Color .....                     |     |

## Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 68   | 34   | 34   | 33   | 37   | 50   | 68  | 68   | 72   | 76   | 70    |
| 2       | --   | 65   | 35   | 32   | 37   | 41   | 47   | 60  | 72   | 75   | 77   | 70    |
| 3       | --   | 63   | 36   | 34   | 35   | 41   | 45   | 50  | 74   | --   | 76   | 73    |
| 4       | --   | 64   | 41   | 34   | 39   | --   | 38   | 52  | 74   | 80   | 76   | 70    |
| 5       | --   | 62   | 40   | 34   | 37   | 42   | 41   | 57  | --   | --   | 76   | 60    |
| 6       | --   | 59   | 43   | 37   | 37   | 41   | 42   | 62  | 75   | 74   | 69   | 62    |
| 7       | --   | --   | 42   | 33   | 39   | 40   | 45   | --  | 72   | 76   | 69   | 71    |
| 8       | --   | 57   | 46   | 36   | 43   | 39   | 44   | 70  | 59   | 70   | 72   | 70    |
| 9       | --   | 54   | 38   | 36   | 38   | 36   | 46   | 65  | 72   | --   | 72   | 70    |
| 10      | --   | 50   | 38   | 32   | 38   | 43   | 47   | 69  | 75   | --   | 75   | 65    |
| 11      | --   | 50   | 34   | 35   | 38   | 36   | 54   | 61  | 79   | --   | 80   | 71    |
| 12      | --   | 57   | 44   | 32   | 37   | 48   | 48   | 65  | 69   | --   | 70   | 72    |
| 13      | --   | 57   | 45   | 32   | 39   | 50   | 45   | --  | 78   | --   | 69   | 70*   |
| 14      | 64   | 56   | 41   | 32   | 36   | 52   | 42   | 63  | 75   | --   | 72   | --    |
| 15      | --   | 58   | 44   | 35   | 39   | 48   | 42   | 63  | 84   | --   | 73   | --    |
| 16      | 65   | 56   | 45   | 36   | 36   | 47   | 43   | --  | --   | --   | 73   | 70    |
| 17      | 68   | 54   | 45   | 40   | --   | 49   | 47   | --  | 84   | --   | 70   | --    |
| 18      | 66   | 52   | 42   | 35   | 39   | 48   | 50   | --  | 84   | --   | 69   | --    |
| 19      | 64   | 50   | 33   | 36   | 38   | 44   | 50   | --  | 74   | --   | 67   | --    |
| 20      | 61   | 53   | 43   | 34   | 36   | 44   | 50   | 54  | 74   | --   | 69   | --    |
| 21      | 64   | 52   | 44   | 35   | 43   | 50   | 62   | 57  | --   | --   | 68   | 74    |
| 22      | 64   | 50   | 45   | 38   | 45   | 49   | 62   | 58  | --   | --   | 70   | 76    |
| 23      | 69   | 53   | 44   | 34   | 44   | 49   | 50   | --  | --   | --   | 70   | 67    |
| 24      | 65   | 53   | 45   | 32   | 44   | 47   | 67   | --  | --   | --   | 70   | 63    |
| 25      | 57   | 64   | 41   | 37   | 48   | 45   | --   | 72  | --   | --   | 72   | 64    |
| 26      | 54   | 64   | 38   | 34   | 45   | 43   | --   | 79  | --   | --   | 69   | 64    |
| 27      | 57   | 48   | 39   | 36   | 42   | 43   | 60   | 65  | --   | --   | 70   | 59    |
| 28      | 59   | 44   | 39   | 37   | 36   | 42   | 61   | 71  | --   | --   | 65   | 64    |
| 29      | 60   | 37   | 39   | 36   | --   | 44   | 68   | 74  | 74   | --   | 69   | 58    |
| 30      | 63   | 33   | 34   | 36   | --   | 50   | 67   | 74  | 76   | --   | 68   | 55    |
| 31      | 62   | --   | 34   | 35   | --   | 50   | --   | 78  | --   | 79   | 70   | --    |
| Average | --   | 55   | 40   | 35   | 39   | 45   | 50   | --  | --   | --   | 71   | --    |

## SUSQUEHANNA RIVER BASIN--Continued

## MARSH CREEK AT BLANCHARD, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 15                   |                          |              | 49                   | 15                       | s 3.1        | 32                   | 1                        | 0.1          |
| 2.....  | 14                   | 1                        | (t)          | 207                  | 101                      | s 61         | 28                   | 3                        | .2           |
| 3.....  | 14                   |                          |              | 180                  | 32                       | 16           | 30                   | 14                       | 1.1          |
| 4.....  | 39                   | 30                       | s 3.2        | 142                  | 14                       | 5.4          | 29                   | --                       | a 6          |
| 5.....  | 26                   | --                       | a 7          | 110                  | 11                       | 3.3          | 26                   | 3                        | .2           |
| 6.....  | 20                   |                          |              | 89                   | 11                       | 2.6          | 26                   |                          |              |
| 7.....  | 29                   |                          |              | 77                   | 7                        | 1.5          | 29                   | 5                        | .4           |
| 8.....  | 23                   | 2                        | .1           | 65                   | 5                        | .9           | 35                   | 6                        | s 6          |
| 9.....  | 22                   |                          |              | 52                   | 9                        | 1.3          | 85                   | 18                       | 4.1          |
| 10..... | 20                   | 0                        | 0            | 47                   |                          |              | 102                  | 7                        | 1.9          |
| 11..... | 19                   | 0                        | 0            | 42                   |                          |              | 104                  | 6                        | 1.7          |
| 12..... | 19                   | 0                        | 0            | 38                   | 6                        | .6           | 102                  | 8                        | 2.2          |
| 13..... | 18                   | 1                        | (t)          | 33                   |                          |              | 94                   | 8                        | 2.0          |
| 14..... | 18                   | 2                        | .1           | 29                   |                          |              | 149                  | 48                       | s 24         |
| 15..... | 17                   | 3                        | .1           | 27                   |                          |              | 198                  | 33                       | 18           |
| 16..... | 16                   | 4                        | .2           | 31                   | --                       | a 4          | 185                  | 21                       | 10           |
| 17..... | 16                   | 2                        | .1           | 27                   | 4                        | .3           | 154                  | 19                       | 7.9          |
| 18..... | 15                   | 0                        | 0            | 23                   | --                       | a 2          | 127                  | 16                       | 5.5          |
| 19..... | 14                   | 5                        | .2           | 23                   | 4                        | .2           | 100                  |                          |              |
| 20..... | 14                   | 4                        | .2           | 23                   | 3                        | .2           | 89                   | 6                        | 1.5          |
| 21..... | 14                   | 7                        | .3           | 34                   | 12                       | s 1.7        | 104                  | 16                       | 4.5          |
| 22..... | 14                   | 8                        | .3           | 44                   | 9                        | 1.1          | 147                  | 40                       | s 17         |
| 23..... | 73                   | 70                       | s 18         | 35                   |                          |              | 190                  | 33                       | 17           |
| 24..... | 50                   | 8                        | 1.1          | 40                   |                          |              | 201                  | 34                       | 18           |
| 25..... | 45                   | 4                        | .5           | 44                   | 6                        | .6           | 167                  | 18                       | 8.1          |
| 26..... | 43                   | 4                        | .5           | 40                   |                          |              | 140                  | 13                       | 4.9          |
| 27..... | 50                   | 9                        | 1.2          | 38                   |                          |              | 125                  | 10                       | 3.4          |
| 28..... | 43                   | 4                        | .5           | 35                   | 12                       | 1.1          | 108                  |                          |              |
| 29..... | 38                   | 10                       | 1.0          | 34                   | --                       | a 6          | 94                   |                          |              |
| 30..... | 35                   | 10                       | .9           | 31                   | 2                        | .2           | 78                   | 10                       | 2.4          |
| 31..... | 36                   | 6                        | .6           | --                   | --                       | --           | 73                   |                          |              |
| Total.  | 829                  | --                       | 30.3         | 1,689                | --                       | 107.7        | 3,151                | --                       | 166.2        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         | January              |                          |              | February             |                          |              | March                |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....  | 58                   | 12                       | 1.9          | 57                   | 3                        | 0.4          | 129                  | 12                       | 3.6          |
| 2.....  | 56                   |                          |              | 52                   |                          |              | 110                  |                          |              |
| 3.....  | 47                   | 27                       | 3.6          | 50                   |                          |              | 93                   | --                       | a 2.5        |
| 4.....  | 47                   |                          |              | 92                   |                          |              | 78                   |                          |              |
| 5.....  | 42                   | 14                       | 1.6          | 80                   |                          |              | 70                   |                          |              |
| 6.....  | 39                   |                          |              | 77                   | 7                        | 1.5          | 65                   |                          |              |
| 7.....  | 36                   |                          |              | 80                   |                          |              | 62                   |                          |              |
| 8.....  | 33                   |                          |              | 78                   |                          |              | 66                   | 26                       | 4.6          |
| 9.....  | 32                   | 6                        | .6           | 97                   | 48                       | s 14         | 70                   |                          |              |
| 10..... | 33                   |                          |              | 145                  | 43                       | 17           | 62                   |                          |              |
| 11..... | 30                   |                          |              | 150                  | 23                       | 9.3          | 60                   |                          |              |
| 12..... | 24                   | 23                       | 1.5          | 127                  | 19                       | 6.5          | 90                   | 57                       | s 16         |
| 13..... | 22                   | 21                       | 1.2          | 114                  | 14                       | 4.3          | 146                  | 60                       | s 28         |
| 14..... | 17                   | --                       | b 8          | 96                   |                          |              | 190                  | 50                       | 26           |
| 15..... | 17                   |                          |              | 80                   | 7                        | 1.7          | 253                  | 138                      | s 104        |
| 16..... | 16                   |                          |              | 70                   | 8                        | 1.5          | 249                  | 62                       | 42           |
| 17..... | 16                   |                          |              | 62                   | --                       | a 1.3        | 189                  | 33                       | 17           |
| 18..... | 15                   | 5                        | .2           | 54                   |                          |              | 150                  | 25                       | 10           |
| 19..... | 15                   |                          |              | 50                   |                          |              | 124                  |                          |              |
| 20..... | 15                   |                          |              | 45                   | 8                        | 1.0          | 109                  | 14                       | 4.0          |
| 21..... | 16                   |                          |              | 38                   |                          |              | 89                   |                          |              |
| 22..... | 22                   | 8                        | s 9          | 34                   |                          |              | 78                   |                          |              |
| 23..... | 150                  | 152                      | 62           | 33                   | 6                        | .5           | 69                   |                          |              |
| 24..... | 220                  | 24                       | 14           | 32                   | 10                       | .9           | 63                   | 25                       | 4.4          |
| 25..... | 160                  | 50                       | 22           | 35                   |                          |              | 57                   |                          |              |
| 26..... | 112                  | --                       | a 5.1        | 96                   | 73                       | s 31         | 57                   |                          |              |
| 27..... | 85                   | 15                       | 3.4          | 172                  | 43                       | 20           | 89                   | 14                       | s 3.4        |
| 28..... | 72                   | --                       | a 1.9        | 147                  | 15                       | 6            | 97                   | 6                        | 1.6          |
| 29..... | 87                   | 12                       | 2.8          | --                   | --                       | --           | 107                  |                          |              |
| 30..... | 72                   | 4                        | .8           | --                   | --                       | --           | 111                  | 23                       | 6.6          |
| 31..... | 60                   | 5                        | .8           | --                   | --                       | --           | 103                  |                          |              |
| Total.  | 1,666                | --                       | 136.5        | 2,243                | --                       | 130.3        | 3,285                | --                       | 347.3        |

s Computed by subdividing day.  
t Less than 0.05 ton.

a Computed from partly estimated concentration graph.  
b Computed from estimated concentration graph.

## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## SUSQUEHANNA RIVER BASIN--Continued

## MARSH CREEK AT BLANCHARD, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 104                  | 14                       | s 4.2        | 76                   | 6                        | 1.2          | 12                   | 10                       | 0.3          |
| 2.....  | 261                  | 75                       | 53           | 66                   |                          |              | 11                   |                          |              |
| 3.....  | 249                  | 27                       | 18           | 60                   |                          |              | 11                   |                          |              |
| 4.....  | 233                  | 22                       | 14           | 54                   |                          |              | 10                   |                          |              |
| 5.....  | 291                  | 36                       | s 34         | 49                   |                          |              | 10                   |                          |              |
| 6.....  | 715                  | 167                      | 323          | 44                   | 4                        | .5           | 11                   | --                       | a.2          |
| 7.....  | 676                  | 175                      | 320          | 37                   |                          |              | 12                   |                          |              |
| 8.....  | 777                  | 197                      | s 428        | 34                   |                          |              | 11                   |                          |              |
| 9.....  | 772                  | 139                      | s 313        | 31                   |                          |              | 10                   |                          |              |
| 10..... | 429                  | 55                       | 64           | 28                   |                          |              | 8.9                  |                          |              |
| 11..... | 278                  | 17                       | 7.6          | 27                   | 5                        | .4           | 9.3                  | 38                       | s 2.2        |
| 12..... | 215                  |                          |              | 26                   |                          |              | 19                   |                          |              |
| 13..... | 171                  |                          |              | 24                   |                          |              | 19                   |                          |              |
| 14..... | 133                  |                          |              | 27                   |                          |              | 25                   |                          |              |
| 15..... | 107                  |                          |              | 38                   |                          |              | 13                   |                          |              |
| 16..... | 89                   | 15                       | 3.7          | 24                   | 5                        | .3           | 10                   | 12                       | .3           |
| 17..... | 78                   |                          |              | 22                   |                          |              | 9.3                  |                          |              |
| 18..... | 99                   |                          |              | 22                   |                          |              | 8.0                  |                          |              |
| 19..... | 89                   |                          |              | 22                   |                          |              | 7.3                  |                          |              |
| 20..... | 93                   |                          |              | 25                   |                          |              | 7.3                  |                          |              |
| 21..... | 99                   | 25                       | 9.2          | 24                   | 8                        | .4           | 6.9                  | 17                       | s.6          |
| 22..... | 95                   |                          |              | 22                   |                          |              | 6.2                  |                          |              |
| 23..... | 151                  |                          |              | 21                   |                          |              | 5.9                  |                          |              |
| 24..... | 148                  |                          |              | 19                   |                          |              | 8.8                  |                          |              |
| 25..... | 133                  |                          |              | 17                   |                          |              | 22                   |                          |              |
| 26..... | 124                  | 8                        | 2.1          | 17                   | 6                        | .2           | 9.8                  | 5                        | .1           |
| 27..... | 127                  |                          |              | 15                   |                          |              | 8.4                  |                          |              |
| 28..... | 105                  |                          |              | 14                   |                          |              | 8.4                  |                          |              |
| 29..... | 95                   |                          |              | 14                   |                          |              | 16                   |                          |              |
| 30..... | 85                   |                          |              | 12                   |                          |              | 11                   |                          |              |
| 31..... | --                   | --                       | --           | 12                   |                          |              | --                   |                          |              |
| Total.  | 7,021                | --                       | 1,691.3      | 923                  | --                       | 13.5         | 333.5                | --                       | 21.7         |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 8.9                  | 7                        | 0.1          | 1.8                  | 8                        | (t)          | 1.4                  | 10                       | (t)          |
| 2.....  | 7.3                  |                          |              | 1.7                  |                          |              | 1.3                  |                          |              |
| 3.....  | 6.9                  |                          |              | 1.7                  |                          |              | 1.3                  |                          |              |
| 4.....  | 6.9                  |                          |              | 2.1                  |                          |              | 1.2                  |                          |              |
| 5.....  | 7.6                  |                          |              | 2.3                  |                          |              | 1.1                  |                          |              |
| 6.....  | 6.6                  | 54                       | s 2.1        | 1.8                  | 6                        | (t)          | 1.0                  | 8                        | a (t)        |
| 7.....  | 5.9                  |                          |              | 1.7                  |                          |              | .9                   |                          |              |
| 8.....  | 6.2                  |                          |              | 1.4                  |                          |              | .8                   |                          |              |
| 9.....  | 14                   |                          |              | 1.4                  |                          |              | .9                   |                          |              |
| 10..... | 6.6                  |                          |              | 1.5                  |                          |              | 1.0                  |                          |              |
| 11..... | 5.5                  | 12                       | .2           | 1.5                  | 40                       | s 1.1        | 1.7                  | 6                        | (t)          |
| 12..... | 4.8                  |                          |              | 1.4                  |                          |              | 2.3                  |                          |              |
| 13..... | 5.2                  |                          |              | 1.5                  |                          |              | 2.5                  |                          |              |
| 14..... | 10                   |                          |              | 1.4                  |                          |              | 2.5                  |                          |              |
| 15..... | 5.5                  |                          |              | 7.6                  |                          |              | 3.2                  |                          |              |
| 16..... | 4.5                  | 7                        | .1           | 4.8                  | 12                       | .2           | 10                   | 39                       | s 1.1        |
| 17..... | 3.9                  |                          |              | 3.2                  |                          |              | 4.5                  |                          |              |
| 18..... | 3.2                  |                          |              | 2.1                  |                          |              | 2.7                  |                          |              |
| 19..... | 3.2                  |                          |              | 2.4                  |                          |              | 2.3                  |                          |              |
| 20..... | 2.9                  |                          |              | 11                   |                          |              | 2.9                  |                          |              |
| 21..... | 2.7                  | 7                        | .1           | 4.5                  | 12                       | .1           | 5.5                  | 47                       | s 1.6        |
| 22..... | 2.7                  |                          |              | 3.5                  |                          |              | 4.6                  |                          |              |
| 23..... | 5.5                  |                          |              | 2.5                  |                          |              | 12                   |                          |              |
| 24..... | 4.5                  |                          |              | 2.1                  |                          |              | 5.9                  |                          |              |
| 25..... | 2.9                  |                          |              | 1.9                  |                          |              | 4.2                  |                          |              |
| 26..... | 2.7                  | 9                        | (t)          | 1.9                  | 9                        | (t)          | 3.2                  | 9                        | .1           |
| 27..... | 2.7                  |                          |              | 1.8                  |                          |              | 2.7                  |                          |              |
| 28..... | 2.7                  |                          |              | 1.5                  |                          |              | 2.5                  |                          |              |
| 29..... | 2.5                  |                          |              | 1.4                  |                          |              | 2.3                  |                          |              |
| 30..... | 2.3                  |                          |              | 1.5                  |                          |              | 2.3                  |                          |              |
| 31..... | 1.9                  |                          |              | 1.5                  |                          |              | --                   |                          |              |
| Total.  | 158.7                | --                       | 6.1          | 78.4                 | --                       | 3.9          | 90.7                 | --                       | 4.6          |

Total discharge for year (cfs-days)..... 21,468.3

Total load for year (tons)..... 2,659.4

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

t Less than 0.05 ton.

b Computed from estimated concentration graph.

SUSQUEHANNA RIVER BASIN--Continued

WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA.

LOCATION.--At gaging station at Market Street Bridge at Buffalo Creek and 7.4 miles upstream from mouth.

DRAINAGE AREA.--6,847 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, October 1956 to September 1957.

Water temperatures: October 1944 to June 1953, October 1956 to September 1957.

EXTREMES, 1956-57.--Hardness: Maximum, 156 ppm Aug. 26 to Sept. 6; minimum, 36 ppm Mar. 17 to Apr. 5, 7-16.

Specific conductance: Maximum daily, 423 microhos Aug. 26; minimum daily, 63 microhos Nov. 3.

Water temperatures: Maximum, 82°F June 25, July 22; minimum, freezing point on many days during the winter months.

EXTREMES, 1944-53, 1956-57.--Dissolved solids (1944-47): Maximum, 219 ppm Oct. 1-10, 1944; minimum, 46 ppm May 1-10, 1945.

Hardness: Maximum, 156 ppm Oct. 1-10, 1951 Aug. 26 to Sept. 6, 1957; minimum, 26 ppm May 21-31, 1946.

Specific conductance: Maximum daily, 423 microhos Aug. 26, 1957; minimum daily, 63 microhos Nov. 3, 1956.

Water temperatures: Maximum, 90°F July 28, Aug. 10, 1949; minimum, freezing point on many days during the winter months.

REMARKS.--Records of specific conductance of daily samples available in district office in Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium magnesium             | Non-carbonate |                                         |     |       |
| Oct. 1-10, 1956 .....      | 4,570                | 7.7                        | 0.00      | 18           | 5.6            | 7.1         | 7.1           | 19                              | 57                         | 4.8           | 0.1          | 1.8                        | 110                                                | 68                            | 52            | 180                                     | 7.3 | 2     |
| Nov. 11-20 .....           | 7,850                | --                         | --        | --           | --             | 5.5         | 5.5           | 18                              | 36                         | 3.5           | --           | 2.0                        | --                                                 | 47                            | 32            | 128                                     | 7.1 | 5     |
| Dec. 21-30 .....           | 24,900               | 8.1                        | .00       | 10           | 3.5            | 2.8         | 1.2           | 9                               | 31                         | 2.8           | .1           | 3.1                        | 78                                                 | 40                            | 32            | 108                                     | 6.3 | 3     |
| Jan. 11-20, 1957 .....     | 4,570                | 9.5                        | .01       | 20           | 5.4            | 5.3         | 1.3           | 21                              | 55                         | 5.3           | .1           | 5.0                        | 104                                                | 72                            | 55            | 190                                     | 6.7 | 4     |
| Feb. 1-10 .....            | 11,700               | 8.6                        | .01       | 14           | 4.5            | 3.1         | 1.0           | 9                               | 41                         | 3.3           | .1           | 4.1                        | 91                                                 | 54                            | 46            | 136                                     | 6.5 | 3     |
| Mar. 1-9 .....             | 17,000               | --                         | --        | --           | --             | 4.4         | 4.4           | 11                              | 31                         | 2.9           | --           | 1.5                        | --                                                 | 37                            | 28            | 105                                     | 6.4 | 5     |
| Mar. 10-15 .....           | 13,000               | --                         | --        | --           | --             | 5.1         | 5.1           | 14                              | 37                         | 3.8           | --           | 2.0                        | --                                                 | 46                            | 34            | 132                                     | 6.9 | 4     |
| Mar. 17-Apr. 5, 7-16 ..... | 30,900               | --                         | --        | --           | --             | 4.4         | 4.4           | 10                              | 31                         | 2.6           | --           | 1.6                        | --                                                 | 36                            | 28            | 108                                     | 6.5 | 4     |
| Apr. 17-May 5 .....        | 20,500               | --                         | --        | --           | --             | 4.6         | 4.6           | 20                              | 26                         | 2.1           | --           | 1.9                        | --                                                 | 38                            | 30            | 105                                     | 7.5 | 2     |
| May 6-11 .....             | 8,270                | --                         | --        | --           | --             | 4.4         | 4.4           | 16                              | 38                         | 2.8           | --           | 1.4                        | --                                                 | 48                            | 35            | 133                                     | 7.0 | 3     |
| May 12, 14-15, 17-22 ..... | 7,220                | --                         | --        | --           | --             | 6.7         | 6.7           | 22                              | 50                         | 3.5           | --           | 1.6                        | --                                                 | 62                            | 44            | 173                                     | 7.1 | 2     |
| May 23-June 6 .....        | 6,200                | --                         | --        | --           | --             | 4.6         | 4.6           | 20                              | 43                         | 3.4           | --           | 1.9                        | --                                                 | 58                            | 42            | 146                                     | 7.1 | 3     |
| June 7-15 .....            | 3,500                | --                         | --        | --           | --             | 4.6         | 4.6           | 24                              | 56                         | 5.0           | --           | 3.8                        | --                                                 | 78                            | 59            | 188                                     | 7.3 | 2     |
| June 16-July 1 .....       | 3,290                | --                         | --        | --           | --             | 11          | 1.4           | 20                              | 70                         | 5.6           | --           | 3.9                        | --                                                 | 76                            | 60            | 215                                     | 7.1 | 2     |
| July 2-19 .....            | 2,540                | 6.8                        | .04       | 24           | 6.5            | 4.5         | 1.4           | 20                              | 71                         | 5.6           | .1           | 2.7                        | 140                                                | 87                            | 70            | 215                                     | 7.0 | 3     |
| July 20-Aug. 13 .....      | 1,260                | --                         | --        | --           | --             | 16          | 16            | 44                              | 84                         | 8.4           | --           | 2.9                        | --                                                 | 104                           | 68            | 289                                     | 7.2 | 3     |
| Aug. 14-25 .....           | 977                  | --                         | --        | --           | --             | 18          | 18            | 42                              | 111                        | 13            | --           | 3.2                        | --                                                 | 132                           | 98            | 356                                     | 6.9 | 2     |
| Aug. 26-Sept. 6 .....      | 860                  | --                         | --        | --           | --             | 14          | 14            | 47                              | 120                        | 15            | --           | 3.2                        | --                                                 | 156                           | 118           | 392                                     | 6.9 | 3     |
| Sept. 7-30 .....           | 1,050                | --                         | --        | --           | --             | 16          | 16            | 46                              | 106                        | 8.0           | --           | 10                         | --                                                 | 132                           | 95            | 360                                     | 7.0 | 2     |
| Weighted-Average .....     | 9,600                | --                         | --        | --           | --             | 9.2         | 9.2           | 25                              | 61                         | 5.5           | --           | 3.3                        | --                                                 | 76                            | 48            | 202                                     | --  | 3     |



## NORTH ATLANTIC SLOPE BASINS, NEW YORK TO YORK RIVER

## SUSQUEHANNA RIVER BASIN--Continued

## WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 60   | 55   | 35   | 32   | --   | 35   | 45   | --  | 69   | 70   | 80   | 70    |
| 2       | 60   | 50   | 35   | 31   | --   | --   | 50   | 60  | 70   | 70   | 75   | 70    |
| 3       | 65   | 55   | 35   | 31   | --   | 35   | 45   | 59  | 65   | 70   | 74   | 74    |
| 4       | 60   | 55   | 35   | 31   | --   | --   | 42   | 55  | 69   | 72   | --   | 75    |
| 5       | 58   | 55   | 35   | 31   | --   | --   | 40   | 55  | 70   | 75   | 74   | 70    |
| 6       | 55   | 52   | 38   | --   | --   | 35   | --   | 54  | 70   | 70   | 65   | 65    |
| 7       | 55   | 50   | 40   | 31   | --   | --   | 45   | 55  | 70   | 75   | 70   | 70    |
| 8       | 58   | 50   | 40   | 31   | --   | 32   | --   | 56  | 70   | 75   | 70   | 70    |
| 9       | 59   | 48   | 40   | 31   | --   | 35   | 40   | 60  | 60   | 75   | 72   | 65    |
| 10      | 55   | 45   | 40   | 35   | --   | 35   | 40   | 63  | 65   | 74   | --   | 65    |
| 11      | 50   | 42   | 35   | 31   | --   | 31   | --   | 65  | 70   | 70   | 70   | 70    |
| 12      | 50   | 44   | 40   | 31   | --   | 36   | 45   | 63  | 72   | 70   | 74   | 70    |
| 13      | 50   | 40   | 40   | 31   | --   | 40   | 42   | --  | 75   | 75   | 70   | 70    |
| 14      | 50   | 40   | 40   | 31   | --   | 40   | 40   | 65  | 72   | 74   | 70   | 70    |
| 15      | 50   | 40   | 40   | 31   | 35   | 45   | 40   | 65  | 75   | 75   | 75   | 70    |
| 16      | 50   | 45   | 40   | 31   | 35   | --   | 40   | --  | 80   | 72   | 75   | 70    |
| 17      | 58   | 42   | 40   | 31   | 35   | 45   | 45   | 65  | 80   | 74   | 70   | 70    |
| 18      | 55   | 48   | 40   | 31   | 35   | 42   | 45   | 65  | 80   | 75   | 70   | 65    |
| 19      | 50   | 40   | 40   | 31   | 35   | 42   | 45   | 65  | 80   | 75   | 70   | --    |
| 20      | 58   | 40   | 48   | 31   | 35   | 42   | 50   | 60  | 75   | 76   | 70   | 70    |
| 21      | 58   | 41   | 49   | 32   | 35   | 40   | 55   | 58  | 70   | 80   | 65   | 70    |
| 22      | 55   | 40   | 40   | 35   | --   | 40   | 55   | 56  | 75   | 82   | 68   | 70    |
| 23      | 56   | 35   | 42   | 35   | 32   | 40   | --   | 52  | 80   | 80   | 68   | 70    |
| 24      | 55   | 38   | 42   | 31   | 36   | 43   | 60   | 60  | 80   | 70   | 70   | 65    |
| 25      | 59   | --   | 41   | 31   | 40   | 44   | --   | 60  | 82   | 70   | 70   | 64    |
| 26      | 54   | 38   | 40   | 31   | 40   | 40   | --   | 65  | 75   | 70   | 70   | 65    |
| 27      | 58   | --   | 40   | --   | 42   | 45   | 80   | 68  | 75   | 73   | 70   | 60    |
| 28      | 55   | 35   | 40   | 31   | 38   | 45   | --   | 62  | 78   | 74   | 68   | 51    |
| 29      | --   | 35   | 35   | 40   | --   | 44   | 56   | 64  | 73   | 75   | 70   | 55    |
| 30      | 52   | 35   | 38   | 31   | --   | 45   | --   | 65  | 70   | 80   | 70   | 55    |
| 31      | 55   | --   | 38   | 31   | --   | 40   | --   | 65  | --   | 80   | 70   | --    |
| Average | 55   | 43   | 39   | 32   | --   | 40   | --   | 61  | 73   | 74   | 71   | 67    |

## SUSQUEHANNA RIVER BASIN--Continued

## JUNIATA RIVER AT NEWPORT, PA.

LOCATION.--At gaging station at highway bridge at Newport, Perry County, 1,000 feet upstream from Little Buffalo Creek, and 230 feet from west bank of river. DRAINAGE AREA.--3,354 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, February 1956 to September 1957.

Water temperatures: October 1944 to June 1953.

Sediment records: January 1951 to September 1957.

EXTREMES, 1956-57.--Specific conductance: Maximum daily, 445 micromhos Sept. 3, 11; minimum daily, 112 micromhos Nov. 2. Sediment concentrations: Maximum daily, 529 ppm Nov. 2; minimum daily, 0 ppm on many days during the year.

Sediment loads: Maximum daily, 36,200 tons Nov. 2; minimum daily, 0 tons many days during the year.

EXTREMES, 1944-53, 1956-57.--Dissolved solids (1944-47, 1949-51): Maximum 282 ppm Oct. 10, 1944; minimum, 74 ppm Feb. 11-20, 1950.

Hardness (1944-47, 1949-53): Maximum, 170 ppm Nov. 1-10, 1952; minimum, 14 ppm Feb. 21-28, Apr. 1-10, 1951.

Specific conductance: Maximum daily, 465 micromhos Oct. 1, 1944; minimum daily, 74 micromhos Nov. 25, 1950.

Water temperatures: Maximum daily, 89°F July 22, 1952; minimum, freezing point on many days during winter months.

Sediment concentrations (1944-53): Maximum, 89°F July 22, 1952; minimum, 1,130 ppm Mar. 2, 1954; minimum daily, 0 ppm many days.

Sediment loads (1951-57): Maximum daily, 128,000 tons Mar. 2, 1954; minimum daily, 0 tons many days.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP1502.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956    | 1,290                | 2.8                        | 0.00      | 35           | 9.1            | 13          | 1.8           | 110                             | 46                         | 13            | 0.1          | 2.7                        | 194                                                | 125                           | 35            | 317                                       | 7.8 | 3     |
| Oct. 11-20         | 1,060                | 1.8                        | 0.03      | 35           | 11             | 13          | 2.3           | 112                             | 48                         | 13            | 0.1          | 1.9                        | 187                                                | 133                           | 41            | 317                                       | 7.6 | 4     |
| Nov. 21-30         | 1,960                | 3.7                        | 0.08      | 28           | 8.6            | 9.6         | 1.6           | 91                              | 38                         | 8.1           | 0.1          | 3.4                        | 147                                                | 105                           | 31            | 248                                       | 7.6 | 3     |
| Dec. 20-31         | 3,300                | 6.9                        | 0.05      | 17           | 4.7            | 2.9         | 1.3           | 47                              | 22                         | 3.2           | 0.1          | 4.9                        | 102                                                | 62                            | 23            | 142                                       | 7.2 | 4     |
| Jan. 1-10, 1957    | 3,600                | 6.1                        | 0.08      | 23           | 6.8            | 3.4         | 1.3           | 69                              | 29                         | 4.3           | 0.1          | 6.0                        | 125                                                | 83                            | 29            | 192                                       | 7.6 | 4     |
| Feb. 1-10          | 5,470                | 6.1                        | 0.06      | 19           | 5.3            | 4.0         | 1.8           | 52                              | 25                         | 4.6           | 0.1          | 4.4                        | 108                                                | 69                            | 27            | 163                                       | 7.3 | 4     |
| Mar. 1-10          | 6,440                | --                         | --        | --           | --             | --          | 6.7           | 50                              | 23                         | 4.5           | --           | 3.8                        | --                                                 | 60                            | 34            | 150                                       | 8.0 | 3     |
| Apr. 1-10          | 17,000               | 1.5                        | 0.01      | 17           | 5.0            | 3.3         | 1.5           | 48                              | 25                         | 3.9           | 0.1          | 3.9                        | 87                                                 | 63                            | 24            | 151                                       | 6.9 | 2     |
| May 1-10           | 4,080                | --                         | --        | --           | --             | 15          | 1.6           | 68                              | 33                         | 4.6           | --           | 2.9                        | 11                                                 | 66                            | 11            | 201                                       | 6.9 | 2     |
| May 21-23, 25-31   | 2,120                | 2.8                        | 0.01      | 28           | 7.0            | 9.0         | 1.3           | 88                              | 39                         | 7.6           | 0.0          | 2.4                        | 158                                                | 99                            | 27            | 257                                       | 7.6 | 3     |
| June 1-10          | 1,410                | --                         | --        | --           | --             | 15          | 1.8           | 104                             | 47                         | 8.7           | --           | 2.5                        | --                                                 | 120                           | 35            | 286                                       | 6.6 | 3     |
| July 11-20         | 999                  | 1.9                        | 0.01      | 29           | 8.0            | 15          | 1.8           | 88                              | 54                         | 9.7           | 0.1          | 1.4                        | 171                                                | 106                           | 34            | 283                                       | 7.9 | 2     |
| Aug. 1-10          | 662                  | --                         | --        | --           | --             | 19          | --            | 108                             | 66                         | 16            | --           | 0.6                        | --                                                 | 138                           | 50            | 351                                       | 7.4 | 3     |
| Sept. 1-10         | 433                  | --                         | --        | --           | --             | 28          | --            | 130                             | 71                         | 21            | --           | 0.5                        | --                                                 | 150                           | 44            | 415                                       | 7.5 | 7     |
| Sept. 11-20        | 599                  | 2.4                        | 0.02      | 34           | 16             | 32          | 2.3           | 130                             | 79                         | 24            | 0.1          | 0.2                        | 259                                                | 151                           | 45            | 434                                       | 8.1 | 8     |
| Sept. 21-30        | 610                  | --                         | --        | --           | --             | 28          | --            | 126                             | 72                         | 23            | --           | 0.5                        | --                                                 | 150                           | 47            | 409                                       | 7.7 | 7     |

## SUSQUEHANNA RIVER BASIN--Continued

## JUNIATA RIVER AT NEWPORT, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 886                   | 0                         | 0            | 3,050                 | 29                        | s 275        | 1,690                 | 6                         | 26           |
| 2.....  | 1,020                 |                           |              | 23,900                | 529                       | s 36,200     | 1,630                 |                           |              |
| 3.....  | 1,120                 |                           |              | 15,800                | 150                       | 6,410        | 1,610                 |                           |              |
| 4.....  | 1,070                 |                           |              | 10,300                | 76                        | 2,120        | 1,610                 |                           |              |
| 5.....  | 1,160                 |                           |              | 7,160                 | 30                        | 580          | 1,590                 |                           |              |
| 6.....  | 1,610                 | 0                         | 0            | 5,740                 | 28                        | 434          | 1,610                 | 8                         | 53           |
| 7.....  | 1,840                 | 0                         | 0            | 4,810                 | 23                        | 299          | 1,590                 |                           |              |
| 8.....  | 1,430                 | 2                         | 7            | 4,420                 | 23                        | 274          | 1,550                 |                           |              |
| 9.....  | 1,370                 |                           |              | 3,920                 | 21                        | 222          | 1,960                 |                           |              |
| 10..... | 1,350                 |                           |              | 3,550                 | 20                        | 192          | 3,860                 |                           |              |
| 11..... | 1,210                 |                           |              | 3,310                 | 6                         | 41           | 5,470                 | 68                        | 1,000        |
| 12..... | 1,220                 |                           |              | 3,020                 |                           |              | 5,340                 | 37                        | 534          |
| 13..... | 1,060                 |                           |              | 2,720                 |                           |              | 4,940                 | 16                        | 214          |
| 14..... | 1,020                 |                           |              | 2,650                 |                           |              | 6,830                 | 81                        | s 2,050      |
| 15..... | 1,060                 |                           |              | 2,470                 |                           |              | 19,500                | 201                       | s 10,500     |
| 16..... | 978                   | 1                         | 3            | 2,350                 | 6                         | 41           | 23,000                | 106                       | s 6,640      |
| 17..... | 1,010                 |                           |              | 2,380                 |                           |              | 15,800                | 58                        | 2,480        |
| 18..... | 978                   |                           |              | 2,350                 |                           |              | 11,200                | 25                        | 757          |
| 19..... | 1,010                 |                           |              | 2,260                 |                           |              | 8,990                 | 16                        | 336          |
| 20..... | 1,010                 |                           |              | 2,040                 |                           |              | 7,310                 |                           |              |
| 21..... | 916                   | 201                       | s 1,150      | 2,080                 | 6                         | 32           | 7,020                 |                           |              |
| 22..... | 962                   |                           |              | 2,040                 |                           |              | 8,370                 | 17                        | 385          |
| 23..... | 1,980                 |                           |              | 2,190                 |                           |              | 9,310                 | 19                        | 478          |
| 24..... | 11,400                |                           |              | 2,190                 |                           |              | 9,630                 | 18                        | 468          |
| 25..... | 6,160                 |                           |              | 2,020                 |                           |              | 10,300                | 18                        | 516          |
| 26..... | 4,300                 | 31                        | 360          | 1,860                 | 6                         | 32           | 10,300                | 14                        | 390          |
| 27..... | 3,920                 | 18                        | 191          | 1,820                 |                           |              | 9,310                 | 14                        | 352          |
| 28..... | 3,800                 | 15                        | 154          | 1,840                 |                           |              | 8,060                 | 9                         | 196          |
| 29..... | 3,430                 | 10                        | 93           | 1,820                 |                           |              | 7,310                 | 10                        | 198          |
| 30..... | 3,050                 | 13                        | 107          | 1,720                 |                           |              | 6,580                 | 16                        | 285          |
| 31..... | 2,720                 | 12                        | 88           | --                    | --                        | --           | 5,740                 | 16                        | 248          |
| Total.  | 66,050                | --                        | 15,070       | 127,780               | --                        | 47,745       | 219,310               | 00                        | 29,040       |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
|         | January               |                           |              | February              |                           |              | March                 |                           |              |
| 1.....  | 5,340                 | 5                         | 72           | 4,300                 | 3                         | 35           | 7,310                 | 21                        | 415          |
| 2.....  | 4,810                 | 6                         | 78           | 4,300                 |                           |              | 7,310                 | 8                         | 158          |
| 3.....  | 4,300                 | 6                         | 57           | 4,170                 |                           |              | 7,160                 | 8                         | 155          |
| 4.....  | 4,300                 |                           |              | 3,920                 |                           |              | 6,720                 | 8                         | 145          |
| 5.....  | 3,920                 |                           |              | 5,070                 |                           |              | 6,300                 | 8                         | 136          |
| 6.....  | 3,120                 |                           |              | 6,020                 | 20                        | 325          | 5,740                 | 8                         | 123          |
| 7.....  | 2,860                 |                           |              | 6,020                 | 12                        | 195          | 5,340                 |                           |              |
| 8.....  | 3,070                 |                           |              | 5,880                 | 10                        | 159          | 5,340                 |                           |              |
| 9.....  | 3,190                 |                           |              | 6,020                 | 15                        | 244          | 6,300                 |                           |              |
| 10..... | 3,140                 |                           |              | 8,990                 | 42                        | 1,020        | 6,870                 |                           |              |
| 11..... | 3,190                 | 4                         | 32           | 11,600                | 42                        | 1,320        | 6,440                 | 8                         | 137          |
| 12..... | 3,920                 |                           |              | 11,900                | 34                        | 1,090        | 6,160                 |                           |              |
| 13..... | 4,300                 |                           |              | 9,630                 | 24                        | 625          | 6,020                 |                           |              |
| 14..... | 4,040                 |                           |              | 8,060                 | 23                        | 501          | 6,160                 |                           |              |
| 15..... | 3,550                 |                           |              | 6,870                 | 13                        | 241          | 6,440                 |                           |              |
| 16..... | 3,120                 | 85                        | 1,030        | 6,160                 | 11                        | 183          | 7,160                 | 15                        | 290          |
| 17..... | 2,620                 |                           |              | 5,600                 | 5                         | 76           | 7,020                 | 16                        | 304          |
| 18..... | 2,300                 |                           |              | 4,940                 | 4                         | 49           | 6,300                 | 12                        | 188          |
| 19..... | 2,100                 |                           |              | 4,680                 |                           |              | 5,880                 |                           |              |
| 20..... | 2,100                 |                           |              | 4,810                 |                           |              | 5,600                 |                           |              |
| 21..... | 2,300                 |                           |              | 4,420                 |                           |              | 5,470                 |                           |              |
| 22..... | 3,000                 |                           |              | 3,800                 |                           |              | 5,070                 | 6                         | 72           |
| 23..... | 4,500                 | 77                        | 1,870        | 3,430                 | 4                         | 38           | 4,680                 |                           |              |
| 24..... | 8,990                 |                           |              | 3,550                 |                           |              | 4,420                 |                           |              |
| 25..... | 8,370                 |                           |              | 3,430                 |                           |              | 3,920                 |                           |              |
| 26..... | 7,310                 |                           |              | 3,800                 |                           |              | 4,040                 | 10                        | 126          |
| 27..... | 6,720                 | 15                        | 272          | 5,600                 | 20                        | 303          | 4,170                 |                           |              |
| 28..... | 5,600                 | 19                        | 260          | 7,310                 | 19                        | 375          | 4,940                 |                           |              |
| 29..... | 4,940                 |                           |              | --                    | --                        | --           | 5,070                 |                           |              |
| 30..... | 4,810                 |                           |              | --                    | --                        | --           | 4,420                 |                           |              |
| 31..... | 4,940                 |                           |              | --                    | --                        | --           | 4,810                 | 10                        | 130          |
| Total.  | 130,770               | --                        | 6,498        | 164,280               | --                        | 7,594        | 178,580               | --                        | 4,663        |

s Computed by subdividing day.

## SUSQUEHANNA RIVER BASIN--Continued

## JUNIATA RIVER AT NEWPORT, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 4,420                | 11                       | 131          | 5,740                | 25                       | 388          | 1,560                | 3                        | 12           |
| 2.....                                   | 6,440                | 52                       | 905          | 5,200                | 23                       | 323          | 1,400                |                          |              |
| 3.....                                   | 11,600               | 149                      | s 4,710      | 4,800                | 20                       | 259          | 1,380                |                          |              |
| 4.....                                   | 11,600               | 80                       | 2,510        | 4,380                |                          |              | 1,540                |                          |              |
| 5.....                                   | 17,100               | 125                      | s 6,290      | 4,130                |                          |              | 1,320                |                          |              |
| 6.....                                   | 28,800               | 229                      | s 17,800     | 3,870                | 6                        | 60           | 1,480                | 2                        | 8            |
| 7.....                                   | 25,900               | 178                      | 12,500       | 3,430                |                          |              | 1,340                |                          |              |
| 8.....                                   | 20,600               | 90                       | 5,010        | 3,300                |                          |              | 1,240                |                          |              |
| 9.....                                   | 21,700               | 70                       | 4,110        | 3,180                |                          |              | 1,340                |                          |              |
| 10.....                                  | 21,700               | 62                       | 3,640        | 2,880                |                          |              | 1,500                |                          |              |
| 11.....                                  | 16,800               | 45                       | 2,040        | 2,850                | 3                        | 22           | 1,940                | 17                       | 89           |
| 12.....                                  | 13,500               | 35                       | 1,280        | 2,750                |                          |              | 2,070                |                          |              |
| 13.....                                  | 11,000               | 16                       | 476          | 2,530                |                          |              | 2,550                |                          |              |
| 14.....                                  | 9,190                | 11                       | 273          | 2,550                |                          |              | 1,980                |                          |              |
| 15.....                                  | 8,010                | 14                       | 303          | 2,720                |                          |              | 1,780                |                          |              |
| 16.....                                  | 7,000                | 10                       | 181          | 3,080                | 3                        | 21           | 2,070                | 6                        | 33           |
| 17.....                                  | 6,300                |                          |              | 3,020                |                          |              | 2,190                |                          |              |
| 18.....                                  | 6,440                |                          |              | 2,550                |                          |              | 2,260                |                          |              |
| 19.....                                  | 6,860                |                          |              | 2,430                |                          |              | 1,940                |                          |              |
| 20.....                                  | 6,860                |                          |              | 2,360                |                          |              | 1,670                |                          |              |
| 21.....                                  | 6,160                | 16                       | 252          | 2,430                | 4                        | 26           | 1,400                | 4                        | 15           |
| 22.....                                  | 5,980                |                          |              | 2,700                |                          |              | 1,400                |                          |              |
| 23.....                                  | 5,600                |                          |              | 2,650                |                          |              | 1,220                |                          |              |
| 24.....                                  | 5,470                |                          |              | 2,720                |                          |              | 1,050                |                          |              |
| 25.....                                  | 5,740                |                          |              | 2,380                |                          |              | 1,500                |                          |              |
| 26.....                                  | 5,980                |                          |              | 2,220                |                          |              | 3,400                | 49                       | s 537        |
| 27.....                                  | 9,460                | 73                       | s 1,900      | 2,030                |                          |              | 2,850                |                          |              |
| 28.....                                  | 9,190                | 85                       | 2,110        | 1,780                |                          |              | 1,780                |                          |              |
| 29.....                                  | 7,430                | 86                       | 1,730        | 1,760                | 2                        | 9            | 1,820                |                          |              |
| 30.....                                  | 6,440                | 45                       | 783          | 1,650                |                          |              | 2,600                | 32                       | 191          |
| 31.....                                  | --                   | --                       | --           | 1,610                |                          |              | --                   |                          |              |
| Total.                                   | 329,270              | --                       | 70,918       | 91,690               | --                       | 1,780        | 53,570               | --                       | 1,895        |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| Day                                      | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 3,120                | 31                       | 261          | 710                  | 0                        | 0            | 436                  | 0                        | 0            |
| 2.....                                   | 2,120                |                          |              | 645                  |                          |              | 509                  |                          |              |
| 3.....                                   | 1,850                |                          |              | 697                  |                          |              | 416                  |                          |              |
| 4.....                                   | 1,560                |                          |              | 645                  |                          |              | 407                  |                          |              |
| 5.....                                   | 1,260                |                          |              | 599                  |                          |              | 416                  |                          |              |
| 6.....                                   | 1,020                | 2                        | 7            | 599                  | 0                        | 0            | 425                  | 1                        | 1            |
| 7.....                                   | 1,150                |                          |              | 645                  |                          |              | 456                  |                          |              |
| 8.....                                   | 952                  |                          |              | 658                  |                          |              | 446                  |                          |              |
| 9.....                                   | 920                  |                          |              | 671                  |                          |              | 488                  |                          |              |
| 10.....                                  | 1,190                |                          |              | 749                  |                          |              | 530                  |                          |              |
| 11.....                                  | 1,540                | 0                        | 0            | 658                  | 0                        | 0            | 576                  | 0                        | 0            |
| 12.....                                  | 1,340                |                          |              | 576                  |                          |              | 610                  |                          |              |
| 13.....                                  | 1,170                |                          |              | 478                  |                          |              | 576                  |                          |              |
| 14.....                                  | 1,030                |                          |              | 467                  |                          |              | 576                  |                          |              |
| 15.....                                  | 906                  |                          |              | 564                  |                          |              | 634                  |                          |              |
| 16.....                                  | 848                  | 0                        | 0            | 530                  | 0                        | 0            | 610                  | 1                        | 2            |
| 17.....                                  | 906                  |                          |              | 553                  |                          |              | 588                  |                          |              |
| 18.....                                  | 736                  |                          |              | 498                  |                          |              | 542                  |                          |              |
| 19.....                                  | 818                  |                          |              | 446                  |                          |              | 634                  |                          |              |
| 20.....                                  | 697                  |                          |              | 446                  |                          |              | 645                  |                          |              |
| 21.....                                  | 710                  | 2                        | 4            | 327                  | 0                        | 0            | 658                  | 1                        | 1            |
| 22.....                                  | 671                  |                          |              | 488                  |                          |              | 658                  |                          |              |
| 23.....                                  | 671                  |                          |              | 498                  |                          |              | 736                  |                          |              |
| 24.....                                  | 862                  |                          |              | 488                  |                          |              | 818                  |                          |              |
| 25.....                                  | 848                  |                          |              | 456                  |                          |              | 723                  |                          |              |
| 26.....                                  | 818                  | 0                        | 0            | 498                  | 0                        | 0            | 645                  | 1                        | 1            |
| 27.....                                  | 749                  |                          |              | 478                  |                          |              | 446                  |                          |              |
| 28.....                                  | 736                  |                          |              | 478                  |                          |              | 520                  |                          |              |
| 29.....                                  | 645                  |                          |              | 467                  |                          |              | 446                  |                          |              |
| 30.....                                  | 588                  |                          |              | 542                  |                          |              | 446                  |                          |              |
| 31.....                                  | 645                  |                          |              | 467                  |                          |              | --                   |                          |              |
| Total.                                   | 33,076               | --                       | 356          | 17,021               | --                       | 0            | 16,616               | --                       | 27           |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      | 1,428,013                |              |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      | 185,586                  |              |

s Computed by subdividing day.

SUSQUEHANNA RIVER BASIN--Continued  
JUNIATA RIVER AT NEWPORT. PA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 |
| Oct. 24, 1956 ..   | 7:00 a. m.  | 13,400          | --                     | 238                           | 418                                        | 43                                                | 62    | 79    | 93    | 93    | 98    | 100   |       |                     | BWCM  |
| Oct. 24 .....      | 11:15 a. m. | 13,400          | --                     | 348                           | 775                                        | 33                                                | 62    | 80    | 94    | 94    | 98    |       |       |                     | BWCM  |
| Nov. 2 .....       | 6:45 a. m.  | 32,100          | 62                     | 883                           | 1,570                                      | 58                                                | 66    | 84    | 93    | 96    |       |       |       |                     | BWCM  |
| Nov. 2 .....       | 11:45 a. m. | 25,700          | 62                     | 356                           | 788                                        | 40                                                | 57    | 84    | 93    | 97    |       |       |       |                     | BWCM  |
| Dec. 15 .....      | 7:00 a. m.  | 16,000          | 42                     | 151                           | 336                                        | 31                                                | 55    | 72    | 84    | 92    | 97    |       |       |                     | BWCM  |
| Dec. 15 .....      | 11:00 a. m. | 20,000          | 41                     | 228                           | 507                                        | 23                                                | 49    | 69    | 83    | 89    | 96    | 99    |       |                     | BWCM  |
| Dec. 15 .....      | 1:00 a. m.  | 21,200          | 41                     | 232                           | 507                                        | 35                                                | 53    | 64    | 80    | 89    | 95    | 97    |       |                     | BWCM  |
| Dec. 15 .....      | 3:00 p. m.  | 22,600          | 41                     | 258                           | 544                                        | 33                                                | 50    | 68    | 82    | 90    | 95    | 98    |       |                     | BWCM  |
| Dec. 16 .....      | 7:00 a. m.  | 24,500          | 43                     | 144                           | 246                                        | 28                                                | 47    | 61    | 76    | 83    | 91    | 95    |       |                     | BWCM  |
| Jan. 23, 1957 ..   | 5:00 a. m.  | 4,500           | 38                     | 88                            | 197                                        | 42                                                | 53    | 66    | 78    | 87    | 93    | --    |       |                     | BWCM  |
| Apr. 3 .....       | 6:30 a. m.  | 10,300          | 45                     | 114                           | 251                                        | 45                                                | 62    | 74    | 88    | 92    | 95    | --    |       |                     | BWCM  |
| Apr. 3 .....       | 11:00 a. m. | 12,500          | 48                     | 127                           | 289                                        | 28                                                | 45    | 58    | 73    | 82    | 90    | 94    |       |                     | BWCM  |
| Apr. 3 .....       | 3:00 p. m.  | 13,100          | 48                     | 92                            | 202                                        | 34                                                | 48    | 60    | 79    | 89    | 97    | --    |       |                     | BWCM  |
| Apr. 5 .....       | 6:00 p. m.  | 21,200          | 42                     | 141                           | 316                                        | 35                                                | 48    | 59    | 70    | 81    | 89    | 95    |       |                     | BWCM  |
| Apr. 6 .....       | 5:30 a. m.  | 20,300          | 43                     | 142                           | 305                                        | 30                                                | 38    | 50    | 72    | 87    | 90    | 95    |       |                     | BWCM  |

## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.

LOCATION.--At bridge on State Highway 850; 400 feet downstream from gaging station, 2.3 miles upstream from mouth, and 3.6 miles west of Loysville, Perry County.

DRAINAGE AREA.--15.0 square miles.

RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1957.

Sediment records: February 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 85°F July 27; minimum, 35°F Nov. 23 and Jan. 2, 3.

Sediment concentrations: Maximum daily, estimated, 580 ppm Nov. 1; minimum daily, 0 ppm Oct. 29, 30.

Sediment loads: Maximum daily, estimated, 650 tons, Nov. 1; minimum daily, 0 tons Oct. 29, 30.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 986 ppm June 10, 1954; minimum daily, 0 ppm, Oct. 29, 30, 1956.

Sediment loads: Maximum daily, estimated, 650 tons Nov. 1, 1956; minimum daily, 0 tons, Oct. 29, 30, 1956.

REMARKS.--Records of specific conductance and pH of periodic sediment samples available in district office at Philadelphia, Pa. Records of discharge for period October 1956 to September 1957 given in WSP 1502.

## Chemical analysis, in parts per million, Jan. 3, 1957

|                                 |     |                                          |     |
|---------------------------------|-----|------------------------------------------|-----|
| Silica (SiO <sub>2</sub> )      | 6.9 | Nitrate (NO <sub>3</sub> )               | 7.1 |
| Iron (Fe)                       | .02 | Dissolved solids (residue at 180°C)      | 102 |
| Manganese (Mn)                  | .00 | Hardness as CaCO <sub>3</sub>            |     |
| Calcium (Ca)                    | 29  | Calcium, magnesium                       | 86  |
| Magnesium (Mg)                  | 3.4 | Noncarbonate                             | 12  |
| Sodium (Na)                     | 1.1 |                                          |     |
| Potassium (K)                   | 1.1 | Specific conductance (micromhos at 25°C) | 188 |
| Bicarbonate (HCO <sub>3</sub> ) | 90  | pH                                       | 8.1 |
| Sulfate (SO <sub>4</sub> )      | 12  | Color                                    | 2   |
| Chloride (Cl)                   | 1.6 |                                          |     |
| Fluoride (F)                    | .0  |                                          |     |

## Temperature (°F) of water, November 1956 to September, 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       |      | 55   | 39   | --   | 38   | 42   | --   | 52  | 61   | 69   | 72   | 75    |
| 2       |      | 59   | 39   | 35   | 40   | 43   | 54   | 62  | 69   | 59   | 72   | 72    |
| 3       |      | 50   | --   | 35   | --   | --   | 49   | 60  | 58   | 59   | 80   | 72    |
| 4       |      | --   | 44   | 46   | 41   | 45   | 41   | 47  | --   | 87   | 74   | 67    |
| 5       |      | --   | 38   | 40   | 40   | --   | 42   | 48  | 63   | --   | 61   | 72    |
| 6       |      | --   | --   | --   | 38   | 48   | 50   | 56  | 62   | 67   | 62   | 71    |
| 7       |      | --   | 51   | --   | 42   | 39   | 54   | 56  | 66   | 65   | 62   | 69    |
| 8       |      | 50   | --   | 39   | 38   | 37   | 46   | 71  | 57   | 63   | --   | 65    |
| 9       |      | --   | --   | 39   | 39   | 39   | 47   | 66  | --   | 69   | 70   | 62    |
| 10      |      | 45   | --   | 40   | 45   | 42   | 51   | 56  | 64   | 69   | 72   | 65    |
| 11      |      | 39   | 41   | --   | --   | 42   | 54   | 63  | 71   | 70   | 75   | 70    |
| 12      |      | 42   | 49   | 42   | 40   | --   | 53   | 67  | 74   | 66   | 67   | --    |
| 13      |      | 42   | 48   | --   | --   | 55   | 51   | 65  | 68   | 68   | 73   | 74    |
| 14      |      | 39   | 39   | --   | 38   | 54   | 42   | 67  | 69   | 65   | 74   | 67    |
| 15      |      | 45   | 43   | --   | 42   | 48   | 58   | 63  | 70   | 65   | 75   | --    |
| 16      |      | 50   | 42   | --   | 42   | 55   | 54   | 67  | 81   | 61   | 67   | 70    |
| 17      |      | 38   | 43   | --   | --   | --   | 50   | 62  | 78   | 65   | 72   | --    |
| 18      |      | 42   | 43   | --   | 43   | 48   | 51   | 65  | 78   | 65   | 65   | 65    |
| 19      |      | 42   | 39   | --   | 41   | 42   | 54   | 56  | --   | 66   | --   | 68    |
| 20      |      | 43   | 52   | --   | 38   | --   | 58   | 51  | 65   | 76   | 64   | 65    |
| 21      |      | 45   | 45   | --   | 42   | 47   | 58   | 51  | --   | 83   | --   | 67    |
| 22      |      | --   | 46   | --   | 48   | 47   | 64   | 51  | 78   | 77   | 75   | 65    |
| 23      |      | 35   | 43   | 37   | 42   | --   | --   | 51  | 68   | 70   | 66   | 58    |
| 24      |      | --   | 45   | --   | --   | 50   | 53   | --  | 68   | 66   | 65   | --    |
| 25      |      | --   | 41   | --   | 52   | 45   | 58   | 56  | 69   | 67   | --   | --    |
| 26      |      | --   | 42   | 40   | 45   | 45   | 71   | 73  | 66   | 61   | 77   | --    |
| 27      |      | --   | 43   | --   | 45   | 47   | 63   | 65  | 65   | 85   | 72   | --    |
| 28      |      | 41   | 42   | --   | --   | 48   | 71   | 56  | 67   | --   | 67   | --    |
| 29      |      | --   | 42   | 40   | --   | --   | 61   | 65  | 72   | 64   | 62   | 55    |
| 30      |      | 38   | --   | --   | --   | 44   | 58   | 58  | 65   | 74   | 72   | 68    |
| 31      |      | --   | 43   | 37   | --   | --   | --   | 71  | --   | 72   | 67   | --    |
| Average | --   | --   | --   | --   | --   | --   | 54   | 60  | 68   | 68   | 70   | --    |

## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 5.9                  | 2                        | (t)          | 799                  | --                       | b650         | 9.1                  | 2                        | (t)          |
| 2.....  | 5.9                  |                          |              | 417                  | --                       | a300         | 9.1                  | 1                        | (t)          |
| 3.....  | 5.9                  |                          |              | 134                  | 33                       | s16          | 9.0                  | --                       | a0.1         |
| 4.....  | 9.5                  |                          |              | 69                   | 12                       | 2.2          | 8.5                  | 3                        | .1           |
| 5.....  | 6.9                  |                          |              | 48                   | 13                       | 1.7          | 8.2                  | 2                        | (t)          |
| 6.....  | 5.9                  | 2                        | (t)          | 37                   | 9                        | .9           | 8.2                  | --                       | (at)         |
| 7.....  | 7.5                  |                          |              | 30                   | 11                       | .9           | 8.2                  | 3                        | .1           |
| 8.....  | 5.9                  |                          |              | 26                   | 10                       | .7           | 11                   | --                       | b.2          |
| 9.....  | 5.5                  |                          |              | 23                   | --                       | a.5          | 32                   | --                       | b2.7         |
| 10..... | 5.1                  |                          |              | 20                   | --                       | --           | 22                   | --                       | b.8          |
| 11..... | 5.1                  | 2                        | (t)          | 18                   | 4                        | .2           | 19                   | 4                        | .2           |
| 12..... | 4.9                  |                          |              | 17                   |                          |              | 18                   |                          |              |
| 13..... | 4.9                  |                          |              | 16                   |                          |              | 18                   |                          |              |
| 14..... | 4.7                  |                          |              | 15                   |                          |              | 146                  |                          |              |
| 15..... | 4.7                  |                          |              | 14                   |                          |              | 97                   |                          |              |
| 16..... | 4.5                  | 1                        | (t)          | 14                   | 3                        | .1           | 70                   | 14                       | s2.9         |
| 17..... | 4.5                  |                          |              | 13                   |                          |              | 50                   |                          |              |
| 18..... | 4.5                  |                          |              | 13                   |                          |              | 40                   |                          |              |
| 19..... | 4.5                  |                          |              | 12                   |                          |              | 33                   |                          |              |
| 20..... | 4.4                  |                          |              | 12                   |                          |              | 30                   |                          |              |
| 21..... | 4.4                  | 26                       | s1.8         | 13                   | --                       | a.2          | 48                   | 10                       | 1.0          |
| 22..... | 11                   |                          |              | 14                   |                          |              | 41                   |                          |              |
| 23..... | 26                   |                          |              | 11                   |                          |              | 38                   |                          |              |
| 24..... | 7.2                  |                          |              | 10                   |                          |              | 51                   |                          |              |
| 25..... | 5.5                  |                          |              | 9.7                  |                          |              | 45                   |                          |              |
| 26..... | 5.1                  | 37                       | s4.1         | 11                   | --                       | a.1          | 38                   | 12                       | 1.2          |
| 27..... | 32                   |                          |              | 11                   |                          |              | 36                   |                          |              |
| 28..... | 16                   |                          |              | 10                   |                          |              | 32                   |                          |              |
| 29..... | 11                   |                          |              | 10                   |                          |              | 30                   |                          |              |
| 30..... | 8.7                  |                          |              | 9.1                  |                          |              | 24                   |                          |              |
| 31..... | 16                   | 15                       | s.8          | --                   | --                       | --           | 23                   | 2                        | .1           |
| Total.  | 253.6                | --                       | 12.5         | 1,855.8              | --                       | 975.8        | 1,052.7              | --                       | 106.0        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| January |                      |                          | February     |                      |                          | March        |                      |                          |              |
| 1.....  | 20                   | 1                        | (t)          | 16                   | 1                        | (t)          | 34                   | 6                        | 0.5          |
| 2.....  | 18                   |                          |              | 16                   | 1                        | (t)          | 36                   |                          |              |
| 3.....  | 17                   |                          |              | 15                   | --                       | b0.2         | 31                   |                          |              |
| 4.....  | 17                   |                          |              | 36                   | 134                      | s17          | 27                   |                          |              |
| 5.....  | 16                   |                          |              | 24                   | 22                       | 1.4          | 26                   |                          |              |
| 6.....  | 15                   | 5                        | .2           | 22                   | 1                        | .1           | 25                   | 6                        | .4           |
| 7.....  | 16                   |                          |              | 23                   | 11                       | .7           | 29                   |                          |              |
| 8.....  | 15                   |                          |              | 23                   | 10                       | .6           | 30                   |                          |              |
| 9.....  | 15                   |                          |              | 48                   | 92                       | s17          | 41                   |                          |              |
| 10..... | 19                   |                          |              | 50                   | 38                       | s5.6         | 35                   |                          |              |
| 11..... | 16                   | --                       | e.2          | 37                   | --                       | b1.5         | 33                   | 9                        | 9            |
| 12..... | 15                   |                          |              | 30                   | 31                       | 2.5          | 35                   |                          |              |
| 13..... | 14                   |                          |              | 30                   | --                       | b1.6         | 35                   |                          |              |
| 14..... | 13                   |                          |              | 27                   | 7                        | .5           | 34                   |                          |              |
| 15..... | 11                   |                          |              | 25                   |                          |              | 39                   |                          |              |
| 16..... | 12                   | --                       | e.2          | 24                   |                          |              | 34                   | --                       | a.7          |
| 17..... | 10                   |                          |              | 22                   |                          |              | 30                   |                          |              |
| 18..... | 10                   |                          |              | 20                   |                          |              | 28                   |                          |              |
| 19..... | 9.7                  |                          |              | 21                   | 2                        | .1           | 28                   |                          |              |
| 20..... | 9.7                  |                          |              | 18                   |                          |              | 30                   |                          |              |
| 21..... | 11                   | --                       | b.9          | 17                   |                          |              | 25                   | 8                        | .5           |
| 22..... | 20                   |                          |              | 16                   |                          |              | 23                   |                          |              |
| 23..... | 47                   |                          |              | 16                   |                          |              | 22                   |                          |              |
| 24..... | 22                   |                          |              | 16                   | --                       | a.1          | 21                   |                          |              |
| 25..... | 20                   |                          |              | 16                   | 1                        | (t)          | 20                   |                          |              |
| 26..... | 18                   | 3                        | .1           | 44                   | 126                      | s31          | 20                   | 15                       | .8           |
| 27..... | 18                   |                          |              | 44                   | 47                       | s6.2         | 24                   |                          |              |
| 28..... | 17                   |                          |              | 34                   | --                       | a.8          | 20                   |                          |              |
| 29..... | 21                   |                          |              | --                   | --                       | --           | 19                   |                          |              |
| 30..... | 18                   |                          |              | --                   | --                       | --           | 18                   |                          |              |
| 31..... | 16                   |                          |              | --                   | --                       | --           | 17                   | --                       | a.1          |
| Total.  | 516.4                | --                       | 17.1         | 730                  | --                       | 88.7         | 865                  | --                       | 22.6         |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 18                   | 6                        | 0.3          | 14                   |                          |              | 6.5                  |                          |              |
| 2.....  | 35                   | 23                       | s 2.3        | 14                   |                          |              | 6.5                  |                          |              |
| 3.....  | 24                   | 7                        | .5           | 14                   |                          |              | 6.5                  |                          |              |
| 4.....  | 41                   | 24                       | s 2.6        | 13                   | 5                        | 0.2          | 6.5                  |                          |              |
| 5.....  | 136                  | 270                      | s 115        | 13                   |                          |              | 6.5                  | 4                        | 0.1          |
| 6.....  | 153                  | 178                      | s 92         | 12                   |                          |              | 6.5                  |                          |              |
| 7.....  | 81                   | 26                       | 5.7          | 12                   |                          |              | 6.2                  |                          |              |
| 8.....  | 93                   | 38                       | s 11         | 11                   |                          |              | 8.0                  | 11                       | .2           |
| 9.....  | 94                   | 24                       | s 6.4        | 11                   |                          |              | 7.6                  | --                       | a .2         |
| 10..... | 68                   | 10                       | 1.8          | 11                   | 4                        | .1           | 6.5                  |                          |              |
| 11..... | 56                   |                          |              | 11                   |                          |              | 6.5                  | 4                        | .1           |
| 12..... | 48                   |                          |              | 11                   |                          |              | 7.3                  |                          |              |
| 13..... | 40                   |                          |              | 10                   |                          |              | 7.6                  | 8                        | .2           |
| 14..... | 35                   |                          |              | 10                   |                          |              | 10                   | 17                       | .5           |
| 15..... | 30                   | 5                        | .5           | 12                   | 4                        | .1           | 6.8                  | 5                        | .1           |
| 16..... | 28                   |                          |              | 9.7                  |                          |              | 6.2                  |                          |              |
| 17..... | 27                   |                          |              | 9.1                  |                          |              | 5.7                  |                          |              |
| 18..... | 30                   |                          |              | 9.4                  |                          |              | 5.5                  |                          |              |
| 19..... | 27                   |                          |              | 9.4                  |                          |              | 5.7                  |                          |              |
| 20..... | 24                   | 8                        | .5           | 13                   |                          |              | 5.2                  |                          |              |
| 21..... | 22                   |                          |              | 11                   |                          |              | 4.8                  |                          |              |
| 22..... | 20                   |                          |              | 9.7                  | 6                        | .2           | 4.8                  | 6                        | .1           |
| 23..... | 20                   | --                       | a .4         | 9.4                  |                          |              | 4.8                  |                          |              |
| 24..... | 21                   |                          |              | 8.2                  |                          |              | 5.0                  |                          |              |
| 25..... | 20                   |                          |              | 7.9                  |                          |              | 6.2                  |                          |              |
| 26..... | 19                   |                          |              | 7.9                  |                          |              | 5.5                  |                          |              |
| 27..... | 18                   | 7                        | .3           | 7.6                  |                          |              | 5.0                  |                          |              |
| 28..... | 17                   |                          |              | 7.0                  | 4                        | .1           | 5.6                  | 15                       | .2           |
| 29..... | 16                   |                          |              | 6.8                  |                          |              | 17                   | 92                       | s 6.8        |
| 30..... | 15                   | --                       |              | 6.8                  |                          |              | 7.2                  | 30                       | .6           |
| 31..... | --                   |                          |              | 6.5                  |                          |              | --                   | --                       | --           |
| Total.  | 1,276                | --                       | 246.1        | 318.4                | --                       | 4.4          | 199.7                | --                       | 11.0         |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 6.0                  |                          |              | 3.6                  |                          |              | 2.9                  | 4                        | (t)          |
| 2.....  | 5.0                  |                          |              | 3.6                  |                          |              | 3.1                  |                          |              |
| 3.....  | 4.8                  |                          |              | 3.6                  |                          |              | 3.1                  |                          |              |
| 4.....  | 4.6                  |                          |              | 3.8                  |                          |              | 2.9                  |                          |              |
| 5.....  | 4.4                  |                          |              | 3.6                  |                          |              | 2.9                  |                          |              |
| 6.....  | 4.2                  |                          |              | 3.5                  | 10                       | 0.1          | 2.9                  | 5                        | (t)          |
| 7.....  | 4.2                  | 8                        | .1           | 3.5                  |                          |              | 3.1                  |                          |              |
| 8.....  | 4.6                  |                          |              | 3.5                  |                          |              | 3.1                  |                          |              |
| 9.....  | 5.5                  |                          |              | 3.5                  |                          |              | 3.1                  |                          |              |
| 10..... | 4.2                  |                          |              | 3.6                  |                          |              | 5.6                  | 8                        | 0.1          |
| 11..... | 4.2                  |                          |              | 3.5                  |                          |              | 4.0                  | 7                        | .1           |
| 12..... | 4.2                  |                          |              | 3.3                  |                          |              | 3.5                  | --                       | (at)         |
| 13..... | 4.2                  |                          |              | 3.3                  |                          |              | 3.3                  |                          |              |
| 14..... | 4.2                  |                          |              | 3.3                  | 4                        | (t)          | 3.5                  |                          |              |
| 15..... | 4.0                  |                          | .1           | 3.3                  |                          |              | 3.6                  |                          |              |
| 16..... | 4.0                  |                          |              | 3.3                  |                          |              | 3.6                  |                          |              |
| 17..... | 4.0                  |                          |              | 3.3                  |                          |              | 3.8                  | 4                        | (t)          |
| 18..... | 4.0                  |                          |              | 3.3                  |                          |              | 3.5                  |                          |              |
| 19..... | 4.0                  |                          |              | 3.1                  | --                       | (at)         | 3.5                  |                          |              |
| 20..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.5                  |                          |              |
| 21..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.8                  |                          |              |
| 22..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.5                  | 5                        | (t)          |
| 23..... | 5.3                  |                          |              | 3.1                  |                          |              | 3.5                  | 4                        | (t)          |
| 24..... | 4.6                  |                          |              | 2.9                  |                          |              | 3.3                  | --                       | (at)         |
| 25..... | 4.0                  |                          |              | 3.8                  | 4                        | (t)          | 3.3                  | --                       | (at)         |
| 26..... | 4.0                  | 4                        | (t)          | 4.3                  |                          |              | 3.1                  | --                       | (at)         |
| 27..... | 4.0                  |                          |              | 3.3                  |                          |              | 3.1                  | --                       | (at)         |
| 28..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.3                  |                          |              |
| 29..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.3                  | 4                        | (t)          |
| 30..... | 4.0                  |                          |              | 3.1                  |                          |              | 3.3                  |                          |              |
| 31..... | 4.0                  |                          |              | 3.1                  |                          |              | --                   | --                       | --           |
| Total.  | 134.2                | --                       | 2.5          | 104.6                | --                       | 1.8          | 102.0                | --                       | 1.3          |

Total discharge for year (cfs-days) ..... 7,408.4

Total load for year (tons) ..... 1,489.8

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.



## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 |                     | 0.500 |
| Aug. 18, 1955 ...  | 12:15 p. m. | 107             | --                     | 137                           | 615                                        |                                                   | 38    | 63    | 79    | 86    | 91    | 94    | 98    |       | 99                  | BSWCM |
| Dec. 14, 1956 ...  | 9:55 a. m.  | 130             | 38                     | 291                           | 528                                        |                                                   | 15    | 59    | 71    | 89    | 96    | 99    |       |       |                     | BWSM  |

## SUSQUEHANNA RIVER BASIN

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SUSQUEHANNA RIVER BASIN--Continued  
SUSQUEHANNA RIVER AT HARRISBURG, PA.

LOCATION.--At gaging station at Walnut Street Bridge in Harrisburg, Dauphin County.

DRAINAGE AREA.--24,100 square miles.

RECORDS AVAILABLE.--Chemical analyses: Composites of daily samples collected from east channel station 1180, October 1944 to September 1946. Cross-section samples, one to three times monthly, October 1944 to September 1949. Monthly cross-section samples November 1950 to January 1953, March 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Station      | Mean discharge (cfs) | Bicar-bonate (HCO <sub>3</sub> ) | Sul-fate (SO <sub>4</sub> ) | Chlo-ride (Cl) | Ni-trate (NO <sub>3</sub> ) | Hardness as CaCO <sub>3</sub> |                | Specific conduct-ance (micro-mhos at 25° C) | pH   | Color |
|--------------------|--------------|----------------------|----------------------------------|-----------------------------|----------------|-----------------------------|-------------------------------|----------------|---------------------------------------------|------|-------|
|                    |              |                      |                                  |                             |                |                             | Calcium, mag-nesium           | Non-carbon-ate |                                             |      |       |
| Oct. 16, 1956      | East Channel | 11,400               |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 20                               | 142                         | 7.5            | 2.7                         | 160                           | 144            | 371                                         | 7.3  | 4     |
|                    | 1,120        |                      | 26                               | 66                          | 6.0            | 1.0                         | 90                            | 68             | 211                                         | 7.3  | 4     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 26                               | 64                          | 4.5            | 1.5                         | 74                            | 52             | 204                                         | 7.1  | 4     |
|                    | 1,100        |                      | 90                               | 45                          | 9.5            | 1.6                         | 100                           | 26             | 272                                         | 8.0  | 4     |
| Nov. 14, 1956      | 1,320        |                      | 106                              | 36                          | 13             | 1.5                         | 108                           | 21             | 283                                         | 8.2  | 4     |
|                    | East Channel | 21,000               |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 8                                | 108                         | 5.0            | 3.8                         | 124                           | 118            | 307                                         | 6.3  | 2     |
|                    | 1,370        |                      | 20                               | 30                          | 4.0            | 1.8                         | 40                            | 24             | 121                                         | 6.4  | 3     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 38                               | 22                          | 3.0            | 2.9                         | 36                            | 5              | 132                                         | 6.7  | 3     |
| Mar. 14, 1957      | 1,100        |                      | 74                               | 21                          | 4.0            | 3.6                         | 76                            | 16             | 190                                         | 7.2  | 2     |
|                    | 1,370        |                      | 146                              | 18                          | 5.0            | 9.9                         | 132                           | 12             | 296                                         | 7.4  | 2     |
|                    | East Channel | 35,000               |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 32                               | 75                          | 8.5            | 5.4                         | 94                            | 68             | 264                                         | 6.9  | 2     |
|                    | 600          |                      | 36                               | 40                          | 8.5            | 4.3                         | 64                            | 34             | 184                                         | 6.5  | 1     |
|                    | 1,280        |                      | a 52                             | 37                          | 3.5            | 1.8                         | 56                            | 10             | 167                                         | 8.6  | 3     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 46                               | 29                          | 3.5            | 3.6                         | 52                            | 14             | 155                                         | 6.9  | 2     |
| Apr. 15, 1957      | 1,100        |                      | 60                               | 24                          | 4.0            | 5.2                         | 62                            | 13             | 168                                         | 7.2  | 4     |
|                    | 1,420        |                      | b 81                             | 20                          | 6.5            | 10                          | 36                            | 0              | 239                                         | 10.7 | 8     |
|                    | East Channel | 102,000              |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 14                               | 53                          | 5.0            | 3.4                         | 60                            | 48             | 172                                         | 6.6  | 4     |
|                    | 600          |                      | 24                               | 29                          | 5.5            | 2.8                         | 42                            | 23             | 134                                         | 6.8  | 2     |
|                    | 1,180        |                      | 48                               | 24                          | 3.5            | 4.7                         | 58                            | 18             | 148                                         | 7.0  | 4     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 12                               | 33                          | 3.5            | 2.1                         | 38                            | 28             | 103                                         | 6.7  | 2     |
| May 15, 1957       | 1,100        |                      | 36                               | 26                          | 2.5            | 4.6                         | 48                            | 18             | 130                                         | 7.1  | 2     |
|                    | 1,320        |                      | 16                               | 30                          | 4.0            | 2.7                         | 40                            | 27             | 113                                         | 6.6  | 1     |
|                    | East Channel | 18,600               |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 18                               | 134                         | 8.5            | 3.2                         | 140                           | 125            | 357                                         | 7.1  | 2     |
|                    | 600          |                      | 40                               | 92                          | 11             | 2.0                         | 110                           | 78             | 309                                         | 7.0  | 4     |
|                    | 1,180        |                      | 20                               | 46                          | 3.5            | 2.9                         | 58                            | 42             | 162                                         | 7.1  | 2     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 42                               | 41                          | 3.0            | 2.2                         | 64                            | 30             | 174                                         | 7.5  | 2     |
| June 13, 1957      | 1,100        |                      | 82                               | 36                          | 5.5            | 2.9                         | 84                            | 17             | 235                                         | 7.5  | 3     |
|                    | 1,320        |                      | 164                              | 20                          | 4.5            | 8.1                         | 148                           | 14             | 321                                         | 7.9  | 2     |
|                    | East Channel | 11,300               |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 32                               | 156                         | 12             | .7                          | 168                           | 142            | 412                                         | 6.7  | 3     |
|                    | 600          |                      | 52                               | 97                          | 13             | .2                          | 120                           | 78             | 331                                         | 6.8  | 3     |
|                    | 1,180        |                      | 34                               | 54                          | 6.5            | 1.8                         | 72                            | 44             | 198                                         | 6.9  | 2     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 50                               | 45                          | 8.0            | 2.3                         | 80                            | 39             | 203                                         | 7.0  | 2     |
| July 16, 1957      | 1,100        |                      | 100                              | 37                          | 9.5            | 3.4                         | 106                           | 24             | 271                                         | 7.3  | 3     |
|                    | 1,320        |                      | 140                              | 37                          | 7.0            | 8.8                         | 124                           | 10             | 276                                         | 7.5  | 2     |
|                    | East Channel | 7,180                |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 28                               | 187                         | 14             | .7                          | 192                           | 171            | 478                                         | 6.8  | 3     |
|                    | 600          |                      | 52                               | 104                         | 14             | .9                          | 132                           | 90             | 354                                         | 7.0  | 2     |
|                    | 1,180        |                      | 44                               | 66                          | 8.0            | 1.4                         | 88                            | 52             | 243                                         | 7.0  | 2     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 56                               | 56                          | 9.0            | .9                          | 90                            | 44             | 241                                         | 7.5  | 3     |
| Aug. 14, 1957      | 1,100        |                      | 100                              | 44                          | 10             | .9                          | 104                           | 22             | 281                                         | 7.9  | 3     |
|                    | 1,320        |                      | 100                              | 18                          | 13             | 3.6                         | 96                            | 14             | 239                                         | 7.6  | 2     |
|                    | East Channel | 4,580                |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 34                               | 217                         | 24             | .6                          | 230                           | 202            | 590                                         | 7.0  | 3     |
|                    | 600          |                      | 56                               | 157                         | 23             | .5                          | 176                           | 130            | 486                                         | 7.1  | 3     |
|                    | 1,180        |                      | 54                               | 109                         | 17             | .7                          | 132                           | 88             | 376                                         | 7.1  | 2     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 64                               | 92                          | 16             | .7                          | 140                           | 88             | 350                                         | 7.3  | 3     |
| Sept. 16, 1957     | 1,100        |                      | 103                              | 56                          | 19             | .4                          | 122                           | 34             | 346                                         | 7.6  | 3     |
|                    | 1,320        |                      | 100                              | 36                          | 19             | .2                          | 104                           | 22             | 298                                         | 7.5  | 2     |
|                    | East Channel | 3,580                |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 120          |                      | 12                               | 265                         | 23             | 3.4                         | 264                           | 254            | 610                                         | 6.3  | 3     |
|                    | 600          |                      | 32                               | 183                         | 15             | 2.7                         | 168                           | 142            | 488                                         | 6.6  | 5     |
|                    | 1,180        |                      | 64                               | 119                         | 15             | 3.6                         | 172                           | 120            | 391                                         | 7.1  | 5     |
|                    | West Channel |                      |                                  |                             |                |                             |                               |                |                                             |      |       |
|                    | 600          |                      | 96                               | 86                          | 21             | 2.1                         | 140                           | 62             | 396                                         | 7.1  | 5     |
|                    | 1,100        |                      | 116                              | 62                          | 13             | 1.8                         | 128                           | 33             | 377                                         | 7.9  | 3     |
|                    | 1,320        |                      | 128                              | 38                          | 19             | 4.7                         | 124                           | 19             | 341                                         | 7.4  | 5     |

a Includes equivalent of 4 parts per million carbonate (CO<sub>3</sub>).b Includes equivalent of 73 parts per million carbonate (CO<sub>3</sub>).

## SUSQUEHANNA RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN SUSQUEHANNA RIVER BASIN IN NEW YORK

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| SCHENEVUS CREEK AT SCHENEVUS               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 19, 1957 .....                        |                      | 4.8                        | 0.04      | 11           | 1.9            | 2.3         | 0.7           | 28                              | 13                         | 2.8           | 0.0          | 2.7                        | 53                                                 | 35                            | 12            | 90                                        | 6.9 | 3     |
| OTEGO CREEK NEAR ONEONTA                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 19, 1957 .....                        | 76                   | 4.3                        | 0.26      | 12           | 1.7            | 2.0         | 0.7           | 30                              | 11                         | 2.4           | 0.0          | 2.7                        | 52                                                 | 37                            | 12            | 83                                        | 6.9 | 2     |
| May 28, 1957 .....                         | 129                  | 3.9                        | .17       | 10           | 2.0            | 1.9         | .7            | 30                              | 9.1                        | 1.4           | .1           | 1.1                        | 46                                                 | 33                            | 9             | 78                                        | 7.0 | 7     |
| OULEROUT CREEK AT EAST SIDNEY              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 19, 1957 .....                        | 69.5                 | 4.0                        | 0.02      | 7.3          | 1.7            | 2.2         | 0.8           | 20                              | 9.5                        | 2.8           | 0.0          | 2.6                        | 42                                                 | 25                            | 9             | 69                                        | 7.1 | 2     |
| BUTTERNUT CREEK AT MORRIS                  |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 19, 1957 .....                        | 42                   | 4.8                        | 0.03      | 12           | 1.5            | 2.0         | 0.8           | 29                              | 12                         | 2.6           | 0.0          | 2.8                        | 50                                                 | 36                            | 12            | 83                                        | 7.5 | 2     |
| May 28, 1957 .....                         | 72                   | 3.2                        | .19       | 9.6          | 1.6            | 1.8         | .7            | 31                              | 8.4                        | 1.4           | .1           | .9                         | 47                                                 | 31                            | 5             | 75                                        | 7.2 | 10    |
| WEST BRANCH TIOGHNIAGA CREEK AT HORNER     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 20, 1957 .....                        |                      | 4.5                        | 0.00      | 46           | 13             | 3.8         | 1.3           | 171                             | 21                         | 5.4           | 0.0          | 7.8                        | 188                                                | 168                           | 28            | 335                                       | 7.6 | 3     |
| EAST BRANCH TIOGHNIAGA CREEK NEAR CORTLAND |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 20, 1957 .....                        |                      | 4.4                        | 0.14      | 35           | 5.3            | 2.2         | 0.9           | 112                             | 15                         | 3.2           | 0.0          | 4.0                        | 127                                                | 109                           | 17            | 222                                       | 7.5 | 3     |
| May 29, 1957 .....                         |                      | 2.8                        | .16       | 27           | 5.3            | 2.0         | .6            | 90                              | 13                         | 2.7           | .1           | 1.9                        | 101                                                | 90                            | 16            | 180                                       | 7.3 | 15    |

SUSQUEHANNA RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN SUSQUEHANNA RIVER BASIN IN PENNSYLVANIA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                              | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |     | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH   | Color |   |
|-------------------------------------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|-----|------------------------------------|-------------------------------------------|------|-------|---|
| TIOGA RIVER AT TIOGA                            |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| Oct. 9, 1956 .....                              |                      |                  |                            |               |           |                |              |                | 10          |               | 3                               | 73                         | 4.6           |              | 6.4                        |                                                    | 68                            | 66  |                                    | 194                                       | 5.6  | 5     |   |
| WEST BRANCH SUSQUEHANNA RIVER AT CURWENSVILLE   |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| Sept. 11, 1957 ...                              |                      |                  |                            |               |           |                |              |                |             |               | 0                               | 707                        |               |              |                            |                                                    |                               |     | 2.9                                | 1,400                                     | 3.20 |       |   |
| SINNEMAHONING CREEK AT CAMERON                  |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| July 19, 1957 ....                              |                      |                  |                            |               |           |                |              |                | 8.0         |               | 24                              | 19                         | 6.0           |              | 4.5                        |                                                    | 80                            | 34  | 15                                 |                                           | 120  | 7.5   | 2 |
| FIRST FORK SINNEMAHONING CREEK AT SINNEMAHONING |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| July 19, 1957 .....                             |                      |                  |                            |               |           |                |              |                | 6.0         |               | 30                              | 8.8                        | 4.0           |              | 2.2                        |                                                    | 60                            | 28  | 4                                  |                                           | 80   | 7.1   | 2 |
| KETTLE CREEK AT WESTPORT                        |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| July 19, 1957 ....                              |                      |                  |                            |               |           |                |              |                | 5.1         |               | 6                               | 37                         | 2.0           |              | 0.7                        |                                                    | 65                            | 36  | 31                                 |                                           | 107  | 5.9   | 2 |
| KETTLE CREEK NEAR WESTPORT                      |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| Sept. 12, 1957 ....                             |                      |                  | 2.8                        | 0.1           | 0.03      | 0.02           | 8.3          | 1.8            | 3.2         | 1.2           | 20                              | 12                         | 6.2           | 0.1          | 0.4                        |                                                    | 58                            | 28  | 12                                 |                                           | 84   | 6.6   | 2 |
| WEST BRANCH SUSQUEHANNA RIVER AT HYNER          |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| July 19, 1957 .....                             |                      |                  |                            |               |           |                |              |                |             |               | 0                               | 200                        | 6.0           |              | 0.4                        |                                                    | 305                           | 160 | 160                                | 1.0                                       | 520  | 3.50  | 3 |
| WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN     |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| Nov. 8, 1956 .....                              |                      |                  |                            |               |           |                |              |                |             |               | 0                               | 52                         | 2.0           |              | 0.4                        |                                                    |                               | 40  | 40                                 | 0.2                                       | 140  | 4.05  | 2 |
| Sept. 13, 1957 ....                             |                      |                  |                            |               |           |                |              |                |             |               | 0                               | 108                        | 6.5           |              | .2                         |                                                    |                               | 80  | 80                                 | .4                                        | 272  | 3.70  | 2 |
| FISHING CREEK AT NEWBERRYTOWN                   |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |     |                                    |                                           |      |       |   |
| Aug. 18, 1957 ....                              |                      |                  |                            |               | 0.05      |                |              |                |             |               | 58                              |                            | 3.5           | 0.0          | 4.1                        |                                                    |                               | 62  |                                    |                                           | 155  | 7.7   |   |

## POTOMAC RIVER BASIN

CRABTREE CREEK NEAR SWANTON, MD.

LOCATION --Temperature recorder at gaging station, 0.9 mile upstream from Middle Fork, 1.0 mile downstream from Springlick Run, and 5.0 miles northeast of Swanton, Garrett County.

DRAINAGE AREA --16.7 square miles

RECORDS AVAILABLE --Water temperatures: February 1952 to December 1955, July 1956 to September 1957.

EXTREMES, 1952-1957 --Water temperatures: Maximum recorded, 75°F July 20-22, Aug. 1, 3; minimum freezing point, January 18-21.

EXTREMES, 1952-1957 --Water temperatures: Maximum recorded, 82°F Aug. 2, 3, 1955; minimum, freezing point on many days during winter months.

REMARKS --Records fair, probably because of friction in recorder. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature(°F) of water, water year October 1956 to September 1957.

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph.7

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 58      | 53  | 56       | 51  | 36       | 36  | 38      | 33  | 41       | 41  | 39    | 35  | 45    | 42  | 64  | 34  | 62   | 56  | 68   | 61  | 75     | 67  | --        | --  |
| 2.....       | 57      | 54  | 55       | 52  | 39       | 36  | 33      | 33  | 42       | 41  | 41    | 39  | 47    | 45  | 54  | 35  | 62   | 58  | 70   | 59  | 74     | 66  | --        | --  |
| 3.....       | 61      | 56  | 55       | 50  | 40       | 38  | 33      | 33  | 43       | 41  | 39    | 35  | 45    | 42  | 58  | 30  | 62   | 57  | 72   | 59  | 75     | 66  | --        | --  |
| 4.....       | 60      | 59  | 56       | 54  | 40       | 38  | 36      | 33  | 43       | 43  | 38    | 34  | 44    | 42  | 56  | 47  | 61   | 64  | 59   | 69  | 61     | 73  | 69        | --  |
| 5.....       | 60      | 56  | 54       | 51  | 40       | 38  | 36      | 36  | 43       | 38  | 40    | 35  | 45    | 42  | 51  | 47  | 61   | 61  | 71   | 64  | 69     | 64  | 68        | 62  |
| 6.....       | 56      | 56  | 51       | 48  | 41       | 39  | 36      | 35  | 40       | 38  | 41    | 39  | 45    | 42  | 57  | 47  | 67   | 60  | 71   | 61  | 69     | 60  | 64        | 58  |
| 7.....       | 56      | 53  | 52       | 51  | 45       | 41  | 36      | 35  | 42       | 40  | 40    | 38  | 50    | 42  | 60  | 48  | 67   | 61  | 71   | 62  | 69     | 60  | 64        | 59  |
| 8.....       | 55      | 50  | 52       | 49  | 45       | 45  | 35      | 34  | 42       | 41  | 39    | 37  | 47    | 43  | 63  | 30  | 64   | 36  | 69   | 62  | 70     | 62  | 64        | 59  |
| 9.....       | 53      | 51  | 49       | 45  | 46       | 42  | 36      | 33  | 44       | 41  | 40    | 38  | 45    | 40  | 64  | 52  | 56   | 55  | 72   | 65  | 71     | 64  | 61        | 60  |
| 10.....      | 52      | 48  | 45       | 44  | 42       | 41  | 39      | 36  | 44       | 44  | 41    | 37  | 47    | 42  | 65  | 55  | 64   | 55  | 71   | 63  | 72     | 67  | 62        | 59  |
| 11.....      | 50      | 46  | 45       | 43  | 43       | 41  | 39      | 37  | 44       | 40  | 41    | 38  | 50    | 40  | 60  | 59  | 63   | 56  | 68   | 61  | 73     | 66  | 64        | 58  |
| 12.....      | 51      | 46  | 47       | 45  | 44       | 43  | 39      | 36  | 41       | 38  | 46    | 41  | 46    | 43  | 67  | 57  | 66   | 61  | 73   | 64  | 72     | 68  | 65        | 60  |
| 13.....      | 52      | 47  | 46       | 44  | 44       | 43  | 39      | 37  | 41       | 39  | 47    | 41  | 43    | 39  | 67  | 59  | 71   | 62  | 71   | 65  | 71     | 64  | 65        | 62  |
| 14.....      | 53      | 48  | 47       | 42  | 43       | 42  | 37      | 33  | 39       | 37  | 47    | 41  | 43    | 38  | 66  | 60  | 70   | 65  | 73   | 67  | 73     | 63  | 64        | 63  |
| 15.....      | 55      | 50  | 47       | 45  | 43       | 43  | 33      | 33  | 38       | 37  | 49    | 45  | 47    | 36  | 68  | 60  | 72   | 65  | 73   | 65  | 73     | 68  | 68        | 62  |
| 16.....      | 55      | 50  | 47       | 45  | 45       | 43  | 34      | 33  | 40       | 38  | 47    | 41  | 43    | 40  | 64  | 56  | 72   | 66  | 73   | 62  | 74     | 68  | 65        | 63  |
| 17.....      | 56      | 51  | 45       | 42  | 44       | 43  | 33      | 33  | 38       | 36  | 48    | 41  | 49    | 43  | 65  | 53  | 74   | 69  | 72   | 62  | 71     | 66  | 64        | 62  |
| 18.....      | 56      | 52  | 42       | 41  | 43       | 39  | 33      | 32  | 38       | 34  | 43    | 43  | 52    | 48  | 66  | 61  | 72   | 65  | 72   | 65  | 71     | 61  | 64        | 62  |
| 19.....      | 55      | 52  | 41       | 38  | 39       | 36  | 32      | 32  | 39       | 36  | 44    | 44  | 39    | 49  | 61  | 57  | 65   | 61  | 73   | 65  | 66     | 62  | 66        | 61  |
| 20.....      | 53      | 52  | 41       | 39  | 43       | 39  | 32      | 32  | 37       | 34  | 44    | 41  | 60    | 53  | 58  | 53  | 69   | 61  | 75   | 65  | 67     | 63  | 64        | 62  |
| 21.....      | 53      | 51  | 46       | 41  | 46       | 43  | 33      | 32  | 37       | 34  | 44    | 40  | 61    | 53  | 56  | 53  | 71   | 60  | 75   | 66  | 68     | 60  | 68        | 62  |
| 22.....      | 53      | 53  | 45       | 38  | 46       | 45  | 37      | 33  | 40       | 35  | 42    | 41  | 58    | 53  | 59  | 52  | 72   | 62  | 75   | 69  | 89     | 61  | 68        | 62  |
| 23.....      | 56      | 53  | 38       | 35  | 45       | 44  | 40      | 37  | 41       | 38  | 49    | 41  | 60    | 53  | 64  | 54  | 74   | 65  | 71   | 66  | 71     | 63  | 65        | 60  |
| 24.....      | 56      | 56  | 35       | 35  | 46       | 43  | 38      | 37  | 44       | 40  | 47    | 41  | 63    | 55  | 64  | 58  | 72   | 66  | 72   | 64  | 67     | 60  | 61        | 55  |
| 25.....      | 56      | 51  | 35       | 35  | 43       | 41  | 39      | 37  | 45       | 41  | 45    | 41  | 60    | 58  | 62  | 53  | 68   | 64  | 69   | 61  | 64     | 61  | 60        | 53  |
| 26.....      | 51      | 51  | 36       | 35  | 42       | 41  | 39      | 38  | 46       | 44  | 44    | 41  | 66    | 57  | 65  | 57  | 71   | 61  | 66   | 61  | 65     | 62  | 58        | 54  |
| 27.....      | 53      | 51  | 37       | 36  | 41       | 41  | 38      | 38  | 45       | 44  | 44    | 43  | 67    | 58  | 65  | 58  | 71   | 64  | 68   | 62  | 66     | 60  | 56        | 51  |
| 28.....      | 53      | 53  | 37       | 36  | 41       | 40  | 38      | 38  | 44       | 44  | 43    | 41  | 66    | 59  | 62  | 55  | 71   | 64  | 71   | 63  | 66     | 59  | 53        | 49  |
| 29.....      | 55      | 52  | 37       | 36  | 41       | 36  | 41      | 38  | --       | --  | 43    | 41  | 66    | 59  | 62  | 52  | 70   | 64  | 71   | 65  | 70     | 60  | 52        | 49  |
| 30.....      | 54      | 53  | 37       | 36  | 41       | 36  | 40      | 40  | --       | --  | 45    | 41  | 64    | 54  | 64  | 54  | 68   | 62  | 73   | 66  | --     | --  | 56        | 51  |
| 31.....      | 55      | 53  | --       | --  | 39       | 34  | 41      | 40  | --       | --  | 47    | 38  | --    | --  | 64  | 54  | --   | --  | 73   | 67  | --     | --  | --        | --  |
| Average..... | 55      | 52  | 45       | 43  | 42       | 40  | 37      | 35  | 42       | 39  | 44    | 40  | 53    | 47  | 62  | 54  | 68   | 61  | 71   | 63  | 70     | 63  | 63        | 58  |

## POTOMAC RIVER BASIN--Continued

## SOUTH BRANCH POTOMAC RIVER NEAR PETERSBURG, W. VA.

LOCATION.--At the Potomac Edison powerplant, 1,000 feet upstream from gaging station, and 2½ miles west of Petersburg, Grant County.

DRAINAGE AREA.--642 square miles.

RECORDS AVAILABLE.--Water temperatures: January 1947 to September 1953, November 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79°F Aug. 5; minimum, freezing point Jan 2, 15-18.

EXTREMES, 1947-53, 1954-57.--Water temperatures: Maximum, 84°F June 27, July 23, 1952, Aug. 3, 1955; minimum, freezing point on several days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 60   | 58   | 36   | 34   | 42   | 40   | 46   | 62  | 70   | 71   | 78   | 74    |
| 2       | 62   | 57   | 35   | 32   | 43   | 42   | 48   | 62  | 69   | 70   | 77   | 74    |
| 3       | 64   | 57   | 37   | 33   | 42   | 41   | 49   | 60  | 68   | 70   | 78   | 75    |
| 4       | 66   | 58   | 38   | 34   | 45   | 40   | 46   | 59  | 69   | 71   | 78   | 75    |
| 5       | 66   | 56   | 40   | 36   | 44   | 40   | 45   | 57  | 69   | 73   | 79   | 75    |
| 6       | 65   | 55   | 44   | 36   | 40   | 42   | 45   | 56  | 69   | 74   | 78   | 74    |
| 7       | 63   | 54   | 48   | 37   | 41   | 42   | 47   | 58  | 69   | 74   | 77   | 74    |
| 8       | 61   | 52   | 50   | 35   | 44   | 40   | 48   | 61  | 66   | 73   | 78   | 73    |
| 9       | 60   | 50   | 49   | 36   | 44   | 39   | 46   | 65  | 65   | 74   | 78   | 72    |
| 10      | 58   | 46   | 49   | 38   | 46   | 41   | 47   | 67  | 66   | 74   | 78   | 71    |
| 11      | 58   | 44   | 44   | 35   | 46   | 44   | 48   | 65  | 67   | 73   | 78   | 71    |
| 12      | 56   | 44   | 46   | 35   | 40   | 46   | 51   | 66  | 70   | 74   | 77   | 72    |
| 13      | 57   | 45   | 46   | 34   | 40   | 48   | 49   | 70  | 75   | 74   | 76   | 73    |
| 14      | 58   | 45   | 48   | 34   | 39   | 46   | 49   | 69  | 75   | 75   | 77   | 74    |
| 15      | 59   | 47   | 45   | 32   | 36   | 50   | 48   | 69  | 75   | 76   | 77   | 72    |
| 16      | 58   | 50   | 44   | 32   | 40   | 49   | 49   | 67  | 75   | 77   | 77   | 71    |
| 17      | 58   | 47   | 46   | 32   | 38   | 48   | 49   | 65  | 75   | 77   | 76   | 70    |
| 18      | 59   | 45   | 44   | 32   | 37   | 48   | 52   | 68  | 77   | 77   | 75   | 69    |
| 19      | 59   | 42   | 45   | 33   | 40   | 46   | 56   | 67  | 76   | 76   | 75   | 68    |
| 20      | 59   | 40   | 46   | 34   | 37   | 46   | 62   | 65  | 76   | 77   | 76   | 68    |
| 21      | 58   | 44   | 49   | 35   | 38   | 45   | 62   | 62  | 74   | 78   | 76   | 68    |
| 22      | 58   | 43   | 50   | 37   | 39   | 45   | 63   | 62  | 75   | 78   | 77   | 67    |
| 23      | 59   | 38   | 49   | 40   | 41   | 47   | 64   | 67  | 75   | 78   | 76   | 66    |
| 24      | 60   | 34   | 49   | 36   | 43   | 49   | 66   | 70  | 76   | 77   | 76   | 65    |
| 25      | 60   | 34   | 40   | 35   | 45   | 45   | 69   | 70  | 75   | 76   | 76   | 63    |
| 26      | 58   | 36   | 40   | 39   | 46   | 46   | 67   | 71  | 73   | 77   | 75   | 60    |
| 27      | 57   | 36   | 41   | 40   | 48   | 46   | 67   | 70  | 76   | 78   | 75   | 59    |
| 28      | 56   | 36   | 45   | 40   | 45   | 45   | 65   | 70  | 75   | 78   | 75   | 58    |
| 29      | 55   | 38   | 40   | 41   | --   | 45   | 63   | 70  | 74   | 78   | 74   | 58    |
| 30      | 55   | 37   | 35   | 42   | --   | 44   | 61   | 70  | 73   | 77   | 73   | 59    |
| 31      | 57   | --   | 36   | 41   | --   | 45   | --   | 70  | --   | 76   | 74   | --    |
| Average | 59   | 46   | 44   | 36   | 42   | 45   | 54   | 65  | 72   | 75   | 76   | 69    |

## POTOMAC RIVER BASIN--Continued

## POTOMAC RIVER AT HANCOCK, MD.

LOCATION.--Temperature recorder at gaging station, 0.2 mile downstream from Little Tonoiloway Creek, half a mile downstream from bridge on U. S. Highway 522 at Hancock, Washington County, and 1.1 miles upstream from Tonoiloway Creek (formerly called Great or Big Tonoiloway Creek).  
DRAINAGE.--4,073 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 90° F July 22; minimum, freezing point several days during November and December.

EXTREMES, 1952-57.--Water temperatures: Maximum, 93° F July 22, 1952; minimum, freezing point several days during winter months of 1955, 1956 and 1957.

REMARKS.--Records fair, probably because of friction in recorder. Temperature range during missing period Jan. 4-14, 32° F to 39° F. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 65      | 61  | 61       | 60  | 34       | 33  | 35      | 33  | 40       | 39  | 44    | 42  | 48    | 48  | 69  | 67  | 76   | 74  | 81   | 76  | 87     | 79  | 85        | 77  |
| 2.....       | 64      | 62  | 61       | 35  | 33       | 33  | 32      | 40  | 40       | 42  | 41    | 50  | 50    | 48  | 69  | 66  | 77   | 74  | 79   | 74  | 88     | 78  | 83        | 79  |
| 3.....       | 68      | 63  | 62       | 60  | 37       | 34  | 32      | 40  | 40       | 40  | 41    | 40  | 51    | 50  | 68  | 64  | 74   | 72  | 80   | 75  | 88     | 79  | 83        | 76  |
| 4.....       | 66      | 65  | 60       | 58  | 38       | 35  | --      | --  | 40       | 40  | 40    | 40  | 50    | 48  | 66  | 62  | 72   | 71  | 82   | 78  | 86     | 80  | 80        | 75  |
| 5.....       | 67      | 65  | 58       | 57  | 38       | 36  | --      | --  | 40       | 40  | 40    | 39  | 48    | 46  | 63  | 61  | 71   | 71  | 83   | 79  | 83     | 79  | 82        | 72  |
| 6.....       | 65      | 63  | 57       | 54  | 40       | 38  | --      | --  | 40       | 40  | 40    | 40  | 46    | 46  | 63  | 60  | 74   | 70  | 83   | 77  | 80     | 74  | 77        | 72  |
| 7.....       | 63      | 61  | 54       | 54  | 42       | 39  | --      | --  | 40       | 40  | 40    | 40  | 47    | 46  | 65  | 60  | 77   | 72  | 86   | 78  | 81     | 72  | 78        | 72  |
| 8.....       | 61      | 58  | 54       | 53  | 43       | 42  | --      | --  | 40       | 40  | 40    | 40  | 47    | 47  | 66  | 62  | 76   | 70  | 82   | 79  | 79     | 72  | 78        | 72  |
| 9.....       | 61      | 59  | 53       | 50  | 43       | 40  | --      | --  | 40       | 40  | 40    | 40  | 47    | 47  | 69  | 65  | 70   | 68  | 85   | 77  | 80     | 74  | 75        | 71  |
| 10.....      | 60      | 58  | 50       | 46  | 40       | 39  | --      | --  | 42       | 40  | 40    | 39  | 47    | 47  | 72  | 68  | 85   | 71  | 88   | 85  | 82     | 76  | 72        | 71  |
| 11.....      | 59      | 56  | 46       | 45  | 39       | 39  | --      | --  | 43       | 42  | 40    | 40  | 49    | 47  | 71  | 69  | 74   | 71  | 79   | 74  | 85     | 75  | 79        | 71  |
| 12.....      | 58      | 55  | 46       | 45  | 39       | 39  | --      | --  | 43       | 40  | 42    | 40  | 50    | 49  | 71  | 68  | 76   | 73  | 85   | 76  | 84     | 79  | 82        | 75  |
| 13.....      | 58      | 55  | 45       | 44  | 39       | 39  | --      | --  | 40       | 40  | 44    | 41  | 50    | 49  | 70  | 73  | 80   | 74  | 81   | 79  | 85     | 76  | 82        | 77  |
| 14.....      | 60      | 57  | 45       | 43  | 39       | 38  | --      | --  | 40       | 40  | 47    | 41  | 50    | 49  | 73  | 73  | 81   | 76  | 84   | 78  | 84     | 74  | 81        | 78  |
| 15.....      | 62      | 58  | 46       | 44  | 39       | 39  | 35      | 34  | 40       | 39  | 49    | 47  | 50    | 47  | 77  | 72  | 80   | 77  | 85   | 77  | 85     | 79  | 82        | 76  |
| 16.....      | 62      | 59  | 46       | 46  | 39       | 39  | 34      | 33  | 39       | 38  | 50    | 48  | 50    | 48  | 76  | 72  | 80   | 77  | 86   | 76  | 86     | 80  | 79        | 76  |
| 17.....      | 63      | 60  | 46       | 44  | 39       | 39  | 33      | 33  | 39       | 38  | 50    | 48  | 51    | 49  | 72  | 69  | 83   | 79  | 83   | 76  | 84     | 77  | 78        | 76  |
| 18.....      | 64      | 61  | 44       | 43  | 39       | 39  | 33      | 33  | 38       | 37  | 50    | 48  | 53    | 51  | 72  | 69  | 86   | 82  | 82   | 78  | 83     | 74  | 76        | 73  |
| 19.....      | 63      | 60  | 43       | 41  | 39       | 38  | 33      | 33  | 37       | 37  | 48    | 48  | 54    | 53  | 72  | 68  | 85   | 82  | 85   | 76  | 78     | 74  | 76        | 73  |
| 20.....      | 61      | 58  | 41       | 40  | 38       | 37  | 33      | 33  | 38       | 37  | 48    | 48  | 60    | 54  | 68  | 66  | 82   | 79  | 88   | 78  | 77     | 72  | 75        | 73  |
| 21.....      | 61      | 57  | 43       | 41  | 38       | 37  | 33      | 32  | 38       | 37  | 48    | 46  | 64    | 60  | 66  | 65  | 82   | 78  | 89   | 80  | 80     | 70  | 78        | 73  |
| 22.....      | 61      | 60  | 43       | 39  | 41       | 38  | 32      | 32  | 38       | 37  | 48    | 47  | 65    | 64  | 65  | 64  | 84   | 79  | 90   | 83  | 81     | 73  | 82        | 75  |
| 23.....      | 63      | 59  | 39       | 34  | 42       | 41  | 35      | 32  | 39       | 38  | 48    | 46  | 67    | 64  | 70  | 65  | 87   | 81  | 86   | 79  | 82     | 73  | 80        | 74  |
| 24.....      | 64      | 62  | 34       | 33  | 42       | 42  | 34      | 34  | 40       | 39  | 50    | 48  | 70    | 67  | 72  | 70  | 85   | 83  | 83   | 75  | 79     | 72  | 75        | 70  |
| 25.....      | 62      | 58  | 33       | 32  | 42       | 42  | 34      | 34  | 40       | 39  | 40    | 50  | 48    | 74  | 71  | 83  | 79   | 82  | 74   | 74  | 72     | 73  | 66        | 63  |
| 26.....      | 60      | 57  | 34       | 32  | 42       | 40  | 34      | 34  | 44       | 42  | 50    | 48  | 66    | 64  | 76  | 72  | 83   | 78  | 80   | 75  | 72     | 70  | 71        | 67  |
| 27.....      | 57      | 57  | 35       | 33  | 40       | 39  | 34      | 34  | 46       | 44  | 50    | 50  | 68    | 65  | 75  | 74  | 84   | 80  | 81   | 75  | 78     | 69  | 70        | 63  |
| 28.....      | 57      | 57  | 35       | 34  | 39       | 39  | 34      | 34  | 46       | 44  | 50    | 50  | 70    | 68  | 74  | 71  | 83   | 81  | 83   | 76  | 78     | 70  | 66        | 61  |
| 29.....      | 58      | 57  | 36       | 34  | 39       | 39  | 36      | 34  | --       | --  | 50    | 48  | 70    | 68  | 74  | 71  | 81   | 87  | 87   | 78  | 79     | 72  | 63        | 59  |
| 30.....      | 58      | 58  | 35       | 33  | 39       | 35  | 36      | 36  | --       | --  | 48    | 47  | 70    | 67  | 74  | 71  | 80   | 76  | 88   | 80  | 82     | 74  | 63        | 60  |
| 31.....      | 60      | 58  | --       | --  | 35       | 34  | 39      | 36  | --       | --  | 48    | 46  | --    | --  | 76  | 71  | --   | --  | 86   | 80  | 81     | 76  | --        | --  |
| Average..... | 62      | 59  | 46       | 44  | 39       | 38  | --      | --  | 40       | 40  | 46    | 44  | 56    | 54  | 71  | 68  | 79   | 76  | 84   | 77  | 82     | 75  | 77        | 72  |

POTOMAC RIVER BASIN--Continued  
LINGANORE CREEK NEAR FREDERICK, MD.

LOCATION --Temperature recorder at gaging station, 2½ miles upstream from mouth, and 4 miles east of Frederick, Frederick County.  
DRAINAGE AREA --82.3 square miles.

RECORDS AVAILABLE --October 1951 to September 1957.

EXTREMES, 1956-57 --Water temperatures: Maximum, 86°F June 16; minimum, freezing point Jan. 21-23.

EXTREMES, 1951-57 --Water temperatures: Maximum, 88°F July 31, 1954; minimum, freezing point on many days during winter months.

REMARKS --Temperature range during missing period Oct. 7-12, 61°F to 49°F. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 63      | 58  | 62       | 61  | 38       | 36  | 37      | 35  | 38       | 37  | 40    | 39  | 48    | 46  | 70  | 61  | 73   | 65  | 77   | 68  | 82     | 73  | 81        | 74  |
| 2.....       | 61      | 57  | 64       | 62  | 39       | 38  | 35      | 35  | 40       | 38  | 43    | 39  | 54    | 48  | 68  | 62  | 72   | 62  | 76   | 77  | 86     | 82  | 71        | 80  |
| 3.....       | 64      | 59  | 63       | 61  | 41       | 37  | 35      | 35  | 39       | 39  | 43    | 40  | 55    | 51  | 64  | 57  | 69   | 65  | 77   | 65  | 83     | 72  | 81        | 75  |
| 4.....       | 62      | 61  | 59       | 57  | 42       | 38  | 35      | 35  | 44       | 39  | 42    | 38  | 51    | 46  | 61  | 54  | 66   | 64  | 78   | 69  | 80     | 76  | 80        | 74  |
| 5.....       | 65      | 61  | 58       | 54  | 41       | 39  | 36      | 35  | 43       | 38  | 43    | 39  | 51    | 44  | 59  | 52  | 66   | 65  | 82   | 73  | 78     | 72  | 76        | 69  |
| 6.....       | 61      | 55  | 51       | 45  | 41       | 37  | 36      | 36  | 38       | 37  | 43    | 42  | 52    | 48  | 64  | 56  | 72   | 65  | 81   | 69  | 76     | 67  | 72        | 66  |
| 7.....       | 51      | 47  | 44       | 37  | 36       | 40  | 38      | 43  | 41       | 40  | 42    | 42  | 53    | 49  | 68  | 57  | 73   | 63  | 75   | 70  | 74     | 66  | 70        | 67  |
| 8.....       | 55      | 52  | 50       | 47  | 38       | 37  | 41      | 40  | 42       | 40  | 42    | 40  | 50    | 45  | 60  | 60  | 68   | 61  | 82   | 72  | 74     | 68  | 67        | 65  |
| 9.....       | 52      | 48  | 50       | 45  | 38       | 37  | 41      | 40  | 42       | 40  | 42    | 40  | 50    | 45  | 60  | 60  | 68   | 61  | 82   | 72  | 74     | 68  | 67        | 65  |
| 10.....      | 48      | 44  | 45       | 40  | 44       | 41  | 40      | 38  | 44       | 41  | 43    | 38  | 52    | 46  | 71  | 62  | 74   | 63  | 80   | 71  | 76     | 71  | 70        | 66  |
| 11.....      | 47      | 43  | 41       | 39  | 43       | 41  | 39      | 38  | 44       | 44  | 43    | 41  | 53    | 47  | 68  | 65  | 74   | 64  | 76   | 68  | 80     | 68  | 76        | 70  |
| 12.....      | 48      | 46  | 45       | 41  | 34       | 34  | 39      | 36  | 48       | 43  | 43    | 54  | 51    | 67  | 63  | 78  | 69   | 82  | 70   | 78  | 73     | 79  | 72        | 70  |
| 13.....      | 55      | 50  | 48       | 45  | 47       | 45  | 36      | 33  | 40       | 38  | 49    | 44  | 52    | 49  | 73  | 63  | 82   | 72  | 79   | 73  | 79     | 69  | 79        | 71  |
| 14.....      | 57      | 51  | 48       | 43  | 47       | 43  | 35      | 33  | 40       | 38  | 52    | 45  | 51    | 46  | 71  | 68  | 83   | 74  | 81   | 74  | 78     | 67  | 74        | 72  |
| 15.....      | 59      | 53  | 50       | 45  | 43       | 43  | 33      | 33  | 41       | 38  | 52    | 45  | 52    | 45  | 75  | 66  | 85   | 74  | 83   | 73  | 79     | 73  | 78        | 72  |
| 16.....      | 54      | 51  | 49       | 46  | 43       | 43  | 33      | 33  | 41       | 40  | 53    | 49  | 52    | 48  | 71  | 64  | 86   | 76  | 81   | 70  | 81     | 74  | 75        | 72  |
| 17.....      | 56      | 50  | 48       | 47  | 45       | 43  | 33      | 33  | 40       | 38  | 50    | 46  | 53    | 51  | 64  | 61  | 82   | 74  | 78   | 70  | 77     | 70  | 72        | 70  |
| 18.....      | 63      | 59  | 48       | 45  | 46       | 42  | 33      | 33  | 41       | 47  | 49    | 47  | 57    | 52  | 64  | 61  | 85   | 76  | 78   | 72  | 78     | 68  | 70        | 68  |
| 19.....      | 60      | 57  | 43       | 43  | 42       | 36  | 33      | 33  | 41       | 41  | 47    | 44  | 56    | 50  | 68  | 62  | 81   | 75  | 79   | 70  | 75     | 68  | 73        | 67  |
| 20.....      | 57      | 55  | 44       | 41  | 43       | 39  | 33      | 33  | 42       | 38  | 45    | 43  | 62    | 55  | 62  | 59  | 77   | 70  | 83   | 70  | 73     | 68  | 71        | 68  |
| 21.....      | 59      | 55  | 49       | 43  | 47       | 43  | 33      | 32  | 41       | 37  | 48    | 41  | 68    | 59  | 57  | 79  | 68   | 84  | 73   | 76  | 65     | 77  | 70        | 70  |
| 22.....      | 59      | 57  | 49       | 43  | 48       | 47  | 32      | 32  | 42       | 38  | 45    | 44  | 66    | 62  | 59  | 57  | 80   | 70  | 85   | 77  | 76     | 68  | 79        | 72  |
| 23.....      | 62      | 59  | 43       | 37  | 48       | 47  | 45      | 32  | 43       | 40  | 51    | 42  | 66    | 59  | 71  | 59  | 82   | 73  | 81   | 74  | 76     | 67  | 76        | 68  |
| 24.....      | 63      | 60  | 37       | 36  | 47       | 46  | 39      | 34  | 47       | 42  | 52    | 45  | 72    | 63  | 75  | 67  | 81   | 75  | 79   | 70  | 71     | 65  | 70        | 64  |
| 25.....      | 60      | 55  | 36       | 35  | 47       | 43  | 35      | 34  | 47       | 45  | 50    | 45  | 68    | 62  | 73  | 64  | 78   | 73  | 78   | 67  | 70     | 66  | 67        | 60  |
| 26.....      | 55      | 54  | 39       | 36  | 43       | 42  | 37      | 35  | 50       | 47  | 48    | 44  | 66    | 61  | 75  | 66  | 79   | 72  | 76   | 68  | 70     | 66  | 67        | 61  |
| 27.....      | 55      | 53  | 38       | 37  | 42       | 41  | 39      | 37  | 53       | 50  | 49    | 46  | 73    | 63  | 74  | 68  | 80   | 72  | 78   | 69  | 76     | 67  | 63        | 57  |
| 28.....      | 57      | 55  | 38       | 36  | 42       | 41  | 38      | 38  | 50       | 40  | 48    | 45  | 75    | 67  | 71  | 63  | 80   | 74  | 79   | 70  | 74     | 67  | 59        | 54  |
| 29.....      | 56      | 55  | 39       | 37  | 42       | 39  | 38      | 38  | --       | --  | 48    | 43  | 73    | 67  | 70  | 61  | 77   | 73  | 81   | 72  | 76     | 68  | 56        | 54  |
| 30.....      | 57      | 56  | 38       | 36  | 39       | 35  | 39      | 37  | --       | --  | 48    | 44  | 71    | 63  | 71  | 62  | 77   | --  | 83   | 74  | 70     | 60  | 56        | 56  |
| 31.....      | 61      | 57  | --       | --  | --       | 37  | 35      | 38  | 37       | --  | 51    | 41  | --    | --  | 72  | 62  | --   | --  | 80   | 75  | 80     | 74  | --        | --  |
| Average..... | 60      | 56  | 48       | 45  | 44       | 41  | 36      | 35  | 43       | 40  | 47    | 43  | 59    | 53  | 68  | 61  | 77   | 70  | 80   | 71  | 77     | 69  | 72        | 67  |



## RAPPAHANNOCK RIVER BASIN

## RAPPAHANNOCK RIVER AT REMINGTON, VA.

LOCATION.--At gaging station at bridge on U. S. Highway 29 at Remington, Fauquier County, 0.3 mile upstream from Tinpot Run, 0.4 mile downstream from Ruffans Run, 2.5 miles downstream from Hazel River, and at mile 35.2.

DRAINAGE AREA.--616 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1956.

Water temperatures: May 1951 to September 1956.

Sediment records: April 1951 to September 1957.

EXTREMES, 1956-57.--Sediment concentrations: Maximum daily, 400 ppm Apr. 5; minimum daily, 2 ppm on several days.

Sediment loads: Maximum daily, 4,830 tons Apr. 5; minimum daily, less than 0.50 ton on several days.

EXTREMES, 1951-57.--Sediment concentrations: Maximum daily, 1,240 ppm June 10, 1951; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 23,400 tons June 10, 1951; minimum daily, less than 0.50 ton on many days.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1502.

| Suspended sediment, water year October 1956 to September 1957 |                                 |                                     |                    |                                 |                                     |                    |                                 |                                     |                    |
|---------------------------------------------------------------|---------------------------------|-------------------------------------|--------------------|---------------------------------|-------------------------------------|--------------------|---------------------------------|-------------------------------------|--------------------|
| Day                                                           | October                         |                                     |                    | November                        |                                     |                    | December                        |                                     |                    |
|                                                               | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    | Mean<br>dis-<br>charge<br>(cfs) | Suspended sediment                  |                    |
|                                                               |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                                 | Mean<br>concen-<br>tration<br>(ppm) | Tons<br>per<br>day |
| 1.....                                                        | 409                             | 14                                  | 15                 | 3,510                           | 256                                 | s 3,090            | 360                             | 7                                   | 7                  |
| 2.....                                                        | 328                             | 12                                  | 11                 | 3,510                           | 129                                 | s 1,270            | 350                             | 11                                  | 10                 |
| 3.....                                                        | 275                             | 10                                  | 7                  | 2,080                           | 57                                  | 320                | 350                             | 17                                  | 16                 |
| 4.....                                                        | 260                             | 10                                  | 7                  | 1,780                           | 38                                  | 183                | 340                             | 6                                   | 6                  |
| 5.....                                                        | 322                             | 12                                  | 10                 | 1,400                           | 26                                  | 98                 | 330                             | 4                                   | 4                  |
| 6.....                                                        | 295                             | 8                                   | 6                  | 1,200                           | 17                                  | 55                 | 330                             | 3                                   | 3                  |
| 7.....                                                        | 250                             | 6                                   | 4                  | 995                             | 15                                  | 40                 | 330                             | 5                                   | 4                  |
| 8.....                                                        | 228                             | 5                                   | 3                  | 898                             | 16                                  | 39                 | 330                             | 4                                   | 4                  |
| 9.....                                                        | 205                             | 5                                   | 3                  | 800                             | 13                                  | 28                 | 320                             | 4                                   | 3                  |
| 10.....                                                       | 185                             | 4                                   | 2                  | 709                             | 10                                  | 19                 | 320                             | 3                                   | 3                  |
| 11.....                                                       | 173                             | 3                                   | 1                  | 644                             | 7                                   | 12                 | 310                             | 4                                   | 3                  |
| 12.....                                                       | 162                             | 2                                   | 1                  | 586                             | 7                                   | 11                 | 300                             | 6                                   | 5                  |
| 13.....                                                       | 158                             | 3                                   | 1                  | 540                             | 7                                   | 10                 | 311                             | 14                                  | 12                 |
| 14.....                                                       | 158                             | 2                                   | 1                  | 488                             | 6                                   | 8                  | 373                             | 11                                  | 11                 |
| 15.....                                                       | 158                             | 2                                   | 1                  | 469                             | 6                                   | 8                  | 579                             | 19                                  | 30                 |
| 16.....                                                       | 158                             | 2                                   | 1                  | 451                             | 5                                   | 6                  | 735                             | 36                                  | 71                 |
| 17.....                                                       | 158                             | 4                                   | 2                  | 520                             | 12                                  | 17                 | 560                             | 14                                  | 21                 |
| 18.....                                                       | 162                             | 6                                   | 3                  | 865                             | 20                                  | 47                 | 475                             | 8                                   | 10                 |
| 19.....                                                       | 162                             | 3                                   | 1                  | 676                             | 13                                  | 24                 | 409                             | 5                                   | 6                  |
| 20.....                                                       | 158                             | 2                                   | 1                  | 546                             | 7                                   | 10                 | 385                             | 5                                   | 5                  |
| 21.....                                                       | 158                             | 2                                   | 1                  | 508                             | 5                                   | 7                  | 391                             | 5                                   | 5                  |
| 22.....                                                       | 366                             | 91                                  | s 146              | 510                             | 7                                   | 10                 | 403                             | 5                                   | 5                  |
| 23.....                                                       | 1,440                           | 158                                 | s 621              | 500                             | 6                                   | 8                  | 800                             | 54                                  | s 167              |
| 24.....                                                       | 832                             | 53                                  | 119                | 450                             | 9                                   | 11                 | 1,370                           | 82                                  | 303                |
| 25.....                                                       | 534                             | 14                                  | 20                 | 400                             | 12                                  | 13                 | 962                             | 27                                  | 70                 |
| 26.....                                                       | 427                             | 8                                   | 9                  | 400                             | 5                                   | 5                  | 768                             | 13                                  | 27                 |
| 27.....                                                       | 2,910                           | 344                                 | s 4,340            | 400                             | 4                                   | 4                  | 683                             | 9                                   | 17                 |
| 28.....                                                       | 2,750                           | 165                                 | s 1,460            | 380                             | 4                                   | 4                  | 618                             | 8                                   | 13                 |
| 29.....                                                       | 1,340                           | 53                                  | 192                | 380                             | 4                                   | 4                  | 572                             | 9                                   | 14                 |
| 30.....                                                       | 1,060                           | 38                                  | 109                | 370                             | 4                                   | 4                  | 508                             | 15                                  | 21                 |
| 31.....                                                       | 2,300                           | 100                                 | 621                | --                              | --                                  | --                 | 451                             | 5                                   | 6                  |
| Total.                                                        | 18,481                          | --                                  | 7,719              | 26,965                          | --                                  | 5,365              | 15,323                          | --                                  | 882                |

s Computed by subdividing day.

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

| Suspended sediment, water year October 1956 to September 1957--Continued |                       |                           |              |                       |                           |              |                       |                           |              |
|--------------------------------------------------------------------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
| Day                                                                      | January               |                           |              | February              |                           |              | March                 |                           |              |
|                                                                          | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|                                                                          |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....                                                                   | 457                   | 6                         | 7            | 898                   | 38                        | 92           | 2,220                 | 74                        | 444          |
| 2.....                                                                   | 403                   | 7                         | 8            | 1,370                 | 77                        | 285          | 2,220                 | 66                        | 396          |
| 3.....                                                                   | 367                   | 11                        | 11           | 1,120                 | 39                        | 118          | 1,700                 | 40                        | 184          |
| 4.....                                                                   | 440                   | 6                         | 7            | 995                   | 28                        | 75           | 1,400                 | 30                        | 113          |
| 5.....                                                                   | 403                   | 5                         | 5            | 898                   | 52                        | 126          | 1,260                 | 20                        | 68           |
| 6.....                                                                   | 373                   | 5                         | 5            | 995                   | 34                        | 91           | 1,120                 | 16                        | 48           |
| 7.....                                                                   | 373                   | 5                         | 5            | 930                   | 15                        | 38           | 1,060                 | 18                        | 52           |
| 8.....                                                                   | 373                   | 5                         | 5            | 865                   | 16                        | 37           | 2,380                 | 143                       | s 1,220      |
| 9.....                                                                   | 373                   | 5                         | 5            | 930                   | 20                        | 50           | 2,600                 | 236                       | 1,660        |
| 10.....                                                                  | 494                   | 8                         | 11           | 1,440                 | 76                        | 295          | 1,620                 | 72                        | 315          |
| 11.....                                                                  | 546                   | 11                        | 16           | 1,370                 | 43                        | 159          | 1,340                 | 37                        | 134          |
| 12.....                                                                  | 433                   | 7                         | 8            | 1,260                 | 20                        | 68           | 1,200                 | 25                        | 81           |
| 13.....                                                                  | 421                   | 8                         | 9            | 1,090                 | 22                        | 65           | 1,060                 | 21                        | 60           |
| 14.....                                                                  | 427                   | 8                         | 9            | 995                   | 40                        | 107          | 962                   | 24                        | 62           |
| 15.....                                                                  | 367                   | 8                         | 8            | 962                   | 19                        | 49           | 898                   | 26                        | 63           |
| 16.....                                                                  | 360                   | 17                        | 17           | 898                   | 21                        | 51           | 865                   | 19                        | 44           |
| 17.....                                                                  | 360                   | 29                        | 28           | 832                   | 11                        | 25           | 800                   | 23                        | 50           |
| 18.....                                                                  | 360                   | 49                        | 48           | 748                   | 7                         | 14           | 761                   | 36                        | 74           |
| 19.....                                                                  | 420                   | 6                         | 7            | 748                   | 12                        | 24           | 780                   | 14                        | 29           |
| 20.....                                                                  | 450                   | 2                         | 2            | 898                   | 27                        | 65           | 800                   | 12                        | 26           |
| 21.....                                                                  | 475                   | 28                        | 36           | 780                   | 23                        | 48           | 722                   | 26                        | 51           |
| 22.....                                                                  | 633                   | 60                        | 103          | 713                   | 9                         | 17           | 690                   | 28                        | 52           |
| 23.....                                                                  | 1,150                 | 190                       | s 661        | 676                   | 6                         | 11           | 800                   | 12                        | 26           |
| 24.....                                                                  | 995                   | 93                        | 250          | 650                   | 5                         | 9            | 709                   | 7                         | 13           |
| 25.....                                                                  | 742                   | 39                        | 78           | 624                   | 4                         | 7            | 644                   | 7                         | 12           |
| 26.....                                                                  | 670                   | 39                        | 71           | 1,200                 | 86                        | s 472        | 618                   | 7                         | 12           |
| 27.....                                                                  | 605                   | 16                        | 26           | 2,820                 | 349                       | 2,660        | 605                   | 7                         | 11           |
| 28.....                                                                  | 644                   | 25                        | 43           | 2,150                 | 164                       | 952          | 579                   | 6                         | 9            |
| 29.....                                                                  | 787                   | 63                        | 134          | ---                   | ---                       | ---          | 553                   | 6                         | 9            |
| 30.....                                                                  | 832                   | 38                        | 85           | ---                   | ---                       | ---          | 540                   | 6                         | 9            |
| 31.....                                                                  | 787                   | 37                        | 79           | ---                   | ---                       | ---          | 508                   | 6                         | 8            |
| Total.                                                                   | 16,525                | --                        | 1,787        | 29,858                | --                        | 6,010        | 34,014                | --                        | 5,335        |
|                                                                          |                       |                           |              |                       |                           |              |                       |                           |              |
| April                                                                    |                       |                           | May          |                       |                           | June         |                       |                           |              |
| 1.....                                                                   | 501                   | 6                         | 8            | 424                   | 13                        | 15           | 238                   | 15                        | 10           |
| 2.....                                                                   | 995                   | 72                        | 193          | 402                   | 14                        | 15           | 230                   | 39                        | 24           |
| 3.....                                                                   | 995                   | 58                        | 156          | 375                   | 14                        | 14           | 272                   | 75                        | 55           |
| 4.....                                                                   | 774                   | 19                        | 40           | 364                   | 14                        | 14           | 364                   | 45                        | 44           |
| 5.....                                                                   | 3,910                 | 400                       | s 4,830      | 358                   | 11                        | 11           | 364                   | 23                        | 23           |
| 6.....                                                                   | 4,400                 | 207                       | s 2,600      | 353                   | 10                        | 10           | 1,290                 | 234                       | s 993        |
| 7.....                                                                   | 2,300                 | 42                        | 261          | 331                   | 10                        | 9            | 820                   | 66                        | 146          |
| 8.....                                                                   | 1,780                 | 39                        | 187          | 315                   | 10                        | 9            | 550                   | 36                        | 53           |
| 9.....                                                                   | 1,700                 | 34                        | 156          | 306                   | 8                         | 7            | 472                   | 58                        | 74           |
| 10.....                                                                  | 1,320                 | 28                        | 100          | 291                   | 5                         | 4            | 430                   | 56                        | 65           |
| 11.....                                                                  | 1,140                 | 24                        | 74           | 277                   | 4                         | 3            | 364                   | 50                        | 49           |
| 12.....                                                                  | 1,030                 | 21                        | 58           | 286                   | 4                         | 3            | 315                   | 52                        | 44           |
| 13.....                                                                  | 960                   | 20                        | 52           | 291                   | 4                         | 3            | 282                   | 38                        | 29           |
| 14.....                                                                  | 890                   | 24                        | 58           | 282                   | 8                         | 6            | 255                   | 17                        | 12           |
| 15.....                                                                  | 799                   | 34                        | 73           | 743                   | 59                        | 118          | 364                   | 76                        | 75           |
| 16.....                                                                  | 743                   | 15                        | 30           | 538                   | 18                        | 26           | 306                   | 58                        | 48           |
| 17.....                                                                  | 701                   | 16                        | 30           | 364                   | 21                        | 21           | 268                   | 50                        | 36           |
| 18.....                                                                  | 694                   | 17                        | 32           | 348                   | 13                        | 12           | 222                   | 12                        | 7            |
| 19.....                                                                  | 680                   | 17                        | 31           | 520                   | 32                        | 45           | 198                   | 11                        | 6            |
| 20.....                                                                  | 645                   | 17                        | 30           | 592                   | 67                        | 107          | 178                   | 10                        | 5            |
| 21.....                                                                  | 631                   | 17                        | 29           | 715                   | 40                        | 77           | 162                   | 8                         | 3            |
| 22.....                                                                  | 592                   | 22                        | 35           | 520                   | 23                        | 32           | 147                   | 8                         | 3            |
| 23.....                                                                  | 550                   | 48                        | 71           | 472                   | 17                        | 22           | 140                   | 6                         | 2            |
| 24.....                                                                  | 562                   | 38                        | 58           | 402                   | 16                        | 17           | 140                   | 8                         | 3            |
| 25.....                                                                  | 715                   | 16                        | 31           | 336                   | 13                        | 12           | 158                   | 7                         | 3            |
| 26.....                                                                  | 604                   | 40                        | 65           | 310                   | 12                        | 10           | 206                   | 17                        | 9            |
| 27.....                                                                  | 544                   | 33                        | 48           | 301                   | 11                        | 9            | 214                   | 11                        | 6            |
| 28.....                                                                  | 520                   | 31                        | 44           | 306                   | 10                        | 8            | 147                   | 8                         | 3            |
| 29.....                                                                  | 532                   | 22                        | 32           | 264                   | 10                        | 7            | 162                   | 11                        | 5            |
| 30.....                                                                  | 472                   | 16                        | 20           | 251                   | 13                        | 9            | 291                   | 19                        | 15           |
| 31.....                                                                  | --                    | --                        | --           | 243                   | 17                        | 11           | --                    | --                        | --           |
| Total.                                                                   | 32,679                | --                        | 9,432        | 11,880                | --                        | 666          | 9,549                 | --                        | 1,850        |

s Computed by subdividing day.

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

## Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 170                  | 7                        | 3            | 30                   | 8                        | 1            | 15                   | 39                       | 2            |
| 2.....  | 131                  | 5                        | 2            | 26                   | 7                        | (t)          | 14                   | 39                       | 1            |
| 3.....  | 112                  | 6                        | 2            | 27                   | 8                        | 1            | 16                   | 34                       | 1            |
| 4.....  | 98                   | 6                        | 2            | 24                   | 7                        | (t)          | 15                   | 29                       | 1            |
| 5.....  | 93                   | 5                        | 1            | 18                   | 8                        | (t)          | 15                   | 26                       | 1            |
| 6.....  | 86                   | 4                        | 1            | 14                   | 14                       | 1            | 12                   | 20                       | 1            |
| 7.....  | 77                   | 4                        | 1            | 12                   | 33                       | 1            | 10                   | 12                       | (t)          |
| 8.....  | 72                   | 4                        | 1            | 9.4                  | 23                       | 1            | 16                   | 22                       | 1            |
| 9.....  | 72                   | 4                        | 1            | 8.8                  | 19                       | (t)          | 71                   | 33                       | 6            |
| 10..... | 72                   | 4                        | 1            | 8.2                  | 37                       | 1            | 43                   | 23                       | 3            |
| 11..... | 72                   | 4                        | 1            | 8.2                  | 34                       | 1            | 85                   | 29                       | 7            |
| 12..... | 64                   | 4                        | 1            | 8.2                  | 12                       | (t)          | 92                   | 11                       | 3            |
| 13..... | 53                   | 4                        | 1            | 8.2                  | 9                        | (t)          | 67                   | 10                       | 2            |
| 14..... | 50                   | 4                        | 1            | 8.8                  | 6                        | (t)          | 59                   | 14                       | 2            |
| 15..... | 48                   | 5                        | 1            | 12                   | 11                       | (t)          | 59                   | 13                       | 2            |
| 16..... | 43                   | 5                        | 1            | 12                   | 38                       | 1            | 85                   | 13                       | 3            |
| 17..... | 38                   | 6                        | 1            | 10                   | 36                       | 1            | 475                  | 87                       | 112          |
| 18..... | 36                   | 13                       | 1            | 8.8                  | 43                       | 1            | 451                  | 125                      | 152          |
| 19..... | 34                   | 24                       | 2            | 8.2                  | 36                       | 1            | 181                  | 92                       | 45           |
| 20..... | 34                   | 18                       | 2            | 9.4                  | 32                       | 1            | 112                  | 85                       | 26           |
| 21..... | 32                   | 52                       | 4            | 11                   | 30                       | 1            | 88                   | 75                       | 18           |
| 22..... | 29                   | 50                       | 4            | 16                   | 28                       | 1            | 73                   | 60                       | 12           |
| 23..... | 31                   | 49                       | 4            | 20                   | 31                       | 2            | 69                   | 53                       | 10           |
| 24..... | 43                   | 37                       | 4            | 15                   | 34                       | 1            | 59                   | 42                       | 7            |
| 25..... | 61                   | 11                       | 2            | 20                   | 41                       | 2            | 51                   | 28                       | 4            |
| 26..... | 53                   | 30                       | 4            | 34                   | 33                       | 3            | 45                   | 23                       | 3            |
| 27..... | 42                   | 34                       | 4            | 26                   | 38                       | 3            | 41                   | 24                       | 3            |
| 28..... | 36                   | 11                       | 1            | 26                   | 40                       | 3            | 36                   | 31                       | 3            |
| 29..... | 50                   | 33                       | 4            | 21                   | 42                       | 2            | 34                   | 26                       | 2            |
| 30..... | 38                   | 12                       | 1            | 17                   | 44                       | 2            | 36                   | 24                       | 2            |
| 31..... | 34                   | 8                        | 1            | 18                   | 39                       | 2            | --                   | --                       | --           |
| Total.  | 1,904                | --                       | 60           | 495.2                | --                       | 34           | 2,425                | --                       | 435          |

Total discharge for year (cfs-days).....200,098.2  
 Total load for year (tons).....39,575

t Less than 0.50 ton.



## PART 2A. SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## PASQUOTANK RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN PASQUOTANK RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                       | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|------------------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                          |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium                          | Non-<br>carbon-<br>ate |                                                             |     |       |
|                                          |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| NEWLAND DRAINAGE CANAL AT LYNCHES CORNER |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| July 23, 1957....                        | 0.06               | 20                            | 1.3          | 29              | 16                     | 57             | 5.9                   | 238                                     | 18                            | 44               | 0.5             | 2.1                           | a311                                                                | 136                              | 105                    | 503                                                         | 7.1 | 200   |
| Aug. 6, 1957....                         | .245               |                               |              | 23              | 9.2                    | 42             | 4.6                   | 166                                     | 8.8                           | 31               |                 | 1.2                           |                                                                     | 96                               | 0                      | 389                                                         | 6.7 |       |

a Calculated from determined constituents.

## CHOWAN RIVER BASIN

## CHOWAN RIVER AT WINTON, N. C.

LOCATION --At drawbridge on U. S. Highway 158 and State Highway 97 at Winton, Hertford County, and 2.7 miles downstream from Meherrin River.

DRAINAGE AREA --4 198 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum, 126 ppm Sept. 11-20; minimum, 46 ppm Feb. 1-28.

Hardness: Maximum, 29 ppm Sept. 11-20; minimum, 14 ppm Feb. 1-28.

Specific conductance: Maximum daily, 204 micromhos Sept. 20; minimum daily, 43.2 micromhos Feb. 8, 9.

Water temperatures: Maximum, 87° F July 27; minimum, 38° F on several days during January.

EXTREMES 1954-57 --Dissolved solids: Maximum, 150 ppm Dec. 21-31, 1954; minimum, 46 ppm Feb. 1-28, 1957.

Hardness: Maximum, 29 ppm Sept. 11-20, 1957; minimum, 14 ppm Feb. 1-28, 1957.

Specific conductance: Maximum daily, 240 micromhos Feb. 1, 2, 1955; minimum daily, 43.2 micromhos Feb. 8, 9, 1957.

Water temperatures: Maximum, 87° F Aug. 5, 7, 8, 1955, July 27, 1957; minimum, 37° F Feb. 13, 1955, Jan. 1, 1956.

REMARKS --Records of suspended matter of composite samples from October 1954 to September 1955 and records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |                     | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg/l                 | Non-carbonate, mg/l |                                           |     |       |
| Oct. 1-31, 1956 --         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                     |                                           |     |       |
| Nov. 1-30.....             |                      | 12                         | 0.29      | 5.4          | 1.6            | 10          | 1.9           | 24                              | 7.5                        | 8.8           | 0.0          | 1.8                        | 82                                                 | 20                            | 0                   | 94.5                                      | 6.5 | 110   |
| Dec. 1-31.....             |                      | 14                         | .36       | 5.3          | 1.4            | 5.8         | 1.6           | 19                              | 4.1                        | 7.4           | .1           | 1.9                        | 485                                                | 19                            | 4                   | 77.6                                      | 6.4 | 110   |
| Jan. 1-31, 1957..          |                      | 11                         | .39       | 5.1          | 1.2            | 5.8         | 1.4           | 20                              | 4.9                        | 7.5           | .0           | 1.7                        | 79                                                 | 18                            | 1                   | 77.6                                      | 6.9 | 110   |
| Feb. 1-28.....             |                      | 8.4                        | .06       | 4.0          | 1.0            | 4.0         | 1.4           | 11                              | 5.8                        | 4.6           | .0           | 1.3                        | 46                                                 | 14                            | 5                   | 69.1                                      | 6.6 | 30    |
| Mar. 1-30.....             |                      | 7.9                        | .03       | 4.0          | 1.1            | 4.1         | 1.6           | 14                              | 4.8                        | 4.2           | .2           | 1.3                        | 49                                                 | 15                            | 5                   | 56.5                                      | 6.2 | 42    |
| Apr. 1-30.....             |                      | 7.4                        | .04       | 4.0          | 1.2            | 4.3         | 1.8           | 18                              | 8.2                        | 5.0           | .2           | 1.9                        | 53                                                 | 17                            | 2                   | 65.0                                      | 6.4 | 40    |
| May 1-31.....              |                      | 13                         | .64       | 6.8          | 2.4            | 4.5         | 1.2           | 26                              | 5.3                        | 6.0           | .2           | 2.3                        | 62                                                 | 27                            | 4                   | 78.5                                      | 6.3 | 50    |
| June 1-30.....             |                      | 12                         | .30       | 5.0          | 1.8            | 5.8         | .9            | 26                              | 5.4                        | 5.5           | .1           | 1.9                        | 66                                                 | 20                            | 0                   | 81.3                                      | 6.6 | 70    |
| July 1-31.....             |                      | 9.8                        | .18       | 6.1          | 1.9            | 6.7         | 1.4           | 27                              | 3.6                        | 5.4           | .3           | 1.6                        | 69                                                 | 23                            | 0                   | 75.2                                      | 6.5 | 85    |
| Aug. 1-31.....             |                      | 4.7                        | .09       | 4.7          | 2.2            | 7.2         | 1.4           | 28                              | 3.9                        | 5.5           | .1           | 1.4                        | 59                                                 | 21                            | 0                   | 84.6                                      | 6.6 | 55    |
| Sept. 1-10, 21-30          |                      | 7.1                        | .12       | 8.0          | .8             | 12          | 1.6           | 38                              | 5.1                        | 7.8           | .3           | 1.9                        | 78                                                 | 23                            | 0                   | 105                                       | 6.7 | 75    |
| Sept. 11-20.....           |                      | 6.0                        | .06       | 7.5          | 2.5            | 2.5         | 2.3           | 59                              | 5.0                        | 18            | .4           | 1.8                        | 126                                                | 29                            | 0                   | 175                                       | 7.4 | 110   |
| Time-weighted average..... |                      | 10                         | 0.25      | 5.3          | 1.5            | 6.1         | 1.5           | 23                              | 5.3                        | 6.5           | 0.1          | 1.7                        | 67                                                 | 19                            | 2                   | 78.6                                      | --  | 70    |

a Organic matter present; sum of mineral constituents 51 parts per million.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## CHOWAN RIVER BASIN--Continued

## CHOWAN RIVER AT WINTON, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 (Once-daily measurement at approximately 9 a.m.)

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 74   | 66   | 49   | 45   | 42   | 48   | 56   | 66  | 75   | 84   | 83   | 80    |
| 2       | 74   | 65   | 48   | 45   | 42   | 48   | 55   | 67  | 76   | 84   | 84   | 80    |
| 3       | 74   | 65   | 48   | 44   | 42   | 48   | 56   | 68  | 76   | 84   | 82   | 79    |
| 4       | 73   | 65   | 49   | 45   | 43   | 47   | 56   | 68  | 76   | 84   | 82   | 80    |
| 5       | 73   | 64   | 50   | 44   | 42   | 48   | 56   | 68  | 76   | 85   | 83   | 79    |
| 6       | 74   | 64   | 50   | 44   | 45   | 48   | 57   | 68  | 77   | 86   | 82   | 78    |
| 7       | 74   | 64   | 49   | 44   | 45   | 47   | 57   | 68  | 75   | 86   | 82   | 79    |
| 8       | 73   | 63   | 50   | 44   | 45   | 47   | 56   | 69  | 75   | 85   | 81   | 79    |
| 9       | 73   | 60   | 49   | 43   | 45   | 47   | 55   | 69  | 74   | 83   | 81   | 78    |
| 10      | 72   | 60   | 48   | 43   | 45   | 47   | 56   | 70  | 74   | 84   | 81   | 79    |
| 11      | 70   | 60   | 48   | 43   | 46   | 47   | 56   | 70  | 73   | 83   | 81   | 79    |
| 12      | 69   | 59   | 48   | 42   | 45   | 57   | 55   | 70  | 73   | 82   | 81   | 79    |
| 13      | 69   | 57   | 50   | 42   | 45   | 57   | 55   | 71  | 73   | 83   | 82   | 79    |
| 14      | 69   | 56   | 50   | 41   | 45   | 51   | 55   | 72  | 74   | 83   | 81   | 79    |
| 15      | 70   | 56   | 50   | 41   | 44   | 52   | 54   | 72  | 75   | 83   | 81   | 79    |
| 16      | 69   | 56   | 50   | 40   | 44   | 52   | 56   | 72  | 76   | 83   | 80   | 78    |
| 17      | 68   | 56   | 49   | 40   | 43   | 53   | 57   | 72  | 76   | 83   | 81   | 79    |
| 18      | 68   | 56   | 49   | 39   | 43   | 53   | 58   | 73  | 77   | 82   | 81   | 78    |
| 19      | 68   | 55   | 48   | 38   | 43   | 53   | 59   | 73  | 77   | 83   | 80   | 78    |
| 20      | 67   | 55   | 48   | 38   | 43   | 55   | 59   | 72  | 77   | 82   | 80   | 78    |
| 21      | 66   | 55   | 48   | 39   | 43   | 56   | 58   | 73  | 77   | 83   | 80   | 78    |
| 22      | 65   | 53   | 47   | 38   | 44   | 56   | 59   | 73  | 76   | 83   | 80   | 78    |
| 23      | 66   | 55   | 47   | 39   | 45   | 56   | 60   | 73  | 77   | 83   | 79   | 78    |
| 24      | 65   | 50   | 47   | 38   | 45   | 56   | 60   | 74  | 77   | 82   | 79   | 78    |
| 25      | 65   | 50   | 46   | 38   | 46   | 54   | 60   | 74  | 81   | --   | 79   | 78    |
| 26      | 65   | 50   | 46   | 38   | 46   | 54   | 60   | 75  | 82   | 82   | 79   | 78    |
| 27      | 64   | 50   | 47   | 38   | 47   | 55   | 62   | 76  | 83   | 87   | 79   | 77    |
| 28      | 64   | 49   | 46   | 40   | 48   | 55   | 64   | 75  | 83   | 81   | 78   | 77    |
| 29      | 63   | 50   | 46   | 41   | --   | 56   | 65   | 75  | 84   | 81   | 78   | 77    |
| 30      | 65   | 48   | 45   | 41   | --   | 54   | 66   | 75  | 84   | 82   | 80   | 77    |
| 31      | 65   | --   | 45   | 41   | --   | 55   | --   | 75  | --   | 82   | --   | --    |
| Average | 69   | 57   | 48   | 41   | 44   | 52   | 58   | 71  | 77   | 83   | 81   | 78    |

## MISCELLANEOUS ANALYSES OF STREAMS IN CHOWAN RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection             | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
|                                |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| POTECASI CREEK NEAR UNION      |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 11, 1957....              | 453                |                               |              | 3.1             | 1.4                    | 4.1            | 1.3                   | 10                                      | 5.2                           | 8.0              |                 | 1.6                           |                                                                     | 13                               | 5                      | 58.2                                                        | 5.6 |       |
| July 17.....                   | .176               |                               |              | 4.0             | 2.4                    | 6.3            | 2.0                   | 23                                      | 3.0                           | 8.8              |                 | 1.2                           |                                                                     | 20                               | 1                      | 73.8                                                        | 6.3 |       |
| Aug. 5.....                    | ---                |                               |              | 6.0             | 2.2                    | 7.9            | 1.7                   | 14                                      | 19                            | 7.5              |                 | .7                            |                                                                     | 24                               | 13                     | 98.2                                                        | 6.0 |       |
| COLE CREEK NEAR GATESVILLE     |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 12, 1957....              | 32.8               |                               |              | 3.2             | 1.3                    | 4.2            | 0.9                   | 12                                      | 5.4                           | 5.0              |                 | 2.2                           |                                                                     | 13                               | 3                      | 57.8                                                        | 6.0 |       |
| July 17.....                   | .19                |                               |              | --              | --                     | 14             | 2.0                   | 60                                      | 1.4                           | 6.8              |                 | 1.5                           |                                                                     | 30                               | 0                      | 140                                                         | 6.7 |       |
| Aug. 6.....                    | .16                |                               |              | 9.0             | 3.4                    | 17             | 1.9                   | 64                                      | 15                            | 8.0              |                 | .6                            |                                                                     | 36                               | 0                      | 158                                                         | 6.8 |       |
| AHOUSKIE CREEK AT AHOUSKIE     |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 5, 1957....               | 2239               | 6.9                           | 0.10         | 2.4             | 0.5                    | 3.4            | 1.6                   | 7                                       | 3.7                           | 5.1              | 0.1             | 1.5                           | b28                                                                 | 8                                | 2                      | 40.8                                                        | 6.1 | 75    |
| Aug. 5.....                    | .65                | --                            | --           | 6.3             | 3.7                    | 34             | 6.5                   | 130                                     | 3.1                           | 12               | --              | .7                            | --                                                                  | 31                               | 0                      | 266                                                         | 6.6 | --    |
| Sept. 5.....                   | --                 | 18                            | .01          | 9.0             | 2.1                    | 7.3            | 2.5                   | 12                                      | 26                            | 7.7              | .1              | 1.6                           | b80                                                                 | 31                               | 21                     | 114                                                         | 6.8 | 65    |
| CHINKAPIN SWAMP NEAR BETHLEHEM |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| July 23, 1957....              | 0.02               | 49                            | 0.00         | 18              | 6.8                    | 12             | 5.0                   | 123                                     | 2.2                           | 5.5              | 0.4             | 1.0                           | b161                                                                | 74                               | 0                      | 221                                                         | 6.9 | 5     |
| Aug. 7.....                    | .02                |                               |              | 11              | 2.2                    | 7.0            | 2.4                   | 29                                      | 20                            | 5.2              |                 | .7                            |                                                                     | 37                               | 13                     | 116                                                         | 6.2 |       |

a Mean daily discharge.

b Calculated from determined constituents.



## ROANOKE RIVER BASIN

## ROANOKE RIVER AT RANDOLPH, VA.

LOCATION.--At bridge on State Highway 746 (old 26), 2.8 miles northwest of Randolph, Charlotte County, 3.6 miles upstream from Roanoke Creek and at mile 227.3

DRAINAGE AREA.--3,000 square miles (approximately).

RECORDS AVAILABLE.--Chemical analyses: April 1929 to March 1930, October 1950 to September 1956.

Water temperatures: October 1950 to September 1956.

Sediment records: January 1954 to September 1957.

EXTREMES, 1956-57.--Sediment concentrations: Maximum daily, 2,060 ppm May 20; minimum daily, 10 ppm Jan. 15-18.

Sediment loads: Maximum daily, 59,900 tons Sept. 18; minimum daily, 26 tons Oct. 10.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 2,060 ppm May 20, 1957; minimum daily, 6 ppm Dec. 28-31, 1955.

Sediment loads: Maximum daily, 71,500 tons Mar. 2, 1954; minimum daily, 13 tons Sept. 21, 22, 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,820                | 195                      | 958          | 5,160                | 224                      | s 3,460      | 1,440                | 16                       | 52           |
| 2.....  | 1,330                | 125                      | 449          | 6,150                | 218                      | s 3,620      | 1,400                |                          |              |
| 3.....  | 1,120                | 87                       | 263          | 4,640                | 150                      | 1,880        | 1,360                | 16                       | 59           |
| 4.....  | 960                  | 59                       | 153          | 3,600                | 109                      | 1,060        | 1,330                |                          |              |
| 5.....  | 900                  | 43                       | 104          | 2,900                | 76                       | 595          | 1,300                |                          |              |
| 6.....  | 840                  | 43                       | 98           | 2,440                | 61                       | 402          | 1,300                | 14                       | 48           |
| 7.....  | 930                  | 38                       | 95           | 2,180                | 45                       | 265          | 1,260                |                          |              |
| 8.....  | 870                  | 19                       | 45           | 1,980                | 40                       | 214          | 1,260                |                          |              |
| 9.....  | 840                  | 37                       | 84           | 1,860                | 42                       | 211          | 1,260                |                          |              |
| 10..... | 780                  | 28                       | 59           | 1,700                | 32                       | 147          | 1,260                |                          |              |
| 11..... | 750                  | 22                       | 45           | 1,540                | 30                       | 125          | 1,190                | 15                       | 49           |
| 12..... | 700                  | 18                       | 34           | 1,470                | 27                       | 107          | 1,160                |                          |              |
| 13..... | 675                  | 15                       | 27           | 1,440                | 30                       | 117          | 1,190                |                          |              |
| 14..... | 650                  | 15                       | 26           | 1,330                | 31                       | 111          | 1,300                | 17                       | 58           |
| 15..... | 725                  | 16                       | 31           | 1,300                | 60                       | 211          | 1,900                | 109                      | s 664        |
| 16..... | 630                  | 23                       | 39           | 1,300                | 55                       | 193          | 5,000                | 213                      | s 2,780      |
| 17..... | 615                  | 72                       | 120          | 1,300                | 29                       | 102          | 4,910                | 171                      | 2,270        |
| 18..... | 700                  | 62                       | 117          | 3,900                | 355                      | s 4,320      | 3,600                | 140                      | 1,360        |
| 19..... | 650                  | 18                       | 32           | 5,940                | 234                      | 3,750        | 2,900                | 96                       | 752          |
| 20..... | 675                  | 18                       | 33           | 4,370                | 135                      | 1,590        | 2,350                | 62                       | 393          |
| 21..... | 725                  | 28                       | 55           | 3,100                | 93                       | 778          | 2,180                | 46                       | 271          |
| 22..... | 960                  | 44                       | 114          | 2,900                | 69                       | 540          | 2,020                | 30                       | 164          |
| 23..... | 6,270                | 492                      | s 12,000     | 2,800                | 55                       | 416          | 2,180                | 36                       | 212          |
| 24..... | 9,340                | 504                      | s 13,300     | 2,260                | 48                       | 293          | 3,400                | 121                      | 1,110        |
| 25..... | 5,000                | 331                      | 4,470        | 2,020                | 29                       | 158          | 3,900                | 82                       | 863          |
| 26..... | 3,100                | 174                      | 1,460        | 1,820                |                          |              | 3,800                | 58                       | 595          |
| 27..... | 2,260                | 125                      | 763          | 1,700                | 24                       | 112          | 3,000                | 42                       | 340          |
| 28..... | 9,480                | 567                      | s 16,200     | 1,660                |                          |              | 2,530                | 31                       | 200          |
| 29..... | 6,450                | 417                      | s 7,380      | 1,580                |                          |              | 2,260                |                          |              |
| 30..... | 4,280                | 261                      | 3,020        | 1,470                | 16                       | 66           | 2,020                | 23                       | 125          |
| 31..... | 3,300                | 104                      | 927          | --                   | --                       | --           | 1,900                | 20                       | 103          |
| Total.  | 68,325               | --                       | 62,501       | 77,810               | --                       | 25,133       | 67,860               | --                       | 13,145       |

s Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | January              |                          |              | February             |                          |              | March                |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,740                |                          |              | 11,700               | 559                      | s 17,700     | 13,500               | 661                      | s 25,500     |
| 2.....  | 1,660                | 15                       | 66           | 14,300               | 335                      | 12,900       | 15,200               | 612                      | s 26,200     |
| 3.....  | 1,540                |                          |              | 10,400               | 233                      | s 6,760      | 8,030                | 296                      | s 6,500      |
| 4.....  | 1,440                |                          |              | 7,990                | 162                      | 3,490        | 6,430                | 209                      | 3,630        |
| 5.....  | 1,470                | 18                       | 73           | 6,640                | 140                      | 2,510        | 5,480                | 139                      | 2,060        |
| 6.....  | 1,580                |                          |              | 5,640                | 135                      | 2,060        | 4,820                | 110                      | 1,430        |
| 7.....  | 1,620                | 36                       | 157          | 5,240                | 115                      | 1,630        | 4,370                | 82                       | 968          |
| 8.....  | 1,500                |                          |              | 5,480                | 130                      | 1,920        | 4,820                | 166                      | s 2,280      |
| 9.....  | 1,440                | 46                       | 182          | 7,230                | 143                      | 2,790        | 5,870                | 162                      | 2,570        |
| 10..... | 1,500                |                          |              | 12,900               | 364                      | s 13,000     | 5,080                | 85                       | 1,170        |
| 11..... | 1,700                | 17                       | 77           | 9,900                | 350                      | 9,360        | 4,280                | 62                       | 716          |
| 12..... | 1,820                |                          |              | 7,030                | 306                      | 5,810        | 3,900                | 62                       | 653          |
| 13..... | 1,780                | 18                       | 87           | 5,940                | 190                      | 3,050        | 3,500                | 61                       | 576          |
| 14..... | 1,700                | 15                       | 69           | 5,160                | 105                      | 1,460        | 3,300                | 51                       | 454          |
| 15..... | 1,660                |                          |              | 4,550                | 89                       | 1,090        | 3,300                | 62                       | 552          |
| 16..... | 1,580                | 10                       | 41           | 4,190                | 86                       | 973          | 3,700                | 58                       | 579          |
| 17..... | 1,500                |                          |              | 3,800                | 62                       | 636          | 3,300                | 60                       | 535          |
| 18..... | 1,300                |                          |              | 3,400                | 47                       | 431          | 2,900                | 61                       | 478          |
| 19..... | 1,080                |                          |              | 3,100                | 54                       | 452          | 2,800                | 46                       | 348          |
| 20..... | 1,220                |                          |              | 3,900                | 78                       | 821          | 2,800                | 65                       | 491          |
| 21..... | 1,330                | 20                       | 77           | 5,480                | 247                      | 3,650        | 2,710                | 46                       | 337          |
| 22..... | 1,700                |                          |              | 5,160                | 145                      | 2,020        | 2,620                | 43                       | 304          |
| 23..... | 1,940                |                          |              | 4,280                | 106                      | 1,220        | 3,000                | 41                       | 332          |
| 24..... | 2,180                |                          |              | 3,800                | 90                       | 928          | 3,300                | 57                       | 508          |
| 25..... | 2,260                |                          |              | 3,400                | 70                       | 643          | 3,100                | 63                       | 527          |
| 26..... | 2,180                | 26                       | 152          | 3,900                | 62                       | 653          | 2,800                | 45                       | 340          |
| 27..... | 2,020                |                          |              | 6,820                | 404                      | s 7,930      | 2,620                | 77                       | 545          |
| 28..... | 2,020                | 46                       | 251          | 8,480                | 299                      | s 6,940      | 2,530                | 52                       | 355          |
| 29..... | 2,800                | 83                       | 627          | --                   | --                       | --           | 2,530                | 38                       | 260          |
| 30..... | 6,620                | 270                      | s 5,580      | --                   | --                       | --           | 2,350                | 40                       | 254          |
| 31..... | 11,800               | 980                      | s 31,400     | --                   | --                       | --           | 2,260                | 55                       | 336          |
| Total.  | 67,580               | --                       | 40,340       | 179,810              | --                       | 112,822      | 137,200              | --                       | 81,788       |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 2,260                | 88                       | 537          | 2,900                | 97                       | 760          | 1,540                | 90                       | 374          |
| 2.....  | 2,350                | 35                       | 222          | 2,800                | 109                      | 824          | 1,500                | 95                       | 385          |
| 3.....  | 5,870                | 486                      | s 9,900      | 2,440                | 90                       | 593          | 1,500                | 80                       | 324          |
| 4.....  | 6,360                | 651                      | s 11,400     | 2,260                | 130                      | 793          | 1,860                | 162                      | 814          |
| 5.....  | 5,720                | 402                      | s 6,520      | 2,180                | 102                      | 600          | 2,440                | 150                      | 988          |
| 6.....  | 20,200               | 740                      | s 41,500     | 2,180                | 69                       | 406          | 6,180                | 924                      | s 17,400     |
| 7.....  | 26,100               | 538                      | s 38,600     | 2,100                | 72                       | 408          | 6,460                | 745                      | s 13,800     |
| 8.....  | 11,100               | 281                      | s 8,700      | 2,020                | 84                       | 458          | 5,400                | 824                      | s 12,200     |
| 9.....  | 16,300               | 740                      | s 33,600     | 1,940                | 50                       | 262          | 4,640                | 525                      | 6,580        |
| 10..... | 13,700               | 624                      | s 23,800     | 1,900                | 72                       | 369          | 2,710                | 320                      | 2,340        |
| 11..... | 7,710                | 370                      | 7,700        | 1,860                | 52                       | 261          | 2,440                | 205                      | 1,350        |
| 12..... | 6,360                | 208                      | 3,570        | 1,820                | 57                       | 280          | 2,260                | 140                      | 854          |
| 13..... | 5,640                | 147                      | 2,240        | 1,820                | 43                       | 211          | 2,100                | 110                      | 624          |
| 14..... | 5,400                | 131                      | 1,910        | 1,780                | 54                       | 260          | 1,900                | 125                      | 641          |
| 15..... | 4,820                | 106                      | 1,380        | 1,700                | 72                       | 330          | 1,740                | 155                      | 728          |
| 16..... | 4,370                | 75                       | 885          | 1,780                | 41                       | 197          | 2,710                | 345                      | 2,520        |
| 17..... | 4,190                | 69                       | 781          | 1,820                | 52                       | 256          | 2,620                | 250                      | 1,770        |
| 18..... | 4,000                | 63                       | 680          | 1,660                | 48                       | 215          | 2,260                | 198                      | 1,210        |
| 19..... | 3,800                | 72                       | 739          | 2,180                | 238                      | s 2,040      | 2,710                | 310                      | 2,270        |
| 20..... | 3,600                | 95                       | 923          | 7,550                | 2,060                    | s 41,700     | 2,350                | 250                      | 1,590        |
| 21..... | 3,500                | 73                       | 690          | 5,240                | 1,665                    | 23,600       | 1,820                | 270                      | 1,330        |
| 22..... | 3,300                | 82                       | 731          | 3,900                | 800                      | 8,420        | 1,580                | 195                      | 832          |
| 23..... | 3,100                | 85                       | 711          | 2,530                | 560                      | 3,830        | 1,470                | 140                      | 556          |
| 24..... | 3,100                | 60                       | 502          | 2,260                | 295                      | 1,800        | 1,400                | 108                      | 408          |
| 25..... | 4,000                | 138                      | 1,490        | 1,980                | 180                      | 962          | 1,470                | 112                      | 445          |
| 26..... | 3,800                | 220                      | 2,260        | 1,820                | 142                      | 698          | 2,530                | 323                      | s 2,400      |
| 27..... | 5,300                | 243                      | 2,160        | 1,820                | 140                      | 688          | 1,900                | 163                      | 836          |
| 28..... | 2,800                | 132                      | 998          | 2,100                | 190                      | 1,080        | 1,700                | 136                      | 624          |
| 29..... | 2,620                | 118                      | 835          | 2,100                | 132                      | 748          | 1,740                | 190                      | 893          |
| 30..... | 2,530                | 104                      | 710          | 1,860                | 120                      | 603          | 2,180                | 204                      | 1,200        |
| 31..... | --                   | --                       | --           | 1,620                | 115                      | 503          | --                   | --                       | --           |
| Total.  | 191,900              | --                       | 206,674      | 73,920               | --                       | 94,155       | 75,090               | --                       | 78,286       |

s Computed by subdividing day.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

## Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,980                | 178                      | 952          | 1,000                | --                       | --           | 700                  | --                       | --           |
| 2.....  | 1,580                | 137                      | 584          | 900                  | --                       | --           | 700                  | --                       | --           |
| 3.....  | 1,360                | --                       | --           | 810                  | --                       | --           | 650                  | --                       | --           |
| 4.....  | 1,260                | --                       | --           | 770                  | --                       | --           | 650                  | --                       | --           |
| 5.....  | 1,190                | --                       | --           | 770                  | --                       | --           | 800                  | --                       | --           |
| 6.....  | 1,160                | --                       | --           | 720                  | --                       | --           | 750                  | --                       | --           |
| 7.....  | 1,080                | --                       | --           | 720                  | 43                       | 84           | 700                  | --                       | --           |
| 8.....  | 1,020                | --                       | --           | 700                  | --                       | --           | 1,000                | --                       | --           |
| 9.....  | 990                  | --                       | --           | 700                  | --                       | --           | 1,000                | --                       | --           |
| 10..... | 990                  | --                       | --           | 670                  | --                       | --           | 2,150                | 252                      | s 1,550      |
| 11..... | 990                  | --                       | --           | 620                  | --                       | --           | 2,620                | --                       | --           |
| 12..... | 1,050                | 42                       | 119          | 600                  | --                       | --           | 1,900                | --                       | --           |
| 13..... | 990                  | --                       | --           | 580                  | --                       | --           | 1,330                | --                       | --           |
| 14..... | 930                  | --                       | --           | 560                  | --                       | --           | 1,230                | --                       | --           |
| 15..... | 900                  | --                       | --           | 560                  | --                       | --           | 1,230                | --                       | --           |
| 16..... | 870                  | --                       | --           | 590                  | --                       | --           | 1,620                | --                       | --           |
| 17..... | 870                  | --                       | --           | 750                  | --                       | --           | 7,240                | 547                      | s 15,600     |
| 18..... | 1,080                | 160                      | 467          | 750                  | --                       | --           | 21,800               | 1,025                    | s 59,900     |
| 19..... | 1,300                | --                       | --           | 1,180                | 87                       | s 340        | 14,200               | 455                      | 17,400       |
| 20..... | 1,300                | --                       | --           | 2,080                | 245                      | 1,380        | 6,310                | --                       | --           |
| 21..... | 1,080                | --                       | --           | 1,660                | --                       | --           | 4,640                | --                       | --           |
| 22..... | 1,000                | 86                       | 232          | 1,100                | --                       | --           | 3,300                | --                       | --           |
| 23..... | 930                  | --                       | --           | 900                  | --                       | --           | 2,710                | --                       | --           |
| 24..... | 900                  | --                       | --           | 800                  | --                       | --           | 2,440                | --                       | --           |
| 25..... | 2,090                | --                       | --           | 800                  | --                       | --           | 2,020                | --                       | --           |
| 26..... | 1,500                | --                       | --           | 800                  | --                       | --           | 1,740                | --                       | --           |
| 27..... | 1,130                | --                       | --           | 860                  | --                       | --           | 1,540                | --                       | --           |
| 28..... | 960                  | --                       | --           | 860                  | --                       | --           | 1,400                | --                       | --           |
| 29..... | 930                  | --                       | --           | 750                  | 38                       | 77           | 1,400                | --                       | --           |
| 30..... | 900                  | 80                       | 194          | 700                  | --                       | --           | 2,000                | --                       | --           |
| 31..... | 1,100                | --                       | --           | 700                  | --                       | --           | --                   | --                       | --           |
| Total.  | 35,410               | --                       | 2,548        | 25,960               | --                       | 1,881        | 91,770               | --                       | 94,450       |

Total discharge for year (cfs-days).....1,092,635

Total measured load for year (tons).....813,723

Estimated load for days not sampled (tons).....37,576

Total estimated load for year (tons).....851,299

s Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time      | Instantaneous discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-----------|-------------------------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |           |                               |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |           |                               |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Feb. 1, 1957...    | 4:09 p.m. | 12,300                        |                         | 345                           | 768                                        | 35                                                | 42    | 55    | 65    | 76    | 85    | 89    | 95    |       | 99    | 100                 | BSWCM |
| Mar. 2.....        | 2:42 p.m. | 15,400                        |                         | 463                           | 1,020                                      | 36                                                | 44    | 57    | 66    | 76    | 85    | 90    | 96    |       | 100   | --                  | BSWCM |
| Apr. 6.....        | 3:38 p.m. | 22,000                        |                         | 833                           | 1,420                                      | 35                                                | 42    | 51    | 57    | 64    | 74    | 79    | 93    |       | 98    | 100                 | BSWCM |
| Apr. 7.....        | 2:56 p.m. | 26,300                        |                         | 431                           | 717                                        | 48                                                | 55    | 63    | 69    | 78    | 81    | 88    |       |       | 99    | 100                 | BSWCM |
| Apr. 7.....        | 2:36 p.m. | 26,300                        |                         | 433                           | 696                                        | 18                                                | 31    | 47    | 71    | 73    | 77    | 85    |       |       | 97    | 100                 | BSNM  |
| May 21.....        | 6:00 a.m. | 5,400                         |                         | 1,810                         | 1,260                                      | 53                                                | 63    | 75    | 88    | 95    | 97    | 98    | 99    |       | 100   | --                  | BSWCM |
| June 6.....        | 5:21 p.m. | 7,600                         |                         | 1,765                         | 1,590                                      | 11                                                | 21    | 35    | 54    | 80    | 90    | 96    | 98    |       | 100   | --                  | BSNM  |
| July 18.....       | 3:10 p.m. | 1,160                         |                         | 137                           | 437                                        | 50                                                | 67    | 76    | 86    | 92    | 94    | 97    | 98    |       | 99    | 100                 | BSWCM |
| Aug. 19.....       | 3:20 p.m. | 1,660                         |                         | 216                           | 567                                        | 10                                                | 24    | 43    | 68    | 88    | 90    | 94    | 97    |       | 99    | 100                 | BSNM  |
| Sept. 9.....       | 3:32 p.m. | 1,840                         |                         | 384                           | 1,090                                      | 49                                                | 65    | 76    | 88    | 93    | 96    | 99    | 100   |       | --    | --                  | BSWCM |
| Sept. 17.....      | 4:40 p.m. | 7,600                         |                         | 712                           | 1,120                                      | 30                                                | 37    | 44    | 54    | 61    | 69    | 87    | 94    |       | 98    | 100                 | BSWCM |

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.

LOCATION.--At gaging station at highway bridge, 0.5 mile southeast of Paces, Halifax County, 0.5 mile upstream from Big Toby Creek, 2.7 miles upstream from Birch Creek, and at mile 36.0.

DRAINAGE AREA.--2,550 square miles (approximately).

RECORDS AVAILABLE.--Chemical analyses: October 1955 to August 1956.

Water temperatures: January 1954 to September 1956.

Sediment records: January 1954 to September 1957.

EXTREMES, 1956-57.--Sediment concentrations: Maximum daily, 2,260 ppm Sept. 18; minimum daily, 12 ppm Nov. 30, Dec. 1-3.

Sediment loads: Maximum daily, 94,200 tons Sept. 18; minimum daily, 29 tons Jan. 20.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 2,263 ppm July 13, 1955; minimum daily, 10 ppm Jan. 17, 1956.

Sediment loads: Maximum daily, 94,200 tons Sept. 18, 1957; minimum daily 11 tons Sept. 23, 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,670                | 167                      | 753          | 2,760                | 118                      | 879          | 1,200                | 12                       | 39           |
| 2.....  | 1,450                | 124                      | 485          | 2,760                | 100                      | 745          | 1,220                | 12                       | 40           |
| 3.....  | 1,150                | 101                      | 314          | 2,250                | 74                       | 450          | 975                  | 12                       | 32           |
| 4.....  | 1,080                | 129                      | 376          | 2,040                | 96                       | 529          | 1,000                | 17                       | 46           |
| 5.....  | 1,050                | 138                      | 391          | 1,400                | 88                       | 333          | 1,150                | 17                       | 53           |
| 6.....  | 1,100                | 112                      | 333          | 1,500                | 65                       | 263          | 1,080                | 17                       | 50           |
| 7.....  | 1,080                | 76                       | 222          | 1,450                | 40                       | 157          | 1,080                | 26                       | 76           |
| 8.....  | 950                  | 54                       | 139          | 1,400                | 40                       | 151          | 1,050                | 26                       | 74           |
| 9.....  | 850                  | 50                       | 115          | 1,400                | 37                       | 140          | 1,020                | 26                       | 72           |
| 10..... | 850                  | 50                       | 115          | 1,350                | 31                       | 113          | 1,000                | 22                       | 59           |
| 11..... | 725                  | 44                       | 86           | 1,220                | 26                       | 86           | 950                  | 22                       | 56           |
| 12..... | 725                  | 35                       | 69           | 1,220                | 23                       | 76           | 1,050                | 18                       | 51           |
| 13..... | 725                  | 35                       | 69           | 1,150                | 24                       | 75           | 1,020                | 19                       | 52           |
| 14..... | 700                  | 34                       | 64           | 1,220                | 20                       | 66           | 1,080                | 42                       | 122          |
| 15..... | 650                  | 27                       | 47           | 1,180                | 22                       | 70           | 1,610                | 70                       | s 375        |
| 16..... | 650                  | 27                       | 47           | 1,120                | 21                       | 64           | 11,100               | 896                      | s 30,000     |
| 17..... | 675                  | 30                       | 55           | 1,220                | 98                       | s 341        | 9,300                | 549                      | s 15,100     |
| 18..... | 750                  | 34                       | 69           | 3,000                | 205                      | s 1,620      | 3,480                | 262                      | s 2,540      |
| 19..... | 750                  | 52                       | 105          | 3,480                | 148                      | 1,390        | 2,320                | 73                       | 457          |
| 20..... | 1,180                | 84                       | 268          | 2,320                | 62                       | 388          | 1,970                | 68                       | 362          |
| 21..... | 1,080                | 69                       | 201          | 1,850                | 30                       | 150          | 1,790                | 58                       | 280          |
| 22..... | 3,160                | 243                      | s 2,420      | 1,970                | 64                       | 340          | 1,850                | 99                       | 495          |
| 23..... | 8,300                | 537                      | 12,000       | 1,970                | 64                       | 340          | 3,080                | 220                      | 1,830        |
| 24..... | 6,620                | 443                      | 7,920        | 1,670                | 30                       | 135          | 4,840                | 282                      | 3,690        |
| 25..... | 2,680                | 238                      | 1,720        | 1,400                | 30                       | 113          | 5,160                | 246                      | 3,430        |
| 26..... | 1,790                | 106                      | 512          | 1,400                | 16                       | 60           | 3,880                | 165                      | 1,730        |
| 27..... | 3,880                | 375                      | s 4,880      | 1,250                | 16                       | 54           | 2,680                | 96                       | 695          |
| 28..... | 5,960                | 370                      | 5,950        | 1,350                | 16                       | 58           | 2,180                | 72                       | 424          |
| 29..... | 4,120                | 221                      | 2,460        | 1,300                | 16                       | 56           | 1,970                | 36                       | 191          |
| 30..... | 2,460                | 108                      | 717          | 1,220                | 12                       | 40           | 1,730                | 36                       | 168          |
| 31..... | 2,320                | 113                      | 708          | --                   | --                       | --           | 1,610                | 30                       | 130          |
| Total.  | 61,130               | --                       | 43,610       | 50,820               | --                       | 9,282        | 75,425               | --                       | 62,719       |

s Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.--Continued

## Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,400                 | 30                       | 113          | 15,900                | 883                      | 37,900       | 8,410                 | 485                      | s 11,000     |
| 2.....  | 1,450                 | 20                       | 78           | 23,800                | 725                      | 46,600       | 9,050                 | 473                      | 11,600       |
| 3.....  | 1,400                 | 20                       | 76           | 21,900                | 385                      | 22,800       | 5,080                 | 243                      | 3,330        |
| 4.....  | 1,350                 | 20                       | 73           | 7,720                 | 275                      | 5,730        | 3,560                 | 118                      | 1,130        |
| 5.....  | 1,300                 | 20                       | 70           | 4,920                 | 203                      | 2,700        | 2,920                 | 84                       | 662          |
| 6.....  | 1,400                 | 18                       | 68           | 3,960                 | 130                      | 1,390        | 2,600                 | 64                       | 449          |
| 7.....  | 1,350                 | 18                       | 66           | 3,400                 | 105                      | 964          | 2,390                 | 48                       | 310          |
| 8.....  | 1,300                 | 18                       | 63           | 3,160                 | 95                       | 811          | 2,760                 | 92                       | 686          |
| 9.....  | 1,300                 | 20                       | 70           | 4,680                 | 160                      | 2,020        | 3,880                 | 186                      | 1,950        |
| 10..... | 1,300                 | 20                       | 70           | 6,860                 | 260                      | 4,820        | 3,320                 | 95                       | 852          |
| 11..... | 1,250                 | 20                       | 68           | 5,740                 | 258                      | 4,000        | 2,460                 | 60                       | 399          |
| 12..... | 1,250                 | 20                       | 68           | 4,120                 | 204                      | 2,270        | 2,250                 | 57                       | 346          |
| 13..... | 1,180                 | 21                       | 67           | 3,320                 | 90                       | 807          | 2,250                 | 56                       | 340          |
| 14..... | 1,200                 | 22                       | 71           | 2,840                 | 60                       | 460          | 2,110                 | 48                       | 273          |
| 15..... | 1,150                 | 22                       | 68           | 2,460                 | 58                       | 385          | 2,180                 | 78                       | 459          |
| 16..... | 1,180                 | 22                       | 70           | 2,250                 | 45                       | 273          | 3,400                 | 182                      | 1,670        |
| 17..... | 1,120                 | 14                       | 42           | 2,110                 | 40                       | 228          | 3,080                 | 125                      | 1,040        |
| 18..... | 1,050                 | 14                       | 40           | 1,970                 | 37                       | 197          | 2,390                 | 92                       | 594          |
| 19..... | 975                   | 14                       | 37           | 1,910                 | 30                       | 155          | 2,250                 | 73                       | 443          |
| 20..... | 775                   | 14                       | 29           | 2,840                 | 98                       | 751          | 2,180                 | 60                       | 353          |
| 21..... | 1,020                 | 13                       | 36           | 3,000                 | 85                       | 689          | 2,110                 | 56                       | 319          |
| 22..... | 1,150                 | 13                       | 40           | 2,530                 | 72                       | 492          | 2,040                 | 48                       | 264          |
| 23..... | 1,500                 | 60                       | 243          | 2,180                 | 138                      | 812          | 2,920                 | 96                       | 757          |
| 24..... | 2,040                 | 140                      | 771          | 1,970                 | 54                       | 287          | 3,240                 | 122                      | 1,070        |
| 25..... | 2,530                 | 95                       | 649          | 1,850                 | 38                       | 190          | 2,600                 | 96                       | 674          |
| 26..... | 1,910                 | 83                       | 428          | 3,010                 | 334                      | s 3,470      | 2,320                 | 81                       | 507          |
| 27..... | 1,610                 | 60                       | 261          | 4,440                 | 339                      | s 4,050      | 2,250                 | 51                       | 310          |
| 28..... | 1,610                 | 45                       | 196          | 5,520                 | 282                      | s 4,200      | 2,110                 | 36                       | 205          |
| 29..... | 2,040                 | 307                      | s 1,690      | --                    | --                       | --           | 1,970                 | 39                       | 207          |
| 30..... | 4,680                 | 555                      | 7,010        | --                    | --                       | --           | 1,850                 | 28                       | 140          |
| 31..... | 7,670                 | 640                      | 13,300       | --                    | --                       | --           | 1,730                 | 30                       | 140          |
| Total.  | 52,440                | --                       | 25,931       | 150,360               | --                       | 149,451      | 93,660                | --                       | 42,479       |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | April                 |                          |              | May                   |                          |              | June                  |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,670                 | 30                       | 135          | 1,970                 | 66                       | 351          | 1,300                 | 138                      | 484          |
| 2.....  | 1,730                 | 34                       | 159          | 1,790                 | 68                       | 328          | 1,500                 | 108                      | 437          |
| 3.....  | 2,110                 | 51                       | 291          | 1,790                 | 65                       | 314          | 1,220                 | 108                      | 356          |
| 4.....  | 2,460                 | 67                       | 445          | 1,730                 | 85                       | 397          | 1,350                 | 104                      | 379          |
| 5.....  | 3,940                 | 428                      | s 8,390      | 1,610                 | 72                       | 313          | 3,080                 | 674                      | s 6,870      |
| 6.....  | 17,200                | 1,610                    | s 71,100     | 1,400                 | 51                       | 193          | 8,510                 | 1,260                    | s 31,200     |
| 7.....  | 21,800                | 760                      | 44,700       | 1,400                 | 58                       | 219          | 8,140                 | 1,080                    | s 25,000     |
| 8.....  | 10,700                | 744                      | s 21,100     | 1,610                 | 68                       | 296          | 3,800                 | 628                      | s 6,660      |
| 9.....  | 17,400                | 1,450                    | s 65,900     | 1,500                 | 44                       | 178          | 2,460                 | 315                      | 2,090        |
| 10..... | 18,200                | 890                      | 43,700       | 1,500                 | 51                       | 207          | 1,790                 | 173                      | 836          |
| 11..... | 6,440                 | 473                      | s 8,410      | 1,450                 | 58                       | 227          | 1,670                 | 135                      | 609          |
| 12..... | 4,440                 | 240                      | 2,880        | 1,500                 | 56                       | 227          | 1,910                 | 127                      | 655          |
| 13..... | 3,640                 | 148                      | 1,450        | 1,350                 | 44                       | 160          | 1,790                 | 105                      | 507          |
| 14..... | 3,400                 | 123                      | 1,130        | 1,350                 | 54                       | 197          | 1,670                 | 100                      | 451          |
| 15..... | 2,920                 | 96                       | 757          | 1,450                 | 63                       | 249          | 2,110                 | 349                      | s 2,100      |
| 16..... | 2,680                 | 107                      | 774          | 2,320                 | 163                      | 1,020        | 2,760                 | 321                      | s 2,580      |
| 17..... | 2,530                 | 77                       | 526          | 1,790                 | 165                      | 797          | 1,790                 | 185                      | 894          |
| 18..... | 2,390                 | 68                       | 439          | 1,450                 | 164                      | 642          | 2,250                 | 905                      | 5,500        |
| 19..... | 2,390                 | 70                       | 452          | 1,400                 | 146                      | 552          | 3,480                 | 840                      | 7,890        |
| 20..... | 2,250                 | 72                       | 437          | 1,350                 | 104                      | 379          | 2,600                 | 365                      | 2,560        |
| 21..... | 2,250                 | 61                       | 371          | 1,670                 | 115                      | 519          | 1,970                 | 465                      | 2,470        |
| 22..... | 2,320                 | 69                       | 432          | 1,910                 | 198                      | 1,020        | 1,730                 | 270                      | 1,260        |
| 23..... | 3,240                 | 425                      | s 3,600      | 1,550                 | 129                      | 540          | 2,520                 | 990                      | s 7,690      |
| 24..... | 3,800                 | 442                      | 4,530        | 1,450                 | 127                      | 497          | 4,200                 | 938                      | s 11,300     |
| 25..... | 2,680                 | 143                      | 1,030        | 1,790                 | 141                      | 681          | 1,610                 | 625                      | 2,720        |
| 26..... | 2,250                 | 106                      | 644          | 1,720                 | 123                      | 571          | 2,320                 | 586                      | s 3,630      |
| 27..... | 2,040                 | 85                       | 463          | 1,830                 | 197                      | s 1,180      | 2,680                 | 555                      | 5,210        |
| 28..... | 1,910                 | 68                       | 351          | 4,760                 | 1,100                    | s 14,100     | 2,680                 | 355                      | 2,570        |
| 29..... | 1,730                 | 69                       | 322          | 3,240                 | 712                      | 6,230        | 2,320                 | 360                      | 2,260        |
| 30..... | 1,850                 | 62                       | 310          | 1,850                 | 490                      | 2,450        | 2,530                 | 530                      | 3,620        |
| 31..... | --                    | --                       | --           | 1,550                 | 295                      | 1,230        | --                    | --                       | --           |
| Total.  | 154,360               | --                       | 285,433      | 55,030                | --                       | 36,262       | 80,540                | --                       | 140,788      |

s Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,670                | --                       | --           | 775                  | --                       | --           | 775                  | --                       | --           |
| 2.....  | 1,350                | --                       | --           | 750                  | --                       | --           | 675                  | --                       | --           |
| 3.....  | 1,400                | --                       | --           | 1,000                | --                       | --           | 555                  | --                       | --           |
| 4.....  | 1,250                | --                       | --           | 1,050                | --                       | --           | 640                  | --                       | --           |
| 5.....  | 1,220                | --                       | --           | 650                  | --                       | --           | 725                  | --                       | --           |
| 6.....  | 1,080                | --                       | --           | 975                  | --                       | --           | 3,040                | --                       | --           |
| 7.....  | 1,080                | --                       | --           | 1,050                | 245                      | 695          | 1,550                | --                       | --           |
| 8.....  | 1,020                | --                       | --           | 775                  | --                       | --           | 2,680                | --                       | --           |
| 9.....  | 825                  | --                       | --           | 725                  | --                       | --           | 2,600                | 610                      | 4,280        |
| 10..... | 1,080                | --                       | --           | 400                  | --                       | --           | 2,680                | 640                      | 4,630        |
| 11..... | 1,000                | --                       | --           | 530                  | --                       | --           | 2,320                | --                       | --           |
| 12..... | 1,000                | 65                       | 176          | 600                  | --                       | --           | 1,610                | --                       | --           |
| 13..... | 1,020                | --                       | --           | 405                  | --                       | --           | 1,250                | --                       | --           |
| 14..... | 900                  | --                       | --           | 442                  | --                       | --           | 1,100                | --                       | --           |
| 15..... | 775                  | --                       | --           | 700                  | --                       | --           | 1,020                | --                       | --           |
| 16..... | 725                  | --                       | --           | 725                  | --                       | --           | 1,830                | --                       | --           |
| 17..... | 975                  | --                       | --           | 1,120                | --                       | --           | 4,240                | 748                      | s 12,400     |
| 18..... | 1,100                | 195                      | 579          | 1,300                | --                       | --           | 16,700               | 2,260                    | s 94,200     |
| 19..... | 1,870                | --                       | --           | 1,980                | 489                      | s 2,780      | 22,200               | 638                      | s 37,500     |
| 20..... | 2,940                | --                       | --           | 2,810                | 595                      | 4,510        | 10,800               | --                       | --           |
| 21..... | 1,400                | --                       | --           | 1,610                | --                       | --           | 4,520                | --                       | --           |
| 22..... | 900                  | 185                      | 450          | 1,100                | --                       | --           | 3,080                | --                       | --           |
| 23..... | 750                  | --                       | --           | 950                  | --                       | --           | 2,040                | --                       | --           |
| 24..... | 1,000                | --                       | --           | 850                  | --                       | --           | 2,920                | --                       | --           |
| 25..... | 1,200                | --                       | --           | 1,390                | --                       | --           | 3,080                | --                       | --           |
| 26..... | 1,250                | --                       | --           | 2,040                | --                       | --           | 2,180                | --                       | --           |
| 27..... | 975                  | --                       | --           | 1,250                | --                       | --           | 1,970                | --                       | --           |
| 28..... | 800                  | --                       | --           | 1,080                | --                       | --           | 1,790                | --                       | --           |
| 29..... | 725                  | --                       | --           | 900                  | 100                      | 243          | 2,040                | --                       | --           |
| 30..... | 825                  | 110                      | 245          | 800                  | --                       | --           | 2,740                | --                       | --           |
| 31..... | 825                  | --                       | --           | 800                  | --                       | --           | --                   | --                       | --           |
| Total.  | 34,930               | --                       | 1,450        | 31,532               | --                       | 8,228        | 105,350              | --                       | 153,010      |

Total discharge for year (cfs-days).....945,577  
 Total measured load for year (tons).....958,643  
 Estimated load for days not sampled (tons).....83,963  
 Estimated load for year (tons).....1,042,606

s Computed by subdividing day.

ROANOKE RIVER BASIN--Continued

DAN RIVER AT PACES, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time       | Instantaneous discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|------------|-------------------------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |            |                               |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                               |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 | 1.000 |                     |
| Jan. 31, 1957..    | 8:15 a.m.  | 7,100                         |                         | 556                           | 669                                        | 21                                                | 32    | 46    | 61    | 73    | 74    | 80    | 88    |       | 96    | 99    | BSNM                |
| Jan. 2.....        | 4:38 p.m.  | 8,740                         |                         | 333                           | 682                                        | 42                                                | 47    | 50    | 57    | 63    | 69    | 79    | 90    |       | 98    | 100   | BSNWM               |
| Mar. 6.....        | 5:56 p.m.  | 19,000                        |                         | 1,070                         | 2,450                                      | 16                                                | 26    | 36    | 46    | 61    | 75    | 83    | 92    |       | 98    | 100   | BSNM                |
| Apr. 6.....        | 22,600     |                               |                         | 1,555                         | 400                                        | 44                                                | 51    | 56    | 60    | 63    | 64    | 71    | 84    |       | 99    | 100   | BSNWM               |
| Apr. 7.....        | 4:56 p.m.  | 22,600                        |                         | 1,340                         | 3,190                                      | 40                                                | 45    | 56    | 63    | 69    | 75    | 84    | 88    |       | 95    | 99    | BSNWM               |
| June 6.....        | 10,500     |                               |                         |                               |                                            |                                                   |       |       |       |       |       |       |       |       |       |       | BSNWM               |
| July 2.....        | 10:57 a.m. | 1,550                         |                         | 298                           | 827                                        | 48                                                | 67    | 83    | 92    | 95    | 96    | 99    | 100   |       | --    | --    | BSNM                |
| July 12.....       | 4:05 p.m.  | 1,000                         |                         | 70                            | 275                                        | 40                                                | 43    | 49    | 53    | 59    | 65    | 72    | 75    |       | 80    | 94    | BSNWM               |
| July 18.....       | 6:57 p.m.  | 1,300                         |                         | 227                           | 682                                        | 12                                                | 24    | 43    | 66    | 86    | 92    | 98    | 100   |       | --    | --    | BSNM                |
| July 22.....       | 12:50 p.m. | 1,050                         |                         | 134                           | 386                                        | 65                                                | 76    | 86    | 92    | 94    | 95    | 98    | 100   |       | --    | --    | BSNM                |
| Aug. 19.....       | 6:20 p.m.  | 2,840                         |                         | 470                           | 1,240                                      | 58                                                | 70    | 76    | 82    | 85    | 89    | 95    | 98    |       | 100   | --    | BSNWM               |
| Sept. 9.....       | 1:20 p.m.  | 2,600                         |                         | 559                           | 1,310                                      | 60                                                | 70    | 79    | 86    | 90    | 92    | 97    | 99    |       | 100   | --    | BSNWM               |
| Sept. 17.....      | 3:07 p.m.  | 4,360                         |                         | 618                           | 1,890                                      | 47                                                | 56    | 65    | 73    | 79    | 86    | 94    | 98    |       | 99    | 100   | BSNWM               |
| Sept. 18.....      | 4:20 p.m.  | 17,700                        |                         | 1,460                         | 3,310                                      | 35                                                | 43    | 54    | 65    | 72    | 77    | 88    | 96    |       | 99    | 100   | BSNWM               |



## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT JAMESVILLE, N. C.

LOCATION --At boat dock in Jamesville, Martin County, and 1 mile downstream from lower mouth of Devils Gut.

DRAINAGE AREA --9,247 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum, 85 ppm June 1-31; minimum, 54 ppm June 1-30.

Hardness: Maximum, 44 ppm July 1-31; minimum, 13 ppm June 1-30.

Specific conductance: Maximum daily, 140 micromhos Dec. 13; minimum daily, 71.2 micromhos Feb. 7.

Water temperatures: Maximum, 84°F July 30, Aug. 3, 4; minimum, 39°F Jan. 19.

EXTREMES 1955-57 --Dissolved solids: Maximum, 81 ppm June 1-10, 1956; minimum, 54 ppm June 1-30, 1957.

Hardness: Maximum, 45 ppm Sept. 21-30, 1956; minimum, 13 ppm June 1-30, 1957.

Specific conductance: Maximum daily, 153 micromhos June 23, 1956; minimum daily, 71.2 micromhos Feb. 7, 1957.

Water temperatures: Maximum, 88°F July 6, 1956; minimum, 37°F Jan. 9, 1956.

REMARKS --Records of suspended matter of composite samples from October 1955 to September 1956 and records of specific conductance of daily samples from October 1955 to September 1957 available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-31, 1956       |                      | 6.6                        | 0.12      | 11           | 2.7            | 8.9         | 1.7           | 54                              | 5.9                        | 6.0           | 0.0          | 1.6                        | 78                                                 | 39                            | 0             | 126                                       | 6.6 | 16    |
| Nov. 1-30             |                      | 7.1                        | .31       | 10           | 2.6            | 8.1         | 1.8           | 48                              | 5.9                        | 6.0           | .1           | 1.1                        | 78                                                 | 36                            | 0             | 119                                       | 6.6 | 40    |
| Dec. 1-31             |                      | 8.2                        | .20       | 9.9          | 2.6            | 7.9         | 2.1           | 50                              | 6.2                        | 6.0           | .0           | 1.7                        | 79                                                 | 36                            | 0             | 118                                       | 7.1 | 45    |
| Jan. 1-31, 1957       |                      | 11                         | .21       | 10           | 2.8            | 8.9         | 2.2           | 48                              | 8.3                        | 5.1           | .1           | 1.7                        | 80                                                 | 37                            | 0             | 120                                       | 6.8 | 25    |
| Feb. 1-28             |                      | 11                         | .07       | 7.2          | 2.9            | 5.7         | .6            | 36                              | 6.7                        | 6.5           | .1           | 1.2                        | 72                                                 | 30                            | 0             | 97.1                                      | 6.2 | 30    |
| Mar. 1-31             |                      | 9.4                        | .03       | 6.8          | 3.4            | 5.7         | 1.4           | 33                              | 5.2                        | 4.5           | .1           | 1.5                        | 63                                                 | 31                            | 4             | 89.3                                      | 6.8 | 20    |
| Apr. 1-30             |                      | 13                         | .33       | 8.4          | 2.9            | 5.2         | 1.4           | 39                              | 7.7                        | 5.0           | .2           | 1.9                        | 78                                                 | 33                            | 1             | 100                                       | 6.5 | 45    |
| May 1-31              |                      | 14                         | .45       | 9.2          | 3.2            | 5.2         | 1.4           | 43                              | 6.3                        | 5.0           | .2           | 2.2                        | 85                                                 | 36                            | 1             | 105                                       | 6.5 | 70    |
| June 1-30             |                      | 7.7                        | .03       | 4.4          | .5             | 7.9         | 2.1           | 18                              | 6.5                        | 6.0           | .2           | 2.0                        | 54                                                 | 13                            | 0             | 102                                       | 7.5 | 12    |
| July 1-31             |                      | 9.8                        | .05       | 11           | 3.9            | 6.3         | 1.5           | 50                              | 7.6                        | 4.4           | .3           | 1.5                        | 80                                                 | 44                            | 3             | 109                                       | 7.4 | 30    |
| Aug. 1-31             |                      | 8.4                        | .08       | 12           | 3.1            | 6.7         | 1.2           | 55                              | 5.8                        | 4.5           | .1           | 1.0                        | 79                                                 | 43                            | 0             | 122                                       | 7.0 | 25    |
| Sept. 1-30            |                      | 8.8                        | .07       | 11           | 3.6            | 7.3         | 1.2           | 51                              | 4.6                        | 3.1           | .5           | 1.2                        | 75                                                 | 40                            | 0             | 120                                       | 7.1 | 32    |
| Time-weighted average |                      | 9.6                        | 0.16      | 9.3          | 2.9            | 7.0         | 1.6           | 44                              | 6.4                        | 5.2           | 0.2          | 1.6                        | 75                                                 | 35                            | 0             | 111                                       | --  | 33    |

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT JAMESVILLE, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 4 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 68   | 65   | 47   | 47   | 47   | 50   | 54   | --  | 70   | 79   | 82   | --    |
| 2       | 69   | 66   | 47   | 43   | 47   | 49   | 57   | 68  | 71   | 78   | 83   | --    |
| 3       | 68   | 65   | 48   | 44   | 47   | 49   | 57   | 67  | 72   | 79   | 84   | 77    |
| 4       | 69   | 64   | 48   | 44   | 47   | 49   | 58   | 65  | 73   | 79   | 84   | 80    |
| 5       | 69   | 65   | 48   | 43   | 58   | 47   | 59   | 62  | 74   | 80   | 83   | 80    |
| 6       | 68   | 62   | 47   | 43   | 57   | 47   | 59   | 63  | 75   | 80   | 81   | 80    |
| 7       | 68   | 63   | 51   | 44   | 47   | 47   | 58   | 63  | 75   | 81   | 82   | 78    |
| 8       | 68   | 60   | 54   | 43   | 48   | 47   | 57   | 65  | 72   | 82   | 81   | 78    |
| 9       | 67   | 60   | 55   | 43   | 47   | 47   | 58   | 63  | 71   | 82   | 82   | 78    |
| 10      | 68   | 58   | 52   | 43   | 47   | 47   | 57   | 64  | 72   | 83   | 82   | 80    |
| 11      | 67   | 57   | 52   | 43   | 48   | 50   | 57   | 65  | 73   | 82   | 83   | 80    |
| 12      | 66   | 56   | 52   | 43   | 46   | 47   | 57   | 64  | 74   | 82   | --   | 80    |
| 13      | 66   | 56   | 54   | 54   | --   | 50   | 57   | 66  | 73   | 83   | 82   | 80    |
| 14      | 65   | 57   | 54   | 51   | 45   | 51   | 54   | 67  | 78   | 82   | --   | 80    |
| 15      | 67   | 56   | 56   | 42   | 45   | 52   | 54   | 69  | 75   | 82   | 82   | 80    |
| 16      | 66   | 58   | 56   | 42   | 44   | 55   | 55   | 69  | 73   | 81   | --   | 80    |
| 17      | 65   | 57   | 55   | 41   | 45   | 55   | 56   | 68  | 73   | 81   | 82   | 80    |
| 18      | 66   | 56   | 54   | 40   | 45   | 54   | 59   | 69  | 75   | 81   | 80   | 80    |
| 19      | 66   | 55   | 54   | 39   | 45   | 51   | 61   | 70  | 77   | --   | 80   | 79    |
| 20      | 66   | 54   | 54   | 40   | 44   | 55   | 62   | 69  | 74   | 81   | 70   | 78    |
| 21      | 65   | 54   | 66   | 40   | 44   | 55   | 63   | 69  | 74   | 81   | 78   | 78    |
| 22      | 65   | 54   | 52   | 41   | 45   | 55   | 65   | 69  | 74   | 82   | 78   | 78    |
| 23      | 66   | 54   | 53   | 40   | 45   | 54   | 66   | 69  | 75   | 81   | --   | 78    |
| 24      | 65   | 52   | 54   | 43   | 47   | 54   | 65   | 69  | 77   | 81   | 78   | 75    |
| 25      | 65   | 51   | 53   | 42   | 48   | 54   | 67   | 69  | 77   | 80   | 78   | 75    |
| 26      | 65   | 50   | 51   | 47   | 50   | 53   | --   | 69  | 78   | --   | 76   | 75    |
| 27      | 65   | 50   | 51   | 43   | 50   | 54   | 68   | 71  | 79   | 81   | 76   | 73    |
| 28      | 65   | 48   | 54   | 43   | 51   | 55   | 68   | 71  | --   | 81   | 77   | 72    |
| 29      | 65   | 48   | 47   | 45   | --   | 54   | 69   | 71  | --   | 81   | 76   | 70    |
| 30      | 64   | 47   | 47   | 46   | --   | --   | 68   | 70  | --   | 84   | 78   | 70    |
| 31      | 64   | --   | 48   | 46   | --   | --   | --   | 70  | --   | 81   | 77   | --    |
| Average | 66   | 57   | 52   | 43   | 47   | 51   | 60   | 67  | 74   | 81   | 80   | 78    |

ROANOKE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN ROANOKE RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1936 to September 1957

| Date of collection               | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
|                                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-carbon-<br>ate |                                                             |     |       |
| DAN RIVER NEAR FRANCISCO         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 20, 1956....                | 98.3               | 9.6                           | 0.05         | 2.8                  | 0.8                    | 1.4            | 0.7                   | 15                                      | 1.1                           | 1.2              | 0.0             | 0.5                           | a25                                                                 | 10                               | 0                  | 31.1                                                        | 6.8 | 8     |
| June 20, 1957....                | 190                | 11                            | .02          | 2.6                  | .8                     | 2.3            | .7                    | 15                                      | 3.0                           | .8               | .0              | 1.4                           | a30                                                                 | 10                               | 0                  | 35.7                                                        | 7.0 | 17    |
| BELEWS CREEK NEAR PINE HALL      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957....                | 57                 |                               |              | 5.2                  | 3.6                    | 4.2            | 1.1                   | 31                                      | 8.2                           | 4.8              |                 | 0.3                           |                                                                     | 28                               | 2                  |                                                             | 6.5 |       |
| July 8.....                      | 27.1               |                               |              | 5.6                  | 1.9                    | 4.5            | 1.4                   | 34                                      | 3.1                           | 2.5              |                 | .7                            |                                                                     | 22                               | 0                  | 70.8                                                        | 6.3 |       |
| MAYO RIVER NEAR PRICE            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 19, 1957....                | b280               | 14                            | 0.01         | 3.6                  | 0.3                    | 2.7            | 0.8                   | 20                                      | 1.1                           | 1.2              | 0.0             | 0.1                           | a34                                                                 | 10                               | 0                  | 42.0                                                        | 7.0 | 10    |
| Sept. 4.....                     | 94.3               | 17                            | .00          | 3.7                  | 1.9                    | 3.4            | 1.1                   | 26                                      | 2.8                           | .9               | .0              | .5                            | a44                                                                 | 17                               | 0                  | 51.8                                                        | 7.2 | 13    |
| SMITH RIVER AT SPRAY             |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 19, 1957....                | 185                | 15                            | 0.01         | 5.2                  | 1.3                    | 6.0            | 1.8                   | 32                                      | 3.1                           | 3.2              | 0.0             | 1.1                           | a53                                                                 | 18                               | 0                  | 72.2                                                        | 7.0 | 14    |
| Sept. 4.....                     | b350               | 14                            | .00          | 5.5                  | 2.3                    | 5.6            | 1.1                   | 31                                      | 2.5                           | 1.9              | .0              | .8                            | a47                                                                 | 23                               | 0                  | 71.2                                                        | 6.8 | 3     |
| WOLF ISLAND CREEK NEAR PELHAM    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957....                | 49.4               |                               |              | 4.4                  | 2.2                    | 4.9            | 1.1                   | 26                                      | 5.3                           | 2.5              |                 | 0.9                           |                                                                     | 20                               | 0                  | 65.9                                                        | 6.4 |       |
| July 8.....                      | 15.9               |                               |              | 7.2                  | 2.7                    | 5.8            | 1.9                   | 41                                      | 3.7                           | 3.4              |                 | 1.5                           |                                                                     | 29                               | 0                  | 69.0                                                        | 6.5 |       |
| HOGAN CREEK NEAR PROVIDENCE      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957....                | 76.1               |                               |              | 6.8                  | 2.4                    | 5.0            | 1.1                   | 35                                      | 5.9                           | 2.5              |                 | 0.3                           |                                                                     | 27                               | 0                  | 82.5                                                        | 6.1 |       |
| July 9.....                      | 11.0               |                               |              | 9.8                  | 3.1                    | 6.1            | 1.4                   | 53                                      | 2.6                           | 3.0              |                 | .9                            |                                                                     | 37                               | 0                  | 97.3                                                        | 7.3 |       |
| MOON CREEK NEAR PROVIDENCE       |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957....                | 22.5               |                               |              | 5.6                  | 2.7                    | 4.8            | 1.0                   | 34                                      | 3.3                           | 2.3              |                 | 0.5                           |                                                                     | 25                               | 0                  | 72.0                                                        | 6.5 |       |
| July 9.....                      | 4.39               |                               |              |                      |                        | 5.6            | 1.6                   | 47                                      | 4.4                           | 5.6              |                 | 1.0                           |                                                                     | 36                               | 0                  | 102                                                         | 6.7 |       |
| COUNTRYLINE CREEK AT YANCEYVILLE |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 14, 1957....                | 31.8               |                               |              | 7.2                  | 3.8                    | 6.0            | 1.2                   | 40                                      | 7.0                           | 4.3              |                 | 0.3                           |                                                                     | 34                               | 1                  | 99.8                                                        | 6.5 |       |
| July 9.....                      | 4.76               |                               |              | 7.6                  | 3.6                    | 6.8            | 1.5                   | 49                                      | 5.6                           | 3.0              |                 | .9                            |                                                                     | 34                               | 0                  | 100                                                         | 6.5 |       |
| COUNTRYLINE CREEK NEAR SEMORA    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 14, 1957....                | 74.1               |                               |              | 7.2                  | 3.9                    | 5.3            | 0.8                   | 41                                      | 6.3                           | 3.2              |                 | 0.7                           |                                                                     | 34                               | 0                  | 113                                                         | 6.8 |       |
| July 9.....                      | 5.72               |                               |              | 10                   | 4.3                    | 5.1            | 1.7                   | 62                                      | 2.5                           | 3.2              |                 | .7                            |                                                                     | 43                               | 0                  |                                                             | 6.7 |       |

## HYCO RIVER NEAR ROXBORO

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |     |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|-----|-----|
| Apr. 1, 1957..... | 37.8 |  |  | 8.4 | 3.2 | 6.2 | 0.6 | 46 | 7.2 | 4.0 |  | 0.7 |  | 34 | 0 | 102 | 7.2 |
| July 9.....       | .29  |  |  |     |     | 7.8 | 1.5 | 77 | 3.1 | 6.0 |  | .8  |  | 56 | 0 | 148 | 6.9 |

## SOUTH HYCO CREEK NEAR CONCORD

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 14, 1957.... | 71.0 |  |  | 6.4 | 3.1 | 5.7 | 0.7 | 36 | 7.3 | 3.0 |  | 0.5 |  | 29 | 0 | 85.0 | 6.4 |
| July 9.....       | 2.02 |  |  | 8.8 | 3.7 | 7.6 | 1.5 | 58 | 3.0 | 4.0 |  | 1.3 |  | 37 | 0 | 64.8 | 6.4 |

## AARONS CREEK NEAR OAK HILL

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 14, 1957.... | 23.6 |  |  | 5.5 | 2.0 | 3.6 | 0.3 | 27 | 2.4 | 3.0 |  | 0.5 |  | 22 | 0 | 68.5 | 6.4 |
| July 10.....      | .12  |  |  | 6.0 | 2.1 | 3.7 | 1.0 | 32 | 2.8 | 1.0 |  | 1.1 |  | 24 | 0 |      | 6.3 |

## LITTLE GRASS CREEK NEAR STOVALL

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 14, 1957.... | 15.8 |  |  | 4.4 | 2.2 | 4.5 | 0.4 | 27 | 2.2 | 3.0 |  | 0.3 |  | 18 | 0 | 61.0 | 6.4 |
| July 10.....      | .60  |  |  | 7.5 | 2.3 | 4.3 | .9  | 42 | 1.7 | 2.3 |  | .9  |  | 28 | 0 | 79.5 | 6.6 |

## SMITH CREEK NEAR NORLINA

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 13, 1957.... | 30.3 |  |  | 4.2 | 1.1 | 3.9 | 1.4 | 23 | 2.2 | 4.0 |  | 1.0 |  | 15 | 0 | 53.1 | 6.5 |
| July 11.....      | 3.59 |  |  | 4.4 | 1.6 | 5.2 | 1.5 | 30 | 3.8 | 3.0 |  | .6  |  | 18 | 0 | 84.8 | 6.5 |

## SIX POUND CREEK NEAR OAKVILLE

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 30, 1957.... | 10.7 |  |  | 3.2 | 1.5 | 4.6 | 0.9 | 24 | 0.8 | 2.6 |  | 0.9 |  | 14 | 0 | 47.2 | 6.4 |
| July 11.....      | 2.89 |  |  |     |     | 4.1 | .8  | 25 | 1.1 | 2.0 |  | .2  |  |    |   |      | 6.6 |

## STONEHOUSE CREEK NEAR LITTLETON

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 30, 1957.... | 10.3 |  |  | 5.2 | 3.3 | 5.5 | 0.9 | 39 | 2.2 | 2.5 |  | 0.3 |  | 26 | 0 | 75.7 | 7.1 |
| July 19.....      | 1.27 |  |  | 5.0 | 2.3 | 4.5 | 1.4 | 34 | 1.3 | 2.2 |  | .7  |  | 22 | 0 | 68.5 | 6.2 |

## ROANOKE RIVER AT ROANOKE RAPIDS

|                   |         |     |      |     |     |     |     |    |     |     |  |     |     |     |    |      |     |
|-------------------|---------|-----|------|-----|-----|-----|-----|----|-----|-----|--|-----|-----|-----|----|------|-----|
| Mar. 4, 1957..... | b13,000 | 12  | 0.01 | 14  | 1.6 | 9.3 | 1.6 | 54 | 9.5 | 5.0 |  | 0.1 | 1.5 | a82 | 41 | 128  | 7.4 |
| Aug. 26.....      | b5,130  | 8.8 | .50  | 7.9 | 3.2 | 5.6 | 1.4 | 40 | 4.9 | 3.8 |  | .2  | 1.1 | a58 | 33 | 90.8 | 7.0 |

## READY BRANCH NEAR WILLIAMSTON

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Apr. 11, 1957.... | 12.7 |  |  | 5.3 | 1.5 | 7.5 | 1.2 | 18 | 8.3 | 10  |  | 2.4 |  | 19 | 5 | 83.0 | 6.1 |
| July 16.....      | 1.65 |  |  | 4.8 | 2.9 | 7.4 | 1.1 | 23 | 5.7 | 9.5 |  | 1.6 |  | 24 | 5 | 93.5 | 6.2 |

a Calculated from determined constituents.

b Mean daily discharge.

## PAMLICO RIVER BASIN

## FISHING CREEK NEAR ENFIELD, N. C.

LOCATION.--Temperature recorder at gaging station on right bank 15 feet downstream from bridge on U. S. Highway 301, 2,000 feet downstream from Atlantic Coast Line Railroad bridge, 2 miles southwest of Enfield, Halifax County, and  $\frac{3}{4}$  miles downstream from Rocky Creek, and at mile 27.7.

DRAINAGE AREA.--521 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: October 1948 to September 1949, October 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F Aug. 12; minimum, 34°F Jan. 20-22.

EXTREMES, 1948-49, 1953-57.--Water temperatures: Maximum, 86°F July 27-29, 1955; minimum, 33°F Dec. 28, 1948.

REMARKS.--No records July 3-19, 23, 28-31, Aug. 1-6 due to thermometer out of water. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

Continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day   | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|-------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|       | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1     | 62      | 62  | 62       | 61  | 44       | 44  | 40      | 40  | 49       | 48  | 54    | 50  | 54    | 54  | 72  | 70  | 68   | 82  | 81   | --  | --     | 77  | 76        |    |
| 2     | 63      | 62  | 63       | 62  | 44       | 44  | 40      | 40  | 48       | 47  | 54    | 47  | 56    | 56  | 74  | 70  | 73   | 81  | 78   | --  | --     | 78  | 76        |    |
| 3     | 64      | 63  | 63       | 63  | 44       | 44  | 40      | 38  | 47       | 45  | 48    | 47  | 58    | 56  | 70  | 65  | 74   | 71  | 78   | --  | --     | 80  | 79        |    |
| 4     | 65      | 64  | 63       | 63  | 44       | 43  | 38      | 37  | 46       | 46  | 46    | 46  | 58    | 58  | 65  | 63  | 74   | 72  | --   | --  | --     | --  | 80        |    |
| 5     | 66      | 65  | 63       | 62  | 43       | 43  | 38      | 37  | 48       | 46  | 46    | 46  | 59    | 58  | 65  | 63  | 74   | 73  | --   | --  | --     | --  | 78        |    |
| 6     | 66      | 66  | 62       | 61  | 44       | 43  | 38      | 38  | 48       | 48  | 46    | 45  | 60    | 59  | 64  | 62  | 74   | 73  | --   | --  | --     | --  | 78        |    |
| 7     | 66      | 66  | 61       | 60  | 44       | 44  | 39      | 38  | 48       | 47  | 45    | 44  | 60    | 59  | 63  | 61  | 76   | 73  | --   | --  | 80     | 78  | 77        |    |
| 8     | 66      | 66  | 60       | 59  | 45       | 44  | 39      | 39  | 47       | 47  | 45    | 44  | 59    | 59  | 64  | 62  | 76   | 75  | --   | --  | 79     | 77  | 77        |    |
| 9     | 66      | 63  | 59       | 57  | 48       | 45  | 40      | 39  | 47       | 47  | 45    | 45  | 59    | 58  | 66  | 63  | 73   | 72  | --   | --  | 80     | 78  | 77        |    |
| 10    | 63      | 64  | 37       | 35  | 48       | 48  | 42      | 40  | 48       | 47  | 45    | 45  | 58    | 58  | 67  | 64  | 74   | 72  | --   | --  | 81     | 80  | 78        |    |
| 11    | 64      | 63  | 55       | 52  | 48       | 48  | 42      | 42  | 49       | 48  | 46    | 45  | 58    | 58  | 67  | 66  | 74   | 72  | --   | --  | 82     | 80  | 78        |    |
| 12    | 63      | 62  | 51       | 48  | 48       | 42  | 41      | 49  | 48       | 48  | 45    | 45  | 58    | 57  | 68  | 66  | 75   | 72  | --   | --  | 84     | 81  | 78        |    |
| 13    | 62      | 62  | 51       | 50  | 48       | 47  | 41      | 48  | 46       | 51  | 48    | 58  | 58    | 70  | 68  | 78  | 75   | --  | --   | 83  | 80     | 79  | 78        |    |
| 14    | 62      | 61  | 50       | 50  | 48       | 48  | 41      | 41  | 46       | 44  | 52    | 51  | 58    | 56  | 72  | 69  | 80   | 76  | --   | --  | 80     | 79  | 80        |    |
| 15    | 61      | 60  | 50       | 50  | 48       | 41  | 40      | 44  | 42       | 54  | 52    | 56  | 54    | 74  | 71  | 80  | 78   | --  | --   | 80  | 80     | 80  | 79        |    |
| 16    | 60      | 60  | 50       | 50  | 50       | 50  | 40      | 38  | 42       | 42  | 57    | 54  | 56    | 54  | 75  | 73  | 81   | 79  | --   | --  | 83     | 80  | 79        |    |
| 17    | 60      | 60  | 50       | 50  | 50       | 50  | 37      | 37  | 42       | 42  | 57    | 57  | 56    | 54  | 74  | 73  | 83   | 80  | --   | --  | 83     | 81  | 79        |    |
| 18    | 60      | 60  | 50       | 50  | 50       | 50  | 37      | 37  | 42       | 42  | 56    | 56  | 60    | 58  | 76  | 72  | 82   | 80  | --   | --  | 77     | 74  | 75        |    |
| 19    | 61      | 60  | 50       | 50  | 50       | 50  | 36      | 35  | 42       | 42  | 56    | 56  | 60    | 58  | 76  | 74  | 82   | 80  | --   | --  | 77     | 74  | 75        |    |
| 20    | 61      | 61  | 50       | 50  | 50       | 50  | 34      | 34  | 43       | 43  | 56    | 55  | 63    | 60  | 76  | 74  | 82   | 81  | 82   | 78  | 75     | 73  | 74        |    |
| 21    | 61      | 61  | 50       | 50  | 48       | 48  | 34      | 34  | 43       | 43  | 55    | 54  | 68    | 63  | 75  | 72  | 82   | 80  | 80   | 78  | 76     | 74  | 74        |    |
| 22    | 61      | 61  | 50       | 50  | 49       | 48  | 37      | 34  | 42       | 42  | 54    | 52  | 70    | 67  | 72  | 71  | 82   | 80  | 80   | 78  | 77     | 75  | 76        |    |
| 23    | 62      | 61  | 50       | 50  | 50       | 49  | 40      | 37  | 42       | 42  | 52    | 50  | 70    | 68  | 72  | 70  | 81   | 79  | --   | --  | 76     | 74  | 77        |    |
| 24    | 62      | 62  | 50       | 48  | 52       | 50  | 42      | 40  | 43       | 42  | 50    | 50  | 71    | 68  | 74  | 71  | 81   | 79  | 80   | 78  | 74     | 73  | 76        |    |
| 25    | 62      | 62  | 48       | 47  | 53       | 52  | 42      | 45  | 43       | 45  | 51    | 50  | 72    | 70  | 75  | 72  | 80   | 79  | 79   | 77  | 73     | 73  | 74        |    |
| 26    | 62      | 62  | 47       | 46  | 52       | 49  | 42      | 42  | 50       | 45  | 52    | 51  | 73    | 70  | 76  | 74  | 80   | 78  | 79   | 77  | 74     | 72  | 71        |    |
| 27    | 62      | 62  | 46       | 46  | 49       | 46  | 42      | 42  | 54       | 50  | 53    | 52  | 73    | 71  | 76  | 74  | 79   | 77  | 78   | 76  | 73     | 70  | 70        |    |
| 28    | 62      | 62  | 46       | 45  | 46       | 44  | 44      | 44  | 54       | 54  | 53    | 74  | 72    | 75  | 73  | 82  | 78   | --  | --   | 70  | 70     | 70  | 67        |    |
| 29    | 62      | 61  | 45       | 45  | 44       | 44  | 48      | 44  | --       | --  | 54    | 54  | 74    | 73  | 74  | 72  | 80   | 79  | --   | --  | 72     | 70  | 67        |    |
| 30    | 61      | 61  | 45       | 44  | 44       | 44  | 42      | 42  | --       | --  | 54    | 54  | 74    | 73  | 72  | 70  | 81   | 79  | --   | --  | 74     | 72  | 66        |    |
| 31    | 61      | 61  | --       | --  | 42       | 40  | 51      | 49  | --       | --  | 54    | 54  | --    | --  | 70  | 69  | --   | --  | --   | --  | 76     | 74  | --        |    |
| Aver- | 63      | 62  | 53       | 53  | 47       | 46  | 41      | 40  | 46       | 45  | 51    | 50  | 63    | 61  | 72  | 69  | 78   | 75  | --   | --  | --     | --  | 76        | 75 |

## PAMLICO RIVER BASIN--Continued

TAR RIVER NEAR PACTOLUS, N. C.

LOCATION.--At Yankee Hall Landing about 1.5 miles southeast of Pactolus, Pitt County.

DRAINAGE AREA.--2 680 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 82 ppm July 21-31; minimum, 53 ppm Mar. 1-10.

Hardness: Maximum, 30 ppm July 11-20, 21-31; minimum, 13 ppm Dec. 21-31.

Specific conductance: Maximum daily, 131 micromhos Aug. 23; minimum daily, 47.2 micromhos Mar. 8.

Water temperatures: Maximum, 90°F Aug. 3, 7; minimum, 39°F Jan. 18.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nestum            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956...  |                      | 13                         | 0.05      | 5.6          | 1.4            | 6.2         | 2.0           | 15                              | 9.8                        | 7.6           | 0.0          | 2.0                        | 69                                                 | 20                            | 7             | 82.8                                      | 6.6 | 30    |
| Oct. 11-20, 1956... |                      | 13                         | 0.10      | 6.2          | 1.4            | 7.1         | 2.1           | 20                              | 6.6                        | 8.2           | 0.0          | 2.4                        | 69                                                 | 21                            | 5             | 89.5                                      | 6.7 | 42    |
| Oct. 21-31, 1956... |                      | 13                         | 0.10      | 6.2          | 1.1            | 7.4         | 2.3           | 19                              | 8.0                        | 8.5           | 0.0          | 2.1                        | 69                                                 | 20                            | 4             | 84.9                                      | 6.3 | 65    |
| Nov. 1-10, 1956...  |                      | 14                         | 0.57      | 5.9          | 1.3            | 6.2         | 2.0           | 19                              | 6.0                        | 9.1           | 0.0          | 2.3                        | 70                                                 | 20                            | 5             | 83.9                                      | 6.4 | 80    |
| Nov. 11-20, 1956... |                      | 16                         | 0.62      | 5.7          | 1.7            | 6.7         | 1.6           | 20                              | 4.5                        | 9.6           | 0.0          | 2.5                        | 69                                                 | 21                            | 5             | 86.6                                      | 6.5 | 65    |
| Nov. 21-30, 1956... |                      | 17                         | 0.57      | 5.6          | 1.9            | 6.9         | 1.5           | 23                              | 5.4                        | 9.4           | 0.0          | 2.1                        | 67                                                 | 22                            | 3             | 88.2                                      | 6.7 | 45    |
| Dec. 1-10, 1956...  |                      | 17                         | 0.47      | 6.0          | 1.1            | 7.0         | 1.5           | 22                              | 3.6                        | 8.8           | 0.0          | 1.7                        | 73                                                 | 19                            | 1             | 87.2                                      | 6.9 | 36    |
| Dec. 11-20, 1956... |                      | 13                         | 0.36      | 4.6          | 1.1            | 4.8         | 1.7           | 20                              | 3.5                        | 8.1           | 0.0          | 2.5                        | 72                                                 | 18                            | 2             | 82.0                                      | 6.9 | 35    |
| Dec. 21-31, 1956... |                      | 13                         | 0.16      | 4.6          | 0.8            | 4.8         | 1.7           | 18                              | 5.8                        | 5.8           | 0.0          | 1.3                        | 64                                                 | 17                            | 3             | 73.7                                      | 6.4 | 45    |
| Jan. 1-10, 1957...  |                      | 15                         | 0.45      | 4.8          | 1.3            | 6.1         | 1.6           | 21                              | 4.7                        | 7.8           | 0.0          | 2.3                        | 63                                                 | 18                            | 0             | 78.8                                      | 6.7 | 28    |
| Jan. 11-20, 1957... |                      | 16                         | 0.52      | 5.2          | 1.1            | 6.5         | 1.6           | 21                              | 4.7                        | 7.8           | 0.0          | 2.3                        | 61                                                 | 18                            | 2             | 77.7                                      | 6.5 | 33    |
| Jan. 21-31, 1957... |                      | 15                         | 0.53      | 4.8          | 1.6            | 6.4         | 1.5           | 20                              | 4.8                        | 7.8           | 0.0          | 1.8                        | 61                                                 | 18                            | 2             | 77.7                                      | 6.5 | 33    |
| Feb. 1-10, 1957...  |                      | 10                         | 0.05      | 4.8          | 1.7            | 4.9         | 2.2           | 14                              | 8.1                        | 6.5           | 0.0          | 1.5                        | 61                                                 | 23                            | 12            | 75.8                                      | 6.9 | 40    |
| Feb. 11-19, 1957... |                      | 9.6                        | 0.05      | 4.8          | 1.5            | 4.5         | 2.2           | 14                              | 7.6                        | 7.0           | 0.0          | 2.2                        | 62                                                 | 18                            | 7             | 80.4                                      | 6.9 | 30    |
| Feb. 20-28, 1957... |                      | 12                         | 0.03      | 4.4          | 1.0            | 4.7         | 1.6           | 16                              | 5.4                        | 6.5           | 0.0          | 1.7                        | 55                                                 | 15                            | 2             | 70.6                                      | 6.7 | 25    |
| Mar. 1-10, 1957...  |                      | 8.0                        | 0.03      | 4.7          | 1.0            | 4.7         | 1.6           | 12                              | 6.3                        | 4.9           | 0.0          | 1.6                        | 53                                                 | 15                            | 6             | 70.6                                      | 6.4 | 63    |
| Mar. 11-20, 1957... |                      | 8.0                        | 0.15      | 4.7          | 1.0            | 4.7         | 1.6           | 12                              | 5.9                        | 6.1           | 0.0          | 1.9                        | 57                                                 | 16                            | 4             | 71.1                                      | 6.7 | 45    |
| Mar. 21-31, 1957... |                      | 8.8                        | 0.37      | 4.6          | 1.4            | 5.8         | 1.8           | 16                              | 5.9                        | 6.1           | 0.0          | 2.3                        | 57                                                 | 17                            | 4             | 70.0                                      | 6.7 | 45    |
| Apr. 1-10, 1957...  |                      | 9.7                        | 0.22      | 4.4          | 2.2            | 6.0         | 1.1           | 18                              | 5.6                        | 7.5           | 0.0          | 1.5                        | 61                                                 | 20                            | 5             | 76.1                                      | 6.8 | 50    |
| Apr. 11-20, 1957... |                      | 11                         | 0.22      | 5.2          | 2.1            | 6.0         | 1.5           | 23                              | 4.3                        | 7.5           | 0.0          | 1.3                        | 69                                                 | 20                            | 1             | 80.2                                      | 6.7 | 60    |
| Apr. 21-30, 1957... |                      | 12                         | 0.23      | 4.8          | 2.4            | 6.8         | 2.0           | 26                              | 6.4                        | 7.5           | 0.0          | 2.8                        | 71                                                 | 22                            | 1             | 92.1                                      | 6.9 | 45    |
| May 1-10, 1957...   |                      | 14                         | 0.21      | 6.0          | 2.5            | 7.3         | 2.1           | 27                              | 4.3                        | 8.0           | 0.0          | 2.2                        | 64                                                 | 28                            | 3             | 90.8                                      | 7.0 | 23    |
| May 11-20, 1957...  |                      | 15                         | 0.13      | 4.8          | 3.2            | 8.3         | 1.8           | 30                              | 4.6                        | 8.7           | 0.0          | 2.6                        | 70                                                 | 28                            | 1             | 95.0                                      | 7.0 | 35    |
| May 21-31, 1957...  |                      | 14                         | 0.15      | 6.1          | 3.0            | 8.4         | 1.9           | 29                              | 5.6                        | 8.9           | 0.0          | 2.8                        | 73                                                 | 28                            | 4             | 95.8                                      | 6.8 | 35    |

PAMLICO RIVER BASIN--Continued  
TAR RIVER NEAR PACTOLUS, N. C.--Continued  
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, nesium               | Non-carbonate |                                           |     |       |
| June 1-10, 1957...         |                      | 13                         | 0 .02     | 5.4          | 2.0            | 6.8         | 2.0           | 21                              | 5.0                        | 7.8           | 0.2          | 2.9                        | 64                                                 | 22                            | 5             | 81.5                                      | 7.1 | 23    |
| June 11-20.....            |                      | 13                         | .06       | 6.9          | 1.4            | 7.0         | 1.9           | 20                              | 5.0                        | 8.6           |              | 3.1                        | 60                                                 | 23                            | 6             | 87.8                                      | 6.7 | 38    |
| June 21-30.....            |                      | 14                         | .08       | 7.1          | 2.3            | 8.7         | 2.2           | 28                              | 6.5                        | 10            | .2           | 2.6                        | 77                                                 | 27                            | 4             | 102                                       | 6.8 | 28    |
| July 1-10.....             |                      | 12                         | .01       | 7.2          | 2.4            | 10          | 1.5           | 32                              | 8.7                        | 9.5           | .2           | 1.6                        | 75                                                 | 28                            | 2             | 110                                       | 7.3 | 10    |
| July 11-20.....            |                      | 11                         | .00       | 7.6          | 2.7            | 9.5         | 1.8           | 34                              | 8.2                        | 9.0           | .3           | 2.1                        | 77                                                 | 30                            | 2             | 116                                       | 7.1 | 10    |
| July 21-31.....            |                      | 13                         | .00       | 7.6          | 2.7            | 12          | 1.8           | 34                              | 7.8                        | 12            | .2           | 3.1                        | 82                                                 | 30                            | 2             | 120                                       | 7.1 | 10    |
| Aug. 1-10.....             |                      | 12                         | .06       | 6.7          | 2.1            | 11          | 2.1           | 28                              | 6.4                        | 14            | .2           | 2.9                        | 80                                                 | 25                            | 2             | 118                                       | 7.1 | 23    |
| Aug. 11-20.....            |                      | 9.0                        | .04       | 8.2          | 1.2            | 11          | 2.1           | 29                              | 7.6                        | 12            | .2           | 2.1                        | 78                                                 | 25                            | 2             | 113                                       | 7.4 | 20    |
| Aug. 21-31.....            |                      | 11                         | .12       | 5.9          | 1.9            | 9.3         | 2.1           | 17                              | 8.8                        | 12            | .2           | 2.8                        | 76                                                 | 23                            | 9             | 100                                       | 6.7 | 45    |
| Sept. 1-10.....            |                      | 10                         | .03       | 5.6          | 1.9            | 7.2         | 1.8           | 19                              | 9.0                        | 7.0           | .2           | 1.7                        | 66                                                 | 22                            | 6             | 91.2                                      | 6.2 | 25    |
| Sept. 11-20.....           |                      | 11                         | .04       | 6.4          | 1.9            | 9.1         | 2.1           | 21                              | 11                         | 9.0           | .1           | 1.9                        | 74                                                 | 24                            | 7             | 104                                       | 6.6 | 25    |
| Sept. 21-30.....           |                      | 11                         | .05       | 6.0          | 2.2            | 7.7         | 2.3           | 18                              | 11                         | 8.5           | .2           | 1.7                        | 68                                                 | 24                            | 9             | 100                                       | 6.4 | 30    |
| Time-weighted average..... |                      | 12                         | 0.19      | 5.7          | 1.8            | 7.3         | 1.8           | 21                              | 6.5                        | 8.4           | 0.1          | 2.2                        | 68                                                 | 22                            | 4             | 88.5                                      | --  | 38    |

## PAMLICO RIVER BASIN--Continued

## TAR RIVER NEAR PACTOLUS, N. C.--Continued

Temperature (<sup>°</sup>F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 12 m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 69   | 67   | 46   | 44   | 54   | 51   | 56   | 78  | 75   | 83   | 84   | 80    |
| 2       | 70   | 68   | 46   | 44   | 55   | 52   | 60   | 78  | 75   | 81   | 84   | 85    |
| 3       | 70   | 67   | 46   | 43   | 52   | 53   | 61   | 78  | 76   | 83   | 90   | 85    |
| 4       | 72   | 67   | 48   | 43   | 52   | 58   | 60   | 78  | 75   | 86   | 84   | 83    |
| 5       | 70   | 66   | 48   | 43   | 52   | 54   | 61   | 78  | 81   | 85   | 85   | 81    |
| 6       | 71   | 64   | 52   | 43   | 55   | --   | 63   | 69  | 81   | 84   | 84   | 81    |
| 7       | 71   | 64   | 52   | 43   | 52   | 49   | 63   | 68  | 76   | 81   | 90   | 81    |
| 8       | 70   | 60   | 54   | 45   | 52   | 49   | 64   | 68  | 78   | 85   | 83   | 81    |
| 9       | 71   | 57   | 56   | 44   | 51   | 49   | 62   | 69  | 76   | 85   | 84   | 79    |
| 10      | 68   | 57   | 51   | 46   | 53   | 49   | 64   | 69  | 73   | 85   | 83   | 81    |
| 11      | 66   | 59   | 56   | 46   | 57   | 51   | 63   | 70  | 79   | 86   | 85   | 79    |
| 12      | 67   | 56   | 52   | 47   | 56   | 52   | 65   | 79  | 80   | 84   | 83   | 81    |
| 13      | 65   | 56   | 55   | 46   | 56   | 55   | 59   | 79  | 77   | 87   | 84   | 84    |
| 14      | 65   | 54   | 56   | 45   | 53   | 54   | 62   | 78  | 79   | 84   | 84   | 81    |
| 15      | 64   | 65   | 58   | 44   | 51   | 60   | 60   | 78  | 80   | 86   | 81   | 82    |
| 16      | 64   | 56   | 58   | 40   | 49   | 53   | 60   | 80  | --   | 85   | 84   | 80    |
| 17      | 64   | 56   | 60   | 40   | 47   | 54   | 60   | 78  | 83   | 81   | 81   | 80    |
| 18      | 66   | 57   | 56   | 39   | 50   | 56   | 62   | 79  | 85   | 81   | 80   | 81    |
| 19      | 61   | 56   | 53   | 42   | 51   | 58   | 63   | 80  | 85   | 85   | 77   | 80    |
| 20      | 65   | 55   | 54   | 42   | 45   | 58   | 70   | 80  | 86   | 81   | 76   | 79    |
| 21      | 65   | 55   | 53   | 41   | 45   | 54   | 70   | 77  | 85   | 84   | 76   | 82    |
| 22      | 66   | 54   | 54   | 47   | 56   | 55   | 72   | 76  | 86   | 85   | 77   | 79    |
| 23      | 66   | 53   | 54   | 47   | 46   | 56   | 72   | 76  | 85   | 81   | 77   | 82    |
| 24      | 67   | 50   | 55   | 46   | 50   | 55   | 75   | 78  | 84   | 84   | 73   | 80    |
| 25      | 66   | 48   | 54   | 42   | 50   | 55   | 76   | 80  | 85   | 84   | 74   | 80    |
| 26      | 65   | 48   | 54   | 46   | 55   | 54   | 60   | 82  | 83   | 83   | 74   | 79    |
| 27      | 65   | 41   | 51   | 47   | 55   | 55   | 76   | 80  | 81   | 87   | 69   | 81    |
| 28      | 63   | 41   | 54   | 47   | 54   | 54   | 75   | 81  | 80   | 82   | 81   | 79    |
| 29      | 63   | 47   | 47   | 54   | --   | 54   | 80   | 83  | --   | 84   | 81   | 81    |
| 30      | 65   | 45   | 47   | 45   | --   | --   | 78   | 78  | --   | 84   | 80   | 79    |
| 31      | 65   | --   | 42   | 42   | --   | --   | --   | 75  | --   | --   | 79   | --    |
| Average | 67   | 56   | 52   | 44   | 52   | 54   | 66   | 77  | 80   | 84   | 81   | 81    |



## PAMLICO RIVER BASIN--Continued

## TAR RIVER AT GRIMESLAND, N. C.

LOCATION--At bridge on county road, 1 mile northeast of Grimesland, Pitt County, 0.3 mile upstream from Chicod Creek, and 1.8 miles upstream from Grindie Creek.

DRAINAGE AREA--2,740 square miles.

RECORDS AVAILABLE--Chemical analyses: September 1954 to September 1957.

WATER TEMPERATURES--October 1954 to September 1956.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 117 ppm Sept. 27-28; minimum, 57 ppm Mar. 11-20.

Hardness: Maximum, 33 ppm Sept. 27-28; minimum, 14 ppm Dec. 21-31, Feb. 11-19.

Specific conductance: Maximum daily, 234 micromhos Sept. 28; minimum daily, 46.9 micromhos Feb. 10-11.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 10,500 ppm Oct. 15 (p.m.), 1954; minimum, 52 ppm Feb. 12-20, 1956.

Hardness: Maximum, 1,940 ppm Oct. 15 (p.m.), 1955; minimum, 13 ppm July 21, 1955.

Specific conductance: Maximum daily, 15,600 micromhos Oct. 15 (p.m.), 1954; minimum daily, 46.9 micromhos Feb. 10-11, 1957.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956..  |                      | 11                         | 0.07      | 5.2          | 1.4            | 6.2         | 2.2           | 15                              | 7.7                        | 7.8           | 0.0          | 1.8                        | 60                                                 | 19                            | 6             | 84.3                                      | 6.5 | 30    |
| Oct. 11-20.....    |                      | 14                         | .08       | 5.7          | 1.3            | 6.7         | 2.1           | 20                              | 7.4                        | 8.4           | .0           | 2.4                        | 65                                                 | 20                            | 4             | 90.4                                      | 6.7 | 40    |
| Oct. 21-31.....    |                      | 13                         | .11       | 5.7          | 1.1            | 6.1         | 2.0           | 17                              | 5.1                        | 8.8           | .1           | 2.0                        | 64                                                 | 20                            | 5             | 82.6                                      | 6.5 | 30    |
| Nov. 1-10.....     |                      | 14                         | .52       | 5.6          | 1.5            | 6.1         | 2.0           | 16                              | 5.1                        | 8.8           | .1           | 2.0                        | 64                                                 | 21                            | 4             | 84.1                                      | 6.5 | 70    |
| Nov. 11-20.....    |                      | 16                         | .52       | 5.7          | 1.6            | 6.5         | 1.7           | 20                              | 4.8                        | 9.7           | .0           | 2.0                        | 70                                                 | 21                            | 4             | 84.1                                      | 6.9 | 70    |
| Nov. 21-30.....    |                      | 17                         | .60       | 5.6          | 1.2            | 7.1         | 1.3           | 21                              | 5.3                        | 9.6           | .0           | 1.9                        | 65                                                 | 19                            | 2             | 88.0                                      | 6.7 | 45    |
| Dec. 1-10.....     |                      | 18                         | .49       | 6.0          | 1.5            | 7.8         | 1.6           | 26                              | 7.5                        | 8.3           | .0           | 2.1                        | 76                                                 | 21                            | 0             | 90.4                                      | 7.2 | 34    |
| Dec. 11-20.....    |                      | 17                         | .51       | 6.0          | 1.4            | 7.6         | 1.4           | 25                              | 3.7                        | 8.3           | .0           | 1.9                        | 73                                                 | 21                            | 0             | 88.6                                      | 6.9 | 32    |
| Dec. 21-31.....    |                      | 13                         | .10       | 4.0          | .9             | 7.0         | 2.2           | 20                              | 3.2                        | 7.1           | .0           | 1.5                        | 67                                                 | 14                            | 0             | 76.2                                      | 7.1 | 44    |
| Jan. 1-10, 1957..  |                      | 13                         | .94       | 5.2          | .9             | 6.4         | 1.8           | 19                              | 3.8                        | 7.6           | .0           | 1.8                        | 63                                                 | 17                            | 1             | 72.0                                      | 6.6 | 48    |
| Jan. 11-20.....    |                      | 13                         | .52       | 5.1          | .9             | 6.2         | 1.5           | 20                              | 4.8                        | 7.2           | .0           | 1.9                        | 61                                                 | 16                            | 0             | 76.6                                      | 6.4 | 33    |
| Jan. 21-31.....    |                      | 15                         | .56       | 5.4          | .9             | 6.4         | 1.4           | 20                              | 5.3                        | 7.4           | .0           | 1.8                        | 61                                                 | 17                            | 1             | 77.7                                      | 6.5 | 35    |
| Feb. 1-10.....     |                      | 9.5                        | .07       | 3.7          | 1.4            | 4.0         | 1.7           | 14                              | 5.9                        | 5.3           | .1           | 1.4                        | 61                                                 | 15                            | 3             | 59.1                                      | 6.2 | 95    |
| Feb. 11-19.....    |                      | 10                         | .07       | 3.8          | 1.2            | 5.0         | 1.6           | 13                              | 6.8                        | 5.2           | .1           | 1.2                        | 61                                                 | 14                            | 4             | 61.2                                      | 6.7 | 75    |
| Feb. 20-28.....    |                      | 12                         | .17       | 4.4          | 1.4            | 5.5         | 1.4           | 17                              | 6.1                        | 6.0           | .1           | 1.7                        | 68                                                 | 17                            | 3             | 69.6                                      | 6.4 | 35    |
| Mar. 1-10.....     |                      | 9.0                        | .12       | 3.9          | 1.2            | 4.9         | 1.8           | 14                              | 6.0                        | 5.4           | .2           | 1.4                        | 65                                                 | 15                            | 3             | 59.9                                      | 6.6 | 95    |
| Mar. 11-20.....    |                      | 8.4                        | .04       | 4.2          | 1.1            | 4.9         | 1.4           | 14                              | 5.8                        | 5.7           | .1           | 1.4                        | 57                                                 | 15                            | 4             | 63.8                                      | 6.6 | 50    |
| Mar. 21-31.....    |                      | 9.0                        | .16       | 4.5          | 1.4            | 5.6         | 1.3           | 16                              | 6.3                        | 5.9           | .1           | 1.7                        | 63                                                 | 17                            | 4             | 69.5                                      | 6.3 | 45    |
| Apr. 1-10.....     |                      | 9.5                        | .15       | 4.8          | 1.9            | 5.8         | 1.1           | 20                              | 5.6                        | 7.5           | .0           | 1.9                        | 63                                                 | 20                            | 4             | 78.1                                      | 6.6 | 50    |
| Apr. 11-20.....    |                      | 11                         | .22       | 4.8          | 1.9            | 6.1         | 1.1           | 26                              | 5.7                        | 7.0           | .0           | 1.3                        | 63                                                 | 20                            | 0             | 78.9                                      | 6.7 | 80    |
| Apr. 21-30.....    |                      | 13                         | .23       | 5.6          | 2.2            | 6.7         | 1.2           | 27                              | 5.8                        | 6.5           | .0           | 1.5                        | 68                                                 | 23                            | 1             | 85.2                                      | 6.9 | 50    |

|                            |     |      |     |     |     |     |    |     |     |     |     |       |    |    |      |     |    |
|----------------------------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-------|----|----|------|-----|----|
| May 1-10, 1957...          | 14  | .28  | 7.0 | 1.8 | 6.7 | 2.1 | 29 | 5.3 | 8.9 | .1  | 4.1 | 74    | 25 | 1  | 96.8 | 6.9 | 45 |
| May 11-20.....             | 15  | .40  | 5.8 | 2.6 | 7.4 | 1.7 | 31 | 6.2 | 9.2 | .1  | 2.7 | 75    | 25 | 0  | 99.9 | 6.9 | 38 |
| May 21-30.....             | 14  | .15  | 5.3 | 2.9 | 7.2 | 1.7 | 28 | 4.9 | 7.3 | .1  | 2.4 | 71    | 24 | 0  | 86.9 | 7.2 | 45 |
| June 1-10.....             | 13  | .01  | 5.5 | 1.9 | 6.7 | 2.0 | 19 | 5.9 | 7.4 | .2  | 4.1 | 62    | 22 | 6  | 80.5 | 6.9 | 38 |
| June 11-20.....            | 13  | .01  | 6.4 | 2.7 | 9.1 | 2.5 | 27 | 6.9 | 11  | .3  | 3.7 | 74    | 27 | 5  | 103  | 7.1 | 35 |
| June 21-30.....            | 15  | .11  | 6.4 | 2.7 | 9.1 | 2.5 | 27 | 6.9 | 11  | .3  | 3.7 | 74    | 27 | 5  | 103  | 7.1 | 35 |
| July 1-10.....             | 12  | .01  | 7.6 | 2.4 | 11  | 1.3 | 34 | 7.4 | 10  | .2  | 1.7 | 75    | 29 | 1  | 118  | 6.7 | 15 |
| July 11-20.....            | 9.8 | .00  | 7.6 | 2.7 | 11  | 1.3 | 38 | 7.2 | 10  | .1  | 1.2 | 77    | 30 | 0  | 122  | 6.7 | 15 |
| July 21-31.....            | 11  | .00  | 8.4 | 2.2 | 10  | 1.8 | 38 | 9.1 | 10  | .1  | 2.4 | 77    | 30 | 0  | 122  | 7.3 | 15 |
| Aug. 1-10.....             | 12  | .00  | 7.2 | 2.4 | 11  | 1.9 | 33 | 9.6 | 12  | .2  | 1.8 | 77    | 27 | 0  | 121  | 7.1 | 28 |
| Aug. 11-20.....            | 11  | .00  | 8.1 | 1.4 | 8.5 | 1.9 | 32 | 9.7 | 11  | .2  | 2.6 | 71    | 27 | 1  | 121  | 7.1 | 28 |
| Aug. 21-31.....            | 11  | .04  | 6.0 | 1.9 | 8.5 | 1.9 | 24 | 9.7 | 11  | .2  | 2.5 | 72    | 23 | 3  | 103  | 7.3 | 35 |
| Sept. 1-10.....            | 12  | .19  | 5.2 | 1.5 | 5.4 | 1.4 | 20 | 6.4 | 6.0 | .2  | 2.4 | 63    | 19 | 3  | 78.9 | 6.9 | 60 |
| Sept. 11-20.....           | 12  | .11  | 6.8 | 1.9 | 6.7 | 1.8 | 21 | 12  | 7.3 | .2  | 2.5 | 68    | 25 | 8  | 100  | 7.0 | 35 |
| Sept. 21-26, 29-30         | 11  | .15  | 6.0 | 1.9 | 6.4 | 1.8 | 19 | 9.7 | 7.7 | .2  | 2.0 | 66    | 23 | 7  | 94.1 | 7.0 | 45 |
| Sept. 27-28.....           | 11  | .34  | 8.1 | 3.1 | 23  | 2.7 | 18 | 15  | 43  | .2  | 1.6 | all 7 | 33 | 18 | 220  | 6.2 | -- |
| Time-weighted average..... | 13  | 0.21 | 5.7 | 1.7 | 7.2 | 1.7 | 23 | 6.5 | 8.2 | 0.1 | 2.1 | 68    | 21 | 2  | 85.2 | --  | 44 |

a Calculated from determined constituents.

PAMLICO RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN PAMLICO RIVER BASIN IN NORTH CAROLINA

| Chemical analyses, in parts per million, water year October 1956 to September 1957 |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
|------------------------------------------------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
| Date of collection                                                                 | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|                                                                                    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium                          | Non-<br>carbon-<br>ate |                                                             |     |       |
| SHELTON CREEK NEAR OXFORD                                                          |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 1, 1957.....                                                                  | 12.3               |                               |              | 5.0                  | 2.6                    | 4.3            | 0.5                   | 30                                      | 2.8                           | 3.2              |                 | 1.3                           |                                                                     | 23                               | 0                      | 65.8                                                        | 6.8 |       |
| July 10.....                                                                       | .35                |                               |              | 7.4                  | 3.1                    | 5.5            | .8                    | 47                                      | 2.8                           | 2.5              |                 | .5                            |                                                                     | 31                               | 0                      | 89.5                                                        | 6.3 |       |
| TAR RIVER NEAR TAR RIVER                                                           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 6, 1957.....                                                                  | a150               | 14                            | 0.00         | 4.4                  | 2.4                    | 5.1            | 0.5                   | 28                                      | 3.3                           | 4.5              | 0.6             | 0.8                           | b50                                                                 | 21                               | 0                      | 68.0                                                        | 7.2 | 10    |
| Aug. 7.....                                                                        | 4.27               | 10                            | .02          | 5.6                  | 3.7                    | 2.9            | 1.9                   | 38                                      | 1.1                           | 3.5              | .4              | .3                            | b48                                                                 | 24                               | 0                      | 78.8                                                        | 6.6 | 10    |
| CEDAR CREEK NEAR LOUISBURG                                                         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 6, 1957.....                                                                  | a66                | 19                            | 0.23         | 2.8                  | 0.7                    | 4.3            | 1.5                   | 16                                      | 3.5                           | 3.2              | 0.0             | 1.1                           | b44                                                                 | 10                               | 0                      | 49.2                                                        | 7.0 | 40    |
| Sept. 9.....                                                                       | 9.18               | 28                            | .11          | 3.6                  | 1.6                    | 7.1            | 1.1                   | 31                                      | 2.4                           | 3.2              | .0              | 1.0                           | b63                                                                 | 16                               | 0                      | 67.0                                                        | 6.5 | 9     |
| CROOKED CREEK NEAR BUNN                                                            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 12, 1957.....                                                                 | 45.7               |                               |              | 2.4                  | 1.0                    | 4.6            | 0.9                   | 16                                      | 2.8                           | 2.8              |                 | 0.7                           |                                                                     | 10                               | 0                      | 42.3                                                        | 6.1 |       |
| July 16.....                                                                       | 4.94               |                               |              | 3.6                  | 1.2                    | 7.0            | 1.4                   | 28                                      | 1.0                           | 3.5              |                 | 1.6                           |                                                                     | 14                               | 0                      | 61.2                                                        | 6.4 |       |
| CYPRESS CREEK NEAR BUNN                                                            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 12, 1957.....                                                                 | 43.2               |                               |              | 3.0                  | 0.4                    | 4.7            | 1.0                   | 14                                      | 3.0                           | 3.0              |                 | 0.7                           |                                                                     | 9                                | 0                      | 45.5                                                        | 6.8 |       |
| July 16.....                                                                       | .56                |                               |              | 6.3                  | 1.8                    | 6.8            | 1.6                   | 39                                      | 2.5                           | 3.8              |                 | 1.0                           |                                                                     | 23                               | 0                      | 83.2                                                        | 6.4 |       |
| TAR RIVER NEAR NASHVILLE                                                           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 4, 1957.....                                                                  | a3,080             | 12                            | 0.04         | 3.2                  | 0.5                    | 3.8            | 1.1                   | 14                                      | 3.4                           | 3.2              | 0.0             | 1.1                           | b35                                                                 | 10                               | 0                      | 47.4                                                        | 6.4 | 35    |
| Sept. 9.....                                                                       | a174               | 19                            | .22          | 4.2                  | 1.0                    | 5.3            | 1.5                   | 25                                      | 1.6                           | 2.9              | .1              | 1.2                           | b49                                                                 | 15                               | 0                      | 61.0                                                        | 6.6 | 22    |
| SAPONY CREEK NEAR NASHVILLE                                                        |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 4, 1957.....                                                                  | 272                | 8.2                           | 0.08         | 4.0                  | 1.1                    | 3.6            | 1.1                   | 16                                      | 3.9                           | 4.5              | 0.0             | 1.5                           | b36                                                                 | 15                               | 2                      | 53.9                                                        | 6.2 | 70    |
| Sept. 9.....                                                                       | 7.56               | 11                            | .19          | 5.4                  | 1.7                    | 3.5            | 1.3                   | 25                                      | 4.6                           | 4.6              | .1              | 1.1                           | b45                                                                 | 21                               | 0                      | 65.8                                                        | 6.2 | 55    |
| SANDY CREEK NEAR ALERT                                                             |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 13, 1957.....                                                                 | 52.9               |                               |              | 3.2                  | 1.3                    | 4.8            | 1.2                   | 21                                      | 2.9                           | 2.3              |                 | 0.9                           |                                                                     | 13                               | 0                      | 52.5                                                        | 6.3 |       |
| July 11.....                                                                       | 6.14               |                               |              | 4.2                  | 1.8                    | 6.0            | 1.6                   | 30                                      | 1.6                           | 3.5              |                 | .7                            |                                                                     | 18                               | 0                      | 64.0                                                        | 6.7 |       |
| SHOCCO CREEK NEAR ELBERON                                                          |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 13, 1957.....                                                                 | 20.0               |                               |              | 3.0                  | 1.1                    | 4.3            | 0.9                   | 21                                      | 2.0                           | 3.5              |                 | 0.8                           |                                                                     | 12                               | 0                      | 48.2                                                        | 6.2 |       |
| July 11.....                                                                       | 2.91               |                               |              |                      |                        | 5.9            | 1.5                   | 32                                      | 3.4                           | 5.2              |                 | .9                            |                                                                     | 19                               | 0                      | 72.2                                                        | 6.5 |       |

## FISHING CREEK NEAR ENFIELD

|                   |        |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|--------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Mar. 4, 1957..... | a1,040 | 13 | 0.07 | 2.8 | 0.5 | 6.4 | 1.9 | 19 | 3.4 | 3.6 | 0.0 | 1.1 | b42 | 9  | 0 | 61.7 | 6.6 | 40 |
| Sept. 4.....      | 43.4   | 15 | .07  | 4.1 | 1.4 | 3.5 | 1.9 | 20 | 5.0 | 2.2 | .0  | 1.1 | b44 | 16 | 0 | 57.0 | 6.3 | 28 |

## TAR RIVER AT TARBORO

|                   |  |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|--|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Mar. 5, 1957..... |  | 10 | 0.03 | 2.8 | 1.0 | 3.6 | 1.5 | 13 | 3.6 | 3.8 | 0.0 | 1.1 | b33 | 11 | 0 | 47.8 | 6.3 | 15 |
| Sept. 5.....      |  | 14 | .09  | 4.6 | 1.4 | 5.3 | 1.7 | 19 | 4.4 | 3.8 | .0  | 2.0 | b47 | 17 | 2 | 69.8 | 6.2 | 28 |

## CONETOE CREEK NEAR BETHEL

|                   |      |     |      |     |     |     |     |    |     |     |     |     |     |    |    |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|----|------|-----|----|
| Mar. 5, 1957..... | 169  | 8.9 | 0.07 | 5.6 | 1.0 | 5.6 | 1.2 | 5  | 12  | 8.6 | 0.0 | 3.5 | b48 | 18 | 14 | 82.1 | 6.2 | 25 |
| Sept. 5.....      | 3.58 | 11  | .47  | 10  | 1.9 | 4.6 | 3.4 | 24 | 8.2 | 11  | .2  | 1.8 | b65 | 33 | 13 | 120  | 6.5 | 60 |

## GRINDLE CREEK NEAR PACTOLUS

|                    |      |    |  |     |     |     |     |    |    |     |  |     |  |    |    |     |     |  |
|--------------------|------|----|--|-----|-----|-----|-----|----|----|-----|--|-----|--|----|----|-----|-----|--|
| Apr. 11, 1957..... | 34.8 |    |  | 7.1 | 2.5 | 7.8 | 1.2 | 12 | 18 | 11  |  | 2.8 |  | 28 | 18 | 107 | 5.8 |  |
| July 17.....       | 3.86 |    |  | 8.7 | 2.0 | 9.6 | 2.5 | 20 | 19 | 9.0 |  | 2.1 |  | 30 | 14 | 122 | 6.1 |  |
| Aug. 14.....       | .93  | 16 |  | 9.2 | 2.4 | 9.3 | 1.8 | 20 | 26 | 8.2 |  | 1.0 |  | 33 | 17 | 130 | 6.1 |  |

## HERRING RUN NEAR WASHINGTON

|                    |      |     |      |     |     |     |     |    |     |     |     |     |      |    |    |      |     |    |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----|----|------|-----|----|
| Mar. 21, 1957..... | a31  | 9.2 | 0.41 | 1.3 | 0.8 | 4.2 | 1.1 | 0  | 8.4 | 5.0 | 0.0 | 1.6 | b32  | 6  | 6  | 56.7 | 4.5 | 35 |
| Aug. 20.....       | a. 8 | 45  | .26  | 13  | 3.2 | 8.6 | 1.0 | 35 | 26  | 5.0 | .1  | .2  | b123 | 46 | 17 | 142  | 6.9 |    |

a Mean daily discharge.

b Calculated from determined constituents.

NEUSE RIVER BASIN  
NEUSE RIVER NEAR RALEIGH, N. C.

LOCATION.--At bridge on U. S. Highway 64, 6.1 miles east of Raleigh, Wake County.

DRAINAGE AREA.--876 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum, 205 ppm July 4-7; minimum, 37 ppm Aug. 27-28.

Hardness: Maximum, 34 ppm July 4-7; minimum, 13 ppm Feb. 1-10, Aug. 19.

Specific conductance: Maximum daily, 388 micromhos July 23; minimum daily, 46.6 micromhos Feb. 2.

Water temperatures: Maximum, 78°F July 12; minimum, 34°F Jan. 21.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

| Chemical analyses, in parts per million, water year October 1956 to September 1957 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                         |                                           |     |       |                 |          |
|------------------------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|-------------------------|-------------------------------------------|-----|-------|-----------------|----------|
| Date of collection                                                                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |                         | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|                                                                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-magnesium carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-6, 8-10, 1956.....                                                          | 15                   |                            | 0.03      | 5.3          | 2.0            | 14          | 2.0           | 28                              | 5.4                        | 15            | 0.1          | 2.9                        | 80                                                 | 22                            | 0                       | 119                                       | 6.8 | 15    | 8               | 6        |
| Oct. 7.....                                                                        | --                   |                            | --        | --           | --             | --          | --            | 35                              | 5.3                        | 51            | --           | --                         | --                                                 | 23                            | 0                       | 263                                       | 7.1 | --    | --              | --       |
| Oct. 7-14.....                                                                     | 15                   |                            | .31       | 6.4          | 1.3            | 21          | 2.2           | 30                              | 5.9                        | 26            | .1           | 2.8                        | a97                                                | 21                            | 0                       | 162                                       | 6.8 | --    | --              | --       |
| Oct. 15.....                                                                       | 18                   |                            | .26       | 6.6          | 2.2            | 17          | 2.3           | 37                              | 5.9                        | 97            | --           | 3.5                        | a93                                                | 24                            | 0                       | 280                                       | 7.0 | 39    | --              | --       |
| Oct. 16-20.....                                                                    | 14                   |                            | .04       | 4.7          | 2.1            | 14          | 2.1           | 28                              | 7.5                        | 15            | .1           | 2.8                        | 82                                                 | 26                            | 0                       | 142                                       | 6.9 | 17    | 10              | 7        |
| Oct. 21-31.....                                                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                         |                                           |     |       |                 |          |
| Nov. 1-10.....                                                                     | 13                   |                            | .25       | 5.4          | 2.1            | 11          | 2.0           | 24                              | 4.9                        | 15            | 0            | 2.7                        | 87                                                 | 22                            | 3                       | 107                                       | 6.6 | 60    | 13              | 8        |
| Nov. 11-20.....                                                                    | 16                   |                            | .29       | 6.3          | 1.8            | 11          | 1.6           | 32                              | 4.0                        | 12            | 0            | 2.2                        | 85                                                 | 23                            | 0                       | 111                                       | 6.8 | 35    | 7               | 5        |
| Nov. 21-30.....                                                                    | 17                   |                            | .22       | 5.7          | 2.4            | 13          | 1.6           | 33                              | 4.0                        | 13            | 0            | 2.6                        | 86                                                 | 24                            | 0                       | 119                                       | 7.0 | 20    | 6               | 3        |
| Dec. 1-10.....                                                                     | 16                   |                            | .23       | 5.8          | 1.9            | 11          | 1.6           | 32                              | 5.0                        | 10            | 0            | 2.7                        | 85                                                 | 22                            | 0                       | 111                                       | 7.2 | 27    | 6               | 4        |
| Dec. 11-20.....                                                                    | 12                   |                            | .12       | 4.5          | 1.3            | 8.5         | 1.6           | 22                              | 4.7                        | 9.0           | 0            | 2.3                        | 71                                                 | 17                            | 0                       | 88.6                                      | 6.9 | 45    | 10              | 6        |
| Dec. 21-31.....                                                                    | 13                   |                            | .06       | 6.8          | .5             | 7.7         | 1.2           | 23                              | 5.5                        | 7.2           | 0            | 1.7                        | 64                                                 | 19                            | 0                       | 82.7                                      | 6.8 | 20    | 8               | 6        |
| Jan. 1-10, 1957                                                                    | 17                   |                            | .01       | 5.1          | 1.8            | 9.6         | 1.6           | 28                              | 4.8                        | 9.6           | 0            | 1.9                        | 68                                                 | 20                            | 0                       | 99.7                                      | 7.2 | 15    | 5               | 4        |
| Jan. 11-12, 20.                                                                    | 16                   |                            | .02       | 6.0          | 1.9            | 23          | 1.7           | 33                              | 8.9                        | 27            | --           | 3.1                        | a106                                               | 23                            | 0                       | 171                                       | 6.8 | 15    | --              | --       |
| Jan. 13-19.....                                                                    | 17                   |                            | .24       | 5.7          | 2.1            | 11          | 1.7           | 31                              | 4.2                        | 10            | 0            | 2.3                        | 73                                                 | 23                            | 0                       | 107                                       | 7.2 | 20    | 4               | 4        |
| Jan. 21-31.....                                                                    | 16                   |                            | .01       | 5.5          | 2.0            | 11          | 1.8           | 30                              | 3.8                        | 11            | 0            | 2.3                        | 72                                                 | 22                            | 0                       | 107                                       | 6.2 | 15    | 6               | 4        |
| Feb. 1-10.....                                                                     | 11                   |                            | .04       | 3.8          | 1.0            | 4.6         | 1.7           | 14                              | 7.1                        | 4.0           | 0            | 1.4                        | 53                                                 | 13                            | 2                       | 60.5                                      | 6.6 | 25    | 12              | 5        |
| Feb. 11-19.....                                                                    | 13                   |                            | .03       | 4.8          | 2.1            | 7.0         | 1.3           | 21                              | 5.4                        | 6.3           | 0            | 1.1                        | 63                                                 | 15                            | 0                       | 75.6                                      | 6.8 | 15    | 8               | 5        |
| Feb. 20-28.....                                                                    | 13                   |                            | .02       | 4.6          | 2.0            | 6.7         | 1.4           | 20                              | 7.6                        | 5.9           | 0            | 1.7                        | 60                                                 | 20                            | 4                       | 72.1                                      | 6.8 | 13    | 8               | 6        |
| Mar. 1-10.....                                                                     | 13                   |                            | .04       | 4.4          | 1.5            | 5.2         | 1.4           | 10                              | 7.9                        | 7.0           | 0            | 2                          | 53                                                 | 17                            | 9                       | 68.8                                      | 7.1 | 20    | 7               | 5        |
| Mar. 11-20.....                                                                    | 14                   |                            | .02       | 4.8          | 1.7            | 6.1         | 1.4           | 26                              | 6.2                        | 6.5           | 1            | 1.5                        | 60                                                 | 19                            | 0                       | 81.8                                      | 6.7 | 20    | 5               | 4        |
| Mar. 21-31.....                                                                    | 14                   |                            | .03       | 4.4          | 2.2            | 6.5         | 1.4           | 26                              | 3.5                        | 6.5           | 1            | .9                         | 59                                                 | 20                            | 0                       | 83.6                                      | 6.5 | 20    | 6               | 4        |
| Apr. 1-10.....                                                                     | 15                   |                            | .29       | 5.2          | 1.9            | 9.9         | 1.5           | 29                              | 5.7                        | 8.5           | .2           | 2.1                        | 69                                                 | 21                            | 0                       | 96.6                                      | 7.0 | 15    | 5               | 4        |
| Apr. 11-20.....                                                                    | 12                   |                            | .38       | 4.8          | 2.0            | 9.6         | 1.5           | 28                              | 3.3                        | 10            | .2           | 2.1                        | 68                                                 | 20                            | 0                       | 94.4                                      | 6.6 | 35    | 5               | 5        |
| Apr. 21-30.....                                                                    | 12                   |                            | .06       | 5.2          | 1.9            | 8.6         | 2.0           | 25                              | 3.7                        | 8.5           | .2           | 2.4                        | 61                                                 | 21                            | 1                       | 86.3                                      | 6.4 | 15    | 7               | 6        |

|                            |     |      |     |     |     |     |    |     |     |     |     |      |    |   |       |     |    |    |    |
|----------------------------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----|---|-------|-----|----|----|----|
| May 1-3, 6-10, 1957.....   | 19  | 0.38 | 4.6 | 2.6 | 9.6 | 0.8 | 31 | 4.0 | 12  | 0.0 | 3.2 | 88   | 22 | 0 | 108   | 7.2 | 60 | 5  | 4  |
| May 4-5.....               | 16  | .09  | 6.4 | 2.7 | 27  | 1.2 | 40 | 4.2 | 34  | --  | 2.4 | a114 | 27 | 0 | 198   | 7.0 | 30 | -- | -- |
| May 11, 13-17, 19.....     | 18  | .08  | 4.4 | 1.9 | 6.8 | .9  | 28 | 4.5 | 7.6 | .2  | 3.4 | 82   | 19 | 0 | 99.6  | 7.4 | 60 | 7  | 5  |
| May 12, 18, 20.....        | 18  | .05  | 7.6 | 2.9 | 44  | 2.0 | 55 | 4.4 | 59  | .0  | 2.6 | a168 | 31 | 0 | 304   | 6.8 | 20 | -- | -- |
| May 21, 24, 26.....        | 18  | .10  | 7.6 | 3.2 | 44  | 2.0 | 53 | 5.7 | 59  | .3  | 3.0 | a170 | 32 | 0 | 301   | 7.0 | 20 | -- | -- |
| May 22-23, 25, 27-31.....  | 20  | .16  | 5.0 | 2.6 | 12  | 1.4 | 36 | 5.5 | 15  | .1  | 2.2 | 103  | 23 | 0 | 123   | 7.2 | 20 | 6  | 5  |
| June 1-10.....             | 17  | .13  | 5.9 | 2.2 | 8.4 | 1.1 | 35 | 4.3 | 8.7 | .0  | 1.6 | 70   | 24 | 0 | 105   | 6.6 | 10 | 5  | 4  |
| June 11-20.....            | 17  | .00  | 5.1 | 2.5 | 11  | 1.7 | 31 | 6.1 | 11  | .0  | 3.6 | 90   | 23 | 0 | 111   | 7.1 | 25 | 5  | 4  |
| June 21-30.....            | 17  | .00  | 7.1 | 2.7 | 12  | 1.5 | 41 | 4.2 | 11  | .1  | 2.4 | 85   | 29 | 0 | 120   | 7.0 | 15 | 3  | 3  |
| July 1-3, 8-10.....        | 17  | .07  | 6.8 | 2.9 | 9.7 | 1.4 | 43 | 3.7 | 8.0 | .2  | 1.8 | 85   | 29 | 0 | 111   | 7.2 | 25 | 4  | 2  |
| July 4-7.....              | 15  | .08  | 7.9 | 3.6 | 60  | 2.5 | 59 | 7.2 | 76  | .2  | 2.1 | a205 | 34 | 0 | 393   | 6.6 | -- | -- | -- |
| July 11-12, 19.....        | 17  | .08  | 8.0 | 1.7 | 58  | 2.4 | 60 | 4.5 | 39  | --  | 2.1 | a163 | 27 | 0 | 173   | 7.4 | -- | -- | -- |
| July 13-14, 30.....        | 16  | .01  | 7.8 | 2.5 | --  | --  | 45 | 5.7 | 21  | --  | 1.0 | 148  | 27 | 0 | 173   | 7.4 | -- | -- | -- |
| July 15-25, 30.....        | 16  | .03  | 7.2 | 2.7 | 30  | 2.1 | 46 | 3.2 | 14  | .1  | 2.4 | 140  | 29 | 0 | 239   | 6.8 | 20 | -- | -- |
| July 21-25, 30-31.....     | 17  | .02  | 7.6 | 2.7 | 32  | 1.9 | 51 | 3.5 | 38  | .2  | 2.6 | 139  | 30 | 0 | 231   | 7.7 | 20 | 5  | 3  |
| July 26-29.....            | 6.6 | .05  | 9.1 | 2.4 | 60  | 2.5 | 59 | 8.8 | 78  | .2  | 2.0 | a201 | 33 | 0 | 400   | 6.8 | -- | -- | -- |
| Aug. 1-10.....             | 15  | .04  | 7.2 | 2.0 | 22  | 1.8 | 40 | 8.1 | 26  | .1  | 2.8 | 112  | 26 | 0 | 180   | 7.2 | 20 | 5  | 5  |
| Aug. 11-18, 20.....        | 15  | .04  | 6.1 | 2.5 | 21  | 1.9 | 42 | 6.8 | 26  | .1  | 2.6 | 111  | 26 | 0 | 169   | 7.0 | 25 | 5  | -- |
| Aug. 19.....               | 13  | --   | --  | --  | --  | --  | 16 | 4.2 | 6.4 | --  | --  | 107  | 13 | 0 | 165.2 | 6.7 | 30 | -- | -- |
| Aug. 21-26, 29.....        | 13  | .08  | 5.8 | 2.9 | 21  | 2.0 | 39 | 7.9 | 26  | .1  | 2.5 | 107  | 11 | 0 | 143   | 6.7 | 30 | 6  | 5  |
| Aug. 27-28.....            | 8.4 | .37  | 3.8 | 2.7 | 4.7 | 1.8 | 16 | 1.1 | 4.0 | --  | 2.3 | a37  | 21 | 8 | 648   | 6.3 | -- | -- | -- |
| Sept. 1-10.....            | 17  | .20  | 7.5 | 2.5 | 31  | 2.2 | 43 | 6.1 | 41  | .1  | 4.2 | 150  | 29 | 0 | 215   | 7.3 | 30 | 5  | 4  |
| Sept. 11-20.....           | 18  | .17  | 8.0 | 2.0 | 30  | 2.2 | 41 | 5.7 | 32  | .1  | 3.5 | 132  | 28 | 0 | 211   | 7.2 | 25 | -- | 6  |
| Sept. 21.....              | --  | --   | 7.1 | 1.2 | --  | --  | 28 | 5.3 | 5.8 | --  | --  | --   | 22 | 0 | 93.6  | 7.2 | -- | -- | -- |
| Sept. 22-30.....           | 16  | .19  | 9.6 | .9  | 28  | 2.1 | 40 | 10  | 29  | .3  | 3.3 | 124  | 28 | 0 | 200   | 6.5 | 35 | 5  | 5  |
| Time-weighted average..... | 15  | 0.11 | 5.7 | 2.0 | 14  | 1.6 | 31 | 5.3 | 16  | 0.1 | 2.3 | 82   | 22 | 0 | 130   | --  | 23 | 7  | 5  |

a Calculated from determined constituents.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR RALEIGH, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 5:30 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 63   | 45   | 41   | 43   | 40   | 60   | 76  | 70   | 75   | 77   | 74    |
| 2       | 65   | 62   | 44   | 37   | 40   | 41   | 61   | 75  | 72   | 75   | 76   | 74    |
| 3       | 67   | 63   | 45   | 35   | 41   | 40   | 66   | 65  | 70   | 75   | --   | 73    |
| 4       | 67   | 63   | 45   | 38   | 45   | 42   | 65   | 60  | 73   | 74   | 77   | 73    |
| 5       | 68   | 62   | 46   | 40   | 46   | 44   | 68   | --  | 70   | 76   | 75   | 72    |
| 6       | 68   | 60   | 45   | 39   | 44   | 45   | 67   | 60  | 70   | 75   | 76   | 70    |
| 7       | 64   | 60   | 45   | 38   | 42   | --   | 70   | 63  | 70   | 75   | 77   | 69    |
| 8       | 60   | 59   | 45   | 40   | 43   | 44   | 65   | 65  | 71   | 76   | 76   | 70    |
| 9       | 60   | 60   | 45   | 39   | 44   | 43   | 62   | 67  | 71   | 75   | 76   | 69    |
| 10      | 60   | 50   | 46   | 41   | 47   | 40   | 64   | 68  | 71   | 76   | 76   | 68    |
| 11      | 60   | 49   | 45   | 40   | 45   | 45   | 60   | 70  | 72   | 75   | 77   | 70    |
| 12      | 57   | 50   | 50   | 38   | 46   | 48   | 61   | 71  | 72   | 78   | 77   | 69    |
| 13      | 57   | 48   | 53   | 39   | 51   | 40   | 64   | 70  | 71   | 76   | 76   | 66    |
| 14      | 67   | 48   | 55   | 42   | 55   | 45   | 65   | 70  | 71   | 76   | 77   | 65    |
| 15      | 57   | 51   | 54   | 45   | 52   | 46   | 67   | 69  | 70   | 77   | 76   | 65    |
| 16      | 59   | 51   | 53   | 41   | 49   | 44   | 70   | 70  | 71   | 76   | 76   | 67    |
| 17      | 61   | 45   | 55   | 39   | 47   | 49   | 68   | 70  | 75   | 76   | --   | 66    |
| 18      | 62   | --   | 50   | 40   | 49   | 50   | 70   | 71  | 75   | 75   | 74   | 65    |
| 19      | --   | 46   | 50   | 38   | 52   | 52   | 69   | 70  | 75   | 76   | 75   | 64    |
| 20      | 61   | 48   | 50   | 37   | 50   | 51   | 72   | 69  | 74   | 77   | 75   | 64    |
| 21      | 62   | 50   | 48   | 34   | 49   | 53   | 75   | 71  | 76   | 76   | 75   | 65    |
| 22      | 63   | 45   | 45   | 35   | 48   | 52   | 74   | 70  | 75   | 76   | 76   | 65    |
| 23      | 62   | 45   | 46   | 36   | 51   | 53   | 75   | 72  | 75   | 77   | 75   | 64    |
| 24      | 60   | 42   | 47   | 36   | 50   | 55   | 70   | 73  | 76   | 75   | 76   | 65    |
| 25      | 60   | 45   | 45   | 39   | 48   | 54   | 75   | 71  | 74   | 76   | --   | 64    |
| 26      | 60   | 44   | 48   | 44   | 52   | 56   | 75   | 72  | 73   | 75   | 75   | 65    |
| 27      | 62   | 42   | 40   | 45   | 51   | 55   | 74   | 73  | 75   | 76   | 74   | 63    |
| 28      | 60   | 40   | 41   | 49   | 53   | 54   | 76   | 73  | 75   | 77   | 76   | 63    |
| 29      | 60   | 42   | 40   | 55   | --   | 54   | 75   | 73  | 75   | 76   | 75   | 65    |
| 30      | 61   | 40   | 40   | 50   | --   | 55   | 75   | 74  | 75   | 76   | 76   | 64    |
| 31      | 62   | --   | 40   | 53   | --   | 54   | --   | 73  | --   | 76   | 76   | --    |
| Average | 62   | 51   | 47   | 41   | 48   | 48   | 69   | 70  | 73   | 76   | 76   | 67    |

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR SELMA, N. C.

LOCATION.--At bridge on county road, 2.1 miles northwest of Selma, Johnston County, and 9.9 miles downstream from gaging station near Clayton.

DRAINAGE AREA.--1,175 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1955 to September 1957.

EXTREMES 1956-57.--Dissolved solids: Maximum, 151 ppm Aug. 1-18; minimum, 56 ppm Feb. 1-28.

Hardness: Maximum, 31 ppm Aug. 1-18; minimum, 19 ppm Feb. 1-28; War. 1-31.

Specific conductance: Maximum daily, 270 micromhos Aug. 17; minimum daily, 44.3 micromhos May 13.

Water temperatures: Maximum, 90°F Aug. 16; minimum, 38°F Jan. 3-5, 18, 19, 1957.

EXTREMES 1955-57.--Dissolved solids: Maximum, 151 ppm Aug. 1-18, 1957; minimum, 35 ppm Mar. 17-20, 1956.

Hardness: Maximum, 31 ppm Aug. 1-18, 1957; minimum, 14 ppm Mar. 17-20, 1956.

Specific conductance: Maximum daily, 270 micromhos Aug. 17, 1957; minimum daily, 44.3 micromhos May 13, 1957.

Water temperatures: Maximum, 90°F Aug. 16, 1957; minimum, 33°F Dec. 16, 1955.

REMARKS.--During period October 1955 to March 1956, samples collected 9.9 miles upstream at bridge on State Highway 42, 3 miles east of Clayton, N. C.

Records of suspended matter of composite samples from October 1955 to September 1956 and records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for gaging station near Clayton for water year October 1956 to September 1957 given in WSP 1503.

No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./nestum           | Non-carbonate |                                           |     |       |
| Oct. 1-31, 1956.           | 524                  | 18                         | 0.03      | 5.7          | 2.6            | 15          | 2.5           | 33                              | 5.7                        | 16            | 0.2          | 3.4                        | 94                                                 | 25                            | 0             | 131                                       | 6.5 | 14    |
| Nov. 1-30.....             | 804                  | 18                         | .29       | 6.2          | 2.0            | 11          | 1.7           | 31                              | 5.1                        | 12            | .0           | 3.3                        | 82                                                 | 24                            | 0             | 113                                       | 6.5 | 34    |
| Dec. 1-3, 5-7, 13-31.....  | 1,520                | 17                         | .03       | 6.1          | 1.7            | 9.4         | 2.0           | 26                              | 6.0                        | 8.0           | .1           | 3.3                        | 72                                                 | 22                            | 1             | 95.7                                      | 6.8 | 15    |
| Dec. 1-3, 12-31.....       | 649                  | 17                         | .03       | 6.0          | 2.5            | 20          | 2.3           | 26                              | 3.4                        | 22.0          | .1           | 3.1                        | 124                                                | 22                            | 0             | 128                                       | 6.8 | 14    |
| Jan. 1-31, 1957.           | 649                  | 17                         | .03       | 6.0          | 1.7            | 10          | 2.0           | 28                              | 4.4                        | 9.7           | .1           | 3.5                        | 75                                                 | 22                            | 0             | 103                                       | 7.0 | 10    |
| Feb. 1-28.....             | 3,363                | 13                         | .03       | 6.0          | 1.0            | 6.8         | 1.4           | 20                              | 5.3                        | 7.0           | .2           | 2.0                        | 56                                                 | 19                            | 3             | 83.0                                      | 6.0 | 20    |
| Mar. 1-31.....             | 2,231                | 13                         | .02       | 4.8          | 1.7            | 5.4         | 1.4           | 21                              | 6.5                        | 6.0           | .2           | 1.6                        | 58                                                 | 19                            | 2             | 78.5                                      | 6.5 | 20    |
| Apr. 1-30.....             | 926                  | 16                         | .27       | 5.6          | 1.9            | 9.5         | 2.0           | 29                              | 4.0                        | 8.0           | .1           | 3.0                        | 71                                                 | 22                            | 0             | 98.1                                      | 6.2 | 30    |
| May 1-31.....              | 887                  | 17                         | .26       | 5.6          | 2.7            | 11          | 1.8           | 30                              | 4.9                        | 12            | .2           | 3.4                        | 78                                                 | 25                            | 0             | 111                                       | 6.5 | 30    |
| June 1-30.....             | 745                  | 17                         | .17       | 5.5          | 2.5            | 9.7         | 1.6           | 30                              | 5.7                        | 7.5           | .2           | 2.9                        | 95                                                 | 24                            | 0             | 121                                       | 6.4 | 30    |
| July 1-31.....             | 191                  | 13                         | .04       | 9.1          | 1.6            | 18          | 2.7           | 43                              | 4.5                        | 18            | .5           | 2.3                        | 96                                                 | 29                            | 0             | 149                                       | 7.3 | 19    |
| Aug. 1-18.....             | 118                  | 15                         | .07       | 8.0          | 2.8            | 30          | 3.3           | 56                              | 6.8                        | 32            | .1           | 2.6                        | 153                                                | 31                            | 0             | 229                                       | 6.8 | 20    |
| Aug. 19-31.....            | 935                  | 12                         | .07       | 5.6          | 1.8            | 12          | 2.6           | 26                              | 6.7                        | 11            | .1           | 2.8                        | 77                                                 | 22                            | 0             | 110                                       | 6.5 | 20    |
| Sept. 1-30.....            | 408                  | 15                         | .18       | 6.3          | 2.4            | 16          | 2.7           | 35                              | 3.6                        | 17            | .7           | 3.5                        | 95                                                 | 26                            | 0             | 141                                       | 6.7 | 55    |
| Time-weighted average..... | 1,024                | 15                         | 0.12      | 6.2          | 2.0            | 12          | 2.1           | 31                              | 5.2                        | 12            | 0.2          | 3.0                        | 83                                                 | 24                            | 0             | 118                                       | --  | 25    |



## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR SELMA, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 3 p.m./

| Day          | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|--------------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1            | 67   | 65   | 49   | --   | 52   | 56   | --   | 74  | 75   | 84   | 87   | --    |
| 2            | 67   | --   | 49   | 42   | 50   | 52   | 64   | 74  | 74   | 85   | 87   | --    |
| 3            | 68   | --   | 47   | 38   | 52   | 52   | 62   | 69  | 80   | 81   | 82   | --    |
| 4            | 68   | 65   | 46   | 38   | 50   | 52   | 62   | 62  | 76   | 84   | 82   | 80    |
| 5            | 67   | 65   | 47   | 38   | 50   | 50   | 61   | 62  | 76   | 82   | 89   | 80    |
| 6            | 67   | 64   | 46   | --   | 50   | 51   | 60   | 66  | 75   | 83   | 79   | 75    |
| 7            | 66   | 64   | 56   | 42   | 52   | 50   | 62   | 68  | 76   | 85   | 85   | 75    |
| 8            | 66   | 65   | 48   | 42   | 50   | 49   | 61   | 69  | 74   | --   | 80   | 77    |
| 9            | 64   | 61   | 48   | 42   | 50   | --   | 60   | 70  | 70   | --   | 81   | 80    |
| 10           | 63   | 58   | 46   | 40   | 49   | --   | 60   | 74  | 77   | --   | 81   | 82    |
| 11           | 62   | 55   | 47   | 40   | 49   | --   | 60   | 70  | 71   | --   | 84   | 80    |
| 12           | 61   | 55   | 48   | 40   | 49   | --   | 61   | 69  | 77   | --   | 83   | 72    |
| 13           | 62   | 55   | 50   | 40   | 50   | --   | 58   | 69  | 80   | --   | 85   | 82    |
| 14           | 63   | 54   | 52   | 40   | 49   | --   | 60   | 74  | 80   | --   | 81   | 80    |
| 15           | 63   | 54   | 55   | 40   | 47   | --   | 60   | 76  | 82   | 85   | 85   | 82    |
| 16           | 64   | 54   | --   | 41   | 46   | --   | 59   | 78  | 85   | 87   | 90   | 80    |
| 17           | 64   | 54   | 54   | 40   | 45   | --   | 63   | 74  | 74   | 85   | 84   | 84    |
| 18           | 63   | 54   | 54   | 38   | 45   | --   | 61   | 75  | 85   | 82   | 80   | 80    |
| 19           | 63   | 56   | 55   | 38   | 44   | --   | 65   | 75  | 73   | 85   | 80   | 80    |
| 20           | 64   | 54   | 54   | 40   | 44   | --   | 65   | 78  | 88   | 81   | 74   | 85    |
| 21           | 64   | 50   | 56   | 40   | 45   | --   | 61   | 75  | 78   | 85   | 75   | 75    |
| 22           | 65   | 48   | 54   | 42   | 45   | --   | 74   | 73  | 84   | 87   | 80   | 77    |
| 23           | 65   | 46   | 54   | 44   | 44   | --   | 73   | 77  | 86   | 85   | 79   | 80    |
| 24           | 63   | 44   | 55   | 46   | 46   | --   | 75   | 81  | 86   | 82   | 82   | 78    |
| 25           | 63   | 44   | 55   | 46   | 47   | --   | 70   | 79  | 84   | 87   | 72   | 70    |
| 26           | 67   | --   | 52   | 48   | 50   | --   | 71   | 79  | 80   | 80   | 75   | 75    |
| 27           | 61   | --   | 50   | 48   | 54   | --   | 75   | 77  | 81   | 80   | 72   | 70    |
| 28           | 62   | --   | 49   | 50   | 55   | --   | 74   | 75  | 85   | 82   | 74   | 65    |
| 29           | 63   | --   | 48   | 50   | --   | --   | 79   | 72  | 80   | 82   | 72   | 60    |
| 30           | 64   | --   | 45   | 50   | --   | --   | 75   | 71  | --   | 85   | 75   | 61    |
| 31           | 65   | --   | 45   | --   | --   | --   | --   | 72  | --   | 85   | --   | --    |
| Aver-<br>age | 64   | --   | 50   | 42   | 49   | --   | 65   | 73  | 79   | --   | 80   | 76    |

# NEUSE RIVER BASIN--Continued

NEUSE RIVER NEAR FORT BARNWELL, N. C.

LOCATION.--At county bridge off State Highway 55 between Fort Barnwell and Vanceboro, Craven County.

DRAINAGE AREA.--3,897 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 81 ppm Aug. 11-20; minimum, 50 ppm Mar. 11-20.

Hardness: Maximum, 29 ppm Aug. 11-20; minimum, 13 ppm Dec. 21-31, Feb. 1-10, 11-19, Mar. 1-10.

Specific conductance: Maximum daily, 169 micromhos Aug. 17; minimum daily, 56.8 micromhos Feb. 9, 10.

Water temperatures: Maximum, 88°F Aug. 1-3; minimum, 41°F Jan. 16-18.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 186 ppm Sept. 26-27, 1954; minimum, 50 ppm Mar. 11-20, 1957.

Hardness: Maximum, 171 ppm Oct. 12, 15, 1954; minimum, 12 ppm Mar. 21-31, 1956.

Specific conductance: Maximum daily, 673 micromhos Aug. 21, 1955; minimum daily, 49.1 micromhos Mar. 27, 1956.

Water temperatures: Maximum, 91°F Aug. 12-13, 1956; minimum, freezing point Jan. 13, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956.   |                      | 12                         | 0.18      | 4.7          | 0.9            | 7.4         | 2.0           | 15                              | 5.9                        | 8.5           | 0.1          | 1.7                        | 61                                                 | 16                            | 3             | 78.8                                      | 6.7 | 55    |
| Oct. 11-20.        |                      | 10                         | 0.10      | 4.9          | 1.2            | 7.4         | 1.9           | 16                              | 7.9                        | 8.6           | .0           | 2.0                        | 60                                                 | 18                            | 4             | 85.3                                      | 6.4 | 42    |
| Oct. 21-31.        |                      | 10                         | 0.12      | 5.2          | 1.5            | 7.2         | 1.7           | 18                              | 5.4                        | 9.5           | .1           | 1.7                        | 71                                                 | 19                            | 4             | 84.7                                      | 6.9 | 50    |
| Nov. 1-10.         |                      | 13                         | .45       | 5.2          | 1.5            | 7.2         | 1.5           | 18                              | 6.6                        | 9.4           | .1           | 2.3                        | 65                                                 | 18                            | 3             | 82.8                                      | 6.5 | 65    |
| Nov. 11-20.        |                      | 13                         | .48       | 4.9          | 1.4            | 7.1         | 1.3           | 20                              | 3.5                        | 10            | .0           | 3.2                        | 64                                                 | 19                            | 3             | 87.2                                      | 6.8 | 55    |
| Nov. 21-30.        |                      | 13                         | .49       | 5.5          | 1.3            | 8.1         | 1.3           | 19                              | 3.2                        | 9.5           | .0           | 2.3                        | 68                                                 | 16                            | 0             | 83.2                                      | 6.8 | 38    |
| Dec. 1-10.         |                      | 14                         | .51       | 4.8          | 1.0            | 8.1         | 1.5           | 19                              | 4.0                        | 9.7           | .0           | 2.5                        | 68                                                 | 16                            | 0             | 85.2                                      | 6.9 | 47    |
| Dec. 11-20.        |                      | 12                         | .53       | 4.7          | 1.1            | 8.2         | 1.6           | 19                              | 4.0                        | 7.8           | .1           | 1.7                        | 64                                                 | 13                            | 2             | 70.5                                      | 6.8 | 45    |
| Dec. 21-31.        |                      | 12                         | .18       | 4.1          | 1.7            | 6.2         | 1.7           | 14                              | 4.0                        | 7.8           | .1           | 1.7                        | 64                                                 | 13                            | 2             | 70.5                                      | 6.8 | 45    |
| Jan. 1-10, 1957.   |                      | 13                         | .55       | 4.2          | 1.1            | 7.6         | 1.5           | 15                              | 5.7                        | 8.8           | .2           | 2.5                        | 67                                                 | 16                            | 3             | 87.8                                      | 6.3 | 40    |
| Jan. 11-20.        |                      | 13                         | .49       | 4.7          | 1.1            | 7.6         | 1.5           | 15                              | 5.7                        | 8.8           | .2           | 2.5                        | 67                                                 | 16                            | 3             | 87.8                                      | 6.3 | 40    |
| Jan. 21-31.        |                      | 12                         | .48       | 4.8          | 1.0            | 7.7         | 1.5           | 19                              | 5.9                        | 8.7           | .0           | 2.6                        | 62                                                 | 16                            | 1             | 82.3                                      | 6.8 | 34    |
| Feb. 1-10.         |                      | 10                         | .07       | 4.4          | .5             | 4.8         | 1.6           | 12                              | 7.2                        | 6.0           | .0           | 2.0                        | 57                                                 | 13                            | 3             | 69.9                                      | 6.7 | 35    |
| Feb. 11-19.        |                      | 10                         | .04       | 3.0          | 1.4            | 5.3         | 1.7           | 12                              | 5.5                        | 5.5           | .0           | 1.7                        | 53                                                 | 13                            | 3             | 65.6                                      | 6.0 | 29    |
| Feb. 20-28.        |                      | 9.9                        | .07       | 3.9          | 1.1            | 7.0         | 1.7           | 14                              | 5.3                        | 7.2           | .0           | 1.8                        | 56                                                 | 14                            | 3             | 72.7                                      | 6.2 | 23    |
| Mar. 1-10.         |                      | 8.4                        | .06       | 3.5          | 1.1            | 5.1         | 1.7           | 12                              | 6.1                        | 6.1           | .0           | 1.9                        | 51                                                 | 13                            | 3             | 61.8                                      | 6.4 | 39    |
| Mar. 11-20.        |                      | 8.3                        | .05       | 3.5          | 1.3            | 5.6         | 1.6           | 13                              | 6.2                        | 6.3           | .0           | 1.2                        | 50                                                 | 14                            | 3             | 64.3                                      | 6.3 | 31    |
| Mar. 21-31.        |                      | 8.1                        | .03       | 3.8          | 1.3            | 5.8         | 1.4           | 13                              | 5.0                        | 7.3           | .1           | 1.5                        | 55                                                 | 15                            | 4             | 68.5                                      | 6.7 | 25    |

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR FORT BARNWELL, N. C.--Continued

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Apr. 1-10, 1957..          |                      | 7.8                        | 0.23      | 4.8          | 1.7            | 6.6         | 1.0           | 16                              | 6.1                        | 8.0           | 0.0          | 1.3                        | 64                                                 | 19                            | 6             | 76.0                                      | 6.7 | 60    |
| Apr. 11-20.....            |                      | 8.4                        | .29       | 4.8          | 1.7            | 7.2         | 1.2           | 18                              | 4.3                        | 8.0           | .0           | 2.3                        | 63                                                 | 19                            | 4             | 79.9                                      | 6.7 | 60    |
| Apr. 21-30.....            |                      | 9.9                        | .23       | 4.8          | 1.9            | 7.4         | 1.2           | 20                              | 7.1                        | 8.0           | .0           | 1.7                        | 95                                                 | 20                            | 4             | 85.3                                      | 6.5 | 35    |
| May 1-10.....              |                      | 11                         | .24       | 4.8          | 1.9            | 6.2         | 1.1           | 20                              | 5.8                        | 8.2           | .1           | 2.3                        | 66                                                 | 21                            | 2             | 81.2                                      | 7.0 | 85    |
| May 11-20.....             |                      | 10                         | .24       | 4.8          | 1.9            | 6.2         | 1.9           | 20                              | 5.8                        | 9.2           | .1           | 2.3                        | 66                                                 | 20                            | 4             | 78.2                                      | 7.9 | 85    |
| May 21-31.....             |                      | 11                         | .20       | 5.8          | 1.6            | 5.8         | 2.0           | 22                              | 4.6                        | 9.0           | .1           | 2.5                        | 67                                                 | 21                            | 3             | 82.9                                      | 7.0 | 50    |
| June 1-10.....             |                      | 11                         | .25       | 5.6          | 1.4            | 7.9         | 1.9           | 23                              | 4.9                        | 7.9           | .1           | 2.6                        | 68                                                 | 20                            | 1             | 87.2                                      | 6.6 | 43    |
| June 11-20.....            |                      | 10                         | .31       | 3.9          | 1.6            | 6.0         | 1.9           | 18                              | 4.0                        | 6.6           | .2           | 2.6                        | 58                                                 | 16                            | 2             | 68.0                                      | 6.8 | 110   |
| June 21-30.....            |                      | 14                         | .30       | 4.8          | 2.4            | 8.0         | 1.9           | 25                              | 3.4                        | 8.0           | .2           | 2.4                        | 69                                                 | 22                            | 2             | 87.4                                      | 6.8 | 55    |
| July 1-10.....             |                      | 13                         | .08       | 6.8          | 1.5            | 9.6         | 1.4           | 29                              | 6.0                        | 9.0           | .1           | 2.2                        | 72                                                 | 23                            | 0             | 100                                       | 7.0 | 20    |
| July 11-20.....            |                      | 9.8                        | .03       | 6.8          | 2.4            | 8.6         | 1.4           | 28                              | 9.2                        | 9.5           | .0           | 1.9                        | 72                                                 | 27                            | 4             | 101                                       | 7.3 | 20    |
| July 21-31.....            |                      | 8.3                        | .00       | 6.4          | 2.2            | 9.5         | 1.4           | 30                              | 9.9                        | 10            | .1           | 2.5                        | 70                                                 | 25                            | 0             | 101                                       | 7.3 | 20    |
| Aug. 1-10.....             |                      | 8.6                        | .00       | 7.2          | 2.4            | 14          | 2.3           | 37                              | 7.6                        | 14            | --           | 2.8                        | 77                                                 | 28                            | 0             | 124                                       | 7.2 | 20    |
| Aug. 11-20.....            |                      | 5.2                        | .01       | 8.0          | 2.2            | 13          | 2.3           | 36                              | 7.2                        | 13            | --           | 4.5                        | 81                                                 | 29                            | 0             | 129                                       | 7.1 | 15    |
| Aug. 21-31.....            |                      | 11                         | .11       | 6.0          | 1.2            | 9.4         | 1.9           | 19                              | 8.7                        | 9.0           | .2           | 3.1                        | 72                                                 | 20                            | 0             | 97.1                                      | 6.9 | 35    |
| Sept. 1-10.....            |                      | 9.2                        | .11       | 6.4          | 1.7            | 6.4         | 1.5           | 21                              | 9.1                        | 7.5           | .2           | 2.1                        | 66                                                 | 23                            | 6             | 96.0                                      | 7.2 | 45    |
| Sept. 11-20.....           |                      | 8.8                        | .07       | 7.2          | 1.7            | 7.9         | 1.8           | 20                              | 11                         | 9.0           | .2           | 2.7                        | 64                                                 | 25                            | 9             | 110                                       | 7.0 | 60    |
| Sept. 21-30.....           |                      | 12                         | .15       | 5.6          | 2.2            | 8.9         | 1.7           | 21                              | 10                         | 10            | .2           | 2.4                        | 74                                                 | 23                            | 6             | 111                                       | 6.8 | 55    |
| Time-weighted average..... |                      | 11                         | 0.22      | 5.2          | 1.6            | 7.2         | 1.6           | 20                              | 6.2                        | 8.3           | 0.1          | 2.3                        | 65                                                 | 19                            | 3             | 82.0                                      | --  | 45    |

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR FORT BARNWELL, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 2 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 72   | --   | 56   | --   | 54   | 45   | 59   | --  | 75   | 84   | 88   | 82    |
| 2       | 72   | --   | 56   | --   | 54   | 46   | 62   | --  | 76   | 84   | 88   | --    |
| 3       | 72   | 67   | 54   | 43   | --   | 46   | 63   | --  | 79   | 84   | 88   | 85    |
| 4       | 73   | 68   | 54   | 43   | --   | 45   | 63   | 69  | 79   | 84   | 87   | 84    |
| 5       | 72   | 68   | 52   | 42   | 51   | 44   | 63   | 69  | 79   | 85   | 87   | 83    |
| 6       | 72   | 69   | 52   | 42   | 49   | 47   | 62   | 69  | 79   | 85   | 86   | 82    |
| 7       | 73   | 65   | 54   | 43   | 49   | 47   | 64   | 69  | 79   | 85   | 86   | 81    |
| 8       | 73   | 59   | 54   | 43   | 50   | 49   | 64   | 72  | 79   | 87   | 86   | 79    |
| 9       | 74   | 60   | 55   | 44   | 53   | 49   | 63   | 72  | 79   | 85   | 86   | 80    |
| 10      | 66   | 58   | 54   | 45   | 51   | 48   | 63   | 73  | 78   | 85   | 85   | 81    |
| 11      | 66   | 58   | 52   | 45   | 49   | 50   | 63   | 73  | 78   | 85   | 85   | 82    |
| 12      | 66   | 59   | 53   | 45   | 49   | 51   | 63   | 73  | 80   | 85   | 84   | 84    |
| 13      | 66   | 58   | 54   | 45   | 48   | 52   | 62   | 74  | 78   | 85   | 84   | 85    |
| 14      | 61   | 56   | 56   | 45   | 46   | 52   | 62   | 77  | 80   | 85   | 84   | 86    |
| 15      | 66   | 56   | 56   | 43   | 46   | 55   | 61   | 78  | 80   | 85   | 84   | 85    |
| 16      | 66   | 58   | 56   | 41   | 48   | 55   | 60   | 78  | 80   | 85   | 84   | 84    |
| 17      | 66   | 56   | 56   | 41   | 47   | 58   | 63   | 78  | 80   | 85   | 84   | 76    |
| 18      | 67   | 56   | 56   | 41   | 46   | 58   | 64   | 76  | 80   | 85   | 84   | 77    |
| 19      | 69   | 56   | 55   | 46   | 47   | 58   | 68   | 76  | 81   | 85   | 84   | 78    |
| 20      | 69   | 56   | 56   | 45   | 46   | 58   | 68   | 77  | 82   | --   | 80   | 78    |
| 21      | 69   | 56   | 55   | 46   | 45   | 55   | 68   | 75  | 82   | 85   | 80   | 87    |
| 22      | 68   | 55   | 55   | 46   | 45   | 57   | 69   | 75  | 81   | 85   | 78   | 82    |
| 23      | 68   | 52   | 55   | 46   | 47   | 60   | 74   | 81  | 82   | 85   | 78   | 81    |
| 24      | 68   | 50   | 53   | 46   | 47   | 59   | 74   | 80  | 82   | 85   | 79   | 78    |
| 25      | 66   | 50   | 50   | 46   | 48   | 60   | 76   | 80  | 83   | 84   | 75   | 78    |
| 26      | 64   | 48   | 50   | 45   | 48   | 59   | 77   | 80  | 82   | 84   | 75   | 75    |
| 27      | 63   | 46   | 50   | 50   | 46   | 58   | 78   | 80  | 82   | 84   | 74   | --    |
| 28      | 63   | 46   | 50   | 50   | 46   | 57   | 77   | 82  | 83   | 84   | 75   | --    |
| 29      | 65   | 47   | 48   | 52   | --   | 57   | 78   | 78  | 83   | 85   | 78   | --    |
| 30      | 65   | 47   | 43   | 52   | --   | --   | 78   | 78  | --   | --   | 78   | --    |
| 31      | --   | --   | 46   | 52   | --   | --   | --   | 78  | --   | --   | 80   | --    |
| Average | 68   | 56   | 53   | 45   | 48   | 53   | 67   | 76  | 80   | 85   | 82   | 81    |

## NEUSE RIVER BASIN

## NEUSE RIVER NEAR (COWEN LANDING) VANCEBORO, N. C.

LOCATION.--At Cowen Landing about 6 miles southeast of Vanceboro, Craven County.

DRAINAGE AREA.--4,027 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 400 ppm Oct. 17; minimum, 54 ppm Mar. 21-31.

Hardness: Maximum, 78 ppm Oct. 17; minimum, 13 ppm Feb. 11-19.

Specific conductance: Maximum daily, 1,400 micromhos Sept. 30; minimum daily, 58.7 micromhos June 16 (p.m.).

Water temperatures: Maximum, 89°F July 9, 14, 16, 22, Aug. 4 (p.m.); minimum, 40°F Jan. 18, 20, 21 (a.m.).

EXTREMES, 1954-57.--Dissolved solids: Maximum, 6,270 ppm Oct. 15 (p.m.); minimum, 54 ppm Mar. 21-31, 1956, Mar. 21-31, 1957.

Hardness: Maximum, 1,550 ppm Aug. 12 (p.m.), 1955; minimum, 12 ppm July 16 (p.m.), 17-20, 1955.

Specific conductance: Maximum daily, 12,900 micromhos Aug. 12 (p.m.), 1955; minimum daily, 41.1 micromhos Sept. 20 (p.m.), 1955.

Water temperatures: Maximum, 92°F July 28 (p.m.), 1955; minimum, 35°F Jan. 21 (a.m.), 1955, Dec. 17 (a.m.), 1955.

REMARKS.--Samples collected twice daily (8:00 a.m. and 6:00 p.m.). Samples collected in morning and afternoon were composited unless otherwise noted. Records of specific conductance of samples collected twice daily available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                          |     |       |
| Oct. 1-10, 1956..  |                      | 9.8                        | 0.20      | 4.8          | 1.2            | 10          | 1.9           | 14                              | 6.8                        | 13            | 0.1          | 2.7                        | 64                                                 | 17                            | 6             | 97.1                                     | 6.4 | 45    |
| Oct. 11-16, 18-20  |                      | 11                         | .25       | 5.6          | 1.4            | 10          | 1.9           | 19                              | 6.2                        | 13            | .1           | 2.5                        | 66                                                 | 20                            | 4             | 101                                      | 6.5 | 40    |
| Oct. 17.....       |                      | 12                         | .06       | 8.8          | 1.4            | 112         | 6.1           | 22                              | 31                         | 203           | --           | 2.5                        | a400                                               | 78                            | 60            | 770                                      | 6.6 | --    |
| Oct. 21-31.....    |                      | 10                         | .25       | 5.2          | 1.5            | 8           | 2.1           | 17                              | 7.2                        | 12            | .1           | 2.5                        | 66                                                 | 19                            | 5             | 93.0                                     | 6.4 | 20    |
| Nov. 1-10.....     |                      | 12                         | .47       | 5.3          | 1.4            | 7.3         | 1.6           | 18                              | 5.8                        | 9.9           | .1           | 2.7                        | 71                                                 | 19                            | 4             | 87.0                                     | 6.4 | 25    |
| Nov. 11-20.....    |                      | 12                         | .57       | 6.4          | 1.0            | 8.7         | 1.6           | 23                              | 3.0                        | 11            | .0           | 2.9                        | 75                                                 | 20                            | 1             | 94.9                                     | 6.5 | 48    |
| Nov. 21-30.....    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                          |     |       |
| Dec. 1-10.....     |                      | 13                         | .51       | 6.0          | 1.0            | 8.3         | 1.7           | 21                              | 3.3                        | 11            | .0           | 3.3                        | 75                                                 | 19                            | 2             | 95.3                                     | 6.7 | 44    |
| Dec. 11-20.....    |                      | 12                         | .49       | 5.6          | 1.0            | 9.1         | 1.6           | 20                              | 3.8                        | 11            | .0           | 3.2                        | 78                                                 | 18                            | 2             | 95.1                                     | 6.9 | 44    |
| Dec. 21-31.....    |                      | 12                         | .16       | 4.4          | .7             | 6.1         | 1.8           | 15                              | 3.8                        | 8.1           | .1           | 2.3                        | 62                                                 | 14                            | 2             | 73.2                                     | 6.8 | 38    |
| Jan. 1-10, 1957..  |                      | 13                         | .58       | 5.5          | 1.1            | 6.8         | 1.6           | 18                              | 5.0                        | 9.2           | .0           | 2.5                        | 68                                                 | 18                            | 3             | 83.0                                     | 6.3 | 48    |
| Jan. 11-20.....    |                      | 13                         | .51       | 6.2          | .5             | 7.9         | 1.4           | 21                              | 4.7                        | 9.5           | .0           | 2.6                        | 62                                                 | 18                            | 0             | 87.0                                     | 6.7 | 35    |
| Jan. 21-31.....    |                      | 12                         | .52       | 6.2          | .9             | 8.1         | 1.4           | 20                              | 4.6                        | .0            | .0           | 2.7                        | 62                                                 | 19                            | 3             | 92.4                                     | 6.6 | 30    |
| Feb. 1-10.....     |                      | 11                         | .03       | 4.4          | 1.0            | 5.9         | 1.9           | 16                              | 4.7                        | 7.0           | .0           | 2.6                        | 60                                                 | 15                            | 2             | 77.1                                     | 6.9 | 25    |
| Feb. 11-19.....    |                      | 10                         | .05       | 3.6          | 1.0            | 4.8         | 1.9           | 12                              | 5.1                        | 6.5           | .0           | 2.1                        | 56                                                 | 13                            | 3             | 67.0                                     | 6.9 | 35    |
| Feb. 20-28.....    |                      | 11                         | .03       | 4.8          | .5             | 6.1         | 1.6           | 16                              | 6.1                        | 8.0           | .0           | 2.5                        | 58                                                 | 14                            | 0             | 80.0                                     | 6.9 | 20    |
| Mar. 1-10.....     |                      | 8.5                        | .06       | 4.3          | 1.0            | 5.7         | 1.8           | 12                              | 5.9                        | 7.3           | .1           | 2.8                        | 57                                                 | 15                            | 5             | 68.9                                     | 6.2 | 36    |
| Mar. 11-20.....    |                      | 9.0                        | .06       | 4.5          | .6             | 5.3         | 1.7           | 11                              | 6.4                        | 7.0           | .0           | 4.0                        | 56                                                 | 14                            | 5             | 67.6                                     | 7.1 | 34    |
| Mar. 21-31.....    |                      | 8.0                        | .03       | 4.5          | 1.1            | 6.5         | 1.7           | 14                              | 7.6                        | 7.5           | .0           | 2.9                        | 54                                                 | 16                            | 4             | 74.9                                     | 5.9 | 27    |

|                                |      |      |     |     |     |     |    |     |     |     |     |    |    |    |       |     |     |
|--------------------------------|------|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|----|-------|-----|-----|
| Apr. 1-10, 1957...             | 7.1  | 0.19 | 4.8 | 1.7 | 6.8 | 1.1 | 17 | 6.0 | 8.5 | 0.0 | 2.2 | 63 | 19 | 0  | 82.8  | 6.3 | 50  |
| Apr. 11-20.....                | 8.1  | .33  | 4.8 | 1.9 | 7.7 | 1.1 | 19 | 5.0 | 8.5 | .0  | 1.9 | 65 | 20 | 4  | 82.8  | 6.1 | 50  |
| Apr. 21-31.....                | 10.1 | .15  | 5.2 | 1.9 | 8.3 | 1.1 | 22 | 5.3 | 9.0 | .0  | 2.5 | 66 | 21 | 3  | 93.5  | 6.1 | 45  |
| May 1-10.....                  | 11   | .14  | 5.1 | 2.3 | 7.9 | 2.3 | 24 | 7.1 | 9.8 | .1  | 3.9 | 68 | 22 | 3  | 88.8  | 6.8 | 44  |
| May 11-20.....                 | 10   | .26  | 4.1 | 2.3 | 7.9 | 1.8 | 21 | 5.4 | 8.8 | .1  | 3.9 | 66 | 20 | 2  | 88.2  | 6.2 | 55  |
| May 21-31.....                 | 11   | .27  | 5.4 | 1.8 | 8.5 | 1.9 | 22 | 6.0 | 9.3 | .1  | 3.1 | 69 | 21 | 3  | 91.5  | 6.5 | 44  |
| June 1-10.....                 | 11   | .18  | 5.6 | 1.5 | 7.1 | 2.1 | 23 | 6.1 | 9.0 | .1  | 3.9 | 69 | 20 | 1  | 90.2  | 6.8 | 55  |
| June 11-20.....                | 9.2  | .26  | 4.2 | 2.3 | 5.0 | 2.2 | 20 | 6.4 | 7.6 | .2  | 2.9 | 63 | 20 | 4  | 70.7  | 6.5 | 110 |
| June 21-31.....                | 12   | .01  | 8.4 | 2.7 | 9.8 | 1.8 | 26 | 5.5 | 11  | .1  | 3.7 | 77 | 24 | 6  | 171.9 | 7.1 | 95  |
| July 1-10.....                 | 9.8  | .02  | 8.0 | 1.9 | 9.8 | 1.8 | 33 | 7.4 | 9.5 | .0  | 3.4 | 75 | 23 | 0  | 121   | 7.1 | 20  |
| July 11-20.....                | 8.5  | .01  | 7.2 | 2.4 | 11  | 2.0 | 33 | 6.2 | 10  | .1  | 3.5 | 78 | 28 | 1  | 123   | 6.7 | 15  |
| Aug. 1-10.....                 | 7.2  | .04  | 8.3 | 1.3 | 13  | 2.6 | 35 | 6.3 | 15  | .2  | 2.9 | 84 | 26 | 0  | 129   | 7.4 | 20  |
| Aug. 11-20.....                | 5.2  | .02  | 9.0 | 1.6 | 15  | 2.7 | 40 | 5.4 | 17  | .2  | 2.9 | 87 | 29 | 0  | 142   | 7.5 | 20  |
| Aug. 21-31.....                | 8.0  | .07  | 6.7 | 1.5 | 11  | 2.4 | 22 | 11  | 14  | .2  | 3.0 | 79 | 23 | 5  | 113   | 6.9 | 28  |
| Sept. 1-10.....                | 9.7  | .16  | 5.6 | 1.9 | 7.7 | 1.9 | 21 | 8.4 | 8.3 | .2  | 3.3 | 65 | 22 | 5  | 97.7  | 6.6 | 40  |
| Sept. 11-20.....               | 9.9  | .01  | 6.8 | 2.2 | 9.1 | 1.9 | 23 | 9.2 | 11  | .2  | 3.3 | 75 | 26 | 6  | 110   | 6.8 | 30  |
| Sept. 21-28, 29<br>(a.m.)..... | 9.9  | .09  | 6.4 | 1.5 | 8.5 | 1.9 | 19 | 8.8 | 9.5 | .2  | 3.5 | 73 | 22 | 6  | 101   | 6.5 | 50  |
| Sept. 29 (p.m.)...             | --   | --   | --  | --  | --  | --  | -- | --  | 25  | --  | --  | -- | -- | -- | 140   | --  | 55  |
| Sept. 30.....                  | --   | --   | --  | --  | --  | --  | -- | --  | 350 | --  | --  | -- | -- | -- | 1,400 | --  | 45  |
| Time-weighted<br>average.....  | 10   | 0.21 | 5.6 | 1.5 | 8.5 | 1.9 | 21 | 6.1 | 11  | 0.1 | 3.0 | 68 | 20 | 3  | 99    | --  | 42  |

a Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR (COWEN LANDING) VANCEBORO, N. C.--Continued

Temperature ( $^{\circ}\text{F}$ ) of water, water year October 1956 to September 1957  
 /Twice daily measurements at approximately 8 a.m. and 6 p.m./

| Day     | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|---------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|         | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1       | 67      | 69   | 66       | 68   | 47       | 47   | 48      | 47   | 55       | 58   | 54    | 54   | 56    | 59   | 73   | 77   | 73   | 78   | 93   | 97   | 91     | 92   | 76        | 84   |
| 2       | 66      | 72   | 66       | 68   | 47       | 48   | 46      | 45   | 55       | 56   | 53    | 53   | 56    | 59   | 71   | --   | 75   | 78   | 93   | 97   | 91     | 92   | 87        | 84   |
| 3       | 69      | 71   | 67       | 67   | 48       | 50   | 43      | 44   | 55       | 58   | 53    | 53   | 60    | 59   | --   | --   | 75   | 78   | 83   | 88   | 84     | 86   | 85        | 83   |
| 4       | 68      | 70   | 66       | 66   | 48       | 49   | 43      | 44   | 56       | 59   | 53    | 53   | 60    | 59   | --   | 69   | 76   | 78   | 80   | 88   | 86     | 89   | 82        | 84   |
| 5       | 69      | 71   | 65       | 65   | 48       | 53   | 46      | 45   | 55       | 55   | 50    | 51   | 63    | 66   | 69   | 66   | 76   | 79   | 86   | 86   | 85     | 87   | 83        | 83   |
| 6       | 70      | 72   | 63       | 64   | 49       | 53   | 44      | 45   | 53       | 54   | 49    | 50   | 62    | 63   | 63   | 67   | 77   | 78   | 87   | 88   | 84     | 86   | 81        | 84   |
| 7       | 70      | 73   | 63       | 63   | 50       | 54   | 45      | 47   | 53       | 53   | 49    | 50   | 62    | 64   | 64   | 69   | 78   | 80   | 84   | 87   | 86     | 85   | 81        | 83   |
| 8       | 68      | 71   | 62       | 63   | 51       | 54   | 45      | 46   | 53       | 53   | 49    | 50   | 63    | 64   | 66   | 69   | 79   | 80   | 83   | 87   | 81     | 84   | 80        | 84   |
| 9       | 68      | 71   | 62       | 63   | 51       | 54   | 45      | 46   | 53       | 53   | 49    | 50   | 63    | 64   | 66   | 69   | 79   | 80   | 83   | 87   | 81     | 84   | 80        | 84   |
| 10      | 66      | 69   | 56       | 57   | 53       | 53   | 48      | 45   | 53       | 52   | 47    | 50   | 63    | 64   | 67   | 72   | 78   | 78   | 83   | 89   | 83     | 85   | 79        | 82   |
| 11      | 65      | 66   | 55       | 56   | 53       | 54   | 47      | 48   | 53       | 53   | 48    | 51   | 63    | 64   | 68   | 72   | 73   | 76   | 84   | 87   | 86     | 85   | 80        | 84   |
| 12      | 64      | 66   | 55       | 57   | 54       | 55   | 47      | 48   | 49       | 51   | 50    | 54   | 63    | 68   | 72   | 73   | 73   | 76   | 86   | 87   | 83     | 87   | 81        | 86   |
| 13      | 63      | 65   | 55       | 56   | 54       | 48   | 48      | 49   | 48       | 50   | 52    | 56   | 62    | 61   | 72   | 76   | 74   | 78   | 86   | 88   | 83     | 84   | 80        | 86   |
| 14      | 64      | 65   | 54       | 56   | 54       | 59   | 47      | 48   | 49       | 50   | 54    | 55   | 61    | 59   | 73   | 77   | 75   | 78   | 85   | 89   | 82     | 86   | 80        | 87   |
| 15      | 65      | 66   | 55       | 57   | 53       | 60   | 45      | 45   | 47       | 49   | 55    | 56   | 60    | 61   | 76   | 77   | 75   | 79   | 85   | 87   | 83     | 82   | 85        | 85   |
| 16      | 65      | 66   | 55       | 59   | 61       | 61   | 44      | 44   | 48       | 48   | 54    | 58   | 59    | 60   | 75   | 80   | 78   | 79   | 85   | 89   | 82     | 81   | 82        | 84   |
| 17      | 65      | 65   | 58       | 57   | 60       | 63   | 44      | 43   | 46       | 48   | 53    | 59   | 62    | 63   | 73   | 78   | 80   | 81   | 87   | 87   | 82     | 81   | 82        | 84   |
| 18      | 66      | 68   | 56       | 58   | 60       | 60   | 40      | 43   | 47       | 49   | 55    | 59   | 61    | 63   | 73   | 78   | 79   | 81   | 84   | 85   | 82     | 83   | 83        | 82   |
| 19      | 66      | 68   | 55       | 57   | 58       | 59   | 41      | 42   | 48       | 51   | 59    | 59   | 62    | 63   | 74   | 76   | 79   | 81   | 86   | 87   | 80     | 81   | 79        | 83   |
| 20      | 66      | 67   | 55       | 57   | 58       | 57   | 40      | 43   | 48       | 49   | 57    | 58   | 64    | 67   | 74   | 77   | 80   | 82   | 85   | 83   | 78     | 85   | 78        | 80   |
| 21      | 64      | 66   | 55       | 58   | 55       | 56   | 40      | 43   | 45       | 47   | 55    | 56   | 61    | 69   | 75   | 74   | 79   | 82   | 83   | 86   | 77     | 78   | 77        | 79   |
| 22      | 65      | 67   | 55       | 57   | 55       | 56   | 43      | 46   | 45       | 48   | 56    | 56   | 69    | 73   | 74   | 76   | 79   | 83   | 83   | 89   | 76     | 78   | 78        | 80   |
| 23      | 66      | 68   | 56       | 54   | 57       | 57   | 49      | 50   | 47       | 49   | 55    | 57   | 69    | 78   | 74   | 74   | 80   | 84   | 84   | 88   | 75     | 77   | 78        | 80   |
| 24      | 65      | 68   | 56       | 54   | 56       | 57   | 49      | 49   | 50       | 53   | 57    | 71   | 76    | 75   | 80   | 80   | 84   | 85   | 87   | 75   | 73     | 78   | 80        | 80   |
| 25      | 65      | 68   | 55       | 54   | 54       | 53   | 47      | 48   | 50       | 51   | 56    | 57   | 73    | 76   | 81   | 83   | 85   | 86   | 84   | 84   | 74     | 73   | 78        | 78   |
| 26      | 65      | 66   | 54       | 50   | 51       | 53   | 48      | 48   | 54       | 55   | 55    | 56   | 74    | 77   | 78   | 80   | 81   | 83   | 80   | 85   | 73     | 74   | 74        | 76   |
| 27      | 65      | 67   | 49       | 50   | 50       | 50   | 48      | 50   | 54       | 55   | 55    | 58   | 75    | 78   | 78   | 81   | 80   | 82   | 85   | 84   | 73     | 79   | 73        | 72   |
| 28      | 65      | 65   | 48       | 49   | 50       | 51   | 50      | 50   | 55       | 56   | 59    | 75   | 78    | 78   | 80   | 80   | 84   | 85   | 80   | 84   | 75     | 81   | 71        | 72   |
| 29      | 65      | 65   | 48       | 48   | 50       | 47   | 54      | 57   | --       | --   | 55    | 59   | 76    | 79   | 76   | 76   | 81   | --   | 79   | 84   | 77     | 80   | 68        | 68   |
| 30      | 65      | 67   | 49       | 48   | 48       | 48   | 55      | 54   | --       | --   | 55    | --   | 75    | 78   | 75   | 76   | --   | --   | 80   | 85   | 77     | 67   | --        | --   |
| 31      | 65      | 67   | --       | --   | 47       | 48   | 54      | 51   | --       | --   | --    | --   | --    | 74   | 75   | --   | --   | --   | 80   | 88   | 80     | 84   | --        | --   |
| Average | 66      | 68   | 57       | 58   | 53       | 54   | 46      | 47   | 51       | 52   | 53    | 55   | 65    | 67   | 73   | 75   | 77   | 80   | 84   | 87   | 80     | 82   | 79        | 81   |

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.

LOCATION.--At Streets Ferry about 1½ miles east of Lima, Craven County.

DRAINAGE AREA.--4,040 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 5,060 ppm Oct. 17 (a.m.); minimum, 52 ppm Mar. 1-10, 21-31.

Hardness: Maximum, 890 ppm Oct. 17 (a.m.); minimum, 13 ppm Feb. 11-19, Mar. 11-20.

Specific conductance: Maximum daily, 12,100 micromhos Sept. 29 (m.), Sept. 30 (a.m.); minimum daily, 56.4 micromhos Mar. 12 (m.).

Water temperatures: Maximum, 87°F July 14; minimum, 40°F Jan. 19, 20.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 12,100 ppm Oct. 15 (m.), 1954; minimum, 50 ppm Apr. 21-30, 1956.

Hardness: Maximum, 2,220 ppm Oct. 15 (m.), 1954; minimum, 13 ppm Feb. 11-19, Mar. 11-20, 1957.

Specific conductance: Maximum daily, 17,800 micromhos Oct. 15 (m.), 1954; minimum daily, 51.9 micromhos Mar. 27 (a.m.), 1956.

Water temperatures: Maximum, 90°F July 28 (p.m.), 1955; minimum, 39°F Dec. 8 (a.m.), 1954.

REMARKS.--Samples collected three times daily (6 a.m., 12 m., 6 p.m.). Three daily samples were composited unless otherwise noted. Records of specific conductance of samples collected three times daily available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956..                  |                      | 10                         | 0.26      | 4.8          | 1.2            | 11          | 1.9           | 16                              | 7.2                        | 14            | 0.1          | 1.7                        | 69                                                 | 17                            | 4             | 108                                       | 6.7 | 50    |
| Oct. 11-16, 18-20                  |                      | 11                         | .22       | 4.8          | 1.9            | 12          | 60            | 42                              | 6.0                        | 16            | .1           | 1.9                        | 74                                                 | 20                            | 4             | 107                                       | 6.6 | 50    |
| Oct. 17 (a.m.)...                  |                      | --                         | .01       | 8.8          | 1.5            | 1,560       | --            | 42                              | 390                        | 2,800         | --           | 1.9                        | 25,060                                             | 830                           | 856           | 8,530                                     | 6.9 | --    |
| Oct. 17 (p.m.)...                  |                      | --                         | --        | --           | --             | --          | --            | 20                              | 19                         | 140           | --           | --                         | --                                                 | 37                            | 19            | 300                                       | 6.5 | --    |
| Oct. 21-27, 28 (a.m., p.m.), 29-31 |                      | 10                         | .20       | 5.2          | 1.4            | 9.5         | 2.1           | 17                              | 7.1                        | 12            | .1           | 1.9                        | 71                                                 | 19                            | 5             | 96.4                                      | 6.5 | 55    |
| Oct. 28 (p.m.)...                  |                      | --                         | --        | --           | --             | --          | --            | 20                              | 13                         | 43            | --           | --                         | --                                                 | 29                            | 13            | 211                                       | 6.7 | --    |
| Nov. 1-10.....                     |                      | 12                         | .52       | 6.1          | 1.3            | 7.4         | 1.8           | 20                              | 5.6                        | 10            | .1           | 2.0                        | 75                                                 | 21                            | 4             | 88.7                                      | 7.1 | 90    |
| Nov. 11-20.....                    |                      | 13                         | .43       | 5.9          | 1.1            | 8.1         | 1.5           | 23                              | 4.0                        | 9.8           | --           | 2.4                        | 72                                                 | 13                            | 4             | 82.3                                      | 6.5 | 90    |
| Nov. 21-30.....                    |                      | 14                         | .59       | 6.0          | 1.9            | 8.4         | 1.6           | 22                              | 4.7                        | 11            | .0           | 2.1                        | 74                                                 | 19                            | 1             | 92.1                                      | 6.5 | 60    |
| Dec. 1-10.....                     |                      | 13                         | .58       | 6.0          | .8             | 8.9         | 1.6           | 22                              | 6.5                        | 9.2           | .0           | 2.2                        | 69                                                 | 18                            | 0             | 93.3                                      | 6.9 | 46    |
| Dec. 11-20.....                    |                      | 12                         | .35       | 4.6          | .9             | 5.7         | 2.0           | 14                              | 4.3                        | 8.0           | .1           | 1.6                        | 62                                                 | 15                            | 4             | 96.4                                      | 6.6 | 40    |
| Dec. 21-31.....                    |                      | 12                         |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               | 73.7                                      | 6.6 | 40    |
| Jan. 1-10, 1957..                  |                      | 12                         | .60       | 4.6          | 1.2            | 6.4         | 1.4           | 17                              | 5.9                        | 8.5           | .0           | 1.7                        | 65                                                 | 16                            | 2             | 77.7                                      | 6.3 | 45    |
| Jan. 11-20.....                    |                      | 13                         | .60       | 5.6          | .5             | 7.9         | 1.2           | 19                              | 4.8                        | 9.5           | .1           | 2.1                        | 60                                                 | 16                            | 2             | 84.9                                      | 6.5 | 43    |
| Jan. 21-31.....                    |                      | 12                         | .57       | 4.6          | 1.0            | 8.0         | 1.3           | 20                              | 6.0                        | 10            | .0           | 2.1                        | 63                                                 | 18                            | 2             | 75.2                                      | 6.9 | 38    |
| Feb. 1-10.....                     |                      | 11                         | .13       | 4.8          | .9             | 6.8         | 1.7           | 13                              | 5.0                        | 8.2           | .1           | 1.2                        | 53                                                 | 13                            | 3             | 63.2                                      | 6.7 | 35    |
| Feb. 11-20.....                    |                      | 10                         | .13       | 4.7          | .7             | 6.8         | 1.6           | 16                              | 4.6                        | 8.6           | .1           | 1.6                        | 58                                                 | 15                            | 2             | 75.5                                      | 6.8 | 35    |
| Feb. 20-28.....                    |                      | 11                         | .20       | 4.7          | .7             | 6.8         | 1.6           | 16                              | 4.6                        | 8.6           | .1           | 1.6                        | 58                                                 | 15                            | 2             | 75.5                                      | 6.8 | 35    |

a. Calculated from determined constituents.



NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued

| Date of collection                                                                                                                                                                                        | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                                                                                                                                                                                                           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |     |       |
| Mar. 1-10, 1957...                                                                                                                                                                                        |                      | 8.6                        | 0.05      | 4.2          | 0.9            | 5.1         | 1.6           | 12                              | 7.9                        | 6.0           | 0.0          | 1.7                        | 52                                                  | 14                            | 4             | 65.7                                       | 6.0 | 33    |
| Mar. 11-20.....                                                                                                                                                                                           |                      | 9.1                        | .05       | 3.9          | .9             | 6.7         | 1.7           | 12                              | 6.4                        | 6.5           | .1           | 1.6                        | 57                                                  | 13                            | 4             | 64.1                                       | 5.9 | 29    |
| Mar. 21-31.....                                                                                                                                                                                           |                      | 7.7                        | .04       | 4.2          | 1.6            | 6.1         | 1.4           | 16                              | 6.3                        | 7.0           | .1           | 1.8                        | 52                                                  | 17                            | 4             | 71.1                                       | 6.4 | 29    |
| Apr. 1-10.....                                                                                                                                                                                            |                      | 7.7                        | .04       | 4.8          | 1.9            | 6.6         | .9            | 17                              | 5.0                        | 8.5           | .1           | 1.9                        | 61                                                  | 20                            | 6             | 74.0                                       | 6.4 | 50    |
| Apr. 11-20.....                                                                                                                                                                                           |                      | 7.9                        | .24       | 4.8          | 1.7            | 7.3         | .9            | 20                              | 3.6                        | 8.5           | .1           | 1.1                        | 63                                                  | 19                            | 3             | 80.2                                       | 6.6 | 50    |
| Apr. 21-30.....                                                                                                                                                                                           |                      | 10                         | .18       | 5.2          | 1.9            | 8.0         | 1.2           | 23                              | 3.1                        | 8.3           | .1           | 1.3                        | 64                                                  | 21                            | 2             | 87.4                                       | 6.7 | 60    |
| May 1-10.....                                                                                                                                                                                             |                      | 11                         | .29       | 6.0          | 1.7            | 7.2         | 1.9           | 25                              | 6.1                        | 9.7           | .1           | 2.1                        | 74                                                  | 22                            | 2             | 90.8                                       | 7.2 | 45    |
| May 11-20.....                                                                                                                                                                                            |                      | 11                         | .32       | 5.6          | 1.4            | 8.9         | 1.6           | 24                              | 3.7                        | 8.5           | .1           | 2.1                        | 70                                                  | 20                            | 0             | 85.2                                       | 6.8 | 60    |
| May 21-31.....                                                                                                                                                                                            |                      | 10                         | .26       | 6.0          | 1.5            | 6.7         | 1.8           | 24                              | 4.7                        | 8.8           | .1           | 2.5                        | 74                                                  | 21                            | 1             | 86.0                                       | 6.5 | 45    |
| June 1-10.....                                                                                                                                                                                            |                      | 13                         | .20       | 5.6          | 1.8            | 8.2         | 2.2           | 26                              | 5.0                        | 9.2           | .1           | 3.5                        | 76                                                  | 22                            | 0             | 95.2                                       | 6.9 | 50    |
| June 11-20.....                                                                                                                                                                                           |                      | 9.5                        | .26       | 4.8          | 1.0            | 4.4         | 2.1           | 17                              | 4.6                        | 6.6           | .3           | 2.6                        | 72                                                  | 16                            | 2             | 68.3                                       | 6.5 | 110   |
| June 21-30.....                                                                                                                                                                                           |                      | 12                         | .24       | 4.0          | 2.5            | 6.1         | 2.1           | 20                              | 4.7                        | 9.2           | .2           | 2.3                        | 73                                                  | 20                            | 4             | 86.4                                       | 6.8 | 65    |
| July 1-10.....                                                                                                                                                                                            |                      | 11                         | .02       | 8.4          | 2.4            | 9.5         | 2.1           | 28                              | 10                         | 12            | .0           | 1.8                        | 87                                                  | 26                            | 3             | 108                                        | 8.6 | 30    |
| July 11-20.....                                                                                                                                                                                           |                      | 7.7                        | .03       | 7.6          | 2.9            | 9.8         | 2.2           | 32                              | 10.2                       | 11            | .0           | 1.8                        | 77                                                  | 27                            | 0             | 115                                        | 6.9 | 20    |
| July 21-30.....                                                                                                                                                                                           |                      | 4.6                        | .00       | 7.6          | 2.9            | 9.8         | 2.6           | 33                              | 10                         | 11            | .0           | 1.5                        | 74                                                  | 31                            | 4             | 118                                        | 6.8 | 20    |
| Aug. 1-10.....                                                                                                                                                                                            |                      | 4.6                        | .02       | 8.0          | 1.9            | 12          | 2.2           | 29                              | 9.3                        | 14            | .2           | 1.2                        | 78                                                  | 28                            | 4             | 127                                        | 7.4 | 25    |
| Aug. 11-12, 13 (a.m., m.), 14 (p.m.), 15-16, 17 (p.m.), 18 (a.m.), 19-20 (p.m.), 21-22 (p.m.), 23 (a.m., m.), 24 (a.m., m.), 25 (p.m.), 26 (a.m., m.), 27 (p.m.), 28 (a.m., m.), 29 (p.m.), 30 (a.m., m.) |                      | 3.2                        | .01       | 8.0          | 2.4            | 15          | 2.3           | 40                              | 7.4                        | 17            | .2           | 1.1                        | 86                                                  | 30                            | 0             | 150                                        | 7.0 | 25    |
| Sept. 1-10.....                                                                                                                                                                                           |                      | --                         | --        | 5.8          | 7.0            | --          | --            | 38                              | 29                         | 177           | --           | --                         | --                                                  | 43                            | 12            | 791                                        | 6.7 | --    |
| Sept. 11-20.....                                                                                                                                                                                          |                      | 3.1                        | .00       | 9.2          | 6.8            | 45          | 3.5           | 38                              | 16                         | 75            | .2           | 1.3                        | a179                                                | 51                            | 20            | 350                                        | 6.6 | 25    |
| Sept. 21-26, 27 (a.m.), 28 (p.m.), 29 (a.m.), 30 (p.m.)                                                                                                                                                   |                      | 6.3                        | .07       | 6.8          | 2.2            | 12          | 2.2           | 25                              | 11                         | 14            | .2           | 1.6                        | 70                                                  | 26                            | 6             | 123                                        | 6.4 | 30    |
| Sept. 1-10.....                                                                                                                                                                                           |                      | 8.4                        | .02       | 7.2          | .7             | 8.2         | 1.9           | 21                              | 11                         | 8.0           | .2           | 1.7                        | 60                                                  | 21                            | 4             | 94.1                                       | 6.8 | 30    |
| Sept. 11-20.....                                                                                                                                                                                          |                      | 8.4                        | .03       | 5.6          | 2.9            | 9.8         | 2.1           | 27                              | 12                         | 10            | .1           | 1.4                        | 75                                                  | 26                            | 4             | 114                                        | 6.7 | 30    |
| Sept. 21-26, 27 (a.m.), 28 (p.m.), 29 (a.m.), 30 (p.m.)                                                                                                                                                   |                      | 8.2                        | .10       | 6.0          | 2.2            | 9.6         | 2.3           | 20                              | 11                         | 10            | .1           | 1.6                        | 80                                                  | 24                            | 8             | 119                                        | 7.0 | 55    |
| Sept. 1-10.....                                                                                                                                                                                           |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 2,430         | --           | --                         | --                                                  | --                            | --            | 7,550                                      | --  | 33    |
| Sept. 11-20.....                                                                                                                                                                                          |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 1,700         | --           | --                         | --                                                  | --                            | --            | 5,500                                      | --  | 37    |
| Sept. 21-26, 27 (a.m.), 28 (p.m.), 29 (a.m.), 30 (p.m.)                                                                                                                                                   |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 1,410         | --           | --                         | --                                                  | --                            | --            | 4,650                                      | --  | 37    |
| Sept. 1-10.....                                                                                                                                                                                           |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 1,400         | --           | --                         | --                                                  | --                            | --            | 4,610                                      | --  | 37    |
| Sept. 11-20.....                                                                                                                                                                                          |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 3,750         | --           | --                         | --                                                  | --                            | --            | 11,000                                     | --  | 31    |
| Sept. 21-26, 27 (a.m.), 28 (p.m.), 29 (a.m.), 30 (p.m.)                                                                                                                                                   |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 785           | --           | --                         | --                                                  | --                            | --            | 2,710                                      | --  | 45    |
| Sept. 1-10.....                                                                                                                                                                                           |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 4,150         | --           | --                         | --                                                  | --                            | --            | 12,100                                     | --  | 33    |
| Sept. 11-20.....                                                                                                                                                                                          |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 2,580         | --           | --                         | --                                                  | --                            | --            | 8,100                                      | --  | 43    |
| Sept. 21-26, 27 (a.m.), 28 (p.m.), 29 (a.m.), 30 (p.m.)                                                                                                                                                   |                      | --                         | --        | --           | --             | --          | --            | --                              | --                         | 4,050         | --           | --                         | --                                                  | --                            | --            | 12,100                                     | --  | 33    |
| Time-weighted average.....                                                                                                                                                                                |                      | 9.7                        | 0.22      | 5.6          | 1.7            | 9.8         | 1.8           | 21                              | 7.0                        | 379           | 0.1          | 1.8                        | 68                                                  | 21                            | 4             | 1,436                                      | --  | 45    |

<sup>a</sup> Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 [Average of thrice-daily measurements at approximately  
 6 a.m., 12 m., and 6 p.m.]

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 67   | 67   | 47   | 47   | 55   | 55   | 57   | 77  | 73   | 83   | 84   | 81    |
| 2       | 68   | 67   | 47   | 44   | 56   | 53   | 60   | 75  | 75   | 84   | 84   | 81    |
| 3       | 69   | 67   | 46   | 42   | 56   | 54   | 61   | 73  | 75   | 83   | 85   | 82    |
| 4       | 69   | 66   | 47   | 43   | 55   | 52   | 61   | 69  | 77   | 84   | 85   | 82    |
| 5       | 70   | 64   | 48   | 44   | 56   | 50   | 63   | 64  | 77   | 84   | 84   | 82    |
| 6       | 70   | 63   | 50   | 44   | 57   | 49   | 63   | 65  | 79   | 84   | 83   | 81    |
| 7       | 70   | 62   | 50   | 45   | 52   | 49   | 64   | 65  | 79   | 84   | 83   | 81    |
| 8       | 69   | 60   | 51   | 44   | 53   | 50   | 64   | 67  | 79   | 85   | 82   | 81    |
| 9       | 69   | 59   | 53   | 45   | 52   | 49   | 63   | 69  | 78   | 85   | 82   | 80    |
| 10      | 68   | 58   | 53   | 47   | 54   | 49   | 63   | 72  | 75   | 85   | 82   | 80    |
| 11      | 66   | 55   | 53   | 47   | 53   | 49   | 63   | 71  | 74   | 85   | 83   | 81    |
| 12      | 64   | 56   | 54   | 47   | 51   | 52   | 63   | 72  | 75   | 85   | 84   | 81    |
| 13      | 64   | 55   | 54   | 48   | 50   | 52   | 62   | 74  | 76   | 86   | 83   | 82    |
| 14      | 64   | 55   | 56   | 47   | 49   | 54   | 60   | 76  | 76   | 87   | 84   | 84    |
| 15      | 64   | 54   | 57   | 45   | 48   | 55   | 60   | 76  | 77   | 86   | 82   | 83    |
| 16      | 65   | 56   | 59   | 44   | 48   | 57   | 59   | 78  | 77   | 86   | 83   | 84    |
| 17      | 65   | 57   | 60   | 43   | 47   | 57   | 61   | 76  | 78   | 85   | 82   | 84    |
| 18      | 65   | 57   | 59   | 41   | 48   | 58   | 62   | 74  | 79   | 85   | 81   | 83    |
| 19      | 65   | 55   | 58   | 40   | 48   | 59   | 63   | 75  | 80   | 84   | 80   | 81    |
| 20      | 65   | 54   | 57   | 40   | 47   | 58   | 66   | 75  | 80   | 84   | 79   | 79    |
| 21      | 65   | 56   | 56   | 42   | 46   | 57   | 69   | 74  | 80   | 83   | 79   | 79    |
| 22      | 66   | 54   | 57   | 43   | 45   | 56   | 70   | 73  | 81   | 85   | 76   | 79    |
| 23      | 67   | 53   | 56   | 47   | 48   | 56   | 72   | 75  | 82   | 86   | 76   | 79    |
| 24      | 66   | 51   | 57   | 48   | 50   | 57   | 74   | 77  | 82   | 83   | 75   | 78    |
| 25      | 66   | 50   | 55   | 47   | 51   | 57   | 75   | 79  | 83   | 83   | 74   | 76    |
| 26      | 65   | 50   | 52   | 48   | 53   | 56   | 76   | 80  | 81   | 83   | 74   | 75    |
| 27      | 65   | 48   | 50   | 48   | 55   | 57   | 77   | 79  | 80   | 80   | 73   | 74    |
| 28      | 65   | 47   | 50   | 51   | 55   | 57   | 78   | 79  | 82   | 82   | 77   | 74    |
| 29      | 64   | 48   | 50   | 54   | --   | 57   | 78   | 77  | 81   | 83   | 77   | 71    |
| 30      | 65   | 47   | 47   | 54   | --   | 56   | 78   | 75  | --   | 83   | 79   | 70    |
| 31      | 65   | --   | 47   | 54   | --   | --   | --   | 73  | --   | 84   | 82   | --    |
| Average | 66   | 56   | 53   | 46   | 51   | 54   | 66   | 74  | 78   | 84   | 81   | 80    |

NEUSE RIVER BASIN--Continued  
SWIFT CREEK NEAR VANCEBORO, N. C.

LOCATION.--At gaging station at highway bridge 2½ miles upstream from bridge on State Highway 118, 2½ miles downstream from Clayrot Swamp, and 3½ miles northwest of Vanceboro, Craven County.

DRAINAGE AREA.--182 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1952, January 1955 to September 1957.

Water temperatures: October 1950 to September 1957. Maximum, 298 ppm June 22, 24-30; minimum, 80 ppm Oct. 17-20.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 298 ppm June 22, 24-30; minimum, 80 ppm Oct. 17-20.

Hardness: Maximum, 63 ppm Sept. 1-5; minimum, 24 ppm Mar. 1-10.

Specific conductance: Maximum daily, 618 micromhos July 1; minimum daily, 67.1 micromhos Mar. 12.

Water temperatures: Maximum, 78°F July 10, 11, 15, Aug. 4-6; minimum, 35°F Jan. 19-21.

EXTREMES, 1951-52, 1954-57.--Dissolved solids (1951-52, 1955-57): Maximum, 349 ppm June 11-20, 1955; minimum, 66 ppm Mar. 1-10, 1952.

Hardness: Maximum, 96 ppm Jan. 1-10, 1955; minimum, 15 ppm Sept. 21-30, 1955.

Specific conductance (1955-57): Maximum daily, 865 micromhos June 21, 1955; minimum daily, 29.5 micromhos Sept. 21, 1955.

Water temperatures: Maximum, 87°F July 29, 1952; minimum, 35°F Jan. 19-21, 1957.

REMARKS.--Records of suspended matter of composite samples from October 1951 to September 1952 and records of specific conductance of daily samples from January 1955 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956..  | 26                   | 11                         | 0.07      | 14           | 1.7            | 14          | 3.1           | 28                              | 21                         | 19            | 0.1          | 2.3                        | 104                                                | 41                            | 18            | 171                                       | 6.8 | 28    |
| Oct. 11-16.....    | 16                   | 12                         | 0.03      | 14           | 2.1            | 11          | 2.5           | 22                              | 16                         | 14            | -            | 2.1                        | 115                                                | 41                            | 18            | 173                                       | 6.8 | 35    |
| Oct. 17-20.....    | 339                  | 10                         | 0.03      | 11           | 1.5            | 11          | 2.2           | 22                              | 16                         | 14            | -            | 3.5                        | 80                                                 | 34                            | 16            | 137                                       | 6.8 | 65    |
| Oct. 21-31.....    | 402                  | 10                         | 0.06      | 11           | 1.5            | 8.5         | 1.8           | 14                              | 20                         | 11            | 0            | 1.9                        | 96                                                 | 32                            | 20            | 121                                       | 6.3 | 60    |
| Nov. 1-10.....     | 485                  | 12                         | 0.35      | 9.6          | 1.5            | 7.6         | 1.4           | 14                              | 16                         | 12            | 0            | 2.2                        | 90                                                 | 30                            | 19            | 110                                       | 6.3 | 80    |
| Nov. 11-20.....    | 95                   | 12                         | 0.33      | 12           | 1.6            | 9.0         | 1.0           | 22                              | 21                         | 13            | 0            | 1.6                        | 93                                                 | 37                            | 19            | 133                                       | 6.6 | 45    |
| Nov. 21-30.....    | 50                   | 14                         | 0.45      | 14           | 2.0            | 9.7         | 1.6           | 30                              | 19                         | 14            | 0            | 1.7                        | 104                                                | 44                            | 19            | 148                                       | 6.8 | 50    |
| Dec. 1-10.....     | 50                   | 13                         | 0.49      | 15           | 1.2            | 11          | 1.6           | 32                              | 20                         | 15            | 0            | 1.5                        | 111                                                | 43                            | 17            | 158                                       | 7.9 | 44    |
| Dec. 11-15.....    | 99                   | 13                         | 0.57      | 16           | 1.5            | 13          | 1.7           | 34                              | 19                         | 15            | 0            | 1.7                        | 118                                                | 45                            | 19            | 150                                       | 6.8 | 33    |
| Dec. 16-20.....    | 56                   | 13                         | 0.13      | 16           | 1.0            | 11          | 1.3           | 28                              | 22                         | 16            | 0            | 1.8                        | 114                                                | 43                            | 20            | 160                                       | 7.1 | 32    |
| Jan. 1-10, 1957..  | 44                   | 12                         | 0.37      | 16           | 1.7            | 13          | 1.5           | 34                              | 27                         | 18            | 0            | 1.8                        | 121                                                | 48                            | 20            | 179                                       | 6.9 | 32    |
| Jan. 11-20.....    | 84                   | 11                         | 0.24      | 15           | 1.5            | 12          | 1.4           | 30                              | 23                         | 18            | 0            | 1.8                        | 112                                                | 44                            | 19            | 166                                       | 6.9 | 30    |
| Jan. 21-31.....    | 206                  | 11                         | 0.36      | 11           | 1.3            | 9.8         | 1.7           | 17                              | 17                         | 15            | 0            | 2.1                        | 103                                                | 34                            | 20            | 132                                       | 6.8 | 48    |
| Feb. 1-10.....     | 187                  | 11                         | 0.35      | 12           | 1.2            | 8.2         | 1.2           | 20                              | 18                         | 14            | 0            | 1.8                        | 100                                                | 34                            | 18            | 127                                       | 6.6 | 45    |
| Feb. 11-19.....    | 215                  | 8.9                        | 0.37      | 12           | 1.3            | 8.9         | 1.3           | 20                              | 18                         | 14            | 0            | 2.9                        | 98                                                 | 33                            | 16            | 128                                       | 6.6 | 53    |
| Feb. 20-28.....    | 421                  | 9.4                        | 0.33      | 8.3          | 1.9            | 6.1         | 1.4           | 11                              | 13                         | 80            | 0.2          | 1.7                        | 83                                                 | 24                            | 16            | 103.9                                     | 6.7 | 45    |
| Mar. 1-10.....     | 441                  | 8.1                        | 0.11      | 8.3          | 1.6            | 7.1         | 1.3           | 15                              | 13                         | 9.1           | 0.2          | 1.9                        | 86                                                 | 27                            | 17            | 99.5                                      | 6.4 | 45    |
| Mar. 11-20.....    | 342                  | 8.2                        | 0.11      | 8.3          | 1.6            | 7.1         | 1.3           | 15                              | 13                         | 9.1           | 0.2          | 1.9                        | 86                                                 | 27                            | 17            | 99.5                                      | 6.4 | 45    |
| Mar. 21-31.....    | 342                  | 8.2                        | 0.11      | 8.3          | 1.6            | 7.1         | 1.3           | 15                              | 13                         | 9.1           | 0.2          | 1.9                        | 86                                                 | 27                            | 17            | 99.5                                      | 6.4 | 45    |

|                            |     |     |      |     |     |     |     |    |    |     |     |     |      |    |    |     |     |    |
|----------------------------|-----|-----|------|-----|-----|-----|-----|----|----|-----|-----|-----|------|----|----|-----|-----|----|
| Apr. 1-10, 1957...         | 222 | 7.9 | 0.18 | 11  | 1.5 | 7.1 | 1.5 | 21 | 14 | 10  | 0.2 | 1.7 | 95   | 32 | 15 | 114 | 6.6 | 48 |
| Apr. 11-20, 1957...        | 179 | 9.7 | .30  | 11  | 2.7 | 9.5 | 1.3 | 22 | 15 | 12  | .2  | 1.5 | 102  | 35 | 17 | 127 | 6.8 | 50 |
| Apr. 21-30, 1957...        | 179 | 12  | .59  | 13  | 2.0 | 11  | 1.6 | 35 | 13 | 15  | .2  | 1.9 | 116  | 42 | 19 | 151 | 6.6 | 48 |
| May 1-10, 1957...          | 77  | 11  | .67  | 13  | 2.0 | 13  | 1.6 | 35 | 13 | 15  | .2  | 2.4 | 116  | 42 | 19 | 151 | 6.6 | 48 |
| May 11-18, 1957...         | 42  | 13  | .59  | 15  | 1.8 | 17  | 1.5 | 36 | 14 | 25  | .1  | 3.4 | 136  | 43 | 15 | 180 | 6.9 | 62 |
| May 19, 1957...            | 30  | --  | --   | --  | --  | --  | --  | 48 | 16 | 92  | --  | --  | --   | 59 | 10 | 424 | 7.8 | -- |
| May 21, 23-27, 1957...     | 43  | 12  | .54  | 14  | 3.7 | 21  | 2.1 | 35 | 16 | 32  | .1  | 4.3 | 137  | 51 | 22 | 212 | 7.3 | 60 |
| May 28, 28-31, 1957...     | 104 | 8.6 | .43  | 9.4 | 1.7 | 8.4 | 2.6 | 22 | 12 | 12  | .3  | 5.0 | 116  | 30 | 12 | 125 | 6.9 | 90 |
| June 1-10, 1957...         | 42  | 13  | .45  | 14  | 2.5 | 17  | 2.3 | 39 | 16 | 26  | .2  | 3.3 | 129  | 45 | 13 | 190 | 7.0 | 85 |
| June 11-18, 1957...        | 21  | 12  | .33  | 13  | 2.4 | 15  | 2.6 | 32 | 19 | 22  | .3  | 3.6 | 118  | 42 | 15 | 172 | 7.0 | 85 |
| June 19-26, 1957...        | 21  | 12  | .53  | 17  | 2.2 | 31  | 2.3 | 44 | 17 | 43  | .2  | 2.9 | 160  | 51 | 15 | 289 | 6.6 | 60 |
| June 21, 23, 1957...       | 14  | 11  | .53  | 17  | 2.2 | 31  | 2.3 | 44 | 17 | 43  | .2  | 2.8 | 160  | 51 | 15 | 289 | 6.6 | 60 |
| June 22, 24-30, 1957...    | 12  | 13  | .66  | 21  | 2.0 | 67  | 5.5 | 62 | 20 | 105 | .2  | 3.5 | 288  | 61 | 10 | 492 | 7.1 | 65 |
| July 1, 7-9, 1957...       | 4.9 | 12  | .66  | 18  | 2.4 | 82  | 4.0 | 54 | 14 | 123 | .3  | 3.7 | a287 | 55 | 11 | 540 | 7.1 | 35 |
| July 2-6, 10, 1957...      | 5.4 | 12  | .69  | 17  | 2.1 | 50  | 3.3 | 51 | 14 | 70  | .3  | 3.4 | 218  | 50 | 8  | 362 | 6.9 | 65 |
| July 11-12, 17, 1957...    | 11  | 11  | .41  | 20  | 2.2 | 82  | 3.3 | 51 | 23 | 68  | .2  | 1.4 | a203 | 58 | 16 | 369 | 6.9 | 50 |
| July 13-16, 1957...        | 5.4 | 11  | .49  | 19  | 2.7 | 82  | 3.5 | 58 | 17 | 120 | .3  | 3.3 | a288 | 58 | 10 | 541 | 6.8 | 50 |
| July 18-20, 1957...        | 7.2 | 8.3 | .22  | 14  | 2.2 | 20  | 3.7 | 24 | 25 | 14  | .0  | 2.3 | a190 | 44 | 24 | 200 | 6.5 | -- |
| July 21-24, 26-31, 1957... | 7.6 | 8.2 | .03  | 13  | 1.6 | 22  | 3.5 | 28 | 20 | 33  | .3  | 2.1 | 134  | 41 | 18 | 215 | 7.1 | 35 |
| July 25, 1957...           | 43  | --  | --   | --  | --  | --  | --  | 32 | 30 | 62  | --  | --  | --   | 57 | 31 | 328 | 7.1 | -- |
| Aug. 1-10, 1957...         | 2.2 | 8.4 | .51  | 14  | 2.4 | 42  | 3.1 | 36 | 16 | 85  | .3  | 3.3 | 175  | 45 | 16 | 312 | 7.3 | 60 |
| Aug. 11-19, 1957...        | 5.7 | 8.2 | .30  | 16  | 2.2 | 51  | 2.7 | 38 | 17 | 85  | .3  | 2.9 | 210  | 49 | 18 | 383 | 7.0 | 50 |
| Aug. 20, 1957...           | 208 | --  | --   | --  | --  | 12  | 1.7 | -- | 20 | 19  | --  | --  | --   | 27 | -- | 139 | 6.5 | -- |
| Aug. 21-22, 1957...        | 102 | 8.9 | .28  | 14  | 2.4 | 11  | 1.8 | 11 | 32 | 22  | .3  | 2.6 | a100 | 46 | 37 | 178 | 6.6 | -- |
| Aug. 23-31, 1957...        | 17  | 13  | .43  | 19  | 1.9 | 38  | 2.3 | 32 | 28 | 60  | .3  | 2.6 | 206  | 56 | 30 | 351 | 7.3 | 55 |
| Sept. 1-5, 1957...         | 11  | 12  | .30  | 19  | 3.7 | 66  | 3.4 | 48 | 20 | 100 | .2  | 3.5 | a252 | 63 | 24 | 481 | 7.3 | 50 |
| Sept. 6-10, 1957...        | 32  | 7.8 | .05  | 12  | 2.7 | 26  | 3.0 | 36 | 14 | 71  | .2  | 3.6 | a241 | 49 | 16 | 418 | 7.1 | 50 |
| Sept. 11-14, 1957...       | 48  | 8.2 | .07  | 12  | 2.7 | 20  | 3.0 | 26 | 13 | 28  | .2  | 2.0 | 135  | 43 | 20 | 219 | 7.2 | 50 |
| Sept. 15-18, 1957...       | 14  | 11  | .11  | 16  | 3.2 | 53  | 3.2 | 36 | 18 | 80  | .2  | 3.8 | a207 | 54 | 24 | 398 | 7.1 | 40 |
| Sept. 21-30, 1957...       | 52  | 10  | .12  | 12  | 3.2 | 21  | 2.6 | 25 | 21 | 30  | .2  | 2.6 | 135  | 42 | 22 | 213 | 7.1 | 45 |
| Weighted average.....      | 130 | 11  | 0.25 | 12  | 1.6 | 12  | 1.9 | 21 | 20 | 18  | 0.1 | 2.5 | 96   | 37 | 19 | 156 | --  | 60 |

a Calculated from determined constituents.



NEUSE RIVER BASIN--Continued

NEUSE RIVER AT NEW BERN, N. C.

LOCATION--At bridge on U. S. Highway 17 at New Bern, Craven County.

DRAINAGE AREA--4,467 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Specific conductance: Maximum daily, 25 900 micromhos Sept. 28 (bottom); minimum daily, 64.6 micromhos Mar. 11 (top).

REMARKS.--Integrated samples collected daily during October and November and a top sample and a bottom sample were collected once daily during December through September. Records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chloride, in parts per million, water year October 1956 to September 1957

| Day | October |        | November |        | December |        | January |        | February |        | March |        | April |        | May   |        | June  |        | July  |        | August |        | September |        |
|-----|---------|--------|----------|--------|----------|--------|---------|--------|----------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|--------|--------|-----------|--------|
|     | Top     | Bottom | Top      | Bottom | Top      | Bottom | Top     | Bottom | Top      | Bottom | Top   | Bottom | Top   | Bottom | Top   | Bottom | Top   | Bottom | Top   | Bottom | Top    | Bottom | Top       | Bottom |
| 1   | 7,590   | 3,500  | 2,120    | --     | 97       | 3,680  | 394     | 1,960  | 72       | 2,870  | 12    | 12     | 50    | 1,540  | 124   | 2,360  | 930   | 4,540  | 2,180 | 4,600  | 1,700  | 4,250  | 1,910     | 5,890  |
| 2   | 5,550   | 2,740  | 444      | 3,090  | 960      | 5,070  | 332     | 1,090  | 91       | 3,300  | 13    | 12     | 36    | 2,830  | 89    | 2,360  | 1,110 | 5,860  | 1,700 | 4,250  | 1,910  | 5,890  |           |        |
| 3   | 4,120   | 2,010  | 225      | 3,910  | 704      | 4,930  | 50      | 1,390  | 91       | 3,900  | 13    | 12     | 1,060 | 2,800  | 170   | 2,150  | 1,860 | 5,540  | 2,350 | 4,260  | 2,160  | 5,490  |           |        |
| 4   | 6,270   | 2,340  | 144      | 4,640  | 427      | 4,120  | --      | --     | 108      | 3,650  | 14    | 13     | 1,090 | 1,830  | 176   | 1,810  | 1,850 | 4,850  | 2,160 | 2,860  | 1,670  | 5,240  |           |        |
| 5   | 6,540   | 1,650  | 430      | 4,930  | 182      | 4,930  | 257     | 3,070  | 80       | 3,950  | 15    | 16     | 382   | 2,860  | 90    | 1,400  | 2,250 | 3,080  | 2,610 | 3,250  | 1,420  | 6,330  |           |        |
| 6   | 5,740   | 3,050  | 330      | 5,050  | 586      | 5,050  | 126     | 3,000  | 45       | 2,930  | 14    | 14     | 426   | 3,670  | 258   | 2,490  | 1,500 | 4,230  | 2,400 | 3,300  | 1,420  | 6,820  |           |        |
| 7   | 6,130   | 2,900  | 372      | 5,330  | 986      | 5,000  | 126     | 3,000  | 45       | 2,930  | 14    | 14     | 598   | 3,710  | 146   | 3,100  | 1,650 | 3,800  | 1,940 | 4,550  | 1,350  | 7,820  |           |        |
| 8   | 3,770   | 2,310  | 1,440    | 4,980  | 506      | 3,520  | 228     | 1,550  | 17       | 16     | 22    | 25     | 762   | 4,230  | 1,365 | 1,800  | 1,450 | 4,700  | 2,310 | 4,700  | 2,190  | 7,370  |           |        |
| 9   | 6,320   | 2,030  | 3,680    | 5,210  | 828      | 2,580  | 235     | 2,080  | 7.8      | 8.8    | 20    | 20     | 548   | 4,060  | 1,510 | 2,050  | 3,570 | 5,570  | 2,200 | 4,760  | 2,130  | 5,040  |           |        |
| 10  | 5,210   | 675    | 1,110    | 5,350  | 880      | 3,420  | 171     | 410    | 12       | 11     | 14    | 15     | 278   | 3,790  | 123   | 2,820  | 2,860 | 4,870  | 2,360 | 5,350  | 745    | 6,480  |           |        |
| 11  | 4,650   | 420    | 775      | 5,380  | 1,800    | 3,620  | 18      | 614    | 10       | 21     | 20    | 190    | 3,170 | 39     | 2,400 | 1,030  | 1,850 | 1,920  | 4,760 | 3,650  | 5,750  | 1,580  | 7,320     |        |
| 12  | 4,750   | 645    | 780      | 5,790  | 1,820    | 3,620  | 43      | 1,800  | 10       | 15     | 15    | 202    | 3,490 | 23     | 2,400 | 2,000  | 3,950 | 3,350  | 6,150 | 2,100  | 7,370  |        |           |        |
| 13  | 4,420   | 1,950  | 362      | 5,390  | 1,100    | 3,800  | 161     | 1,000  | 10       | 9.8    | 16    | 16     | 414   | 2,500  | 24    | 2,570  | 2,660 | 3,570  | 4,350 | 5,750  | 1,650  | 8,340  |           |        |
| 14  | 4,610   | 2,950  | 430      | 5,730  | 2,000    | 3,650  | 50      | 690    | 10       | 11     | 14    | 14     | 452   | 2,280  | 26    | 3,290  | 1,850 | 3,200  | 4,400 | 4,900  | 1,950  | 7,820  |           |        |
| 15  | 4,290   | 2,570  | 205      | 5,930  | 990      | 3,500  | 162     | 2,200  | 11       | 12     | 13    | 13     | 560   | 1,710  | 17    | 3,160  | 1,170 | 4,600  | 4,700 | 5,700  | 2,540  | 7,670  |           |        |
| 16  | 2,300   | 2,130  | 935      | 6,320  | 2,350    | 3,920  | 41      | 1,640  | 12       | 14     | 14    | 14     | 104   | 2,020  | 27    | 2,750  | 2,580 | 2,500  | 4,550 | 5,900  | 1,300  | 5,980  |           |        |
| 17  | 2,880   | 3,160  | 3,680    | 6,560  | 1,580    | 5,550  | 14      | 836    | 12       | 12     | 15    | 15     | 52    | 1,040  | 22    | 3,170  | --    | 3,000  | 4,200 | 4,950  | 1,960  | 7,900  |           |        |
| 18  | 3,960   | 4,470  | 1,560    | 6,700  | 720      | 4,400  | 88      | 820    | 13       | 14     | 13    | 13     | 30    | 130    | 157   | 3,660  | 1,160 | 4,450  | 2,630 | 4,500  | 3,500  | 8,540  |           |        |
| 19  | 3,540   | 1,020  | 1,020    | 7,070  | 460      | 4,150  | 64      | 2,140  | 18       | 17     | 15    | 14     | 718   | 925    | 66    | 4,330  | 1,310 | 4,400  | 3,300 | 5,250  | 1,860  | 9,280  |           |        |
| 20  | 3,540   | 1,020  | 1,020    | 7,070  | 460      | 4,150  | 64      | 2,140  | 18       | 17     | 15    | 14     | 718   | 925    | 66    | 4,330  | 1,310 | 4,400  | 3,300 | 5,250  | 1,860  | 9,280  |           |        |
| 21  | 2,940   | 1,670  | 840      | 7,320  | 420      | 3,120  | 55      | 2,780  | 215      | 253    | 15    | 18     | 120   | 1,130  | 214   | 3,610  | 1,325 | 4,250  | 4,250 | 5,600  | 3,220  | 8,740  |           |        |
| 22  | 3,750   | 2,080  | 320      | 7,020  | 820      | 1,880  | 24      | 3,900  | 30       | 263    | 17    | 18     | 212   | 1,460  | 152   | 3,740  | 1,380 | 4,000  | 4,450 | 6,100  | 3,450  | 8,340  |           |        |
| 23  | 3,370   | 2,720  | 500      | 7,170  | 924      | 2,630  | 38      | 3,920  | 16       | 16     | 17    | 17     | 70    | 380    | 94    | 3,850  | --    | 3,500  | 3,750 | 5,750  | 2,570  | 7,750  |           |        |
| 24  | 4,240   | 3,270  | 2,850    | 7,000  | 480      | 3,150  | 24      | 4,030  | 15       | 20     | 17    | 19     | 166   | 860    | 150   | 3,580  | 1,650 | 5,750  | 3,450 | 5,500  | 3,550  | 7,120  |           |        |
| 25  | 3,590   | 3,510  | 770      | 6,780  | 900      | 3,020  | 18      | 1,650  | 16       | 16     | 19    | 19     | 451   | 24     | 350   | 107    | 3,480 | 1,450  | 4,750 | 1,240  | 4,650  | 3,000  | 8,440     |        |
| 26  | 3,730   | 2,680  | 830      | 6,760  | 450      | 3,380  | 20      | 1,320  | 14       | 14     | 17    | 17     | 1,940 | 26     | 36    | 362    | 3,010 | --     | 4,500 | 4,500  | 4,830  | 9,030  |           |        |
| 27  | 3,880   | 2,880  | 670      | 6,630  | 410      | 3,320  | 38      | 750    | 18       | 19     | 27    | 27     | 2,280 | 622    | 700   | 172    | 2,970 | 2,020  | 3,250 | 2,160  | 4,500  | 7,120  | 9,420     |        |
| 28  | 2,960   | 1,900  | 635      | 4,060  | 346      | 2,600  | --      | --     | 26       | 26     | 30    | 30     | 2,460 | 360    | 580   | 614    | 622   | 1,500  | 4,500 | 2,800  | 6,850  | 8,590  |           |        |
| 29  | 2,960   | 1,900  | 635      | 4,060  | 346      | 2,600  | --      | --     | 26       | 26     | 30    | 30     | 2,460 | 360    | 580   | 614    | 622   | 1,500  | 4,500 | 2,800  | 6,850  | 8,590  |           |        |
| 30  | 1,570   | 1,700  | 394      | 3,370  | 1,040    | 1,440  | --      | --     | 14       | 14     | 56    | 56     | 2,020 | 218    | 1,940 | --     | 1,520 | 4,400  | 2,710 | 6,350  | 7,320  | 7,720  |           |        |
| 31  | 770     | --     | 234      | 2,740  | 1,386    | 2,850  | --      | --     | --       | --     | --    | --     | 114   | 2,120  | --    | --     | 1,630 | 4,100  | 1,470 | 6,150  | --     | --     |           |        |

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER AT NEW BERN, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Top and bottom measurements from December 1956 to September 1957 at approximately 11:30 a.m./7

| Day     | October |        | November |        | December |        | January |        | February |        | March |        | April |        | May |        | June |        | July |        | August |        | September |        |
|---------|---------|--------|----------|--------|----------|--------|---------|--------|----------|--------|-------|--------|-------|--------|-----|--------|------|--------|------|--------|--------|--------|-----------|--------|
|         | Top     | Bottom | Top      | Bottom | Top      | Bottom | Top     | Bottom | Top      | Bottom | Top   | Bottom | Top   | Bottom | Top | Bottom | Top  | Bottom | Top  | Bottom | Top    | Bottom | Top       | Bottom |
| 1       | 66      | 50     | 48       | 50     | 56       | 54     | 54      | 52     | 58       | 57     | 79    | 74     | 75    | 75     | 84  | 82     | 86   | 83     | 83   | 82     | 86     | 83     | 83        | 78     |
| 2       | 68      | 51     | 49       | 51     | 57       | 55     | 55      | 53     | 59       | 57     | 80    | 75     | 76    | 75     | 84  | 82     | 87   | 84     | 84   | 82     | 88     | 85     | 84        | 78     |
| 3       | 68      | 48     | 48       | 50     | 50       | 50     | 54      | 53     | 62       | 61     | 73    | 71     | 78    | 75     | 82  | 80     | 89   | 84     | 83   | 82     | 89     | 84     | 83        | 78     |
| 4       | 68      | 49     | 52       | 44     | 48       | --     | --      | --     | 63       | 62     | 61    | 68     | 69    | 84     | 82  | 86     | 84   | 82     | 86   | 84     | 81     | 81     | 79        | 79     |
| 5       | 67      | 49     | 52       | 46     | 48       | --     | --      | --     | 51       | 52     | 64    | 63     | 65    | 78     | 76  | 84     | 82   | 85     | 84   | 82     | 85     | 84     | 82        | 80     |
| 6       | 65      | 50     | 52       | 44     | 46       | 54     | 53      | 49     | 53       | 64     | 64    | 67     | 66    | 78     | 77  | 83     | 83   | 81     | 83   | 82     | 83     | 81     | 82        | 79     |
| 7       | 72      | 52     | 45       | 48     | 57       | 55     | 49      | 51     | 65       | 65     | 68    | 66     | 78    | 76     | 84  | 83     | 78   | 81     | 81   | 81     | 81     | 81     | 81        | 79     |
| 8       | 70      | 53     | 43       | 47     | 54       | 53     | 49      | 51     | 65       | 65     | 68    | 67     | 80    | 78     | 86  | 83     | 80   | 81     | 82   | 80     | 81     | 82     | 80        | 79     |
| 9       | 63      | 54     | 46       | 48     | 53       | 53     | 48      | 54     | 61       | 70     | 67    | 75     | 75    | 84     | 82  | 80     | 81   | 84     | 81   | 84     | 81     | 84     | 81        | 81     |
| 10      | 60      | 54     | 45       | 48     | 54       | 53     | 48      | 54     | 61       | 70     | 67    | 75     | 75    | 84     | 82  | 80     | 81   | 84     | 81   | 84     | 81     | 84     | 81        | 81     |
| 11      | 70      | 60     | 55       | 47     | 49       | 55     | 55      | 51     | 49       | 64     | 63    | 72     | 68    | 79     | 76  | 82     | 83   | 84     | 81   | 84     | 81     | 84     | 80        | 80     |
| 12      | 67      | 59     | 54       | 55     | 47       | 50     | 51      | 51     | 53       | 65     | 64    | 72     | 68    | 78     | 76  | 86     | 83   | 82     | 81   | 85     | 82     | 81     | 85        | 80     |
| 13      | 66      | 58     | 51       | 55     | 47       | 49     | 50      | 52     | 53       | 52     | 63    | 75     | 70    | 79     | 77  | 86     | 83   | 83     | 81   | 84     | 88     | 83     | 84        | 88     |
| 14      | 67      | 58     | 59       | 55     | 48       | 47     | 49      | 52     | 53       | 54     | 64    | 60     | 76    | 71     | 79  | 77     | 87   | 84     | 83   | 81     | 84     | 80     | 81        | 80     |
| 15      | 67      | 60     | 56       | 46     | 47       | 48     | 50      | 55     | 54       | 60     | 60    | 79     | 74    | 81     | 78  | 86     | 85   | 83     | 81   | 84     | 80     | 81     | 84        | 80     |
| 16      | 67      | 59     | 57       | 45     | 44       | 47     | 50      | 52     | 51       | 62     | 60    | 77     | 73    | 80     | 78  | 85     | 84   | 86     | 83   | 84     | 81     | 84     | 81        | 81     |
| 17      | 67      | 58     | 56       | 44     | 47       | 50     | 56      | 57     | 61       | 61     | 73    | 76     | 79    | 79     | 84  | 86     | 86   | 83     | 85   | 80     | 83     | 85     | 80        | 80     |
| 18      | 69      | 60     | 58       | 44     | 41       | 47     | 50      | 59     | 58       | 65     | 63    | 79     | 76    | 88     | 88  | 84     | 84   | 89     | 84   | 82     | 81     | 84     | 81        | 81     |
| 19      | 68      | 58     | 56       | 40     | 44       | 49     | 49      | 59     | 58       | 68     | 63    | 76     | 78    | 81     | 78  | 84     | 83   | 83     | 80   | 81     | 80     | 81     | 80        | 81     |
| 20      | 68      | 59     | 58       | 44     | 39       | 47     | 49      | 59     | 59       | 70     | 65    | 78     | 76    | 80     | 77  | 86     | 84   | 77     | 78   | 82     | 82     | 82     | 82        | 82     |
| 21      | 66      | 59     | 57       | 43     | 45       | 41     | 48      | 57     | 57       | 70     | 68    | 77     | 76    | 83     | 78  | 84     | 83   | 77     | 79   | 84     | 81     | 84     | 81        | 81     |
| 22      | 67      | 59     | 59       | 47     | 48       | 46     | 50      | 56     | 57       | 75     | 70    | 75     | 74    | 89     | 88  | 85     | 83   | 77     | 78   | 75     | 77     | 75     | 78        | 78     |
| 23      | 67      | 57     | 58       | 57     | 50       | 48     | 50      | 55     | 55       | 74     | 71    | 77     | 76    | 88     | 88  | 84     | 84   | 84     | 84   | 77     | 75     | 84     | 84        | 84     |
| 24      | 67      | 53     | 58       | 56     | 48       | 43     | 51      | 50     | 59       | 73     | 72    | 75     | 78    | 83     | 79  | 82     | 82   | 77     | 78   | 75     | 75     | 78     | 78        | 78     |
| 25      | 67      | 53     | 57       | 45     | 48       | 51     | 51      | 56     | 56       | 73     | 73    | 80     | 78    | 83     | 79  | 81     | 81   | 76     | 76   | 76     | 76     | 79     | 77        | 77     |
| 26      | 65      | 54     | 53       | 56     | 48       | 49     | 50      | 48     | 57       | 75     | 72    | 80     | 78    | 82     | 79  | 80     | 81   | 78     | 77   | 76     | 77     | 76     | 79        | 79     |
| 27      | 66      | 52     | 51       | 55     | 49       | 48     | 55      | 57     | 56       | 79     | 74    | 80     | 79    | 85     | 81  | 79     | 80   | 77     | 75   | 75     | 75     | 78     | 78        | 78     |
| 28      | 65      | 52     | 52       | 56     | 49       | 50     | 50      | 54     | 58       | 77     | 69    | 79     | 79    | 85     | 81  | 81     | 80   | 76     | 72   | 76     | 72     | 76     | 76        | 76     |
| 29      | 65      | 51     | 50       | 53     | 51       | 52     | --      | --     | 59       | 58     | 69    | 77     | 77    | 82     | 82  | 82     | 81   | 81     | 76   | 71     | 71     | 71     | 71        | 71     |
| 30      | 65      | 50     | 47       | 53     | 55       | 54     | --      | --     | 57       | 57     | 78    | 72     | 75    | 77     | --  | --     | 83   | 81     | 80   | 77     | 70     | 70     | 70        | 70     |
| 31      | 66      | --     | --       | 54     | 52       | --     | --      | --     | --       | --     | --    | 74     | 75    | --     | --  | --     | 86   | 83     | 82   | 78     | --     | --     | --        | --     |
| Average | 68      | 54     | 55       | 47     | 47       | 50     | 52      | 54     | 54       | 67     | 65    | 75     | 73    | 81     | 78  | 84     | 83   | 81     | 80   | 81     | 81     | 80     | 81        | 79     |

LOCATION.--At gaging station 50 feet downstream from Free Bridge, 800 feet downstream from Little Chinquapin Branch, 1½ miles southwest of Phillips Crossroads and 6 miles west of Trenton, Jones County.

DRAINAGE AREA.--168 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1953, January 1955 to September 1957.

Water temperatures: October 1951 to September 1953, January 1955 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum 153 ppm Sept. 1-10, minimum, 73 ppm Mar. 11-20.

Hardness: Maximum 117 ppm Aug. 11-20; minimum, 28 ppm Mar. 1-10.

Specific conductance: Maximum daily, 257 micromhos 36°F Jan. 5.

Water temperatures: Maximum 86°F June 17; minimum, 36°F Jan. 10.

EXTREMES: 1951-53.--Dissolved solids: Maximum, 153 ppm Sept. 1-10, 1957; minimum, 59 ppm Mar. 1-10, 1952.

Hardness: Maximum, 117 ppm Aug. 11-20, 1957; minimum, 20 ppm May 5-10, 1956.

Specific conductance (1955-57).--Dissolved solids: Maximum daily, 237 micromhos June 17, 1957; minimum daily, 51.5 micromhos May 10, 1956.

Water temperatures: Maximum, 86°F June 17, 1957; minimum, freezing point Jan. 9, 10, 17, 1956.

REMARKS.--Records of suspended matter of composite samples from October 1951 to September 1953 and records of specific conductance of daily samples from January 1955 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in MSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180° C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25° C) | pH   | Color |    |
|--------------------|----------------------|----------------------------|-----------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|----------------------------------------------------------------------|----------------------------------|------------------------|--------------------------------------------------------------|------|-------|----|
|                    |                      |                            |           |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      | Calcium,<br>magnesium            | Non-<br>carbon-<br>ate |                                                              |      |       |    |
| Oct. 1-10, 1956..  | 94                   | 7.0                        | 0.06      | 39                   | 1.8                    | 6.0            | 0.7                   | 106                                     | 18                            | 6.8              | 0.0             | 2.0                           | 144                                                                  | 104                              | 17                     | 231                                                          | 7.4  | 15    |    |
| Oct. 11-20.....    | 21                   | 5.0                        | .07       | 36                   | 2.0                    | 5.3            | .9                    | 100                                     | 16                            | 6.5              | .0              | 3.3                           | 139                                                                  | 99                               | 17                     | 221                                                          | 7.1  | 18    |    |
| Oct. 21-31.....    | 88                   | 7.8                        | .18       | 23                   | 1.5                    | 5.3            | .7                    | 53                                      | 16                            | 8.0              | .0              | 1.9                           | 107                                                                  | 63                               | 20                     | 153                                                          | 6.8  | 55    |    |
| Nov. 1-10.....     | 148                  | 8.6                        | .30       | 18                   | 1.2                    | 4.5            | .5                    | 36                                      | 15                            | 9.0              | .0              | 2.3                           | 106                                                                  | 51                               | 21                     | 130                                                          | 7.2  | 179   |    |
| Nov. 11-20.....    | 94                   | 5.6                        | .14       | 44                   | 1.1                    | 5.3            | .4                    | 91                                      | 12                            | 8.2              | .0              | 1.4                           | 114                                                                  | 83                               | 18                     | 173                                                          | 7.2  | 79    |    |
| Nov. 21-30.....    | 32                   | 9.7                        | .26       | 27                   | 1.2                    | 5.0            | .4                    | 70                                      | 12                            | 9.2              | .0              | 2.2                           | 115                                                                  | 73                               | 18                     | 173                                                          | 7.2  | 55    |    |
| Dec. 1-10.....     | 38                   | 8.6                        | .20       | 24                   | 1.0                    | 5.2            | .5                    | 64                                      | 10                            | 9.0              | .0              | 1.5                           | 114                                                                  | 63                               | 11                     | 159                                                          | 7.6  | 45    |    |
| Dec. 11-20.....    | 35                   | 8.1                        | .26       | 24                   | .7                     | 5.0            | .4                    | 61                                      | 8.6                           | 9.6              | .0              | 1.5                           | 107                                                                  | 62                               | 12                     | 157                                                          | 7.0  | 45    |    |
| Dec. 21-31.....    | 58                   | 8.2                        | .21       | 22                   | .4                     | 5.0            | .2                    | 57                                      | 7.7                           | 9.6              | .0              | 1.5                           | 105                                                                  | 57                               | 10                     | 146                                                          | 7.0  | 55    |    |
| Jan. 1-10, 1957..  | 44                   | 8.2                        | .29       | 20                   | .7                     | 4.9            | .2                    | 48                                      | 8.6                           | 9.6              | .0              | 1.3                           | 98                                                                   | 52                               | 13                     | 135                                                          | 7.2  | 50    |    |
| Jan. 11-20.....    | 33                   | 7.3                        | .30       | 22                   | .7                     | 4.9            | .3                    | 56                                      | 10                            | 9.3              | .0              | 1.1                           | 100                                                                  | 58                               | 12                     | 146                                                          | 7.2  | 42    |    |
| Jan. 21-31.....    | 93                   | 2.9                        | .30       | 18                   | 1.1                    | 4.8            | .3                    | 46                                      | 9.7                           | 9.0              | .0              | .8                            | 93                                                                   | 50                               | 12                     | 130                                                          | 7.2  | 48    |    |
| Feb. 1-10.....     | 104                  | 7.0                        | .29       | 15                   | .7                     | 5.4            | .7                    | 36                                      | 8.5                           | 9.6              | .0              | 1.6                           | 94                                                                   | 41                               | 12                     | 115                                                          | 7.1  | 65    |    |
| Feb. 11-19.....    | 74                   | 6.4                        | .33       | 17                   | .7                     | 5.0            | .5                    | 41                                      | 7.1                           | 10.0             | .0              | 1.5                           | 94                                                                   | 46                               | 12                     | 120                                                          | 7.2  | 60    |    |
| Feb. 20-28.....    | 130                  | 6.0                        | .28       | 16                   | .5                     | 5.3            | .5                    | 39                                      | 6.5                           | 9.8              | .0              | 1.5                           | 89                                                                   | 42                               | 10                     | 117                                                          | 7.1  | 65    |    |
| Mar. 1-10.....     | 497                  | 5.7                        | .13       | 9.5                  | 1.1                    | 4.2            | .6                    | 20                                      | 6.8                           | 7.0              | .0              | 2.2                           | 74                                                                   | 28                               | 12                     | 74                                                           | 80.8 | 7.0   | 85 |
| Mar. 11-20.....    | 339                  | 4.7                        | .18       | 12                   | .9                     | 5.3            | .8                    | 27                                      | 7.7                           | 6.7              | .2              | 1.6                           | 73                                                                   | 33                               | 10                     | 90.8                                                         | 6.9  | 75    |    |
| Mar. 21-31.....    | 303                  | 4.3                        | .19       | 11                   | .9                     | 4.5            | .5                    | 26                                      | 8.9                           | 6.8              | .2              | 1.7                           | 85                                                                   | 32                               | 10                     | 86.6                                                         | 6.7  | 85    |    |



NEUSE RIVER BASIN--Continued  
TRENT RIVER NEAR TRENTON, N. C.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Apr. 1-10, 1957.....  | 167                  | 4.9                        | 0.17      | 13           | 1.0            | 5.1         | 0.5           | 33                              | 6.7                        | 7.3           | 0.2          | 1.7                        | 81                                                 | 37                            | 10            | 97.3                                      | 7.0 | 90    |
| Apr. 11-20.....       | 82                   | 5.4                        | .21       | 16           | 2.0            | 4.5         | .6            | 44                              | 7.4                        | 7.9           | .2           | 2.0                        | 97                                                 | 48                            | 12            | 117                                       | 7.1 | 85    |
| Apr. 21-30.....       | 36                   | 5.4                        | .27       | 18           | 3.1            | 5.3         | .6            | 58                              | 6.6                        | 7.6           | .2           | 2.0                        | 119                                                | 57                            | 9             | 139                                       | 7.2 | 85    |
| May 1-10.....         | 25                   | 6.8                        | .19       | 23           | 2.2            | 4.2         | 1.0           | 67                              | 11                         | 9.0           | .1           | 2.8                        | 102                                                | 66                            | 11            | 169                                       | 7.3 | 75    |
| May 11-20.....        | 18                   | 6.0                        | .18       | 22           | 2.4            | 5.1         | .3            | 68                              | 8.3                        | 8.0           | .0           | .9                         | 116                                                | 66                            | 10            | 159                                       | 6.9 | 60    |
| May 21-31.....        | 15                   | 4.6                        | .17       | 24           | 2.4            | 5.1         | .6            | 73                              | 7.2                        | 8.5           | .0           | 1.3                        | 105                                                | 70                            | 10            | 169                                       | 7.2 | 60    |
| June 1-10.....        | 73                   | 7.6                        | .11       | 22           | 2.1            | 5.2         | 1.0           | 66                              | 7.6                        | 7.6           | .3           | 2.1                        | 94                                                 | 64                            | 10            | 150                                       | 7.2 | 50    |
| June 11-20.....       | 234                  | 7.1                        | .20       | 14           | 1.6            | 4.1         | .8            | 37                              | 5.2                        | 6.6           | .3           | 2.3                        | 88                                                 | 42                            | 11            | 99.6                                      | 6.9 | 110   |
| June 21-30.....       | 41                   | 9.7                        | .29       | 23           | 1.8            | 5.2         | .8            | 65                              | 5.6                        | 7.6           | .2           | 3.7                        | 119                                                | 64                            | 11            | 145                                       | 7.4 | 120   |
| July 1-10.....        | 18                   | 8.1                        | .11       | 30           | 2.1            | 7.0         | .6            | 84                              | 15                         | 8.9           | .0           | 3.5                        | 145                                                | 85                            | 16            | 195                                       | 7.2 | 100   |
| July 11-20.....       | 38                   | 5.2                        | .04       | 24           | 2.0            | 6.0         | .9            | 64                              | 14                         | 9.1           | .0           | 2.0                        | 116                                                | 67                            | 15            | 168                                       | 7.1 | 60    |
| July 21-31.....       | 12                   | 6.3                        | .02       | 32           | 1.5            | 5.7         | .8            | 84                              | 21                         | 7.4           | .4           | 2.2                        | 121                                                | 85                            | 16            | 200                                       | 7.1 | 40    |
| Aug. 1-10.....        | 6.1                  | 6.2                        | .01       | 39           | 1.9            | 4.9         | .8            | 112                             | 12                         | 7.5           | .2           | 2.0                        | 152                                                | 106                           | 14            | 230                                       | 7.7 | 30    |
| Aug. 11-20.....       | 6.0                  | 3.1                        | .00       | 42           | 3.2            | 4.4         | .9            | 123                             | 13                         | 7.0           | .2           | 1.7                        | 132                                                | 117                           | 14            | 230                                       | 7.9 | 20    |
| Aug. 21-31.....       | 3.9                  | 3.0                        | .00       | 41           | 3.2            | 4.4         | .7            | 123                             | 13                         | 7.0           | .2           | 1.7                        | 132                                                | 115                           | 14            | 243                                       | 8.0 | 20    |
| Sept. 1-10.....       | 23.9                 | 4.0                        | .04       | 42           | 2.2            | 5.1         | .7            | 116                             | 13                         | 7.2           | .1           | 1.2                        | 153                                                | 113                           | 18            | 243                                       | 7.8 | 30    |
| Sept. 11-20.....      | 45                   | 7.6                        | .16       | 32           | 1.4            | 6.1         | .6            | 58                              | 32                         | 8.6           | .2           | 2.4                        | 150                                                | 86                            | 38            | 202                                       | 7.4 | 65    |
| Sept. 21-23.....      | 34                   | 8.6                        | .14       | 30           | 3.2            | 4.9         | .3            | 57                              | 34                         | 8.5           | .3           | 1.9                        | 120                                                | 89                            | 42            | 210                                       | 7.3 | 60    |
| Sept. 24-30.....      | 107                  | 7.8                        | .21       | 21           | 1.8            | 5.0         | .6            | 44                              | 19                         | 8.6           | .2           | 1.8                        | 120                                                | 60                            | 24            | 142                                       | 7.3 | 95    |
| Weighted average..... | 84.5                 | 6.4                        | 0.20      | 18           | 1.3            | 5.0         | 0.6           | 43                              | 10                         | 8.1           | 0.1          | 2.0                        | 97                                                 | 47                            | 14            | 125                                       | --  | 80    |

a Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR TRENTON, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 7 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 68   | 67   | 50   | 48   | 58   | 45   | 50   | 68  | --   | 80   | 79   | --    |
| 2       | 65   | 66   | 49   | 40   | 56   | 40   | 65   | 68  | 76   | 80   | 79   | 80    |
| 3       | 65   | 66   | 45   | 38   | 48   | 50   | 52   | 65  | 76   | 81   | 82   | 80    |
| 4       | 72   | 62   | 48   | 38   | 60   | 45   | 52   | 55  | 78   | 79   | 81   | 81    |
| 5       | 71   | 62   | 50   | 36   | 45   | 45   | 59   | 56  | 76   | 80   | 81   | 80    |
| 6       | 70   | 55   | 49   | 40   | 44   | 46   | 60   | 56  | 72   | 79   | 75   | 75    |
| 7       | 70   | 52   | 50   | 45   | 54   | 44   | 55   | 59  | 73   | 72   | 75   | 76    |
| 8       | 69   | 52   | 58   | 40   | 55   | 47   | 60   | 59  | 78   | 73   | 75   | 76    |
| 9       | 58   | 52   | 58   | 48   | 53   | 45   | 48   | 61  | 79   | 78   | 78   | 78    |
| 10      | 55   | 41   | 48   | 61   | 62   | 38   | 55   | 60  | 78   | 79   | 80   | 78    |
| 11      | 55   | 45   | 50   | 49   | 58   | 40   | 50   | 68  | 78   | 79   | 79   | 79    |
| 12      | 55   | 44   | 50   | 40   | 45   | 50   | 54   | 69  | 79   | 78   | 80   | 78    |
| 13      | 57   | 50   | 60   | 48   | 45   | 54   | 50   | 68  | 80   | 78   | --   | 80    |
| 14      | 58   | 52   | 62   | 40   | 45   | 58   | 46   | 68  | 80   | 80   | 75   | 80    |
| 15      | 60   | 52   | 60   | 38   | 48   | 60   | 48   | 67  | 85   | 80   | 78   | 82    |
| 16      | 68   | 65   | 65   | 40   | 49   | 58   | 50   | 70  | 85   | 79   | 80   | 79    |
| 17      | 69   | 65   | 62   | 39   | 40   | 48   | 51   | 67  | 86   | 79   | 81   | 79    |
| 18      | 62   | 65   | 58   | 38   | 40   | 48   | 60   | 69  | 82   | 79   | 80   | 80    |
| 19      | 62   | 55   | 55   | 39   | 50   | 68   | 61   | 70  | 83   | 79   | 80   | 81    |
| 20      | 62   | 55   | 55   | 38   | 45   | 59   | 65   | 68  | 80   | 80   | 79   | 75    |
| 21      | 69   | 58   | 60   | 48   | 40   | 42   | 66   | 65  | 80   | 80   | 79   | 76    |
| 22      | 68   | 55   | 60   | 46   | 45   | 43   | 65   | 72  | 80   | 80   | 78   | 75    |
| 23      | 67   | 45   | 68   | 46   | 46   | 50   | 68   | 75  | 75   | 79   | 70   | 75    |
| 24      | 65   | 46   | 58   | 44   | 50   | 49   | 60   | 72  | 78   | 78   | 71   | 70    |
| 25      | 60   | 46   | 45   | 38   | 55   | 48   | 70   | 70  | 78   | 77   | 70   | 69    |
| 26      | 60   | 46   | 38   | 45   | 65   | 50   | 65   | 72  | 78   | 70   | 71   | 70    |
| 27      | 61   | 46   | 48   | 46   | 60   | 50   | 66   | 72  | 78   | 71   | 71   | 70    |
| 28      | 61   | 38   | 45   | 48   | 45   | 49   | 72   | 70  | 80   | 72   | 71   | 65    |
| 29      | 61   | 50   | 38   | 59   | --   | 50   | 68   | 70  | 80   | 72   | 72   | 68    |
| 30      | 69   | 52   | 37   | 58   | --   | 48   | 72   | 70  | --   | 78   | 71   | 65    |
| 31      | --   | --   | 47   | 48   | --   | --   | --   | 70  | --   | 78   | 79   | --    |
| Average | 64   | 54   | 52   | 44   | 50   | 49   | 59   | 67  | 79   | 78   | 77   | 76    |

## NEUSE RIVER BASIN--Continued

## TRENT RIVER AT POLLOCKSVILLE, N. C.

LOCATION (revised) --At bridge on U. S. Highway 17 in Pollocksville, Jones County, 0.4 mile upstream from Mill Creek.  
DRAINAGE AREA (revised) --372 square miles.

RECORDS AVAILABLE --Chemical analyses: January 1955 to September 1957

Water temperatures: January 1955 to September 1957.

EXTREMES: 1956-57. --Dissolved solids: Maximum, 216 ppm Oct. 3; minimum, 77 ppm Mar. 1-10.

Hardness: Maximum, 100 ppm Oct. 3; minimum, 28 ppm Mar. 1-10.

Specific conductance: Maximum daily, 421 micromhos Oct. 3; minimum daily, 78.6 micromhos Mar. 8.

Water temperatures: Maximum, 82 F on several days during June and July; minimum, 40 F Feb. 5, 11, 13, 18.

EXTREMES: 1955-57. --Dissolved solids: Maximum, 5,080 ppm Jan. 1-8, 1955; minimum, 66 ppm Sept. 21-30, 1955, Mar. 21-31, 1956.

Hardness: Maximum, 1,200 ppm Jan. 19, 1955; minimum, 19 ppm Sept. 21-30, 1955.

Specific conductance: Maximum daily, 9,230 micromhos Jan. 19, 1955; minimum daily, 36.1 micromhos Sept. 22-23, 1955.

Water temperatures: Maximum, 88 F June 7, 1956; minimum, 39 F Dec. 26-28, 30-31, 1955.

REMARKS --Records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-2, 4-10, 1956. |                      | 7.9                        | 0.12      | 33           | 3.0            | 16          | 2.1           | 93                              | 14                         | 26            | 0.0          | 3.4                        | 163                                                | 86                            | 19            | 274                                       | 7.2 | 38    |
| Oct. 3-16             |                      | 7.6                        | .03       | 32           | 4.8            | 40          | 2.8           | 79                              | 21                         | 14            | --           | 2.5                        | 421                                                | 103                           | 12            | 263                                       | 7.0 | 42    |
| Oct. 17-20            |                      | 6.7                        | .03       | 24           | 1.2            | 7.2         | 2.4           | 62                              | 14                         | 21            | --           | 1.7                        | 498                                                | 63                            | 14            | 177                                       | 7.5 | 60    |
| Oct. 21-31            |                      | 5.9                        | .12       | 24           | 1.7            | 7.4         | 2.7           | 62                              | 15                         | 10            | --           | 5.2                        | 117                                                | 67                            | 16            | 183                                       | 6.8 | 55    |
| Nov. 1-10             |                      | 9.5                        | .24       | 28           | 1.3            | 6.4         | 1.0           | 73                              | 11                         | 10            | --           | 4.5                        | 134                                                | 75                            | 15            | 186                                       | 7.1 | 100   |
| Nov. 11-20            |                      | 9.5                        | .32       | 29           | 1.2            | 6.2         | .8            | 77                              | 11                         | 9.7           | --           | 3.5                        | 135                                                | 78                            | 15            | 187                                       | 7.3 | 110   |
| Nov. 21-30            |                      | 9.5                        | .24       | 33           | 1.3            | 6.2         | .8            | 91                              |                            | 9.6           | --           | 2.5                        | 137                                                | 87                            | 13            | 207                                       | 7.6 | 48    |
| Dec. 1-10             |                      | 9.7                        | .27       | 33           | 1.0            | 6.2         | .9            | 90                              | 9.2                        | 9.4           | --           | 2.5                        | 138                                                | 86                            | 12            | 205                                       | 7.6 | 48    |
| Dec. 11-19            |                      | 7.2                        | .14       | 31           | 1.5            | 6.1         | 1.1           | 86                              | 9.8                        | 9.4           | --           | 3.8                        | 128                                                | 81                            | 10            | 195                                       | 7.9 | 32    |
| Dec. 20-28            |                      | 7.8                        | .17       | 30           | 1.1            | 6.1         | 1.1           | 87                              | 8.9                        | 9.2           | --           | 1.9                        | 124                                                | 82                            | 11            | 194                                       | 7.4 | 32    |
| Jan. 1-10, 1957       |                      | 6.9                        | .18       | 30           | 1.5            | 6.8         | 2.0           | 83                              | 8.8                        | 11            | --           | 4.3                        | 130                                                | 80                            | 12            | 199                                       | 7.5 | 32    |
| Jan. 11-20            |                      | 7.4                        | .17       | 30           | .7             | 6.8         | 1.7           | 83                              | 9.0                        | 11            | --           | 3.9                        | 130                                                | 79                            | 11            | 198                                       | 7.5 | 33    |
| Jan. 21-31            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 1-10             |                      | 7.8                        | .15       | 22           | 1.2            | 4.8         | 2.1           | 64                              | 9.8                        | 9.0           | --           | 2.1                        | 110                                                | 59                            | 7             | 157                                       | 7.2 | 40    |
| Feb. 11-19            |                      | 7.4                        | .12       | 24           | 1.2            | 4.6         | .7            | 66                              | 11                         | 8.0           | --           | 1.4                        | 114                                                | 65                            | 4             | 165                                       | 7.6 | 35    |
| Feb. 20-28            |                      | 6.8                        | .18       | 25           | .7             | 4.6         | .7            | 72                              | 8.3                        | 9.0           | --           | 2.0                        | 112                                                | 72                            | 7             | 186                                       | 7.0 | 38    |
| Mar. 1-10             |                      | 5.5                        | .13       | 10           | 1.7            | 4.9         | 1.6           | 70                              | 6.7                        | 7.0           | --           | 4.2                        | 79                                                 | 32                            | 14            | 94.3                                      | 6.7 | 95    |
| Mar. 11-20            |                      | 5.5                        | .13       | 10           | 1.7            | 4.9         | 1.6           | 70                              | 6.7                        | 7.0           | --           | 4.2                        | 79                                                 | 32                            | 14            | 94.3                                      | 6.7 | 95    |
| Mar. 21-31            |                      | 5.4                        | .23       | 13           | 1.4            | 4.4         | .9            | 31                              | 5.7                        | 6.8           | --           | 3.4                        | 84                                                 | 37                            | 12            | 101                                       | 6.4 | 90    |

|                               |     |      |    |     |     |     |     |     |     |     |     |     |    |    |     |     |     |
|-------------------------------|-----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|
| Apr. 1-10, 1957...            | 5.6 | 0.19 | 19 | 0.7 | 5.9 | 0.6 | 51  | 9.4 | 9.5 | 0.0 | 2.2 | 108 | 51 | 9  | 137 | 7.1 | 90  |
| Apr. 11-20.....               | 5.6 | .24  | 22 | 1.9 | 5.4 | .6  | 63  | 7.2 | 8.5 | .0  | 1.3 | 111 | 73 | 11 | 153 | 7.1 | 80  |
| Apr. 21-30.....               | 7.2 | .39  | 27 | 1.9 | 4.1 | 1.6 | 72  | 8.7 | 8.5 | .0  | 3.4 | 113 | 70 | 11 | 170 | 7.4 | 48  |
| May 1-10.....                 | 7.1 | .14  | 32 | 1.7 | 7.5 | 1.1 | 93  | 8.7 | 9.8 | .2  | 3.9 | 128 | 88 | 12 | 209 | 7.6 | 30  |
| May 11-20.....                | 8.2 | .13  | 32 | 2.2 | 7.4 | 1.3 | 99  | 8.2 | 11  | .1  | 4.3 | 130 | 90 | 8  | 222 | 7.3 | 37  |
| May 21-31.....                |     |      |    |     |     |     |     |     |     |     |     |     |    |    |     |     |     |
| June 1-10.....                | 6.6 | .26  | 17 | 1.4 | 5.2 | 1.3 | 39  | 9.9 | 8.2 | .1  | 5.3 | 106 | 49 | 17 | 127 | 7.3 | 110 |
| June 11-20.....               | 6.6 | .10  | 17 | 1.6 | 6.8 | 1.0 | 40  | 8.7 | 8.5 | .0  | 5.4 | 114 | 50 | 17 | 135 | 7.1 | 120 |
| June 21-30.....               | 7.4 | .13  | 20 | 1.6 | 5.2 | 1.0 | 56  | 5.7 | 7.5 | .3  | 3.9 | 119 | 57 | 9  | 145 | 7.1 | 120 |
| July 1-10.....                | 8.4 | .14  | 24 | 1.8 | 6.8 | .7  | 69  | 14  | 9.5 | .0  | 3.4 | 118 | 68 | 12 | 168 | 7.3 | 120 |
| July 11-20.....               | 8.4 | .16  | 25 | 1.6 | 5.4 | .7  | 72  | 13  | 8.1 | .0  | 3.0 | 114 | 89 | 10 | 180 | 7.0 | 120 |
| July 21-31.....               | 8.0 | .08  | 28 | 1.1 | 5.3 | .8  | 78  | 12  | 8.1 | .0  | 1.5 | 124 | 75 | 11 | 180 | 7.1 | 160 |
| Aug. 1-10.....                | 10  | .02  | 34 | 2.2 | 5.2 | .4  | 101 | 6.9 | 8.0 | --  | 1.5 | 132 | 93 | 10 | 198 | 7.8 | 35  |
| Aug. 11-20.....               | 10  | .08  | 29 | 1.9 | 4.3 | .4  | 83  | 9.4 | 6.5 | --  | 2.9 | 123 | 80 | 12 | 170 | 7.8 | 50  |
| Aug. 21-31.....               | 8.8 | .06  | 30 | 2.2 | 5.4 | .4  | 89  | 12  | 8.0 | --  | 1.6 | 123 | 85 | 12 | 187 | 7.8 | 40  |
| Sept. 1-10.....               | 5.9 | .06  | 30 | 2.9 | 6.3 | .8  | 88  | 13  | 11  | .2  | 1.0 | 122 | 88 | 16 | 216 | 7.8 | 30  |
| Sept. 11-20.....              | 5.4 | .11  | 30 | 3.4 | 6.5 | .8  | 90  | 12  | 12  | .3  | .5  | 124 | 89 | 15 | 219 | 7.2 | 30  |
| Time-weighted<br>average..... | 7.4 | 0.15 | 26 | 1.6 | 6.3 | 1.1 | 72  | 9.9 | 9.9 | 0.0 | 3.0 | 121 | 72 | 12 | 178 | --  | 60  |

a Calculated from determined constituents.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## NEUSE RIVER BASIN--Continued

## TRENT RIVER AT POLLOCKSVILLE, N. C.--Continued

Temperature ( $^{\circ}$ F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 7:30 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 60   | 48   | --   | 55   | 52   | 60   | 62  | 79   | 64   | 74   | 76    |
| 2       | 71   | 60   | 48   | 47   | 50   | 52   | 50   | 59  | 78   | 70   | 68   | 77    |
| 3       | 70   | 59   | 49   | 48   | 48   | 53   | 55   | 70  | 80   | 72   | 70   | 77    |
| 4       | 70   | 52   | 49   | 48   | 42   | 53   | 53   | 64  | 74   | 72   | 68   | 77    |
| 5       | 69   | 50   | 49   | 47   | 40   | 52   | 54   | 62  | 82   | 62   | 64   | 77    |
| 6       | 69   | 51   | 49   | 47   | 42   | 52   | 53   | 60  | 79   | 65   | 65   | 77    |
| 7       | 69   | 55   | 49   | 46   | 45   | 54   | 57   | 61  | 76   | 71   | 69   | 78    |
| 8       | 69   | 54   | 49   | 46   | 44   | 54   | 57   | 56  | 78   | 64   | 70   | 78    |
| 9       | 69   | 59   | 50   | 46   | 46   | 54   | 58   | 54  | 77   | 70   | 70   | 78    |
| 10      | 59   | 53   | 50   | 47   | 48   | 54   | 59   | 52  | 74   | 74   | 72   | 77    |
| 11      | 62   | 57   | 51   | 47   | 40   | 53   | 48   | 69  | 74   | 69   | 68   | 77    |
| 12      | 60   | 57   | 51   | 47   | 42   | 53   | 49   | 72  | 70   | 69   | 64   | 77    |
| 13      | 65   | 52   | 50   | 50   | 40   | 54   | 50   | 75  | 79   | 69   | 69   | 76    |
| 14      | 63   | 62   | 51   | 59   | 44   | 54   | 58   | 76  | 82   | 70   | 69   | 76    |
| 15      | 62   | 51   | 51   | 54   | 47   | 54   | 54   | 75  | 81   | 69   | 64   | 76    |
| 16      | 61   | 49   | 50   | 49   | 48   | 56   | 54   | 78  | 79   | --   | 64   | --    |
| 17      | 66   | 59   | 50   | 49   | 46   | 56   | 65   | 70  | 79   | 70   | 60   | --    |
| 18      | 67   | 52   | 50   | 55   | 40   | 56   | 62   | 74  | 74   | 72   | 64   | --    |
| 19      | 59   | 52   | 49   | 53   | 42   | 59   | 69   | 74  | 70   | 74   | 74   | --    |
| 20      | 60   | 48   | 48   | 52   | 45   | 59   | 64   | 80  | 75   | 82   | 70   | --    |
| 21      | 58   | 48   | 49   | 59   | 44   | 59   | 65   | 79  | 75   | 82   | 72   | --    |
| 22      | 63   | 49   | 48   | 57   | 49   | 59   | 63   | 81  | 80   | 81   | 72   | --    |
| 23      | 60   | 49   | 48   | 52   | 50   | 59   | 67   | 78  | 80   | 80   | 72   | --    |
| 24      | 69   | 48   | 47   | 56   | 52   | 60   | 70   | 59  | 76   | 79   | 73   | --    |
| 25      | 67   | 47   | 46   | 55   | 49   | 60   | 58   | 70  | 73   | 80   | 75   | --    |
| 26      | 66   | 47   | 46   | 59   | 48   | 60   | 59   | 70  | 77   | 80   | 76   | --    |
| 27      | 67   | --   | 46   | 60   | 47   | 59   | 57   | 79  | 76   | 81   | 77   | --    |
| 28      | 68   | 47   | 46   | 62   | --   | 59   | 75   | 77  | 72   | 81   | 77   | --    |
| 29      | 70   | 48   | 47   | 54   | --   | 59   | 52   | 77  | 75   | 82   | 78   | --    |
| 30      | 65   | 48   | 47   | 55   | --   | 59   | 74   | 78  | --   | 82   | 78   | --    |
| 31      | 64   | --   | 47   | --   | --   | --   | --   | 79  | --   | 82   | 78   | --    |
| Average | 65   | 53   | 49   | 52   | 46   | 56   | 59   | 70  | 77   | 74   | 70   | --    |

## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR RHEMS, N. C.

LOCATION.--At end of county road about 2½ miles southeast of Rhems, Craven County, and about 1 mile downstream from Deep Gully.

DRAINAGE AREA.--425 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Specific conductance: Maximum daily, 13,200 micromhos Sept. 30. minimum daily, 90.3 micromhos Mar. 13.

Water temperatures: Maximum, 84°F July 14-18, Aug. 3-5; minimum, 40°F Jan. 18-20.

REMARKS.--No discharge records available for this station.

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1956 to September 1957

| Day | October                                  |               | November                                 |               | December                                 |               | January                                  |               |
|-----|------------------------------------------|---------------|------------------------------------------|---------------|------------------------------------------|---------------|------------------------------------------|---------------|
|     | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) |
| 1   | 5,490                                    | 1,730         | 166                                      | 21            | 744                                      | 156           | 4,110                                    | 1,240         |
| 2   | 6,190                                    | 2,010         | 741                                      | 168           | 819                                      | 183           | 3,140                                    | 904           |
| 3   | 5,770                                    | 1,810         | 749                                      | 168           | 1,180                                    | 290           | 3,040                                    | 880           |
| 4   | 5,810                                    | 1,890         | --                                       | --            | 2,780                                    | 786           | 1,730                                    | 464           |
| 5   | 6,070                                    | 1,910         | 201                                      | 29            | 904                                      | 194           | 3,880                                    | 1,170         |
| 6   | 6,620                                    | 2,140         | 183                                      | 24            | 856                                      | 194           | 3,850                                    | 1,150         |
| 7   | 5,920                                    | 1,860         | 183                                      | 23            | 1,350                                    | 344           | 2,950                                    | 850           |
| 8   | 8,860                                    | 2,970         | --                                       | --            | 6,740                                    | 2,160         | 2,860                                    | 824           |
| 9   | 1,850                                    | 490           | 220                                      | 32            | 7,280                                    | 2,290         | 1,280                                    | 320           |
| 10  | 663                                      | 138           | 239                                      | 36            | 8,930                                    | 2,920         | 1,240                                    | 326           |
| 11  | 349                                      | 56            | 295                                      | 50            | 4,950                                    | 1,510         | 2,970                                    | 870           |
| 12  | 463                                      | 92            | 261                                      | 35            | 6,000                                    | 1,860         | 3,110                                    | 920           |
| 13  | 505                                      | 114           | 769                                      | 186           | 2,190                                    | 580           | 2,880                                    | 840           |
| 14  | 997                                      | 256           | 289                                      | 44            | 5,910                                    | 1,860         | 2,860                                    | 830           |
| 15  | 285                                      | 42            | 291                                      | 44            | 2,170                                    | 594           | 4,670                                    | 1,440         |
| 16  | 182                                      | 21            | --                                       | --            | 2,660                                    | 760           | 2,760                                    | 790           |
| 17  | 578                                      | 123           | --                                       | --            | 6,110                                    | 1,930         | --                                       | --            |
| 18  | 6,040                                    | 1,970         | 317                                      | 64            | 6,710                                    | 2,120         | 1,640                                    | 440           |
| 19  | 2,520                                    | 700           | 362                                      | 62            | 6,610                                    | 2,100         | 1,550                                    | 420           |
| 20  | 1,780                                    | 474           | 265                                      | 32            | 3,180                                    | 910           | 1,540                                    | 416           |
| 21  | 3,420                                    | 1,020         | 269                                      | 33            | 5,470                                    | 1,730         | 930                                      | 225           |
| 22  | 470                                      | 93            | 1,110                                    | 282           | 3,020                                    | 885           | 657                                      | 144           |
| 23  | 469                                      | 93            | 719                                      | 160           | 3,000                                    | 865           | 4,150                                    | 1,260         |
| 24  | 989                                      | 272           | 1,110                                    | 288           | 6,760                                    | 2,160         | 4,200                                    | 1,290         |
| 25  | 202                                      | 22            | --                                       | --            | 6,740                                    | 2,200         | 918                                      | 202           |
| 26  | 493                                      | 98            | 1,630                                    | 446           | 7,880                                    | 2,570         | --                                       | --            |
| 27  | 3,390                                    | 1,020         | 663                                      | 140           | 4,300                                    | 1,280         | 441                                      | 72            |
| 28  | 557                                      | 100           | 660                                      | 142           | 3,230                                    | 955           | 361                                      | 50            |
| 29  | 247                                      | 34            | 369                                      | 58            | 7,620                                    | 2,480         | 1,240                                    | 330           |
| 30  | --                                       | --            | 832                                      | 193           | 4,130                                    | 1,220         | 1,270                                    | 330           |
| 31  | 283                                      | 47            | --                                       | --            | 6,200                                    | 1,980         | 1,250                                    | 326           |

## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR RHEMS, N. C.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1956 to September 1957--Continued

| Day  | February                                 |               | March                                    |               | April                                    |               | May                                      |               |
|------|------------------------------------------|---------------|------------------------------------------|---------------|------------------------------------------|---------------|------------------------------------------|---------------|
|      | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) | Specific conductance (micromhos at 25°C) | Chloride (Cl) |
| 1    | 460                                      | 88            | --                                       | --            | 118                                      | 11            | 223                                      | 20            |
| 2    | 452                                      | 82            | --                                       | --            | 120                                      | 11            | 228                                      | 21            |
| 3    | --                                       | --            | 145                                      | 14            | 130                                      | 11            | --                                       | --            |
| 4    | --                                       | --            | 127                                      | 12            | 129                                      | 11            | --                                       | --            |
| 5    | --                                       | --            | 132                                      | 15            | 129                                      | 11            | 1,230                                    | 320           |
| 6    | 208                                      | 22            | 108                                      | 10            | 155                                      | 15            | 347                                      | 48            |
| 7    | 204                                      | 22            | 118                                      | 13            | 154                                      | 14            | 337                                      | 59            |
| 8    | 196                                      | 20            | 98.2                                     | 9.0           | 165                                      | 18            | 271                                      | 29            |
| 9    | 186                                      | 18            | 93.0                                     | 9.0           | 148                                      | 12            | 1,320                                    | 346           |
| 10   | 189                                      | 18            | 94.0                                     | 8.7           | 156                                      | 13            | 2,070                                    | 568           |
| 11   | 196                                      | 19            | 99.5                                     | 10            | 158                                      | 13            | 312                                      | 36            |
| 12   | 247                                      | 34            | 90.8                                     | 9.1           | 158                                      | 13            | 2,850                                    | 848           |
| 13   | 193                                      | 19            | 90.3                                     | 8.7           | 157                                      | 14            | 2,920                                    | 850           |
| 14   | 191                                      | 18            | 93.2                                     | 9.1           | 159                                      | 14            | 2,050                                    | 552           |
| 15   | 195                                      | 19            | 94.7                                     | 9.8           | 171                                      | 16            | 2,050                                    | 570           |
| 16   | 206                                      | 22            | 120                                      | 12            | 162                                      | 16            | 3,770                                    | 1,120         |
| 17   | 206                                      | 22            | 120                                      | 12            | 154                                      | 13            | 3,780                                    | 1,110         |
| 18   | 187                                      | 17            | 120                                      | 13            | 165                                      | 13            | 2,460                                    | 690           |
| 19   | 192                                      | 18            | 132                                      | 12            | 164                                      | 13            | 1,610                                    | 426           |
| 20   | 204                                      | 21            | 126                                      | 12            | 169                                      | 14            | 1,060                                    | 256           |
| 21   | 219                                      | 24            | 140                                      | 15            | 171                                      | 14            | 2,880                                    | 852           |
| 22   | 202                                      | 19            | 142                                      | 14            | 184                                      | 15            | 2,900                                    | 858           |
| 23   | 198                                      | 16            | 143                                      | 13            | 188                                      | 16            | 1,820                                    | 492           |
| 24   | 199                                      | 18            | 136                                      | 12            | 188                                      | 15            | 1,810                                    | 500           |
| 25   | 201                                      | 16            | 129                                      | 11            | 195                                      | 16            | 1,800                                    | 492           |
| 26   | 198                                      | 17            | 127                                      | 13            | 195                                      | 16            | 2,770                                    | 812           |
| 27   | 201                                      | 17            | 118                                      | 12            | 197                                      | 16            | 2,810                                    | 564           |
| 28   | 188                                      | 13            | 119                                      | 12            | 207                                      | 17            | 1,170                                    | 290           |
| 29   | --                                       | --            | 121                                      | 12            | 207                                      | 17            | 2,330                                    | 658           |
| 30   | --                                       | --            | 126                                      | 14            | 221                                      | 20            | 2,350                                    | 656           |
| 31   | --                                       | --            | 122                                      | 12            | --                                       | --            | 1,510                                    | 392           |
|      |                                          |               |                                          |               |                                          |               |                                          |               |
| June |                                          |               | July                                     |               | August                                   |               | September                                |               |
| 1    | 1,490                                    | 386           | 602                                      | 140           | --                                       | --            | 7,260                                    | 2,270         |
| 2    | 182                                      | 19            | 2,020                                    | 550           | 4,200                                    | 1,320         | 5,890                                    | 1,800         |
| 3    | 970                                      | 232           | 770                                      | 185           | 4,390                                    | 1,370         | 2,690                                    | 740           |
| 4    | 419                                      | 63            | 1,230                                    | 326           | 4,670                                    | 1,420         | 4,300                                    | 1,280         |
| 5    | 421                                      | 62            | 763                                      | 185           | 6,400                                    | 2,070         | 4,360                                    | 1,280         |
| 6    | 422                                      | 63            | 5,000                                    | 1,550         | 6,390                                    | 2,080         | 6,630                                    | 2,080         |
| 7    | 292                                      | 26            | 5,670                                    | 1,750         | 4,590                                    | 1,420         | 6,500                                    | 2,020         |
| 8    | 292                                      | 25            | 4,770                                    | 1,435         | 4,550                                    | 1,440         | 6,080                                    | 1,930         |
| 9    | 1,680                                    | 446           | 4,600                                    | 1,435         | 3,030                                    | 925           | 6,200                                    | 1,950         |
| 10   | --                                       | --            | 4,980                                    | 1,550         | 3,190                                    | 925           | 3,920                                    | 1,170         |
| 11   | 350                                      | 41            | 6,800                                    | 2,130         | 4,380                                    | 1,380         | 3,220                                    | 940           |
| 12   | 189                                      | 16            | 6,120                                    | 1,850         | 6,690                                    | 2,200         | 3,380                                    | 970           |
| 13   | 181                                      | 15            | 5,320                                    | 1,650         | 4,990                                    | 1,550         | 3,320                                    | 965           |
| 14   | 157                                      | 11            | 6,290                                    | 1,990         | 7,530                                    | 2,530         | 12,100                                   | 4,100         |
| 15   | 156                                      | 12            | 5,250                                    | 1,610         | 9,000                                    | 2,980         | 12,000                                   | 3,800         |
| 16   | 130                                      | 10            | 5,720                                    | 1,700         | 9,010                                    | 3,020         | 12,800                                   | 4,300         |
| 17   | 129                                      | 10            | 3,020                                    | 950           | 7,720                                    | 2,570         | 3,400                                    | 935           |
| 18   | 129                                      | 9.1           | 3,210                                    | 975           | 7,980                                    | 2,650         | 3,700                                    | 1,080         |
| 19   | 127                                      | 20            | 2,840                                    | 750           | 7,890                                    | 2,600         | 3,690                                    | 1,080         |
| 20   | 144                                      | 13            | 2,100                                    | 635           | 8,830                                    | 2,950         | 8,650                                    | 2,780         |
| 21   | 141                                      | 14            | 1,590                                    | 426           | 7,960                                    | 2,650         | 8,800                                    | 2,720         |
| 22   | 131                                      | 13            | 1,340                                    | 360           | 8,680                                    | 2,920         | 11,200                                   | 3,900         |
| 23   | 132                                      | 12            | 1,400                                    | 370           | 8,610                                    | 2,830         | 11,200                                   | 3,850         |
| 24   | 131                                      | 13            | 5,320                                    | 1,660         | 8,310                                    | 2,830         | 8,310                                    | 2,560         |
| 25   | 130                                      | 12            | 6,380                                    | 2,050         | 5,430                                    | 1,770         | 8,320                                    | 2,590         |
| 26   | 513                                      | 116           | 6,400                                    | 2,020         | 5,720                                    | 1,850         | 5,100                                    | 1,520         |
| 27   | 522                                      | 118           | 5,360                                    | 1,660         | 3,510                                    | 1,080         | 4,110                                    | 1,180         |
| 28   | 160                                      | 13            | 6,290                                    | 1,950         | 3,420                                    | 1,080         | 13,000                                   | 4,500         |
| 29   | 155                                      | 14            | 5,390                                    | 1,650         | 2,890                                    | 875           | 12,100                                   | 4,100         |
| 30   | --                                       | --            | 5,400                                    | 1,650         | 3,920                                    | 1,220         | 13,200                                   | 4,500         |
| 31   | --                                       | --            | --                                       | --            | 4,000                                    | 1,220         | --                                       | --            |

## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR RHEMS, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 7:30 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 69   | 65   | 50   | 48   | 52   | --   | 56   | 73  | 78   | 80   | --   | 80    |
| 2       | 70   | 65   | 46   | 48   | 54   | --   | 58   | 74  | 75   | 80   | 83   | 80    |
| 3       | 71   | 65   | 48   | 45   | --   | 54   | 62   | --  | 75   | 82   | 84   | 80    |
| 4       | 71   | --   | 48   | 45   | --   | 50   | 60   | --  | 75   | 82   | 84   | 80    |
| 5       | 71   | 62   | 50   | 45   | --   | 50   | 63   | 60  | 75   | 82   | 84   | 78    |
| 6       | 73   | 62   | 50   | 45   | 55   | 50   | 63   | 63  | 75   | 82   | 82   | 80    |
| 7       | 72   | 62   | 48   | 47   | 55   | 50   | 63   | 65  | 76   | 79   | 82   | 80    |
| 8       | 71   | --   | 50   | 46   | 55   | 50   | 63   | 65  | 76   | 82   | 82   | 78    |
| 9       | 69   | 62   | 54   | 50   | 55   | 50   | 60   | 68  | 75   | 82   | 82   | 78    |
| 10      | 69   | 55   | 54   | 50   | 50   | 48   | 62   | 68  | --   | 82   | 82   | 79    |
| 11      | 67   | 56   | 50   | 46   | 56   | 48   | 64   | 65  | 74   | 82   | 80   | 79    |
| 12      | 69   | 56   | 50   | 47   | 50   | 50   | 64   | 70  | 75   | 83   | 80   | 80    |
| 13      | 69   | 54   | 52   | 48   | 50   | 50   | 60   | 70  | 75   | 83   | 80   | 80    |
| 14      | 70   | 52   | 55   | 48   | 50   | 53   | 58   | 74  | 75   | 84   | 82   | 80    |
| 15      | 65   | 52   | 58   | 46   | 48   | 53   | 58   | 72  | 75   | 84   | 82   | 80    |
| 16      | 68   | --   | 59   | 45   | 50   | 53   | 58   | 75  | 78   | 84   | 82   | 80    |
| 17      | 67   | --   | 59   | --   | 50   | 53   | 60   | 75  | 78   | 84   | 82   | 80    |
| 18      | 69   | 54   | 59   | 40   | 50   | 53   | 62   | 75  | 76   | 84   | 82   | 80    |
| 19      | 68   | 50   | 54   | 40   | 50   | 59   | 62   | 75  | 79   | 83   | 82   | 80    |
| 20      | 64   | 50   | 55   | 40   | 50   | 58   | 65   | 75  | 80   | 83   | 82   | 80    |
| 21      | 67   | 56   | 57   | 47   | 46   | 58   | 65   | 75  | 86   | 83   | 82   | 79    |
| 22      | 70   | 52   | 59   | 47   | 46   | 57   | 65   | 75  | 80   | 83   | 78   | 78    |
| 23      | 66   | 50   | 59   | 51   | 46   | 55   | 66   | 75  | 80   | 81   | 75   | 78    |
| 24      | 69   | 50   | 59   | 50   | 48   | 56   | 66   | 75  | 80   | 80   | 75   | 75    |
| 25      | 67   | --   | 55   | 48   | 50   | 55   | 70   | 75  | 80   | 80   | 75   | 75    |
| 26      | 68   | 50   | 50   | --   | 54   | 55   | 70   | 78  | 80   | 80   | 75   | 75    |
| 27      | 65   | 50   | 50   | 50   | 54   | 55   | 72   | 80  | 80   | 80   | 75   | 74    |
| 28      | 66   | 48   | 52   | 50   | 54   | 55   | 73   | 80  | 80   | 80   | 75   | 72    |
| 29      | 68   | 50   | 55   | 50   | --   | 55   | 73   | 80  | 80   | 80   | 75   | 70    |
| 30      | --   | 50   | 50   | 50   | --   | 55   | 73   | 78  | --   | 80   | 77   | 69    |
| 31      | 65   | --   | 50   | 50   | --   | 56   | --   | 78  | --   | --   | 77   | --    |
| Average | 68   | 55   | 53   | 47   | 51   | 53   | 64   | 73  | 78   | 82   | 80   | 78    |



NEUSE RIVER BASIN --Continued  
 MISCELLANEOUS ANALYSES OF STREAMS IN NEUSE RIVER BASIN IN NORTH CAROLINA  
 Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection             | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mg-<br>nesium        | Non-<br>carbon-<br>ate |                                                             |     |       |
| ENO RIVER AT HILLSBORO         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 5, 1957.....              | 84.3               | 15                            | 0.00         | 4.8                  | 1.6                    | 4.1            | 0.5                   | 23                                      | 2.3                           | 4.5              | 0.0             | 1.1                           | a45                                                                 | 19                               | 0                      | 62.5                                                        | 6.5 | 15    |
| Apr. 13.....                   | b46                | --                            | --           | 3.6                  | 3.4                    | 4.1            | 1.3                   | 33                                      | 1.4                           | 4.9              | --              | 1.4                           | --                                                                  | 23                               | 0                      | 68.5                                                        | 6.6 | --    |
| Sept. 20.....                  | 28.7               | 13                            | .08          | 5.5                  | 1.8                    | 11             | 1.5                   | 26                                      | 7.4                           | 14               | .1              | 1.0                           | a88                                                                 | 20                               | 0                      | 102                                                         | 6.3 | 60    |
| FLAT RIVER AT BAHAMA           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 23, 1957.....             | 101                | 11                            | 0.10         | 3.6                  | 1.5                    | 3.7            | 1.2                   | 15                                      | 4.5                           | 3.2              | 0.2             | 1.1                           | a37                                                                 | 15                               | 3                      | 52.4                                                        | 6.6 | 65    |
| Aug. 8.....                    | 9.5                | 12                            | .05          | 5.7                  | 2.3                    | 4.2            | 1.8                   | 32                                      | 2.5                           | 3.2              | .0              | 1.6                           | a30                                                                 | 24                               | 0                      | 72.3                                                        | 6.4 | 25    |
| DIAL CREEK NEAR BAHAMA         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 24, 1957.....             | 3.15               | 19                            | .19          | 3.6                  | 1.2                    | 4.7            | 1.0                   | 20                                      | 3.2                           | 3.6              | 0.2             | 0.3                           | a47                                                                 | 14                               | 0                      | 51.3                                                        | 6.9 | 28    |
| Aug. 8.....                    | b.02               | 19                            | .14          | 5.2                  | 1.0                    | 5.1            | 1.1                   | 30                                      | 2.2                           | 3.0              | .0              | 1.0                           | a53                                                                 | 17                               | 0                      | 71.0                                                        | 6.4 | 25    |
| FLAT RIVER AT DAM, NEAR BAHAMA |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 24, 1957.....             | 156                | 13                            | 0.12         | 4.4                  | 1.3                    | 4.6            | 1.1                   | 20                                      | 4.0                           | 4.0              |                 | 0.8                           | a43                                                                 | 16                               | 0                      | 55.0                                                        | 6.9 | 50    |
| Aug. 8.....                    | 3.43               | 11                            | .02          | 4.8                  | 1.8                    | 3.4            | 1.2                   | 25                                      | 1.7                           | 2.6              | 0.0             | .9                            | a39                                                                 | 19                               | 0                      | 60.0                                                        | 6.2 | 13    |
| NEUSE RIVER NEAR NORTSIDE      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 6, 1957.....              | 410                | 13                            | 0.03         | 5.6                  | 2.7                    | 9.3            | 1.0                   | 36                                      | 5.3                           | 5.5              | 0.2             | 2.6                           | a63                                                                 | 25                               | 0                      | 99.2                                                        | 6.5 | 10    |
| Aug. 7.....                    | 25.2               | 13                            | .07          | 10                   | 3.6                    | 24             | 4.8                   | 56                                      | 14                            | 18               | .3              | 6.8                           | a123                                                                | 41                               | 0                      | 211                                                         | 6.6 | 20    |
| BIG BRANCH NEAR GARNER         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 16, 1957.....             |                    |                               |              | 3.2                  | 1.2                    | 7.0            | 1.2                   | 23                                      | 2.8                           | 4.5              |                 | 2.0                           |                                                                     | 13                               | 0                      | 63.3                                                        | 6.4 |       |
| Mar. 29.....                   | 11.1               |                               |              | 3.4                  | 1.6                    | 7.0            | 1.1                   | 26                                      | 4.7                           | 4.6              |                 | 1.8                           |                                                                     | 15                               | 0                      | 70.2                                                        | 6.2 |       |
| LITTLE RIVER NEAR PRINCETON    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 11, 1957.....             | 581                | 10                            | 0.04         | 2.8                  | 0.2                    | 5.3            | 1.5                   | 10                                      | 5.2                           | 5.0              | 0.0             | 1.1                           | a36                                                                 | 8                                | 0                      | 50.1                                                        | 6.3 | 25    |
| Aug. 12.....                   | 12.4               | 9.0                           | .34          | 2.8                  | 1.1                    | 6.2            | 1.9                   | 20                                      | 1.1                           | 4.5              | .2              | 2.0                           | a39                                                                 | 12                               | 0                      | 61.5                                                        | 6.4 | 40    |
| NEUSE RIVER NEAR GOLDSBORO     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 21, 1957.....             | b3,340             | 9.0                           | 0.03         | 3.2                  | 0.5                    | 6.1            | 1.6                   | 15                                      | 4.1                           | 5.5              | 0.0             | 1.6                           | a39                                                                 | 10                               | 0                      | 59.3                                                        | 6.4 | 30    |
| Aug. 12.....                   | 178                | 11                            | .03          | 5.6                  | 2.4                    | 19             | 2.5                   | 38                                      | 6.2                           | 20               | .3              | 1.9                           | a88                                                                 | 24                               | 0                      | 158                                                         | 6.4 | 35    |
| WALNUT CREEK NEAR BEST         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 16, 1957.....             | 12.6               |                               |              | 4.0                  | 1.5                    | 5.3            | 1.0                   | 4                                       | 9.6                           | 6.7              |                 | 4.1                           |                                                                     | 16                               | 13                     | 73.0                                                        | 5.4 |       |
| Aug. 12.....                   | .58                |                               |              |                      |                        | 4.5            | 1.6                   | 4                                       | 9.5                           | 5.5              |                 | 2.1                           |                                                                     | 9                                | 6                      | 54.0                                                        | 5.3 |       |

## BEAR CREEK NEAR LaGRANGE

|                   |      |  |  |     |     |     |     |   |     |     |  |     |  |    |    |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|---|-----|-----|--|-----|--|----|----|------|-----|
| Mar. 16, 1957.... | 50.6 |  |  | 4.4 | 1.3 | 5.6 | 0.8 | 7 | 12  | 7.8 |  | 2.9 |  | 16 | 10 | 71.0 | 5.7 |
| Aug. 13.....      | 6.99 |  |  | 3.2 | .7  | 4.6 | 1.5 | 4 | 8.8 | 4.7 |  | 2.3 |  | 11 | 8  | 57.5 | 5.2 |

## MOCCASIN CREEK NEAR MIDDLESEX

|                  |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| Mar. 12, 1957... | 39.0 |  |  | 2.2 | 0.9 | 4.6 | 1.2 | 14 | 4.5 | 4.0 |  | 0.9 |  | 9  | 0 | 50.2 | 5.9 |
| Aug. 6.....      | 1.62 |  |  | 3.6 | 2.1 | 7.0 | 1.6 | 30 | 2.4 | 4.8 |  | .4  |  | 18 | 0 | 74.9 | 6.4 |

## TOISNOT SWAMP NEAR NEW HOPE

|                  |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |      |     |
|------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|------|-----|
| May 10, 1957.... | 8.37 |  |  | 3.8 | 1.7 | 4.1 | 0.6 | 10 | 1.4 | 12  |  | 1.8 |  | 16 | 8 | 5.7  |     |
| Aug. 6.....      | 3.77 |  |  | 4.4 | 1.2 | 4.2 | .9  | 19 | .5  | 6.5 |  | .3  |  | 16 | 0 | 53.4 | 6.4 |

## NAHUTTA SWAMP NEAR SHINE

|                  |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |
|------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|
| Mar. 21, 1957... | b99  | 11 | 0.06 | 4.4 | 0.7 | 6.5 | 1.6 | 8  | 6.6 | 8.7 |     | 1.9 |     | 14 | 7 | 67.3 | 6.0 |
| Aug. 12.....     | 2.45 | 12 | .42  | 4.0 | 1.0 | 6.2 | 1.3 | 14 | 3.6 | 7.6 | 0.1 | 1.4 | 246 | 14 | 3 | 67.7 | 6.1 |

## CORE CREEK NEAR FORT BARNWELL

|                  |      |  |  |    |     |     |     |     |     |     |  |     |  |     |   |     |     |
|------------------|------|--|--|----|-----|-----|-----|-----|-----|-----|--|-----|--|-----|---|-----|-----|
| May 16, 1957.... | 7.25 |  |  | 34 | 2.9 | 5.7 | 0.7 | 111 | 5.1 | 6.4 |  | 2.1 |  | 98  | 7 | 6.7 |     |
| Aug. 13.....     | .52  |  |  | 41 | 4.6 | 6.3 | 1.0 | 143 | 4.9 | 6.0 |  | .7  |  | 120 | 3 | 262 | 7.1 |

a Calculated from determined constituents.

b Mean daily discharge.

## WHITE OAK RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN WHITE OAK RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |               | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|---------------|--------------------------------------------------------|-----|-------|
|                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium                          | Non-carbonate |                                                        |     |       |
| May 17, 1957.....  | 0.64               | 6.4                           |              | 56              | 2.1               | 5.0            | 0.5              | 71                                 | 1.5                           | 7.2              | 0.1             | 0.3                           | a170                                                                | 63                               | 5             | 142                                                    | 6.8 |       |
| Aug. 13.....       |                    |                               |              |                 |                   | 6.4            | .7               | 181                                | 1.4                           | 6.8              |                 | 1.2                           |                                                                     | 148                              | 0             | 321                                                    | 7.3 |       |

## WHITE OAK RIVER AT BELGRADE

a Calculated from determined constituents.

## NEW RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN NEW RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |               | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|---------------|--------------------------------------------------------|-----|-------|
|                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium                          | Non-carbonate |                                                        |     |       |
| Mar. 21, 1957..... | 127                | 5.6                           | 0.29         | 16              | 0.5               | 5.1            | 0.3              | 45                                 | 5.3                           | 6.7              | 0.0             | 1.9                           | a64                                                                 | 42                               | 5             | 113                                                    | 6.9 | 80    |
| Aug. 13.....       | 4.96               | 5.4                           | .00          | 60              | 1.9               | 7.6            | 1.1              | 180                                | 8.3                           | 7.2              | .5              | 4.1                           | a185                                                                | 158                              | 10            | 338                                                    | 7.9 | 5     |

|                                   |      |    |      |    |     |     |     |     |     |     |     |     |      |     |   |     |     |  |
|-----------------------------------|------|----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|---|-----|-----|--|
| SOUTHWEST CREEK NEAR JACKSONVILLE |      |    |      |    |     |     |     |     |     |     |     |     |      |     |   |     |     |  |
| May 17, 1957.....                 | 4.67 |    |      | 26 | 3.1 | 5.0 | 0.8 | 90  | 5.7 | 6.2 |     | 0.5 |      | 77  | 4 | 165 | 6.7 |  |
| Aug. 13.....                      | .63  | 12 | 0.11 | 41 | 1.8 | 4.8 | .8  | 134 | 2.6 | 4.1 | 0.1 | .8  | a135 | 110 | 0 | 232 | 7.0 |  |
| Aug. 14.....                      | .66  |    |      | -- | --  | 4.4 | 1.0 | 117 | 2.2 | 4.2 |     | .5  |      | 94  | 0 | 210 | 7.0 |  |

|                             |      |  |  |    |     |     |     |    |     |     |  |     |  |    |    |     |     |  |
|-----------------------------|------|--|--|----|-----|-----|-----|----|-----|-----|--|-----|--|----|----|-----|-----|--|
| NORTHEAST CREEK NEAR KELLUM |      |  |  |    |     |     |     |    |     |     |  |     |  |    |    |     |     |  |
| Apr. 17, 1957.....          | 3.71 |  |  | 15 | 2.1 | 6.0 | 0.8 | 36 | 4.4 | 8.0 |  | 4.0 |  | 47 | 17 | 130 | 6.3 |  |
| Aug. 13.....                | .91  |  |  |    |     | 8.6 | 1.2 | 92 | 2.7 | 8.4 |  | 1.6 |  | 74 | 0  | 188 | 7.0 |  |

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN

## HAW RIVER NEAR BENAJA, N. C.

LOCATION.--Temperature recorder at gaging station. 200 feet upstream from site of old High Rock Mill, 500 feet upstream from highway bridge, half a mile upstream from county line, 6 miles downstream from Troublesome Creek, and 6 miles east of Benaja, Rockingham County.

Drainage Area.--168 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.

Water temperatures: October 1952 to September 1953, July 14-16 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 78° F. July 14-16; minimum, 34° F. Jan. 20-22.

EXTREMES, 1952-57.--Water temperatures: Maximum, 84° F. Aug. 2, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

Continuous ethyl alcohol-actuated thermometer<sup>7</sup>

| Day   | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|-------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|       | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1     | 58      | 56  | 57       | 56  | 41       | 41  | 41      | 40  | 48       | 48  | 49    | 46  | 52    | 52  | 69  | 68  | 64   | 72  | 74   | 74  | 71     | 74  | 70        |  |
| 2     | 59      | 58  | 57       | 57  | 41       | 40  | 41      | 40  | 48       | 48  | 47    | 46  | 56    | 52  | 67  | 65  | 68   | 70  | 69   | 76  | 71     | 74  | 70        |  |
| 3     | 60      | 59  | 58       | 58  | 40       | 40  | 40      | 38  | 48       | 47  | 47    | 47  | 58    | 56  | 65  | 60  | 67   | 66  | 73   | 66  | 76     | 71  | 75        |  |
| 4     | 61      | 60  | 58       | 58  | 42       | 40  | 38      | 37  | 48       | 47  | 47    | 46  | 58    | 53  | 60  | 58  | 68   | 65  | 73   | 67  | 74     | 72  | 73        |  |
| 5     | 62      | 61  | 58       | 57  | 43       | 42  | 39      | 37  | 48       | 48  | 46    | 45  | 53    | 51  | 58  | 55  | 68   | 67  | 74   | 70  | 74     | 72  | 69        |  |
| 6     | 62      | 62  | 57       | 55  | 44       | 43  | 39      | 39  | 48       | 47  | 45    | 45  | 53    | 52  | 59  | 56  | 68   | 68  | 74   | 69  | 72     | 69  | 71        |  |
| 7     | 62      | 62  | 55       | 54  | 46       | 44  | 40      | 39  | 47       | 46  | 45    | 44  | 55    | 52  | 60  | 55  | 68   | 68  | 73   | 68  | 70     | 66  | 69        |  |
| 8     | 62      | 60  | 54       | 54  | 48       | 46  | 40      | 40  | 47       | 46  | 45    | 44  | 55    | 55  | 62  | 56  | 68   | 68  | 74   | 68  | 70     | 65  | 66        |  |
| 9     | 60      | 59  | 54       | 53  | 50       | 48  | 40      | 40  | 47       | 46  | 45    | 44  | 55    | 53  | 64  | 59  | 68   | 62  | 74   | 71  | 72     | 66  | 66        |  |
| 10    | 58      | 57  | 52       | 50  | 50       | 48  | 44      | 40  | 50       | 47  | 44    | 43  | 55    | 52  | 63  | 61  | 62   | 76  | 70   | 74  | 68     | 69  | 68        |  |
| 11    | 57      | 56  | 50       | 48  | 46       | 44  | 43      | 50  | 50       | 46  | 44    | 44  | 56    | 53  | 63  | 63  | 64   | 62  | 75   | 70  | 74     | 70  | 69        |  |
| 12    | 56      | 54  | 48       | 48  | 46       | 46  | 43      | 41  | 50       | 46  | 50    | 46  | 59    | 56  | 67  | 63  | 68   | 64  | 76   | 68  | 76     | 72  | 70        |  |
| 13    | 54      | 53  | 48       | 48  | 47       | 46  | 41      | 41  | 46       | 45  | 50    | 50  | 59    | 55  | 69  | 65  | 71   | 67  | 76   | 70  | 75     | 71  | 72        |  |
| 14    | 53      | 52  | 49       | 48  | 48       | 47  | 41      | 41  | 45       | 44  | 51    | 50  | 55    | 52  | 69  | 66  | 74   | 70  | 78   | 72  | 74     | 71  | 72        |  |
| 15    | 53      | 52  | 48       | 47  | 48       | 48  | 41      | 40  | 44       | 42  | 55    | 51  | 52    | 51  | 69  | 67  | 75   | 70  | 78   | 74  | 74     | 72  | 69        |  |
| 16    | 53      | 52  | 50       | 47  | 48       | 47  | 40      | 38  | 43       | 42  | 55    | 54  | 52    | 51  | 69  | 67  | 75   | 72  | 78   | 73  | 75     | 71  | 70        |  |
| 17    | 54      | 53  | 50       | 49  | 48       | 48  | 38      | 37  | 43       | 42  | 55    | 54  | 52    | 56  | 69  | 65  | 76   | 72  | 77   | 73  | 74     | 71  | 69        |  |
| 18    | 56      | 54  | 50       | 49  | 48       | 48  | 37      | 36  | 43       | 42  | 53    | 52  | 59    | 56  | 67  | 65  | 76   | 72  | 77   | 72  | 72     | 67  | 66        |  |
| 19    | 56      | 56  | 49       | 48  | 47       | 46  | 36      | 35  | 43       | 42  | 53    | 52  | 63    | 59  | 69  | 67  | 76   | 72  | 70   | 67  | 65     | 66  | 65        |  |
| 20    | 56      | 56  | 48       | 46  | 47       | 46  | 35      | 34  | 43       | 42  | 53    | 52  | 66    | 62  | 67  | 67  | 75   | 72  | 71   | 70  | 66     | 65  | 65        |  |
| 21    | 56      | 56  | 48       | 47  | 48       | 47  | 34      | 34  | 43       | 41  | 52    | 49  | 69    | 65  | 67  | 65  | 75   | 70  | 72   | 70  | 67     | 65  | 68        |  |
| 22    | 57      | 56  | 48       | 48  | 50       | 48  | 38      | 34  | 42       | 41  | 50    | 49  | 70    | 68  | 65  | 64  | 72   | 70  | 74   | 71  | 68     | 65  | 69        |  |
| 23    | 57      | 57  | 48       | 46  | 52       | 50  | 45      | 38  | 42       | 41  | 49    | 48  | 69    | 67  | 67  | 64  | 72   | 70  | 76   | 72  | 68     | 66  | 69        |  |
| 24    | 58      | 57  | 46       | 44  | 52       | 50  | 43      | 43  | 44       | 42  | 50    | 48  | 70    | 68  | 71  | 67  | 72   | 70  | 74   | 72  | 66     | 65  | 69        |  |
| 25    | 58      | 58  | 44       | 42  | 52       | 50  | 43      | 42  | 44       | 44  | 50    | 47  | 69    | 67  | 70  | 68  | 72   | 70  | 72   | 69  | 66     | 64  | 61        |  |
| 26    | 58      | 56  | 42       | 41  | 50       | 46  | 42      | 41  | 52       | 47  | 50    | 48  | 70    | 68  | 71  | 68  | 70   | 70  | 71   | 68  | 65     | 63  | 62        |  |
| 27    | 56      | 56  | 41       | 41  | 46       | 44  | 42      | 41  | 54       | 52  | 48    | 48  | 70    | 66  | 69  | 68  | 70   | 70  | 71   | 68  | 66     | 64  | 62        |  |
| 28    | 56      | 56  | 41       | 40  | 44       | 44  | 44      | 42  | 55       | 49  | 49    | 48  | 70    | 67  | 68  | 66  | 72   | 70  | 74   | 69  | 68     | 64  | 58        |  |
| 29    | 56      | 56  | 40       | 40  | 44       | 44  | 49      | 44  | --       | --  | 50    | 48  | 70    | 67  | 66  | 64  | 72   | 70  | 74   | 69  | 70     | 66  | 55        |  |
| 30    | 56      | 56  | 41       | 40  | 44       | 44  | 42      | 50  | 49       | --  | 52    | 50  | 69    | 67  | 64  | 63  | 71   | 70  | 75   | 70  | 71     | 67  | 54        |  |
| 31    | 56      | 56  | --       | --  | 42       | 40  | 50      | 48  | --       | --  | 53    | 51  | --    | --  | 66  | 62  | --   | --  | 76   | 70  | 73     | 69  | --        |  |
| Aver- | 57      | 56  | 50       | 49  | 47       | 45  | 41      | 40  | 47       | 45  | 49    | 48  | 61    | 58  | 66  | 63  | 71   | 68  | 74   | 70  | 71     | 68  | 68        |  |

## CAPE FEAR RIVER BASIN--Continued

## HAW RIVER AT HAW RIVER, N. C.

LOCATION.--At gaging station at town of Haw River, Alamance County, 650 feet downstream from Southern Railway bridge and 3 miles downstream from Stony Creek.

DRAINAGE AREA.--599 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium magnesium             | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  | 91                   | 15                         | 0.03      | 10           | 2.7            | 49          | 4.6           | 108                             | 19                         | 18            | 0.1          | 7.1                        | 184                                                | 36                            | 0             | 298                                       | 6.7 | 15    |
| Nov. 13.....       | 233                  | 20                         | .15       | 8.2          | 3.7            | 22          | 2.6           | 58                              | 12                         | 16            | .0           | 2.6                        | 123                                                | 36                            | 0             | 185                                       | 6.8 | 30    |
| Dec. 13.....       | 162                  | 22                         | .05       | 9.5          | 3.6            | 58          | 4.2           | 99                              | 26                         | 39            | .1           | 3.3                        | 216                                                | 38                            | 0             | 354                                       | 6.8 | --    |
| Jan. 13, 1957....  | 199                  | 20                         | .27       | 9.3          | 2.6            | 47          | 3.8           | 106                             | 18                         | 24            | .1           | .7                         | 190                                                | 34                            | 0             | 305                                       | 7.1 | 27    |
| Mar. 14.....       | 398                  | 18                         | .01       | 7.6          | 2.0            | 14          | 2.3           | 43                              | 10                         | 11            | .1           | 2.5                        | 97                                                 | 27                            | 0             | 141                                       | 6.8 | 18    |
| Apr. 16.....       | 420                  | 17                         | .01       | 7.1          | 1.8            | 16          | 2.3           | 42                              | 10                         | 12            | .2           | 2.1                        | 97                                                 | 25                            | 0             | 145                                       | 6.9 | 10    |
| May 15.....        | 273                  | 22                         | .01       | 9.6          | 3.4            | 76          | 4.5           | 170                             | 16                         | 35            | .1           | .7                         | 4254                                               | 38                            | 0             | 409                                       | 7.0 | 5     |
| June 14.....       | 153                  | 19                         | .01       | 9.1          | 3.3            | 23          | 2.7           | 52                              | 8.4                        | 17            | 1.4          | 4.4                        | 125                                                | 36                            | 0             | 192                                       | 6.5 | 9     |
| July 15.....       | 40                   | 16                         | .03       | 140          | 14             | 78          | 7.7           | 147                             | 28                         | 324           | 1.3          | .8                         | 4684                                               | 406                           | 285           | 605                                       | 7.3 | 35    |
| Aug. 16.....       | 110                  | 15                         | .04       | 12           | 3.9            | 102         | 6.4           | 178                             | 37                         | 54            | .7           | 6.3                        | 335                                                | 45                            | 0             | 582                                       | 7.2 | 30    |
| Sept. 16.....      | 131                  | 14                         | .06       | 7.8          | 2.4            | 23          | 3.6           | 57                              | 11                         | 13            | .7           | 1.7                        | 111                                                | 29                            | 0             | 188                                       | 6.9 | 60    |

a. Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

## HAW RIVER AT BYNUM, N. C.

LOCATION --At millrace to textile mill, 100 yards downstream from bridge at Bynum, Chatham County, and 5½ miles upstream from gaging station near Pittsboro.

DRAINAGE AREA --1,280 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1955 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum, 197 ppm Aug. 21-24; minimum, 60 ppm Mar. 1-10.

Hardness: Maximum, 42 ppm Aug. 24; minimum, 14 ppm July 24.

Specific conductance: Maximum daily, 366 micromhos Aug. 21; minimum daily, 57.0 micromhos Feb. 2.

Water temperatures: Maximum 86°F July 15; minimum, 33°F July 18.

EXTREMES, 1955-57 --Dissolved solids: Maximum, 355 ppm Aug. 24-25, 1956; minimum, 50 ppm Mar. 16-20, 1956.

Hardness: Maximum, 45 ppm July 9, 1956; minimum, 14 ppm July 24, 1957.

Specific conductance: Maximum daily, 657 micromhos Aug. 21, 1956; minimum daily, 57.0 micromhos Feb. 2, 1957.

Water temperatures: Maximum, 88°F July 5, 1956; minimum, 33°F Dec. 22, 1955.

REMARKS --Records of suspended matter of composite samples and records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of gaging station near Pittsboro for water year October 1956 to September 1957 given in WSP 1503. No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-8, 1956.    | 838                  | 12                         | 0.07      | 5.2          | 2.0            | 11          | 2.4           | 23                              | 9.2                        | 14            | 0.3          | 2.7                        | 80                                                 | 21                            | 2             | 107                                       | 6.8 | 27    | 11              | 7        |
| Oct. 9-10, 1956.   | 528                  | 15                         | .17       | 7.5          | 1.8            | 19          | 3.0           | 39                              | 15                         | 14            | 1.2          | 3.1                        | a98                                                | 26                            | 0             | 159                                       | 6.7 | --    | --              | --       |
| Oct. 11-15, 1956.  | 552                  | 15                         | .09       | 6.8          | 2.4            | 25          | 2.7           | 58                              | 13                         | 14            | .2           | 3.0                        | 131                                                | 27                            | 0             | 179                                       | 7.1 | 32    | 9               | 6        |
| Oct. 16-18, 1956.  | 138                  | 15                         | .26       | 8.0          | 2.7            | 46          | 3.7           | 97                              | 16                         | 23            | .8           | 2.4                        | a167                                               | 31                            | 0             | 278                                       | 7.0 | 50    | --              | --       |
| Oct. 19-20, 1956.  | 1,820                | 15                         | --        | 4.6          | 1.5            | --          | --            | 33                              | 2.6                        | 6.8           | --           | 2.9                        | --                                                 | 18                            | 0             | 83.4                                      | 6.5 | --    | --              | --       |
| Oct. 21-31, 1956.  | 2,070                | 15                         | .05       | 6.4          | 2.7            | 13          | 2.5           | 37                              | 11                         | 10            | .5           | 2.4                        | 95                                                 | 27                            | 0             | 126                                       | 6.7 | 32    | 14              | 9        |
| Nov. 1-10, 1957.   | 940                  | 18                         | --        | 7.2          | 2.9            | 16          | 2.2           | 46                              | 10                         | 11            | .4           | 2.4                        | 107                                                | 30                            | 0             | 141                                       | 6.8 | 35    | 10              | 7        |
| Nov. 11-20, 1957.  | 764                  | 19                         | .24       | 8.0          | 3.2            | 25          | 2.4           | 65                              | 12                         | 17            | .6           | 2.0                        | 131                                                | 33                            | 0             | 191                                       | 7.3 | 40    | 8               | 5        |
| Nov. 21-30, 1957.  | 625                  | 16                         | .04       | 7.2          | 2.4            | 16          | 1.8           | 45                              | 10                         | 11            | .5           | 2.1                        | 100                                                | 28                            | 0             | 143                                       | 7.3 | 20    | 7               | 5        |
| Dec. 1-10, 1957.   | 368                  | 16                         | .23       | 8.0          | 2.9            | 26          | 2.2           | 61                              | 11                         | 17            | .6           | 2.0                        | 123                                                | 32                            | 0             | 194                                       | 7.0 | 20    | 5               | 4        |
| Dec. 11-14, 1957.  | 367                  | 17                         | .05       | 8.4          | 4.1            | 32          | 3.1           | 73                              | 12                         | 24            | 1.0          | 3.5                        | a142                                               | 38                            | 0             | 234                                       | 6.5 | 15    | --              | --       |
| Dec. 15-20, 1957.  | 1,990                | 17                         | .03       | 6.5          | 2.3            | 18          | 2.5           | 44                              | 9.6                        | 12            | .6           | 3.5                        | 107                                                | 26                            | 0             | 146                                       | 6.7 | 17    | 10              | 6        |
| Dec. 21-31, 1957.  | 2,300                | 16                         | .03       | 6.4          | 2.2            | 8.1         | 2.2           | 28                              | 6.5                        | 7.0           | --           | 2.3                        | 78                                                 | 25                            | 2             | 99.0                                      | 6.2 | 10    | 5               | 3        |
| Jan. 1-10, 1957.   | 608                  | 19                         | .20       | 7.2          | 2.0            | 16          | 2.0           | 46                              | 7.0                        | 10            | .4           | 2.2                        | 92                                                 | 27                            | 0             | 137                                       | 7.2 | 27    | 5               | 4        |
| Jan. 11-20, 1957.  | 478                  | 17                         | .10       | 7.2          | 2.7            | 23          | 2.4           | 59                              | 9.8                        | 13            | .6           | 3.1                        | 120                                                | 29                            | 0             | 183                                       | 6.8 | 10    | 5               | 4        |
| Jan. 21-26, 1957.  | 899                  | 18                         | .03       | 8.4          | 2.2            | 21          | 2.5           | 52                              | 12                         | 13            | .6           | 3.7                        | 115                                                | 30                            | 0             | 173                                       | 7.0 | 11    | 6               | 4        |
| Jan. 27-31, 1957.  | 4,090                | 14                         | .05       | 6.0          | 2.9            | 9.6         | 1.9           | 30                              | 8.7                        | 7.5           | .3           | 1.7                        | a68                                                | 27                            | 2             | 100                                       | 6.0 | 20    | --              | --       |
| Feb. 1-10, 1957.   | 7,680                | 12                         | .02       | 4.4          | 1.9            | 5.6         | 1.7           | 19                              | 7.5                        | 4.0           | .2           | 1.9                        | 61                                                 | 19                            | 3             | 73.8                                      | 6.3 | 15    | 8               | 6        |
| Feb. 11-19, 1957.  | 1,380                | 16                         | .06       | 5.6          | 2.7            | 9.1         | 1.2           | 34                              | 7.8                        | 8.0           | .2           | 1.5                        | 77                                                 | 16                            | 0             | 108                                       | 6.6 | 20    | 4               | 3        |
| Feb. 20-28, 1957.  | 2,980                | 15                         | .02       | 5.6          | 2.2            | 9.1         | 1.3           | 30                              | 6.7                        | 8.5           | .2           | 2.0                        | 77                                                 | 23                            | 0             | 103                                       | 7.0 | 20    | 7               | 4        |

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

## HAW RIVER AT BYNUM, N. C.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection          | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color | Oxygen consumed |          |
|-----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|-----------------|----------|
|                             |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg./l.               | Non-carbonate |                                            |     |       | Unfiltered      | Filtered |
| Mar. 1-10, 1957             | 3,300                | 13                         | 0.02      | 5.2          | 2.4            | 7.1         | 1.4           | 25                              | 6.4                        | 5.5           | 0.2          | 1.6                        | 60                                                  | 23                            | 3             | 79.6                                       | 6.9 | 15    | 5               | 3        |
| Mar. 11-20, ....            | 1,120                | 16                         | .02       | 5.6          | 3.4            | 12          | 1.6           | 41                              | 6.5                        | 8.0           | .3           | 1.9                        | 77                                                  | 28                            | 0             | 111                                        | 6.9 | 10    | 4               | 3        |
| Mar. 21-31, ....            | 1,690                | 15                         | .02       | 6.0          | 2.9            | 11          | 1.8           | 39                              | 7.7                        | 7.5           | .2           | 1.6                        | 76                                                  | 27                            | 0             | 109                                        | 6.4 | 10    | 5               | 3        |
| Apr. 1-10, ....             | 2,670                | 14                         | .12       | 4.4          | 1.8            | 9.0         | 1.0           | 37                              | 5.6                        | 5.8           | .1           | 2.0                        | 78                                                  | 18                            | 0             | 111                                        | 6.3 | 10    | 8               | 4        |
| Apr. 11-20, ....            | 1,060                | 15                         | .02       | 6.4          | 2.9            | 11          | 1.0           | 34                              | 7.6                        | 9.0           | .3           | 2.1                        | 78                                                  | 24                            | 0             | 113                                        | 6.3 | 10    | 4               | 4        |
| Apr. 21-30, ....            | 1,090                | 15                         | .02       | 6.8          | 2.2            | 11          | 1.1           | 40                              | 5.8                        | 9.0           | .3           | 2.1                        | 78                                                  | 26                            | 0             | 112                                        | 6.6 | 35    | 7               | 5        |
| May 1-6, ....               | 437                  | 17                         | .05       | 8.3          | 3.0            | 18          | 1.7           | 57                              | 7.4                        | 10            | .6           | 2.6                        | 110                                                 | 33                            | 0             | 162                                        | 7.3 | 27    | --              | 3        |
| May 7-10, ....              | 343                  | 17                         | .04       | 8.8          | 3.6            | 28          | 2.0           | 71                              | 13                         | 20            | 1.3          | 2.5                        | 112                                                 | 37                            | 0             | 211                                        | 6.7 | 15    | --              | --       |
| May 11-20, ....             | 623                  | 17                         | .19       | 6.0          | 3.6            | 26          | 2.0           | 64                              | 9.9                        | 17            | .9           | 3.5                        | 124                                                 | 30                            | 0             | 184                                        | 7.0 | 20    | 5               | 4        |
| May 21-31, ....             | 467                  | 17                         | .09       | 7.2          | 3.2            | 24          | 2.2           | 59                              | 9.6                        | 16            | .9           | 3.5                        | 121                                                 | 31                            | 0             | 178                                        | 7.1 | 20    | 5               | 4        |
| June 1-7, ....              | 791                  | 18                         | .14       | 7.9          | 2.8            | 38          | 2.5           | 67                              | 13                         | 20            | 1.1          | 4.3                        | 143                                                 | 31                            | 0             | 204                                        | 7.3 | 23    | 6               | 5        |
| June 8-10, ....             | 1,800                | 13                         | .07       | 5.2          | 1.7            | 9.0         | 1.7           | 27                              | 7.7                        | 7.0           | 1.2          | 3.1                        | 103                                                 | 20                            | 0             | 92.6                                       | 6.5 | 28    | --              | --       |
| June 11-20, ....            | 328                  | 16                         | .00       | 7.0          | 3.2            | 16          | 1.9           | 46                              | 17.8                       | 10            | .3           | 3.3                        | 101                                                 | 28                            | 0             | 124                                        | 6.5 | 20    | 5               | 4        |
| June 21-30, ....            | 436                  | 15                         | .00       | 7.6          | 3.2            | 24          | 2.7           | 54                              | 11                         | 18            | .6           | 4.5                        | 114                                                 | 32                            | 0             | 196                                        | 7.0 | 20    | 6               | 4        |
| July 1-10, ....             | 265                  | 15                         | .01       | 8.0          | 3.9            | 24          | 2.7           | 65                              | 11                         | 18            | .9           | 3.9                        | 128                                                 | 36                            | 0             | 200                                        | 7.3 | 20    | 5               | 3        |
| July 11-19, ....            | 589                  | 14                         | .00       | 7.7          | 3.0            | 21          | 2.6           | 59                              | 10                         | 18            | .4           | 2.3                        | 114                                                 | 32                            | 0             | 187                                        | 7.2 | 20    | 6               | 3        |
| July 20-23, ....            | 1,060                | --                         | .01       | 4.1          | 2.0            | --          | --            | 22                              | 7.7                        | 8.0           | --           | 3.1                        | --                                                  | 19                            | 1             | 88.5                                       | 6.2 | --    | --              | --       |
| July 24-25, ....            | 395                  | 12                         | .00       | 6.3          | 2.6            | 13          | 2.0           | 34                              | 12                         | 9.9           | .2           | 3.4                        | 97                                                  | 26                            | 0             | 127                                        | 6.4 | 35    | 7               | 5        |
| July 26-31, ....            | 2,340                | --                         | .13       | 3.0          | 1.6            | --          | --            | 14                              | 5.9                        | 6.8           | --           | 2.6                        | --                                                  | 14                            | 2             | 59.5                                       | 6.8 | --    | --              | --       |
| Aug. 1-9, ....              | 286                  | 13                         | .06       | 4.0          | 1.1            | 25          | 2.5           | 57                              | 12                         | 22            | .2           | 2.9                        | 120                                                 | 47                            | 0             | 209                                        | 6.8 | --    | --              | --       |
| Aug. 10-19, ....            | 319                  | 10                         | .04       | 1.9          | 1.2            | --          | --            | 80                              | 17                         | 33            | --           | 4.2                        | 168                                                 | 36                            | 0             | 280                                        | 6.8 | --    | --              | --       |
| Aug. 20-24, ....            | 337                  | 12                         | .09       | 9.9          | 2.8            | 42          | 3.8           | 80                              | 17                         | 33            | .4           | 2.9                        | 168                                                 | 36                            | 0             | 328                                        | 7.6 | 30    | 6               | 6        |
| Aug. 25-31, ....            | 1,540                | 9.5                        | .03       | 4.4          | 2.0            | 12          | 2.1           | 33                              | 8.3                        | 7.9           | .2           | 1.8                        | 197                                                 | 19                            | 0             | 100                                        | 7.5 | 20    | --              | --       |
| Sept. 1-10, ....            | 441                  | 11                         | .07       | 5.2          | 2.8            | 19          | 2.6           | 44                              | 4.8                        | 15            | .4           | 2.2                        | 104                                                 | 25                            | 0             | 150                                        | 7.1 | 35    | 5               | 4        |
| Sept. 11-20, ....           | 964                  | 10                         | .05       | 5.4          | 2.8            | 18          | 2.9           | 39                              | 7.3                        | 16            | .6           | 2.2                        | 106                                                 | 25                            | 0             | 142                                        | 7.2 | 35    | 6               | 4        |
| Sept. 21-30, ....           | 1,570                | 11                         | .05       | 5.6          | 2.7            | 12          | 2.6           | 35                              | 6.5                        | 11            | .4           | 2.2                        | 97                                                  | 25                            | 0             | 115                                        | 7.1 | 40    | 8               | 5        |
| Time-weighted average, .... | 1,256                | 15                         | 0.06      | 6.7          | 3.1            | 18          | 2.1           | 47                              | 9.2                        | 13            | 0.5          | 2.6                        | 93                                                  | 29                            | 0             | 150                                        | --  | 23    | --              | --       |

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

## HAW RIVER AT BYNUM, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 12 m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | 61   | 43   | 43   | 50   | 48   | 54   | 74  | 74   | 82   | 84   | 79    |
| 2       | 65   | 64   | 42   | 40   | 49   | 47   | 58   | 73  | 76   | 80   | 84   | 80    |
| 3       | 66   | 64   | 40   | 37   | 52   | 46   | 60   | 71  | 78   | 81   | 85   | 81    |
| 4       | 68   | 62   | 44   | 36   | 51   | 47   | 58   | 65  | 77   | 81   | 85   | 82    |
| 5       | 69   | 63   | 44   | 40   | 50   | 46   | 60   | 64  | 78   | 82   | 83   | 79    |
| 6       | 68   | 60   | 45   | 41   | 49   | 47   | 59   | 65  | 74   | 81   | 79   | 79    |
| 7       | 67   | 59   | 47   | 42   | 50   | 46   | 57   | 67  | 73   | 83   | 78   | 79    |
| 8       | 64   | 58   | 50   | 40   | 50   | 47   | 57   | 68  | 76   | 83   | 77   | 76    |
| 9       | 63   | 56   | 44   | 42   | 49   | 46   | 55   | 67  | 70   | 85   | 78   | 75    |
| 10      | 64   | 52   | 43   | 46   | 50   | 45   | 58   | 66  | 68   | 84   | 81   | 76    |
| 11      | 61   | 51   | 45   | --   | 51   | 46   | 56   | 68  | 70   | 83   | 82   | 75    |
| 12      | 60   | 52   | 47   | 43   | 49   | 51   | 59   | 70  | 73   | 84   | 84   | 77    |
| 13      | 60   | 51   | 51   | --   | 47   | 50   | 55   | 72  | 78   | 85   | 81   | 78    |
| 14      | 60   | 50   | 52   | 44   | 45   | 52   | 56   | 73  | 79   | 85   | 82   | 80    |
| 15      | 61   | 51   | 52   | 41   | 44   | 54   | 55   | 76  | 81   | 86   | 83   | 81    |
| 16      | 62   | 53   | 53   | 39   | 45   | 56   | 55   | 74  | 82   | 84   | 85   | 79    |
| 17      | 64   | 55   | 51   | 38   | 46   | 55   | 57   | 73  | 83   | 85   | 84   | 78    |
| 18      | 65   | 53   | 50   | 35   | 43   | 56   | 59   | 74  | 84   | 82   | 80   | 75    |
| 19      | 60   | 49   | 49   | 36   | 46   | 55   | 62   | 75  | 84   | 75   | 73   | 71    |
| 20      | 63   | 48   | 48   | 35   | 45   | 54   | 66   | 75  | 80   | 77   | 74   | 73    |
| 21      | 61   | 49   | 50   | 38   | 44   | 53   | 68   | 74  | 79   | 77   | 75   | 74    |
| 22      | 62   | 50   | 52   | 41   | 43   | 54   | 72   | 72  | 82   | 79   | 76   | 75    |
| 23      | 62   | 45   | 53   | 49   | 46   | 51   | 68   | 73  | 82   | 80   | 75   | 76    |
| 24      | 63   | 43   | 56   | 43   | 45   | 52   | 70   | 76  | 83   | 75   | 75   | 71    |
| 25      | 63   | 44   | 53   | 44   | 48   | 53   | 73   | 77  | 81   | 77   | 67   | 70    |
| 26      | 60   | 43   | 49   | 45   | 53   | 51   | 72   | 75  | 78   | 78   | 68   | 68    |
| 27      | 61   | 42   | 46   | 45   | 55   | 52   | 74   | 76  | 77   | 79   | 70   | 69    |
| 28      | 60   | 40   | 45   | 47   | 54   | 53   | 75   | 75  | 80   | 80   | 71   | 65    |
| 29      | 59   | 41   | 45   | 50   | --   | 54   | 76   | 74  | 80   | 81   | 76   | 62    |
| 30      | 60   | 42   | 41   | 52   | --   | 55   | 75   | 72  | 82   | 82   | 76   | 60    |
| 31      | 62   | --   | 40   | 51   | --   | 55   | --   | 73  | --   | 83   | 78   | --    |
| Average | 63   | 52   | 47   | 42   | 48   | 51   | 63   | 72  | 78   | 81   | 78   | 75    |



## CAPE FEAR RIVER BASIN--Continued

## NEW HOPE RIVER NEAR NEW HILL, N. C.

LOCATION.--At bridge on county road, 0.2 mile downstream from mouth of Beaver Creek and approximately 4 miles downstream from gaging station near Pittsboro, Chatham County.

DRAINAGE AREA.--338 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 138 ppm Aug. 11-18; minimum, 39 ppm June 4-10.

Hardness: Maximum, 45 ppm Aug. 11-18; minimum, 8 ppm July 24.

Specific conductance: Maximum daily, 208 micromhos Aug. 18; minimum daily, 24.9 micromhos July 24.

Water temperatures: Maximum, 79°F July 15, Aug. 13; minimum, 33°F Jan. 20.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    |                      | 12                         | 0.06      | 6.3          | 1.9            | 7.4         | 2.4           | 20                              | 8.8                        | 7.8           | 0.6          | 2.5                        | 70                                                 | 23                            | 7             | 93.8                                      | 6.6 | 34    | 11              | 10       |
| Oct. 11-18, 20.    |                      | 13                         | .05       | 7.2          | 2.2            | 9.5         | 2.5           | 28                              | 7.3                        | 10            | .4           | 2.9                        | 91                                                 | 27                            | 4             | 112                                       | 6.6 | 42    | 12              | 11       |
| Oct. 19.....       |                      | --                         | --        | --           | --             | --          | --            | 11                              | 2.7                        | 4.3           | --           | --                         | --                                                 | 14                            | 5             | 51.1                                      | 6.4 | --    | --              | --       |
| Oct. 21-31.....    |                      | 12                         | .11       | 5.2          | 2.3            | 6.7         | 2.2           | 22                              | 7.6                        | 7.1           | .3           | 2.0                        | 84                                                 | 22                            | 5             | 84.2                                      | 6.6 | 70    | 17              | 15       |
| Nov. 1-10.....     |                      | 13                         | .07       | 6.1          | 1.9            | 8.0         | 2.1           | 23                              | 7.5                        | 8.5           | .4           | 2.5                        | 84                                                 | 23                            | 4             | 98.5                                      | 6.7 | 50    | 21              | 12       |
| Nov. 11-20.....    |                      | 15                         | .41       | 6.8          | 2.5            | 8.1         | 2.0           | 27                              | 7.7                        | 10            | .4           | 3.5                        | 94                                                 | 27                            | 3             | 110                                       | 6.7 | 50    | 18              | 8        |
| Nov. 21-30.....    |                      | 16                         | .45       | 7.6          | 2.9            | 11          | 2.2           | 35                              | 7.1                        | 12            | .4           | 6.2                        | 99                                                 | 31                            | 4             | 130                                       | 7.1 | 35    | 8               | 6        |
| Dec. 1-10.....     |                      | 15                         | .16       | 8.4          | 2.9            | 11          | 2.2           | 32                              | 8.0                        | 13            | .4           | 7.2                        | 100                                                | 33                            | 7             | 137                                       | 7.1 | 15    | 7               | 4        |
| Dec. 11-14.....    |                      | 12                         | .06       | 7.6          | 3.2            | 12          | 2.8           | 31                              | 11                         | 12            | --           | 5.9                        | 83                                                 | 32                            | 7             | 139                                       | 7.1 | 16    | --              | --       |
| Dec. 15-20.....    |                      | 9.5                        | .10       | 4.5          | 1.2            | 5.3         | 2.2           | 13                              | 5.6                        | 7.8           | .0           | 2.7                        | 64                                                 | 16                            | 6             | 68.3                                      | 6.7 | 55    | --              | --       |
| Dec. 21-31.....    |                      | 13                         | .08       | 4.0          | 2.2            | 6.9         | 1.8           | 19                              | 7.0                        | 6.8           | .2           | 2.5                        | 69                                                 | 19                            | 4             | 89.0                                      | 6.5 | 35    | --              | 9        |
| Jan. 1-10, 1957    |                      | 14                         | .03       | 9.2          | .5             | 8.2         | 1.6           | 24                              | 6.0                        | 9.8           | .2           | 3.3                        | 74                                                 | 25                            | 6             | 103                                       | 6.9 | 15    | 6               | 5        |
| Jan. 11-20.....    |                      | 14                         | .19       | 6.8          | 2.4            | 10          | 1.9           | 27                              | 5.8                        | 10            | .2           | 6.8                        | 92                                                 | 27                            | 5             | 120                                       | 7.0 | 18    | 6               | 4        |
| Jan. 21-31.....    |                      | 12                         | .02       | 7.2          | 2.4            | 10          | 1.9           | 24                              | 7.4                        | 12            | .2           | 5.1                        | 83                                                 | 28                            | 9             | 118                                       | 6.8 | 10    | 6               | 4        |
| Feb. 1-10.....     |                      | 9.3                        | .05       | 4.0          | 2.2            | 3.2         | 1.1           | 14                              | 6.9                        | 6.5           | .2           | 1.5                        | 60                                                 | 19                            | 8             | 68.0                                      | 6.6 | 35    | 10              | 8        |
| Feb. 11-19.....    |                      | 12                         | .03       | 6.0          | 1.7            | 4.9         | .9            | 19                              | 7.6                        | 7.0           | .2           | 1.9                        | 66                                                 | 22                            | 7             | 80.6                                      | 6.5 | 20    | 7               | 5        |
| Feb. 20-28.....    |                      | 10                         | .04       | 5.2          | 2.2            | 4.3         | 1.4           | 18                              | 6.4                        | 7.0           | .0           | 1.8                        | 62                                                 | 22                            | 7             | 79.7                                      | 6.1 | 25    | 7               | 5        |
| Mar. 1-10.....     |                      | 9.5                        | .06       | 4.0          | 1.2            | 4.0         | 1.6           | 16                              | 6.4                        | 7.0           | .2           | 1.5                        | 55                                                 | 15                            | 2             | 65.6                                      | 5.9 | 30    | 10              | 6        |
| Mar. 11-20.....    |                      | 10                         | .02       | 5.2          | 1.5            | 5.2         | 1.2           | 20                              | 6.7                        | 7.0           | .2           | 2.1                        | 60                                                 | 19                            | 3             | 80.5                                      | 6.6 | 20    | 7               | 5        |
| Mar. 21-31.....    |                      | 11                         | .19       | 4.4          | 1.1            | 6.2         | 1.6           | 20                              | 4.9                        | 5.6           | .3           | 1.5                        | 60                                                 | 16                            | 0             | 75.4                                      | 6.6 | 25    | 9               | 7        |

|                            |      |      |     |     |     |     |    |     |     |     |     |     |    |    |       |     |     |     |     |
|----------------------------|------|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|----|-------|-----|-----|-----|-----|
| Apr. 1-10, 1957            | 11   | 0.29 | 6.0 | 3.2 | 6.9 | 1.3 | 26 | 5.7 | 9.5 | 0.3 | 2.0 | 70  | 28 | 7  | 97.5  | 6.5 | 30  | 8   | 6   |
| Apr. 11-20.....            | 10   | .22  | 7.2 | 3.4 | 8.8 | 1.3 | 35 | 5.8 | 11  | .2  | 3.5 | 71  | 32 | 3  | 110   | 6.4 | 20  | 12  | 5   |
| Apr. 21-30.....            | 9.6  | .25  | 7.2 | 2.7 | 7.7 | 1.7 | 33 | 5.5 | 8.5 | .3  | 3.5 | 74  | 29 | 2  | 108   | 6.2 | 35  | 10  | 9   |
| May 1-10.....              | 14   | .49  | 8.0 | 2.7 | 5.2 | 1.5 | 35 | 6.5 | 5.0 | .5  | 5.6 | 82  | 32 | 3  | 123   | 7.3 | 75  | 16  | 6   |
| May 11-20.....             | 14.7 | .48  | 8.0 | 2.7 | 5.2 | 1.5 | 35 | 6.5 | 5.0 | .5  | 5.6 | 82  | 32 | 3  | 123   | 7.3 | 75  | 16  | 6   |
| May 21-25, 29-31           | 14.7 | .48  | 8.0 | 2.7 | 5.2 | 1.5 | 35 | 6.5 | 5.0 | .5  | 5.6 | 82  | 32 | 3  | 123   | 7.3 | 75  | 16  | 6   |
| May 26-28.....             | 9.5  | .04  | 4.0 | 1.0 | 5.2 | 1.8 | 15 | 7.6 | 4.5 | .1  | 3.5 | 844 | 14 | 2  | 61.5  | 6.2 | 40  | 17  | 6   |
| June 1-3.....              | 14   | .01  | 6.8 | 2.4 | 8.9 | 1.7 | 31 | 6.3 | 8.5 | .4  | 4.1 | 859 | 27 | 2  | 102   | 6.5 | 20  | 8   | --- |
| June 4-10.....             | 18.3 | .03  | 4.4 | 1.2 | 4.0 | 1.3 | 16 | 5.9 | 3.5 | .2  | 2.2 | 839 | 16 | 3  | 57.8  | 6.1 | 40  | --- | --- |
| June 11-20.....            | 13   | .32  | 6.0 | 2.7 | 8.7 | 1.4 | 30 | 7.2 | 9.0 | .2  | 2.6 | 83  | 26 | 1  | 100   | 7.1 | 65  | 8   | 7   |
| June 21-30.....            | 13   | .04  | 7.1 | 3.2 | 8.6 | 2.1 | 35 | 6.7 | 7.6 | .4  | 3.7 | 80  | 31 | 2  | 106   | 6.7 | 30  | --- | 4   |
| July 1-10.....             | 12   | .20  | 9.5 | 3.1 | 11  | 1.9 | 45 | 9.3 | 13  | .3  | 2.2 | 93  | 36 | 0  | 140   | 6.6 | 50  | --- | --- |
| July 11-20.....            | 8.4  | .03  | 10  | 4.1 | 14  | 2.3 | 36 | 6.1 | 12  | .4  | 2.3 | 101 | 43 | 0  | 182   | 7.0 | 20  | --- | 4   |
| July 21-23, 29-31          | 11   | .13  | 9.2 | 3.1 | 15  | 2.6 | 43 | 11  | 12  | .4  | 3.3 | 891 | 36 | 0  | 160   | 7.4 | 25  | 7   | 6   |
| July 24.....               | ---  | ---  | --- | --- | --- | --- | 7  | 2.4 | 6.0 | --- | --- | --- | 8  | 2  | 34.9  | 6.3 | --- | --- | --- |
| July 25-28.....            | 9.3  | .06  | 4.8 | 1.7 | 6.6 | 1.6 | 18 | 6.6 | 6.6 | .0  | 2.3 | 849 | 19 | 4  | 74.5  | 6.3 | 25  | --- | --- |
| Aug. 1-10.....             | 9.6  | .08  | 10  | 2.5 | 13  | 2.4 | 41 | 10  | 13  | .4  | 2.8 | 91  | 35 | 2  | 151   | 6.8 | 20  | 9   | 6   |
| Aug. 11-18.....            | 7.3  | .01  | 12  | 3.9 | 19  | 3.5 | 61 | 9.8 | 18  | .4  | 1.5 | 138 | 45 | 0  | 185   | 7.6 | 20  | 5   | 5   |
| Aug. 19-20.....            | 6.9  | .54  | 4.8 | 1.4 | 9.7 | 2.2 | 20 | 11  | 3.5 | --- | 2.7 | 850 | 18 | 0  | 182.0 | 7.0 | 30  | --- | --- |
| Aug. 21-30.....            | 10.2 | .06  | 5.2 | 2.4 | 4.5 | 2.7 | 17 | 15  | 14  | .2  | 3.7 | 87  | 21 | 13 | 162   | 6.8 | 50  | 11  | 11  |
| Sept. 1-10.....            | 11   | .19  | 6.8 | 3.1 | 9.0 | 2.2 | 31 | 6.2 | 9.1 | .4  | 1.7 | 58  | 30 | 4  | 102.6 | 6.8 | 50  | 11  | 11  |
| Sept. 11-20.....           | 13   | .08  | 12  | 1.4 | 14  | 2.9 | 42 | 8.5 | 13  | .3  | 3.4 | 100 | 35 | 2  | 149   | 7.1 | 35  | --- | 8   |
| Sept. 21-30.....           | 12   | .11  | 8.8 | 1.8 | 8.8 | 2.4 | 29 | 7.9 | 8.2 | .3  | 2.6 | 92  | 29 | 5  | 105   | 6.9 | 65  | 10  | 10  |
| Time-weighted average..... | 12   | 0.14 | 6.8 | 2.3 | 8.4 | 1.9 | 28 | 7.1 | 9.0 | 0.3 | 3.1 | 78  | 26 | 3  | 105   | --- | 34  | --- | --- |

a Calculated from determined constituents.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## CAPE FEAR RIVER BASIN--Continued

## NEW HOPE RIVER NEAR NEW HILL, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 6:30 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 64   | 41   | 42   | 51   | 49   | 54   | 68  | 67   | 74   | 76   | 73    |
| 2       | --   | 65   | 40   | 40   | 50   | 48   | 56   | 70  | 68   | 73   | 75   | 77    |
| 3       | --   | 65   | 43   | 39   | 49   | 48   | 57   | 68  | 69   | 72   | 76   | 75    |
| 4       | --   | 64   | 42   | 38   | 50   | 47   | 58   | 62  | 69   | 72   | 77   | 75    |
| 5       | --   | 63   | 43   | 39   | 52   | 46   | 60   | 58  | 70   | 74   | 75   | 73    |
| 6       | --   | 61   | 45   | 39   | 50   | 46   | 60   | 59  | 70   | 75   | 75   | 73    |
| 7       | --   | 59   | 47   | 42   | 49   | 46   | 58   | 58  | 69   | 75   | 72   | 73    |
| 8       | --   | 57   | 49   | 43   | 49   | 47   | 58   | 59  | 69   | 75   | 71   | 73    |
| 9       | --   | 55   | 49   | 42   | 50   | 46   | 57   | 61  | 68   | 77   | 72   | 73    |
| 10      | --   | 52   | 48   | 48   | 51   | 45   | 55   | 63  | 66   | 78   | 74   | 73    |
| 11      | --   | 49   | 46   | 44   | 51   | 45   | 55   | --  | 65   | 77   | 75   | 74    |
| 12      | --   | 50   | 49   | 44   | 49   | 47   | 59   | 64  | 66   | 76   | 77   | 74    |
| 13      | --   | 49   | 54   | 43   | 46   | 49   | --   | 65  | 68   | 76   | 79   | 74    |
| 14      | --   | 49   | 51   | 44   | 43   | 52   | 54   | 67  | 70   | 78   | 77   | 75    |
| 15      | --   | 46   | 52   | 40   | 41   | 54   | 52   | 68  | 72   | 79   | 77   | 74    |
| 16      | 60   | 53   | 52   | 39   | 42   | 55   | 52   | 68  | 74   | 77   | 77   | 74    |
| 17      | 60   | 52   | 53   | 37   | 42   | 54   | 35   | 68  | 75   | 78   | 77   | 75    |
| 18      | 62   | 50   | 52   | 34   | 42   | 53   | 57   | 68  | 76   | 78   | 76   | 74    |
| 19      | 62   | 49   | 51   | 34   | 45   | 54   | 62   | --  | 78   | 75   | 71   | 71    |
| 20      | 61   | 48   | 48   | 33   | 46   | 54   | 62   | --  | 76   | 74   | 69   | 71    |
| 21      | 61   | 53   | 50   | 35   | 43   | 52   | 65   | 68  | 73   | 75   | 68   | 71    |
| 22      | 64   | 49   | 51   | 38   | 41   | 52   | 66   | 68  | 74   | 76   | 69   | 72    |
| 23      | 63   | 46   | 54   | 47   | 42   | 50   | 68   | 70  | 74   | 77   | 69   | 72    |
| 24      | 63   | 43   | 56   | 43   | 43   | 51   | 68   | 71  | 73   | 77   | 69   | 71    |
| 25      | 62   | 41   | 53   | 42   | 46   | 52   | 69   | 73  | 74   | 71   | 66   | 67    |
| 26      | 61   | 41   | 48   | 42   | 52   | 51   | 69   | 70  | 73   | 71   | 66   | 66    |
| 27      | 60   | 41   | 45   | 44   | 56   | 51   | 69   | 70  | 73   | 72   | 67   | 66    |
| 28      | 60   | 40   | 44   | 47   | 55   | 53   | 69   | 68  | 73   | 72   | 68   | 62    |
| 29      | 60   | 40   | 43   | 49   | --   | 52   | 70   | 67  | 73   | 72   | 68   | 60    |
| 30      | 61   | 42   | 41   | 54   | --   | 52   | 66   | 66  | 74   | 78   | 69   | 60    |
| 31      | 62   | --   | 41   | 52   | --   | 53   | --   | 66  | --   | 75   | 71   | --    |
| Average | --   | 51   | 48   | 42   | 47   | 50   | 61   | 66  | 71   | 75   | 73   | 71    |

## CAPE FEAR RIVER BASIN--Continued

## DEEP RIVER AT RAMSEUR, N. C.

LOCATION.--At bridge on U. S. Highway 64 at Ramseur, Randolph County, and  $1\frac{1}{2}$  miles downstream from Sandy Creek.

DRAINAGE AREA.--346 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1947, October 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  | 32                   | 13                         | 0.02      | 9.1          | 2.5            | 20          | 3.5           | 44                              | 13                         | 19            | 0.1          | 1.9                        | 112                                                | 33                            | 0             | 171                                       | 6.7 | 20    |
| Nov. 15, .....     | 86                   | 16                         | .06       | 8.3          | 2.7            | 14          | 2.2           | 44                              | 13.5                       | 13            | .1           | 3.0                        | 101                                                | 32                            | 0             | 145                                       | 6.7 | 30    |
| Dec. 13, .....     | 73                   | 17                         | .08       | 9.0          | 2.9            | 25          | 2.5           | 50                              | 13                         | 24            | .1           | 4.3                        | 128                                                | 34                            | 0             | 204                                       | 6.7 | 25    |
| Jan. 15, 1957....  | 122                  | 20                         | .16       | 8.6          | 3.3            | 21          | 2.1           | 46                              | 11                         | 20            | .1           | 2.7                        | 123                                                | 35                            | 0             | 181                                       | 7.0 | 30    |
| Feb. 13, .....     | 332                  | 15                         | .01       | 5.8          | 1.6            | 7.1         | 1.6           | 27                              | 6.8                        | 5.7           | .0           | 1.9                        | 67                                                 | 21                            | 0             | 88.9                                      | 6.7 | 25    |
| Mar. 14, .....     | 253                  | 15                         | .01       | 6.8          | 2.2            | 12          | 1.5           | 34                              | 7.0                        | 12            | .1           | .3                         | 84                                                 | 26                            | 0             | 120                                       | 6.7 | 7     |
| Apr. 16, .....     | 227                  | 16                         | .02       | 6.0          | 1.8            | 9.7         | 1.6           | 34                              | 5.9                        | 8.4           | .1           | 2.3                        | 76                                                 | 23                            | 0             | 111                                       | 6.8 | 15    |
| May 15, .....      | 104                  | 17                         | .00       | 8.2          | 2.8            | 17          | 2.3           | 54                              | 5.8                        | 14            | .1           | .8                         | 100                                                | 32                            | 0             | 152                                       | 6.5 | 18    |
| June 14, .....     | 92                   | 16                         | .01       | 8.6          | 2.8            | 14          | 2.0           | 44                              | 6.2                        | 10            | .3           | 3.1                        | 96                                                 | 33                            | 0             | 140                                       | 6.4 | 18    |
| July 15, .....     | 17                   | 11                         | .02       | 8.8          | 3.2            | 8.6         | 2.4           | 46                              | 6.7                        | 7.0           | .7           | 1.5                        | 78                                                 | 35                            | 0             | 119                                       | 6.6 | 20    |
| Aug. 13, .....     | 64                   | 10                         | .02       | 8.5          | 2.8            | 17          | 2.8           | 40                              | 7.7                        | 18            | .0           | 3.1                        | 98                                                 | 33                            | 0             | 159                                       | 6.4 | 15    |
| Sept. 16, .....    | 38                   | 9.3                        | .02       | 8.8          | 2.3            | 19          | 3.1           | 48                              | 6.0                        | 20            | .2           | 2.6                        | 98                                                 | 31                            | 0             | 158                                       | 6.6 | 15    |



|                            |     |      |     |     |     |     |    |     |     |     |     |    |    |   |      |     |    |    |    |
|----------------------------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|------|-----|----|----|----|
| June 1-10, 1957            | 8.9 | 0.08 | 3.6 | 1.5 | 7.2 | 1.0 | 19 | 4.4 | 5.2 | 0.1 | 1.8 | 61 | 15 | 0 | 64.2 | 6.9 | 50 | -- | 7  |
| June 11-20.....            | 8.7 | .09  | 3.2 | 1.5 | 4.6 | .7  | 14 | 5.1 | 3.8 | .2  | 2.4 | 53 | 14 | 3 | 48.2 | 7.0 | 60 | -- | 10 |
| June 21-30.....            | 9.5 | .09  | 2.9 | 2.8 | 4.0 | .7  | 13 | 5.4 | 4.8 | .1  | 2.2 | 50 | 18 | 7 | 51.8 | 6.4 | 65 | -- | 11 |
| July 1-10.....             | 8.4 | .05  | 4.0 | 1.2 | 6.8 | .7  | 19 | 2.8 | 6.0 | .2  | 2.4 | 51 | 15 | 0 | 75.6 | 6.7 | 40 | 9  | 6  |
| July 11-20.....            | 9.7 | .03  | 4.8 | 1.7 | 7.2 | .7  | 23 | 3.0 | 7.5 | .2  | 2.6 | 63 | 19 | 0 | 79.0 | 6.7 | 40 | 9  | 5  |
| July 21-31.....            | 7.1 | .02  | 5.2 | 1.2 | 11  | 1.4 | 28 | 5.6 | 8.0 | .3  | 2.6 | 67 | 18 | 0 | 100  | 6.9 | 30 | 7  | 5  |
| Aug. 1-10.....             | 6.1 | .09  | 5.6 | 1.0 | 4.5 | 1.5 | 16 | 4.8 | 4.3 | .2  | 1.6 | 50 | 15 | 2 | 62.2 | 7.2 | 50 | -- | 7  |
| Aug. 11-20.....            | 6.5 | .09  | 4.0 | 1.2 | 8.7 | 1.4 | 16 | 3.2 | 4.6 | .1  | 1.8 | 50 | 17 | 4 | 71.0 | 6.7 | 38 | 6  | 2  |
| Aug. 21-31.....            | 6.7 | .07  | 4.0 | 1.6 | 8.5 | 1.7 | 16 | 3.0 | 4.8 | .2  | 1.8 | 50 | 17 | 4 | 71.0 | 6.7 | 38 | 6  | 2  |
| Sept. 1-10.....            | 5.8 | .07  | 2.4 | 1.6 | 4.7 | 1.3 | 14 | 3.0 | 6.8 | .1  | 1.8 | 60 | 13 | 1 | 57.5 | 6.3 | 35 | 6  | 5  |
| Sept. 11-20.....           | 7.7 | .18  | 5.1 | 1.4 | 5.8 | 1.1 | 13 | 3.4 | 5.5 | .2  | 2.7 | 57 | 14 | 4 | 59.3 | 6.9 | 75 | 7  | 6  |
| Sept. 21-30....            | 8.5 | .20  | 5.1 | .9  | 10  | 1.5 | 24 | 4.0 | 8.5 | .3  | 2.8 | 72 | 16 | 0 | 87.5 | 7.2 | 80 | 9  | 6  |
| Time-weighted average..... | 9.0 | 0.09 | 3.8 | 1.4 | 6.2 | 1.1 | 18 | 5.0 | 6.0 | 0.1 | 2.0 | 57 | 16 | 0 | 69.1 | --  | 42 | -- | -- |

a Calculated from determined constituents.

b Organic matter present; sum of mineral constituents, 40 parts per million.

c Organic matter present; sum of mineral constituents, 35 parts per million.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## CAPE FEAR RIVER BASIN--Continued

## CAPE FEAR RIVER NEAR ACME, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 (Once-daily measurement at approximately 9 a.m.)

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 61   | 45   | 42   | 43   | 43   | 45   | 64  | 59   | 63   | 83   | 74    |
| 2       | --   | 61   | 43   | 42   | 45   | 44   | 46   | 64  | 59   | 63   | 83   | 75    |
| 3       | --   | 61   | 43   | 40   | 43   | 43   | 47   | 64  | 59   | 63   | 83   | 76    |
| 4       | 65   | 61   | 42   | 40   | 45   | 41   | 48   | 58  | 60   | 63   | 85   | 77    |
| 5       | 65   | 61   | 42   | 39   | 45   | 39   | 49   | 56  | 60   | 63   | 84   | 78    |
| 6       | 65   | 60   | 42   | 39   | 43   | 40   | 49   | 56  | 58   | --   | 83   | 78    |
| 7       | 67   | 60   | 42   | 38   | 44   | 39   | 49   | 56  | 60   | 63   | 83   | 78    |
| 8       | 65   | 60   | 43   | 38   | 44   | 35   | 50   | 56  | 58   | --   | 83   | 78    |
| 9       | 61   | 58   | 43   | 38   | 44   | 37   | 50   | 57  | 55   | 63   | 83   | 78    |
| 10      | 67   | 58   | 43   | --   | 44   | 37   | 50   | 58  | 54   | 63   | 83   | 80    |
| 11      | 66   | 56   | 43   | 38   | 44   | 38   | 48   | 58  | --   | 63   | 83   | 80    |
| 12      | 64   | 55   | 44   | 39   | 44   | 39   | 49   | 58  | 53   | 82   | 83   | 80    |
| 13      | 66   | 55   | 45   | 39   | 43   | 40   | 47   | 58  | 53   | 82   | 83   | 81    |
| 14      | 64   | 53   | 45   | 39   | 42   | 40   | 46   | 58  | 53   | 83   | 83   | 81    |
| 15      | 66   | 53   | 48   | 38   | 42   | 42   | 45   | 59  | 55   | 83   | 83   | 81    |
| 16      | 65   | 53   | 49   | 37   | 41   | 43   | 46   | 58  | 55   | 85   | 83   | 81    |
| 17      | 64   | 52   | 49   | 37   | 40   | 43   | 47   | 58  | 57   | 85   | 84   | 81    |
| 18      | 65   | 52   | 51   | 37   | 40   | 44   | 48   | 58  | 58   | 86   | 84   | 80    |
| 19      | 65   | 52   | 49   | 37   | 40   | 49   | 48   | 59  | 60   | 86   | 84   | 80    |
| 20      | 64   | 52   | 50   | 37   | 39   | 48   | 48   | 59  | 60   | 86   | 84   | 78    |
| 21      | 63   | 52   | 49   | 37   | 39   | 47   | 49   | 60  | 60   | 84   | 80   | 79    |
| 22      | 63   | 50   | 49   | 38   | 39   | 45   | 50   | 60  | 61   | 84   | 79   | 80    |
| 23      | 62   | 49   | 49   | 38   | 39   | 45   | 52   | 61  | 61   | 84   | 79   | 80    |
| 24      | 60   | 49   | 49   | 38   | 39   | 45   | 54   | 61  | 61   | 84   | 77   | 80    |
| 25      | 60   | 47   | 48   | 38   | 39   | 45   | 54   | 62  | 62   | 83   | 76   | 80    |
| 26      | 60   | 47   | 47   | 38   | 40   | 45   | 56   | 62  | 62   | 81   | 76   | 80    |
| 27      | 60   | 46   | 47   | 37   | 40   | 45   | 57   | 62  | 62   | 81   | 74   | 79    |
| 28      | 60   | 46   | 46   | 38   | 41   | 44   | 64   | 62  | 62   | 83   | 72   | 76    |
| 29      | 60   | 45   | 46   | 39   | --   | 43   | 64   | 60  | 61   | 83   | 71   | 75    |
| 30      | 61   | 45   | 43   | 45   | --   | 43   | 64   | 60  | 62   | 82   | 71   | 75    |
| 31      | --   | --   | 42   | 43   | --   | 44   | --   | 59  | --   | 82   | 72   | --    |
| Average | 63   | 54   | 46   | 39   | 42   | 42   | 51   | 59  | 59   | 77   | 80   | 76    |

## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER NEAR CHINQUAPIN, N. C.

LOCATION.--At bridge on State Highway 41, 540 feet upstream from gaging station, 0.4 mile downstream from Muddy Creek and 1½ miles west of Chinquapin, Duplin County.

DRAINAGE AREA.--600 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1956 to September 1957.

Water temperatures: October 1950 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 163 ppm Aug. 11-20; minimum, 25 ppm Feb. 27-28.

Hardness: Maximum, 40 ppm Aug. 1-10; minimum, 13 ppm Feb. 27-28, Mar. 21-31.

Specific conductance: Maximum daily, 267 micromhos Aug. 13, 14; minimum daily, 46.6 micromhos Feb. 28.

Water temperatures: Maximum, 80°F on several days during July, August, and September; minimum, 37°F Jan. 3, 19, 20.

EXTREMES, 1950-51, 1956-57.--Dissolved solids: Maximum, 163 ppm Aug. 11-20, 1957; minimum, 25 ppm Feb. 27-28, 1957.

Hardness: Maximum, 40 ppm Aug. 1-10, 1957; minimum, 13 ppm Feb. 27-28, Mar. 21-31, 1957.

Specific conductance (1956-57): Maximum daily, 267 micromhos Aug. 13, 14, 1957; minimum daily, 46.6 micromhos Feb. 28, 1957.

Water temperatures: Maximum, 80°F July 1, 1951; minimum, 34°F Dec. 22, 1950.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of daily samples from October 1956 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH   | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |      |       | Unfiltered      | Filtered |
| Oct. 3-10, 1956    | 280                  | 11                         | 0.21      | 8.1          | 1.3            | 12          | 1.2           | 12                              | 13                         | 18            | 0.1          | 1.7                        | 107                                                | 25                            | 16            | 6.4  | 80    | 18              | 18       |
| Oct. 11-20.....    | 207                  | 9.9                        | .31       | 4.8          | .9             | 12          | 1.2           | 16                              | 8.9                        | 18            | .1           | 1.7                        | 100                                                | 23                            | 10            | 6.5  | 85    | 18              | 15       |
| Oct. 21-31.....    | 187                  | 11                         | .47       | 6.0          | 1.2            | 8.3         | 1.1           | 10                              | 8.0                        | 14            | .0           | 2.0                        | abst                                               | 20                            | 11            | 6.5  | 170   | 24              | 20       |
| Nov. 1-10.....     | 974                  | 12                         | .30       | 5.6          | 1.2            | 9.9         | 1.0           | 11                              | 5.2                        | 14            | .0           | 1.5                        | 92                                                 | 19                            | 7             | 6.5  | 100   | 22              | 20       |
| Nov. 11-20.....    | 350                  | 12                         | .30       | 5.6          | 1.2            | 9.9         | 1.0           | 11                              | 5.2                        | 14            | .0           | 1.5                        | 92                                                 | 19                            | 7             | 6.5  | 100   | 22              | 20       |
| Nov. 21-30.....    | 220                  | 14                         | .28       | 6.4          | .6             | 9.7         | .9            | 16                              | 3.4                        | 16            | .0           | 1.1                        | 87                                                 | 18                            | 5             | 6.7  | 85    | 20              | 16       |
| Dec. 1-10.....     | 261                  | 12                         | .24       | 5.6          | 1.4            | 9.0         | 1.2           | 14                              | 3.7                        | 16            | .1           | 1.9                        | 83                                                 | 20                            | 8             | 6.7  | 75    | 18              | 13       |
| Dec. 11-20.....    | 228                  | 11                         | .42       | 5.9          | .8             | 9.8         | 1.0           | 16                              | 3.5                        | 17            | .0           | 1.9                        | 91                                                 | 18                            | 5             | 6.8  | 110   | 20              | 17       |
| Dec. 21-31.....    | 399                  | 11                         | .50       | 5.2          | .9             | 8.8         | 1.0           | 13                              | 3.7                        | 16            | .0           | .0                         | 89                                                 | 17                            | 6             | 6.2  | 140   | 22              | 19       |
| Jan. 1-10, 1957    | 236                  | 9.7                        | .14       | 6.0          | .7             | 9.1         | 1.0           | 12                              | 3.8                        | 15            | .0           | .9                         | 71                                                 | 18                            | 8             | 6.1  | 85    | 10              | 10       |
| Jan. 11-20.....    | 227                  | 8.8                        | .12       | 5.6          | .2             | 10          | .8            | 14                              | 2.3                        | 15            | .0           | 1.3                        | 67                                                 | 15                            | 5             | 6.1  | 85    | 10              | 10       |
| Jan. 21-31.....    | 485                  | 8.1                        | .15       | 5.6          | .6             | 7.5         | .9            | 12                              | 2.4                        | 12            | .0           | 1.3                        | 67                                                 | 13                            | 5             | 6.7  | 50    | 15              | 12       |
| Feb. 1-10.....     | 548                  | 7.2                        | .02       | 6.4          | .5             | 6.9         | .5            | 10                              | 3.6                        | 14            | .0           | 1.6                        | 69                                                 | 18                            | 10            | 6.3  | 80    | 13              | 12       |
| Feb. 11-19.....    | 387                  | 6.8                        | .02       | 5.6          | 1.9            | 8.2         | .4            | 12                              | 4.6                        | 18            | .2           | 1.1                        | 75                                                 | 22                            | 12            | 10.2 | 5.9   | 65              | 12       |
| Feb. 20-26.....    | 363                  | 5.7                        | .01       | 4.4          | 2.2            | 7.6         | .4            | 10                              | 5.2                        | 17            | .1           | .7                         | 71                                                 | 20                            | 12            | 92.7 | 5.7   | 50              | 11       |
| Feb. 27-28.....    | 837                  | 3.7                        | .08       | 3.2          | 1.2            | 7.7         | 1.1           | 6                               | 6.6                        | 4.5           | --           | --                         | b25                                                | 13                            | 8             | 47.9 | 5.4   | 60              | --       |
| Mar. 1-10.....     | 173                  | 5.9                        | .09       | 4.0          | .9             | 5.8         | 1.0           | 8                               | 7.0                        | 8.5           | .2           | 1.5                        | 57                                                 | 14                            | 7             | 64.7 | 6.0   | 70              | 13       |
| Mar. 11-20.....    | 1,350                | 3.7                        | .14       | 4.8          | .7             | 5.5         | 1.1           | 8                               | 5.7                        | 10            | .1           | 1.8                        | 56                                                 | 14                            | 8             | 70.2 | 5.9   | 16              | 15       |
| Mar. 21-31.....    | 1,260                | 3.8                        | .13       | 3.6          | 1.0            | 6.2         | 1.0           | 10                              | 3.9                        | 8.2           | .3           | 1.5                        | 35                                                 | 13                            | 5             | 64.6 | 6.0   | 90              | --       |

a Organic matter present; sum of mineral constituents 61 parts per million.

b Calculated from determined constituents.



## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER NEAR CHINQUAPIN, N. C.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) (Fe) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH   | Color | Oxygen consumed |          |
|-----------------------|----------------------|---------------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------|-------|-----------------|----------|
|                       |                      |                                 |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |      |       | Unfiltered      | Filtered |
| Apr. 1-10, 1957       | 690                  | 4.2                             | 0.23      | 5.2          | 0.2            | 7.8         | 1.1           | 14                              | 3.4                        | 12            | 0.2          | 2.0                        | 65                                                 | 14                            | 3             | 75.6 | 100   | 15              | 15       |
| Apr. 11-20, 1957      | 438                  | 5.6                             | .39       | 5.6          | .7             | 9.1         | 1.2           | 16                              | 3.2                        | 14            | .2           | 3.5                        | 71                                                 | 17                            | 4             | 86.9 | 6.3   | 85              | 13       |
| Apr. 21-30, 1957      | 195                  | 7.7                             | .51       | 7.2          | 1.0            | 11          | .8            | 22                              | 3.1                        | 17            | .2           | 2.7                        | 90                                                 | 22                            | 4             | 105  | 6.2   | 120             | --       |
| May 1-10, 1957        | 196                  | 8.8                             | .56       | 6.4          | 1.9            | 13          | .9            | 20                              | 5.9                        | 22            | .1           | .9                         | 89                                                 | 24                            | 8             | 112  | 6.7   | 100             | 13       |
| May 11-20, 1957       | 212                  | 8.8                             | .50       | 5.6          | 1.5            | 12          | .7            | 16                              | 3.9                        | 19            | .1           | 1.2                        | 83                                                 | 20                            | 7             | 100  | 6.6   | 110             | 16       |
| May 21-31, 1957       | 173                  | 8.4                             | .35       | 7.6          | .2             | 12          | .8            | 16                              | 4.5                        | 21            | .2           | .9                         | 83                                                 | 20                            | 7             | 110  | 5.9   | 100             | 17       |
| June 1-10, 1957       | 478                  | 5.9                             | .33       | 3.7          | 1.2            | 2.8         | .4            | 6                               | 6.1                        | 6.0           | .3           | 2.9                        | c78                                                | 14                            | 9             | 58.2 | 5.9   | 90              | 22       |
| June 11-20, 1957      | 1,450                | 7.6                             | .39       | 5.1          | .6             | 5.0         | .3            | 10                              | 4.2                        | 9.5           | .2           | 2.6                        | d110                                               | 15                            | 7             | 69.1 | 6.1   | 100             | 24       |
| June 21-30, 1957      | 263                  | 9.4                             | .24       | 6.7          | 2.4            | 10          | .8            | 24                              | 4.8                        | 14            | .1           | 2.0                        | 84                                                 | 27                            | 7             | 100  | 6.6   | 90              | --       |
| July 1-10, 1957       | 172                  | 8.3                             | .17       | 8.0          | 1.7            | 13          | .5            | 14                              | 9.4                        | 18            | .2           | 1.8                        | 93                                                 | 27                            | 16            | 118  | 7.1   | 100             | 15       |
| July 11-20, 1957      | 115                  | 7.7                             | .16       | 6.0          | 3.2            | 22          | .7            | 24                              | 5.7                        | 31            | .2           | 1.9                        | 112                                                | 28                            | 8             | 165  | 7.0   | 100             | 15       |
| July 21-31, 1957      | 61                   | 6.1                             | .15       | 8.8          | 1.7            | 28          | 1.0           | 25                              | 5.6                        | 49            | .1           | 1.6                        | 138                                                | 29                            | 9             | 221  | 7.0   | 100             | 11       |
| Aug. 1-10, 1957       | 31                   | 5.8                             | .16       | 14           | 1.4            | 33          | 1.6           | 40                              | 7.1                        | 52            | .2           | .9                         | 151                                                | 40                            | 7             | 242  | 7.2   | 50              | 8        |
| Aug. 11-20, 1957      | 22                   | 6.9                             | .17       | 10           | .3             | 33          | 1.5           | 16                              | 14                         | 51            | .2           | 1.0                        | 163                                                | 26                            | 13            | 226  | 6.6   | 55              | 8        |
| Aug. 21-31, 1957      | 94                   | 9.1                             | .10       | 10           | 1.3            | 19          | 1.4           | 14                              | 22                         | 26            | .2           | 1.0                        | 106                                                | 31                            | 20            | 163  | 6.5   | 40              | 8        |
| Sept. 1-10, 1957      | 227                  | 8.3                             | .26       | 6.3          | 2.0            | 18          | 1.0           | 12                              | 6.3                        | 30            | .2           | 2.1                        | 115                                                | 24                            | 14            | 150  | 6.5   | 140             | 16       |
| Sept. 11-20, 1957     | 299                  | 9.4                             | .12       | 6.7          | 1.2            | 8.5         | 1.0           | 9                               | 9.3                        | 14            | .2           | 2.0                        | e103                                               | 21                            | 14            | 94.0 | 6.2   | 130             | 17       |
| Sept. 21-30, 1957     | 440                  | 6.9                             | .07       | 5.2          | 1.7            | 6.0         | 1.1           | 8                               | 12                         | 10            | .2           | 2.0                        | f85                                                | 20                            | 13            | 78.2 | 6.2   | 110             | 16       |
| Weighted average..... | 438                  | 7.0                             | 0.23      | 5.0          | 1.0            | 7.3         | 0.8           | 11                              | 5.1                        | 12            | 0.1          | 1.7                        | 66                                                 | 17                            | 8             | 80.0 | --    | 90              | 12       |

c Organic matter present; sum of mineral constituents 33 parts per million.  
d Organic matter present; sum of mineral constituents 44 parts per million.  
e Organic matter present; sum of mineral constituents 57 parts per million.  
f Organic matter present; sum of mineral constituents 49 parts per million.

## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER NEAR CHINQUAPIN, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 8 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | --   | 40   | 40   | 52   | 55   | 58   | 70  | 70   | 70   | 79   | --    |
| 2       | 68   | --   | 42   | 39   | 54   | 52   | 59   | 69  | 70   | 71   | 79   | 79    |
| 3       | 69   | --   | 44   | 37   | 55   | --   | 63   | 69  | 70   | 72   | 79   | 79    |
| 4       | 69   | --   | 50   | 50   | 56   | 46   | 63   | 60  | 70   | 72   | 79   | 79    |
| 5       | 72   | 63   | 48   | 50   | 56   | 47   | 63   | 58  | 70   | 72   | 79   | 79    |
| 6       | 70   | 61   | 54   | 45   | 55   | 47   | 64   | 59  | 70   | 72   | 79   | 79    |
| 7       | 70   | 53   | 54   | 45   | 56   | 47   | 64   | 59  | --   | 78   | 80   | 79    |
| 8       | 71   | --   | --   | 45   | 56   | 46   | 64   | 60  | 69   | 78   | 80   | 79    |
| 9       | 64   | --   | 51   | 45   | 57   | 46   | 64   | 62  | 69   | 78   | 80   | 79    |
| 10      | 65   | --   | 51   | 46   | 56   | 46   | 65   | 64  | 68   | 78   | 79   | 79    |
| 11      | 65   | 50   | 53   | 46   | 56   | 48   | 65   | 68  | 68   | 79   | 79   | 78    |
| 12      | 62   | 54   | 53   | 48   | 52   | 55   | 66   | 68  | 69   | 79   | 79   | 79    |
| 13      | 63   | 56   | 60   | --   | 49   | 55   | 57   | 69  | 70   | 79   | 79   | 77    |
| 14      | 65   | 55   | 59   | --   | 45   | 59   | 57   | 69  | 70   | 79   | 79   | 79    |
| 15      | 66   | 56   | 59   | 40   | 45   | 60   | 56   | 69  | 70   | 79   | 79   | 80    |
| 16      | 66   | --   | 59   | 39   | 45   | 60   | 56   | 70  | 70   | 79   | 79   | 79    |
| 17      | 65   | --   | 59   | 38   | 46   | 60   | 59   | 71  | 70   | 79   | 74   | 78    |
| 18      | 63   | 54   | 59   | 38   | 47   | 60   | 59   | 70  | 71   | 79   | 75   | 80    |
| 19      | 66   | 54   | 52   | 37   | 47   | 59   | 60   | 70  | 70   | 79   | 75   | 79    |
| 20      | 63   | 56   | 61   | 37   | 45   | 59   | 65   | 70  | 71   | 79   | 76   | 78    |
| 21      | 62   | 51   | 61   | 43   | 44   | 54   | 65   | 69  | 71   | 79   | 79   | 68    |
| 22      | 65   | 50   | 60   | 45   | 45   | 54   | 66   | 70  | 71   | 79   | 79   | 67    |
| 23      | 62   | 49   | 60   | 45   | 46   | 55   | 66   | 70  | 71   | 79   | 79   | 66    |
| 24      | 62   | --   | 59   | 45   | 47   | 55   | 67   | 70  | 70   | 79   | 79   | 67    |
| 25      | 63   | --   | 59   | 46   | --   | 57   | 68   | 70  | 70   | 79   | 79   | 67    |
| 26      | 64   | 43   | 50   | 49   | 56   | 57   | 68   | 69  | 71   | 79   | 79   | 68    |
| 27      | 62   | 40   | 47   | 49   | 57   | 58   | 69   | 69  | 71   | 80   | 79   | 68    |
| 28      | 62   | 42   | 46   | 50   | 57   | 58   | 70   | 70  | 72   | 80   | 78   | 66    |
| 29      | 64   | 46   | 45   | 52   | --   | 58   | 70   | 70  | 74   | 80   | 79   | 67    |
| 30      | 65   | 45   | 45   | 56   | --   | 56   | 70   | 69  | 74   | 80   | 78   | 66    |
| 31      | 65   | --   | 46   | 56   | --   | 56   | --   | 69  | --   | 80   | 80   | --    |
| Average | 65   | --   | 53   | 45   | 51   | 54   | 64   | 67  | 70   | 78   | 79   | 75    |

## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER AT CASTLE HAYNE, N. C.

LOCATION --At bridge on U. S. Highway 117, 0.8 mile north of Castle Hayne, New Hanover County, and 4.7 miles upstream from Prince George Creek. DRAINAGE AREA --1,499 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES: 1956-57 --Dissolved solids: Maximum 114 ppm Aug. 11, 14-20; minimum, 63 ppm June 11-20.

Hardness: Maximum 33 ppm Aug. 12-13; minimum 17 ppm June 21-30.

Specific conductance: Maximum daily, 187 micromhos Aug. 12; minimum daily, 60.0 micromhos June 25.

Water temperatures: Maximum 48° F Aug. 2; minimum, 45° F Dec. 27-28.

EXTREMES: 1954-57 --Dissolved solids: Maximum 1,530 ppm Oct. 21-22, 26-27, 29, 1954; minimum, 63 ppm June 11-20, 1957.

Hardness: Maximum 516 ppm Oct. 15, 1954; minimum, 10 ppm Sept. 21-30, 1955.

Specific conductance: Maximum daily, 5,060 micromhos Oct. 23, 24, 1954; minimum daily, 34.5 micromhos Sept. 25, 1955.

Water temperatures: Maximum daily, 5,060 micromhos Oct. 23, 24, 1954; minimum, 40° F Dec. 21, 1955.

REMARKS --Values reported for sums are calculated from determined constituents. Records of suspended matter of composite samples and records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                   | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color | Oxygen<br>consumed |               |
|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|-------------------|--------------------------------------------------------|-----|-------|--------------------|---------------|
|                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium                          | Non-<br>carbonate |                                                        |     |       | Unfil-<br>tered    | Fil-<br>tered |
| Oct. 1-10, 1956    | 6.9                           | 0.22         | 7.2             | 1.2               | 9.7            | 1.0              | 19                                 | 6.0                           | 14               | 0.1             | 0.9                           | 90                                                                  | 23                               | 7                 | 98.0                                                   | 6.6 | 110   | 21                 | 20            |
| Oct. 11-20         | 7.3                           | .22          | 7.9             | .9                | 9.1            | 1.2              | 18                                 | 7.6                           | 13               | .1              | 1.2                           | 91                                                                  | 23                               | 8                 | 98.2                                                   | 6.5 | 110   | 22                 | 19            |
| Oct. 21-31         | 8.0                           | .22          | 8.2             | 1.1               | 7.7            | 1.2              | 15                                 | 9.6                           | 12               | .1              | 1.3                           | 99                                                                  | 25                               | 13                | 91.4                                                   | 6.5 | 140   | 26                 | 25            |
| Nov. 1-10          | 8.6                           | .34          | 6.2             | 1.1               | 6.0            | 1.1              | 13                                 | 6.8                           | 9.9              | .0              | .4                            | 95                                                                  | 20                               | 9                 | 78.9                                                   | 6.0 | 180   | 31                 | 28            |
| Nov. 11-20         | 9.7                           | .39          | 6.4             | 1.2               | 6.9            | .8               | 15                                 | 6.8                           | 12               | .0              | .7                            | 100                                                                 | 21                               | 9                 | 84.7                                                   | 6.0 | 180   | 35                 | 28            |
| Nov. 21-30         | 10                            | .32          | 7.6             | .7                | 7.8            | .8               | 16                                 | 5.2                           | 13               | .0              | .5                            | 99                                                                  | 22                               | 9                 | 91.3                                                   | 6.7 | 170   | 28                 | 24            |
| Dec. 1-10          | 11                            | .41          | 7.2             | 1.1               | 7.5            | .7               | 18                                 | 5.0                           | 14               | .0              | .2                            | 98                                                                  | 22                               | 8                 | 91.7                                                   | 6.8 | 150   | 30                 | 22            |
| Dec. 11-20         | 11                            | .30          | 8.4             | .8                | 7.4            | .7               | 21                                 | 3.4                           | 12               | .0              | .1                            | 92                                                                  | 25                               | 8                 | 93.0                                                   | 6.9 | 140   | 24                 | 21            |
| Dec. 21-31         | 10                            | .23          | 9.1             | .8                | 7.5            | .7               | 24                                 | 4.3                           | 12               | .1              | .1                            | 90                                                                  | 26                               | 7                 | 102                                                    | 6.9 | 110   | 23                 | 19            |
| Jan. 1-10, 1957    | 9.7                           | .29          | 7.6             | .7                | 8.2            | .9               | 20                                 | 4.3                           | 13               | .0              | .9                            | 85                                                                  | 22                               | 6                 | 98.4                                                   | 7.0 | 110   | 20                 | 19            |
| Jan. 11-20         | 9.9                           | .35          | 7.2             | .9                | 8.4            | 1.2              | 16                                 | 3.6                           | 14               | .0              | 3.6                           | 88                                                                  | 27                               | 9                 | 99.2                                                   | 6.8 | 110   | 25                 | 17            |
| Jan. 21-31         | 8.3                           | .21          | 7.5             | 1.1               | 7.7            | 1.1              | 20                                 | 5.0                           | 12               | .0              | .9                            | 81                                                                  | 23                               | 7                 | 97.3                                                   | 6.3 | 110   | 20                 | 16            |
| Feb. 1-10          | 7.7                           | .11          | 6.8             | 1.0               | 7.3            | .9               | 15                                 | 5.3                           | 11               | .0              | 2.3                           | 83                                                                  | 21                               | 9                 | 86.1                                                   | 6.6 | 100   | 19                 | 19            |
| Feb. 11-20         | 7.0                           | .21          | 6.8             | 1.0               | 7.6            | 1.9              | 15                                 | 2.8                           | 12               | .0              | 2.6                           | 84                                                                  | 21                               | 9                 | 84.4                                                   | 6.6 | 110   | 23                 | 15            |
| Feb. 21-31         | 18                            | .07          | 6.8             | .6                | 6.9            | .8               | 15                                 | 2.8                           | 12               | .0              | 2.6                           | 84                                                                  | 21                               | 9                 | 84.4                                                   | 6.6 | 110   | 23                 | 15            |
| Mar. 1-10          | 5.5                           | .07          | 5.2             | 1.2               | 4.8            | .8               | 13                                 | 7.3                           | 8.5              | .2              | 2.1                           | 68                                                                  | 18                               | 11                | 68.3                                                   | 6.0 | 110   | 20                 | 18            |
| Mar. 11-20         | 4.3                           | .14          | 6.0             | 1.2               | 4.8            | .7               | 12                                 | 4.9                           | 9.5              | .2              | 2.5                           | 68                                                                  | 20                               | 10                | 73.5                                                   | 6.3 | 120   | 22                 | 18            |
| Mar. 21-31         | 3.8                           | .16          | 6.0             | 1.5               | 4.7            | .7               | 12                                 | 7.4                           | 9.0              | .3              | 2.6                           | 68                                                                  | 21                               | 11                | 74.6                                                   | 6.3 | 120   | 23                 | 20            |

|                             |     |      |     |     |     |     |    |     |      |     |     |     |    |    |    |      |     |     |    |    |
|-----------------------------|-----|------|-----|-----|-----|-----|----|-----|------|-----|-----|-----|----|----|----|------|-----|-----|----|----|
| Apr. 1-10, 1957             | 4.6 | 0.24 | 6.0 | 1.0 | 6.9 | 0.6 | 14 | 4.0 | 9.5  | 0.2 | 2.6 | 75  | 42 | 19 | 8  | 69.4 | 6.5 | 110 | -- | 21 |
| Apr. 11-20, ....            | 5.1 | .25  | 6.4 | 1.2 | 7.5 | .8  | 16 | 3.4 | 11   | .3  | 3.1 | 83  | 47 | 21 | 8  | 77.4 | 6.5 | 130 | -- | 22 |
| Apr. 21-30, ....            | 5.3 | .31  | 6.4 | 1.0 | 7.5 | .8  | 18 | 3.2 | 10   | .2  | 2.7 | 81  | 47 | 20 | 5  | 78.6 | 6.2 | 110 | -- | 21 |
| May 1-10, ....              | 5.4 | .31  | 6.0 | 1.3 | 6.5 | .4  | 20 | 4.0 | 11   | .2  | 1.5 | 75  | 46 | 23 | 7  | 80.0 | 6.3 | 140 | 21 | 17 |
| May 11-20, ....             | 5.8 | .23  | 6.8 | 1.7 | 7.6 | .5  | 21 | 5.1 | 13   | .2  | 1.0 | 78  | 52 | 24 | 7  | 89.0 | 6.7 | 160 | 21 | 17 |
| May 21-31, ....             | 6.3 | .28  | 7.6 | 1.7 | 8.7 | .6  | 23 | 4.2 | 14   | .2  | .8  | 82  | 56 | 26 | 7  | 97.0 | 6.5 | 140 | 18 | 17 |
| June 1-10, ....             | 6.9 | .22  | 7.7 | 1.6 | 8.1 | .5  | 24 | 4.2 | 15   | .0  | 3.1 | 67  | 60 | 26 | 6  | 105  | 6.8 | 120 | 15 | 14 |
| June 11-20, ....            | 6.2 | .37  | 5.2 | 1.5 | 5.1 | .6  | 13 | 6.5 | 18.8 | .1  | 3.5 | 63  | 44 | 19 | 8  | 70.5 | 6.4 | 190 | 19 | 18 |
| June 21-30, ....            | 5.8 | .34  | 5.4 | .9  | 5.1 | .5  | 12 | 3.9 | 6.8  | .1  | 3.7 | 65  | 39 | 17 | 7  | 64.2 | 6.6 | 200 | 21 | 20 |
| July 1-10, ....             | 6.4 | .18  | 4.0 | 2.9 | 4.9 | .2  | 16 | 2.1 | 8.0  | .2  | 3.7 | 82  | 41 | 22 | 9  | 67.1 | 6.8 | 200 | 30 | 24 |
| July 11-20, ....            | 6.2 | .16  | 7.6 | 1.2 | 5.8 | .3  | 19 | 2.4 | 9.0  | .2  | 3.7 | 87  | 46 | 24 | 9  | 74.4 | 6.9 | 200 | 29 | 23 |
| July 21-31, ....            | 6.1 | .16  | 7.6 | 1.0 | 6.0 | .3  | 18 | 3.5 | 9.5  | .2  | 3.7 | 89  | 47 | 23 | 8  | 77.9 | 7.0 | 160 | 28 | 22 |
| Aug. 1-10, ....             | 6.9 | .18  | 8.8 | 1.2 | 8.8 | .6  | 19 | 4.6 | 12   | .0  | 1.2 | 90  | 53 | 27 | 11 | 94.1 | 6.3 | 160 | 23 | 20 |
| Aug. 11-14-20, ..           | 6.7 | .20  | 8.1 | 2.9 | 15  | 1.0 | 21 | 4.9 | 25   | .0  | 1.0 | 114 | 73 | 32 | 11 | 142  | 6.3 | 160 | 25 | 20 |
| Aug. 12-13, ....            | 6.4 | .29  | 9.1 | 2.6 | 21  | 1.0 | 19 | 5.3 | 37   | .0  | 2.4 | 108 | 94 | 33 | 18 | 178  | 6.3 | 160 | -- | -- |
| Aug. 21-31, ....            | 6.7 | .14  | 9.2 | 2.2 | 14  | .7  | 21 | 14  | 24   | .0  | 1.8 | 107 | 83 | 32 | 15 | 135  | 6.4 | 140 | 23 | 20 |
| Sept. 1-10, ....            | 6.7 | .13  | 10  | .7  | 9.5 | .5  | 22 | 4.2 | 14   | .3  | 3.1 | 103 | 60 | 28 | 10 | 103  | 6.8 | 120 | -- | 16 |
| Sept. 11-20, ....           | 4.2 | .02  | 10  | 1.6 | 12  | 1.1 | 22 | 6.7 | 20   | .1  | 1.3 | 95  | 68 | 32 | 0  | 129  | 6.3 | 80  | 15 | 12 |
| Sept. 21-30, ....           | 4.8 | .09  | 8.1 | 2.7 | 11  | 1.0 | 18 | 13  | 18   | .2  | 1.4 | 100 | 69 | 31 | 17 | 126  | 6.1 | 80  | 12 | 12 |
| Time-weighted average, .... | 7.3 | 0.24 | 7.2 | 1.3 | 7.8 | 0.8 | 18 | 5.5 | 13   | 0.1 | 1.9 | 85  | 53 | 23 | 9  | 91.2 | --  | 140 | 23 | 20 |

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER AT CASTLE HAYNE, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 6 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 74   | 84   | --   | --   | 58   | 51   | 58   | 80  | 76   | 79   | 80   | 80    |
| 2       | 74   | 72   | 51   | 47   | 50   | 51   | 57   | 63  | 76   | 79   | 86   | 81    |
| 3       | 74   | 84   | 51   | 48   | 51   | 52   | 57   | 63  | 76   | 79   | 80   | 81    |
| 4       | 74   | 75   | 52   | 48   | 52   | 52   | 56   | 63  | 77   | 79   | 80   | 80    |
| 5       | 74   | 75   | 52   | 48   | --   | 52   | 56   | 64  | 78   | 80   | 80   | 81    |
| 6       | 75   | 76   | 50   | 49   | 53   | 52   | 56   | 64  | 78   | 80   | 80   | 80    |
| 7       | 74   | 67   | 51   | 49   | 53   | 52   | 56   | --  | 78   | 80   | 80   | 81    |
| 8       | 74   | 69   | 50   | 50   | 54   | 52   | 56   | 63  | 79   | 80   | 80   | 80    |
| 9       | 75   | 68   | 50   | --   | 54   | 52   | 58   | 71  | 79   | 80   | 80   | 81    |
| 10      | 74   | 68   | 50   | 50   | 54   | 52   | 58   | 68  | 79   | 80   | 80   | 82    |
| 11      | 74   | 68   | 50   | 50   | 55   | 52   | 58   | 69  | 79   | 80   | 80   | 81    |
| 12      | 74   | 67   | 50   | 50   | 54   | 53   | 59   | 69  | 79   | 80   | 80   | 83    |
| 13      | 74   | 67   | 50   | 50   | 54   | 53   | 66   | 70  | 79   | 80   | 81   | 83    |
| 14      | 74   | 67   | 50   | 50   | 53   | 53   | 59   | 70  | 79   | 80   | 81   | 83    |
| 15      | 73   | 67   | 49   | 49   | 52   | 53   | 58   | 71  | 79   | 80   | 80   | 82    |
| 16      | 73   | 67   | 49   | 50   | 53   | 53   | 60   | 71  | 79   | 80   | 81   | 82    |
| 17      | 73   | 65   | 49   | --   | 52   | 54   | 60   | 72  | 79   | 80   | 81   | 81    |
| 18      | 73   | 68   | 49   | --   | 52   | 54   | 60   | 72  | 79   | 80   | 81   | 81    |
| 19      | 73   | 65   | 48   | 49   | 52   | 54   | 60   | 73  | 79   | 80   | 81   | 82    |
| 20      | 73   | 65   | 47   | 48   | 52   | 54   | 61   | 77  | 79   | 80   | 81   | 83    |
| 21      | 72   | 65   | 48   | 48   | 52   | 54   | 61   | 73  | 79   | 80   | 81   | 83    |
| 22      | 73   | 62   | 48   | 49   | 52   | 54   | 61   | 72  | 79   | 80   | 80   | 82    |
| 23      | 72   | 64   | 47   | 49   | 52   | 54   | 61   | 75  | 79   | 80   | 81   | 82    |
| 24      | 73   | 63   | 46   | 48   | 52   | 54   | 61   | --  | 79   | 80   | 80   | 81    |
| 25      | 73   | 62   | 46   | 49   | 52   | 54   | 62   | --  | 79   | 80   | 79   | 80    |
| 26      | --   | 61   | 46   | 49   | 52   | 54   | 61   | --  | 79   | 80   | 79   | 80    |
| 27      | --   | 60   | 45   | 49   | 52   | 55   | 61   | 76  | 79   | 81   | 79   | 79    |
| 28      | --   | 59   | 45   | 49   | 52   | 55   | 62   | 78  | 79   | 80   | 79   | 78    |
| 29      | 72   | 59   | 46   | 49   | --   | 55   | 62   | 77  | 79   | 80   | 80   | 77    |
| 30      | 72   | 58   | 46   | 49   | --   | 55   | 62   | --  | 79   | 80   | 81   | 75    |
| 31      | 73   | --   | 46   | 49   | --   | 55   | --   | --  | --   | --   | 79   | --    |
| Average | 73   | 67   | 49   | 49   | 53   | 53   | 59   | 71  | 79   | 80   | 80   | 81    |

## CAPE FEAR RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN CAPE FEAR RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                  | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|-------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
|                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-carbon-<br>ate |                                                             |     |       |
|                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| HAW RIVER NEAR BENAJA               |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 20, 1957....                   | 112                | 17                            | 0.02         | 4.8                  | 0.8                    | 4.6            | 1.5                   | 29                                      | 2.3                           | 2.7              | 0.0             | 0.5                           | a48                                                                 | 15                               | 0                  | 64.5                                                        | 7.1 | 5     |
| Sept. 6.....                        | 20.3               | 22                            | .07          | 7.1                  | 2.3                    | 6.8            | 2.2                   | 40                                      | 1.2                           | 3.8              | .2              | 3.4                           | a69                                                                 | 27                               | 0                  | 96.0                                                        | 6.7 | 10    |
| REEDY FORK NEAR OAK RIDGE           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 21, 1957....                   | b14                | 18                            | 0.02         | 4.0                  | 1.3                    | 4.9            | 1.6                   | 29                                      | 2.7                           | 2.5              | 0.0             | 0.9                           | a50                                                                 | 15                               | 0                  | 65.0                                                        | 6.8 | 18    |
| Sept. 3.....                        | 3.67               | 23                            | .20          | 5.6                  | 2.4                    | 5.4            | 1.9                   | 39                                      | .2                            | 2.9              | .1              | .9                            | a62                                                                 | 24                               | 0                  | 79.0                                                        | 6.9 | 20    |
| REEDY FORK NEAR GIBSONVILLE         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 20, 1957....                   | b76                | 14                            | 0.01         | 6.7                  | 0.4                    | 4.5            | 1.6                   | 30                                      | 2.5                           | 2.0              | 0.1             | 0.5                           | a47                                                                 | 18                               | 0                  | 65.8                                                        | 7.0 | 4     |
| Sept. 5.....                        | 5.66               | 15                            | .06          | 7.0                  | 2.1                    | 4.5            | 1.8                   | 43                                      | .3                            | 1.5              | .1              | .3                            | a54                                                                 | 26                               | 0                  | 82.1                                                        | 6.8 | 12    |
| SOUTH BUFFALO CREEK NEAR GREENSBORO |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 20, 1957....                   | 36.2               | 17                            | 0.03         | 13                   | 4.6                    | 33             | 4.5                   | 41                                      | 16                            | 48               | 1.3             | 9.3                           | a167                                                                | 52                               | 18                 | 302                                                         | 6.3 | 5     |
| Sept. 5.....                        | 7.18               | 31                            | .21          | 26                   | 7.0                    | 275            | 17                    | 203                                     | 19                            | 402              |                 | .6                            | a878                                                                | 94                               | 0                  | 1,690                                                       | 6.8 |       |
| NORTH BUFFALO CREEK NEAR GREENSBORO |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 20, 1957....                   | b40                | 22                            | 0.05         | 13                   | 0.7                    | 218            | 11                    | c479                                    | 47                            | 57               |                 | 1.1                           | a613                                                                | 36                               | 0                  | 987                                                         | 9.9 | 18    |
| Sept. 5.....                        | 29.3               | 19                            | .17          | 14                   | 4.7                    | 428            | 12                    | 878                                     | 33                            | 140              | 0.1             | .7                            | a1,080                                                              | 55                               |                    | 1,820                                                       | 7.9 |       |
| STONY CREEK NEAR BURLINGTON         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 16, 1957....                   | b29                | 19                            | 0.01         | 7.6                  | 2.7                    | 6.1            | 1.1                   | 46                                      | 4.8                           | 3.4              | 0.0             | 0.1                           | a68                                                                 | 30                               | 0                  | 95.6                                                        | 7.2 | 8     |
| Sept. 6.....                        | 1.08               | 20                            | .03          | 8.2                  | 4.2                    | 4.6            | 1.6                   | 48                                      | 6.1                           | 2.8              | .0              | .4                            | a72                                                                 | 38                               | 0                  | 99.8                                                        | 6.8 | 17    |
| HAW RIVER NEAR PITTSBORO            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 4, 1957....                    | b2,200             |                               |              | 5.5                  | 2.3                    | 7.6            | 1.2                   | 27                                      | 5.5                           | 5.0              |                 | 2.6                           |                                                                     | 23                               | 0                  | --                                                          | 6.3 |       |
| Mar. 7.....                         | 1,260              | 17                            | 0.07         | 8.0                  | 1.6                    | 8.6            | 1.8                   | 29                                      | 5.4                           | 6.0              | 0.0             | 2.7                           | a62                                                                 | 19                               | 0                  | 89.8                                                        | 7.2 | 27    |
| Apr. 13.....                        | b1,240             |                               |              | 8.0                  | 1.3                    | 12             | 1.2                   | 44                                      | 8.4                           | 9.3              |                 | .3                            |                                                                     | 26                               | 0                  | 114                                                         | 6.3 |       |
| NEW HOPE RIVER NEAR PITTSBORO       |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 7, 1957....                    | 308                | 17                            | 0.33         | 4.4                  | 1.5                    | 5.8            | 1.4                   | 21                                      | 6.8                           | 4.8              | 0.0             | 0.7                           | a53                                                                 | 17                               | 0                  | 71.5                                                        | 6.1 | 45    |
| Apr. 13.....                        | 79.7               | --                            | --           | 7.6                  | 2.7                    | 8.6            | 1.2                   | 36                                      | 7.6                           | 9.4              | --              | 2.5                           | --                                                                  | 30                               | 0                  | 107                                                         | 6.5 | --    |
| Aug. 9.....                         | 9.18               | 7.2                           | .01          | 13                   | 4.0                    | 20             | 3.8                   | 67                                      | 9.2                           | 19               | .4              | 3.9                           | a114                                                                | 49                               | 0                  | 210                                                         | 6.7 | 23    |

a Calculated from determined constituents.

b Measured directly.

c Includes equivalent of 150 parts per million of carbonate (CO<sub>3</sub>).

## CAPE FEAR RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN CAPE FEAR RIVER BASIN IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                     | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                        |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
|                                        |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| WEST FORK DEEP RIVER NEAR HIGH POINT   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 27, 1957....                      | 27.9               | 20                            | 0.01         | 6.4                  | 2.7                    | 4.8            | 0.7                   | 36                                      | 4.2                           | 3.0              | 0.7             | 0.5                           | a61                                                                 | 27                               | 0                      | 78.6                                                        | 6.8 | 5     |
| Sept. 3.....                           | 4.15               | 22                            | .05          | 6.7                  | 1.6                    | 5.0            | 1.8                   | 36                                      | 1.1                           | 2.4              | .1              | .8                            | a60                                                                 | 23                               | 0                      | 77.1                                                        | 6.6 | 9     |
| EAST FORK DEEP RIVER NEAR HIGH POINT   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 23, 1957....                      | b20                | 14                            | 0.00         | 8.0                  | 1.7                    | 4.3            | 2.1                   | 30                                      | 5.3                           | 2.8              | 0.1             | 1.8                           | a55                                                                 | 27                               | 2                      | 102                                                         | 6.8 | 10    |
| Sept. 3.....                           | 2.23               | 30                            | .18          | 9.1                  | 3.9                    | 6.0            | 1.4                   | 59                                      | 1.8                           | 1.9              | .1              | .5                            | a84                                                                 | 39                               | 0                      | 102                                                         | 6.9 | 17    |
| DEEP RIVER NEAR RANDLEMAN              |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 22, 1957....                      | b180               | 17                            | 0.01         | 7.2                  | 2.2                    | 12             | 1.9                   | 37                                      | 7.8                           | 12               | 0.0             | 2.0                           | a80                                                                 | 27                               | 0                      | 126                                                         | 7.0 | 7     |
| Sept. 2.....                           | 7.43               | 18                            | .03          | 13                   | 5.3                    | 62             | 5.5                   | 59                                      | 26                            | 74               | .5              | 14                            | a248                                                                | 54                               | 6                      | 437                                                         | 6.3 | 28    |
| BEAR CREEK AT ROBBINS                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 25, 1957....                      | 552                | 11                            | 0.05         | 2.8                  | 1.0                    | 4.1            | 0.2                   | 16                                      | 1.4                           | 2.5              | 0.6             | 2.5                           | a34                                                                 | 11                               | 0                      | 41.2                                                        | 6.9 | 30    |
| Sept. 5.....                           | 14.4               | 7.6                           | .08          | 3.5                  | .5                     | 3.0            | .7                    | 14                                      | .2                            | 3.3              | .0              | .5                            | a26                                                                 | 11                               | 0                      | 43.2                                                        | 6.2 | 45    |
| DEEP RIVER AT MONCURE                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 7, 1957.....                      | b1,640             | 12                            | 0.06         | 3.7                  | 0.7                    | 4.4            | 1.3                   | 16                                      | 3.3                           | 3.8              | 0.0             | 1.9                           | a39                                                                 | 12                               | 0                      | 54.4                                                        | 6.7 | 40    |
| Aug. 9.....                            | b322               | 9.3                           | .11          | 4.4                  | 1.7                    | 5.0            | 2.0                   | 22                                      | 4.1                           | 3.9              | .0              | 2.3                           | a44                                                                 | 18                               | 0                      | 67.5                                                        | 6.4 | 38    |
| CAPE FEAR RIVER AT LILLINGTON          |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 18, 1957....                      | b2,300             | 14                            | 0.14         | 4.8                  | 1.5                    | 5.9            | 1.2                   | 24                                      | 4.2                           | 5.6              | 0.1             | 1.2                           | a51                                                                 | 18                               | 0                      | 75.2                                                        | 6.8 | 50    |
| Aug. 15.....                           | b180               | 9.2                           | .09          | 5.3                  | 2.6                    | 13             | 2.0                   | 35                                      | 8.1                           | 12               | .3              | 1.1                           | a71                                                                 | 24                               | 0                      | 112                                                         | 7.3 | 14    |
| LITTLE RIVER AT LINDEN                 |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 18, 1957....                      | 449                | 5.4                           | 0.16         | 1.2                  | 0.2                    | 2.4            | 0.4                   | 4                                       | 2.3                           | 3.0              | 0.0             | 1.0                           | a18                                                                 | 4                                | 1                      | 25.8                                                        | 6.0 | 33    |
| Aug. 15.....                           | 58.7               | 4.0                           | .04          | 2.0                  | .5                     | 5.2            | 1.1                   | 3                                       | 4.2                           | 5.2              | .2              | 6.9                           | a30                                                                 | 7                                | 5                      | 22.2                                                        | 5.2 | 11    |
| CAPE FEAR RIVER AT LOCK 3 NEAR TARHEEL |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Feb. 18, 1957....                      | b3,460             | 12                            | 0.12         | 3.6                  | 1.5                    | 5.9            | 1.1                   | 18                                      | 5.3                           | 5.3              | 0.1             | 1.1                           | a45                                                                 | 15                               | 0                      | 65.6                                                        | 6.7 | 50    |
| Aug. 14.....                           | b580               | 7.9                           | .15          | 3.6                  | 1.3                    | 7.2            | 1.5                   | 20                                      | 3.6                           | 6.7              | .1              | 1.8                           | a44                                                                 | 14                               | 0                      | 75.8                                                        | 6.4 | 3     |
| TURNBULL CREEK NEAR ELIZABETH TOWN     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 2, 1957.....                      | 113                |                               |              | 2.8                  | 2.1                    | 4.4            | 0.5                   | 12                                      | 4.4                           | 8.7              |                 | 3.6                           |                                                                     | 16                               | 6                      | 54.2                                                        | 5.4 |       |
| Aug. 7.....                            |                    |                               |              | 4.4                  | .4                     | 4.4            | .4                    | 6                                       | 3.3                           | 8.7              |                 | .2                            |                                                                     | 15                               | 10                     | 57.0                                                        | 5.3 |       |

## LIVINGSTON CREEK NEAR ACME

|                   |     |  |  |     |     |     |     |     |     |     |     |     |    |      |     |
|-------------------|-----|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|------|-----|
| Apr. 4, 1957..... | 217 |  |  | 6.1 | 1.4 | 4.3 | 0.2 | 17  | 6.0 | 8.4 | 1.4 | 21  | 7  | 78.8 | 6.0 |
| Aug. 7.....       | .85 |  |  | 39  | 2.8 | 7.0 | .7  | 105 | 22  | 7.9 | .4  | 110 | 24 | 248  | 6.8 |

## HOOD CREEK NEAR LELAND

|                    |      |     |      |    |     |     |     |    |     |     |     |     |     |      |    |
|--------------------|------|-----|------|----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|----|
| Feb. 19, 1957..... | 7.45 | 7.8 | 0.35 | 12 | 0.7 | 4.5 | 0.0 | 38 | 0.8 | 7.4 | 0.0 | 1.0 | a54 | 87.7 | 75 |
| Aug. 13.....       | .15  | 5.3 | .03  | 20 | 1.3 | 4.8 | .5  | 68 | 2.2 | 7.0 | .2  | .9  | a75 | 131  | 8  |

## LITTLE COHARIE CREEK NEAR ROSEBORO

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |      |     |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|-----|
| Feb. 20, 1957..... | 77.8 | 5.6 | 0.37 | 1.0 | 0.2 | 5.7 | 0.7 | 4  | 1.5 | 6.9 | 0.1 | 1.5 | a26 | 41.0 | 5.7 |
| Aug. 12.....       | 2.78 | 6.4 | .48  | 1.4 | .1  | 13  | 1.1 | 12 | 2.2 | 11  | .3  | 2.2 | a44 | 71.8 | 5.9 |

## SIX RUNS NEAR CLINTON

|                   |     |  |  |     |     |     |     |    |     |     |  |     |    |      |     |
|-------------------|-----|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|----|------|-----|
| Apr. 3, 1957..... | 113 |  |  | 4.6 | 1.0 | 5.9 | 1.2 | 10 | 4.0 | 10  |  | 2.7 | 16 | 69.9 | 5.8 |
| Aug. 8.....       | .88 |  |  |     |     | 5.3 | 1.1 | 29 | 2.8 | 8.3 |  | .4  | 30 | 85.8 | 6.7 |

## BLACK RIVER NEAR TOMAHAWK

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |      |     |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|-----|
| Feb. 20, 1957..... | 415  | 6.8 | 0.49 | 2.8 | 0.5 | 4.7 | 0.8 | 7  | 3.6 | 6.6 | 0.1 | 1.2 | a31 | 48.7 | 6.2 |
| Aug. 12.....       | 28.8 | 6.8 | .38  | 4.4 | 1.2 | 6.7 | 1.3 | 17 | 4.1 | 7.5 | .2  | .5  | a41 | 69.8 | 6.4 |

## SOUTH RIVER NEAR PARKERSBURG

|                    |      |     |      |     |     |     |     |   |     |     |     |     |     |      |     |
|--------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|------|-----|
| Feb. 20, 1957..... | 345  | 2.9 | 0.31 | 0.6 | 0.2 | 5.4 | 1.0 | 3 | 1.5 | 6.8 | 0.0 | 1.9 | a22 | 40.2 | 5.3 |
| Aug. 12.....       | 5.51 | 9.1 | .29  | 1.4 | .2  | 5.3 | .8  | 4 | 2.1 | 6.0 | .2  | .7  | a28 | 42.9 | 5.3 |

## COLLY CREEK NEAR KELLY

|                    |      |     |      |     |     |     |     |   |     |     |     |     |     |      |     |
|--------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|------|-----|
| Feb. 19, 1957..... | 81.5 | 4.0 | 0.29 | 1.6 | 0.3 | 2.9 | 1.0 | 0 | 4.3 | 5.0 | 0.0 | 0.3 | a20 | 44.4 | 300 |
| Aug. 13.....       | 1.22 | 13  | .80  | 2.8 | .2  | 4.6 | 1.6 | 1 | 2.5 | 10  | .4  | 1.0 | a40 | 68.2 | 4.7 |

## ROCKFISH CREEK AT WALLACE

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |      |     |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|-----|
| Feb. 19, 1957..... | 28.1 | 8.2 | 0.29 | 4.4 | 0.7 | 4.5 | 0.3 | 14 | 2.3 | 6.5 | 0.0 | 1.0 | a35 | 56.9 | 6.4 |
| Aug. 16.....       | 2.88 | 4.9 | .30  | 4.4 | 1.0 | 2.7 | 1.3 | 15 | 6.0 | 2.9 | .0  | 1.8 | a32 | 48.8 | 6.2 |

## ALLEN CREEK NEAR SOUTHPORT

|                   |      |  |  |     |     |     |     |     |     |     |  |     |    |      |     |
|-------------------|------|--|--|-----|-----|-----|-----|-----|-----|-----|--|-----|----|------|-----|
| Apr. 4, 1957..... | 12.3 |  |  | 9.1 | 1.8 | 5.9 | 0.0 | 21  | 5.9 | 12  |  | 5.4 | 30 | 80.4 | 6.1 |
| Aug. 7.....       | 1.87 |  |  | 33  | 1.5 | 5.6 | .1  | 102 | 2.2 | 7.2 |  | .5  | 88 | 195  | 6.6 |

a Calculated from determined constituents.

b Mean daily discharge.



LOCKWOODS FOLLY RIVER BASIN  
MISCELLANEOUS ANALYSES OF STREAMS IN LOCKWOODS FOLLY RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection           | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |  |
|------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|--|
|                              |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |  |
| PINCH GUT CREEK NEAR BOLIVIA |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |  |
| Apr. 3, 1957....             | 14.6               |                               |              | 18                   | 1.0                    | 5.2            | 0.0                   | 56                                      | 5.2                           | 8.8              |                 | 2.3                           |                                                                     |                                  | 48                     | 2                                                           | 110 | 6.6   |  |
| Aug. 7.....                  | .63                |                               |              | 63                   | 3.4                    | 8.4            | .6                    | 206                                     | 1.8                           | 11               |                 | .3                            |                                                                     |                                  | 172                    | 3                                                           | 356 | 7.0   |  |

## WACCAMAW RIVER BASIN

## WACCAMAW RIVER AT FREELAND, N. C.

LOCATION. --At New Britton Bridge on State Highway 130, 1.0 mile southwest of Freeland, Brunswick County, and 7.0 miles downstream from Juniper Creek. DRAINAGE AREA. --626 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1950 to September 1951, October 1956 to September 1957.

REMARKS. --Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 15, 1956...   | 71                   | 10                         | 0.41      | 5.4          | 0.8            | 6.7         | 0.8           | 6                               | 3.0                        | 10            | 0.0          | 3.5                        | a91                                                | 17                            | 12            | 64.4                                      | 5.4 | 150   |
| Nov. 16, .....     | 329                  | 10                         | .67       | 3.0          | 1.6            | 6.2         | .8            | 5                               | 2.1                        | 9.5           | .1           | 4.1                        | b85                                                | 14                            | 10            | 59.2                                      | 5.2 | 200   |
| Dec. 15, .....     | 131                  | 9.4                        | .43       | 3.6          | .7             | 5.3         | .8            | 7                               | 1.1                        | 9.8           | .0           | .5                         | c74                                                | 12                            | 6             | 59.0                                      | 5.6 | 140   |
| Jan. 14, 1957...   | 111                  | 8.8                        | .18       | 4.6          | .4             | 6.0         | .5            | 7                               | 1.8                        | 10            | .0           | .3                         | d84                                                | 13                            | 7             | 61.3                                      | 5.7 | 140   |
| Feb. 14, .....     | 310                  | 5.5                        | .22       | 3.8          | .4             | 5.7         | 1.0           | 6                               | 1.1                        | 10            | .0           | .6                         | e91                                                | 11                            | 6             | 58.3                                      | 5.5 | 150   |
| Mar. 18, .....     | 1,650                | 3.4                        | .19       | 2.6          | .4             | 5.1         | 1.0           | 4                               | 3.2                        | 9.5           | .0           | 3.5                        | f77                                                | 8                             | 3             | 53.5                                      | 5.2 | 110   |
| Apr. 18, .....     | 650                  | 3.5                        | .18       | 3.3          | .4             | 5.6         | 1.4           | 6                               | 1.2                        | 9.6           | .0           | 3.5                        | g72                                                | 8                             | 3             | 53.5                                      | 5.2 | 110   |
| May 17, .....      | 70                   | 5.5                        | .13       | 4.9          | 1.9            | 6.8         | 1.6           | 10                              | 1.2                        | 10            | .2           | .7                         | h92                                                | 20                            | 12            | 68.8                                      | 5.7 | 190   |
| June 15, .....     | 634                  | 5.6                        | .48       | 3.6          | 1.2            | 5.9         | .4            | 4                               | 4.6                        | 7.2           | .3           | .3                         | i106                                               | 14                            | 11            | 61.8                                      | 4.8 | 190   |
| July 15, .....     | 185                  | 7.3                        | .04       | 5.2          | 1.1            | 6.3         | .8            | 7                               | 1.1                        | 10            | .0           | 3.3                        | h109                                               | 17                            | 12            | 80.0                                      | 5.3 | 250   |
| Aug. 18, .....     | 19                   | 4.7                        | .16       | 8.3          | .5             | 6.1         | 1.1           | 19                              | 4.6                        | 9.2           | .0           | 2.7                        | j84                                                | 23                            | 0             | 79.9                                      | 6.0 | 120   |
| Sept. 14, .....    | 5.5                  | 4.1                        | .12       | 9.4          | .9             | 6.9         | 1.3           | 22                              | 3.7                        | 9.8           | .2           | .6                         | k85                                                | 27                            | 9             | 92.1                                      | 6.4 | 120   |

a Organic matter present; sum of mineral constituents 44 parts per million.

b Organic matter present; sum of mineral constituents 40 parts per million.

c Organic matter present; sum of mineral constituents 35 parts per million.

d Organic matter present; sum of mineral constituents 36 parts per million.

e Organic matter present; sum of mineral constituents 31 parts per million.

f Organic matter present; sum of mineral constituents 28 parts per million.

g Organic matter present; sum of mineral constituents 30 parts per million.

h Organic matter present; sum of mineral constituents 30 parts per million.

i Organic matter present; sum of mineral constituents 32 parts per million.

j Organic matter present; sum of mineral constituents 46 parts per million.

k Organic matter present; sum of mineral constituents 48 parts per million.

## PEE DEE RIVER BASIN

## YADKIN RIVER AT YADKIN COLLEGE, N. C.

LOCATION --At gaging station at bridge on U. S. Highway 64, 1½ miles south of Yadkin College, Davidson County, and 6¼ miles downstream from Reedy Creek. DRAINAGE AREA --2,280 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1943 to September 1944, October 1950 to September 1951, October 1955 to September 1957.

Water temperatures: October 1943 to September 1944, October 1950 to September 1951, October 1955 to September 1957.

Sediment records: January 1951 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum, 52 ppm Oct. 1-31; minimum, 36 ppm Feb. 1-28, Apr. 1-30.

Hardness: Maximum, 16 ppm Oct. 1-31, Dec. 1-31, Jan. 1-31, Mar. 1-31, May 1-30, July 1-31, Aug. 1-31; minimum, 11 ppm Apr. 1-30.

Specific conductance: Maximum daily, 88.4 micromhos Oct. 23; minimum daily, 30.0 micromhos Apr. 7.

Water temperatures: Maximum, 84°F July 20; minimum, freezing point Jan. 4.

Sediment concentrations: Maximum daily, 2,550 ppm Sept. 17; minimum daily, 4 ppm Dec. 1-4.

Sediment loads: Maximum daily, 79,700 tons Sept. 17; minimum daily, 12 tons Dec. 1-4.

EXTREMES 1943-44, 1950-51 --Dissolved solids (1943-44, 1950-51, 1955-57): Maximum, 85 ppm Nov. 1-10, 1950; minimum, 32 ppm Mar. 21-31, 1944.

Hardness (1943-44, 1950-51, 1955-57): Maximum, 22 ppm Sept. 1-30, 1956; minimum, 10 ppm July 11-20, 1944.

Specific conductance (1943-44, 1950-51, 1955-57): Maximum, 136 micromhos Aug. 17, 1956; minimum daily, 30.0 micromhos Apr. 7, 1957.

Water temperatures (1943-44, 1950-51, 1955-57): Maximum, 87°F June 18, 1944; minimum, freezing point on many days during winter months.

Sediment concentrations (1943-44, 1950-51, 1955-57): Maximum, 87°F June 18, 1944; minimum daily, 1 ppm Dec. 3, 1953.

Sediment loads (1943-44, 1950-51, 1955-57): Maximum daily, 108,000 tons Jan. 23, 1954; minimum daily, 3 tons Dec. 3, 1953.

REMARKS --Records of suspended matter of composite samples from October 1943 to September 1944, October 1950 to September 1951 and records of specific conductance of daily samples from October 1955 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-magnesium |                                           |     |       |
| Oct. 1-31, 1956..          | 1,423                | 14                         | 0.08      | 4.6          | 1.1            | 5.8         | 1.9           | 22                              | 2.4                        | 4.8           | 0.0          | 1.8                        | 52                                                 | 16                            | 0             | 67.4                                      | 6.8 | 11    |
| Nov. 1-30.....             | 1,464                | 15                         | .11       | 4.1          | 1.2            | 4.7         | 1.3           | 23                              | .5                         | 3.3           | .1           | 1.2                        | 50                                                 | 15                            | 0             | 60.7                                      | 6.8 | 13    |
| Dec. 1-31.....             | 1,464                | 13                         | .08       | 4.1          | 1.1            | 4.6         | 1.8           | 21                              | 3.2                        | 3.2           | .1           | 2.4                        | 43                                                 | 16                            | 0             | 62.0                                      | 6.7 | 5     |
| Jan. 1-31, 1957..          | 1,500                | 14                         | .08       | 4.0          | 1.5            | 4.3         | 1.4           | 21                              | 2.0                        | 3.2           | .1           | 1.9                        | 44                                                 | 16                            | 0             | 57.5                                      | 6.6 | 7     |
| Feb. 1-28.....             | 4,426                | 12                         | .00       | 3.6          | .7             | 3.2         | 1.4           | 17                              | 2.9                        | 2.0           | .0           | 1.6                        | 36                                                 | 12                            | 0             | 49.2                                      | 6.9 | 7     |
| Mar. 1-31.....             | 3,225                | 12                         | .01       | 3.6          | 1.7            | 3.6         | 1.3           | 19                              | 2.2                        | 3.0           | .2           | 1.5                        | 38                                                 | 16                            | 0             | 48.8                                      | 6.1 | 5     |
| Apr. 1-30.....             | 6,107                | 12                         | .02       | 3.2          | .7             | 3.4         | 1.4           | 15                              | 1.3                        | 2.5           | .1           | 2.1                        | 36                                                 | 11                            | 0             | 46.0                                      | 6.3 | 5     |
| May 1-31.....              | 2,257                | 13                         | .00       | 3.5          | 1.8            | 3.9         | 1.3           | 20                              | 1.6                        | 2.9           | .1           | 1.5                        | 47                                                 | 16                            | 0             | 47.0                                      | 7.1 | 10    |
| June 1-30.....             | 4,087                | 11                         | .00       | 3.9          | .9             | 1.6         | .7            | 15                              | 1.5                        | 2.9           | .1           | 1.6                        | 37                                                 | 14                            | 2             | 45.8                                      | 7.0 | 10    |
| July 1-31.....             | 1,369                | 13                         | .02       | 4.0          | 1.5            | 4.1         | 1.3           | 25                              | 2.0                        | 2.9           | .1           | 1.7                        | 43                                                 | 16                            | 0             | 48.1                                      | 6.1 | 18    |
| Aug. 1-31.....             | 4,107                | 11                         | .02       | 4.0          | .9             | 4.3         | 1.5           | 19                              | 3.0                        | 4.1           | .2           | 1.2                        | 48                                                 | 13                            | 0             | 53.8                                      | 7.2 | 18    |
| Sept. 1-30.....            | 4,107                | 11                         | .02       | 4.0          | .9             | 4.3         | 1.5           | 19                              | 3.0                        | 4.1           | .2           | 1.2                        | 48                                                 | 13                            | 0             | 53.8                                      | 6.7 | 15    |
| Time-weighted average..... | 2,854                | 13                         | 0.03      | 3.8          | 1.3            | 4.1         | 1.4           | 20                              | 2.1                        | 3.2           | 0.1          | 1.6                        | 43                                                 | 15                            | 0             | 54.0                                      | --  | 10    |

a Calculated from determined constituents.

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 8 a.m./

| Day          | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|--------------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1            | 64   | 62   | --   | 40   | 50   | 48   | 49   | 72  | 64   | 76   | 82   | 81    |
| 2            | 67   | 62   | 39   | 37   | 50   | 49   | 51   | 71  | 73   | 75   | 79   | 81    |
| 3            | 69   | 62   | 38   | 35   | 48   | 49   | 51   | 69  | 74   | 74   | 77   | 80    |
| 4            | 69   | 58   | 40   | 31   | 50   | --   | 55   | 62  | 73   | 77   | 83   | 78    |
| 5            | 69   | 60   | 37   | 37   | 50   | 45   | 52   | 62  | 74   | 78   | 80   | 76    |
| 6            | 68   | 59   | 44   | 39   | 48   | 45   | 51   | 62  | 74   | 78   | 76   | 76    |
| 7            | 66   | 58   | 46   | 40   | 48   | 44   | 54   | 63  | 69   | 78   | 74   | 78    |
| 8            | 63   | 59   | 48   | 39   | 49   | 45   | 55   | 69  | 72   | 78   | 78   | 75    |
| 9            | 61   | 57   | 50   | 42   | 48   | 44   | 53   | 65  | 69   | 81   | 74   | 73    |
| 10           | 61   | 51   | 49   | 41   | 51   | 44   | 53   | 68  | 66   | 81   | 78   | 74    |
| 11           | 59   | 53   | 45   | 43   | 51   | 45   | 54   | 69  | 68   | 79   | 81   | 73    |
| 12           | 52   | 51   | 46   | 46   | 48   | 49   | 51   | 69  | 70   | 78   | 78   | 74    |
| 13           | 51   | 49   | 47   | 40   | 47   | 50   | 58   | 73  | 73   | 80   | 80   | 76    |
| 14           | 55   | 47   | 49   | 41   | 45   | 52   | 57   | 74  | 76   | 82   | 79   | 76    |
| 15           | 56   | 48   | 48   | --   | 43   | 53   | 54   | 73  | 78   | 83   | 78   | 78    |
| 16           | 57   | 51   | 50   | 48   | 43   | 53   | --   | 74  | 78   | 82   | 79   | 77    |
| 17           | 60   | 52   | 51   | 36   | 45   | 56   | 55   | 73  | 79   | 81   | 78   | 74    |
| 18           | 61   | 50   | 52   | 33   | 43   | 58   | 58   | 73  | 78   | 80   | 76   | 70    |
| 19           | 62   | 47   | 50   | 34   | 45   | 58   | 60   | 74  | 78   | 79   | 76   | 68    |
| 20           | 61   | 45   | 49   | 34   | 43   | 54   | 64   | 72  | 76   | 84   | 68   | 68    |
| 21           | 60   | 48   | 51   | 34   | 42   | 51   | 70   | 72  | 77   | 78   | 71   | 69    |
| 22           | 60   | 49   | 52   | 38   | 42   | 51   | 70   | 70  | 77   | 79   | 72   | 72    |
| 23           | 60   | 45   | 60   | 48   | 44   | 50   | 70   | 72  | 74   | 83   | 73   | 72    |
| 24           | 60   | 42   | 55   | 45   | 42   | 51   | 71   | 74  | 76   | 81   | 72   | 70    |
| 25           | 61   | 40   | 52   | 42   | 52   | 52   | 71   | 74  | 75   | 78   | 70   | 66    |
| 26           | 60   | 38   | 46   | 42   | 55   | 50   | 72   | 76  | 77   | 76   | 71   | 66    |
| 27           | 59   | 39   | 44   | 44   | 55   | 49   | 71   | 74  | 73   | 76   | 71   | 65    |
| 28           | 59   | 37   | 43   | 41   | 55   | 50   | 74   | 73  | 74   | 78   | 74   | 61    |
| 29           | 58   | 38   | 43   | 41   | --   | 50   | 73   | 75  | 73   | 78   | 75   | 57    |
| 30           | 58   | 39   | 40   | 53   | --   | 51   | 72   | 63  | 76   | 79   | 77   | 56    |
| 31           | 60   | --   | 39   | 50   | --   | 49   | --   | 63  | --   | 79   | 78   | --    |
| Aver-<br>age | 61   | 50   | 47   | 40   | 48   | 50   | 60   | 70  | 74   | 79   | 76   | 72    |

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 2,070                | 151                      | 844          | 1,580                | 38                       | 178          | 1,140                |                          |              |
| 2.....  | 1,620                | 110                      | 481          | 1,890                |                          |              | 1,140                |                          |              |
| 3.....  | 1,340                | 86                       | 311          | 2,560                | 180                      | 1,240        | 1,100                | 4                        | 12           |
| 4.....  | 1,180                | 86                       | 274          | 2,120                | 80                       | 458          | 1,100                |                          |              |
| 5.....  | 1,100                |                          |              | 1,710                |                          |              | 1,060                |                          |              |
|         |                      | 110                      | 327          |                      | 39                       | 171          |                      |                          |              |
| 6.....  | 1,100                |                          |              | 1,540                |                          |              | 1,060                | 5                        | 14           |
| 7.....  | 1,180                |                          |              | 1,420                |                          |              | 1,060                |                          |              |
| 8.....  | 1,220                | 92                       | 298          | 1,340                | 22                       | 82           | 1,040                |                          |              |
| 9.....  | 1,140                |                          |              | 1,340                |                          |              | 1,060                |                          |              |
| 10..... | 957                  | 36                       | 102          | 1,260                |                          |              | 1,020                |                          |              |
|         |                      |                          |              |                      | 16                       | 54           |                      |                          |              |
| 11..... | 880                  |                          |              | 1,180                |                          |              | 1,020                | 6                        | 17           |
| 12..... | 887                  | 74                       | 176          | 1,140                |                          |              | 1,010                |                          |              |
| 13..... | 880                  |                          |              | 1,140                | 9                        | 28           | 1,060                |                          |              |
| 14..... | 826                  | 59                       | 134          | 1,100                |                          |              | 1,140                | 15                       | 46           |
| 15..... | 812                  |                          |              | 1,060                |                          |              | 5,690                | 520                      | s10,390      |
|         |                      |                          |              |                      | 6                        | 17           |                      |                          |              |
| 16..... | 819                  |                          |              | 1,060                |                          |              | 10,000               | 607                      | s17,200      |
| 17..... | 812                  | 46                       | 100          | 1,260                | 42                       | 143          | 3,980                | 321                      | s3,610       |
| 18..... | 793                  |                          |              | 2,070                | 152                      | 850          | 2,860                | 145                      | 1,120        |
| 19..... | 800                  | 18                       | 39           | 2,360                | 98                       | 624          | 2,260                | 74                       | 452          |
| 20..... | 793                  |                          |              | 1,840                |                          |              | 1,940                |                          |              |
|         |                      |                          |              |                      | 28                       | 122          |                      | 41                       | 210          |
| 21..... | 859                  | 45                       | 104          | 1,540                |                          |              | 1,760                |                          |              |
| 22..... | 1,220                | 120                      | 395          | 1,460                |                          |              | 1,980                |                          |              |
| 23..... | 3,460                | 824                      | s8,030       | 1,380                |                          |              | 2,960                | 275                      | 2,200        |
| 24..... | 3,560                | 354                      | s3,630       | 1,300                |                          |              | 3,960                |                          |              |
| 25..... | 2,070                | 125                      | 699          | 1,260                | 8                        | 28           | 3,660                | 203                      | 2,090        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 26..... | 1,500                | 45                       | 182          | 1,220                |                          |              | 3,160                | 125                      | 1,070        |
| 27..... | 1,760                | 75                       | 356          | 1,220                |                          |              | 2,460                | 85                       | 565          |
| 28..... | 3,060                | 145                      | 1,200        | 1,180                | 6                        | 19           | 2,070                |                          |              |
| 29..... | 2,160                | 62                       | 324          | 1,180                |                          |              | 1,890                | 33                       | 168          |
| 30..... | 1,710                |                          |              | 1,140                |                          |              | 1,710                |                          |              |
| 31..... | 1,540                | 100                      | 416          | --                   | --                       | --           | 1,620                | 14                       | 61           |
| Total.  | 44,108               | --                       | 20,156       | 43,850               | --                       | 5,011        | 68,950               | --                       | 42,217       |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         | January              |                          |              | February             |                          |              | March                |                          |              |
| 1.....  | 1,540                |                          |              | 18,100               | 839                      | s40,700      | 11,000               | 412                      | s12,200      |
| 2.....  | 1,500                | 14                       | 56           | 17,600               | 467                      | s22,400      | 8,400                | 299                      | s6,940       |
| 3.....  | 1,420                |                          |              | 9,040                | 319                      | s7,760       | 5,300                | 191                      | 2,730        |
| 4.....  | 1,380                |                          |              | 5,420                | 314                      | 4,600        | 4,060                | 205                      | 2,250        |
| 5.....  | 1,460                | 14                       | 55           | 4,280                | 231                      | 2,670        | 3,460                | 158                      | 1,480        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 6.....  | 1,500                |                          |              | 3,660                | 150                      | 1,480        | 3,060                | 120                      | 991          |
| 7.....  | 1,460                |                          |              | 3,260                | 138                      | 1,210        | 2,860                | 70                       | 541          |
| 8.....  | 1,380                | 7                        | 26           | 3,060                | 138                      | 1,140        | 3,060                | 71                       | 587          |
| 9.....  | 1,340                |                          |              | 3,360                | 200                      | 1,810        | 3,260                | 112                      | 986          |
| 10..... | 1,340                |                          |              | 4,170                | 170                      | 1,910        | 2,860                | 161                      | 1,240        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 11..... | 1,300                | 9                        | 32           | 4,280                | 145                      | 1,680        | 2,560                | 78                       | 539          |
| 12..... | 1,260                |                          |              | 3,660                | 172                      | 1,700        | 2,410                | 68                       | 442          |
| 13..... | 1,260                |                          |              | 3,060                | 82                       | 677          | 2,310                | 63                       | 393          |
| 14..... | 1,260                |                          |              | 2,760                |                          |              | 2,410                | 55                       | 358          |
| 15..... | 1,260                | 6                        | 20           | 2,510                | 61                       | 416          | 3,480                | 178                      | 1,700        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 16..... | 1,260                |                          |              | 2,310                |                          |              | 3,560                | 241                      | 2,320        |
| 17..... | 1,260                |                          |              | 2,210                | 49                       | 292          | 2,860                | 98                       | 757          |
| 18..... | 1,180                |                          |              | 2,070                | 76                       | 425          | 2,510                | 67                       | 454          |
| 19..... | 1,020                | 6                        | 18           | 2,070                | 76                       | 425          | 2,460                | 69                       | 458          |
| 20..... | 1,040                |                          |              | 2,960                | 122                      | 975          | 2,460                | 82                       | 545          |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 21..... | 1,260                | 26                       | 92           | 3,060                | 152                      | 1,260        | 2,310                | 49                       | 306          |
| 22..... | 1,380                |                          |              | 2,460                | 141                      |              | 2,410                | 60                       | 390          |
| 23..... | 2,960                | 289                      | s2,870       | 2,210                | 110                      | 656          | 2,560                | 88                       | 608          |
| 24..... | 3,860                | 254                      | 2,650        | 2,070                | 57                       | 319          | 2,410                | 65                       | 423          |
| 25..... | 3,260                | 126                      | 1,110        | 1,980                | 55                       | 294          | 2,460                | 53                       | 352          |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 26..... | 2,310                | 98                       | 611          | 2,260                | 87                       | 531          | 2,460                | 68                       | 452          |
| 27..... | 2,020                | 78                       | 425          | 3,990                | 194                      | s2,230       | 2,410                | 55                       | 358          |
| 28..... | 1,940                | 53                       | 278          | 6,050                | 402                      | s6,650       | 2,310                | 49                       | 306          |
| 29..... | 2,120                | 111                      | 635          | --                   | --                       | --           | 2,160                | 38                       | 222          |
| 30..... | 4,280                | 468                      | s5,710       | --                   | --                       | --           | 2,120                | 34                       | 195          |
| 31..... | 7,100                | 851                      | s16,200      | --                   | --                       | --           | 2,020                | 26                       | 142          |
| Total.  | 58,910               | --                       | 31,332       | 123,920              | --                       | 105,979      | 99,970               | --                       | 41,665       |

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                     | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                              | 2,020                | 22                       | 120          | 2,860                | 185                      | 1,430        | 1,890                | 86                       | 439          |
| 2.....                              | 2,440                | 88                       | s 663        | 2,460                | 92                       | 611          | 1,800                | 62                       | 301          |
| 3.....                              | 8,130                | 588                      | s13,200      | 2,360                | 120                      | 765          | 1,980                | 164                      | 877          |
| 4.....                              | 5,060                | 460                      | s6,590       | 2,310                | 150                      | 936          | 2,020                | 235                      | 1,280        |
| 5.....                              | 9,960                | 590                      | s19,400      | 2,260                | 96                       | 586          | 3,160                | 441                      | s4,780       |
| 6.....                              | 28,700               | 735                      | s55,500      | 2,210                | 55                       | 328          | 12,100               | 1,590                    | s52,100      |
| 7.....                              | 28,300               | 309                      | s24,100      | 2,160                | 73                       | 426          | 8,200                | 967                      | s21,200      |
| 8.....                              | 9,270                | 267                      | s6,690       | 2,070                | 54                       | 302          | 4,320                | 395                      | 4,610        |
| 9.....                              | 14,200               | 902                      | s35,300      | 2, 3c                | 53                       | 322          | 3,460                | 225                      | 2,100        |
| 10.....                             | 8,570                | 500                      | s12,200      | 1,570                | 40                       | 214          | 4,600                | 618                      | s8,380       |
| 11.....                             | 5,900                | 290                      | 4,620        | 1,940                | 34                       | 178          | 4,000                | 410                      | 4,430        |
| 12.....                             | 4,830                | 295                      | 3,850        | 2,070                | 39                       | 218          | 3,160                | 175                      | 1,490        |
| 13.....                             | 4,060                | 252                      | 2,760        | 2,120                | 30                       | 172          | 2,760                | 130                      | 969          |
| 14.....                             | 3,860                | 145                      | 1,510        | 2,020                | 40                       | 218          | 2,510                | 125                      | 847          |
| 15.....                             | 3,560                | 120                      | 1,150        | 2,360                | 166                      | 1,060        | 4,480                | 475                      | 5,750        |
| 16.....                             | 3,360                | 120                      | 1,090        | 2,160                | 100                      | 583          | 3,420                | 670                      | 6,190        |
| 17.....                             | 3,260                | 110                      | 968          | 1,940                | 63                       | 330          | 2,960                | 560                      | s4,900       |
| 18.....                             | 3,060                | 90                       | 744          | 1,800                | 55                       | 267          | 3,360                | 935                      | 8,480        |
| 19.....                             | 3,060                | 62                       | 512          | 1,890                | 67                       | s345         | 3,060                | 660                      | 5,450        |
| 20.....                             | 3,060                | 58                       | 479          | 2,760                | 497                      | 3,700        | 2,860                | 762                      | s5,780       |
| 21.....                             | 2,860                | 58                       | 448          | 2,660                | 178                      | 1,280        | 2,210                | 220                      | 1,310        |
| 22.....                             | 2,860                | 70                       | 541          | 2,070                | 182                      | 1,020        | 6,030                | 1,330                    | s34,100      |
| 23.....                             | 3,160                | 135                      | 1,150        | 1,890                | 103                      | 526          | 8,680                | 1,820                    | s43,000      |
| 24.....                             | 3,160                | 69                       | 589          | 2,070                | 34                       | 525          | 4,180                | 565                      | s6,250       |
| 25.....                             | 3,060                | 87                       | 719          | 2,020                | 81                       | 442          | 5,230                | 1,050                    | s15,300      |
| 26.....                             | 2,860                | 79                       | 610          | 2,120                | 131                      | s764         | 5,570                | 754                      | s11,900      |
| 27.....                             | 2,660                | 60                       | 431          | 2,620                | 414                      | s2,970       | 4,390                | 380                      | 4,900        |
| 28.....                             | 2,510                | 52                       | 352          | 3,860                | 380                      | 3,960        | 4,090                | 310                      | 3,420        |
| 29.....                             | 2,460                | 65                       | 432          | 2,860                | 477                      | 3,680        | 4,120                | 330                      | 3,670        |
| 30.....                             | 2,960                | 118                      | 943          | 2,120                | 227                      | 1,300        | 3,810                | 245                      | 2,520        |
| 31.....                             | --                   | --                       | --           | 1,940                | 118                      | 618          | --                   | --                       | --           |
| Total.                              | 183,210              | --                       | 197,661      | 69,980               | --                       | 30,076       | 124,410              | --                       | 265,883      |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| Day                                 | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                     | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                              | 3,060                | 245                      | 2,020        | 1,260                | 68                       | 231          | 901                  | 28                       | 68           |
| 2.....                              | 2,560                | 145                      | 1,000        | 2,140                | 462                      | s2,870       | 845                  | 30                       | 68           |
| 3.....                              | 2,260                | 80                       | 488          | 1,770                | 325                      | s1,600       | 812                  | 31                       | 68           |
| 4.....                              | 2,020                | 64                       | 349          | 1,300                | 220                      | 772          | 812                  | 30                       | 66           |
| 5.....                              | 1,890                | 58                       | 296          | 1,760                | 240                      | 1,140        | 873                  | 43                       | 101          |
| 6.....                              | 1,800                | 48                       | 233          | 1,500                | 273                      | 1,110        | 1,440                | 845                      | s3,980       |
| 7.....                              | 1,660                | 38                       | 170          | 1,180                | 97                       | 309          | 2,100                | 976                      | s9,900       |
| 8.....                              | 1,580                | 35                       | 149          | 1,060                | 68                       | 195          | 2,100                | 258                      | s1,480       |
| 9.....                              | 1,540                | 82                       | 116          | 1,020                | 48                       | 132          | 2,070                | 365                      | 2,040        |
| 10.....                             | 1,460                | 34                       | 134          | 985                  | 33                       | 88           | 2,620                | 635                      | s5,220       |
| 11.....                             | 1,420                | 39                       | 150          | 950                  | 35                       | 90           | 3,510                | 537                      | s5,340       |
| 12.....                             | 1,380                | 29                       | 108          | 950                  | 37                       | 95           | 2,560                | 300                      | 2,070        |
| 13.....                             | 1,300                | 18                       | 63           | 1,050                | 62                       | 176          | 2,310                | 250                      | 1,560        |
| 14.....                             | 1,260                | 22                       | 75           | 1,420                | 260                      | s1,060       | 1,660                | 160                      | 717          |
| 15.....                             | 1,260                | 22                       | 75           | 1,040                | 68                       | 191          | 1,500                | 120                      | 486          |
| 16.....                             | 1,300                | 32                       | 112          | 1,770                | 396                      | s2,420       | 1,380                | 125                      | 466          |
| 17.....                             | 1,460                | 40                       | 158          | 1,670                | 459                      | s2,100       | 12,600               | 2,550                    | s79,700      |
| 18.....                             | 2,820                | 210                      | s2,630       | 1,640                | 355                      | s1,680       | 26,500               | 659                      | s46,200      |
| 19.....                             | 6,020                | 892                      | s14,700      | 2,960                | 633                      | s5,060       | 14,100               | 380                      | s14,600      |
| 20.....                             | 3,160                | 557                      | s4,950       | 2,440                | 500                      | s3,370       | 5,060                | 376                      | s5,270       |
| 21.....                             | 2,020                | 223                      | 1,220        | 1,620                | 198                      | 866          | 4,280                | 330                      | 3,810        |
| 22.....                             | 1,620                | 88                       | 385          | 1,340                | 83                       | 300          | 3,480                | 346                      | s3,240       |
| 23.....                             | 1,540                | 77                       | 320          | 1,180                | 56                       | 178          | 4,970                | 595                      | s7,970       |
| 24.....                             | 1,840                | 86                       | 427          | 1,100                | 43                       | 128          | 4,060                | 310                      | 3,400        |
| 25.....                             | 2,070                | 104                      | 581          | 1,100                | 52                       | 154          | 3,060                | 190                      | 1,570        |
| 26.....                             | 1,840                | 130                      | 646          | 1,180                | 80                       | 255          | 2,560                | 100                      | 691          |
| 27.....                             | 1,540                | 90                       | 374          | 1,140                | 42                       | 129          | 2,260                | 100                      | 610          |
| 28.....                             | 1,380                | 58                       | 216          | 1,030                | 47                       | 131          | 2,120                | 160                      | 916          |
| 29.....                             | 1,340                | 50                       | 181          | 978                  | 38                       | 100          | 2,260                | 150                      | 915          |
| 30.....                             | 1,260                | 43                       | 146          | 936                  | 33                       | 83           | 8,410                | 825                      | s24,100      |
| 31.....                             | 1,220                | 42                       | 138          | 915                  | 32                       | 79           | --                   | --                       | --           |
| Total.                              | 58,880               | --                       | 32,610       | 42,384               | --                       | 27,092       | 123,213              | --                       | 222,622      |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days) |                      |                          |              |                      |                          |              |                      | 1,041,785                |              |
| Total load for year (tons)          |                      |                          |              |                      |                          |              |                      | 1,022,304                |              |

s Computed by subdividing day.

PEE DEE RIVER BASIN--Continued  
YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time      | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-----------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |           |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |           |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Dec. 16, 1956....  | (a)       | (a)             |                         | 676                           | 2,090                                      | 34                                                | 41    | 53    | 63    | 72    | 89    | 93    | 96    |       | 99    | 100                 | BSWCM |
| Feb. 1, 1957....   | 4:27 p.m. | 18,800          |                         | 883                           | 1,910                                      | 44                                                | 53    | 62    | 67    | 74    | 79    | 83    | 89    |       | 95    | 100                 | BSWCM |
| Mar. 1.....        | 2:00 p.m. | 11,700          |                         | 610                           | 1,619                                      | 28                                                | 32    | 36    | 42    | 46    | 50    | 56    | 67    |       | 93    | 100                 | BSWCM |
| Apr. 6.....        | 3:45 p.m. | 31,000          |                         | 623                           | 882                                        | 42                                                | 55    | 62    | 68    | 72    | 75    | 80    | 91    |       | 100   | --                  | BSWCM |
| Apr. 7.....        | 1:00 p.m. | 30,100          |                         | 285                           | 423                                        | 55                                                | 64    | 69    | 74    | 77    | 79    | 82    | 90    |       | 100   | --                  | BSWCM |
| Apr. 9.....        | 2:56 p.m. | 15,500          |                         | 980                           | 1,340                                      | 44                                                | 49    | 59    | 66    | 72    | 74    | 81    | 85    |       | 98    | 100                 | BSWCM |
| June 6.....        | 6:28 p.m. | 12,600          |                         | 1,490                         | 3,000                                      | 33                                                | 44    | 54    | 65    | 72    | 75    | 80    | 84    |       | 92    | 99                  | BSWCM |
| Sept. 18.....      | 1:47 p.m. | 28,000          |                         | 504                           | 1,070                                      | 37                                                | 46    | 54    | 63    | 70    | 78    | 86    | 94    |       | 100   | --                  | BSWCM |

a Samples collected at 9:30 a.m. and 5:30 p.m. Respective discharges were 11,100 cfs and 7,140 cfs.

# PEE DEE RIVER BASIN--Continued

ABBOTTS CREEK AT LEXINGTON, N. C.

LOCATION.--At bridge on U. S. Highway 64, 1.5 miles southeast of Lexington, Davidson County, 0.6 mile upstream from gaging station and 4.3 miles downstream from Rich Fork.

DRAINAGE AREA.--174 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |     |       |
| Oct. 15, 1956..... | 24                   | 23                         | 0.08      | 12           | 3.6            | 39          | 3.8           | 64                              | 17                         | 36            | 0.3          | 3.2                        | 171                                                 | 44                            | 0             | 283                                        | 6.9 | 20    |
| Nov. 15.....       | 33                   | 21                         | .01       | 11           | 4.2            | 23          | 6.9           | 62                              | 12                         | 21            | .4           | 5.0                        | 150                                                 | 45                            | 0             | 208                                        | 6.8 | 5     |
| Dec. 13.....       | 36                   | 23                         | .01       | 11           | 3.8            | 23          | 2.6           | 51                              | 12                         | 21            | .4           | 4.5                        | 132                                                 | 43                            | 0             | 168                                        | 7.0 | 20    |
| Jan. 15, 1957..... | 49                   | 22                         | .03       | 10           | 2.8            | 14          | 1.8           | 56                              | 8.5                        | 12            | .3           | 2.0                        | 112                                                 | 37                            | 0             | 156                                        | 7.0 | 5     |
| Feb. 15.....       | 129                  | 19                         | .03       | 8.3          | 3.1            | 12          | 1.6           | 43                              | 12                         | 10            | .1           | 1.6                        | 89                                                  | 34                            | 0             | 132                                        | 7.0 | 7     |
| Mar. 14.....       | 120                  | 20                         | .01       | 8.6          | 2.9            | 12          | 2.0           | 44                              | 10                         | 10            | .3           | 2.5                        | 99                                                  | 33                            | 0             | 141                                        | 6.9 | 30    |
| Apr. 16.....       | 107                  | 20                         | .11       | 8.5          | 2.2            | 10          | 1.8           | 43                              | 8.5                        | 8.7           | .2           | 2.7                        | 90                                                  | 30                            | 0             | 128                                        | 6.9 | 12    |
| May 15.....        | 50                   | 23                         | .01       | 9.1          | 3.6            | 15          | 2.6           | 56                              | 5.5                        | 12            | .2           | 2.6                        | 107                                                 | 38                            | 0             | 168                                        | 6.8 | 7     |
| June 14.....       | 85                   | 20                         | .01       | 9.2          | 3.2            | 13          | 2.4           | 51                              | 7.9                        | 10            | .4           | 1.9                        | 97                                                  | 36                            | 0             | 139                                        | 6.6 | 10    |
| July 18.....       | 38                   | 22                         | .02       | 15           | 2.2            | 11          | 3.9           | 32                              | 18.5                       | 45            | .8           | 4.9                        | 202                                                 | 27                            | 0             | 325                                        | 6.8 | 20    |
| Aug. 16.....       | 35                   | 18                         | .02       | 16.8         | 2.6            | 20          | 3.6           | 36                              | 8.5                        | 20            | .1           | 2.1                        | 195                                                 | 27                            | 0             | 150                                        | 6.6 | 30    |
| Sept. 16.....      | 7.7                  | 19                         | .02       | 15           | 4.4            | 43          | 4.9           | 90                              | 15                         | 42            | .3           | 2.7                        | 199                                                 | 55                            | 0             | 327                                        | 7.0 | 10    |

a Calculated from determined constituents.



## PEE DEE RIVER BASIN--Continued

## UWHARRIE RIVER NEAR ELDORADO, N. C.

LOCATION.--At bridge on State Highway 109, 1 mile upstream from McLeans Creek, and 3 miles south of Eldorado, Montgomery County.  
 DRAINAGE AREA.--347 square miles.  
 RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1948, October 1956 to September 1957.  
 REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg-nesium            | Non-carbonate |                                            |     |       |
| Oct. 16, 1956...   | 46                   | 15                         | 0.02      | 5.9          | 2.2            | 5.8         | 1.3           | 33                              | 5.0                        | 3.5           | 0.1          | 0.3                        | 60                                                  | 24                            | 0             | 75.4                                       | 6.9 | 18    |
| Nov. 16.....       | 58                   | 18                         | .09       | 7.4          | 3.1            | 6.0         | 1.1           | 45                              | 2.3                        | 4.7           | .1           | .7                         | 72                                                  | 31                            | 0             | 96.7                                       | 6.8 | 25    |
| Dec. 14.....       | 54                   | 16                         | .07       | 8.0          | 3.2            | 6.7         | .7            | 46                              | 3.0                        | 4.0           | .1           | .2                         | 87                                                  | 33                            | 0             | 85.3                                       | 7.0 | 25    |
| Jan. 17, 1957....  | 86                   | 17                         | .07       | 6.8          | 2.9            | 5.6         | .4            | 42                              | 2.7                        | 4.2           | .1           | .2                         | 81                                                  | 29                            | 0             | 87.8                                       | 7.3 | 8     |
| Feb. 13.....       | 343                  | 15                         | .01       | 5.5          | 1.5            | 4.4         | 1.2           | 27                              | 2.7                        | 3.6           | .1           | 1.0                        | 52                                                  | 20                            | 0             | 70.1                                       | 6.7 | 10    |
| Mar. 15.....       | 292                  | 15                         | .01       | 6.0          | 1.7            | 5.2         | .5            | 33                              | 1.3                        | 3.6           | .1           | .5                         | 56                                                  | 22                            | 0             | 76.9                                       | 7.1 | 15    |
| Apr. 19.....       | 187                  | 15                         | .03       | 5.7          | 1.6            | 5.1         | .9            | 36                              | 3.5                        | 3.2           | .1           | .6                         | 55                                                  | 21                            | 0             | 75.7                                       | 7.1 | 15    |
| May 16.....        | 129                  | 15                         | .00       | 6.8          | 2.8            | 5.5         | .9            | 45                              | 2.5                        | 3.3           | .0           | .2                         | 61                                                  | 29                            | 0             | 86.3                                       | 6.8 | 8     |
| June 15.....       | 99                   | 15                         | .01       | 6.0          | 2.2            | 4.7         | .6            | 33                              | 2.7                        | 2.5           | .2           | 1.2                        | 51                                                  | 24                            | 0             | 77.9                                       | 6.6 | 8     |
| July 15.....       | 71                   | 15                         | .01       | 5.7          | 2.6            | 5.5         | 1.5           | 41                              | 4.2                        | 4.0           | .6           | 1.0                        | 63                                                  | 27                            | 0             | 85.0                                       | 6.2 | 10    |
| Aug. 15.....       | 12                   | 13                         | .07       | 8.8          | 3.4            | 6.3         | 1.4           | 50                              | 4.5                        | 3.8           | .0           | .4                         | 82                                                  | 35                            | 0             | 99.5                                       | 6.8 | 13    |
| Sept. 5.....       | 12                   | 13                         | .07       | 8.8          | 3.4            | 4.3         | 1.7           | 50                              | 1.3                        | 2.7           | .0           | .4                         | 81                                                  | 36                            | 0             | 98.5                                       | 6.8 | 13    |
| Sept. 17.....      | 20                   | 12                         | .06       | 8.8          | 4.1            | 5.5         | 1.7           | 58                              | .3                         | 3.3           | .0           | .7                         | 72                                                  | 39                            | 0             | 100                                        | 7.2 | 20    |

a Calculated from determined constituents.

PEE DEE RIVER BASIN--Continued

CODDLE CREEK NEAR CONCORD, N. C.

LOCATION --At highway bridge, just below Afton Run, 2½ miles below State Highway 73, and 5 miles west of Concord, Cabarrus County.  
DRAINAGE AREA--66.6 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.  
REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water Year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  |                      | 24                         | 0.02      | 8.0          | 2.8            | 5.8         | 1.7           | 48                              | 0.6                        | 3.0           | 0.1          | 0.6                        | a71                                                | 31                            | 0             | 96.2                                      | 6.9 | 2     |
| Nov. 14.....       |                      | 27                         | .06       | 8.4          | 2.7            | 5.9         | 1.4           | 50                              | 2.3                        | 3.4           | .1           | .7                         | 79                                                 | 32                            | 0             | 101                                       | 6.9 | 19    |
| Dec. 14.....       |                      | 26                         | .06       | 8.7          | 2.7            | 7.4         | 1.8           | 52                              | 2.7                        | 3.7           | .1           | .8                         | a51                                                | 33                            | 0             | 104                                       | 7.1 | 18    |
| Jan. 17, 1957....  |                      | 25                         | .03       | 8.0          | 3.3            | 5.6         | 1.2           | 48                              | 3.7                        | 3.2           | .1           | .8                         | a75                                                | 33                            | 0             | 97.7                                      | 7.3 | 8     |
| Feb. 13.....       |                      | 19                         | .03       | 7.5          | 2.5            | 5.2         | 1.6           | 38                              | 4.5                        | 4.4           | .0           | 1.3                        | 66                                                 | 29                            | 0             | 94.8                                      | 7.1 | 18    |
| Mar. 15.....       |                      | 17                         | .01       | 7.5          | 3.1            | 4.9         | 1.9           | 41                              | 6.7                        | 4.7           | .1           | .7                         | 70                                                 | 31                            | 0             | 94.3                                      | 7.1 | 8     |
| Apr. 18.....       |                      | 22                         | .00       | 7.2          | 2.4            | 5.4         | 1.8           | 47                              | 2.2                        | 3.0           | .1           | 1.4                        | 70                                                 | 28                            | 0             | 89.2                                      | 7.1 | 10    |
| May 16.....        |                      | 26                         | .00       | 7.4          | 2.7            | 5.3         | 1.8           | 45                              | 1.8                        | 2.8           | .1           | 1.0                        | a71                                                | 29                            | 0             | 90.3                                      | 6.8 | 10    |
| June 14.....       |                      | 25                         | .02       | 7.2          | 2.7            | 6.1         | 1.6           | 42                              | 2.5                        | 2.8           | .3           | 1.5                        | a71                                                | 29                            | 0             | 97.9                                      | 6.6 | 5     |
| July 16.....       |                      | 24                         | .01       | 7.2          | 2.6            | 5.7         | 3.1           | 40                              | 4.6                        | 3.0           | .6           | 1.7                        | a70                                                | 22                            | 0             | 79.2                                      | 6.5 | 18    |
| Aug. 13.....       |                      | 24                         | .01       | 7.2          | 2.5            | 5.7         | 1.7           | 43                              | 2.6                        | 3.0           | .6           | 1.7                        | a70                                                | 22                            | 0             | 89.0                                      | 6.9 | 18    |
| Sept. 17.....      |                      | 16                         | .00       | 4.8          | 2.7            | 4.4         | 2.4           | 31                              | 1.7                        | 2.7           | .1           | 1.1                        | a49                                                | 23                            | 0             | 71.1                                      | 6.3 | 15    |

a Calculated from determined constituents.

## PEE DEE RIVER BASIN--Continued

## IRISH BUFFALO CREEK NEAR CONCORD, N. C.

LOCATION.--At bridge on State Highway 49, 1 mile south of Faggarts Crossroads, 1 mile upstream from mouth, and 4½ miles southeast of Concord, Cabarrus County.

DRAINAGE AREA.--44.7 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH   | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|------|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |      |       |
| Oct. 16, 1956....  |                      | 29                         | 0.04      | 15           | 3.2            | 312         | 19            | a503                            | 80                         | 164           | --           | 1.4                        | 962                                                | 50                            | 0             | 1,430                                     | 9.8  | 65    |
| Nov. 16.....       |                      | 39                         | .07       | 15           | 3.5            | 330         | 25            | b720                            | 91                         | 75            | --           | 3.4                        | 1,000                                              | 52                            | 0             | 1,430                                     | 9.0  | --    |
| Dec. 14.....       |                      | 39                         | .03       | 11           | .5             | 405         | 20            | c806                            | 110                        | 80            | --           | .8                         | d1,070                                             | 30                            | 0             | 1,730                                     | 10.4 | --    |
| Jan. 17, 1957....  |                      | 38                         | .10       | 15           | 5.6            | 275         | 19            | 529                             | 56                         | 145           | --           | .7                         | 863                                                | 61                            | 0             | 1,320                                     | 7.8  | --    |
| Feb. 13.....       |                      | 30                         | .44       | 13           | 3.3            | 220         | 13            | 321                             | 78                         | 119           | --           | 1.3                        | 647                                                | 47                            | 0             | 1,040                                     | 7.2  | --    |
| Mar. 13.....       |                      | 27                         | .33       | 12           | 2.8            | 228         | 18            | e353                            | 77                         | 126           | --           | 1.7                        | 825                                                | 40                            | 0             | 1,310                                     | 9.2  | --    |
| Apr. 18.....       |                      | 37                         | .17       | 13           | 2.2            | 298         | 18            | 365                             | 88                         | 155           | --           | 1.4                        | 802                                                | 41                            | 0             | 1,450                                     | 7.3  | 5     |
| May 16.....        |                      | 37                         | .07       | 15           | 3.4            | 325         | 21            | 4726                            | 47                         | 110           | 0.8          | .8                         | 932                                                | 51                            | 0             | 1,450                                     | 8.8  | --    |
| June 14.....       |                      | 31                         | .02       | 16           | 4.8            | 259         | 16            | 358                             | 74                         | 178           | 1.1          | .7                         | 766                                                | 60                            | 0             | 1,280                                     | 6.9  | 15    |
| July 15.....       |                      | 37                         | .05       | 15           | 4.9            | 315         | 20            | 424                             | 112                        | 220           | 1.2          | 1.8                        | 950                                                | 57                            | 0             | 1,480                                     | 7.0  | 45    |
| Aug. 13.....       |                      | 31                         | .03       | 16           | 4.6            | 492         | 21            | 801                             | 119                        | 190           | .8           | 3.0                        | d1,185                                             | 58                            | 0             | 1,730                                     | 7.3  | 120   |
| Sept. 17.....      |                      | 15                         | .14       | 6.0          | .3             | 304         | 41            | g492                            | 27                         | 65            | .9           | 1.5                        | 863                                                | 16                            | 0             | 1,280                                     | 10.0 | --    |

a Includes equivalent of 136 parts per million of carbonate (CO<sub>3</sub>).

b Includes equivalent of 64 parts per million of carbonate (CO<sub>3</sub>).

c Includes equivalent of 310 parts per million of carbonate (CO<sub>3</sub>).

d Includes equivalent of 44 parts per million of carbonate (CO<sub>3</sub>).

e Includes equivalent of 45 parts per million of carbonate (CO<sub>3</sub>).

f Includes equivalent of 67 parts per million of carbonate (CO<sub>3</sub>).

g Includes equivalent of 178 parts per million of carbonate (CO<sub>3</sub>).

PEE DEE RIVER BASIN--Continued  
ROCKY RIVER NEAR CONCORD, N. C.

LOCATION.--On highway bridge three-fourths of a mile upstream from mouth of Dutch Buffalo Creek and 6.8 miles southeast of Concord, Cabarrus County.  
DRAINAGE AREA.--402 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.  
REMARKS.--No discharge records available for this station.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 16, 1956..... |                      | 22                         | 0.14      | 12           | 4.4            | 114         | 7.1           | 210                             | 21                         | 72            | 0.2          | 0.6                        | 365                                                | 49                            | 0             | 606                                       | 8.1 | 30    |
| Nov. 16.....       |                      | 25                         | .18       | 13           | 4.4            | 117         | 8.9           | 232                             | 33                         | 64            | .1           | 1.4                        | 397                                                | 51                            | 0             | 626                                       | 7.2 | 45    |
| Dec. 14.....       |                      | 26                         | .07       | 11           | 4.0            | 116         | 7.9           | 238                             | 40                         | 46            | .2           | .4                         | 380                                                | 45                            | 0             | 590                                       | 8.4 | --    |
| Jan. 17, 1957....  |                      | 26                         | .31       | 12           | 5.5            | 81          | 6.4           | 183                             | 28                         | 45            | .2           | .3                         | 300                                                | 52                            | 0             | 495                                       | 7.5 | --    |
| Feb. 13.....       |                      | 19                         | .03       | 7.5          | 2.6            | 33          | 2.8           | 82                              | 14                         | 15            | .1           | 1.5                        | 136                                                | 30                            | 0             | 218                                       | 7.2 | 15    |
| Mar. 15.....       |                      | 19                         | .01       | 8.4          | 2.5            | 36          | 3.4           | 87                              | 16                         | 18            | .3           | 1.3                        | 154                                                | 31                            | 0             | 241                                       | 7.1 | 25    |
| Apr. 18.....       |                      | 22                         | .01       | 8.7          | 2.6            | 64          | 4.7           | 159                             | 22                         | 21            | .3           | .9                         | 228                                                | 33                            | 0             | 365                                       | 7.3 | 10    |
| May 16.....        |                      | 29                         | .19       | 15           | 6.1            | 63          | 7.4           | 161                             | 3.6                        | 42            | .3           | .8                         | 278                                                | 62                            | 0             | 494                                       | 7.1 | 16    |
| June 14.....       |                      | 20                         | .00       | 8.7          | 3.4            | 48          | 4.2           | 109                             | 18                         | 23            | .3           | 1.9                        | 192                                                | 35                            | 0             | 312                                       | 6.9 | 20    |
| July 16.....       |                      | 20                         | .00       | 99           | 3.9            | 62          | 5.6           | 168                             | 24                         | 162           | .8           | 2.3                        | 554                                                | 263                           | 126           | --                                        | 7.0 | 30    |
| Aug. 13.....       |                      | 23                         | .03       | 21           | 6.9            | 190         | 13            | 386                             | 22                         | 132           | .5           | 1.5                        | 607                                                | 80                            | 0             | 1,100                                     | 7.3 | 40    |
| Sept. 17.....      |                      | 16                         | .03       | 7.8          | 2.7            | 78          | 7.0           | 159                             | 30                         | 36            | .6           | 2.1                        | 262                                                | 30                            | 0             | 410                                       | 7.1 | 20    |

a Includes equivalent of 9 parts per million of carbonate (CO<sub>3</sub>).

b Calculated from determined constituents.

## PEE DEE RIVER BASIN--Continued

## DUTCH BUFFALO CREEK NEAR CONCORD, N. C.

LOCATION.--At bridge on State Highway 73, 0.8 mile upstream from Adam Creek, and 1 mile southeast of Mount Pleasant, Cabarrus County. DRAINAGE AREA.--64.2 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--No discharge records available for this station.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |     |       |
| Oct. 16, 1956...   |                      | 20                         | 0.30      | 12           | 4.3            | 7.4         | 1.6           | 63                              | 5.3                        | 5.6           | 0.1          | 0.1                        | 89                                                  | 48                            | 0             | 132                                        | 6.9 | 5     |
| Nov. 16.....       |                      | 22                         | .07       | 12           | 4.6            | 7.3         | 1.0           | 65                              | 6.3                        | 6.2           | .1           | 1.1                        | 94                                                  | 50                            | 0             | 142                                        | 7.0 | 8     |
| Dec. 14.....       |                      | 22                         | .04       | 13           | 5.1            | 7.8         | 1.1           | 70                              | 5.2                        | 5.0           | .1           | .6                         | 96                                                  | 54                            | 0             | 145                                        | 7.3 | 5     |
| Jan. 17, 1957...   |                      | 21                         | .02       | 12           | 4.7            | 6.1         | .8            | 56                              | 7.4                        | 5.8           | .1           | .7                         | as <sup>a</sup> 7                                   | 48                            | 2             | 128                                        | 7.1 | 5     |
| Feb. 13.....       |                      | 17                         | .01       | 8.6          | 2.8            | 5.2         | .9            | 34                              | 5.9                        | 4.8           | .0           | 1.5                        | 68                                                  | 32                            | 5             | 109                                        | 7.1 | 10    |
| Mar. 15.....       |                      | 16                         | .01       | 9.0          | 3.6            | 5.1         | 1.0           | 43                              | 5.7                        | 4.8           | .1           | .8                         | 75                                                  | 37                            | 2             | 119                                        | 7.2 | 5     |
| Apr. 18.....       |                      | 18                         | .10       | 9.5          | 2.8            | 6.0         | 1.2           | 49                              | 5.7                        | 4.8           | .1           | .3                         | 78                                                  | 35                            | 0             | 127                                        | 7.2 | 3     |
| May 16.....        |                      | 17                         | .02       | 8.0          | 3.4            | 5.7         | 1.8           | 46                              | 4.4                        | 5.0           | .1           | 1.5                        | 82                                                  | 34                            | 0             | 102                                        | 6.7 | 20    |
| June 14.....       |                      | 18                         | .00       | 12           | 4.7            | 6.9         | 1.0           | 63                              | 4.3                        | 4.5           | .3           | .9                         | 87                                                  | 48                            | 0             | 132                                        | 6.6 | 8     |
| July 16.....       |                      | 16                         | .01       | 14           | 5.4            | 7.2         | 2.2           | 54                              | 4.0                        | 19            | .7           | 1.6                        | 107                                                 | 56                            | 12            | 151                                        | 6.9 | 10    |
| Aug. 13.....       |                      | 14                         | .02       | 14           | 5.4            | 8.1         | 2.2           | 74                              | 4.5                        | 6.2           | .5           | 3.3                        | 95                                                  | 58                            | 0             | 160                                        | 6.7 | 7     |
| Sept. 17.....      |                      | 13                         | .04       | 12           | 5.2            | 6.2         | 1.5           | 72                              | 3.8                        | 4.0           | .1           | .3                         | 84                                                  | 51                            | 0             | 131                                        | 7.0 | 15    |

<sup>a</sup> Calculated from determined constituents.

PEE DEE RIVER BASIN--Continued  
 ROCKY RIVER NEAR NORWOOD, N. C.

LOCATION.--At bridge on county road, 2 miles upstream from gaging station, half a mile downstream from Cribbs Creek, and 5.5 miles southwest of Norwood, Stanly County.

DRAINAGE AREA.--1,231 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 506 ppm Sept. 6-8; minimum, 64 ppm Feb. 1-10.

Hardness: Maximum, 60 ppm July 17-18; minimum, 25 ppm Apr. 1-10.

Specific conductance: Maximum daily, 1,000 micromhos Sept. 7; minimum daily, 75.6 micromhos Feb. 2.

Water temperatures: Maximum, 87° F July 24, 25; minimum, 37° F Jan. 19, 20.

EXTREMES, 1953-57.--Dissolved solids: Maximum, 506 ppm Sept. 6-8, 1957; minimum, 45 ppm Mar. 14, 16-20, 1956.

Hardness: Maximum, 60 ppm July 17-18, 1957; minimum, 18 ppm Sept. 26-30, 1956.

Specific conductance: Maximum daily, 1,000 micromhos Sept. 7, 1957; minimum daily, 44.7 micromhos Mar. 6, 1956.

Water temperatures: Maximum, 89° F July 22, 1956; minimum, freezing point Dec. 17, 18, 22, 1955.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection        | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color | Oxygen consumed |          |
|---------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|-----------------|----------|
|                           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg/l                 | Non-carbonate |                                            |     |       | Unfiltered      | Filtered |
| Oct. 1-4, 8-10, 1956..... | 14                   | 0.03                       | 7.6       | 2.4          | 18             | 2.9         | 42            | 15                              | 13                         | 0.0           | 2.2          | 108                        | 0                                                   | 29                            | 0             | 152                                        | 6.7 | 20    | 9               | 5        |
| Oct. 5-7.....             | 13                   | .01                        | 6.9       | 2.9          | 33             | 3.7         | 64            | 23                              | 22                         | .4            | 1.5          | al39                       | 0                                                   | 29                            | 0             | 233                                        | 6.9 | 17    | --              | --       |
| Oct. 11-12.....           | 15                   | .28                        | 11        | 3.1          | 27             | 2.8         | 58            | 15                              | 24                         | .1            | 1.9          | al28                       | 0                                                   | 41                            | 0             | 204                                        | 7.4 | 33    | --              | --       |
| Oct. 13-20.....           | 14                   | .10                        | 10        | 3.9          | 60             | 4.6         | 119           | 23                              | 40                         | .1            | 1.2          | 231                        | 0                                                   | 42                            | 0             | 367                                        | 7.1 | 45    | 10              | 6        |
| Oct. 21-22, 28-31.....    | 16                   | .14                        | 10        | 4.0          | 70             | 5.0         | 132           | 25                              | 43                         | .1            | 1.3          | 251                        | 0                                                   | 42                            | 0             | 402                                        | 7.2 | 30    | 9               | 7        |
| Oct. 23-27.....           | 17                   | .12                        | 8.9       | 3.8          | 33             | 4.0         | 76            | 14                              | 23                         | .2            | 1.5          | al44                       | 0                                                   | 38                            | 0             | 230                                        | 7.1 | 35    | --              | --       |
| Nov. 1-10.....            | 15                   | .13                        | 11        | 4.1          | 70             | 5.0         | 137           | 18                              | 47                         | .1            | .9           | 252                        | 0                                                   | 44                            | 0             | 413                                        | 7.1 | 27    | 7               | 6        |
| Nov. 11-14, 17-18.....    | 17                   | .08                        | 11        | 4.6          | 70             | 5.1         | 136           | 24                              | 48                         | .1            | 1.3          | 260                        | 0                                                   | 46                            | 0             | 439                                        | 7.9 | 17    | 7               | 5        |
| Nov. 15-16, 19-20.....    | 15                   | .04                        | 9.9       | 3.5          | 39             | 3.7         | 95            | 12                              | 27                         | .2            | 1.6          | al59                       | 0                                                   | 39                            | 0             | 273                                        | 7.5 | 20    | --              | --       |
| Nov. 21-23.....           | 16                   | .07                        | 8.9       | 3.3          | 22             | 3.0         | 108           | 11                              | 27                         | .2            | 1.7          | 208                        | 0                                                   | 43                            | 0             | 237                                        | 7.3 | 27    | --              | --       |
| Nov. 24-30.....           | 18                   | .10                        | 9.6       | 4.6          | 52             | 4.4         | 108           | 21                              | 36                         | .1            | 1.2          | 208                        | 0                                                   | 43                            | 0             | 349                                        | 7.3 | 15    | 6               | 4        |
| Dec. 1-10.....            | 13                   | .06                        | 11        | 3.9          | 75             | 4.7         | 139           | 24                              | 49                         | .1            | 1.9          | 256                        | 0                                                   | 44                            | 0             | 428                                        | 7.1 | 20    | 8               | 4        |
| Dec. 11-15.....           | 18                   | .04                        | 11        | 6.3          | 80             | 4.0         | 155           | 25                              | 52                         | .3            | 3.1          | a377                       | 54                                                  | 0                             | 0             | 468                                        | 7.6 | 15    | --              | --       |
| Dec. 16-20.....           | 16                   | .01                        | 8.0       | 3.3          | 18             | 3.4         | 45            | 12                              | 15                         | .2            | 2.1          | 113                        | 0                                                   | 33                            | 0             | 170                                        | 7.2 | 10    | --              | --       |
| Dec. 21-22.....           | 19                   | .03                        | 9.2       | 5.4          | 45             | 4.1         | 100           | 20                              | 33                         | .2            | 2.5          | al88                       | 45                                                  | 0                             | 0             | 310                                        | 7.5 | 15    | --              | --       |
| Dec. 23-31.....           | 15                   | .04                        | 7.1       | 2.9          | 12             | 2.6         | 34            | 12                              | 12                         | .0            | 2.5          | 93                         | 0                                                   | 30                            | 2             | 131                                        | 6.6 | 20    | 8               | 4        |

a Calculated from determined constituents.

## PEE DEE RIVER BASIN--CONTINUED

## ROCKY RIVER NEAR NORWOOD, N. C.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nitrum            | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Jan. 1-10, 1957      |                      | 17                         | 0.12      | 9.2          | 3.3            | 29          | 2.9           | 68                              | 14                         | 24            | 0.0          | 1.7                        | 146                                                | 37                            | 0             | 233                                       | 7.3 | 15    | 5               | 4        |
| Jan. 11-20, 1957     |                      | 17                         | 0.06      | 9.6          | 3.3            | 47          | 3.2           | 92                              | 23                         | 30            | .1           | 1.5                        | al89                                               | 38                            | 0             | 292                                       | 6.8 | 20    | 4               | 3        |
| Jan. 21-26, 1957     |                      | 14                         | .06       | 10           | 3.8            | 52          | 3.8           | 108                             | 20                         | 33            | .0           | 1.5                        | 192                                                | 41                            | 0             | 330                                       | 7.2 | 15    | 6               | 4        |
| Jan. 27-31, 1957     |                      | 15                         | .03       | 7.8          | 3.4            | 29          | 3.1           | 62                              | 16                         | 21            | .2           | 1.9                        | 139                                                | 33                            | 0             | 223                                       | 7.4 | 18    | --              | --       |
| Feb. 1-10, 1957      |                      | 12                         | .01       | 6.0          | 2.6            | 16          | 1.9           | 26                              | 9.3                        | 6.8           | .1           | 2.9                        | 64                                                 | 26                            | 0             | 103                                       | 6.7 | 12    | 7               | 5        |
| Feb. 11-19, 1957     |                      | 16                         | .02       | 6.7          | 2.3            | 16          | 1.9           | 45                              | 13                         | 11            | .0           | 1.7                        | 96                                                 | 26                            | 0             | 147                                       | 6.9 | 8     | 6               | 3        |
| Feb. 20-28, 1957     |                      | 12                         | .02       | 5.6          | 3.6            | 12          | 1.3           | 11                              | 9.4                        | 11            | .3           | 1.1                        | 86                                                 | 29                            | 0             | 134                                       | 6.8 | 10    | 5               | 3        |
| Mar. 1-10, 1957      |                      | 14                         | .02       | 6.8          | 3.4            | 21          | 2.2           | 58                              | 9.5                        | 9.5           | .1           | 1.5                        | 102                                                | 32                            | 0             | 160                                       | 6.6 | 10    | 4               | 2        |
| Mar. 11-20, 1957     |                      | 12                         | .02       | 6.8          | 3.6            | 21          | 2.2           | 58                              | 9.5                        | 9.5           | .1           | 1.5                        | 102                                                | 32                            | 0             | 160                                       | 6.6 | 10    | 4               | 2        |
| Mar. 21-31, 1957     |                      | 12                         | .02       | 6.0          | 3.2            | 14          | 1.7           | 40                              | 6.9                        | 10            | .1           | 1.7                        | 80                                                 | 28                            | 0             | 124                                       | 6.4 | 10    | 6               | 3        |
| Apr. 1-10, 1957      |                      | 14                         | .14       | 5.5          | 2.9            | 12          | .9            | 37                              | 7.2                        | 9.5           | .3           | 2.2                        | 83                                                 | 25                            | 0             | 122                                       | 6.1 | 15    | 7               | 4        |
| Apr. 11-20, 1957     |                      | 15                         | .09       | 8.0          | 2.4            | 24          | 1.6           | 62                              | 12                         | 16            | .2           | 2.1                        | 113                                                | 30                            | 0             | 182                                       | 6.8 | 20    | --              | 3        |
| Apr. 21-25, 1957     |                      | 16                         | .03       | 7.2          | 3.4            | 21          | 1.9           | 63                              | 9.9                        | 10            | .2           | 2.0                        | 110                                                | 32                            | 0             | 170                                       | 6.8 | 10    | --              | --       |
| Apr. 26-30, 1957     |                      | 11                         | .00       | 9.2          | 3.6            | 41          | 3.0           | 96                              | 16                         | 31            | .2           | 2.6                        | al165                                              | 38                            | 0             | 261                                       | 7.2 | 10    | --              | --       |
| May 1-2, 9-10, 1957  |                      | 13                         | .03       | 8.4          | 6.0            | 32          | 2.6           | 95                              | 11                         | 16            | .0           | 1.7                        | al137                                              | 46                            | 0             | 238                                       | 7.1 | 15    | --              | --       |
| May 3-6, 1957        |                      | 17                         | .04       | 8.8          | 5.9            | 44          | 3.1           | 115                             | 15                         | 27            | .1           | 1.4                        | al197                                              | 52                            | 0             | 321                                       | 7.3 | 20    | --              | --       |
| May 7-10, 1957       |                      | 14                         | .06       | 17.6         | 3.6            | 28          | 2.9           | 73                              | 13                         | 19            | .3           | 2.2                        | 133                                                | 34                            | 0             | 209                                       | 6.8 | 20    | 6               | 4        |
| May 12-20, 1957      |                      | 15                         | .11       | 7.6          | 3.2            | 21          | 2.6           | 58                              | 11                         | 15            | .4           | 3.4                        | 114                                                | 32                            | 0             | 170                                       | 6.9 | 15    | 6               | 4        |
| May 21-31, 1957      |                      | 16                         | .08       | 8.8          | 4.9            | 48          | 2.5           | 100                             | 19                         | 34            | .2           | 3.1                        | al186                                              | 42                            | 0             | 320                                       | 7.6 | 20    | --              | --       |
| June 1-3, 1957       |                      | 10                         | .02       | 6.1          | 3.7            | 11          | 2.2           | 35                              | 7.7                        | 9.2           | .4           | 4.4                        | 81                                                 | 30                            | 2             | 119                                       | 6.9 | 22    | --              | 4        |
| June 4-10, 1957      |                      | 12                         | .03       | 5.9          | 3.0            | 12          | 1.7           | 34                              | 8.5                        | 10            | .2           | 2.4                        | 82                                                 | 27                            | 0             | 120                                       | 7.0 | 28    | --              | 3        |
| June 11-15, 1957     |                      | --                         | .11       | 8.1          | 3.7            | --          | --            | 63                              | 14                         | 26            | --           | 2.6                        | --                                                 | 35                            | 0             | 226                                       | 6.9 | --    | --              | --       |
| June 16-24, 1957     |                      | 14                         | .02       | 6.8          | 3.6            | 28          | 3.0           | 63                              | 12                         | 19            | .0           | 3.0                        | 136                                                | 32                            | 0             | 200                                       | 7.3 | 30    | 5               | 5        |
| June 25-29, 1957     |                      | 15                         | .11       | 8.5          | 3.7            | 41          | 2.7           | 89                              | 14                         | 25            | .3           | 3.2                        | al158                                              | 36                            | 0             | 276                                       | 7.5 | 55    | --              | --       |
| July 1-10, 1957      |                      | 13                         | .01       | 7.6          | 3.9            | 18          | 2.6           | 59                              | 5.7                        | 13            | .2           | 3.6                        | 105                                                | 35                            | 0             | 180                                       | 7.2 | 15    | --              | 2        |
| July 11-14, 1957     |                      | 9.2                        | .04       | 8.8          | 4.4            | 23          | 2.8           | 65                              | 10                         | 16            | .0           | 2.9                        | al109                                              | 40                            | 0             | 191                                       | 6.9 | 20    | --              | --       |
| July 15-16, 1957     |                      | 7.6                        | .01       | 11           | 4.9            | 65          | 4.1           | 115                             | 20                         | 54            | .3           | 2.0                        | 251                                                | 47                            | 0             | 429                                       | 7.1 | 20    | --              | --       |
| July 19-20, 1957     |                      | 14                         | .03       | 13           | 6.8            | 96          | 6.6           | 194                             | 24                         | 68            | .1           | 2.0                        | al329                                              | 60                            | 0             | 560                                       | 8.2 | 25    | --              | --       |
| July 21-23, 1957     |                      | 6.7                        | .01       | 9.6          | 4.8            | 80          | 4.6           | 142                             | 19                         | 48            | .2           | 1.8                        | 247                                                | 44                            | 0             | 440                                       | 7.3 | 20    | 7               | 5        |
| July 24-25, 1957     |                      | 7.6                        | .01       | 13           | 4.5            | 115         | 6.2           | 194                             | 25                         | 74            | .4           | 1.3                        | 347                                                | 52                            | 0             | 619                                       | 7.1 | 30    | --              | --       |
| July 26, 28-31, 1957 |                      | 10                         | .02       | 12           | 4.9            | 135         | 7.9           | 222                             | 27                         | 85            | .3           | 2.0                        | 402                                                | 51                            | 0             | 705                                       | 7.8 | 30    | --              | 12       |
| Aug. 1-4, 6-7, 1957  |                      | 7.5                        | .03       | 11           | 4.9            | 77          | 6.7           | 149                             | 17                         | 50            | .0           | 3.2                        | al251                                              | 47                            | 0             | 440                                       | 7.4 | 40    | --              | --       |
| Aug. 5, 8-10, 1957   |                      | 8.7                        | .03       | 10           | 3.9            | 70          | 5.6           | 121                             | 21                         | 48            | .1           | 2.8                        | 244                                                | 41                            | 0             | 420                                       | 7.7 | 20    | 7               | 4        |
| Aug. 11-14, 1957     |                      | 13                         | .12       | 14           | 6.1            | 136         | 9.1           | 257                             | 29                         | 78            | .2           | 3.6                        | al321                                              | 43                            | 0             | 727                                       | 8.0 | 40    | --              | --       |
| Aug. 18-20, 1957     |                      | 14                         | .06       | 10           | 4.1            | 118         | 6.7           | 171                             | 29                         | 77            | .2           | 3.6                        | 366                                                | 43                            | 0             | 612                                       | 7.5 | 35    | 7               | 5        |

[illegible]

a Calculated from determined constituents.



## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## PEE DEE RIVER BASIN--Continued

## ROCKY RIVER NEAR NORWOOD, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 5 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 69   | 71   | 44   | 45   | 55   | 50   | 58   | 79  | 77   | 82   | 84   | 84    |
| 2       | 72   | 67   | 43   | 42   | 54   | 51   | 64   | 76  | 81   | 80   | 85   | 83    |
| 3       | 70   | 67   | 45   | 38   | 52   | 51   | 66   | 68  | 81   | 81   | 83   | 83    |
| 4       | 73   | 64   | 46   | 39   | 56   | 49   | 64   | 63  | 74   | 82   | 81   | 80    |
| 5       | 73   | 65   | 47   | 43   | 54   | 48   | 61   | 64  | 78   | 83   | 83   | 81    |
| 6       | 69   | 52   | 50   | 43   | 51   | 48   | 59   | 66  | 75   | 82   | 82   | 80    |
| 7       | 68   | 60   | 52   | 47   | 51   | 49   | 60   | 68  | 75   | 83   | 79   | 79    |
| 8       | 66   | 59   | 52   | 45   | 52   | 47   | 61   | 70  | 76   | 84   | 78   | 77    |
| 9       | 66   | 56   | 56   | 49   | 53   | 48   | 60   | 72  | 68   | 84   | 80   | 79    |
| 10      | 65   | 59   | 52   | 53   | 55   | 50   | 59   | 73  | 68   | 85   | 82   | 78    |
| 11      | 63   | 58   | 49   | 47   | 55   | 53   | 61   | 70  | 70   | 82   | 82   | 79    |
| 12      | 61   | 55   | 52   | 47   | 51   | 56   | 65   | 72  | 76   | 84   | 86   | 80    |
| 13      | 61   | 53   | 59   | 44   | 50   | 54   | 60   | 76  | 81   | 84   | 85   | 80    |
| 14      | 62   | 52   | 58   | 47   | 48   | 51   | 60   | 77  | 76   | 85   | 84   | 80    |
| 15      | 62   | 54   | 58   | 42   | 48   | 60   | 61   | 75  | 81   | 86   | 84   | 80    |
| 16      | 63   | 56   | 53   | 39   | 48   | 60   | 61   | 76  | 82   | 86   | 86   | 78    |
| 17      | 63   | 55   | 58   | 38   | 48   | 50   | 62   | 75  | 84   | 86   | 84   | 74    |
| 18      | 65   | 55   | 56   | --   | 48   | 56   | 68   | 77  | 77   | 83   | 80   | 74    |
| 19      | 65   | 51   | 54   | 37   | 48   | 58   | 68   | 77  | 79   | 82   | 75   | 72    |
| 20      | 63   | 50   | 54   | 37   | 47   | 56   | 70   | 76  | 78   | 83   | 76   | 76    |
| 21      | 63   | 52   | 56   | 43   | 54   | 55   | 75   | 76  | 81   | 84   | 76   | 75    |
| 22      | 66   | 52   | 56   | 47   | 47   | 52   | 76   | 75  | 81   | 85   | 77   | 78    |
| 23      | 65   | 43   | 57   | 54   | 48   | 53   | 75   | 76  | 82   | 86   | 76   | 80    |
| 24      | 66   | 44   | 57   | 49   | 52   | 53   | 76   | 78  | 81   | 87   | 76   | 75    |
| 25      | 65   | 42   | 53   | 45   | 53   | 53   | 77   | 78  | 78   | 87   | 74   | 74    |
| 26      | 61   | 45   | 48   | 46   | --   | 53   | 76   | 77  | 78   | 81   | 76   | 71    |
| 27      | 60   | 43   | 46   | 48   | 58   | 54   | 78   | 78  | 81   | 79   | 79   | 73    |
| 28      | 63   | 42   | 46   | 53   | 51   | 55   | 79   | 74  | 78   | 80   | 81   | 63    |
| 29      | 61   | 43   | 46   | 49   | --   | 57   | 79   | 75  | 81   | 81   | 81   | 60    |
| 30      | 62   | 45   | 44   | 57   | --   | 59   | 78   | 72  | 81   | 83   | 83   | 65    |
| 31      | 64   | --   | 48   | 55   | --   | 58   | --   | 76  | --   | 85   | 84   | --    |
| Average | 65   | 54   | 51   | 46   | 51   | 53   | 67   | 74  | 78   | 83   | 81   | 76    |

PEE DEE RIVER BASIN--Continued

LITTLE RIVER NEAR MOUNT GILEAD, N. C.

LOCATION. --At bridge on State Highway 73, 5.1 miles southeast of Mount Gilead, Richmond County.  
DRAINAGE AREA. --244 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1956 to September 1957.

REMARKS. --No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  |                      | 11                         | 0.03      | 3.8          | 1.1            | 3.5         | 1.2           | 16                              | 2.1                        | 2.5           | 0.0          | 0.9                        | 42                                                 | 14                            | 1             | 50.6                                      | 6.4 | 30    |
| Nov. 16.....       |                      | 16                         | .03       | 4.5          | 1.5            | 6.3         | 1.0           | 27                              | 2.6                        | 5.2           | .0           | 1.2                        | 62                                                 | 17                            | 0             | 68.4                                      | 6.7 | 30    |
| Dec. 14.....       |                      | 17                         | .18       | 4.0          | 1.2            | 6.3         | 1.0           | 27                              | 1.8                        | 6.0           | .1           | .3                         | 58                                                 | 15                            | 0             | 68.7                                      | 7.0 | 20    |
| Jan. 17, 1957....  |                      | 18                         | .11       | 3.9          | 1.2            | 5.7         | .5            | 22                              | 1.6                        | 4.6           | .0           | .4                         | 53                                                 | 15                            | 0             | 64.8                                      | 7.1 | 5     |
| Feb. 13.....       |                      | 17                         | .06       | 3.5          | .6             | 5.1         | .9            | 13                              | 1.5                        | 4.0           | .0           | .7                         | 50                                                 | 11                            | 0             | 55.3                                      | 6.7 | 35    |
| Mar. 13.....       |                      | 18                         | .11       | 3.4          | .9             | 5.4         | .9            | 23                              | 2.0                        | 3.2           | .1           | .5                         | 47                                                 | 11                            | 0             | 50.9                                      | 7.1 | 10    |
| Apr. 19.....       |                      | 18                         | .11       | 3.4          | .9             | 5.4         | .9            | 23                              | 2.0                        | 3.2           | .1           | .5                         | 49                                                 | 10                            | 0             | 54.5                                      | 6.9 | 3     |
| May 16.....        |                      | 18                         | .01       | 4.0          | 1.0            | 5.8         | 1.0           | 25                              | 1.5                        | 4.8           | .1           | .4                         | 53                                                 | 14                            | 0             | 62.6                                      | 6.7 | 9     |
| June 15.....       |                      | 14                         | .04       | 3.4          | .9             | 4.2         | .6            | 16                              | 2.4                        | 2.5           | .3           | 1.0                        | 50                                                 | 12                            | 0             | 57.0                                      | 6.3 | 35    |
| July 16.....       |                      | 13                         | .01       | 4.8          | 1.6            | 6.5         | 1.4           | 27                              | 1.6                        | 5.4           | .6           | .5                         | 55                                                 | 18                            | 0             | 72.8                                      | 6.6 | 10    |
| Aug. 13.....       |                      | 10                         | .09       | 4.5          | 1.0            | 4.0         | 1.6           | 21                              | 4.9                        | 3.0           | .0           | 2.0                        | 51                                                 | 15                            | 0             | 53.4                                      | 6.4 | 35    |
| Sept. 17.....      |                      | 7.1                        | .08       | 2.8          | 2.2            | 3.9         | 1.4           | 23                              | .3                         | 4.4           | .0           | 1.4                        | 55                                                 | 16                            | 0             | 55.7                                      | 6.3 | 65    |

## PEE DEE RIVER BASIN--Continued

## LYNCHEs RIVER AT EFFINGHAM, S. C.

LOCATION.--Temperature recorder at gaging station at bridge on U. S. Highway 52, 75 feet upstream from Atlantic Coast Line Railroad bridge, and 1 mile south of Effingham, Florence County.

DRAINAGE AREA.--1,030 square miles, approximately.

RECORDS AVAILABLE.--October 1954 to September 1957.

EXTREMES, 1954-57.--Water temperatures: Maximum, 83° F July 14, 15, Sept. 4, 5; minimum, 41° F Jan. 20, 21.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 65      | 65  | 64       | 63  | 46       | 46  | 47      | 47  | 58       | 56  | 57    | 56  | 57    | 57  | 74  | 73  | 72   | 72  | 80   | 79  | 81     | 79  | 81        | 80  |
| 2.....       | 65      | 65  | 65       | 64  | 46       | 45  | 47      | 47  | 58       | 56  | 57    | 56  | 57    | 57  | 74  | 73  | 72   | 72  | 79   | 79  | 81     | 80  | 81        | 80  |
| 3.....       | 67      | 65  | 65       | 65  | 45       | 45  | 47      | 47  | 58       | 56  | 57    | 56  | 57    | 57  | 74  | 73  | 72   | 72  | 79   | 79  | 81     | 81  | 81        | 80  |
| 4.....       | 68      | 67  | 65       | 65  | 46       | 45  | 45      | 44  | 58       | 58  | 54    | 53  | 64    | 63  | 70  | 70  | 74   | 74  | 79   | 78  | 82     | 81  | 83        | 81  |
| 5.....       | 69      | 68  | 65       | 64  | 46       | 46  | 44      | 44  | 59       | 58  | 53    | 51  | 64    | 64  | 62  | 62  | 74   | 74  | 80   | 78  | 82     | 81  | 83        | 81  |
| 6.....       | 69      | 69  | 64       | 62  | 47       | 46  | 45      | 44  | 59       | 58  | 51    | 50  | 64    | 63  | 64  | 63  | 74   | 73  | 81   | 79  | 82     | 81  | 82        | 81  |
| 7.....       | 70      | 69  | 62       | 61  | 48       | 47  | 46      | 45  | 58       | 58  | 50    | 49  | 63    | 62  | 64  | 63  | 76   | 74  | 80   | 79  | 81     | 79  | 82        | 81  |
| 8.....       | 70      | 68  | 61       | 60  | 50       | 48  | 46      | 46  | 58       | 58  | 50    | 50  | 63    | 63  | 64  | 64  | 76   | 75  | 81   | 80  | 79     | 78  | 81        | 78  |
| 9.....       | 68      | 66  | 60       | 58  | 52       | 50  | 48      | 46  | 58       | 58  | 50    | 48  | 63    | 63  | 64  | 64  | 76   | 74  | 80   | 80  | 78     | 77  | 78        | 77  |
| 10.....      | 66      | 66  | 58       | 55  | 52       | 52  | 50      | 48  | 59       | 58  | 48    | 48  | 63    | 61  | 65  | 64  | 74   | 73  | 81   | 80  | 78     | 77  | 78        | 78  |
| 11.....      | 66      | 64  | 55       | 54  | 52       | 51  | 50      | 50  | 59       | 59  | 49    | 48  | 61    | 60  | 65  | 65  | 73   | 72  | 81   | 80  | 78     | 78  | 79        | 78  |
| 12.....      | 64      | 63  | 54       | 54  | 51       | 51  | 49      | 49  | 59       | 56  | 52    | 49  | 61    | 60  | 68  | 65  | 73   | 72  | 80   | 79  | 80     | 78  | 80        | 79  |
| 13.....      | 63      | 62  | 54       | 54  | 53       | 51  | 49      | 49  | 56       | 54  | 53    | 52  | 61    | 61  | 69  | 68  | 75   | 73  | 81   | 79  | 80     | 79  | 80        | 79  |
| 14.....      | 63      | 62  | 54       | 53  | 55       | 53  | 49      | 49  | 54       | 53  | 56    | 53  | 61    | 59  | 72  | 69  | 76   | 74  | 83   | 81  | 80     | 80  | 81        | 80  |
| 15.....      | 63      | 63  | 53       | 53  | 55       | 55  | 49      | 48  | 53       | 52  | 58    | 56  | 59    | 57  | 72  | 72  | 77   | 75  | 83   | 81  | 80     | 79  | 81        | 80  |
| 16.....      | 64      | 63  | 54       | 53  | 58       | 56  | 48      | 46  | 52       | 51  | 59    | 58  | 57    | 56  | 72  | 71  | 77   | 76  | 81   | 79  | 81     | 79  | 80        | 79  |
| 17.....      | 64      | 63  | 56       | 54  | 58       | 56  | 46      | 43  | 51       | 50  | 59    | 58  | 57    | 56  | 71  | 71  | 79   | 77  | 80   | 80  | 81     | 80  | 80        | 79  |
| 18.....      | 64      | 63  | 56       | 56  | 58       | 58  | 43      | 43  | 50       | 50  | 59    | 58  | 57    | 57  | 71  | 71  | 80   | 79  | 80   | 79  | 81     | 80  | 79        | 78  |
| 19.....      | 65      | 64  | 56       | 54  | 58       | 58  | 43      | 42  | 50       | 50  | 59    | 58  | 57    | 57  | 71  | 71  | 81   | 79  | 80   | 78  | 80     | 78  | 80        | 79  |
| 20.....      | 65      | 64  | 54       | 53  | 58       | 58  | 42      | 41  | 52       | 50  | 59    | 59  | 58    | 58  | 71  | 71  | 80   | 78  | 79   | 78  | 77     | 79  | 78        | 78  |
| 21.....      | 64      | 64  | 54       | 53  | 57       | 57  | 42      | 41  | 52       | 51  | 59    | 59  | 58    | 58  | 71  | 71  | 78   | 77  | 79   | 79  | 77     | 76  | 79        | 78  |
| 22.....      | 65      | 64  | 54       | 54  | 57       | 57  | 46      | 42  | 51       | 50  | 59    | 56  | 67    | 65  | 71  | 71  | 79   | 78  | 80   | 79  | 77     | 76  | 79        | 78  |
| 23.....      | 66      | 65  | 54       | 51  | 58       | 57  | 50      | 46  | 50       | 50  | 56    | 55  | 69    | 67  | 72  | 71  | 79   | 78  | 80   | 79  | 77     | 76  | 79        | 79  |
| 24.....      | 66      | 65  | 51       | 49  | 58       | 58  | 50      | 51  | 50       | 55  | 55    | 55  | 69    | 68  | 72  | 71  | 79   | 78  | 80   | 79  | 76     | 74  | 79        | 78  |
| 25.....      | 66      | 65  | 49       | 47  | 58       | 55  | 50      | 49  | 53       | 51  | 55    | 55  | 69    | 68  | 72  | 72  | 79   | 78  | 80   | 79  | 74     | 73  | 78        | 75  |
| 26.....      | 65      | 64  | 47       | 47  | 55       | 52  | 49      | 48  | 57       | 53  | 56    | 55  | 70    | 69  | 74  | 72  | 78   | 77  | 79   | 78  | 75     | 73  | 75        | 74  |
| 27.....      | 64      | 63  | 47       | 47  | 52       | 50  | 49      | 48  | 57       | 56  | 56    | 56  | 72    | 70  | 74  | 73  | 78   | 76  | 78   | 76  | 75     | 74  | 73        | 73  |
| 28.....      | 63      | 63  | 47       | 46  | 50       | 50  | 52      | 49  | 57       | 56  | 56    | 56  | 72    | 71  | 74  | 74  | 79   | 78  | 78   | 75  | 76     | 75  | 73        | 69  |
| 29.....      | 63      | 63  | 46       | 46  | 50       | 50  | 54      | 52  | --       | --  | --    | --  | 72    | 72  | 74  | 74  | 80   | 78  | 77   | 76  | 77     | 78  | 69        | 68  |
| 30.....      | 63      | 63  | 46       | 46  | 50       | 48  | 55      | 54  | --       | --  | --    | --  | 72    | 72  | 74  | 74  | 80   | 78  | 77   | 76  | 77     | 79  | 68        | 65  |
| 31.....      | 63      | 63  | --       | --  | 48       | 47  | 56      | 55  | --       | --  | 57    | 56  | --    | --  | 72  | 72  | --   | --  | 79   | 78  | 80     | 79  | --        | --  |
| Average..... | 65      | 65  | 56       | 55  | 53       | 52  | 48      | 47  | 55       | 54  | 55    | 54  | 64    | 63  | 70  | 69  | 77   | 76  | 80   | 79  | 79     | 78  | 79        | 78  |

## DROWNING CREEK NEAR HOFFMAN, N. C.

LOCATION.--Temperature recorder at gaging station on right bank 10 feet downstream from bridge on U. S. Highway 1, three-quarters of a mile downstream from Deep Creek, 1 mile upstream from Seaboard Airline Railroad bridge, and 4 miles northeast of Hoffman, Richmond County. DRAINAGE AREA.--178 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 74°F on many days during June, July, August and September; minimum, 36°F Jan. 20.

EXTREMES, 1953-57.--Water temperatures: Maximum, 77°F Aug. 21, 1955; minimum, 36°F on several days during winter months.

REMARKS.--No temperature record Feb. 11 to Apr. 7; pen carriage cable out of sheave. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

Continuous ethyl alcohol-actuated thermograph

| Day     | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|---------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|         | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1       | 62      | 60  | 62       | 61  | 44       | 43  | 44      | 44  | 55       | 54  |       |     | --    | --  | 68  | 67  | 66   | 65  | 74   | 72  | 72     | 71  | 72        | 71  |
| 2       | 64      | 62  | 62       | 62  | 44       | 42  | 44      | 42  | 55       | 54  |       |     | --    | --  | 68  | 67  | 66   | 65  | 73   | 72  | 72     | 71  | 73        | 72  |
| 3       | 64      | 62  | 62       | 62  | 43       | 42  | 44      | 42  | 54       | 52  |       |     | --    | --  | 67  | 64  | 66   | 67  | 72   | 70  | 73     | 71  | 74        | 72  |
| 4       | 66      | 64  | 62       | 62  | 44       | 43  | 44      | 43  | 54       | 52  |       |     | --    | --  | 68  | 67  | 68   | 67  | 73   | 71  | 73     | 72  | 74        | 73  |
| 5       | 66      | 63  | 62       | 61  | 45       | 44  | 43      | 40  | 56       | 54  |       |     | --    | --  | 58  | 55  | 69   | 69  | 73   | 70  | 73     | 72  | 73        | 73  |
| 6       | 66      | 66  | 61       | 59  | 47       | 45  | 44      | 43  | 54       | 52  |       |     | --    | --  | 58  | 56  | 69   | 68  | 73   | 72  | 73     | 72  | 72        | 71  |
| 7       | 66      | 65  | 59       | 56  | 48       | 47  | 46      | 44  | 52       | 52  |       |     | --    | --  | 59  | 56  | 69   | 68  | 73   | 71  | 72     | 69  | 71        | 70  |
| 8       | 65      | 62  | 56       | 50  | 48       | 46  | 44      | 42  | 52       | 52  |       |     | 61    | 59  | 59  | 58  | 70   | 69  | 73   | 71  | 70     | 68  | 70        | 70  |
| 9       | 62      | 59  | 56       | 54  | 52       | 50  | 47      | 45  | 52       | 52  |       |     | 61    | 58  | 61  | 59  | 70   | 66  | 74   | 72  | 69     | 67  | 71        | 70  |
| 10      | 59      | 59  | 54       | 51  | 52       | 50  | 50      | 47  | 54       | 52  |       |     | 59    | 54  | 62  | 60  | 66   | 66  | 74   | 73  | 70     | 68  | 72        | 71  |
| 11      | 59      | 58  | 51       | 49  | 50       | 48  | 50      | 48  |          |     |       |     | 58    | 54  | 62  | 62  | 66   | 65  | 74   | 72  | 71     | 70  | 72        | 71  |
| 12      | 58      | 56  | 51       | 50  | 49       | 48  | 48      | 46  |          |     |       |     | 60    | 58  | 64  | 62  | 66   | 66  | 73   | 71  | 72     | 71  | 73        | 71  |
| 13      | 56      | 56  | 51       | 51  | 52       | 49  | 46      | 46  |          |     |       |     | 60    | 57  | 65  | 64  | 71   | 68  | 72   | 71  | 73     | 72  | 74        | 72  |
| 14      | 56      | 56  | 51       | 49  | 55       | 52  | 46      | 46  |          |     |       |     | 57    | 54  | 67  | 65  | 72   | 70  | 73   | 72  | 73     | 72  | 74        | 73  |
| 15      | 56      | 56  | 50       | 49  | 57       | 55  | 46      | 44  |          |     |       |     | 55    | 53  | 68  | 66  | 73   | 71  | 73   | 72  | 73     | 72  | 73        | 72  |
| 16      | 58      | 56  | 52       | 50  | 58       | 57  | 44      | 42  |          |     |       |     | 54    | 52  | 69  | 66  | 73   | 72  | 73   | 72  | 74     | 72  | 72        | 71  |
| 17      | 60      | 58  | 54       | 52  | 58       | 56  | 42      | 41  |          |     |       |     | 56    | 54  | 69  | 67  | 74   | 72  | 74   | 72  | 74     | 73  | 72        | 71  |
| 18      | 60      | 60  | 54       | 53  | 56       | 55  | 41      | 39  |          |     |       |     | 58    | 56  | 68  | 66  | 74   | 73  | 74   | 74  | 72     | 72  | 72        | 71  |
| 19      | 62      | 61  | 51       | 50  | 53       | 52  | 37      | 36  |          |     |       |     | 61    | 58  | 68  | 67  | 74   | 72  | 74   | 72  | 74     | 71  | 70        | 70  |
| 20      | 62      | 61  | 50       | 48  | 53       | 52  | 37      | 36  |          |     |       |     | 64    | 61  | 68  | 67  | 74   | 72  | 73   | 71  | 70     | 70  | 71        | 70  |
| 21      | 61      | 61  | 50       | 48  | 53       | 52  | 40      | 37  |          |     |       |     | 66    | 63  | 68  | 66  | 72   | 71  | 72   | 71  | 70     | 68  | 73        | 71  |
| 22      | 62      | 61  | 50       | 50  | 54       | 53  | 45      | 40  |          |     |       |     | 68    | 66  | 68  | 66  | 72   | 72  | 73   | 71  | 69     | 68  | 73        | 72  |
| 23      | 62      | 62  | 50       | 47  | 56       | 54  | 50      | 45  |          |     |       |     | 69    | 67  | 69  | 67  | 72   | 72  | 74   | 72  | 69     | 68  | 73        | 72  |
| 24      | 62      | 61  | 47       | 44  | 57       | 56  | 50      | 48  |          |     |       |     | 69    | 67  | 70  | 68  | 72   | 71  | 74   | 72  | 68     | 68  | 73        | 70  |
| 25      | 62      | 61  | 44       | 43  | 56       | 51  | 48      | 46  |          |     |       |     | 68    | 67  | 70  | 69  | 72   | 71  | 72   | 71  | 68     | 66  | 70        | 66  |
| 26      | 61      | 60  | 43       | 42  | 51       | 46  | 46      | 45  |          |     |       |     | 68    | 67  | 70  | 70  | 71   | 70  | 72   | 70  | 67     | 66  | 64        | 64  |
| 27      | 60      | 60  | 42       | 42  | 46       | 44  | 47      | 45  |          |     |       |     | 68    | 67  | 70  | 69  | 72   | 70  | 71   | 70  | 68     | 66  | 64        | 64  |
| 28      | 60      | 60  | 42       | 42  | 46       | 44  | 51      | 47  |          |     |       |     | 68    | 67  | 70  | 68  | 72   | 71  | 70   | 69  | 68     | 67  | 64        | 61  |
| 29      | 60      | 60  | 42       | 42  | 46       | 46  | 46      | 45  |          |     |       |     | 68    | 67  | 68  | 67  | 73   | 72  | 70   | 69  | 70     | 68  | 61        | 60  |
| 30      | 60      | 60  | 44       | 42  | 46       | 44  | 55      | 55  |          |     |       |     | 68    | 68  | 67  | 65  | 74   | 72  | 71   | 69  | 70     | 68  | 62        | 61  |
| 31      | 61      | 60  | --       | --  | 44       | 43  | 55      | 53  |          |     |       |     | --    | --  | 65  | 64  | --   | --  | 72   | 71  | 70     | 70  | --        | --  |
| Average | 61      | 60  | 52       | 51  | 51       | 49  | 46      | 44  | --       | --  |       |     | --    | --  | 66  | 64  | 71   | 70  | 73   | 71  | 71     | 70  | 71        | 70  |

## PEE DEE RIVER BASIN--Continued

## LUMBER RIVER AT BOARDMAN, N. C.

LOCATION.--At gaging station on right bank, 15 feet downstream from bridge on U. S. Highway 74, 1 mile downstream from Atlantic Coast Line Railroad bridge at Boardman, Columbus County, and  $1\frac{1}{2}$  miles downstream from Big Swamp.

DRAINAGE AREA.--1,220 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1947, October 1956 to September 1957.

EXTREMES, 1946-47.--Dissolved solids: Maximum, 59 ppm Sept. 21-30, 1947; minimum, 28 ppm Mar. 1-10, 1947.

Hardness: Maximum, 11 ppm Nov. 21-30, 1946, Aug. 21-31, 1947; minimum, 6 ppm Feb. 11-28, Apr. 21-30, May 11-20, June 11 to July 10, 1947.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |                     | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg/l                 | Non-carbonate, mg/l |                                           |     |       |
| Oct. 15, 1956..... | 1,070                | 11                         | 0.01      | 2.2          | 0.3            | 5.5         | 0.8           | 2                               | 6.0                        | 5.2           | 0.1          | 1.6                        | a60                                                | 7                             | 5                   | 45.5                                      | 4.9 | 110   |
| Nov. 15.....       | 881                  | 10                         | .28       | 2.2          | .4             | 4.4         | .4            | 3                               | 3.9                        | 6.3           | .1           | 2.5                        | b61                                                | 7                             | 5                   | 40.0                                      | 5.3 | 110   |
| Dec. 14.....       | 704                  | 8.5                        | .21       | 1.2          | .2             | 3.2         | .4            | 3                               | 2.8                        | 5.2           | .0           | .4                         | c47                                                | 4                             | 1                   | 35.9                                      | 5.3 | 80    |
| Jan. 15, 1957..... | 820                  | 7.3                        | .13       | 1.0          | .3             | 3.3         | .4            | 4                               | 2.4                        | 5.0           | .0           | .1                         | d41                                                | 4                             | 1                   | 38.8                                      | 5.4 | 80    |
| Feb. 15.....       | 1,060                | 5.4                        | .16       | 1.2          | .3             | 3.9         | .9            | 3                               | 1.1                        | 5.5           | .1           | .6                         | e44                                                | 4                             | 2                   | 36.2                                      | 5.2 | 120   |
| Mar. 15.....       | 2,830                | 2.7                        | .12       | 1.6          | .4             | 3.6         | .7            | 2                               | 4.4                        | 5.2           | .0           | .3                         | e46                                                | 6                             | 4                   | 42.9                                      | 5.1 | 120   |
| Apr. 15.....       | 1,400                | 2.7                        | .07       | 1.0          | .2             | 3.7         | 1.2           | 3                               | 4.8                        | 5.1           | .0           | 2.2                        | f42                                                | 3                             | 0                   | 37.1                                      | 5.0 | 80    |
| May 14.....        | 702                  | 6.4                        | .19       | 1.1          | .5             | 3.4         | .9            | 2                               | 1.3                        | 4.2           | .1           | .6                         | e43                                                | 5                             | 3                   | 34.7                                      | 5.8 | 90    |
| June 15.....       | 3,790                | 6.3                        | .45       | 1.5          | .5             | 3.9         | .8            | 2                               | .6                         | 4.8           | .2           | .4                         | g76                                                | 6                             | 4                   | 43.1                                      | 4.7 | 210   |
| July 15.....       | 328                  | 7.1                        | .19       | 1.2          | .7             | 3.8         | .5            | 2                               | 3.6                        | 5.0           | .0           | 2.3                        | h42                                                | 6                             | 4                   | 37.1                                      | 4.9 | 80    |
| Aug. 15.....       | 205                  | 5.1                        | .07       | 1.5          | .5             | 3.3         | .7            | 3                               | 1.3                        | 4.2           | .1           | 1.6                        | i34                                                | 6                             | 3                   | 32.0                                      | 5.3 | 50    |
| Sept. 14.....      | 580                  | 8.2                        | .23       | 1.2          | .5             | 3.0         | .7            | 4                               | 1.8                        | 3.7           | .1           | .7                         | d43                                                | 5                             | 2                   | 33.1                                      | 5.4 | 80    |

a Organic matter present; sum of mineral constituents 34 parts per million.

b Organic matter present; sum of mineral constituents 32 parts per million.

c Organic matter present; sum of mineral constituents 23 parts per million.

d Organic matter present; sum of mineral constituents 22 parts per million.

e Organic matter present; sum of mineral constituents 20 parts per million.

f Organic matter present; sum of mineral constituents 17 parts per million.

g Organic matter present; sum of mineral constituents 21 parts per million.

MISCELLANEOUS ANALYSES OF STREAMS IN PEE DEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                        | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH   | Color |
|-------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|------|-------|
|                                           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium                          | Non-carbon-<br>ate |                                                             |      |       |
| YADKIN RIVER AT PATTERSON, N. C.          |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Dec. 15, 1956...                          | 82.6               | 9.5                           | 0.03         | 2.1                  | 0.2                    | 1.6            | 1.2                   | 10                                      | 2.6                           | 1.0              | 0.0             | 1.2                           | a24                                                                 | 6                                | 0                  | 29.8                                                        | 6.5  | 5     |
| July 22, 1957...                          | 25.8               | 23                            | .00          | 2.8                  | .4                     | 2.4            | 1.2                   | 16                                      | 1.4                           | 1.5              | .1              | 1.1                           | a42                                                                 | 9                                | 0                  | 35.8                                                        | 6.6  | 3     |
| STONY FORK CREEK NEAR FERGUSON, N. C.     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Mar. 18, 1957...                          | 41.8               |                               |              | 1.6                  | 0.7                    | 1.6            | 0.5                   | 12                                      | 0.7                           | 0.7              |                 | 0.3                           |                                                                     | 7                                | 0                  |                                                             | 6.1  |       |
| Aug. 9.....                               | 30.4               |                               |              | 2.0                  | .5                     | 2.0            | .6                    | 13                                      | .1                            | 1.2              |                 | .5                            |                                                                     | 7                                | 0                  |                                                             | 27.1 | 6.1   |
| NORTH PRONG LEWIS FORK AT CHAMPION, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Mar. 18, 1957...                          | 45.4               |                               |              | 2.0                  | 1.5                    | 2.3            | 0.5                   | 12                                      | 2.6                           | 2.7              |                 | 0.1                           |                                                                     | 11                               | 1                  |                                                             | 6.2  |       |
| Aug. 9.....                               | 27.4               |                               |              |                      |                        | 3.8            | .6                    | 21                                      | 1.3                           | 1.5              |                 | 1.7                           |                                                                     | 12                               | 0                  | 41.0                                                        | 6.6  |       |
| SOUTH PRONG LEWIS FORK AT CHAMPION, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Mar. 18, 1957...                          | 49.0               |                               |              | 1.7                  | 0.5                    | 1.6            | 0.5                   | 12                                      | 0.8                           | 1.0              |                 | 0.1                           |                                                                     | 6                                | 0                  |                                                             | 6.3  |       |
| Aug. 9.....                               | 31.2               |                               |              | 1.7                  | 1.2                    | 2.1            | .6                    | 15                                      | 1.9                           | 1.0              |                 | .5                            |                                                                     | 9                                | 0                  | 28.8                                                        | 6.2  |       |
| REDDIES RIVER AT NORTH WILKESBORO, N. C.  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Nov. 30, 1956...                          | 59.0               | 12                            | 0.09         | 2.4                  | 0.5                    | 1.9            | 0.6                   | 13                                      | 0.3                           | 1.4              | 0.0             | 0.3                           | a25                                                                 | 8                                | 0                  | 26.7                                                        | 6.8  | 5     |
| July 29, 1957...                          | 85.1               | 13                            | .04          | 1.8                  | .6                     | 2.1            | .5                    | 14                                      | 1.1                           | .8               | .0              | .5                            | a27                                                                 | 7                                | 0                  | 26.9                                                        | 7.5  | 11    |
| YADKIN RIVER AT WILKESBORO, N. C.         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Nov. 30, 1956...                          | 266                | 14                            | 0.09         | 3.0                  | 0.8                    | 2.5            | 0.7                   | 18                                      | 0.5                           | 1.2              | 0.0             | 0.4                           | a32                                                                 | 11                               | 0                  | 33.5                                                        | 6.8  | 8     |
| July 1, 1957....                          | 851                | 13                            | .04          | 2.4                  | .7                     | 2.4            | .6                    | 15                                      | 1.9                           | .8               | .0              | .7                            | a30                                                                 | 9                                | 0                  | 31.0                                                        | 6.6  | 6     |
| BUGABOO CREEK AT RONDA, N. C.             |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Mar. 18, 1957...                          | 16.9               |                               |              | 1.6                  | 1.0                    | 4.0            | 0.4                   | 14                                      | 0.4                           | 0.8              |                 | 0.3                           |                                                                     | 8                                | 0                  |                                                             | 6.2  |       |
| Aug. 9.....                               | 9.44               |                               |              |                      |                        | 2.0            | .5                    | 13                                      | 1.8                           | 1.8              |                 | 1.0                           |                                                                     | 9                                | 0                  | 27.0                                                        | 6.4  |       |
| MITCHELL RIVER NEAR STATE ROAD, N. C.     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Oct. 17, 1956...                          | 33.0               |                               |              | 2.2                  | 0.4                    | --             | --                    | 17                                      | 1.3                           | 1.0              |                 | 0.6                           |                                                                     | 7                                | 0                  | 32.3                                                        | 6.8  |       |
| Mar. 18, 1957...                          | 112                |                               |              | 2.2                  | 1.4                    | 1.6            | 0.2                   | 13                                      | 2.4                           | 2.2              |                 | 1.1                           |                                                                     | 11                               | 0                  | --                                                          | 6.3  |       |
| Aug. 10.....                              | 61.4               |                               |              | --                   | --                     | 2.1            | .5                    | 14                                      | 1.6                           | 1.6              |                 | .2                            |                                                                     | 9                                | 0                  | 29.2                                                        | 6.2  |       |
| FISHER RIVER NEAR COPELAND, N. C.         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |      |       |
| Nov. 19, 1956...                          | 128                | 9.9                           | 0.15         | 2.7                  | 0.8                    | 1.6            | 0.7                   | 13                                      | 0.4                           | 1.2              | 0.1             | 0.5                           | a24                                                                 | 10                               | 0                  | 28.7                                                        | 6.8  | 27    |
| June 21, 1957...                          | 121                | 11                            | .10          | 1.3                  | .9                     | 1.9            | .5                    | 13                                      | 1.6                           | 1.1              | .0              | .9                            | a25                                                                 | 9                                | 0                  | 29.8                                                        | 6.8  | 22    |

a Calculated from determined constituents.

## PEE DEE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN PEE DEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                                 | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
|                                                    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium<br>medium                | Non-carbon-<br>ate |                                                             |     |       |
|                                                    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| ARARAT RIVER AT MOUNT AIRY, N. C.                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 16, 1956...                                   | 19.3               |                               |              | 3.4                  | 0.5                    | --             | --                    | 22                                      | 2.6                           | 1.3              |                 | 0.6                           |                                                                     | 11                               | 0                  | 44.6                                                        | 6.9 |       |
| Mar. 13, 1957...                                   | 60.8               |                               |              |                      |                        | 2.6            | 0.7                   | 17                                      | 2.7                           | 1.6              |                 | .8                            |                                                                     | --                               | --                 | --                                                          | 6.2 |       |
| Aug. 9.....                                        | 34.2               |                               |              |                      |                        | 2.9            | 1.1                   | 25                                      | 3.3                           | 5.7              |                 | .6                            |                                                                     | 23                               | 0                  | 62.8                                                        | 6.8 |       |
| TOMS CREEK AT PILOT MOUNTAIN, N. C.                |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957...                                   | 21.9               |                               |              | 3.4                  | 0.9                    | 3.1            | 0.8                   | 21                                      | 1.9                           | 1.3              |                 | 0.3                           |                                                                     | 12                               | 0                  |                                                             | 6.4 |       |
| Aug. 9.....                                        | 9.42               |                               |              |                      |                        | 3.4            | 1.2                   | 23                                      | 2.3                           | 3.7              |                 | .4                            |                                                                     | 17                               | 0                  | 54.6                                                        | 6.7 |       |
| LITTLE YADKIN RIVER NEAR DONNAHA, N. C.            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957...                                   | 42.0               |                               |              | 4.0                  | 1.4                    | 3.7            | 0.9                   | 24                                      | 2.5                           | 1.9              |                 | 0.7                           |                                                                     | 16                               | 0                  | 64.5                                                        | 6.5 |       |
| Aug. 9.....                                        | 12.8               |                               |              | 4.6                  | 2.0                    | 3.8            | 1.5                   | 31                                      | 1.3                           | 2.0              |                 | .7                            |                                                                     | 20                               | 0                  |                                                             | 6.6 |       |
| FORBUSH CREEK NEAR YADKINVILLE, N. C.              |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 19, 1956...                                   | 8.90               | 15                            | 0.26         | 3.7                  | 1.4                    | 2.7            | 1.1                   | 22                                      | 1.3                           | 1.6              | 0.0             | 0.3                           | a38                                                                 | 15                               | 0                  | 44.3                                                        | 6.8 | 60    |
| July 22, 1957...                                   | 7.16               | 15                            | .12          | 3.2                  | 1.5                    | 2.1            | .8                    | 21                                      | .9                            | 1.5              | .0              | 1.2                           | a36                                                                 | 14                               | 0                  | 43.1                                                        | 7.0 | 18    |
| DEEP CREEK AT SHACKTOWN, N. C.                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 12, 1957....                                  | 55.4               |                               |              | 2.9                  | 1.1                    | 2.7            | 1.0                   | 18                                      | 1.5                           | 1.4              |                 | 0.7                           |                                                                     | 12                               | 0                  |                                                             | 6.5 |       |
| Aug. 9.....                                        | 26.5               |                               |              | 2.8                  | 1.1                    | 2.0            | 1.2                   | 17                                      | .8                            | 2.0              |                 | .7                            |                                                                     | 12                               | 0                  | 39.0                                                        | 6.3 |       |
| SOUTH FORK MUDDY CREEK NEAR WINSTON-SALEM, N. C.   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 13, 1957....                                  | 27.0               |                               |              | 5.6                  | 2.1                    | 4.6            | 1.0                   | 31                                      | 4.2                           | 2.6              |                 | 1.6                           |                                                                     | 23                               | 0                  |                                                             | 6.4 |       |
| Aug. 9.....                                        | 11.0               |                               |              | 6.4                  | 4.1                    | 5.9            | 1.3                   | 43                                      | 2.3                           | 6.3              |                 | .4                            |                                                                     | 33                               | 0                  | 87.8                                                        | 6.9 |       |
| SOUTH YADKIN RIVER NEAR STATESVILLE, N. C.         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 12, 1957....                                  | 71.2               |                               |              | 3.4                  | 1.8                    | 2.9            | 0.7                   | 19                                      | 1.0                           | 3.9              |                 | 0.7                           |                                                                     | 16                               | 0                  |                                                             | 6.2 |       |
| Aug. 12.....                                       | 35.3               |                               |              | 4.2                  | 2.7                    | 3.0            | 1.1                   | 22                                      | 2.7                           | 4.8              |                 | .6                            |                                                                     | 22                               | 4                  | 66.2                                                        | 6.4 |       |
| ROCKY CREEK AT TURNERSBURG, N. C.                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Jan. 2, 1957....                                   | 65                 | 15                            | 0.11         | 3.4                  | 0.7                    | 2.2            | 1.4                   | 18                                      | 0.8                           | 2.0              | 0.0             | 1.0                           | a36                                                                 | 11                               | 0                  | 41.8                                                        | 6.7 | 8     |
| Aug. 3.....                                        | 66.0               | 13                            | .06          | 2.5                  | 1.4                    | 1.6            | 1.0                   | 18                                      | 1.5                           | 1.2              | .0              | 1.3                           | a33                                                                 | 12                               | 0                  | 37.0                                                        | 6.7 | 17    |
| FIFTH CREEK AT COOL SPRING NEAR STATESVILLE, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Mar. 12, 1957....                                  | 24.6               |                               |              | 4.0                  | 1.8                    | 2.6            | 0.8                   | 25                                      | 1.0                           | 1.8              |                 | 1.0                           |                                                                     | 17                               | 0                  |                                                             | 6.8 |       |
| Aug. 8.....                                        | 11.0               |                               |              |                      |                        | 3.7            | 1.2                   | 34                                      | 1.1                           | 2.4              |                 | .8                            |                                                                     | 24                               | 0                  | 67.0                                                        | 6.8 |       |

## SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.

|                   |     |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|-----|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Jan. 19, 1957.... | 141 | 16 | 0.17 | 4.2 | 1.1 | 2.5 | 1.0 | 23 | 1.9 | 2.0 | 0.1 | 0.8 | a41 | 15 | 0 | 49.5 | 7.0 | 10 |
| Aug. 5.....       | 136 | 16 | .14  | 3.6 | 1.6 | 2.7 | 1.3 | 23 | .2  | 1.8 | .1  | 1.0 | a39 | 16 | 0 | 49.0 | 6.5 | 50 |

## HUNTING CREEK NEAR HARMONY, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |   |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Nov. 30, 1956.... | 70.7 | 13 | 0.13 | 2.6 | 0.7 | 1.9 | 0.9 | 15 | 0.1 | 1.5 | 0.0 | 0.4 | a28 | 9 | 0 | 30.8 | 6.7 | 9 |
| July 22, 1957.... | 129  | 13 | .11  | 2.2 | .8  | 2.1 | .9  | 14 | 2.7 | 1.2 | .0  | .9  | a31 | 9 | 0 | 30.1 | 7.0 | 2 |

## BEAR CREEK AT MOCKSVILLE, N. C.

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |     |     |  |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|-----|-----|--|
| Mar. 12, 1957.... | 13.7 |  |  | 6.8 | 3.7 | 4.5 | 0.7 | 42 | 3.2 | 3.5 |  | 1.0 |  | 22 | 0 |     | 6.5 |  |
| Aug. 8.....       | 2.44 |  |  | 8.8 | 4.8 | 6.1 | 1.5 | 58 | .7  | 4.0 |  | .7  |  | 42 | 0 | 108 | 7.1 |  |

## SOUTH YADKIN RIVER AT COOLEE, N. C.

|                   |     |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|-----|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Dec. 1, 1956..... | 222 | 16 | 0.10 | 4.2 | 1.6 | 6.3 | 1.0 | 29 | 4.2 | 1.8 | 0.1 | 0.2 | a50 | 17 | 0 | 64.0 | 6.9 | 7  |
| July 22, 1957.... | 307 | 14 | .10  | 2.8 | 1.5 | 2.1 | 1.8 | 65 | 3.0 | 2.2 | .0  | 1.5 | a80 | 13 | 0 | 120  | 7.2 | 10 |

## THIRD CREEK SUBWATERSHED NO. 7A NEAR STONY POINT (INFLOW), N. C.

|                    |      |     |      |     |     |     |     |   |     |     |     |     |     |    |   |      |     |    |
|--------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Sept. 16, 1957.... | b11  | 8.5 | 0.01 | 2.2 | 1.2 | 6.6 | 1.7 | 5 | 3.5 | 10  | 0.1 | 5.2 | a41 | 10 | 6 | 53.9 | 6.3 | 15 |
| Sept. 17.....      | 67.7 |     |      | 1.6 | 1.7 | 2.4 | 4.1 | 6 | 4.1 | 1.0 |     | 4.0 |     | 6  | 2 | 34.9 | 5.5 |    |

## THIRD CREEK SUBWATERSHED NO. 7A NEAR STONY POINT (OUTFLOW), N. C.

|                   |      |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Nov. 28, 1956.... | b2.5 | 13  | 0.17 | 2.7 | 1.1 | 2.4 | 1.0 | 19 | 0.1 | 1.5 | 0.0 | 0.7 | a32 | 11 | 0 | 38.4 | 6.3 | 16 |
| June 21, 1957.... | 2.99 | 11  | .10  | 2.4 | .7  | 2.4 | 1.0 | 13 | 1.1 | 2.0 | .0  | 2.3 | a29 | 9  | 0 | 35.0 | 7.2 | 23 |
| Sept. 1.....      | b2.0 |     | --   | 2.8 | .9  | 3.3 | 2.4 | 7  | 4.4 | 4.0 | --  | 3.6 | --  | 9  | 0 | 47.2 | 5.8 | -- |
| Sept. 1.....      | b2.0 |     | --   | 1.8 | 1.0 | 4.2 | 2.5 | 8  | 4.3 | 5.0 | --  | 2.8 | --  | 10 | 4 | 50.7 | 5.7 | -- |
| Sept. 19.....     | b8.8 |     | --   | 1.9 | 1.4 | 4.2 | 2.3 | 8  | 5.5 | 7.8 | .1  | 2.9 | a33 | 13 | 6 | 47.8 | 6.6 | 35 |
| Sept. 20.....     | 48.1 | 7.1 | .30  | 2.8 | 1.4 | 3.5 | 2.3 | 8  | .5  |     |     |     |     |    |   |      |     |    |

## THIRD CREEK AT CLEVELAND, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Dec. 1, 1956..... | 41.6 | 23 | 0.18 | 7.4 | 2.5 | 4.7 | 1.3 | 40 | 2.0 | 2.5 | 0.0 | 1.6 | a65 | 29 | 0 | 81.6 | 7.0 | 18 |
| June 26, 1957.... | 252  | 11 | .00  | 4.6 | 1.5 | 2.5 | 2.2 | 20 | 2.5 | 2.0 | .1  | 3.5 | a40 | 18 | 1 | 59.0 | 6.1 | 6  |

## SWEARING CREEK AT LINWOOD, N. C.

|                   |      |  |  |     |     |     |     |     |     |     |  |     |  |    |   |     |     |  |
|-------------------|------|--|--|-----|-----|-----|-----|-----|-----|-----|--|-----|--|----|---|-----|-----|--|
| Mar. 12, 1957.... | 23.5 |  |  | 7.6 | 3.6 | 5.5 | 0.8 | 46  | 2.5 | 2.3 |  | 1.8 |  | 34 | 0 | 210 | 7.3 |  |
| Aug. 29.....      | 8.19 |  |  | 9.9 | 5.4 | 19  | 3.5 | 103 | .6  | 12  |  | .6  |  | 47 | 0 |     | 6.6 |  |

a Calculated from determined constituents.

b Daily mean discharge.



PEE DEE RIVER BASIN--Continued  
 MISCELLANEOUS ANALYSES OF STREAMS IN PEE DEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued  
 Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                   | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |               | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|---------------|--------------------------------------------------------|-----|-------|
|                                      |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium,<br>magnesium            | Non-carbonate |                                                        |     |       |
| SECOND CREEK NEAR LIBERTY, N. C.     |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 13, 1957....                    | 18.1               |                               |              | 8.8             | 3.9               | 6.2            | 0.6              | 49                                 | 4.5                           | 5.1              |                 | 1.1                           |                                                                     | 38                               | 0             | 132                                                    | 6.6 |       |
| Aug. 8.....                          | 2.23               |                               |              | 11              | 5.5               | 7.3            | 1.3              | 64                                 | 2.5                           | 6.2              |                 | 1.3                           |                                                                     | 50                               | 0             |                                                        | 6.8 |       |
| RICH FORK NEAR HOLLY GROVE, N. C.    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 12, 1957....                    | 31.2               |                               |              | 12              | 4.5               | 15             | 1.6              | 51                                 | 16                            | 12               |                 | 4.9                           |                                                                     | 47                               | 6             | 172                                                    | 6.5 |       |
| Aug. 8.....                          | 3.51               |                               |              | --              | --                | 69             | 6.5              | 128                                | 25                            | 64               |                 | 3.3                           |                                                                     | 82                               | 0             | 508                                                    | 6.9 |       |
| Aug. 29.....                         | 4.22               |                               |              | 16              | 7.3               | 63             | 6.0              | 109                                | 25                            | 64               |                 | 2.0                           |                                                                     | 69                               | 0             | 463                                                    | 6.7 |       |
| ABBOTTS CREEK AT LEXINGTON, N. C.    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Dec. 1, 1956....                     | 43.9               | 20                            | 0.12         | 11              | 4.1               | 22             | 2.4              | 57                                 | 12                            | 20               | 0.3             | 4.7                           | a125                                                                | 45                               | 0             | 204                                                    | 6.8 | 8     |
| July 23, 1957....                    | 43.7               | 17                            | .01          | 8.0             | 4.1               | 11             | 2.7              | 44                                 | 7.2                           | 10               | .3              | 1.8                           | a84                                                                 | 37                               | 1             | 130                                                    | 6.6 | 12    |
| YADKIN RIVER AT HIGH ROCK, N. C.     |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Dec. 9, 1956....                     | 4.920              | 13                            | 0.18         | 5.4             | 1.6               | 8.3            | 1.8              | 34                                 | 3.5                           | 4.6              | 0.0             | 1.7                           | a57                                                                 | 20                               | 0             | 83.2                                                   | 6.9 | 65    |
| July 15, 1957....                    | 4.350              | 11                            | .02          | 4.6             | 1.6               | 4.9            | 1.7              | 24                                 | 5.1                           | 3.1              | .2              | 2.3                           | a47                                                                 | 18                               | 0             | -61.8                                                  | 7.1 | 8     |
| LICK CREEK AT HEALING SPRINGS, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 13, 1957....                    | 9.12               |                               |              | 4.4             | 2.7               | 4.6            | 0.5              | 27                                 | 3.4                           | 3.7              |                 | 1.3                           |                                                                     | 22                               | 0             |                                                        | 6.3 |       |
| Aug. 8.....                          | 1.38               |                               |              | 5.0             | 2.3               | 3.3            | 1.2              | 22                                 | 3.7                           | 3.5              |                 | 1.8                           |                                                                     | 22                               | 4             | 69.0                                                   | 6.3 |       |
| Aug. 28.....                         | .48                |                               |              | 6.7             | 3.0               | 8.5            | 2.4              | 39                                 | 3.2                           | 8.3              |                 | 1.1                           |                                                                     | 29                               | 0             | 102                                                    | 6.6 |       |
| UNHARRIE RIVER NEAR FARMER, N. C.    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Aug. 29, 1957....                    |                    | 17                            | 0.13         | 9.6             | 3.9               | 5.2            | 1.2              | 47                                 | 3.7                           | 3.2              | 0.1             | 1.0                           | a68                                                                 | 40                               | 2             | 100                                                    | 6.6 |       |
| Aug. 29.....                         | 9.01               | 14                            | .02          | 8.5             | 4.1               | 5.0            | 1.1              | 52                                 | 3.7                           | 2.3              | .0              | .8                            | a66                                                                 | 38                               | .0            | 100                                                    | 6.4 | 20    |
| ROCKY RIVER NEAR ROBERTA MILL, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 13, 1957....                    | 52.4               |                               |              | 7.4             | 2.8               | 62             | 1.6              | 103                                | 21                            | 31               | 0.2             | 3.7                           |                                                                     | 30                               | 0             |                                                        | 6.8 |       |
| Aug. 9.....                          | 10.2               |                               |              | 15              | 4.3               | 223            | 5.4              | 238                                | 55                            | 192              |                 | 2.9                           |                                                                     | 54                               | 0             | 1,100                                                  | 6.9 |       |
| MALLARD CREEK NEAR HARRISBURG, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 13, 1957....                    | 21.4               |                               |              | 8.3             | 4.7               | 5.9            | 0.6              | 47                                 | 6.3                           | 4.3              |                 | 0.7                           |                                                                     | 40                               | 2             |                                                        | 6.7 |       |
| Aug. 9.....                          | 1.12               |                               |              | 11              | 6.0               | 7.4            | 1.4              | 73                                 | 3.0                           | 4.0              |                 | .4                            |                                                                     | 53                               | 0             | 137                                                    | 6.8 |       |
| CODDLE CREEK NEAR CONCORD, N. C.     |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |               |                                                        |     |       |
| Mar. 13, 1957....                    | 34.2               |                               |              | 8.0             | 3.3               | 5.3            | 1.0              | 43                                 | 4.3                           | 4.0              |                 | 0.9                           |                                                                     | 33                               | 0             |                                                        | 6.6 |       |
| Aug. 9.....                          | 6.72               |                               |              | 7.4             | 3.8               | 5.5            | 1.8              | 45                                 | 2.0                           | 4.0              |                 | .5                            |                                                                     | 34                               | 0             | 89.6                                                   | 7.1 |       |

## REEDY CREEK AT ROCKY RIVER, N. C.

|                   |      |  |     |     |     |     |    |     |     |     |    |   |     |     |
|-------------------|------|--|-----|-----|-----|-----|----|-----|-----|-----|----|---|-----|-----|
| Mar. 13, 1957.... | 15.9 |  | 9.1 | 5.0 | 6.1 | 1.0 | 55 | 4.6 | 4.1 | 0.7 | 43 | 0 | 108 | 6.6 |
| Aug. 9.....       | 2.42 |  | 12  | 5.4 | 7.3 | 1.6 | 73 | 1.9 | 3.5 | .4  | 51 | 0 | 139 | 6.9 |

BIG BEAR CREEK NEAR RICHFIELD, N. C.

|  |                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|--|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
|  | Dec. 9, 1956..... | 3.39 | 12 | 0.18 | 6.0 | 2.6 | 5.4 | 0.7 | 34 | 2.6 | 5.8 | 0.0 | 0.4 | a53 | 26 | 0 | 79.7 | 7.1 | 12 |
|  | July 4, 1957..... | 7.16 | 14 | .09  | 4.8 | 2.3 | 5.1 | .7  | 25 | 4.5 | 4.8 | .2  | 2.5 | a51 | 21 | 1 | 69.8 | 7.2 | 22 |

LITTLE RIVER NEAR STAR, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |    |   |      |     |    |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|---|------|-----|----|
| Mar. 29, 1957.... | 97.1 | 17 | 0.03 | 3.2 | 1.5 | 4.1 | 0.5 | 21 | 2.1 | 0.6 | 1.6 | 243 | 14 | 0 | 48.5 | 6.6 | 10 |
| Sept. 5.....      | 89.0 | 13 | .14  | 4.3 | 1.3 | 3.5 | 1.2 | 25 | 1.5 | .0  | .5  | 238 | 16 | 0 | 54.0 | 6.6 | 38 |

CARTLEDGE CREEK NEAR ROCKINGHAM, N. C.

|                   |      |  |     |     |     |     |    |     |     |  |     |    |   |      |     |
|-------------------|------|--|-----|-----|-----|-----|----|-----|-----|--|-----|----|---|------|-----|
| Apr. 1, 1957..... | 26.0 |  | 2.5 | 1.0 | 3.3 | 0.4 | 14 | 2.4 | 4.0 |  | 1.2 | 10 | 0 | 42.2 | 6.0 |
| Aug. 7.....       | 1.47 |  | 3.8 | 1.3 | 5.3 | .7  | 24 | 1.5 | 3.7 |  | .3  | 15 | 0 | 52.2 | 6.4 |

PEE DEE RIVER NEAR ROCKINGHAM, N. C.

|                   |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|--------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Mar. 28, 1957.... | b9,650 | 11  | 0.05 | 4.8 | 1.5 | 5.2 | 1.0 | 22 | 5.7 | 4.5 | 0.2 | 1.6 | a47 | 18 | 0 | 69.5 | 6.4 | 15 |
| Sept. 4, .....    | b2,870 | 8.8 | .04  | 4.3 | 1.7 | 6.5 | 1.8 | 28 | 3.4 | 3.8 | .0  | 1.1 | a44 | 18 | 0 | 72.6 | 6.7 | 13 |

FALLING CREEK NEAR ROCKINGHAM, N. C.

|                   |      |  |     |     |     |     |   |     |     |  |     |   |   |      |     |
|-------------------|------|--|-----|-----|-----|-----|---|-----|-----|--|-----|---|---|------|-----|
| Aug. 7, 1937..... | 2.73 |  | 1.2 | 0.2 | 2.4 | 0.1 | 7 | 0.1 | 1.9 |  | 0.5 | 4 | 0 | 17.2 | 6.1 |
| Aug. 29.....      | 4.63 |  | .6  | .2  | 1.7 | .1  | 4 | .2  | 2.0 |  | .5  | 3 | 0 | 18.6 | 5.1 |

SOUTH FORK JONES CREEK NEAR MORVEN, N. C.

|                   |      |  |  |     |     |     |     |    |     |     |     |    |   |             |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|-----|----|---|-------------|
| Apr. 1, 1957..... | 35.9 |  |  | 1.6 | 1.5 | 7.0 | 0.8 | 14 | 1.7 | 6.0 | 1.4 | 10 | 0 | 6.5         |
| Aug. 7.....       | 1.77 |  |  | 4.1 | 2.3 | 7.5 | 1.5 | 27 | 1.5 | 8.1 | .3  | 20 | 0 | 75.8<br>6.4 |

## MARKS CREEK NEAR OSBORNE, N. C.

|              | Aug. 7, 1957..... | 8.89 |   | 2.6 | 0.5 | 8.6 | 0.8 | 10 | 3.4 | 9.3 | 1.7 | 9  | 0 | 62.2 | 5.9 |
|--------------|-------------------|------|---|-----|-----|-----|-----|----|-----|-----|-----|----|---|------|-----|
| Aug. 29..... | 16.1              | 3.3  | 9 | 10  | .9  |     |     | 8  | 9.1 | 11  | 1.2 | 12 | 5 | 79.2 | 5.6 |

## CEDAR CREEK AT SOCIETY HILL. S. C.

|                   |      |     |      |     |     |     |     |   |     |     |     |     |    |   |   |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|---|---|------|-----|----|
| June 20, 1957.... | 43.2 | 4.9 | 0.47 | 0.4 | 0.2 | 2.8 | 1.8 | 4 | 0.9 | 3.3 | 0.0 | 1.3 | 28 | 2 | 0 | 19.0 | 5.1 | 50 |
|-------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|----|---|---|------|-----|----|

a Calculated from determined constituents.

b Daily mean discharge.

## PEE DEE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN PEE DEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                         | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|--------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                            |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
| PEE DEE RIVER AT SOCIETY HILL, S. C.       |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| June 20, 1957....                          | 7,410              | 8.0                           | 0.08         | 4.0                  | 1.7                    | 5.4            | 1.2                   | 24                                      | 2.2                           | 5.3              | 0.3             | 1.5                           | 45                                                                  | 17                               | 0                      | 69.2                                                        | 6.4 | 15    |
| BIG BLACK CREEK NEAR MCBEE, S. C.          |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| June 18, 1957....                          | 93.6               | 6.3                           | 0.19         | 0.8                  | 0.4                    | 1.9            | 0.2                   | 3                                       | 0.0                           | 2.7              | 0.1             | 0.9                           | 26                                                                  | 4                                | 1                      | 20.6                                                        | 5.2 | 40    |
| PEE DEE RIVER AT PEEDEE, S. C.             |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 23, 1957....                           | b6,140             | 8.9                           | 0.10         | 3.4                  | 1.8                    | 5.5            | 1.2                   | 18                                      | 1.4                           | 5.7              | 0.4             | 2.2                           | 50                                                                  | 16                               | 1                      | 64.3                                                        | 6.1 | 30    |
| LYNCES RIVER NEAR BETHUNE, S. C.           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| June 18, 1957....                          | 88.9               | 9.5                           | 0.24         | 2.2                  | 0.7                    | 3.8            | 0.7                   | 11                                      | 1.0                           | 4.6              | 0.2             | 1.0                           | 53                                                                  | 8                                | 0                      | 42.0                                                        | 6.9 | 45    |
| LITTLE LYNCHES RIVER NEAR BETHUNE, S. C.   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| June 18, 1957....                          | 42.5               | 9.4                           | 0.20         | 1.9                  | 0.9                    | 3.0            | 0.5                   | 4                                       | 8.7                           | 2.9              | 0.1             | 0.9                           | 44                                                                  | 9                                | 5                      | 38.8                                                        | 5.5 | 45    |
| LYNCES RIVER NEAR BISHOPVILLE, S. C.       |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 23, 1957....                           | b546               | 10                            | 0.19         | 2.0                  | 1.2                    | 3.9            | 0.6                   | 9                                       | 1.2                           | 6.5              | 0.2             | 3.3                           | 51                                                                  | 10                               | 3                      | 48.0                                                        | 5.6 | 40    |
| LYNCES RIVER AT EFFINGHAM, S. C.           |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 31, 1957....                           | b649               | 9.9                           | 0.20         | 2.9                  | 1.2                    | 6.1            | 0.8                   | 16                                      | 1.6                           | 6.1              | 0.1             | 1.4                           | 55                                                                  | 12                               | 0                      | 58.3                                                        | 6.1 | 65    |
| LITTLE PEE DEE RIVER NEAR DILLION, S. C.   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 22, 1957....                           | b363               | 7.3                           | 0.26         | 2.4                  | 1.0                    | 4.0            | 1.1                   | 4                                       | 1.9                           | 7.3              | 0.3             | 2.8                           | c54                                                                 | 10                               | 7                      | 42.5                                                        | 5.1 | 100   |
| DROWNING CREEK NEAR JACKSON SPRINGS, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Aug. 6, 1957....                           | 16.9               |                               |              | 1.2                  | 0.7                    | 3.8            | 0.2                   | 7                                       | 1.7                           | 3.2              |                 | 0.7                           |                                                                     | 6                                | 0                      | 29.8                                                        | 5.7 |       |
| Aug. 29.....                               | 34.0               |                               |              | 2.4                  | .2                     | 2.5            | .2                    | 6                                       | .2                            | 4.5              |                 | .6                            |                                                                     | 7                                | 2                      | 28.8                                                        | 5.5 |       |
| DROWNING CREEK NEAR HOFFMAN, N. C.         |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 28, 1957....                          | 346                | 3.8                           | 0.04         | 1.2                  | 0.2                    | 1.7            | 0.1                   | 2                                       | 1.6                           | 2.5              | 0.6             | 0.0                           | a13                                                                 | 4                                | 2                      | 17.8                                                        | 5.7 | 25    |
| Sept. 4.....                               | 124                | 5.7                           | .12          | .8                   | .1                     | 1.9            | .2                    | 3                                       | .2                            | 2.1              | .0              | .6                            | a13                                                                 | 2                                | 0                      | 17.6                                                        | 5.4 | 40    |

## LUMBER RIVER NEAR PEMBROKE, N. C.

|                   |     |  |  |     |     |     |     |   |     |     |  |     |  |   |   |  |     |
|-------------------|-----|--|--|-----|-----|-----|-----|---|-----|-----|--|-----|--|---|---|--|-----|
| Apr. 1, 1957..... | 689 |  |  | 1.3 | 0.8 | 2.8 | 0.2 | 5 | 1.6 | 3.2 |  | 1.3 |  | 6 | 2 |  | 5.5 |
| Aug. 8.....       | 273 |  |  | 1.0 | .7  | 2.4 | .2  | 4 | 1.4 | 2.0 |  | 1.0 |  | 5 | 2 |  | 6.3 |

## RAFT SWAMP NEAR LUMBERTON, N. C.

|                   |      |  |  |     |     |     |     |   |     |     |  |     |  |    |   |  |      |
|-------------------|------|--|--|-----|-----|-----|-----|---|-----|-----|--|-----|--|----|---|--|------|
| Apr. 2, 1957..... | 165  |  |  | 1.6 | 0.5 | 4.2 | 0.6 | 3 | 3.9 | 6.0 |  | 2.8 |  | 6  | 4 |  | 43.1 |
| Aug. 8.....       | 5.88 |  |  | 3.2 | 1.2 | 3.8 | .8  | 7 | 7.4 | 7.3 |  | .1  |  | 13 | 7 |  | 51.0 |

## BIG SWAMP NEAR TARHEEL, N. C.

|                   |      |  |  |     |     |     |     |   |     |     |  |     |  |   |   |  |      |
|-------------------|------|--|--|-----|-----|-----|-----|---|-----|-----|--|-----|--|---|---|--|------|
| Apr. 3, 1957..... | 311  |  |  | 1.7 | 0.8 | 3.8 | 0.6 | 3 | 6.2 | 5.0 |  | 2.1 |  | 8 | 5 |  | 44.1 |
| Aug. 8.....       | 17.2 |  |  | 2.8 | .4  | 5.3 | .8  | 6 | 4.2 | 6.0 |  | .2  |  | 9 | 4 |  | 42.8 |

## LITTLE PEE DEE RIVER AT GALIVANTS FERRY, S. C.

|                  |         |     |      |     |     |     |     |   |     |     |     |     |      |   |   |  |      |
|------------------|---------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|------|---|---|--|------|
| May 22, 1957.... | bl, 210 | 6.9 | 0.32 | 1.6 | 0.7 | 3.7 | 0.4 | 4 | 0.0 | 6.7 | 0.3 | 2.9 | .461 | 7 | 4 |  | 40.8 |
|                  |         |     |      |     |     |     |     |   |     |     |     |     |      |   |   |  | 5.3  |
|                  |         |     |      |     |     |     |     |   |     |     |     |     |      |   |   |  | 100  |

a Calculated from determined constituents.

b Daily mean discharge.

c Organic matter present; sum of mineral constituents 30 parts per million.

d Organic matter present; sum of mineral constituents 26 parts per million.



SANTÉE RIVER BASIN--Continued  
CROWDERS CREEK NEAR GASTONIA, N. C.

LOCATION.--At bridge on U. S. Highway 321, 0.3 mile downstream from mouth of South Fork Crowders Creek and 5 miles south of Gastonia, Gaston County.  
DRAINAGE AREA.--70.6 square miles.  
RECORDS AVAILABLE.--October 1956 to September 1957.  
REMARKS.--No discharge records available for this station.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, magnesium            | Non-carbonate |                                            |     |       |
| Oct. 16, 1956....  |                      | 22                         | 0.03      | 22           | 3.3            | 34          | 3.2           | 52                              | 92                         | 10            | 0.0          | 0.8                        | 215                                                 | 70                            | 27            | 327                                        | 6.7 | 2     |
| Nov. 16.....       |                      | 21                         | .05       | 27           | 4.0            | 61          | 4.2           | 103                             | 116                        | 20            | .2           | 1.0                        | 313                                                 | 83                            | 0             | 476                                        | 7.8 | 10    |
| Dec. 13.....       |                      | 23                         | .04       | 20           | 3.1            | 47          | 3.4           | 70                              | 95                         | 17            | .2           | .9                         | 245                                                 | 62                            | 4             | 371                                        | 7.0 | 20    |
| Jan. 16, 1957....  |                      | 23                         | .05       | 17           | 3.0            | 42          | 3.0           | 71                              | 67                         | 22            | .2           | 1.2                        | 215                                                 | 56                            | 0             | 334                                        | 7.6 | 7     |
| Mar. 14.....       |                      | 20                         | .01       | 9.8          | 2.2            | 18          | 2.2           | 50                              | 32                         | 6.9           | .2           | .6                         | 125                                                 | 34                            | 0             | 175                                        | 7.1 | 8     |
| Apr. 18.....       |                      | 21                         | .02       | 13           | 1.4            | 19          | 2.2           | 46                              | 34                         | 8.1           | .2           | .5                         | 125                                                 | 34                            | 0             | 188                                        | 7.0 | 8     |
| May 16.....        |                      | 22                         | .00       | 13           | 2.9            | 11          | 2.2           | 35                              | 33                         | 7.0           | .1           | 1.5                        | 113                                                 | 45                            | 0             | 162                                        | 6.5 | 11    |
| June 14.....       |                      | 22                         | .00       | 16           | 3.0            | 12          | 1.6           | 29                              | 51                         | 4.5           | .3           | 1.6                        | 134                                                 | 53                            | 29            | 192                                        | 6.5 | 10    |
| July 16.....       |                      | 23                         | .01       | 19           | 3.3            | 23          | 2.6           | 40                              | 62                         | 11            | .7           | 2.0                        | 171                                                 | 60                            | 27            | 251                                        | 6.7 | 8     |
| Aug. 15.....       |                      | 16                         | .01       | 22           | 4.1            | 32          | 4.2           | 46                              | 68                         | 17            | .0           | 3.3                        | 211                                                 | 72                            | 34            | 335                                        | 6.4 | 12    |
| Sept. 16.....      |                      | 18                         | .00       | 20           | 3.2            | 19          | 3.2           | 42                              | 53                         | 8.4           | .0           | 1.8                        | 163                                                 | 62                            | 28            | 245                                        | 7.1 | 20    |

<sup>a</sup> Calculated from determined constituents.

## SANTÉE RIVER BASIN--Continued

## LITTLE SUGAR CREEK NEAR CHARLOTTE, N. C.

LOCATION.--At bridge on county road, 50 feet downstream from tributary on right, 500 feet downstream from Briar Creek, 600 feet upstream from sewage-disposal plant of city of Charlotte, and 4.7 miles south of City Hall, Charlotte, Mecklenburg County.

DRAINAGE AREA.--41.4 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, nesium               | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  | 6.8                  | 19                         | 0.30      | 23           | 5.7            | 50          | 4.2           | 119                             | 56                         | 12            | 0.5          | 0.5                        | 235                                                | 80                            | 0             | 360                                       | 7.0 | 10    |
| Nov. 16.....       | 9.7                  | 25                         | .13       | 21           | 5.3            | 37          | 3.3           | 136                             | 24                         | 13            | .6           | 1.1                        | 205                                                | 73                            | 0             | 308                                       | 6.9 | 15    |
| Dec. 14.....       | 189                  | 22                         | .00       | 23           | 5.3            | 22          | 3.8           | 109                             | 23                         | 13            | .5           | 1.3                        | 170                                                | 79                            | 0             | 265                                       | 7.0 | 10    |
| Jan. 17, 1957....  | 11                   | 28                         | .02       | 19           | 5.4            | 19          | 2.3           | 93                              | 19                         | 10            | .4           | 1.6                        | 154                                                | 69                            | 0             | 227                                       | 7.1 | 8     |
| Feb. 13.....       | 29                   | 22                         | .02       | 17           | 3.8            | 10          | 2.6           | 64                              | 15                         | 8.6           | .2           | 2.9                        | 115                                                | 58                            | 6             | 176                                       | 7.2 | 7     |
| Mar. 15.....       | 53                   | 15                         | .03       | 17           | 4.4            | 10          | 3.0           | 73                              | 15                         | 7.3           | .3           | 2.5                        | 123                                                | 62                            | 0             | 183                                       | 7.0 | 20    |
| Apr. 16.....       | 19                   | 24                         | .04       | 18           | 4.1            | 15          | 2.2           | 80                              | 15                         | 14.3          | .4           | 1.5                        | 138                                                | 62                            | 0             | 220                                       | 7.1 | 5     |
| May 16.....        | 58                   | 14                         | .01       | 13           | 3.2            | 5.9         | 2.6           | 57                              | 7.9                        | 4.6           | .4           | 1.6                        | 88                                                 | 45                            | 0             | 130                                       | 6.7 | 18    |
| June 14.....       | 21                   | 23                         | .07       | 22           | 5.2            | 46          | 4.7           | 108                             | 48                         | 26            | .4           | 2.2                        | 244                                                | 76                            | 0             | 375                                       | 6.8 | 35    |
| July 16.....       | 7                    | 20                         | .04       | 20           | 4.9            | 18          | 3.4           | 101                             | 9.6                        | 19            | .9           | 2.7                        | 153                                                | 70                            | 0             | 230                                       | 6.7 | 20    |
| Aug. 13.....       | 4.6                  | 15                         | .01       | 23           | 4.4            | 23          | 3.1           | 97                              | 22                         | 17            | .4           | 4.8                        | 163                                                | 75                            | 0             | 261                                       | 7.4 | 15    |
| Sept. 17.....      | 88                   | 9.3                        | .06       | 15           | 1.9            | 9.4         | 3.0           | 48                              | 17                         | 7.2           | .4           | 2.7                        | 93                                                 | 46                            | 6             | 145                                       | 6.4 | 12    |

## SANTÉE RIVER BASIN--Continued

## SECOND BROAD RIVER AT CLIFFSIDE, N. C.

LOCATION.--At gaging station on left bank a quarter of a mile downstream from dam of Cliffside Mills, at Cliffside, Rutherford County, and 1½ miles upstream from mouth.

DRAINAGE AREA.--211 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949, October 1956 to September 1957.

Water temperatures: October 1948 to September 1949, October 1956 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum, 77 ppm, Oct. 11-20, minimum, 38 ppm, Apr. 1-10.

Hardness: Maximum, 20 ppm, June 21-31, July 21-31, Sept. 1-10; minimum, 12 ppm, Apr. 20-28.

Specific conductance: Maximum daily, 137 micromhos Oct. 5; minimum daily, 31.7 micromhos June 6.

Water temperatures: Maximum, 77°F, July 23-24; minimum, 36°F, Jan. 11-20, 1956; minimum, 36 ppm Nov. 21-30, 1948.

EXTREMES: 1948-49, 1956-57.--Dissolved solids: Maximum, 77 ppm Oct. 11-20, 1956; minimum, 12 ppm Nov. 21-30, 1948.

Hardness: Maximum, 20 ppm June 21-31, July 21-31, Sept. 1-10, 1957; minimum, 12 ppm Nov. 21-30, 1948, Jan. 1-10, July 11-20, Aug. 1-10, 1949, Feb. 20-28, 1957.

Specific conductance (1956-57): Maximum daily, 137 micromhos Oct. 5, 1956; minimum daily, 31.7 micromhos June 6, 1957.

Water temperatures: Maximum, 80°F June 26-29, July 25, 1949; minimum, 36°F Jan. 20, 21, 1957.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of daily samples from October 1956 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 83                   | 16                         | 0.02      | 4.0          | 1.2            | 13          | 1.8           | 33                              | 2.9                        | 11            | 0.1          | 1.6                        | a68                                                | 15                            | 0             | 99.7                                      | 7.1 | 3     | 4               | 2        |
| Oct. 11-20.....    | 66                   | 17                         | .01       | 4.2          | 1.5            | 16          | 1.6           | 34                              | 2.7                        | 14            | .1           | 1.9                        | 77                                                 | 16                            | 0             | 116                                       | 6.9 | 4     | 3               | 2        |
| Oct. 21-30.....    | 107                  | 17                         | .02       | 4.2          | 1.4            | 13          | 1.6           | 32                              | 3.0                        | 11            | .2           | 1.9                        | a69                                                | 16                            | 0             | 99.0                                      | 6.8 | 5     | 5               | 7        |
| Nov. 1-10.....     | 98                   | 18                         | .02       | 4.2          | 1.4            | 14          | 1.6           | 32                              | 3.0                        | 13            | .1           | 2.1                        | a74                                                | 16                            | 0             | 107                                       | 6.7 | 7     | 7               | 7        |
| Nov. 11-20.....    | 116                  | 16                         | .11       | 4.0          | 1.5            | 13          | 1.6           | 28                              | 4.3                        | 16            | .1           | 2.3                        | 65                                                 | 16                            | 0             | 103                                       | 6.7 | 15    | 4               | 2        |
| Nov. 21-30.....    | 97                   | 17                         | .17       | 4.4          | 1.2            | 11          | 1.6           | 28                              | 4.3                        | 8.7           | .1           | 1.3                        | 65                                                 | 16                            | 0             | 90.1                                      | 7.0 | 7     | 3               | 2        |
| Dec. 1-10.....     | 96                   | 16                         | .11       | 4.4          | 1.2            | 13          | 1.8           | 28                              | 3.3                        | 11            | .0           | 2.8                        | 70                                                 | 16                            | 0             | 102                                       | 7.0 | 13    | 5               | 2        |
| Dec. 11-20.....    | 141                  | 16                         | .02       | 3.8          | 1.1            | 8.5         | 1.7           | 24                              | 3.2                        | 7.0           | .0           | 2.4                        | 57                                                 | 14                            | 0             | 77.3                                      | 7.1 | 5     | 4               | 2        |
| Dec. 21-31.....    | 237                  | 16                         | .00       | 3.6          | 1.5            | 7.2         | 1.7           | 23                              | 2.0                        | 6.0           | .1           | 2.1                        | 57                                                 | 15                            | 0             | 72.5                                      | 7.0 | 5     | 4               | 3        |
| Jan. 1-10, 1957    | 124                  | 16                         | .08       | 4.0          | 1.5            | 7.4         | 1.4           | 25                              | 3.0                        | 7.0           | .0           | 2.3                        | a55                                                | 16                            | 0             | 76.8                                      | 6.6 | 7     | 3               | 1        |
| Jan. 11-20.....    | 100                  | 17                         | .06       | 4.0          | 1.5            | 11          | 1.4           | 26                              | 3.5                        | 9.2           | .1           | 2.1                        | 66                                                 | 16                            | 0             | 91.5                                      | 6.6 | 5     | 3               | 2        |
| Jan. 21-31.....    | 232                  | 16                         | .01       | 3.4          | 1.3            | 8.0         | 1.5           | 21                              | 2.0                        | 7.0           | .1           | 1.8                        | 57                                                 | 14                            | 0             | 72.1                                      | 6.8 | 5     | 4               | 2        |
| Feb. 1-10.....     | 774                  | 13                         | .10       | 3.0          | .9             | 4.7         | 1.5           | 16                              | 3.1                        | 4.0           | .0           | 1.9                        | 46                                                 | 11                            | 0             | 54.2                                      | 7.0 | 5     | 8               | 3        |
| Feb. 11-19.....    | 221                  | 16                         | .10       | 3.6          | 1.5            | 6.9         | 1.2           | 24                              | 3.2                        | 5.0           | .1           | 1.6                        | 57                                                 | 15                            | 0             | 70.0                                      | 7.3 | 12    | 4               | 2        |
| Feb. 20-28.....    | 283                  | 15                         | .01       | 4.0          | .5             | 7.2         | 1.3           | 22                              | 2.4                        | 5.7           | .0           | 1.4                        | 56                                                 | 12                            | 0             | 70.3                                      | 7.1 | 2     | 4               | 2        |
| Mar. 1-10.....     | 483                  | 13                         | .01       | 3.2          | 1.9            | 5.6         | 1.3           | 19                              | 2.6                        | 5.0           | .0           | 1.7                        | 43                                                 | 16                            | 0             | 59.5                                      | 5.9 | 5     | 4               | 1        |
| Mar. 11-20.....    | 211                  | 16                         | .00       | 3.4          | 2.1            | 6.6         | 1.5           | 25                              | 2.8                        | 5.1           | .1           | 2.0                        | 52                                                 | 17                            | 0             | 69.3                                      | 6.5 | 2     | 2               | 2        |
| Mar. 21-31.....    | 230                  | 15                         | .00       | 3.4          | 1.2            | 7.2         | 1.5           | 22                              | 2.0                        | 6.5           | .1           | 1.5                        | a50                                                | 14                            | 0             | 71.9                                      | 6.5 | 3     | 2               | 2        |

a Calculated from determined constituents.



SANTEE RIVER BASIN--Continued  
SECOND BROAD RIVER AT CLIFFSIDE, N. C.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH   | Color | Oxygen consumed |          |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------|-------|-----------------|----------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |      |       | Unfiltered      | Filtered |
| Apr. 1-10, 1957            | 1,050                | 12                         | 0.01      | 3.2          | 1.5            | 2.8         | 1.5           | 16                              | 2.6                        | 3.5           | 0.2          | 1.6                        | 38                                                 | 14                            | 0             | 5.9  | 5     | --              | 3        |
| Apr. 11-20, .....          | 285                  | 16                         | .16       | 4.0          | 1.0            | 6.5         | 1.4           | 21                              | 2.3                        | 5.5           | .1           | 2.1                        | 49                                                 | 14                            | 0             | 6.5  | 10    | --              | 2        |
| Apr. 21-30, .....          | 260                  | 16                         | .02       | 4.0          | 1.5            | 6.5         | 1.4           | 24                              | 2.6                        | 4.5           | .1           | 1.6                        | 48                                                 | 16                            | 0             | 6.5  | 5     | --              | 2        |
| May 1-10, .....            | 177                  | 16                         | .09       | 4.0          | 1.7            | 6.9         | .9            | 26                              | 2.7                        | 7.0           | .1           | 1.8                        | a55                                                | 17                            | 0             | 72.1 | 10    | 4               | 1        |
| May 11-20, .....           | 190                  | 16                         | .10       | 4.0          | 1.7            | 7.1         | 1.1           | 24                              | 2.7                        | 7.0           | .1           | 2.0                        | 55                                                 | 17                            | 0             | 70.6 | 5     | 5               | 1        |
| May 21-31, .....           | 191                  | 15                         | .07       | 3.2          | 1.9            | 7.1         | 1.1           | 24                              | 2.4                        | 7.0           | .1           | 1.5                        | 53                                                 | 16                            | 0             | 71.1 | 5     | 13              | 2        |
| June 1-10, .....           | 1,020                | 14                         | .10       | 4.3          | .6             | 5.0         | 1.6           | 18                              | 2.6                        | 4.7           | .1           | 2.0                        | 45                                                 | 13                            | 0             | 53.2 | 10    | 14              | 4        |
| June 11-20, .....          | 305                  | 16                         | .01       | 4.2          | 1.7            | 5.7         | 1.1           | 25                              | 3.0                        | 3.6           | .0           | 1.5                        | 54                                                 | 20                            | 0             | 62.2 | 8     | --              | 4        |
| June 21-30, .....          | 305                  | 16                         | .01       | 4.2          | 2.2            | 6.0         | 1.7           | 25                              | 3.0                        | 4.6           | .0           | 1.5                        | 54                                                 | 20                            | 0             | 62.2 | 8     | --              | 3        |
| July 1-10, .....           | 173                  | 15                         | .00       | 4.0          | 1.9            | 5.6         | 1.0           | 26                              | 2.4                        | 4.5           | .0           | 1.8                        | 50                                                 | 18                            | 0             | 67.6 | 5     | 2               | 1        |
| July 11-20, .....          | 140                  | 15                         | .00       | 4.8          | 1.2            | 7.1         | .8            | 28                              | 2.5                        | 5.5           | .1           | 1.6                        | 56                                                 | 17                            | 0             | 72.0 | 10    | 4               | 1        |
| July 21-31, .....          | 123                  | 16                         | .00       | 7.2          | .5             | 8.2         | .8            | 29                              | 1.5                        | 7.5           | .0           | 2.0                        | 61                                                 | 20                            | 0             | 78.9 | 5     | 3               | 0        |
| Aug. 1-10, .....           | 122                  | 16                         | .17       | 3.8          | 1.6            | 11          | .9            | 29                              | 3.4                        | 9.0           | .0           | 2.2                        | 68                                                 | 16                            | 0             | 95.0 | 6.8   | 4               | 2        |
| Aug. 11-13, .....          | 111                  | 14                         | .02       | 4.4          | 1.7            | 12          | 1.4           | 27                              | 4.0                        | 12            | .0           | 1.8                        | a64                                                | 18                            | 0             | 95.1 | 7.0   | --              | --       |
| Aug. 16-17, .....          | 111                  | 14                         | .02       | 4.4          | 1.7            | 12          | 1.4           | 27                              | 4.0                        | 12            | .0           | 1.8                        | a64                                                | 18                            | 0             | 95.1 | 7.0   | --              | --       |
| Aug. 18-20, 1957           | 320                  | 10                         | .02       | 3.6          | 1.2            | 5.0         | 1.7           | 15                              | 2.4                        | 5.0           | .0           | 2.6                        | a39                                                | 14                            | 2             | 55.8 | 6.9   | 10              | --       |
| Aug. 21-30, .....          | 124                  | 16                         | .01       | 5.6          | 1.0            | 11          | 1.4           | 28                              | 2.4                        | 9.5           | .1           | 2.0                        | 73                                                 | 18                            | 0             | 93.2 | 6.6   | 15              | 3        |
| Sept. 1-10, .....          | 164                  | 14                         | .04       | 7.6          | 1.3            | 11          | 1.3           | 28                              | 3.2                        | 10.1          | .1           | 2.3                        | 66                                                 | 20                            | 0             | 91.2 | 7.0   | 6               | 2        |
| Sept. 11-20, .....         | 386                  | 14                         | .02       | 3.2          | 1.7            | 7.1         | 1.5           | 23                              | 2.2                        | 8.3           | .2           | 1.1                        | 59                                                 | 15                            | 0             | 72.9 | 6.8   | 12              | 3        |
| Sept. 21-30, .....         | 348                  | 14                         | .02       | 5.6          | .5             | 7.6         | 1.4           | 25                              | 1.6                        | 7.5           | .1           | 1.0                        | 54                                                 | 16                            | 0             | 74.1 | 6.9   | 10              | 3        |
| Time-weighted average..... | 257                  | 15                         | 0.05      | 4.2          | 1.3            | 8.5         | 1.4           | 25                              | 2.7                        | 7.4           | 0.1          | 1.9                        | 58                                                 | 16                            | 0             | 78.0 | --    | 5               | 2        |

a Calculated from determined constituents.

## SANTÉE RIVER BASIN--Continued

## SECOND BROAD RIVER AT CLIFFSIDE, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 (Once-daily measurement at approximately 11 a.m.)

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 62   | 62   | 40   | 41   | 53   | 50   | 53   | 68  | --   | 71   | 76   | 74    |
| 2       | 66   | 63   | 39   | 43   | 54   | 50   | 55   | 68  | 66   | 71   | 76   | 74    |
| 3       | 67   | 62   | 39   | 39   | 51   | 49   | 58   | 65  | 70   | 71   | 76   | 74    |
| 4       | 67   | 61   | 40   | 38   | 50   | 49   | 58   | 61  | 72   | 71   | 76   | 75    |
| 5       | 67   | 60   | 42   | 40   | 53   | 48   | 54   | 60  | 70   | 73   | 76   | 72    |
| 6       | 68   | 60   | 40   | 44   | 52   | 46   | 55   | 59  | 68   | 73   | 72   | 74    |
| 7       | 65   | 58   | 46   | 45   | 51   | 47   | 54   | 59  | 68   | 72   | 70   | 73    |
| 8       | 65   | 58   | 48   | 44   | 52   | 48   | 55   | 60  | 68   | 74   | 70   | 74    |
| 9       | 80   | 55   | 50   | 44   | 52   | 45   | --   | 63  | 67   | 75   | 70   | 71    |
| 10      | 59   | 56   | 46   | 46   | 54   | 46   | 54   | 65  | 64   | 76   | 72   | 70    |
| 11      | 58   | 49   | 43   | 46   | 54   | 46   | 55   | 67  | 64   | 76   | 73   | 71    |
| 12      | 59   | 50   | 46   | 46   | 49   | 51   | 58   | 65  | 68   | 74   | 76   | 73    |
| 13      | 54   | 49   | 44   | 43   | 46   | 52   | 58   | 69  | 73   | 74   | 76   | 73    |
| 14      | 54   | 48   | 50   | 45   | 44   | 52   | 56   | 70  | 73   | 75   | 76   | 73    |
| 15      | 58   | 46   | 52   | 43   | 43   | 56   | 57   | 70  | 73   | 76   | 74   | 74    |
| 16      | 56   | 50   | 55   | 40   | 45   | 56   | 54   | 66  | 74   | 74   | 74   | 75    |
| 17      | 59   | 45   | 58   | 39   | 46   | 53   | 56   | 69  | 74   | 76   | 75   | 73    |
| 18      | 60   | 50   | 55   | 37   | 45   | 52   | 58   | 69  | 72   | 76   | 73   | 70    |
| 19      | 60   | 48   | 52   | 37   | 43   | 52   | 62   | 70  | 74   | 75   | 70   | 70    |
| 20      | 60   | 46   | 50   | 36   | 42   | 53   | 63   | 68  | 72   | 73   | 68   | 68    |
| 21      | 59   | 46   | 52   | 36   | 42   | 52   | 66   | 67  | 72   | 76   | 69   | 72    |
| 22      | 60   | 45   | 54   | 40   | 43   | --   | 70   | 70  | 72   | 76   | 69   | 70    |
| 23      | 60   | 44   | 56   | 44   | 43   | 50   | 68   | 69  | 73   | 77   | 71   | 70    |
| 24      | 60   | 42   | 56   | 48   | 46   | 52   | 68   | 71  | 72   | 77   | 71   | 67    |
| 25      | 61   | 40   | 52   | 44   | 50   | 54   | 68   | 70  | 73   | 76   | 70   | 63    |
| 26      | 59   | 40   | 46   | 43   | 53   | 53   | 67   | 68  | 72   | 72   | 70   | 63    |
| 27      | 57   | 39   | 42   | 43   | 56   | 50   | 68   | 71  | 71   | 74   | 70   | 63    |
| 28      | 60   | 38   | 42   | 50   | 58   | 51   | 67   | 68  | 74   | 71   | 71   | 60    |
| 29      | 60   | 38   | 43   | 54   | --   | 53   | 69   | 67  | 69   | 72   | 72   | 56    |
| 30      | 60   | 40   | 41   | 58   | --   | 53   | 68   | 66  | 70   | 73   | 73   | 58    |
| 31      | 60   | --   | 41   | 56   | --   | 51   | --   | 64  | --   | 74   | 73   | --    |
| Average | 61   | 50   | 47   | 44   | 49   | 51   | 60   | 67  | 71   | 74   | 73   | 70    |

## SANTÉE RIVER BASIN--Continued

## BROAD RIVER NEAR BOILING SPRINGS, N. C.

LOCATION --At gaging station on right bank half a mile upstream from Sandy Run Creek, 3 miles downstream from Second Broad River, and 3½ miles southwest of Boiling Springs, Cleveland County.

DRAINAGE AREA --864 square miles

RECORDS AVAILABLE Chemical analyses: October 1945 to September 1946, October 1956 to September 1957.

Water temperatures October 1945 to September 1956: Maximum, 57 ppm June 1-10; minimum, 29 ppm Apr. 1-10.

EXTREMES 1956-57:--Dissolved solids: Maximum, 57 ppm June 1-10; minimum, 29 ppm Apr. 1-10.

Hardness: Maximum, 18 ppm Aug. 11-20; minimum, 8 ppm Feb. 11-19.

Specific conductance: Maximum, 411, 74.1 micromhos Aug. 13; minimum daily, 23.7 micromhos June 6.

Water temperatures: Maximum, 83° F Aug. 3, 4; minimum, 58° F Jan. 20.

EXTREMES 1946-46, 1956-57:--Dissolved solids: Maximum, 57 ppm June 1-10, 1957; minimum, 28 ppm Jan. 1-10, 21-31, Feb. 1-10, 1946.

Hardness: Maximum, 18 ppm Aug. 11-20, 1956; minimum, 8 ppm Jan. 1-10, 1946.

Specific conductance: Maximum, 411, 74.1 micromhos Aug. 13, 1957; minimum daily, 23.7 micromhos June 6, 1957.

Water temperatures: Maximum, 83° F Aug. 3, 4, 1957; minimum, 32° F Feb. 3, 4, 1946.

REMARKS: Records of suspended matter of composite samples and records of specific conductance of daily samples from October 1956 to September 1957 available in district office at Raleigh, N. C. Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) |    | Hardness as CaCO <sub>3</sub> | Non-carbonate | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|----|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |    |                               |               |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956    | 453                  | 15                         | 0.02      | 2.6          | 1.1            | 5.1         | 1.3           | 21                              | 1.3                        | 3.6           | 0.2          | 0.9                        | a41                                                | 11 | 11                            | 0             | 51.8                                      | 6.9 | 6     | 6               | 2        |
| Oct. 11-20         | 729                  | 15                         | .06       | 3.0          | .9             | 2.3         | 1.1           | 22                              | .9                         | 3.5           | .1           | .8                         | 42                                                 | 11 | 11                            | 0             | 51.0                                      | 6.8 | 5     | 5               | 2        |
| Oct. 21-31         | 729                  | 15                         | .06       | 3.0          | .9             | 2.3         | 1.1           | 22                              | .9                         | 3.5           | .1           | .8                         | 42                                                 | 11 | 11                            | 0             | 51.0                                      | 6.8 | 5     | 5               | 2        |
| Nov. 1-10          | 704                  | 15                         | .02       | 2.8          | 1.0            | 4.4         | .9            | 20                              | .6                         | 3.0           | .1           | .6                         | a30                                                | 11 | 11                            | 0             | 45.9                                      | 6.7 | 5     | 4               | 2        |
| Nov. 11-20         | 613                  | 14                         | .02       | 3.2          | 1.0            | 4.6         | .9            | 20                              | 1.5                        | 2.9           | .0           | 1.0                        | 43                                                 | 12 | 12                            | 0             | 50.9                                      | 6.9 | 5     | 4               | 2        |
| Nov. 21-30         | 548                  | 13                         | .08       | 2.8          | .5             | 4.7         | 1.6           | 20                              | 1.1                        | 3.1           | .0           | 1.0                        | 43                                                 | 10 | 10                            | 0             | 49.0                                      | 6.9 | 5     | 3               | 2        |
| Dec. 1-10          | 466                  | 13                         | .08       | 2.8          | 1.0            | 6.1         | 1.3           | 22                              | 2.3                        | 3.3           | .0           | 1.4                        | 43                                                 | 11 | 11                            | 0             | 51.3                                      | 7.0 | 5     | 3               | 1        |
| Dec. 11-20         | 713                  | 15                         | .01       | 3.4          | .6             | 4.0         | 1.4           | 19                              | 1.1                        | 2.0           | .1           | 1.9                        | 39                                                 | 11 | 11                            | 0             | 47.8                                      | 6.9 | 6     | 4               | 2        |
| Dec. 21-31, 1957   | 1,110                | 14                         | .00       | 3.6          | 1.8            | 3.6         | 1.3           | 17                              | 2.0                        | 1.5           | .1           | 1.3                        | 37                                                 | 11 | 11                            | 0             | 42.8                                      | 6.5 | 5     | 4               | 2        |
| Jan. 1-10          | 586                  | 14                         | .00       | 4.0          | .7             | 3.4         | 1.2           | 20                              | 1.3                        | 1.8           | .1           | 1.9                        | a40                                                | 13 | 13                            | 0             | 44.9                                      | 7.1 | 5     | 2               | 2        |
| Jan. 11-20         | 586                  | 13                         | .04       | 2.8          | .5             | 3.7         | 1.0           | 14                              | 1.3                        | 2.0           | .1           | 1.1                        | 40                                                 | 9  | 9                             | 0             | 43.7                                      | 7.1 | 5     | 2               | 1        |
| Jan. 21-31         | 1,190                | 13                         | .00       | 2.8          | .5             | 3.7         | 1.0           | 14                              | 1.3                        | 2.0           | .1           | 1.0                        | 40                                                 | 9  | 9                             | 0             | 46.2                                      | 6.7 | 5     | 3               | 1        |
| Feb. 1-10          | 3,040                | 13                         | .00       | 3.2          | .7             | 2.7         | .9            | 14                              | 1.4                        | 2.0           | .2           | .7                         | 35                                                 | 11 | 11                            | 0             | 37.0                                      | 6.2 | 5     | 5               | 3        |
| Feb. 11-19         | 1,080                | 14                         | .05       | 2.8          | .3             | 3.2         | 1.2           | 17                              | 1.0                        | 1.8           | .0           | 1.1                        | 33                                                 | 8  | 8                             | 0             | 43.1                                      | 6.8 | 15    | 3               | 1        |
| Feb. 20-28         | 1,710                | 13                         | .00       | 2.8          | .5             | 3.2         | 1.1           | 16                              | 1.0                        | 1.3           | .0           | 1.2                        | a32                                                | 9  | 9                             | 0             | 46.4                                      | 6.9 | 5     | 3               | 2        |
| Mar. 1-10          | 2,390                | 12                         | .00       | 2.4          | 1.0            | 1.9         | 1.0           | 13                              | .9                         | 1.5           | .1           | 1.9                        | 30                                                 | 10 | 10                            | 0             | 36.1                                      | 6.6 | 5     | 3               | 1        |
| Mar. 11-20         | 1,190                | 14                         | .00       | 2.2          | .8             | 3.0         | 1.2           | 15                              | .3                         | 1.7           | .1           | 1.9                        | a32                                                | 9  | 9                             | 0             | 38.1                                      | 6.5 | 3     | 4               | 2        |
| Mar. 21-31         | 1,320                | 13                         | .00       | 3.2          | 1.2            | 2.5         | 1.3           | 15                              | 1.7                        | 2.0           | .1           | 1.2                        | 33                                                 | 13 | 13                            | 1             | 39.5                                      | 6.7 | 3     | 4               | 2        |

|                            |       |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |    |   |
|----------------------------|-------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|----|---|
| Apr. 1-10, 1957            | 4,900 | 11 | 0.02 | 2.8 | 0.5 | 2.7 | 1.2 | 11 | 1.2 | 3.0 | 0.1 | 1.2 | a29 | 9  | 0 | 38.5 | 6.1 | 0  | 7  | 3 |
| Apr. 11-20, .....          | 1,920 | 12 | .10  | 2.8 | .5  | 2.8 | 1.3 | 14 | 1.3 | 2.0 | .1  | 1.5 | a31 | 9  | 0 | 35.0 | 6.2 | 10 | -- | 2 |
| Apr. 21-30, .....          | 1,480 | 13 | .09  | 2.0 | 1.0 | 2.4 | 1.0 | 15 | 1.7 | 1.5 | .1  | 1.1 | a31 | 9  | 0 | 37.1 | 6.4 | 15 | -- | 2 |
| May 1-10, .....            | 1,250 | 14 | .05  | 2.4 | 1.2 | 2.4 | .6  | 17 | 1.9 | 2.0 | .1  | .7  | a33 | 11 | 0 | 36.1 | 6.8 | 5  | 6  | 1 |
| May 11-20, .....           | 1,180 | 15 | .03  | 2.0 | 1.3 | 3.0 | .6  | 18 | 1.9 | 2.3 | .2  | .7  | a38 | 11 | 0 | 37.9 | 6.8 | 5  | 5  | 2 |
| May 21-31, .....           | 1,190 | 16 | .03  | 2.0 | 1.3 | 3.0 | .7  | 19 | 1.4 | 2.3 | .2  | 1.5 | a38 | 13 | 0 | 40.0 | 6.7 | 5  | 5  | 1 |
| June 1-10, .....           | 3,310 | 12 | .11  | 2.5 | .9  | 3.0 | 1.3 | 14 | 3.5 | 2.5 | .0  | .9  | 57  | 10 | 0 | 37.0 | 6.3 | 5  | 9  | 3 |
| June 11-20, .....          | 1,630 | 13 | .02  | 2.8 | 1.1 | 2.8 | .8  | 16 | 2.2 | 1.8 | .0  | 1.2 | 37  | 12 | 0 | 35.9 | 6.0 | 10 | -- | 2 |
| June 21-30, .....          | 1,500 | 14 | .02  | 2.6 | 1.8 | 3.0 | .8  | 18 | 2.4 | 1.2 | .0  | .9  | 37  | 14 | 0 | 37.0 | 6.5 | 5  | -- | 3 |
| July 1-10, .....           | 977   | 13 | .01  | 3.2 | 1.0 | 2.7 | .6  | 19 | .4  | 2.5 | .0  | 1.0 | 40  | 12 | 0 | 40.3 | 6.8 | 5  | -- | 1 |
| July 11-20, .....          | 849   | 13 | .01  | 3.6 | 1.0 | 2.7 | .5  | 20 | .5  | 2.5 | .1  | 1.0 | 41  | 13 | 0 | 41.9 | 7.0 | 10 | -- | 1 |
| July 21-31, .....          | 725   | 14 | .00  | 3.2 | 1.2 | 3.2 | .5  | 21 | .5  | 3.0 | .1  | .7  | 44  | 13 | 0 | 46.0 | 7.3 | 5  | 2  | 0 |
| Aug. 1-10, .....           | 652   | 14 | .01  | 3.4 | .8  | 4.3 | 1.1 | 20 | 1.8 | 3.0 | .1  | .7  | 43  | 12 | 0 | 45.5 | 7.1 | 10 | -- | 4 |
| Aug. 11-20, .....          | 997   | 12 | .05  | 3.4 | 2.3 | 2.7 | .7  | 15 | 5.0 | 5.2 | .0  | .8  | 50  | 18 | 0 | 45.8 | 6.9 | 20 | 9  | 5 |
| Aug. 21-31, .....          | 670   | 15 | .03  | 2.8 | 1.7 | 2.7 | .4  | 19 | .6  | 3.0 | .0  | .7  | 45  | 14 | 0 | 49.9 | 6.3 | 20 | -- | 5 |
| Sept. 1-10, .....          | 654   | 13 | .03  | 3.6 | 1.0 | 5.0 | .9  | 20 | 1.8 | 3.7 | .2  | 2.2 | 47  | 13 | 0 | 53.1 | 6.4 | 10 | 4  | 2 |
| Sept. 11-20, .....         | 1,840 | 13 | .04  | 3.4 | .8  | 3.6 | 1.0 | 18 | 1.4 | 2.5 | .2  | .9  | 38  | 12 | 0 | 45.1 | 6.8 | 12 | 3  | 2 |
| Sept. 21-30, .....         | 1,510 | 12 | .04  | 3.6 | 1.0 | 2.8 | .7  | 17 | .2  | 2.7 | .1  | 1.0 | 37  | 13 | 0 | 41.3 | 6.5 | 10 | 3  | 2 |
| Time-weighted average..... | 1,275 | 14 | 0.03 | 3.0 | 1.0 | 3.5 | 1.0 | 18 | 1.4 | 2.5 | 0.1 | 1.1 | 38  | 11 | 0 | 43.5 | --  | 7  | -- | 2 |

a Calculated from determined constituents.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## SANTEE RIVER BASIN--Continued

## BROAD RIVER NEAR BOILING SPRINGS, N. C.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 7 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | 69   | 46   | 48   | 53   | 53   | 55   | 69  | 70   | 75   | 82   | 76    |
| 2       | 72   | 65   | 43   | 45   | 52   | 49   | 57   | 70  | 71   | 76   | 81   | 78    |
| 3       | 75   | 66   | 46   | 44   | 52   | 50   | 58   | 68  | 73   | 76   | 83   | 78    |
| 4       | 72   | 63   | 50   | 46   | 53   | 51   | 60   | 68  | 78   | 74   | 83   | 78    |
| 5       | 74   | 61   | 51   | 50   | 55   | 49   | 55   | 65  | 73   | 76   | 79   | 78    |
| 6       | 71   | 63   | 54   | 48   | 51   | 49   | 52   | 65  | 72   | 77   | 76   | 78    |
| 7       | 67   | 61   | 56   | 49   | 52   | 47   | 55   | 66  | 70   | 77   | 73   | 77    |
| 8       | 65   | 64   | 55   | 50   | 49   | 45   | 55   | 67  | 71   | 78   | 75   | 78    |
| 9       | 62   | 57   | 54   | 51   | 53   | 45   | 52   | 68  | 70   | 81   | 79   | 77    |
| 10      | 66   | 54   | 53   | 58   | 54   | 47   | 52   | 68  | 66   | 80   | 78   | 73    |
| 11      | 64   | 50   | 54   | 52   | 54   | 48   | 55   | 70  | 68   | 80   | 77   | 76    |
| 12      | 63   | 51   | 57   | 52   | 49   | 50   | 55   | 70  | 70   | 80   | 80   | 79    |
| 13      | 60   | 54   | 60   | 46   | 48   | 55   | 55   | 70  | 74   | 80   | 78   | 80    |
| 14      | 58   | 52   | 63   | 50   | 46   | 55   | 54   | 74  | 73   | 80   | 75   | 78    |
| 15      | 57   | 52   | 64   | --   | 45   | 57   | 57   | 74  | 75   | 80   | 75   | 77    |
| 16      | 64   | 55   | 57   | --   | 48   | 56   | --   | 71  | 75   | 79   | 80   | 84    |
| 17      | 65   | 54   | 59   | 48   | 48   | 56   | 57   | 73  | 77   | 82   | 80   | 76    |
| 18      | 67   | 51   | 63   | 44   | 45   | 54   | 59   | 71  | 78   | 78   | 75   | 73    |
| 19      | 67   | 48   | 59   | 41   | 51   | 53   | 60   | 71  | 76   | 78   | 71   | 73    |
| 20      | 65   | 48   | 60   | 38   | 48   | 53   | 62   | 72  | 78   | 78   | 72   | 72    |
| 21      | 63   | 52   | 62   | 41   | 47   | 52   | 65   | 73  | 78   | 78   | 74   | 74    |
| 22      | 62   | 50   | 62   | 51   | 48   | 54   | 67   | 74  | 78   | 78   | 74   | 73    |
| 23      | 64   | 45   | 58   | 56   | 47   | 53   | 67   | 73  | 78   | 81   | 73   | 74    |
| 24      | 63   | 46   | 58   | 48   | 49   | 53   | 66   | 75  | 76   | 82   | 73   | 70    |
| 25      | 67   | 41   | 52   | 48   | 53   | 55   | 66   | 73  | 76   | 79   | 72   | 69    |
| 26      | 63   | 42   | 47   | 47   | 60   | 53   | 67   | 73  | 75   | 76   | 72   | 69    |
| 27      | 62   | 45   | 46   | 46   | 56   | 52   | 67   | 73  | 75   | 78   | 74   | 68    |
| 28      | 60   | 44   | 45   | 52   | 56   | 50   | 67   | 72  | 76   | 73   | 75   | 65    |
| 29      | 60   | 48   | 50   | 62   | --   | 52   | 68   | 71  | 73   | 75   | 74   | 63    |
| 30      | 65   | 46   | 40   | 60   | --   | 53   | 70   | 69  | 75   | 78   | 76   | 60    |
| 31      | 68   | --   | 43   | 57   | --   | 53   | --   | 68  | --   | 81   | 78   | --    |
| Average | 65   | 53   | 54   | 49   | 51   | 52   | 60   | 70  | 74   | 78   | 76   | 74    |

SANTÉE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN SANTÉE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                                 | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|--------------------------------------------------------|-----|-------|
|                                                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium<br>mag-<br>nesium        | Non-carbon-<br>ate |                                                        |     |       |
|                                                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| CATAWBA RIVER NEAR MARION, N. C.                   |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Dec. 13, 1956....                                  | 145                | 12                            | 0.07         | 2.8             | 1.0               | 6.2            | 0.8              | 15                                 | 2.8                           | 6.0              | 0.0             | 3.1                           | a42                                                                 | 11                               | 13                 | 56.9                                                   | 6.5 | 9     |
| July 3, 1957....                                   | 367                | 11                            | .03          | 2.4             | .8                | 1.9            | .5               | 15                                 | .1                            | 1.1              | .0              | .9                            | a26                                                                 | 9                                | 0                  | 31.3                                                   | 6.4 | 6     |
| ARMSTRONG CREEK AT SEVIER, N. C.                   |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Apr. 30, 1957....                                  | 73.2               |                               |              | 3.2             | 1.9               | 2.0            | 0.6              | 16                                 | 4.6                           | 1.5              |                 | 0.3                           |                                                                     | 16                               | 3                  | 45.2                                                   | 6.3 |       |
| Aug. 14.....                                       | 31.6               |                               |              |                 |                   | 1.6            | .6               | 16                                 | 2.8                           | 1.7              |                 | .7                            |                                                                     | 12                               | 0                  | 33.2                                                   | 6.4 |       |
| MILL TIMBER CREEK AT CROSSMORE, N. C.              |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Apr. 30, 1957....                                  | 9.48               |                               |              | 2.0             | 1.0               | 1.6            | 0.4              | 14                                 | 0.9                           | 1.0              |                 | 0.8                           |                                                                     | 9                                | 0                  | 28.8                                                   | 6.1 |       |
| Aug. 10.....                                       | 3.48               |                               |              | 3.8             | .8                | 2.0            | .4               | 19                                 | .5                            | 1.2              |                 | .1                            |                                                                     | 13                               | 0                  | 38.2                                                   | 6.6 |       |
| LINVILLE RIVER AT BRANCH, N. C.                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Dec. 13, 1956....                                  | 93.3               | 8.0                           | 0.02         | 3.8             | 0.4               | 1.2            | 0.2              | 8                                  | 1.0                           | 0.8              | 0.0             | 0.3                           | a18                                                                 | 6                                | 0                  | 22.2                                                   | 6.6 | 5     |
| July 3, 1957....                                   | 197                | 7.1                           | .02          | 2.2             | .1                | 1.1            | .3               | 9                                  | .0                            | .9               | .0              | .9                            | a17                                                                 | 6                                | 0                  | 19.8                                                   | 6.4 | 7     |
| WARRIOR FORK NEAR MORGANTON, N. C.                 |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Sept. 18, 1956....                                 | 11.6               |                               |              | 2.4             | 0.9               | --             | --               | 18                                 | 1.3                           | 1.0              |                 | 1.0                           |                                                                     | 10                               | 0                  | 33.5                                                   | 6.4 |       |
| Mar. 13, 1957....                                  | 108                |                               |              | 2.0             | 1.7               | 1.9            | 0.4              | 13                                 | 2.7                           | 2.5              |                 | .2                            |                                                                     | 12                               | 0                  | --                                                     | 6.1 |       |
| Aug. 12.....                                       | 47.1               |                               |              | --              | --                | 2.0            | .6               | 16                                 | .7                            | 2.4              |                 | .1                            |                                                                     | 9                                | 0                  | 30.8                                                   | 6.5 |       |
| WILSON CREEK NEAR ADAKO, N. C.                     |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Mar. 13, 1957....                                  | 140                |                               |              | 1.2             | 0.3               | 1.4            | 0.1              | 10                                 | 0.4                           | 0.2              |                 | 0.1                           |                                                                     | 4                                | 0                  |                                                        | 6.0 |       |
| Aug. 8.....                                        | 50.8               |                               |              | 1.6             | .2                | 1.8            | .4               | 10                                 | .8                            | .3               |                 | .3                            |                                                                     | 5                                | 0                  | 21.9                                                   | 5.9 |       |
| DROWNING CREEK NEAR HILDEBRAN, N. C.               |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Apr. 29, 1957....                                  | 18.8               |                               |              | 2.5             | 0.4               | 2.6            | 0.8              | 12                                 | 2.3                           | 2.3              |                 | 0.9                           |                                                                     | 8                                | 0                  | 34.3                                                   | 6.0 |       |
| Aug. 12.....                                       | 10.5               |                               |              |                 |                   | 2.1            | .8               | 12                                 | 1.2                           | 2.6              |                 | .5                            |                                                                     | 9                                | 0                  | 30.4                                                   | 6.2 |       |
| MIDDLE LITTLE RIVER NEAR TAYLORSVILLE, N. C.       |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Mar. 19, 1957....                                  | 52.0               |                               |              | 2.4             | 1.2               | 2.0            | 0.7              | 13                                 | 2.6                           | 1.9              |                 | 0.3                           |                                                                     | 11                               | 0                  |                                                        | 6.2 |       |
| Aug. 8.....                                        | 27.0               |                               |              | 2.4             | .8                | 1.6            | .8               | 13                                 | 3.3                           | 1.0              |                 | .7                            |                                                                     | 9                                | 0                  | 29.8                                                   | 5.9 |       |
| LOWER LITTLE RIVER NEAR ALL HEALING SPRINGS, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                    |                                                        |     |       |
| Nov. 28, 1956....                                  | 10.5               | 13                            | 0.14         | 2.8             | 1.0               | 1.9            | 0.9              | 15                                 | 1.2                           | 1.4              | 0.1             | 0.3                           | a30                                                                 | 11                               | 0                  | 32.4                                                   | 6.7 | 8     |
| July 1, 1957....                                   | 53.7               | 14                            | .03          | 2.6             | .9                | 1.7            | .7               | 13                                 | 1.4                           | 1.5              | .1              | 1.1                           | a30                                                                 | 10                               | 0                  | 34.1                                                   | 6.6 | 11    |

<sup>a</sup> Calculated from determined constituents.

SANTER RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SANTER RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                   | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mag-<br>mhos at<br>25°C) | pH   | Color |    |
|--------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|---------------------------------------------------------------------|------|-------|----|
|                                      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-carbon-<br>ate |                                                                     |      |       |    |
|                                      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| GLADE CREEK NEAR MILLERSVILLE, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Apr. 29, 1957.....                   | 11.6               |                               |              |                      |                        | 2.0            | 0.8                   | 12                                      | 3.1                           | 4.5              |                 | 0.7                           |                                                                     |                                  | 13                 | 4                                                                   | 41.8 | 6.3   |    |
| Aug. 8.....                          | 9.66               |                               |              |                      |                        | 2.9            | .8                    | 18                                      | 1.3                           | 2.5              |                 | 1.0                           |                                                                     |                                  | 12                 | 0                                                                   | 41.8 | 6.7   |    |
| CATAWBA RIVER AT CATAWBA, N. C.      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Nov. 28, 1956.....                   | b1,520             | 6.4                           | 0.01         | 3.4                  | 1.0                    | 5.2            | 1.4                   | 22                                      | 1.9                           | 4.3              | 0.0             | 0.7                           | a35                                                                 |                                  | 13                 | 0                                                                   | 55.5 | 6.6   | 6  |
| Aug. 6, 1957.....                    | 4,020              | 8.5                           | .00          | 2.6                  | 1.0                    | 2.7            | .9                    | 16                                      | 1.4                           | 2.4              | .2              | .9                            | a29                                                                 |                                  | 11                 | 0                                                                   | 40.7 | 6.5   | 5  |
| MOUNTAIN CREEK NEAR TERRELL, N. C.   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Oct. 4, 1956.....                    |                    | --                            | --           | 6.0                  | 1.9                    | --             | --                    | 36                                      | 1.8                           | 1.8              | --              | 0.5                           | --                                                                  |                                  | 23                 | 0                                                                   | 69.3 | 6.7   | -- |
| Dec. 19.....                         |                    | 19                            | 0.14         | 6.6                  | 2.3                    | 2.8            | 1.0                   | 37                                      | 4.3                           | 1.6              | 0.0             | .3                            | a56                                                                 |                                  | 26                 | 0                                                                   | 70.1 | 7.1   | 17 |
| July 9, 1957.....                    |                    | 30                            | .13          | 6.0                  | 2.4                    | 3.1            | 1.0                   | 36                                      | 1.2                           | 1.9              | .2              | .6                            | a65                                                                 |                                  | 25                 | 0                                                                   | 69.9 | 6.8   | 10 |
| Aug. 28.....                         |                    | --                            | --           | 6.4                  | 2.8                    | 3.0            | 1.1                   | 38                                      | 1.2                           | 2.1              | --              | .3                            | --                                                                  |                                  | 27                 | 0                                                                   | 76.2 | 6.6   | -- |
| DAVIDSON CREEK NEAR CORNELIUS, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Mar. 12, 1957.....                   | 22.7               |                               |              | 8.4                  | 2.8                    | 6.0            | 1.2                   | 48                                      | 3.1                           | 2.4              |                 | 1.0                           |                                                                     |                                  | 33                 | 0                                                                   |      | 7.1   |    |
| Aug. 27.....                         | 3.81               |                               |              | 9.5                  | 3.4                    | 7.1            | 1.2                   | 56                                      | 2.9                           | 3.4              |                 | .3                            |                                                                     |                                  | 38                 | 0                                                                   | 110  | 6.6   |    |
| DUTCHMAN'S CREEK NEAR STANLEY, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Mar. 12, 1957.....                   | 99.8               |                               |              | 5.1                  | 1.8                    | 3.7            | 1.0                   | 30                                      | 3.0                           | 1.8              |                 | 0.3                           |                                                                     |                                  | 20                 | 0                                                                   |      | 6.4   |    |
| Aug. 27.....                         | 23.9               |                               |              | 9.9                  | 3.0                    | 8.6            | 1.2                   | 60                                      | 1.0                           | 4.3              |                 | .2                            |                                                                     |                                  | 37                 | 0                                                                   | 112  | 6.9   |    |
| HENRY FORK NEAR HENRY RIVER, N. C.   |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Jan. 19, 1957.....                   | 72.0               | 10                            | 0.09         | 1.5                  | 0.5                    | 1.0            | 0.4                   | 8                                       | 2.5                           | 1.2              | 0.0             | 0.4                           | a22                                                                 |                                  | 6                  | 0                                                                   | 25.4 | 6.7   | 5  |
| July 17.....                         | 91.2               | 9.9                           | .07          | 1.9                  | .7                     | 1.4            | .8                    | 10                                      | .6                            | 1.0              | .2              | .6                            | a22                                                                 |                                  | 8                  | 0                                                                   | 26.6 | 6.3   | 25 |
| MAIDEN CREEK AT MAIDEN, N. C.        |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| Apr. 29, 1957.....                   | 15.5               |                               |              | 2.0                  | 1.4                    | 2.4            | 0.8                   | 15                                      | 1.8                           | 2.3              |                 | 0.5                           |                                                                     |                                  | 11                 | 0                                                                   | 39.0 | 6.6   |    |
| Aug. 12.....                         | 3.36               |                               |              |                      |                        | 2.2            | .8                    | 15                                      | 1.1                           | 2.5              |                 | .3                            |                                                                     |                                  | 9                  | 0                                                                   | 31.2 | 6.5   |    |
| CLARK CREEK AT LINCOLNTON, N. C.     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                                     |      |       |    |
| May 13, 1957.....                    | 63.9               |                               |              | 5.2                  | 1.7                    | 5.7            | 1.4                   | 30                                      | 2.3                           | 2.5              |                 | 2.8                           |                                                                     |                                  | 20                 | 0                                                                   | 72.2 | 6.4   |    |
| May 30.....                          | 65.2               |                               |              | 4.8                  | 2.9                    | 14             | 2.2                   | 37                                      | 4.6                           | 14               |                 | .8                            |                                                                     |                                  | 24                 | 0                                                                   | 126  | 6.3   |    |
| July 31.....                         | 38.2               |                               |              | 6.7                  | 2.5                    | 24             | 2.6                   | 44                                      | 6.4                           | 27               |                 | 1.4                           |                                                                     |                                  | 27                 | 0                                                                   | 179  | 6.6   |    |

## INDIAN CREEK NEAR LABORATORY, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Dec. 19, 1956.... | 50.7 | 15 | 0.17 | 4.0 | 1.0 | 2.7 | 1.4 | 20 | 2.6 | 2.2 | 0.0 | 1.2 | a40 | 14 | 0 | 50.6 | 7.3 | 18 |
| July 17, 1957.... | 29.2 | 15 | .09  | 4.0 | 1.5 | 2.1 | 1.4 | 22 | 1.8 | 1.9 | 0   | 1.1 | a40 | 16 | 0 | 49.2 | 6.8 | 9  |
| Aug. 28.....      | 24.2 | -- | --   | 5.3 | 2.4 | 2.2 | 1.2 | 26 | 1.0 | 3.0 | --  | .5  | --  | 23 | 2 | 49.4 | 6.7 | -- |

## HOYLES CREEK NEAR STANLEY, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Feb. 15, 1957.... | 3.99 | 20 | 0.01 | 4.4 | 1.5 | 2.6 | 1.0 | 25 | 1.9 | 2.0 | 0.0 | 0.5 | a46 | 17 | 0 | 55.7 | 6.8 | 5 |
| Aug. 27.....      |      | 25 | .12  | 5.0 | 2.1 | 4.5 | 1.2 | 31 | 3.1 | 3.4 | .2  | .4  | a60 | 21 | 0 | 61.8 | 6.5 |   |

## LONG CREEK NEAR BESSEMER CITY, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Jan. 19, 1957.... | 13.6 | 19 | 0.30 | 5.1 | 1.8 | 3.2 | 0.6 | 31 | 2.0 | 2.0 | 0.0 | 0.6 | a50 | 20 | 0 | 61.3 | 7.3 | 5 |
| July 17.....      | 5.56 | 16 | .02  | 5.9 | 2.0 | 2.8 | 2.4 | 31 | 1.3 | 2.5 | .1  | 1.4 | a49 | 23 | 0 | 69.1 | 6.6 | 8 |

## LONG CREEK AT BESSEMER CITY, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Aug. 15, 1957.... | 7.83 | 12 | 0.03 | 3.6 | 1.4 | 2.2 | 1.8 | 19 | 1.6 | 3.4 | 0.0 | 1.2 | a36 | 15 | 0 | 49.5 | 6.5 | 9 |
| Aug. 28.....      | 1.8  | 30 | .01  | 6.2 | 3.3 | 4.0 | 1.2 | 30 | 3.9 | 3.3 | .1  | .5  | a68 | 29 | 4 | 60.3 | 6.4 |   |

## SOUTH FORK CATAWBA RIVER AT LOWELL, N. C.

|                   |     |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|-----|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Jan. 19, 1957.... | 327 | 16 | 0.17 | 4.5 | 1.1 | 6.1 | 1.3 | 24 | 3.7 | 5.0 | 0.0 | 1.7 | a52 | 16 | 0 | 69.1 | 7.0 | 8  |
| July 9.....       | 363 | 14 | .10  | 3.6 | 1.6 | 4.1 | 1.1 | 24 | 1.6 | 2.8 | .0  | 2.2 | a43 | 16 | 6 | 57.0 | 7.2 | 17 |

## LITTLE SUGAR CREEK NEAR CHARLOTTE, N. C.

|                   |      |    |      |    |     |    |     |      |     |     |     |     |      |     |    |     |     |    |
|-------------------|------|----|------|----|-----|----|-----|------|-----|-----|-----|-----|------|-----|----|-----|-----|----|
| Dec. 19, 1956.... | 9.75 | 27 | 0.07 | 20 | 5.0 | 22 | 3.3 | 94   | 31  | 9.4 | 0.1 | 1.8 | a165 | 72  | 0  | 289 | 6.9 | 8  |
| July 9, 1957....  | 7.04 | 23 | .00  | 20 | 5.1 | 30 | 2.8 | 130  | 9.6 | 13  | .2  | 2.2 | a170 | 71  | 0  | 285 | 7.0 | 10 |
| Aug. 27.....      | b3.6 | 17 | --   | 44 | .9  | 25 | 2.8 | c106 | 55  | 24  | .0  | .5  | a321 | 113 | 26 | 369 | 9.5 | -- |

## MCPALPINE CREEK NEAR PINEVILLE, N. C.

|                   |      |  |  |     |     |     |     |    |     |     |  |     |  |    |   |     |     |  |
|-------------------|------|--|--|-----|-----|-----|-----|----|-----|-----|--|-----|--|----|---|-----|-----|--|
| June 19, 1957.... | 48.2 |  |  | 8.3 | 3.8 | 5.5 | 1.7 | 48 | 2.9 | 3.2 |  | 1.0 |  | 36 | 0 | 101 | 6.6 |  |
| July 30.....      | 3.22 |  |  | 14  | 6.2 | 9.0 | 1.8 | 86 | 2.8 | 4.3 |  | .8  |  | 61 | 0 | 158 | 7.0 |  |
| Aug. 28.....      | 1.14 |  |  | 15  | 7.7 | 9.9 | 1.9 | 94 | 5.7 | 6.8 |  | 1.1 |  | 70 | 0 | 176 | 7.0 |  |

## WATEREE RIVER NEAR CAMDEN, S. C.

|                  |        |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|------------------|--------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| May 3, 1957..... | b3,190 | 10 | 0.02 | 3.6 | 1.7 | 5.4 | 1.1 | 21 | 6.2 | 4.5 | 0.2 | 1.1 | a44 | 16 | 0 | 65.2 | 6.4 | 5 |
|------------------|--------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|

## WATEREE RIVER NEAR EASTOVER, S. C.

|                   |       |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|-------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| June 17, 1957.... | 5,180 | 10 | 0.03 | 4.0 | 2.2 | 7.1 | 1.4 | 31 | 6.6 | 4.5 | 0.3 | 0.1 | a51 | 19 | 0 | 78.5 | 6.4 | 15 |
|-------------------|-------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|

a Calculated from determined constituents.

b Daily mean discharge.

c Includes equivalent of 37 parts per million of carbonate (CO<sub>3</sub>).



## SANTÉE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN SANTÉE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                     | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
| BROAD RIVER NEAR CHIMNEY ROCK, N. C.   |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Dec. 13, 1956.....                     | b75                | 14                            | 0.01         | 2.6             | 0.5                    | 2.6            | 0.7                   | 15                                      | 1.3                           | 0.8              | 0.0             | 0.9                           | a30                                                                 | 9                                | 0                      | 32.5                                                        | 6.6 | 4     |
| July 2, 1957.....                      | 180                | 13                            | .00          | 2.5             | .2                     | 2.4            | .5                    | 14                                      | .2                            | 1.0              | .1              | 1.5                           | a28                                                                 | 7                                | 0                      | 29.0                                                        | 6.5 | 9     |
| COVE CREEK NEAR LAKE LURE, N. C.       |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Dec. 13, 1956.....                     | 51.2               | 17                            | 0.07         | 2.4             | 1.0                    | 2.7            | 0.8                   | 18                                      | 2.0                           | 1.0              | 0.0             | 0.3                           | a36                                                                 | 10                               | 0                      | 35.3                                                        | 6.7 | 10    |
| July 2, 1957.....                      | 136                | 16                            | .07          | 2.4             | 1.0                    | 2.7            | .6                    | 16                                      | 2.0                           | 1.0              | .0              | .9                            | a35                                                                 | 10                               | 0                      | 36.0                                                        | 7.0 | 14    |
| FIRST BROAD RIVER NEAR LAWDALE, N. C.  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Dec. 12, 1956.....                     | 90.4               | 12                            | 0.15         | 2.4             | 1.0                    | 6.6            | 1.0                   | 25                                      | 2.4                           | 2.8              | 0.0             | 0.7                           | a41                                                                 | 10                               | 0                      | 55.5                                                        | 7.2 | 11    |
| July 1, 1957.....                      | 213                | 12                            | .00          | 2.2             | 1.4                    | 2.1            | 1.3                   | 14                                      | 3.3                           | 1.5              | .1              | 1.0                           | a32                                                                 | 11                               | 0                      | 36.1                                                        | 6.9 | 5     |
| BUFFALO CREEK NEAR BLACKSBURG, S. C.   |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Dec. 6, 1956.....                      | 79.3               | 17                            | 0.13         | 4.0             | 1.2                    | 8.8            | 1.5                   | 25                                      | 3.6                           | 9.0              | 0.0             | 1.2                           | 60                                                                  | 15                               | 0                      | 80.9                                                        | 6.6 | 10    |
| May 22, 1957.....                      | 116                | 17                            | .00          | 3.6             | 1.2                    | 7.1            | 2.1                   | 22                                      | 3.1                           | 8.5              | .0              | 1.8                           | 57                                                                  | 14                               | 0                      | 75.8                                                        | 6.6 | 5     |
| BROAD RIVER NEAR GAFFNEY, S. C.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 23, 1957.....                      | b1,470             | 13                            | 0.01         | 2.4             | 1.5                    | 3.8            | 1.6                   | 18                                      | 1.6                           | 4.4              | 0.0             | 1.5                           | 45                                                                  | 12                               | 0                      | 41.5                                                        | 6.4 | 5     |
| CHEROKEE CREEK NEAR GAFFNEY, S. C.     |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Apr. 11, 1957....                      | 20.3               | 11                            | 0.07         | 2.7             | 0.8                    | 2.2            | 1.2                   | 12                                      | 1.2                           | 2.4              | 0.1             | 1.0                           | 29                                                                  | 10                               | 0                      | 37.7                                                        | 6.2 | 5     |
| KINGS CREEK AT KINGS CREEK, S. C.      |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 23, 1957.....                      | 19.9               | 14                            | 0.03         | 1.6             | 3.9                    | 4.4            | 1.6                   | 71                                      | 8.9                           | 4.0              | 0.0             | 0.3                           | 94                                                                  | 56                               | 0                      | 135                                                         | 7.1 | 5     |
| THICKETTY CREEK NEAR THICKETTY, S. C.  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Dec. 3, 1956.....                      | 21.5               | 13                            | 0.01         | 3.5             | 1.3                    | 4.3            | 1.4                   | 20                                      | 2.5                           | 4.2              | 0.0             | 2.3                           | 41                                                                  | 14                               | 0                      | 58.1                                                        | 6.2 | 5     |
| BULLOCK CREEK NEAR SHARON, S. C.       |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 23, 1957.....                      | 29.8               | 22                            | 0.34         | 8.0             | 2.2                    | 5.4            | 1.5                   | 40                                      | 4.7                           | 3.5              | 0.0             | 0.9                           | 79                                                                  | 29                               | 0                      | 90.2                                                        | 6.4 | 40    |
| PACOLET RIVER NEAR FINGERSVILLE, S. C. |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 21, 1957.....                      | b277               | 14                            | 0.12         | 3.2             | 1.5                    | 4.1            | 1.1                   | 21                                      | 4.0                           | 3.0              | 0.0             | 0.9                           | 41                                                                  | 14                               | 0                      | 47.9                                                        | 6.3 | 20    |

|                                        |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|----------------------------------------|--------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| BROAD RIVER NEAR CARLISLE, S. C.       |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 18, 1957....                      | b3,340 | 13  | 0.02 | 3.7 | 0.7 | 3.2 | 1.1 | 20 | 0.3 | 2.2 | 0.0 | 1.0 | 39  | 12 | 0 | 52.7 | 6.7 | 5  |
| SANDY RIVER NEAR LEEDS, S. C.          |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| June 12, 1957....                      | 49.6   | 21  | 0.30 | 7.9 | 4.8 | 8.3 | 1.6 | 53 | 2.7 | 5.8 | 0.2 | 1.7 | 92  | 40 | 0 | 118  | 6.7 | 55 |
| NORTH TYGER RIVER NEAR FAIRMONT, S. C. |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 17, 1957....                      | b45    | 13  | 0.04 | 3.0 | 1.6 | 1.7 | 0.4 | 18 | 0.0 | 3.5 | 0.2 | 1.8 | 38  | 14 | 0 | 43.2 | 6.3 | 10 |
| NORTH TYGER RIVER NEAR MOORE, S. C.    |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 16, 1957....                      | b200   | 12  | 0.11 | 2.8 | 0.3 | 32  | 2.7 | 76 | 6.8 | 3.8 | 0.1 | 2.5 | 105 | 8  | 0 | 167  | 6.7 | 17 |
| FAIRFOREST CREEK NEAR UNION, S. C.     |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 17, 1957....                      | b121   | 18  | 0.04 | 8.0 | 1.7 | 6.3 | 1.2 | 32 | 1.5 | 6.2 | 1.0 | 3.7 | 72  | 27 | 1 | 95.0 | 6.2 | 10 |
| TYGER RIVER NEAR DELTA, S. C.          |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| June 19, 1957....                      | 440    | 17  | 0.04 | 4.4 | 2.2 | 18  | 2.1 | 56 | 3.4 | 5.5 | 0.5 | 2.8 | a84 | 20 | 0 | 125  | 6.7 | 10 |
| ENOREE RIVER NEAR ENOREE, S. C.        |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 18, 1957....                      | b335   | 14  | 0.19 | 2.8 | 0.6 | 11, | 3.2 | 34 | 4.7 | 2.5 | 0.1 | 1.2 | a57 | 10 | 0 | 77.4 | 6.7 | 15 |
| WILSON CREEK NEAR NINETY SIX, S. C.    |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 15, 1957....                      | 28.1   | 25  | 0.05 | 7.1 | 3.3 | 9.7 | 1.6 | 43 | 3.8 | 8.5 | 0.2 | 1.6 | 94  | 31 | 0 | 120  | 6.2 | 10 |
| NINETY SIX CREEK AT NINETY SIX, S. C.  |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Nov. 28, 1956....                      |        | 34  | 0.30 | 11  | 5.4 | 7.8 | 1.4 | 68 | 4.7 | 4.7 | 0.2 | 0.3 | 102 | 49 | 0 | 137  | 7.2 | 12 |
| SALUDA RIVER AT CHAPPELLE, S. C.       |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| Apr. 15, 1957....                      | b3,010 | 14  | 0.13 | 3.6 | 0.5 | 8.8 | 1.1 | 23 | 1.8 | 5.8 | 0.1 | 2.9 | 61  | 11 | 0 | 70.5 | 6.2 | 20 |
| CONGAREE RIVER AT COLUMBIA, S. C.      |        |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
| May 17, 1957....                       | b5,200 | 8.0 | 0.03 | 4.0 | 1.9 | 7.2 | 1.4 | 26 | 3.4 | 5.5 | 0.9 | 3.6 | 64  | 18 | 0 | 78.1 | 6.2 | 10 |

a Calculated from determined constituents.

b Mean daily discharge.

## SANTÉE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN SANTÉE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA--Continued

| Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
|-----------------------------------------------------------------------------------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
| Date of collection                                                                            | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|                                                                                               |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
|                                                                                               |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| CONGAREE CREEK AT CAYCE, S. C.                                                                |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| May 17, 1957.....                                                                             | 116                | 4.2                           | 0.12         | 1.0             | 0.1               | 1.1            | 0.2              | 3                                  | 0.7                           | 2.5              | 0.2             | 0.9                           | 18                                                                  | 3                                | 1                      | 16.9                                                        | 5.4 | 15    |
| June 17,.....                                                                                 | 103                | 3.5                           | .06          | .8              | 1.2               | 1.2            | .1               | 3                                  | 1.1                           | 2.5              | .2              | .5                            | all                                                                 | 3                                | 1                      | 16.1                                                        | 5.2 | 15    |

a. Calculated from determined constituents.

## COOPER RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN COOPER RIVER BASIN IN SOUTH CAROLINA

| Chemical analyses, in parts per million, water year October 1956 to September 1957 |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
|------------------------------------------------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
| Date of collection                                                                 | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|                                                                                    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
| BUSHY PARK DIVERSION CANAL NEAR MONCK'S CORNER                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Mar. 7, 1957.....                                                                  |                    | 4.8                           | 0.07         | 5.6                  | 1.6                    | 10             | 1.8                   | 34                                      | 7.2                           | 7.2              | 0.0             | 0.4                           | 56                                                                  | 20                               | 0                      | 101                                                         | 6.9 | 8     |
| Apr. 17.....                                                                       |                    | 4.3                           | .11          | 5.8                  | 2.2                    | 9.7            | 1.3                   | 30                                      | 8.3                           | 8.5              | .3              | 1.2                           | 64                                                                  | 24                               | 0                      | 101                                                         | 6.4 | 10    |
| June 14.....                                                                       |                    | 6.3                           | .05          | 6.4                  | 1.9                    | 7.5            | 1.3                   | 29                                      | 6.0                           | 7.5              | .3              | 1.4                           | 57                                                                  | 24                               | 0                      | 93.5                                                        | 6.3 | 15    |

## EDISTO RIVER BASIN

SOUTH FORK EDISTO RIVER NEAR DENMARK, S. C.

LOCATION.--Temperature recorder at gaging station on left bank at bridge on U. S. Highway 321, 200 feet downstream from Seaboard Air Line Railroad bridge, 1.8 miles downstream from Little River, and 4.8 miles north of Denmark, Bamberg County.

DRAINAGE AREA.--720 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79° F. Aug. 16-18; minimum, 41° F. Jan. 19-21.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, November 1956 to September 1957

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |      |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|------|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min  |
| 1.....       |         |     |          |     | 45       | 48  | 46      | 48  | 62       | 61  | 57    | 56  | 59    | 59  | 69  | 69  | 70   | 69  | 76   | 75  | 77     | 75  | 75        | 74   |
| 2.....       |         |     | --       | --  | 45       | 45  | 47      | 47  | 62       | 61  | 56    | 55  | 63    | 63  | 69  | 69  | 71   | 70  | 75   | 75  | 78     | 77  | 76        | 75   |
| 3.....       |         |     | --       | --  | 45       | 45  | 47      | 45  | 61       | 59  | 55    | 54  | 63    | 63  | 69  | 68  | 71   | 71  | 75   | 75  | 78     | 77  | 77        | 76   |
| 4.....       |         |     | --       | --  | 46       | 45  | 45      | 43  | 60       | 59  | 54    | 54  | 66    | 65  | 68  | 63  | 71   | 70  | 75   | 74  | 78     | 77  | a 78      | a 76 |
| 5.....       |         |     | --       | --  | 47       | 46  | 47      | 43  | 61       | 60  | 54    | 51  | 66    | 66  | 68  | 63  | 72   | 71  | 75   | 74  | 78     | 77  |           |      |
| 6.....       |         |     | --       | --  | 48       | 47  | 48      | 47  | 61       | 60  | 51    | 50  | 66    | 64  | 60  | 59  | 73   | 72  | 76   | 75  | 78     | 77  |           |      |
| 7.....       |         |     | --       | --  | 49       | 48  | 49      | 48  | 60       | 60  | 50    | 50  | 64    | 61  | 60  | 59  | 73   | 73  | 76   | 75  | 77     | 76  | 76        | 75   |
| 8.....       |         |     | --       | --  | 50       | 49  | 49      | 48  | 60       | 60  | 50    | 49  | 63    | 62  | 60  | 60  | 73   | 73  | 75   | 76  | 74     | 75  | 75        | 75   |
| 9.....       |         |     | --       | --  | 52       | 50  | 49      | 48  | 62       | 60  | 49    | 47  | 63    | 62  | 61  | 60  | 73   | 72  | 76   | 75  | 74     | 73  | 75        | 74   |
| 10.....      |         |     | --       | --  | 52       | 52  | 53      | 49  | 62       | 61  | 47    | 46  | 62    | 59  | 62  | 61  | 72   | 71  | 77   | 76  | 75     | 74  | 75        | 74   |
| 11.....      |         |     | --       | --  | 52       | 51  | 53      | 52  | 62       | 60  | 49    | 47  | 60    | 58  | 63  | 62  | 71   | 70  | 77   | 77  | 76     | 75  | 75        | 75   |
| 12.....      |         |     | --       | --  | 51       | 50  | 52      | 49  | 60       | 56  | 53    | 49  | 60    | 59  | 66  | 63  | 71   | 70  | 77   | 76  | 76     | 75  | 76        | 75   |
| 13.....      |         |     | --       | --  | 53       | 50  | 49      | 49  | 56       | 53  | 53    | 53  | 60    | 60  | 67  | 66  | 73   | 71  | 77   | 76  | 77     | 76  | 76        | 76   |
| 14.....      |         |     | --       | --  | 56       | 53  | 49      | 49  | 53       | 52  | 56    | 53  | 60    | 58  | 68  | 67  | 73   | 73  | 77   | 76  | 78     | 77  | 76        | 76   |
| 15.....      |         |     | 52       | 52  | 58       | 56  | 49      | 49  | 52       | 51  | 60    | 56  | 58    | 56  | 68  | 68  | 74   | 73  | 77   | 76  | 78     | 77  | 76        | 76   |
| 16.....      |         |     | 54       | 52  | 58       | 58  | 49      | 46  | 51       | 51  | 60    | 59  | 57    | 56  | 69  | 68  | 74   | 73  | 78   | 77  | 79     | 77  | 76        | 76   |
| 17.....      |         |     | 56       | 54  | 58       | 58  | 46      | 45  | 51       | 51  | 60    | 58  | 59    | 57  | 69  | 69  | 74   | 73  | 77   | 77  | 79     | 78  | 76        | 76   |
| 18.....      |         |     | 56       | 56  | 58       | 58  | 45      | 42  | 51       | 50  | 60    | 59  | 60    | 59  | 69  | 69  | 74   | 73  | 77   | 77  | 79     | 77  | 76        | 76   |
| 19.....      |         |     | 56       | 53  | 58       | 58  | 42      | 41  | 51       | 50  | 60    | 59  | 62    | 60  | 70  | 69  | 75   | 74  | 77   | 76  | 77     | 76  | 76        | 76   |
| 20.....      |         |     | 53       | 52  | 58       | 57  | 41      | 41  | 53       | 51  | 60    | 60  | 64    | 62  | 70  | 70  | 75   | 74  | 77   | 76  | 76     | 75  | 76        | 76   |
| 21.....      |         |     | 53       | 52  | 57       | 57  | 43      | 41  | 53       | 52  | 60    | 59  | 66    | 64  | 70  | 70  | 74   | 74  | 76   | 75  | 75     | 74  | 76        | 76   |
| 22.....      |         |     | 53       | 53  | 57       | 57  | 43      | 43  | 52       | 50  | 58    | 57  | 67    | 66  | 71  | 70  | 74   | 74  | 76   | 75  | 74     | 73  | 76        | 76   |
| 23.....      |         |     | 53       | 51  | 58       | 58  | 51      | 47  | 50       | 49  | 57    | 56  | 68    | 67  | 71  | 71  | 74   | 74  | 77   | 76  | 73     | 73  |           |      |
| 24.....      |         |     | 51       | 48  | 58       | 58  | 52      | 51  | 52       | 50  | 57    | 56  | 68    | 67  | 71  | 71  | 75   | 74  | 77   | 76  | 73     | 73  |           |      |
| 25.....      |         |     | 48       | 47  | 58       | 53  | 51      | 49  | 54       | 52  | 58    | 56  | 67    | 67  | 71  | 71  | 75   | 74  | 77   | 76  | 73     | 72  | 76        | 70   |
| 26.....      |         |     | 47       | 47  | 58       | 49  | 49      | 49  | 57       | 54  | 59    | 58  | 67    | 67  | 71  | 71  | 74   | 74  | 76   | 75  | 73     | 72  |           |      |
| 27.....      |         |     | 47       | 47  | 49       | 47  | 51      | 49  | 57       | 59  | 58    | 57  | 67    | 67  | 72  | 71  | 74   | 73  | 75   | 74  | 73     | 72  |           |      |
| 28.....      |         |     | 47       | 46  | 49       | 48  | 54      | 51  | 56       | 57  | 58    | 56  | 68    | 67  | 72  | 71  | 74   | 74  | 74   | 73  | 73     | 72  |           |      |
| 29.....      |         |     | 46       | 46  | 48       | 48  | 56      | 51  | 55       | 56  | 58    | 56  | 68    | 68  | 72  | 71  | 75   | 74  | 74   | 73  | 73     | 73  | 70        | 65   |
| 30.....      |         |     | 46       | 45  | 48       | 48  | 59      | 58  | --       | --  | 58    | 56  | 68    | 68  | 71  | 70  | 75   | 74  | 75   | 74  | 74     | 73  |           |      |
| 31.....      |         |     | 46       | --  | 46       | 46  | 61      | 59  | --       | --  | 59    | 58  | --    | --  | 70  | 69  | --   | --  | 76   | 73  | 73     | 74  | --        | --   |
| Average..... |         |     | --       | --  | 52       | 51  | 49      | 48  | 57       | 55  | 56    | 54  | 64    | 62  | 68  | 67  | 73   | 72  | 76   | 75  | 76     | 75  | --        | --   |

a No temperature record; temperatures estimated.

## EDISTO RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN EDISTO RIVER BASIN IN SOUTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Chemical analyses, in parts per million, water year October 1956 to September 1957 |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
|------------------------------------------------------------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
| Date of collection                                                                 | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|                                                                                    |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium<br>magnesium             | Non-carbon-<br>ate |                                                             |     |       |
| SHAW CREEK NEAR EUREKA                                                             |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 20, 1956.....                                                                 | 20.6               | 5.8                           | 0.15         | 1.2             | 0.2                    | 3.7            | 0.3                   | 6                                       | 0.1                           | 4.0              | 0.0             | 1.5                           | 26                                                                  | 4                                | 0                  | 29.0                                                        | 5.9 | 30    |
| May 1, 1957.....                                                                   | 24.7               | 4.9                           | .29          | 1.2             | .2                     | 3.6            | 1.0                   | 7                                       | 1.3                           | 4.5              | .0              | 1.2                           | 34                                                                  | 4                                | 0                  | 30.9                                                        | 5.7 | 40    |
| SOUTH FORK EDISTO RIVER NEAR DENMARK                                               |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Apr. 17, 1957.....                                                                 | a565               | 8.2                           | 0.08         | 1.4             | 0.8                    | 2.9            | 0.3                   | 8                                       | 0.5                           | 5.5              | 0.1             | 2.2                           | b48                                                                 | 7                                | 0                  | 30.5                                                        | 5.2 | 40    |
| NORTH FORK EDISTO RIVER NEAR NORTH                                                 |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| June 19, 1957.....                                                                 | 422                | 6.5                           | 0.19         | 1.0             | 0.3                    | 1.9            | 0.2                   | 3                                       | 0.1                           | 1.9              | 0.2             | 1.1                           | c32                                                                 | 4                                | 1                  | 23.2                                                        | 5.1 | 55    |
| NORTH FORK EDISTO RIVER AT ORANGEBURG                                              |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Apr. 17, 1957.....                                                                 | a579               | 3.4                           | 0.25         | 1.1             | 0.3                    | 1.9            | 0.1                   | 4                                       | 0.0                           | 2.9              | 0.0             | 0.9                           | d25                                                                 | 4                                | 1                  | 23.8                                                        | 5.8 | 50    |
| EDISTO RIVER NEAR BRANCHVILLE                                                      |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Apr. 16, 1957.....                                                                 | a1,530             | 4.4                           | 0.29         | 2.8             | 0.2                    | 3.1            | 0.4                   | 8                                       | 1.0                           | 4.0              | 0.0             | 1.5                           | e43                                                                 | 8                                | 1                  | 36.5                                                        | 5.8 | 80    |
| EDISTO RIVER NEAR GIVHANS                                                          |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Apr. 16, 1957.....                                                                 | a1,980             | 4.6                           | 0.26         | 5.9             | 0.2                    | 3.7            | 0.4                   | 16                                      | 1.5                           | 5.9              | 0.0             | 1.7                           | f59                                                                 | 16                               | 2                  | 55.4                                                        | 6.2 | 110   |
| a Daily mean discharge.                                                            |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| b Organic matter present; sum of mineral constituents 26 parts per million.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| c Organic matter present; sum of mineral constituents 15 parts per million.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| d Organic matter present; sum of mineral constituents 13 parts per million.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| e Organic matter present; sum of mineral constituents 22 parts per million.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| f Organic matter present; sum of mineral constituents 32 parts per million.        |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |

a Daily mean discharge.

b Organic matter present; sum of mineral constituents 26 parts per million.

c Organic matter present; sum of mineral constituents 15 parts per million.

d Organic matter present; sum of mineral constituents 13 parts per million.

e Organic matter present; sum of mineral constituents 22 parts per million.

f Organic matter present; sum of mineral constituents 32 parts per million.

## SAVANNAH RIVER BASIN

SAVANNAH RIVER AT BURTONS FERRY BRIDGE, NEAR MILLHAVEN, GA.

LOCATION.--Temperature recorder at gaging station on downstream side of left pier of drawspan of bridge on U. S. Highway 301, 2 miles downstream from Rocky Creek, 9 miles east of Millhaven, Screven County, and at mile 114.5 upstream from Savannah.

DRAINAGE AREA.--8,650 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: January 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 84° F Aug. 16; 47° F Jan. 19-21.

EXTREMES, January 1956 to September 1957.--Water temperatures: Maximum, 84° F Aug. 16, 1957; minimum, 47° F Jan. 27-29, 1956; Jan. 19-21, 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 73      | 71  | 68       | 67  | 53       | 52  | 51      | 60  | 59       | 60  | 58    | 62  | 61    | 73  | 72  | 71  | 72   | 71  | 81   | 79  | 80     | 78  | 80        | 78  |
| 2.....       | 74      | 73  | 69       | 68  | 53       | 52  | 51      | 60  | 59       | 59  | 57    | 65  | 63    | 72  | 72  | 73  | 71   | 81  | 79   | 81  | 79     | 81  | 78        | 78  |
| 3.....       | 74      | 74  | 69       | 68  | 53       | 53  | 51      | 59  | 59       | 57  | 57    | 65  | 63    | 72  | 68  | 74  | 73   | 81  | 80   | 80  | 78     | 82  | 79        | 79  |
| 4.....       | 75      | 74  | 69       | 68  | 54       | 53  | 50      | 49  | 60       | 59  | 57    | 66  | 65    | 68  | 64  | 64  | 63   | 81  | 79   | 81  | 79     | 82  | 80        | 80  |
| 5.....       | 75      | 74  | 69       | 68  | 55       | 54  | 51      | 50  | 60       | 60  | 58    | 66  | 66    | 64  | 63  | 64  | 63   | 82  | 80   | 82  | 80     | 82  | 80        | 80  |
| 6.....       | 75      | 75  | 69       | 68  | 56       | 55  | 52      | 51  | 60       | 60  | 54    | 66  | 64    | 63  | 62  | 63  | 62   | 81  | 79   | 81  | 80     | 81  | 79        | 79  |
| 7.....       | 75      | 74  | 69       | 68  | 57       | 56  | 53      | 52  | 60       | 60  | 55    | 65  | 63    | 63  | 63  | 62  | 80   | 78  | 81   | 79  | 81     | 79  | 77        | 77  |
| 8.....       | 75      | 73  | 69       | 68  | 57       | 57  | 53      | 53  | 60       | 59  | 55    | 63  | 62    | 63  | 63  | 63  | 77   | 82  | 79   | 80  | 79     | 77  | 76        | 76  |
| 9.....       | 73      | 72  | 69       | 68  | 58       | 58  | 54      | 53  | 61       | 59  | 52    | 63  | 62    | 64  | 63  | 63  | 72   | 83  | 81   | 80  | 78     | 77  | 76        | 76  |
| 10.....      | 72      | 71  | 69       | 68  | 59       | 58  | 56      | 54  | 61       | 60  | 52    | 62  | 62    | 64  | 63  | 63  | 77   | 83  | 82   | 80  | 78     | 77  | 76        | 76  |
| 11.....      | 71      | 70  | 69       | 68  | 58       | 56  | 55      | 55  | 61       | 53  | 52    | 62  | 59    | 65  | 64  | 64  | 76   | 83  | 81   | 80  | 78     | 78  | 76        | 76  |
| 12.....      | 70      | 68  | 69       | 68  | 56       | 56  | 55      | 53  | 61       | 57  | 56    | 61  | 59    | 68  | 65  | 65  | 83   | 81  | 81   | 79  | 80     | 78  | 78        | 78  |
| 13.....      | 68      | 68  | 69       | 68  | 57       | 56  | 55      | 53  | 57       | 56  | 58    | 61  | 60    | 70  | 68  | 68  | 76   | 83  | 81   | 81  | 80     | 80  | 79        | 79  |
| 14.....      | 68      | 68  | 69       | 68  | 58       | 57  | 55      | 55  | 56       | 55  | 59    | 58  | 61    | 60  | 71  | 70  | 76   | 82  | 82   | 81  | 82     | 80  | 81        | 79  |
| 15.....      | 69      | 68  | 69       | 68  | 59       | 58  | 55      | 53  | 56       | 55  | 61    | 59  | 61    | 61  | 73  | 71  | 77   | 74  | 82   | 80  | 83     | 81  | 81        | 79  |
| 16.....      | 69      | 68  | 69       | 68  | 60       | 59  | 53      | 52  | 55       | 54  | 61    | 59  | 62    | 61  | 73  | 71  | 79   | 76  | 82   | 80  | 82     | 81  | 81        | 80  |
| 17.....      | 68      | 68  | 69       | 68  | 60       | 59  | 52      | 51  | 54       | 54  | 60    | 59  | 63    | 62  | 71  | 69  | 80   | 78  | 80   | 79  | 82     | 81  | 81        | 80  |
| 18.....      | 69      | 68  | 69       | 68  | 61       | 60  | 51      | 49  | 54       | 53  | 61    | 60  | 64    | 63  | 70  | 69  | 81   | 79  | 79   | 78  | 81     | 80  | 80        | 80  |
| 19.....      | 69      | 68  | 69       | 68  | 60       | 59  | 49      | 47  | 56       | 54  | 62    | 61  | 64    | 64  | 72  | 70  | 82   | 80  | 79   | 78  | 80     | 79  | 80        | 79  |
| 20.....      | 69      | 69  | 69       | 68  | 59       | 58  | 47      | 47  | 57       | 56  | 63    | 62  | 65    | 64  | 74  | 72  | 81   | 80  | 77   | 77  | 79     | 77  | 80        | 79  |
| 21.....      | 69      | 68  | 69       | 68  | 59       | 58  | 50      | 47  | 57       | 55  | 62    | 61  | 69    | 65  | 76  | 73  | 80   | 79  | 80   | 77  | 77     | 76  | 80        | 78  |
| 22.....      | 69      | 68  | 69       | 68  | 59       | 58  | 49      | 46  | 54       | 54  | 61    | 60  | 71    | 68  | 75  | 74  | 80   | 78  | 81   | 78  | 77     | 76  | 81        | 79  |
| 23.....      | 70      | 69  | 69       | 68  | 59       | 58  | 56      | 53  | 55       | 54  | 60    | 59  | 73    | 71  | 75  | 72  | 81   | 78  | 81   | 79  | 76     | 75  | 81        | 79  |
| 24.....      | 70      | 69  | 69       | 68  | 60       | 59  | 56      | 55  | 56       | 59  | 59    | 74  | 72    | 72  | 71  | 81  | 79   | 82  | 81   | 76  | 75     | 81  | 79        | 79  |
| 25.....      | 70      | 69  | 69       | 68  | 60       | 59  | 57      | 55  | 57       | 56  | 60    | 58  | 74    | 73  | 71  | 81  | 78   | 81  | 80   | 76  | 75     | 79  | 77        | 77  |
| 26.....      | 69      | 68  | 69       | 68  | 57       | 54  | 54      | 54  | 59       | 57  | 61    | 60  | 74    | 73  | 73  | 71  | 79   | 78  | 80   | 78  | 75     | 77  | 76        | 76  |
| 27.....      | 68      | 67  | 69       | 68  | 54       | 53  | 54      | 54  | 60       | 59  | 60    | 58  | 73    | 71  | 76  | 72  | 80   | 78  | 76   | 76  | 78     | 76  | 74        | 71  |
| 28.....      | 68      | 68  | 69       | 68  | 53       | 52  | 55      | 54  | 60       | 60  | 58    | 57  | 74    | 72  | 76  | 75  | 80   | 78  | 76   | 75  | 78     | 76  | 74        | 71  |
| 29.....      | 68      | 67  | 69       | 68  | 53       | 52  | 57      | 55  | --       | --  | 59    | 58  | 74    | 72  | 76  | 74  | 78   | 77  | 77   | 74  | 79     | 77  | 71        | 70  |
| 30.....      | 67      | 66  | 69       | 68  | 52       | 51  | 58      | 57  | --       | --  | 59    | 58  | 73    | 72  | 74  | 73  | 79   | 78  | 76   | 76  | 79     | 78  | 70        | 69  |
| 31.....      | 67      | 66  | --       | --  | 51       | 50  | 59      | 58  | --       | --  | 62    | 60  | --    | 73  | 72  | --  | --   | --  | 79   | 77  | 79     | 77  | --        | --  |
| Average..... | 71      | 70  | --       | --  | 57       | 56  | 54      | 52  | 58       | 57  | 58    | 66  | 65    | 71  | 69  | --  | --   | 81  | 79   | 80  | 78     | 79  | 77        | 77  |

## SAVANNAH RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN SAVANNAH RIVER BASIN IN SOUTH CAROLINA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection              | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25° C) | pH  | Color |
|---------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|--------------------------------------------------------------|-----|-------|
|                                 |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium                          | Non-<br>carbon-<br>ate |                                                              |     |       |
|                                 |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| CHAUGA RIVER NEAR WESTMINSTER   |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 23, 1957.....               | 119                | 13                            | 0.36         | 2.8             | 0.1                    | 2.1            | 0.9                   | 13                                      | 0.4                           | 2.0              | 0.0             | 0.3                           | 31                                                                  | 8                                | 0                      | 25.2                                                         | 6.6 | 10    |
| KEOWEE RIVER NEAR JOCASSEE      |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 24, 1957.....               | a331               | 9.6                           | 0.01         | 2.4             | 0.2                    | 1.2            | 0.5                   | 8                                       | 0.4                           | 2.2              | 0.0             | 0.7                           | 19                                                                  | 7                                | 0                      | 17.6                                                         | 6.2 | 15    |
| CANE CREEK NEAR WEST UNION      |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 23, 1957.....               | 42.9               | 15                            | 0.12         | 1.6             | 1.2                    | 2.7            | 1.2                   | 15                                      | 2.1                           | 1.8              | 0.0             | 0.5                           | 36                                                                  | 9                                | 0                      | 33.8                                                         | 6.1 | 10    |
| TWELVE MILE CREEK NEAR PICKENS  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| Feb. 27, 1957....               |                    | 14                            | 0.00         | 2.4             | 0.5                    | 2.2            | 1.1                   | 14                                      | 0.9                           | 1.6              | 0.1             | 1.3                           | 32                                                                  | 9                                | 0                      | 36.7                                                         | 6.6 | 8     |
| CONROSS CREEK AT RICHLAND       |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 23, 1957.....               | 46.9               | 15                            | 0.17         | 3.2             | 0.7                    | 5.5            | 1.2                   | 20                                      | 2.6                           | 4.3              | 0.0             | 2.3                           | 51                                                                  | 11                               | 0                      | 52.1                                                         | 6.0 | 20    |
| BIG GENEROSTEE CREEK NEAR STARR |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 23, 1957.....               | 51.5               | 16                            | 0.07         | 3.2             | 1.0                    | 4.8            | 2.0                   | 18                                      | 1.8                           | 4.5              | 0.2             | 3.7                           | 50                                                                  | 12                               | 0                      | 61.0                                                         | 6.0 | 5     |
| SAVANNAH RIVER NEAR IVA         |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 24, 1957.....               | a3,180             | 12                            | 0.02         | 2.0             | 0.8                    | 4.7            | 1.1                   | 15                                      | 3.5                           | 3.5              | 0.0             | 0.7                           | 49                                                                  | 8                                | 0                      | 39.0                                                         | 6.0 | 10    |
| LONG CANE CREEK NEAR ABBEVILLE  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| Apr. 26, 1957....               | 29.8               | 27                            | 0.19         | 6.4             | 3.2                    | 5.6            | 1.2                   | 44                                      | 2.5                           | 4.0              | 0.0             | 0.5                           | 74                                                                  | 29                               | 0                      | 82.9                                                         | 6.5 | 10    |
| SAVANNAH RIVER AT NORTH AUGUSTA |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |
| May 8, 1957.....                |                    | 11                            | 0.18         | 2.4             | 1.5                    | 3.8            | 1.3                   | 16                                      | 3.2                           | 3.5              | 0.2             | 1.0                           | 51                                                                  | 12                               | 0                      | 46.6                                                         | 6.1 | 70    |
| a Daily mean discharge.         |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                              |     |       |

a Daily mean discharge.

PART 2B. SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS, OCEECHEE RIVER TO PEARL RIVER

ST. JOHNS RIVER BASIN

JANE GREEN CREEK NEAR DEER PARK, FLA.

LOCATION --At gaging station, 1 1/4 miles southeast of Deer Park, Osceola County, and 2 miles downstream from confluence of Crabgrass and Bull Creeks. DRAINAGE AREA --249 square miles. RECORDS AVAILABLE --November 1954 to September 1957. REMARKS --Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 11, 1956..... | 1,310                | 3.3                        | 0.07      | 6.4          | 0.7            |             | 5.3           | 16                              | 2.0                        | 9.5           | --           | 0.0                        | 36                            | 19                            | 4             | 42.3                                      | 6.5 | 250   |
| Jan. 9, 1957.....  | 4.0                  | 3.2                        | .04       | 12           | 1.9            | 12          | 12            | 22                              | 4.0                        | 30            | 0.2          | .2                         | 74                            | 32                            | 22            | 173                                       | 6.7 | 80    |
| Feb. 20.....       | 2.8                  | 2.7                        | .03       | 15           | 2.1            | 14          | 14            | 28                              | 2.0                        | 36            | .2           |                            | 86                            | 46                            | 23            |                                           | 6.7 | 90    |
| Apr. 4.....        | 224                  | 6.3                        | .02       | 11           | 1.6            | 11          | 11            | 23                              | 3.0                        | 25            | .1           | .1                         | 69                            | 34                            | 15            | 137                                       | 6.9 | 160   |
| May 14.....        | 25                   | 2.1                        | .04       | 14           | 1.5            | 11          | 11            | 32                              | 3.5                        | 24            | .2           | .1                         | 72                            | 41                            | 15            | 138                                       | 6.9 | 120   |
| June 26.....       | 85                   | 4.6                        | .09       | 9.6          | 1.0            | 4.4         | 4.4           | 21                              | 3.5                        | 12            | --           | .2                         | 45                            | 28                            | 11            | 82.7                                      | 6.8 | 180   |
| Sept. 19.....      | 1,330                | 3.5                        | .08       | 6.8          | .2             | 5.3         | 5.3           | 18                              | .2                         | 10            | .2           | .3                         | 35                            | 18                            | 3             | 56.5                                      | 6.7 | 95    |



## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR COCOA, FLA.

LOCATION --At State Highway 520, approximately half a mile downstream from outlet of Lake Poinsett, 10.5 miles west of Cocoa, Brevard County. DRAINAGE AREA --1,237 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1953 to September 1957.

Water temperatures: October 1953 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum 576 ppm Oct. 1, 3-7, 9-12; minimum, 135 ppm Nov. 11-20.

Hardness: Maximum 179 ppm Oct. 1, 3-7, 9-12; minimum 42 ppm Dec. 1-10.

Specific conductance: Maximum daily 1,010 micromhos Oct. 9; minimum daily, 169 micromhos Nov. 22.

Water temperatures: Maximum 89°F Sept. 30; minimum 56°F Nov. 28.

EXTREMES 1953-57 --Dissolved solids: Maximum 998 ppm July 11-20, 1956; minimum, 103 ppm Oct. 21-31, 1953.

Hardness: Maximum 294 ppm June 11-20, 1956; minimum 30 ppm Oct. 21-31, 1953.

Specific conductance: Maximum daily 1,620 micromhos June 18, 1956; minimum daily, 107 micromhos Oct. 10, 1953.

Water temperatures: Maximum 95°F Aug. 9, 1956; minimum 46°F Jan. 9, 1956.

REMARKS --Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 were computed from stage-discharge relation based on stage record for Lake Poinsett near Cocoa, Fla., and are available in Surface Water district office at Ocala, Fla.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-magnesium |                                           |     |       |
| Oct. 1, 3-7, 9-12, 1956..... | 947                  | 3.3                        | 0.08      | 47           | 15             | 96          | 2.9           | 54                              | 61                         | 203           | 0.1          | 0.0                        | 576                                                | 179                           | 132           | 865                                       | 7.5 | 140   |
| Oct. 2, 8.....               | 894                  | 3.7                        | --        | 26           | 13             | 51          | 1.4           | 33                              | --                         | 104           | .1           | .0                         | --                                                 | 99                            | 70            | 472                                       | 7.3 | --    |
| Oct. 13-14.....              | 1,260                | 5.7                        | --        | 45           | 13             | 78          | 2.3           | 56                              | --                         | 166           | .1           | .0                         | --                                                 | 166                           | 134           | 736                                       | 7.6 | --    |
| Oct. 15-16.....              | 1,264                | 4.5                        | 1.9       | 39           | 5              | 53          | 1.8           | 30                              | 20                         | 105           | .2           | .0                         | 225                                                | 170                           | 144           | 554                                       | 7.2 | 180   |
| Oct. 18-20.....              | 6,720                | 6.5                        | 1.9       | 39           | 9.2            | 58          | 2.3           | 27                              | 14                         | 48            | .1           | .0                         | 175                                                | 118                           | 84            | 240                                       | 7.3 | 180   |
| Nov. 1-10.....               | 5,970                | 3.4                        | .14       | 15           | 3.8            | 23          | 1.7           | 20                              | 14                         | 126           | .1           | .0                         | 135                                                | 53                            | 30            | 240                                       | 7.2 | 180   |
| Nov. 11-20.....              | 3,503                | 2.3                        | .17       | 12           | 3.2            | 18          | 1.5           | 27                              | 9.2                        | 37            | .0           | .0                         | 145                                                | 43                            | 20            | 184                                       | 7.3 | 200   |
| Nov. 21-30.....              | 2,413                | 2.0                        | .17       | 12           | 3.6            | 18          | 1.4           | 29                              | 8.2                        | 38            | .0           | .0                         | 145                                                | 45                            | 20            | 189                                       | 7.2 | 220   |
| Dec. 1-10.....               | 1,950                | 1.1                        | .14       | 12           | 2.9            | 19          | 1.5           | 27                              | 5.2                        | 35            | .2           | .0                         | 146                                                | 42                            | 20            | 183                                       | 7.0 | 200   |
| Dec. 11-20.....              | 1,716                | 1.1                        | .13       | 12           | 3.4            | 19          | 1.4           | 28                              | 5.8                        | 37            | .2           | .1                         | 147                                                | 44                            | 21            | 184                                       | 7.0 | 220   |
| Dec. 21-31, 1957.....        | 1,512                | 1.4                        | .16       | 13           | 3.0            | 21          | 1.4           | 26                              | 8.0                        | 43            | .2           | .1                         | 174                                                | 45                            | 24            | 207                                       | 7.0 | 280   |
| Jan. 1-10.....               | 1,065                | 1.3                        | .08       | 16           | 4.7            | 35          | .6            | 23                              | 8.2                        | 58            | .2           | .1                         | 213                                                | 60                            | 33            | 280                                       | 7.3 | 180   |
| Jan. 11-20.....              | 1,095                | 1.4                        | .08       | 16           | 4.9            | 38          | .6            | 22                              | 10                         | 59            | .1           | .2                         | 233                                                | 62                            | 34            | 333                                       | 7.4 | 160   |
| Jan. 21-31.....              | 913                  | 1.1                        | .12       | 19           | 4.7            | 38          | .6            | 30                              | 14                         | 72            | .1           | .1                         | 233                                                | 67                            | 42            | 333                                       | 7.4 | 130   |
| Feb. 1-10.....               | 741                  | 1.9                        | .07       | 22           | 6.6            | 44          | 1.3           | 34                              | 21                         | 92            | .2           | .2                         | 300                                                | 82                            | 54            | 404                                       | 7.4 | 140   |
| Feb. 11-20.....              | 542                  | 2.7                        | .10       | 22           | 7.5            | 44          | 1.3           | 34                              | 23                         | 95            | .2           | .2                         | 313                                                | 86                            | 58            | 422                                       | 7.4 | 140   |
| Feb. 21-28.....              | 538                  | 2.1                        | .09       | 25           | 7.7            | 48          | 1.4           | 34                              | 26                         | 105           | .1           | .2                         | 344                                                | 94                            | 66            | 470                                       | 7.4 | 130   |
| Mar. 1-10.....               | 564                  | 1.5                        | .07       | 26           | 10             | 56          | 1.0           | 36                              | 30                         | 121           | .1           | .5                         | 365                                                | 106                           | 76            | 534                                       | 7.3 | 110   |
| Mar. 11-20.....              | 485                  | 1.4                        | .05       | 34           | 10             | 68          | 1.8           | 40                              | 41                         | 145           | .2           | .2                         | 436                                                | 126                           | 93            | 634                                       | 7.3 | 100   |
| Mar. 21-31.....              | 581                  | 1.0                        | .07       | 34           | 11             | 66          | 1.8           | 42                              | 42                         | 143           | .2           | .2                         | 437                                                | 130                           | 96            | 659                                       | 7.4 | 120   |

|                            |       |     |      |    |     |    |     |    |    |     |     |     |     |     |     |     |     |     |
|----------------------------|-------|-----|------|----|-----|----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Apr. 1-10, 1957...         | 676   | 1.3 | 0.04 | 36 | 11  | 68 | 1.7 | 42 | 44 | 148 | 0.2 | 0.3 | 463 | 135 | 100 | 657 | 7.3 | 90  |
| Apr. 11-20.....            | 624   | 3.0 | .05  | 34 | 10  | 60 | 1.5 | 42 | 27 | 133 | .2  | .2  | 402 | 126 | 92  | 600 | 7.3 | 110 |
| Apr. 21-30.....            | 500   | 1.2 | .09  | 31 | 7.4 | 51 | 1.1 | 42 | 41 | 110 | .2  | .2  | 354 | 108 | 74  | 503 | 7.3 | 110 |
| May 1-10.....              | 457   | 3.9 | .05  | 31 | 9.1 | 60 | 1.8 | 40 | 36 | 121 | .3  | .1  | 372 | 115 | 82  | 540 | 6.9 | 90  |
| May 11-20.....             | 663   | 1.2 | .04  | 32 | 9.0 | 63 | 1.6 | 41 | 40 | 129 | .3  | .1  | 411 | 117 | 84  | 411 | 7.0 | 80  |
| May 21-31.....             | 754   | 1.5 | .04  | 34 | 9.0 | 64 | 1.6 | 38 | 44 | 132 | .3  | .2  | 406 | 122 | 91  | 586 | 7.0 | 90  |
| June 1-10.....             | 711   | 1.3 | .04  | 37 | 9.4 | 65 | 1.6 | 38 | 47 | 135 | .2  | .2  | 428 | 131 | 100 | 603 | 7.0 | 80  |
| June 11-20.....            | 722   | 1.4 | .04  | 32 | 6.7 | 56 | 1.2 | 42 | 32 | 117 | .3  | .1  | 352 | 110 | 76  | 516 | 6.9 | 90  |
| June 21-30.....            | 657   | 1.4 | .04  | 31 | 8.1 | 56 | 1.3 | 43 | 32 | 117 | .3  | .1  | 347 | 111 | 76  | 523 | 7.0 | 95  |
| July 1-10.....             | 754   | 1.6 | .05  | 26 | 8.5 | 47 | 1.0 | 44 | 23 | 102 | .1  | .1  | --  | 100 | 64  | 444 | 6.4 | 50  |
| July 11-20.....            | 942   | 3.1 | .05  | 27 | 7.9 | 52 | 1.2 | 39 | 28 | 106 | .3  | .3  | 333 | 100 | 68  | 464 | 6.9 | 100 |
| July 21-31.....            | 924   | 3.2 | .06  | 28 | 7.1 | 52 | 1.2 | 39 | 30 | 104 | .3  | .3  | 322 | 99  | 67  | 460 | 7.0 | 100 |
| Aug. 1-10.....             | 1,153 | 2.8 | .05  | 28 | 6.6 | 45 | 1.0 | 40 | 26 | 96  | .2  | .0  | 318 | 97  | 64  | 430 | 7.3 | 80  |
| Aug. 11-20.....            | 1,232 | 4.2 | .05  | 27 | 5.0 | 40 | .9  | 40 | 23 | 85  | .2  | .0  | 289 | 88  | 53  | 388 | 7.0 | 90  |
| Aug. 21-31.....            | 1,738 | 3.9 | .05  | 22 | 6.0 | 36 | .8  | 35 | 18 | 77  | .2  | .0  | 253 | 83  | 54  | 342 | 7.0 | 90  |
| Sept. 1-10.....            | 2,022 | 5.2 | .05  | 23 | 6.0 | 36 | .9  | 36 | 18 | 79  | .2  | .0  | 284 | 82  | 52  | 362 | 7.0 | 110 |
| Sept. 11-20.....           | 2,701 | 5.9 | .09  | 21 | 5.0 | 39 | 1.0 | 40 | 15 | 68  | .2  | .2  | 230 | 73  | 40  | 312 | 7.2 | 110 |
| Sept. 21-30.....           | 2,947 | 7.0 | .09  | 21 | 5.0 | 32 | 1.0 | 40 | 15 | 68  | .2  | .2  | 230 | 73  | 40  | 312 | 7.2 | 110 |
| Time-weighted average..... | 1,559 | 2.5 | 0.08 | 25 | 7.0 | 46 | 1.3 | 37 | 25 | 95  | .2  | 0.1 | 304 | 92  | 62  | 425 | --  | 130 |

## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR COCOA, FLA.--Continued

| Temperature (°F) of water, water year October 1956 to September 1957 |      |      |      |      |      |      |      |     |      |      |      |       |
|----------------------------------------------------------------------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| Day                                                                  | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
| 1                                                                    | 82   | 74   | 58   | 60   | 73   | 68   | 69   | 79  | 81   | 87   | 82   | 82    |
| 2                                                                    | 83   | 74   | 59   | 60   | 75   | 66   | 69   | 80  | 81   | 88   | 82   | 82    |
| 3                                                                    | 83   | 75   | 60   | 60   | 76   | 68   | 75   | 80  | 82   | 83   | 82   | 84    |
| 4                                                                    | 81   | 75   | 60   | 61   | 74   | 70   | 75   | 79  | 82   | 82   | 83   | 83    |
| 5                                                                    | 79   | 75   | 61   | 61   | 75   | 67   | 75   | 79  | 82   | 85   | 85   | 83    |
| 6                                                                    | 79   | 75   | 65   | 63   | 75   | 68   | 75   | 76  | 83   | 86   | 82   | 83    |
| 7                                                                    | 80   | 72   | 65   | 64   | 74   | 67   | 75   | 76  | 84   | 85   | 81   | 82    |
| 8                                                                    | 78   | 72   | 67   | 65   | 75   | 68   | 80   | 75  | 83   | 85   | 82   | 83    |
| 9                                                                    | 81   | 72   | 66   | 64   | 79   | 82   | 74   | 76  | 84   | 86   | 83   | 83    |
| 10                                                                   | 81   | 66   | 64   | 66   | 80   | 64   | 74   | 78  | 84   | 85   | 83   | 84    |
| 11                                                                   | 80   | 64   | 65   | 69   | 77   | 65   | 72   | 78  | 84   | 88   | 84   | 84    |
| 12                                                                   | 76   | 64   | 74   | 66   | 71   | 64   | 72   | 77  | 83   | 83   | 84   | 84    |
| 13                                                                   | 75   | 66   | 66   | 65   | 64   | 67   | 73   | 80  | --   | 83   | 84   | 84    |
| 14                                                                   | 75   | 66   | 70   | 67   | 66   | 70   | 76   | 81  | 80   | 81   | 84   | 84    |
| 15                                                                   | 84   | 69   | 71   | 66   | 65   | 72   | 72   | 80  | --   | 85   | 86   | 83    |
| 16                                                                   | 84   | 69   | 74   | 67   | 66   | 70   | 72   | 80  | 84   | 86   | 81   | 83    |
| 17                                                                   | 73   | 70   | 74   | 69   | 67   | 72   | 74   | 80  | 88   | 85   | 84   | 83    |
| 18                                                                   | 72   | 71   | 75   | 64   | 70   | 75   | 74   | 78  | 82   | 85   | 84   | 82    |
| 19                                                                   | 72   | --   | 75   | 64   | 71   | 74   | 75   | 81  | 86   | 86   | 84   | 83    |
| 20                                                                   | 72   | 71   | 74   | 67   | 70   | 74   | 76   | 81  | 85   | 84   | 86   | 84    |
| 21                                                                   | 76   | 71   | 74   | 67   | 66   | 73   | 76   | 81  | 85   | 85   | 83   | 85    |
| 22                                                                   | 76   | 71   | 74   | 68   | --   | 74   | 78   | 82  | 85   | 85   | 85   | 88    |
| 23                                                                   | 76   | 65   | 74   | 71   | 66   | 72   | 77   | 85  | 85   | 86   | 82   | 88    |
| 24                                                                   | 75   | 63   | 73   | 68   | 70   | 75   | 78   | 84  | 85   | 85   | 82   | 85    |
| 25                                                                   | 76   | 64   | 67   | 70   | --   | 75   | 78   | 84  | 85   | 87   | 80   | 83    |
| 26                                                                   | 76   | 65   | 64   | 70   | --   | 70   | --   | 82  | 86   | 84   | 83   | 83    |
| 27                                                                   | 74   | 58   | 62   | 71   | 70   | 70   | 78   | 88  | 85   | 86   | 83   | 83    |
| 28                                                                   | 73   | 56   | 63   | 72   | 70   | 69   | 78   | 85  | 80   | 85   | 84   | 82    |
| 29                                                                   | 74   | 57   | 57   | --   | --   | 72   | 78   | 82  | 85   | 85   | 82   | 82    |
| 30                                                                   | 75   | 64   | 57   | 74   | --   | 68   | 78   | 84  | 85   | 83   | 83   | 89    |
| 31                                                                   | 75   | --   | 60   | 74   | --   | 70   | --   | 83  | --   | 83   | 81   | --    |
| Average                                                              | 77   | 68   | 67   | 66   | 71   | 70   | 75   | 80  | 84   | 85   | 83   | 84    |

## ST. JOHNS RIVER BASIN--Continued

## SURFACE WATER SLOUGH NEAR COCOA, FLA.

LOCATION --At culvert on graded road, 2.0 miles north of City of Cocoa Water Plant and 2.5 miles northwest of Cocoa, Brevard County.  
 RECORDS AVAILABLE.--Chemical analyses: November 1954 September 1957.  
 REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub><br>Calcium magnesium carbonate | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|--------------------------------------------------------------|-------------------------------------------|-----|-------|
| Nov. 21, 1956..... |                      | 7.1                        | 0.07      | 2.4          | 4.4            |             | 7.8           | 2                               | 12                         | 19            | --           | 0.0                        | 54                            | 24                                                           | 109                                       | 4.7 | 130   |
| Jan. 7, 1957.....  |                      | 3.7                        | .03       | 2.6          | 1.8            |             | 12            | 4                               | 10                         | 18            | 0.1          | .1                         | 50                            | 14                                                           | 96.1                                      | 5.8 | 110   |
| Feb. 21.....       |                      | 2.1                        | .03       | 2.8          | 2.7            |             | 12            | 4                               | 12                         | 20            | .1           | .3                         | 54                            | 18                                                           | 112                                       | 5.1 | 120   |
| Apr. 5.....        |                      | 3.6                        | .05       | 3.0          | 2.2            |             | 14            | 5                               | 12                         | 22            | .0           | .0                         | 59                            | 16                                                           | 113                                       | 5.4 | 120   |
| May 15.....        |                      | 3.3                        | .05       | 3.2          | 1.9            |             | 11            | 2                               | 9.5                        | 20            | --           | .7                         | 51                            | 16                                                           | 103                                       | 4.8 | 120   |
| June 27.....       |                      | 2.9                        | .06       | 2.8          | 2.4            |             | 9.0           | 1                               | 12                         | 16            | --           | .4                         | 46                            | 17                                                           | 108                                       | 4.7 | 130   |
| Aug. 9.....        |                      | 1.2                        | .10       | 1.2          | 1.5            |             | 1.6           | 0                               | 3.5                        | 6.5           | --           | .2                         | 16                            | 9                                                            | 53.7                                      | 4.5 | 110   |
| Sept. 20.....      |                      | 2.2                        | .20       | 12           | 4.1            |             | 22            | 36                              | 7.0                        | 40            | .2           | .1                         | 106                           | 47                                                           | 200                                       | 6.9 | 500   |

## CLEAR LAKE NEAR COCOA, FLA.

LOCATION --At staff gage on southeast shore of Clear Lake, 2.75 miles northwest of Cocoa, Brevard County.  
 RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub><br>Calcium magnesium carbonate | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|--------------------------------------------------------------|-------------------------------------------|-----|-------|
| Oct. 8, 1956.....  |                      | 3.4                        | 0.01      | 74           | 39             | 277         |               | 26                              | 165                        | 535           | --           | 0.1                        | 1,110                         | 345                                                          | 2,050                                     | 7.2 | 10    |
| Nov. 21.....       |                      | 5.6                        | .05       | 37           | 17             | 135         |               | 0                               | 118                        | 240           | --           | .7                         | 553                           | 162                                                          | 1,050                                     | 4.1 | 5     |
| Jan. 1, 1957.....  |                      | 3.4                        | .04       | 42           | 6.3            | 46          |               | 0                               | 45                         | 79            | 0.0          | .2                         | 133                           | 56                                                           | 396                                       | 4.1 | 2     |
| Feb. 21.....       |                      | 3.1                        | .01       | 31           | 16             | 136         |               | 0                               | 12                         | 174           | .1           | .4                         | 148                           | 148                                                          | 938                                       | 4.3 | 1     |
| Apr. 5.....        |                      | 4.1                        | .01       | 26           | 17             | 88          |               | 0                               | 73                         | 177           | .1           | .0                         | 385                           | 135                                                          | 767                                       | 4.4 | 2     |
| May 15.....        |                      | 5.9                        | .00       | 37           | 19             | 133         |               | 0                               | 91                         | 257           | .4           | 3.4                        | 547                           | 170                                                          | 1,050                                     | 4.5 | 2     |
| June 27.....       |                      | 6.1                        | .01       | 37           | 20             | 148         |               | 2                               | 82                         | 290           | --           | .1                         | 584                           | 174                                                          | 1,110                                     | 4.9 | 15    |
| Aug. 9.....        |                      | 6.0                        | .04       | 43           | 21             | 179         |               | 12                              | 80                         | 345           | --           | 3.5                        | 653                           | 194                                                          | 1,280                                     | 6.5 | 5     |
| Sept. 20.....      |                      | 6.3                        | .04       | 30           | 16             | 127         |               | 16                              | 60                         | 242           | .1           | .0                         | 489                           | 141                                                          | 941                                       | 6.8 | 45    |

## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR CHRISTMAS, FLA.

LOCATION.--At gaging station, 15 feet downstream from bridge on State Highway 50, 2 miles upstream from Lake Cone and Tosohatchee Creek, and 4.5 miles east of Christmas, Orange County.  
 DRAINAGE AREA.--1,418 square miles.  
 RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1957.  
 REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 9, 1956.....   | 2,170                | 4.8                        | 0.14      | 26           | 12             | 86          | 28            | 47                              | 163                        | ..            | ..           | 0.7                        | 354                           | 114                           | 92            | 693                                       | 6.7 | 220   |
| Nov. 20, 1956.....  | 4,030                | 4.0                        | .11       | 14           | 2.2            | 18          | 28            | 8.0                             | 37                         | ..            | ..           | .0                         | 97                            | 44                            | 21            | 190                                       | 6.8 | 85    |
| Jan. 9, 1957.....   | 1,340                | 3.4                        | .09       | 18           | 4.6            | 29          | 28            | 13                              | 64                         | ..            | ..           | .0                         | 146                           | 41                            | 41            | 302                                       | 6.6 | 90    |
| Feb. 20, 1957.....  | 488                  | 1.2                        | .06       | 27           | 8.7            | 123         | 36            | 31                              | 123                        | 62            | 0.2          | .3                         | 271                           | 102                           | 72            | 543                                       | 7.1 | 110   |
| Apr. 4, 1957.....   | 996                  | 6.4                        | .04       | 51           | 27             | 166         | 38            | 100                             | 328                        | ..            | ..           | .9                         | 698                           | 238                           | 207           | 1,320                                     | 7.0 | 70    |
| May 14, 1957.....   | 675                  | 1.2                        | .02       | 40           | 16             | 111         | 42            | 65                              | 216                        | ..            | .2           | .5                         | 341                           | 166                           | 132           | 907                                       | 7.3 | 95    |
| June 25, 1957.....  | 715                  | 2.0                        | .03       | 35           | 9.4            | 80          | 44            | 37                              | 160                        | ..            | ..           | .3                         | 346                           | 126                           | 90            | 677                                       | 7.2 | 90    |
| Aug. 6, 1957.....   | 1,010                | 2.2                        | .05       | 30           | 9.5            | 72          | 40            | 33                              | 144                        | ..            | ..           | .1                         | 311                           | 114                           | 81            | 609                                       | 7.0 | 90    |
| Sept. 19, 1957..... | 3,480                | 5.8                        | .07       | 22           | 6.1            | 58          | 40            | 20                              | 108                        | ..            | .2           | .1                         | 240                           | 80                            | 47            | 458                                       | 7.1 | 150   |

## ECONLOCKHATCHEE RIVER NEAR CHULUOTA, FLA.

LOCATION.--At gaging station, 10 feet downstream from highway bridge, 2.6 miles northeast of Chuluota, Seminole County, and 10 miles upstream from mouth.  
 DRAINAGE AREA.--260 square miles, approximately.  
 RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
 REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 10, 1956.....  | 601                  | 5.4                        | 0.15      | 6.0          | 2.7            | 5.3         | 14            | 3.5                             | 16                         | ..            | ..           | 0.1                        | 46                            | 26                            | 14            | 90.3                                      | 6.4 | 320   |
| Nov. 29, 1956.....  | 74                   | 9.3                        | .12       | 20           | 6.8            | 46          | 38            | 23                              | 84                         | ..            | ..           | 5.5                        | 215                           | 78                            | 47            | 415                                       | 6.9 | 180   |
| Feb. 15, 1957.....  | 32                   | 1.7                        | .03       | 30           | 12             | 71          | 68            | 37                              | 119                        | ..            | ..           | 9.4                        | 320                           | 116                           | 60            | 619                                       | 6.7 | 70    |
| Apr. 4, 1957.....   | 326                  | 8.7                        | .16       | 34           | 12             | 86          | 76            | 44                              | 142                        | 0.5           | ..           | 14                         | 378                           | 134                           | 72            | 726                                       | 7.6 | 45    |
| May 14, 1957.....   | 108                  | 6.9                        | .11       | 8.0          | 2.4            | 15          | 18            | 11                              | 25                         | ..            | .1           | 1.1                        | 79                            | 30                            | 15            | 142                                       | 6.5 | 210   |
| June 25, 1957.....  | 199                  | 8.0                        | .07       | 24           | 7.3            | 60          | 54            | 40                              | 91                         | ..            | .6           | 4.6                        | 263                           | 90                            | 46            | 486                                       | 6.9 | 90    |
| Aug. 7, 1957.....   | 358                  | 6.2                        | .12       | 10           | 4.6            | 23          | 23            | 12                              | 31                         | ..            | ..           | 1.6                        | 92                            | 44                            | 23            | 274                                       | 6.8 | 200   |
| Sept. 19, 1957..... | 1,980                | 4.6                        | .11       | 14           | 5.1            | 30          | 17            | 18                              | 57                         | ..            | ..           | .9                         | 134                           | 19                            | 34            | 245                                       | 6.8 | 180   |
|                     |                      |                            |           | 3.6          | 1.0            | 5.3         | 20            | 2.0                             | 10                         | ..            | .2           | .3                         | 32                            | 13                            | 5             | 55.0                                      | 6.5 | 280   |

## ST. JOHNS RIVER BASIN.--Continued

## ST. JOHNS RIVER ABOVE LAKE HARNEY NEAR GENEVA, FLA.

LOCATION.--At site of former gaging station at bridge on State Highway 46, 1 mile upstream from Lake Harney, 5.5 miles southeast of Geneva, Seminole County, and 16.9 miles southeast of Sanford.

DRAINAGE AREA.--1,910 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                            |     |       |
| Oct. 10, 1956..... |                      | 6.1                        | 0.12      | 30           | 15             | 119         |               | 30                              | 63                         | 216           | --           | 0.2                        | 464                           | 136                           | 112           | 900                                        | 6.6 | 200   |
| Nov. 29.....       |                      | 3.7                        | .12       | 18           | 8.5            | 53          |               | 31                              | 25                         | 102           | --           | .2                         | 226                           | 80                            | 54            | 453                                        | 6.8 | 180   |
| Jan. 9, 1957.....  |                      | 5.4                        | .10       | 22           | 9.0            | 67          |               | 33                              | 30                         | 127           | --           | .0                         | 276                           | 92                            | 65            | 550                                        | 6.7 | 160   |
| Feb. 19.....       |                      | 1.3                        | .06       | 35           | 17             | 131         |               | 42                              | 70                         | 237           | 0.2          | 1.0                        | 514                           | 158                           | 123           | 987                                        | 7.1 | 100   |
| Apr. 4.....        |                      | 2.4                        | .05       | 33           | 28             | 203         |               | 36                              | 120                        | 378           | .2           | .4                         | 803                           | 247                           | 218           | 1,510                                      | 6.9 | 80    |
| May 14.....        |                      | 1.7                        | .05       | 50           | 22             | 192         |               | 36                              | 112                        | 345           | .1           | .4                         | 741                           | 216                           | 186           | 1,370                                      | 6.9 | 60    |
| June 25.....       |                      | 3.6                        | .06       | 41           | 20             | 159         |               | 42                              | 70                         | 300           | --           | .3                         | 615                           | 184                           | 150           | 1,160                                      | 7.0 | 110   |
| Aug. 6.....        |                      | 3.2                        | .06       | 34           | 21             | 140         |               | 34                              | 6.8                        | 310           | --           | 5.3                        | 537                           | 172                           | 144           | 1,190                                      | 6.7 | 90    |
| Sept. 19.....      |                      | 4.5                        | .10       | 18           | 6.6            | 59          |               | 32                              | 20                         | 108           | .2           | .1                         | 232                           | 72                            | 46            | 453                                        | 7.1 | 280   |

## ST. JOHNS RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN ST. JOHNS RIVER BASIN IN FLORIDA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                                             | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
|                                                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| ST. JOHNS RIVER AT CREST GAGE NO. 1, NEAR MALABAR              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 26, 1957.....                                             |                      | 0.9                        | 0.00      | 12           | 3.2            |             | 21            | 30                              | 5.0                        | 42            | 0.2          | 0.2                        | 100                           | 43                            | 18            | 184                                       | 6.9 | 120   |
| June 4.....                                                    |                      | 4.4                        | .02       | 13           | 4.7            |             | 12            | 36                              | 5.0                        | 30            |              |                            | 87                            | 52                            | 22            | 153                                       | 7.0 | 110   |
| ST. JOHNS RIVER AT CREST GAGE NO. 2, NEAR MALABAR              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 26, 1957.....                                             |                      | 1.0                        | 0.00      | 12           | 2.4            |             | 16            | 27                              | 5.0                        | 34            | 0.2          | 0.1                        | 84                            | 40                            | 18            | 188                                       | 6.7 | 140   |
| June 4.....                                                    |                      | 3.8                        | .04       | 9.2          | 1.0            |             | 8.7           | 23                              | 2.8                        | 17            |              | .2                         | 54                            | 27                            | 8             | 91.4                                      | 6.7 | 210   |
| ST. JOHNS RIVER AT CREST GAGE NO. 3, NEAR MELBOURNE            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 26, 1957.....                                             |                      | 1.2                        | 0.00      | 11           | 3.0            |             | 18            | 26                              | 4.2                        | 38            | 0.2          | 0.1                        | 89                            | 40                            | 18            | 183                                       | 6.7 | 120   |
| June 4.....                                                    |                      | 3.4                        | .10       | 9.6          | 1.5            |             | 8.3           | 23                              | 3.0                        | 18            | .2           | .0                         | 55                            | 30                            | 11            | 98.7                                      | 6.6 | 180   |
| ST. JOHNS RIVER NEAR MELBOURNE                                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Jan. 10, 1957.....                                             | 543                  | 1.7                        | 0.07      | 9.2          | 2.2            |             | 13            | 22                              | 6.0                        | 25            | 0.2          | 0.3                        | 69                            | 32                            | 14            | 133                                       | 6.8 | 120   |
| Feb. 21.....                                                   | 308                  | 2.3                        | .08       | 12           | 2.7            |             | 17            | 27                              | 5.0                        | 36            | .2           | .2                         | 88                            | 41                            | 19            | 180                                       | 7.0 | 120   |
| Apr. 9.....                                                    | 394                  | 2.0                        | .03       | 11           | 2.6            |             | 14            | 26                              | 5.0                        | 30            | .1           | .0                         | 78                            | 38                            | 16            | 152                                       | 6.9 | 120   |
| May 15.....                                                    | 260                  | 2.7                        | .03       | 16           | 3.4            |             | 17            | 39                              | 7.5                        | 36            | .2           | .0                         | 102                           | 54                            | 22            | 191                                       | 7.0 | 120   |
| Aug. 5.....                                                    | 515                  | 3.0                        | .05       | 11           | 2.1            |             | 8.5           | 26                              | 5.0                        | 20            | --           | .1                         | 63                            | 36                            | 14            | 121                                       | 6.6 | 90    |
| WASHINGTON LAKE, NEAR EAU GALLIE                               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 26, 1957.....                                             |                      | 1.4                        | 0.07      | 14           | 3.2            |             | 19            | 40                              | 5.5                        | 36            | 0.1          | 0.2                        | 99                            | 48                            | 15            | 208                                       | 7.0 | 110   |
| June 4.....                                                    |                      | 2.7                        | .11       | 14           | 1.9            |             | 15            | 31                              | 4.5                        | 32            | .2           | .0                         | 85                            | 43                            | 18            | 162                                       | 6.9 | 110   |
| LAKE WINDER NEAR BONAVENTURE                                   |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 27, 1957.....                                             |                      | 1.1                        | 0.06      | 22           | 4.1            |             | 29            | 30                              | 12                         | 69            | 0.2          | 0.2                        | 153                           | 72                            | 48            | 321                                       | 7.1 | 110   |
| June 4.....                                                    |                      | 3.4                        | .08       | 14           | 2.9            |             | 17            | 32                              | 6.0                        | 37            | .2           | .0                         | 97                            | 47                            | 21            | 186                                       | 6.9 | 110   |
| ST. JOHNS RIVER AT CREST GAGE NO. 7, NEAR ROCKLEDGE            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 27, 1957.....                                             |                      | 0.7                        | 0.00      | 59           | 20             |             | 105           | 60                              | 87                         | 225           | 0.3          | 0.4                        | 527                           | 230                           | 180           | 1,000                                     | 7.2 | 75    |
| June 4.....                                                    |                      | 2.9                        | .06       | 24           | 5.8            |             | 35            | 42                              | 18                         | 75            | .2           | .0                         | 182                           | 84                            | 50            | 358                                       | 7.0 | 90    |
| ST. JOHNS RIVER AT CREST GAGE NO. 9 (AT KYSER RANCH) NEAR MIMS |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 27, 1957.....                                             |                      | 1.9                        | 0.00      | 56           | 29             |             | 208           | 34                              | 127                        | 390           | 0.2          | 0.3                        | 829                           | 260                           | 230           | 1,560                                     | 6.9 | 75    |
| June 5.....                                                    |                      | 2.1                        | .04       | 54           | 31             |             | 229           | 40                              | 122                        | 425           | .2           | .0                         | 883                           | 262                           | 229           | 1,660                                     | 6.9 | 70    |
| SALT LAKE AT HWY. 46, NEAR MIMS                                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Feb. 27, 1957.....                                             |                      | 6.7                        | 0.57      | 224          | 144            |             | 1,270         | 0                               | 945                        | 2,100         | 0.1          | 0.6                        | 4,690                         | 1,140                         | 1,140         | 7,650                                     | 3.2 | 2     |
| June 5.....                                                    |                      | 3.4                        | .33       | 196          | 158            |             | 1,310         | 0                               | 745                        | 2,300         | .1           | .6                         | 4,710                         | 1,180                         | 1,180         | 7,910                                     | 3.4 | 1     |

## LOUGHMAN'S LAKE NEAR MTMS

|                   |     |      |     |     |     |    |     |       |     |     |       |     |     |       |     |    |
|-------------------|-----|------|-----|-----|-----|----|-----|-------|-----|-----|-------|-----|-----|-------|-----|----|
| Feb. 27, 1957.... | 1.2 | 0.02 | 160 | 122 | 966 | 60 | 430 | 1,775 | 0.2 | 0.9 | 3,490 | 900 | 852 | 6,050 | 7.2 | 45 |
| June 5.....       | 1.0 | .02  | 188 | 119 | 874 | 26 | 625 | 1,550 | .1  | 1.3 | 2,370 | 988 | 937 | 5,640 | 6.4 | 8  |

## OKLAWAHA RIVER AT RIVERSIDE LANDING, NEAR ORANGE SPRINGS

|                  |       |    |      |    |     |    |     |     |    |    |     |     |      |     |    |     |     |     |
|------------------|-------|----|------|----|-----|----|-----|-----|----|----|-----|-----|------|-----|----|-----|-----|-----|
| Aug. 9, 1957.... | 2,070 | 12 | 0.75 | 47 | 7.4 | 19 | 0.8 | 70  | 74 | 32 | 0.5 | 0.1 | a332 | 148 | 90 | 368 | 6.8 | 400 |
| Sept. 20.....    | 1,870 | 11 | .23  | 50 | 6.6 | 26 | 1.2 | 102 | 56 | 41 | .5  | .3  | a310 | 38  | 68 | 400 | 6.8 | 150 |

a Residue on evaporation at 180°C.



## MOULTRIE CREEK BASIN

## MOULTRIE CREEK NEAR ST. AUGUSTINE, FLA.

LOCATION.--Approximately 0.5 mile upstream from gaging station, which is 6 feet downstream from bridge on Kings Road, 0.4 mile upstream from Fort Peyton Branch, and 5 miles southwest of St. Augustine, St. Johns County.  
DRAINAGE AREA.--23.3 square miles (above gaging station).  
RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 820 ppm Feb. 16-20; minimum, 68 ppm Dec. 21, 23-24, 27.

Hardness: Maximum, 354 ppm Feb. 16-20; minimum, 16 ppm Dec. 21, 23-24, 27.

Specific conductance: Maximum daily, 1,390 micromhos Feb. 19; minimum daily, 64.4 micromhos Aug. 25.

Water temperatures: Maximum, 78°F Aug. 2, 17; minimum, 45°F Jan. 19.

EXTREMES, 1955-57.--Dissolved solids: Maximum, 820 ppm Feb. 16-20, 1957; minimum, 68 ppm Dec. 21, 23-24, 27, 1956.

Hardness: Maximum, 354 ppm Feb. 16-20, 1957; minimum, 15 ppm Aug. 3-4, Sept. 14, 16, 1956.

Specific conductance: Maximum daily, 1,390 micromhos Feb. 19, 1957; minimum daily, 64.4 micromhos Aug. 25, 1957.

Water temperatures: Maximum, 78°F Aug. 2, 17, 1957; minimum, 42°F Jan. 9, 11, 14, 15, 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection      | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 1-15, 1956..       | 0.8                  | 19                         | 0.03      | 57           | 10             | 27          | 1.2           | 204                             | 12                         | 48            | 0.4          | 0.1                        | 305                                                | 183                           | 11            | 478                                       | 7.2 | 55    |
| Oct. 16-31.....         | 14.2                 | 13                         | .33       | 18           | 4.6            | 28          | 1.7           | 31                              | 18                         | 52            | .6           | .2                         | 262                                                | 64                            | 38            | 270                                       | 6.1 | 480   |
| Nov. 1-10.....          | 2.8                  | 13                         | .39       | 31           | 7.4            | 38          | 1.7           | 68                              | 18                         | 72            | .6           | .2                         | 330                                                | 108                           | 52            | 398                                       | 6.7 | 460   |
| Nov. 11-20.....         | 1.2                  | 17                         | .22       | 43           | 7.2            | 35          | 1.2           | 130                             | 14                         | 64            | .4           | .2                         | 332                                                | 142                           | 36            | 437                                       | 7.1 | 250   |
| Nov. 21-30.....         | .8                   | 20                         | .13       | 58           | 5.7            | 28          | .9            | 181                             | 7.5                        | 50            | .3           | .1                         | 312                                                | 168                           | 20            | 447                                       | 7.4 | 110   |
| Dec. 1-16.....          | .9                   | 22                         | .07       | 65           | 6.3            | 29          | 1.1           | 214                             | 9.8                        | 51            | .3           | .2                         | 322                                                | 188                           | 12            | 484                                       | 7.2 | 95    |
| Dec. 17-20, 22.....     | 1.0                  | 23                         | .03       | 77           | 11             | 58          | 1.9           | 203                             | 38                         | 104           | .3           | .1                         | 480                                                | 237                           | 70            | 711                                       | 7.4 | 60    |
| Dec. 21, 23-24, 27..... | .9                   | 8.3                        | .16       | 2.4          | 2.4            | 14          | .4            | 16                              | 5.8                        | 26            | .0           | .7                         | 68                                                 | 16                            | 3             | 107                                       | 6.1 | 5     |
| Dec. 25-26, 28-31.....  | .8                   | 23                         | .04       | 75           | 10             | 50          | 1.4           | 229                             | 28                         | 84            | .3           | .0                         | 421                                                | 228                           | 40            | 653                                       | 7.5 | 45    |
| Jan. 1-10, 1957.....    | .7                   | 20                         | .03       | 67           | 7.5            | 36          | 1.1           | 214                             | 17                         | 63            | .3           | .0                         | 347                                                | 198                           | 22            | 548                                       | 7.4 | 25    |
| Jan. 11-20.....         | .9                   | 18                         | .04       | 76           | 7.9            | 42          | 1.2           | 234                             | 21                         | 74            | .4           | .0                         | 395                                                | 232                           | 30            | 619                                       | 7.5 | 45    |
| Jan. 21-31.....         | .9                   | 15                         | .04       | 73           | 7.8            | 39          | 1.1           | 232                             | 18                         | 67            | .3           | .2                         | 377                                                | 214                           | 24            | 593                                       | 7.4 | 40    |
| Feb. 1-10.....          | .9                   | 14                         | .05       | 67           | 8.0            | 32          | .9            | 234                             | 6.5                        | 54            | .5           | .2                         | 328                                                | 200                           | 8             | 523                                       | 7.5 | 55    |
| Feb. 11-15, 21-22.....  | 1.3                  | 16                         | .03       | 88           | 19             | 91          | 2.8           | 204                             | 89                         | 174           | .3           | .2                         | 644                                                | 298                           | 130           | 1,020                                     | 7.6 | 40    |
| Feb. 16-20.....         | 1.1                  | 16                         | .02       | 96           | 28             | 128         | 3.8           | 196                             | 132                        | 242           | .5           | .0                         | 820                                                | 354                           | 194           | 1,300                                     | 7.6 | 45    |
| Feb. 23-28.....         | 1.9                  | 15                         | .04       | 67           | 14             | 63          | 2.6           | 150                             | 51                         | 123           | .5           | .0                         | 524                                                | 224                           | 102           | 747                                       | 7.6 | 95    |
| Mar. 1-10.....          | 1.6                  | 15                         | .07       | 61           | 8.8            | 51          | 2.2           | 153                             | 34                         | 93            | .3           | .2                         | 446                                                | 188                           | 62            | 604                                       | 7.4 | 110   |
| Mar. 11-20.....         | 1.3                  | 16                         | .10       | 52           | 7.4            | 41          | .7            | 152                             | 16                         | 71            | .1           | .3                         | 360                                                | 160                           | 36            | 512                                       | 7.8 | 120   |
| Mar. 21-31.....         | 6.3                  | 13                         | .18       | 32           | 6.8            | 36          | 2.3           | 70                              | 27                         | 71            | .3           | .6                         | 321                                                | 108                           | 50            | 398                                       | 7.5 | 210   |

|                               |      |     |      |     |     |     |     |     |      |    |     |     |     |     |    |      |     |     |
|-------------------------------|------|-----|------|-----|-----|-----|-----|-----|------|----|-----|-----|-----|-----|----|------|-----|-----|
| Apr. 1-10, 1957..             | 5.3  | 13  | 0.21 | 26  | 5.6 | 33  | 1.8 | 49  | 21   | 69 | 0.3 | 0.5 | 292 | 58  | 48 | 348  | 7.2 | 280 |
| Apr. 11-20.....               | 1.3  | 16  | .21  | 59  | 5.0 | 28  | 1.4 | 134 | 5.0  | 46 | .3  | .3  | 282 | 124 | 18 | 430  | 7.8 | 290 |
| Apr. 21-30.....               | 1.7  | 19  | .21  | 59  | 5.0 | 28  | 1.4 | 134 | 5.0  | 46 | .3  | .3  | 282 | 124 | 18 | 430  | 8.1 | 300 |
| May 1-10.....                 | 1.9  | 15  | .16  | 41  | 6.2 | 30  | 1.7 | 118 | 20.5 | 54 | .2  | .4  | 286 | 128 | 32 | 397  | 7.8 | 140 |
| May 11-20.....                | 2.3  | 14  | .25  | 37  | 7.2 | 30  | 1.8 | 104 | 18   | 57 | .3  | .4  | 280 | 122 | 37 | 375  | 7.9 | 220 |
| May 21-30.....                | 11.1 | 12  | .28  | 22  | 5.1 | 23  | 1.5 | 66  | 10   | 40 | .3  | .4  | 217 | 76  | 22 | 253  | 7.2 | 320 |
| June 1-6.....                 | 3.5  | 13  | .35  | 24  | 4.9 | 27  | 1.4 | 68  | 10   | 50 | .0  | .1  | .43 | 80  | 24 | 286  | 6.5 | 280 |
| June 7-20.....                | 67.5 | 9.1 | .33  | 9.2 | 3.4 | 13  | 1.2 | 26  | 6.0  | 24 | .3  | .3  | 177 | 37  | 16 | 136  | 6.0 | 400 |
| June 21-30.....               | 4.7  | 12  | .47  | 20  | 3.6 | 18  | .9  | 55  | 5.0  | 31 | .3  | .3  | 214 | 45  | 20 | 195  | 6.5 | 460 |
| July 1-10.....                | 15.7 | 10  | .43  | 15  | 2.9 | 15  | 1.8 | 40  | 8.2  | 26 | .3  | .4  | 172 | 44  | 13 | 139  | 6.3 | 460 |
| July 11-20.....               | 15.0 | 17  | .32  | 13  | 2.8 | 15  | 1.0 | 24  | 4.8  | 22 | .2  | .3  | 137 | 28  | 10 | 97.3 | 6.0 | 440 |
| July 21-30.....               | 84.4 | 7.7 | .32  | 7.4 | 2.2 | 9.2 | 1.0 | 22  | 4.8  | 16 | .2  | .3  | 137 | 28  | 10 | 97.3 | 6.0 | 440 |
| Aug. 1-10.....                | 137  | 8.5 | .30  | 5.6 | 2.9 | 8.7 | 1.0 | 18  | 5.0  | 14 | .3  | .7  | 137 | 26  | 11 | 86.8 | 6.0 | 460 |
| Aug. 11-20.....               | 39.6 | 8.9 | .45  | 7.6 | 2.3 | 9.9 | .7  | 20  | 2.0  | 18 | .5  | .4  | 148 | 28  | 12 | 100  | 6.2 | 560 |
| Aug. 21-31.....               | 195  | 7.0 | .29  | 6.8 | 1.5 | 7.8 | .8  | 16  | 2.0  | 14 | .3  | .4  | 116 | 23  | 10 | 82.6 | 6.2 | 320 |
| Sept. 1-10.....               | 44.2 | 7.6 | .35  | 6.4 | 2.2 | 9.6 | .9  | 17  | 2.2  | 16 | .4  | .2  | 163 | 23  | 11 | 93.5 | 6.2 | 380 |
| Sept. 11-20.....              | 24.1 | 8.6 | .43  | 8.6 | 2.1 | 11  | 1.0 | 21  | 2.2  | 19 | .3  | .2  | 154 | 30  | 13 | 108  | 6.4 | 380 |
| Sept. 21-30.....              | 13.2 | 9.4 | .41  | 9.8 | 2.8 | 13  | 1.2 | 27  | 3.2  | 22 | .4  | .1  | 132 | 36  | 14 | 127  | 6.4 | 360 |
| Time-weighted<br>average..... | 21.0 | 14  | 0.22 | 38  | 6.2 | 29  | 1.3 | 109 | 16   | 54 | 0.3 | 0.3 | 284 | 120 | 31 | 369  | --  | 240 |

## MOULTRIE CREEK BASIN--Continued

## MOULTRIE CREEK NEAR ST. AUGUSTINE, FLA.--Continued

| Temperature (°F) of water, water year October 1956 to September 1957 |      |      |      |      |      |      |      |     |      |      |      |       |
|----------------------------------------------------------------------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| Day                                                                  | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
| 1                                                                    | 70   | 64   | 51   | 55   | 64   | 61   | 62   | 68  | 71   | 76   | 77   | 75    |
| 2                                                                    | 70   | 66   | 49   | 51   | 64   | 57   | 61   | 67  | 71   | 75   | 78   | 76    |
| 3                                                                    | 70   | 68   | 51   | --   | 63   | 55   | 64   | 68  | 72   | 75   | 77   | 76    |
| 4                                                                    | 71   | 70   | 51   | 53   | 65   | 58   | 67   | 69  | 72   | 75   | 76   | 76    |
| 5                                                                    | 70   | 67   | 50   | 59   | 66   | 59   | 67   | 65  | 72   | 76   | 76   | 74    |
| 6                                                                    | --   | 66   | 49   | 56   | 63   | 59   | 66   | 64  | 73   | 75   | 76   | 75    |
| 7                                                                    | 69   | 62   | 52   | 53   | 62   | 57   | 62   | 61  | 74   | 76   | 75   | 76    |
| 8                                                                    | 69   | 63   | 55   | 51   | 63   | 54   | 65   | 64  | 75   | 76   | 76   | 76    |
| 9                                                                    | 70   | 61   | 57   | 59   | 63   | 53   | 64   | 65  | 75   | 76   | 76   | 74    |
| 10                                                                   | 69   | 56   | 58   | 61   | 64   | 50   | 63   | 67  | 75   | 76   | 77   | 76    |
| 11                                                                   | 69   | 54   | 57   | 60   | 63   | 52   | 62   | 68  | 75   | 76   | 77   | 77    |
| 12                                                                   | 68   | 55   | 57   | 58   | 59   | 55   | 61   | 69  | 73   | 76   | 76   | 77    |
| 13                                                                   | 68   | 57   | 60   | 57   | 54   | 58   | 64   | 70  | 74   | 75   | 77   | 77    |
| 14                                                                   | 69   | 58   | 62   | 59   | 53   | 61   | 67   | 70  | 74   | 75   | 77   | 77    |
| 15                                                                   | 69   | 60   | 64   | 59   | 54   | 61   | 67   | 71  | 74   | 75   | 77   | 77    |
| 16                                                                   | 69   | 61   | 65   | 63   | 54   | 61   | 66   | 70  | 74   | 75   | 77   | 76    |
| 17                                                                   | 67   | 63   | 65   | 57   | 50   | 60   | 62   | 70  | 74   | 76   | 78   | 75    |
| 18                                                                   | --   | 63   | 65   | 48   | 54   | 61   | 65   | 70  | 74   | 77   | 77   | 76    |
| 19                                                                   | 67   | 64   | 64   | 45   | 60   | 63   | 64   | 70  | 74   | 77   | 76   | 76    |
| 20                                                                   | 68   | 63   | 65   | 51   | 58   | 64   | 63   | 72  | 75   | 76   | 76   | 76    |
| 21                                                                   | 69   | 63   | 61   | 57   | 57   | 62   | 67   | 73  | 75   | 76   | 76   | 76    |
| 22                                                                   | 70   | 60   | 64   | 61   | 57   | 62   | 65   | 74  | 75   | 75   | 74   | 77    |
| 23                                                                   | 69   | 53   | 62   | 64   | 59   | 63   | 66   | 74  | 75   | 76   | 74   | 76    |
| 24                                                                   | 68   | 54   | 56   | 62   | 60   | 63   | 64   | 73  | 75   | 75   | 74   | 76    |
| 25                                                                   | 68   | 54   | 58   | 61   | 60   | 65   | 64   | 73  | 73   | 75   | 73   | 75    |
| 26                                                                   | 66   | 54   | 57   | 60   | 62   | 64   | 65   | 72  | 74   | 76   | 74   | 74    |
| 27                                                                   | 65   | 51   | 56   | 62   | 64   | 60   | 66   | 72  | 76   | 76   | 74   | 74    |
| 28                                                                   | 63   | 46   | 55   | 64   | 64   | 58   | 67   | 72  | 77   | 77   | 74   | 74    |
| 29                                                                   | 64   | 50   | --   | 66   | --   | 58   | 68   | 72  | 76   | 77   | 76   | 73    |
| 30                                                                   | 65   | 50   | 53   | 66   | --   | 57   | 69   | 72  | 76   | 76   | 76   | 74    |
| 31                                                                   | 63   | --   | 57   | 64   | --   | 57   | --   | 72  | --   | 76   | 76   | --    |
| Average                                                              | 68   | 59   | 58   | 58   | 60   | 59   | 65   | 70  | 74   | 76   | 76   | 76    |

INDIAN RIVER BASIN  
CRANE CREEK AT MELBOURNE, FLA.

LOCATION.--At gaging station, 24 feet upstream from bridge on U. S. Highway 192, 1½ miles west of City Hall in Melbourne, Brevard County, and 2½ miles upstream from Indian River.

DRAINAGE AREA.--12.6 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 9, 1956       | 21                   | 8.2                        | 0.04      | 99           | 19             | 89          |               | 187                             | 63                         | 212           | --           | 0.0                        | 582                           | 395                           | 172           | 1,050                                     | 7.9 | 75    |
| Jan. 10, 1957      | 5.2                  | 13                         | .01       | 128          | 20             | 107         |               | 256                             | 67                         | 250           | 0.3          | 7                          | 713                           | 402                           | 193           | 1,200                                     | 7.6 | 38    |
| Feb. 21            | 8.0                  | 12                         | .02       | 126          | 22             | 106         |               | 242                             | 75                         | 253           | .3           | 1.0                        | 714                           | 405                           | 206           | 1,295                                     | 7.6 | 35    |
| Apr. 9             | 9.3                  | 11                         | .04       | 114          | 16             | 81          |               | 240                             | 43                         | 202           | .1           | .9                         | 586                           | 350                           | 154           | 1,080                                     | 7.8 | 50    |
| May 12             | 6.6                  | 13                         | .01       | 126          | 17             | 90          |               | 264                             | 51                         | 219           | .3           | 1.6                        | 648                           | 384                           | 168           | 1,170                                     | 8.1 | 140   |
| June 24            | 5.0                  | 14                         | .02       | 136          | 16             | 100         |               | 272                             | 58                         | 240           | --           | .2                         | 698                           | 406                           | 182           | 1,250                                     | 7.7 | 45    |
| Aug. 5             | 12                   | 11                         | .02       | 106          | 17             | 97          |               | 218                             | 55                         | 220           | --           | .2                         | 613                           | 334                           | 156           | 1,080                                     | 7.6 | 45    |
| Sept. 16           | 12                   | 11                         | .04       | 97           | 8.8            | 79          |               | 218                             | 37                         | 164           | .3           | .1                         | 504                           | 278                           | 100           | 902                                       | 7.0 | 70    |

FELLSMERE CANAL NEAR FELLSMERE, FLA.

LOCATION.--At gaging station at bridge on State Highway 507, 3.3 miles north of Fellsmere, Indian River County, and 5.9 miles upstream from North Prong Sebastian Creek.

DRAINAGE AREA.--78.4 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 10, 1956      | 187                  | 8.4                        | 0.03      | 51           | 12             | 43          |               | 155                             | 39                         | 58            | --           | --                         | 302                           | 176                           | 65            | 431                                       | --  | --    |
| Feb. 8, 1957       | 53                   | 8.7                        | .04       | 65           | 16             | 63          |               | 183                             | 49                         | 130           | 0.3          | 0.1                        | 328                           | 238                           | 83            | 580                                       | 7.5 | 120   |
| Feb. 19            | 52                   | 11                         | .06       | 50           | 14             | 47          |               | 128                             | 42                         | 96            | .2           | .0                         | 323                           | 182                           | 78            | 584                                       | 7.7 | 170   |
| Apr. 3             | 150                  |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     | 110   |
| May 13             | 187                  | 7.1                        | .04       | 43           | 12             | 41          |               | 114                             | 31                         | 84            | .4           | .2                         | 275                           | 157                           | 64            | 509                                       | 7.5 | 120   |
| June 25            | 82                   | 8.4                        | .15       | 51           | 10             | 39          |               | 128                             | 30                         | 83            | --           | .4                         | 285                           | 168                           | 63            | 516                                       | 7.8 | 220   |
| Aug. 6             | 284                  | 6.5                        | .08       | 56           | 5.5            | 24          |               | 107                             | 50                         | 52            | --           | 1.1                        | 143                           | 162                           | 74            | 441                                       | 7.5 | 140   |
| Sept. 17           | 316                  | 6.0                        | .10       | 36           | 5.4            | 27          |               | 96                              | 24                         | 47            | .4           | .3                         | 193                           | 112                           | 34            | 331                                       | 7.3 | 300   |

INDIAN RIVER BASIN--Continued  
NORTH CANAL NEAR VERO BEACH, FLA.

LOCATION.--At gaging station at bridge on U. S. Highway 1, 3.9 miles north of Vero Beach, Indian River County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Nov. 9, 1956.....  | 31                   | 14                         | 0.03      | 79           | 12             | 50          |               | 203                             | 52                         | 96            | --           | 0.1                        | 403                           | 246                           | 80            | 726                                       | 7.6 | 50    |
| Jan. 4, 1957.....  | 9                    | 8.2                        | .03       | 59           | 9.5            | 49          |               | 172                             | 30                         | 84            | 0.2          | .5                         | 325                           | 186                           | 45            | 585                                       | 8.0 | 35    |
| Feb. 20.....       | 65                   | 7.9                        | .00       | 54           | 9.6            | 42          |               | 158                             | 30                         | 74            | .3           | .2                         | 296                           | 174                           | 44            | 542                                       | 7.8 | 30    |
| Apr. 5.....        | 37                   | 12                         | .02       | 72           | 14             | 62          |               | 186                             | 61                         | 110           | .3           | .2                         | 424                           | 237                           | 84            | 728                                       | 7.8 | 55    |
| May 16.....        | 72                   | 8.0                        | .06       | 51           | 11             | 47          |               | 128                             | 47                         | 85            | .3           | .0                         | 312                           | 172                           | 67            | 572                                       | 7.4 | 55    |
| June 13.....       | 11                   | 9.2                        | .00       | 51           | 8.0            | 41          |               | 156                             | 30                         | 64            | --           | .1                         | 280                           | 160                           | 32            | 466                                       | 7.7 | 45    |
| Aug. 16.....       | 10                   | 8.4                        | .03       | 49           | 11             | 41          |               | 143                             | 32                         | 76            | --           | .1                         | 288                           | 168                           | 50            | 522                                       | 7.0 | 45    |
| Sept. 27.....      | 12                   | 8.3                        | .22       | 53           | 6.3            | 39          |               | 146                             | 31                         | 64            | .3           | .3                         | 274                           | 158                           | 38            | 477                                       | 8.0 | 45    |

MAIN CANAL AT VERO BEACH, FLA.

LOCATION.--At gaging station, 8 feet upstream from dam and 0.6 mile northwest of Vero Beach, Indian River County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Nov. 9, 1956.....  | 49                   | 14                         | 0.03      | 79           | 14             | 59          |               | 202                             | 55                         | 113           | --           | 0.0                        | 434                           | 254                           | 89            | 786                                       | 7.5 | 65    |
| Jan. 4, 1957.....  | 71                   | 13                         | .02       | 98           | 29             | 124         |               | 243                             | 93                         | 238           | 0.5          | .6                         | 716                           | 364                           | 164           | 1,260                                     | 7.7 | 35    |
| Feb. 20.....       | 153                  | 10                         | .00       | 96           | 21             | 86          |               | 228                             | 75                         | 175           | .5           | .3                         | 576                           | 233                           | 139           | 1,030                                     | 7.9 | 50    |
| Apr. 5.....        | 75                   | 14                         | .01       | 78           | 12             | 64          |               | 192                             | 58                         | 117           | .2           | .0                         | 438                           | 244                           | 86            | 778                                       | 7.8 | 55    |
| May 16.....        | 173                  | 7.7                        | .06       | 52           | 11             | 48          |               | 126                             | 46                         | 89            | .3           | .0                         | 316                           | 174                           | 71            | 576                                       | 7.5 | 75    |
| June 13.....       | 66                   | 11                         | .00       | 78           | 16             | 63          |               | 210                             | 51                         | 122           | --           | .0                         | 444                           | 260                           | 88            | 751                                       | 7.7 | 50    |
| Aug. 16.....       | 50                   | 11                         | .02       | 78           | 17             | 77          |               | 212                             | 59                         | 139           | --           | .1                         | 485                           | 264                           | 91            | 850                                       | 7.5 | 45    |
| Sept. 27.....      | 59                   | 11                         | .02       | 75           | 13             | 62          |               | 192                             | 58                         | 111           | .4           | .2                         | 426                           | 240                           | 83            | 747                                       | 7.9 | 47    |

# INDIAN RIVER BASIN--Continued

## SOUTH CANAL NEAR VERO BEACH, FLA.

LOCATION.--At gaging station, 20 feet upstream from bridge on State Highway 605, 2.5 miles south of Vero Beach, Indian River County.  
 RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
 REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-magnesium |                                           |     |       |
| Nov. 9, 1956.....  | 23                   | 12                         | 0.02      | 72           | 13             |             | 59            | 180                             | 55                         | 111           | --           | 0.2                        | 411                           | 233                           | 86            | 740                                       | 7.7 | 50    |
| Jan. 4, 1957.....  | a 8                  | 8.5                        | .03       | 62           | 10             | 50          |               | 183                             | 34                         | 84            | 0.2          | .7                         | 339                           | 196                           | 46            | 601                                       | 8.0 | 45    |
| Feb. 20.....       | 103                  | 6.5                        | .00       | 53           | 8.8            |             | 42            | 150                             | 29                         | 75            | .3           | .2                         | 289                           | 168                           | 45            | 535                                       | 7.7 | 40    |
| Apr. 5.....        | 44                   | 13                         | .03       | 74           | 15             | 72          |               | 184                             | 64                         | 131           | .2           | .1                         | 460                           | 246                           | 95            | 813                                       | 7.7 | 50    |
| May 16.....        | 70                   | 7.9                        | .10       | 70           | 15             |             | 78            | 158                             | 55                         | 148           | .4           | .0                         | 462                           | 236                           | 106           | 843                                       | 7.7 | 45    |
| June 13.....       | 8                    | 8.2                        | .01       | 53           | 8              | 42          |               | 128                             | 29                         | 78            | --           | .1                         | 291                           | 168                           | 40            | 489                                       | 7.8 | 50    |
| Aug. 15.....       | 12                   | 8.0                        | .02       | 44           | 9.7            | 44          |               | 124                             | 28                         | 60            | .2           | .3                         | 275                           | 150                           | 45            | 499                                       | 7.2 | 45    |
| Sept. 27.....      | 15                   | 8.3                        | .03       | 43           | 7.4            | 36          |               | 124                             | 28                         | 60            | .2           | .3                         | 244                           | 138                           | 36            | 437                                       | 7.7 | 55    |

a No gage height record; discharge estimated by comparison with records at stations on Main and North Canals near Vero Beach.

## ST. LUCIE RIVER BASIN

### NORTH FORK ST. LUCIE RIVER AT WHITE CITY, FLA.

LOCATION.--Ten feet upstream from bridge on State Road 712 at White City, St. Lucie County, 1.7 miles downstream from confluence of Fivemile and Tenmile Creeks, and 4 miles south of Fort Pierce.  
 RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
 REMARKS.--No discharge records available for this station in 1957 water year.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-magnesium |                                           |     |       |
| Nov. 8, 1956.....  | 10                   | 10                         | 0.05      | 30           | 6.4            | 31          |               | 93                              | 35                         | 56            | --           | 0.2                        | 224                           | 124                           | 48            | 407                                       | 7.3 | 65    |
| Jan. 3, 1957.....  | 9.7                  | 10                         | .01       | 70           | 20             | 153         |               | 184                             | 36                         | 180           | 0.4          | .6                         | 351                           | 256                           | 122           | 982                                       | 7.4 | 40    |
| Feb. 19.....       | 10                   | 10                         | .00       | 106          | 20             | 154         |               | 228                             | 43                         | 230           | .5           | .3                         | 340                           | 202                           | 86            | 1,713                                     | 7.9 | 15    |
| Apr. 4.....        | 7.6                  | 7.6                        | .08       | 54           | 13             | 71          |               | 125                             | 66                         | 121           | .6           | .0                         | 393                           | 168                           | 86            | 713                                       | 7.5 | 60    |
| May 15.....        | 5.1                  | 5.1                        | .04       | 38           | 8.0            | 43          |               | 90                              | 50                         | 67            | .3           | .0                         | 255                           | 128                           | 54            | 464                                       | 7.3 | 55    |
| June 12.....       | 9.5                  | 9.5                        | .01       | 69           | 18             | 81          |               | 158                             | 86                         | 144           | --           | .1                         | 486                           | 246                           | 116           | 815                                       | 7.8 | 45    |
| Aug. 15.....       | 112                  | 112                        | .03       | 49           | 9.6            | 44          |               | 112                             | 50                         | 81            | --           | .1                         | 298                           | 162                           | 70            | 540                                       | 7.3 | 75    |
| Sept. 26.....      | 8.8                  | 8.8                        | .03       | 64           | 11             | 50          |               | 144                             | 68                         | 88            | .3           | .2                         | 361                           | 204                           | 86            | 628                                       | 8.0 | 60    |

ST. LUCIE RIVER BASIN--Continued  
RIM DITCH NEAR WHITE CITY, FLA.

LOCATION.--At gaging station, 10 feet downstream from bridge on Ideal Holding Co. Road, and 12 miles west of White City, St. Lucie County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1957.  
REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 8, 1956.....  |                      | 7.2                        | 0.07      | 20           | 4.4            | 19          |               | 55                              | 11                         | 37            | --           | 0.1                        | 126                           | 68                            | 23            | 244                                       | 6.9 | 110   |
| Jan. 3, 1957.....  |                      | 7.5                        | .01       | 81           | 23             | 153         |               | 201                             | 115                        | 265           | 0.5          | 1.3                        | 712                           | 321                           | 198           | 1,350                                     | 6.9 | 145   |
| Feb. 19.....       |                      | 12                         | .01       | 112          | 33             | 194         |               | 284                             | 132                        | 340           | .8           | 1.3                        | 952                           | 445                           | 198           | 1,350                                     | 6.9 | 40    |
| Mar. 19.....       |                      | 6.3                        | .02       | 82           | 23             | 119         |               | 190                             | 94                         | 216           | .2           | .0                         | 635                           | 299                           | 144           | 1,140                                     | 8.2 | 50    |
| Apr. 4.....        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| May 15.....        |                      | 2.5                        | .07       | 17           | 4.7            | 23          |               | 44                              | 17                         | 42            | .2           | .0                         | 128                           | 62                            | 26            | 248                                       | 7.0 | 90    |
| June 12.....       |                      | 4.0                        | .02       | 24           | 10             | 32          |               | 64                              | 20                         | 68            | --           | .3                         | 190                           | 101                           | 48            | 346                                       | 7.2 | 90    |
| Aug. 15.....       |                      | 4.8                        | .05       | 31           | 7.9            | 33          |               | 72                              | 26                         | 68            | --           | .1                         | 206                           | 110                           | 51            | 414                                       | 7.0 | 90    |
| Sept. 26.....      |                      | 4.0                        | .04       | 21           | 4.7            | 27          |               | 54                              | 14                         | 50            | .3           | .3                         | 148                           | 72                            | 28            | 289                                       | 7.1 | 85    |

LAKE OKEECHOBEE AND THE EVERGLADES

HARNEY POND CANAL AT STATE HIGHWAY 78 NEAR MOORE HAVEN, FLA.

LOCATION.--At bridge on State Highway 78, approximately 12 miles north of Moore Haven, Glades County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 29, 1956..... |                      | 4.7                        | 0.13      | 21           | 2.8            | 9.9         |               | 41                              | 22                         | 20            | 0.2          | 0.7                        | 101                           | 64                            | 30            | 185                                       | 6.8 | 280   |
| Nov. 28.....       |                      | 11                         | .08       | 82           | 5.7            | 40          |               | 214                             | 41                         | 68            | --           | .0                         | 353                           | 228                           | 52            | 652                                       | 7.5 | 110   |
| Feb. 1957.....     |                      | 3.0                        | .01       | 27           | 2.6            | 16          |               | 61                              | 22                         | 28            | .2           | .3                         | 142                           | 295                           | 28            | 262                                       | 7.3 | 90    |
| Mar. 27.....       |                      | 3.1                        | .01       | 32           | 2.9            | 17          |               | 70                              | 22                         | 28            | .2           | .0                         | 145                           | 295                           | 28            | 262                                       | 7.3 | 90    |
| Apr. 1.....        |                      | 3.5                        | .10       | 28           | 3.6            | 16          |               | 58                              | 34                         | 25            | .2           | .0                         | 139                           | 85                            | 38            | 244                                       | 7.0 | 150   |
| May 13.....        |                      | 2.4                        | .09       | 14           | 2.7            | 7.4         |               | 31                              | 16                         | 14            | .2           | .2                         | 72                            | 46                            | 20            | 134                                       | 6.9 | 120   |
| July 1.....        |                      | 5.2                        | .12       | 8.0          | 2.2            | 2.5         |               | 13                              | 9.0                        | 9.2           | .3           | .4                         | 43                            | 29                            | 18            | 89.6                                      | 6.1 | 200   |
| Aug. 7.....        |                      | 5.4                        | .15       | 21           | 3.8            | 4.1         |               | 32                              | 32                         | 12            | .2           | .2                         | 95                            | 68                            | 42            | 170                                       | 6.7 | 220   |
| Sept. 20.....      |                      | 4.7                        | .08       | 7.2          | 1.6            | 3.4         |               | 17                              | 4.8                        | 8.5           | .2           | .4                         | 39                            | 24                            | 10            | 75.0                                      | 6.4 | 200   |

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
INDIAN PRAIRIE CANAL AT STATE HIGHWAY 78, NEAR OKEECHOBEE, FLA.

LOCATION.--At bridge on State Highway 78, approximately 16 miles southwest of Okeechobee, Okeechobee County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
REMARKS.--No discharge records available for this station.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculation) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|--------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 29, 1956....  |                      | 10                         | 0.97      | 53           | 14             | 13          |               | 2                               | 182                        | 16            | 0.2          | 5.1                        | 295                            | 190                           | 188           | 456                                       | 4.6 | 200   |
| Nov. 28.....       |                      | 12                         | 1.1       | 97           | 20             | 16          |               | 0                               | 316                        | 21            | --           | 12                         | 495                            | 324                           | 324           | 477                                       | 7.1 | 100   |
| Jan. 16, 1957....  |                      | 5.3                        | .03       | 23           | 8.3            | 18          |               | 128                             | 26                         | 24            | --           | .8                         | 106                            | 166                           | 166           | 440                                       | 7.5 | 100   |
| Feb. 1.....        |                      | 3.8                        | .03       | 23           | 9.9            | 18          |               | 38                              | 26                         | 18            | .2           | 2.5                        | 106                            | 166                           | 166           | 440                                       | 6.9 | 190   |
| Apr. 1.....        |                      | 4.4                        | .14       | 76           | 18             | 12          |               | 4                               | 248                        | 18            | .2           |                            | 381                            | 264                           | 260           | 576                                       | 4.9 | 130   |
| May 13.....        |                      | 5.8                        | .12       | 34           | 7.1            | .5          |               | 17                              | 80                         | 11            | .3           | 1.0                        | 148                            | 114                           | 100           | 268                                       | 6.4 | 180   |
| July 1.....        |                      | 6.3                        | .16       | 29           | 7.2            | 2.5         |               | 20                              | 69                         | 13            | .2           | .2                         | 137                            | 102                           | 86            | 244                                       | 6.3 | 220   |
| Aug. 7.....        |                      | 6.5                        | .19       | 27           | 7.9            | 2.8         |               | 18                              | 68                         | 14            | .2           | .3                         | 136                            | 100                           | 85            | 247                                       | 6.2 | 200   |
| Sept. 20.....      |                      | 7.1                        | .29       | 18           | 4.1            | 2.3         |               | 16                              | 34                         | 12            | .3           | .5                         | 86                             | 62                            | 49            | 164                                       | 6.3 | 280   |

ISTOKPOGA CANAL NEAR CORNWELL, FLA.

LOCATION.--At gaging station at bridge on U. S. Highway 98, 100 feet downstream from Seaboard Air Line Railroad bridge, 1½ miles upstream from Kissimmee River, and 4½ miles northwest of Cornwell Post Office, Highlands County.  
DRAINAGE AREA.--624 square miles.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculation) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|--------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 16, 1956....  | 416                  | 0.8                        | 0.03      | 6.4          | 2.9            | 4.4         |               | 4                               | 22                         | 6.5           | 0.1          | 1.8                        | 47                             | 28                            | 24            | 90.2                                      | 5.4 | 80    |
| Dec. 4.....        | 367                  | 4.1                        | .03       | 9.6          | 3.9            | 5.1         |               | 10                              | 25                         | 12            | --           |                            | 65                             | 40                            | 32            | 122                                       | 6.3 | 90    |
| Jan. 15, 1957....  | 86                   | 1.2                        | .01       | 8.4          | 4.1            | 9.2         |               | 12                              | 29                         | 12            | .1           | .4                         | 70                             | 38                            | 28            | 130                                       | 6.5 | 60    |
| Mar. 1.....        | 64                   | 1.2                        | .03       | 10           | 3.2            | 9.9         |               | 14                              | 27                         | 14            | .2           | .0                         | 72                             | 38                            | 26            | 130                                       | 6.6 | 45    |
| July 1.....        | 712                  | 1.0                        | .01       | 6.4          | 3.0            | 6.2         |               | 14                              | 16                         | 10            | --           | .1                         | 50                             | 28                            | 17            | 98.2                                      | 6.5 | 80    |
| Aug. 7.....        | 912                  | 1.5                        | .01       | 6.0          | 2.9            | 4.6         |               | 13                              | 13                         | 9.0           | --           | .4                         | 44                             | 27                            | 16            | 87.3                                      | 6.3 | 80    |
| Sept. 19.....      | 1,150                | 2.5                        | .02       | 4.0          | 1.7            | 5.1         |               | 11                              | 8.5                        | 7.0           | --           | .1                         | 34                             | 17                            | 8             | 59.1                                      | 6.3 | 120   |



LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
KISSIMMEE RIVER NEAR OKEECHOBEE, FLA.

LOCATION --At gaging station at bridge on Highway 70, 9.4 miles west of Okeechobee, Okeechobee County, and 16 miles upstream from Lake Okeechobee.  
DRAINAGE AREA --2,886 square miles.

RECORDS AVAILABLE --Chemical analyses: March 1940 to February 1941, October 1953 to September 1957.  
Water temperatures: October 1953 to September 1957.

EXTREMES, 1956-57 --Dissolved solids: Maximum, 108 ppm Oct. 16, 18-20.  
Hardness: Maximum, 37 ppm Oct. 1-10; minimum, 15 ppm Oct. 16, 18-20.

Specific conductance: Maximum daily, 135 micromhos Oct. 12; minimum daily, 36.2 micromhos Oct. 19.  
Water temperatures: Maximum, 90° F Aug. 16; minimum, 58° F Jan. 18.

EXTREMES, 1940-41, 1953-57 --Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 23 ppm Oct. 16, 18-20, 1956.  
Hardness: Maximum, 56 ppm July 21-31, 1956; minimum, 12 ppm Oct. 11-20, 1953.

Specific conductance: Maximum daily, 266 micromhos June 16, 1956; minimum daily, 36.2 micromhos Oct. 19, 1956.  
Water temperatures (1953-57): Maximum, 90° F July 20, 1956, Aug. 16, 1957; minimum, 53° F Jan. 12, 1956.

REMARKS --Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956... | 314                  | 3.9                        | 0.05      | 10           | 2.9            | 11          | 0.9           | 27                              | 6.0                        | 18            | 0.2          | 0.2                        | 108                                                | 37                            | 15            | 126                                       | 7.3 | 200   |
| Oct. 11-15, 17...  | 873                  | 7.5                        | .09       | 10           | 2.7            | 10          | .9            | 23                              | 6.0                        | 16            | .2           | .2                         | a65                                                | 36                            | 17            | 125                                       | 7.0 | 150   |
| Oct. 16, 18-20...  | 6,008                | 1.2                        | .02       | 4.0          | 1.2            | 3.4         | .8            | 12                              | 2.2                        | 5.8           | .2           | .1                         | a23                                                | 15                            | 5             | 48.4                                      | 6.8 | 140   |
| Oct. 21-31...      | 5,629                | 1.9                        | .08       | 5.6          | 1.2            | 4.1         | 1.6           | 17                              | 1.0                        | 8.2           | .2           | .1                         | 72                                                 | 19                            | 5             | 65.6                                      | 6.8 | 200   |
| Nov. 1-10...       | 2,055                | 1.9                        | .12       | 9.2          | 2.7            | 6.6         | 1.6           | 20                              | 5.0                        | 12            | .2           | .1                         | 97                                                 | 29                            | 12            | 104.3                                     | 7.2 | 200   |
| Nov. 11-20...      | 1,421                | 1.9                        | .12       | 8.8          | 2.4            | 7.1         | 1.3           | 17                              | 8.2                        | 14            | .3           | .2                         | 106                                                | 33                            | 18            | 106                                       | 6.8 | 220   |
| Nov. 21-30...      | 1,555                | 1.2                        | .11       | 8.4          | 2.2            | 7.1         | 1.0           | 17                              | 8.8                        | 16            | .3           | .2                         | 101                                                | 30                            | 16            | 103                                       | 6.8 | 200   |
| Dec. 1-10...       | 1,333                | 1.1                        | .10       | 8.4          | 2.4            | 7.2         | .9            | 20                              | 5.2                        | 14            | .3           | .2                         | 103                                                | 31                            | 14            | 101                                       | 6.8 | 200   |
| Dec. 11-20...      | 1,249                | 1.7                        | .14       | 8.0          | 2.2            | 7.6         | .8            | 19                              | 7.0                        | 14            | .3           | .1                         | 103                                                | 29                            | 14            | 97.4                                      | 6.8 | 220   |
| Dec. 21-31...      | 1,191                | 1.4                        | .13       | 7.6          | 2.6            | 8.2         | .1            | 18                              | 11                         | 12            | .1           | .1                         | 91                                                 | 30                            | 14            | 101                                       | 7.2 | 110   |
| Jan. 1-10, 1957... | 1,122                | 1.0                        | .21       | 7.6          | 2.7            | 8.3         | .1            | 18                              | 12                         | 12            | .1           | .2                         | 94                                                 | 30                            | 15            | 103                                       | 7.1 | 110   |
| Jan. 11-20...      | 1,441                | .9                         | .46       | 6.8          | 3.2            | 8.2         | .1            | 21                              | 10                         | 13            | .1           | .2                         | 92                                                 | 30                            | 13            | 103                                       | 7.2 | 110   |
| Jan. 21-31...      | 1,080                | 1.0                        | .00       | 7.4          | 2.7            | 8.4         | .2            | 20                              | 10                         | 11            | .1           | .2                         | 88                                                 | 30                            | 13            | 102                                       | 7.2 | 110   |
| Feb. 1-10...       | 978                  | 1.1                        | .09       | 8.0          | 2.4            | 8.5         | .2            | 21                              | 11                         | 12            | .2           | .2                         | 88                                                 | 30                            | 13            | 102                                       | 7.1 | 110   |
| Feb. 11-20...      | 994                  | 1.2                        | .03       | 8.4          | 2.3            | 8.3         | .2            | 20                              | 9.5                        | 12            | .1           | .4                         | 91                                                 | 30                            | 14            | 104                                       | 7.1 | 110   |
| Mar. 1-10...       | 1,176                | 1.4                        | .10       | 8.0          | 2.7            | 8.5         | .4            | 18                              | 18                         | 12            | .1           | .2                         | 86                                                 | 31                            | 16            | 107                                       | 7.1 | 110   |
| Mar. 11-20...      | 1,463                | .5                         | .08       | 8.6          | 2.4            | 8.3         | .4            | 18                              | 13                         | 12            | .1           | .0                         | 86                                                 | 32                            | 16            | 109                                       | 7.1 | 110   |
| Mar. 21-31...      | 1,552                | .7                         | .07       | 8.0          | 2.7            | 8.0         | .2            | 18                              | 15                         | 12            | .1           | .1                         | 85                                                 | 31                            | 16            | 106                                       | 7.2 | 100   |

a Calculated from determined constituents.

|                            |       |     |      |     |     |     |     |    |     |     |     |     |    |    |    |      |     |     |
|----------------------------|-------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|----|------|-----|-----|
| Apr. 1-10, 1937..          | 1,598 | 0.9 | 0.36 | 7.4 | 2.7 | 8.2 | 0.1 | 17 | 13  | 11  | 0.1 | 0.1 | 84 | 30 | 16 | 103  | 7.1 | 110 |
| Apr. 11-20.....            | 1,627 | 1.2 | .10  | 7.6 | 2.4 | 7.8 | .1  | 16 | 12  | 11  | .1  | .1  | 84 | 29 | 16 | 100  | 7.0 | 110 |
| Apr. 21-30.....            | 1,725 | 1.4 | .11  | 6.8 | 2.4 | 8.6 | .1  | 16 | 9.8 | 10  | .1  | .2  | 81 | 26 | 14 | 93.1 | 7.0 | 110 |
| May 1-10.....              | 2,274 | 2.0 | .03  | 7.6 | 1.8 | 6.7 | .4  | 17 | 11  | 14  | .0  | .0  | 81 | 28 | 12 | 92.6 | 6.6 | 90  |
| May 11-20.....             | 2,164 | 2.0 | .03  | 7.2 | 2.6 | 7.4 | .2  | 17 | 12  | 12  | .0  | .2  | 81 | 28 | 14 | 84.7 | 6.8 | 100 |
| May 21-31.....             | 2,247 | 2.8 | .06  | 6.8 | 2.9 | 7.0 | .0  | 18 | 8.5 | 12  | .0  | .2  | 80 | 29 | 14 | 86.5 | 6.8 | 100 |
| June 1-10.....             | 1,974 | 3.2 | .07  | 7.0 | 2.2 | 6.6 | .2  | 17 | 10  | 12  | .0  | .2  | 78 | 26 | 12 | 97.3 | 6.3 | 90  |
| June 11-20.....            | 1,888 | 3.0 | .06  | 7.2 | 1.9 | 6.5 | .0  | 17 | 10  | 12  | .0  | .1  | 66 | 26 | 12 | 85.5 | 6.6 | 90  |
| June 21-30.....            | 1,854 | 3.1 | .05  | 6.6 | 2.2 | 6.3 | .1  | 18 | 9.5 | 12  | .0  | .1  | 74 | 26 | 10 | 85.6 | 6.5 | 85  |
| July 1-10.....             | 2,193 | 2.9 | .06  | 6.4 | 1.8 | 6.0 | .1  | 16 | 11  | 10  | .0  | .2  | 71 | 24 | 10 | 77.2 | 6.7 | 90  |
| July 11-20.....            | 2,196 | 3.7 | .04  | 6.4 | 1.9 | 5.8 | .0  | 16 | 8.2 | 9.8 | .0  | .2  | 71 | 24 | 11 | 75.7 | 6.8 | 90  |
| July 21-31.....            | 2,764 | 4.0 | .03  | 5.6 | 1.9 | 5.4 | .0  | 16 | 6.0 | 8.8 | .0  | .1  | 62 | 22 | 9  | 69.8 | 6.6 | 90  |
| Aug. 1-10.....             | 3,213 | 3.9 | .04  | 5.4 | 1.8 | 5.6 | .2  | 15 | 5.5 | 9.5 | .1  | .0  | 65 | 21 | 8  | 65.8 | 6.6 | 90  |
| Aug. 11-20.....            | 3,670 | 4.1 | .07  | 5.6 | 1.7 | 5.4 | .1  | 16 | 4.2 | 9.2 | .1  | .0  | 61 | 21 | 8  | 63.6 | 6.6 | 90  |
| Aug. 21-31.....            | 3,517 | 4.1 | .05  | 5.2 | 1.7 | 5.3 | .1  | 15 | 4.0 | 8.8 | .1  | .0  | 59 | 20 | 8  | 61.6 | 6.6 | 90  |
| Sept. 1-10.....            | 3,805 | 4.2 | .05  | 5.0 | 1.6 | 5.3 | .1  | 15 | 5.0 | 9.0 | .1  | .0  | 60 | 19 | 6  | 61.6 | 6.6 | 90  |
| Sept. 11-20.....           | 4,930 | 4.5 | .06  | 4.8 | 1.5 | 5.1 | .1  | 14 | 2.8 | 8.5 | .1  | .0  | 60 | 18 | 6  | 58.3 | 6.5 | 90  |
| Sept. 21-30.....           | 4,928 | 3.9 | .06  | 4.8 | 1.5 | 5.2 | .0  | 15 | 3.2 | 8.8 | .1  | .0  | 58 | 18 | 6  | 58.9 | 6.6 | 90  |
| Time-weighted average..... | 2,249 | 2.3 | 0.10 | 7.1 | 2.2 | 7.0 | 0.4 | 18 | 8.5 | 12  | 0.1 | 0.1 | 81 | 26 | 12 | 90.4 | --  | 120 |

## 312 SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS, OGEECHEE RIVER TO PEARL RIVER

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## KISSIMMEE RIVER NEAR OKEECHOBEE, FLA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 82   | 74   | 60   | 63   | 75   | --   | 78   | 77  | 83   | 86   | 85   | 85    |
| 2       | 84   | 78   | 60   | 63   | --   | --   | 75   | 77  | 82   | 85   | 84   | 84    |
| 3       | 82   | 76   | 62   | 63   | 76   | 70   | 70   | --  | 83   | 85   | 84   | 84    |
| 4       | 80   | 80   | 65   | 63   | 75   | 68   | 76   | 77  | 83   | 85   | 86   | 84    |
| 5       | 80   | 80   | 67   | 65   | 76   | 70   | 76   | 77  | 85   | 85   | 85   | 84    |
| 6       | 80   | 82   | --   | 65   | 75   | 70   | 77   | 77  | 85   | 85   | 86   | 84    |
| 7       | 80   | 80   | --   | 65   | 75   | 70   | 77   | 77  | 84   | 86   | 85   | --    |
| 8       | 80   | 76   | 70   | 65   | 75   | 66   | 78   | 77  | 84   | 86   | 84   | --    |
| 9       | 80   | 72   | 70   | 65   | 75   | 63   | 77   | 76  | 83   | 88   | 85   | 83    |
| 10      | 80   | 65   | 70   | 67   | 75   | 65   | 77   | 75  | 83   | 88   | 85   | 85    |
| 11      | 75   | 63   | 70   | 70   | 75   | 66   | 77   | --  | 85   | 88   | 85   | 84    |
| 12      | 78   | 60   | 68   | --   | 73   | 68   | 77   | 80  | 85   | 85   | 85   | 84    |
| 13      | 75   | 62   | 75   | 68   | 71   | 72   | 78   | 82  | 85   | 85   | 86   | 84    |
| 14      | 74   | 65   | --   | 68   | 70   | 74   | 78   | 80  | 85   | 87   | 88   | 84    |
| 15      | 76   | 68   | --   | 70   | 68   | 72   | 76   | 80  | 85   | 87   | 88   | 84    |
| 16      | 70   | 70   | 75   | 70   | 70   | 75   | 75   | 82  | 85   | 88   | 90   | 84    |
| 17      | 70   | 70   | 75   | 62   | 70   | 75   | 75   | 82  | 85   | 86   | 88   | 84    |
| 18      | 72   | 70   | --   | 58   | 70   | --   | 75   | 84  | 85   | 85   | 88   | 84    |
| 19      | 75   | 70   | --   | 64   | 70   | 75   | 75   | 84  | 85   | 85   | 87   | 84    |
| 20      | 76   | 74   | 75   | 64   | 70   | 77   | 76   | 82  | 84   | 89   | 85   | 82    |
| 21      | 76   | 74   | 74   | 70   | 70   | 77   | 76   | 85  | 85   | 87   | 85   | 85    |
| 22      | 76   | 74   | 74   | 65   | 68   | 76   | 76   | 85  | 85   | 88   | 82   | 73    |
| 23      | 74   | 65   | 73   | 68   | 68   | 77   | 77   | 85  | 85   | 88   | 82   | 74    |
| 24      | 77   | 68   | 67   | 68   | 70   | 78   | 77   | 87  | 85   | 85   | 80   | 85    |
| 25      | 76   | 70   | 73   | 68   | 70   | 75   | --   | 86  | 85   | 85   | 85   | 85    |
| 26      | 76   | 70   | --   | 70   | 70   | 75   | 77   | 85  | 85   | 85   | 85   | 84    |
| 27      | 75   | 60   | 74   | 75   | 70   | 73   | 77   | 85  | 84   | 85   | 85   | 83    |
| 28      | 74   | 60   | 60   | 75   | 75   | 73   | 77   | 86  | 85   | 83   | 85   | 83    |
| 29      | 74   | 60   | 60   | 76   | --   | 72   | 77   | --  | 85   | 85   | 84   | 84    |
| 30      | 72   | 60   | 62   | 76   | --   | 72   | 77   | 82  | 85   | 85   | 85   | 84    |
| 31      | 74   | --   | 62   | 75   | --   | 70   | --   | 82  | --   | 85   | 88   | --    |
| Average | 77   | 70   | --   | 67   | 72   | 72   | 76   | 81  | 84   | 86   | 85   | 83    |

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## ST. LUCIE CANAL AT LAKE OKEECHOBEE, FLA.

LOCATION --At bridge on U. S. Highways 98 and 441, at outlet of Lake Okeechobee, three-fourths of a mile west of Port Mayaca, Martin County.

RECORDS AVAILABLE.--Chemical analyses: March 1940 to February 1942; November 1954 to August 1957.

EXTREMES, 1940-42.--Dissolved solids: Maximum, 297 ppm Sept. 21-30, 1940; minimum, 142 ppm Aug. 21-31, Nov. 1-7, 1941.

Hardness: Maximum, 163 ppm Sept. 21-30, 1940; minimum, 102 ppm Aug. 1-10, 1941.

Specific conductance: Maximum daily, 382 micromhos Sept. 21, 1940; minimum daily, 253 micromhos Aug. 26, 1941.

REMARKS.--No records of discharge available for this station.

## Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium, mag-                 | Non-carbonate |                                           |     |       |
| Nov. 8, 1956.....  |                      | 6.6                        | 0.09      | 38           | 9.0            |             | 27            | 128                             | 27                         | 40            | --           | 0.5                        | 211                           | 132                           | 27            | 380                                       | 7.0 | 160   |
| Dec. 19.....       |                      | 6.0                        | .02       | 51           | 11             |             | 38            | 176                             | 37                         | 50            | 0.3          | .5                         | 281                           | 172                           | 28            | 467                                       | 7.8 | 35    |
| Jan. 31, 1957..... |                      | 5.3                        | .01       | 70           | 11             |             | 55            | 213                             | 53                         | 56            | .3           | .9                         | 379                           | 210                           | 45            | 510                                       | 7.3 | 30    |
| Mar. 13.....       |                      | 7.0                        | .02       | 67           | 11             |             | 59            | 202                             | 42                         | 93            | .3           | .1                         | 379                           | 212                           | 46            | 584                                       | 8.1 | 60    |
| Apr. 17.....       |                      | 11                         | .02       | 45           | 11             |             | 34            | 158                             | 35                         | 46            | .3           | .0                         | 260                           | 158                           | 28            | 453                                       | 7.4 | 22    |
| July 10.....       |                      | 2.0                        | .02       | 50           | 8.5            |             | 33            | 161                             | 34                         | 46            | --           | .1                         | 253                           | 160                           | 28            | 444                                       | 7.6 | 25    |
| Aug. 14.....       |                      | 5.0                        | .03       | 46           | 7.1            |             | 32            | 151                             | 22                         | 47            | --           | .1                         | 233                           | 144                           | 20            | 416                                       | 7.4 | 55    |

## ST. LUCIE CANAL AT LOCK NEAR STUART, FLA.

LOCATION --At gaging station, 6 miles southwest of Stuart, St. Lucie County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504. On days for which no discharge is shown, flow consists of leakage and lockage, generally less than 10 cfs.

## Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium, mag-                 | Non-carbonate |                                           |     |       |
| Nov. 8, 1956.....  | --                   | 11                         | 0.04      | 76           | 10             |             | 59            | 234                             | 34                         | 93            | --           | 0.6                        | 399                           | 230                           | 38            | 708                                       | 7.5 | 45    |
| Jan. 1957.....     | --                   | 8                          | .00       | 44           | 12             |             | 89            | 243                             | 41                         | 132           | 0.3          | .3                         | 477                           | 354                           | 35            | 827                                       | 7.5 | 30    |
| Feb. 19.....       | --                   | 8.5                        | .00       | 84           | 12             |             | 184           | 246                             | 52                         | 130           | .4           | 1.4                        | 795                           | 304                           | 102           | 1,430                                     | 7.2 | 50    |
| Apr. 4.....        | --                   | 15                         | .02       | 71           | 10             |             | 69            | 211                             | 39                         | 109           | .1           | .1                         | 417                           | 218                           | 45            | 740                                       | 7.5 | 28    |
| May 15.....        | --                   | 8.5                        | .02       | 70           | 8.6            |             | 51            | 208                             | 35                         | 80            | .2           | .0                         | 355                           | 210                           | 40            | 629                                       | 7.9 | 27    |
| June 12.....       | a2,190               | 5.8                        | .00       | 43           | 11             |             | 31            | 146                             | 37                         | 44            | --           | .0                         | 244                           | 152                           | 33            | 408                                       | 7.6 | 30    |
| Aug. 15.....       | --                   | 3.5                        | .01       | 44           | 7.8            |             | 32            | 138                             | 23                         | 53            | --           | .0                         | 231                           | 142                           | 29            | 409                                       | 7.4 | 35    |
| Sept. 26.....      | a6,580               | 6.1                        | .02       | 33           | 8.1            |             | 22            | 110                             | 23                         | 34            | .2           | .6                         | 181                           | 116                           | 26            | 329                                       | 7.6 | 32    |

a. Partial gate openings, constant during day.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
WEST PALM BEACH CANAL AT CANAL POINT, FLA.

LOCATION.--At bridge on U. S. Highway 441, 200 feet downstream from gaging station in hurricane gate structure 5 at Lake Okeechobee, in Canal Point, Palm Beach County, Florida.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 8, 1956.....  | 0                    | 9.2                        | 0.01      | 50           | 16             | 44          |               | 177                             | 55                         | 60            | --           | 0.5                        | 322                           | 191                           | 46            | 559                                       | 7.4 | 45    |
| Dec. 19, 1956..... | 179                  | 5.3                        | .00       | 43           | 12             | 37          |               | 153                             | 39                         | 50            | 0.3          | .3                         | 262                           | 157                           | 32            | 463                                       | 8.0 | 15    |
| Jan. 31, 1957..... | 0                    | 5.8                        | .00       | 42           | 10             | 39          |               | 130                             | 38                         | 46            | .3           | .3                         | 257                           | 146                           | 23            | 446                                       | 8.9 | 28    |
| Mar. 13, 1957..... | 0                    | 6.1                        | .01       | 46           | 12             | 36          |               | 104                             | 35                         | 34            | .3           | .1                         | 273                           | 170                           | 35            | 494                                       | 8.1 | 30    |
| Apr. 18, 1957..... | 0                    | 35                         | .05       | 102          | 48             | 239         |               | 465                             | 138                        | 316           | .8           | .4                         | 1,110                         | 452                           | 71            | 1,870                                     | 7.8 | 180   |
| July 11, 1957..... | 123                  | 5.5                        | .05       | 38           | 11             | 30          |               | 138                             | 35                         | 40            | --           | .0                         | 228                           | 140                           | 27            | 398                                       | 7.4 | 25    |
| Aug. 14, 1957..... | 0                    | 4.5                        | .00       | 43           | 11             | 27          |               | 142                             | 34                         | 38            | --           | 8.2                        | 236                           | 152                           | 36            | 405                                       | 7.0 | 30    |

WEST PALM BEACH CANAL AT RANGELINE ROAD NEAR LOXAHATCHEE, FLA.

LOCATION.--At downstream side of bridge on State Highway 7, 5.3 miles east of Loxahatchee, Palm Beach County.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--No discharge records are available for this station.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 30, 1956..... |                      | 9.4                        | 0.05      | 93           | 7.8            | 81          |               | 280                             | 34                         | 124           | --           | 0.8                        | 488                           | 264                           | 34            | 858                                       | 7.4 | 95    |
| Dec. 12, 1956..... |                      | 11                         | .04       | 86           | 18             | 117         |               | 303                             | 56                         | 167           | 0.2          | .3                         | 605                           | 288                           | 40            | 1,050                                     | 7.7 | 90    |
| Jan. 30, 1957..... |                      | 7.2                        | .06       | 69           | 11             | 51          |               | 214                             | 32                         | 81            | .1           | 4.2                        | 361                           | 217                           | 42            | 648                                       | 7.8 | 55    |
| Mar. 13, 1957..... |                      | 5.9                        | .01       | 74           | 5.7            | 35          |               | 214                             | 23                         | 87            | .3           | .2                         | 358                           | 208                           | 29            | 653                                       | 8.4 | --    |
| Apr. 18, 1957..... |                      | 11                         | .03       | 93           | 6.8            | 66          |               | 281                             | 28                         | 101           | .2           | .0                         | 444                           | 260                           | 30            | 786                                       | 8.0 | 48    |
| July 12, 1957..... |                      | 15                         | .04       | 76           | 17             | 76          |               | 256                             | 55                         | 108           | --           | 6.0                        | 479                           | 260                           | 50            | 817                                       | 7.9 | 150   |
| Aug. 15, 1957..... |                      | 5.9                        | .01       | 54           | 5.7            | 36          |               | 164                             | 21                         | 57            | --           | .1                         | 261                           | 158                           | 24            | 461                                       | 7.3 | 70    |

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## HILLSBORO CANAL AT RANGELINE ROAD, NEAR DEERFIELD BEACH, FLA.

LOCATION.--At bridge on U. S. Highway 441, 4.4 miles upstream from gaging station and 6.3 miles northwest of Deerfield Beach, Broward County.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 for gaging station near Deerfield Beach given in WSP 1504. No appreciable inflow or outflow between gaging station and sampling point except during periods of heavy local rain.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 1, 1956.....  | 40                   | 7.1                        | 0.07      | 94           | 7.7            | 60          | 284           | 37                              | 88                         | --            | --           | 1.5                        | 435                           | 266                           | 34            | 756                                       | 7.5 | 150   |
| Dec. 27.....       | 15                   | 12                         | .05       | 112          | 8.9            | 183         | 399           | 50                              | 236                        | 0.4           | 0.8          | --                         | 800                           | 316                           | 0             | 1,370                                     | 7.8 | 100   |
| Feb. 7, 1957.....  | 25                   | 6.8                        | .14       | 98           | 8.6            | 63          | 299           | 36                              | 94                         | .2            | --           | 2.2                        | 454                           | 280                           | 35            | 860                                       | 7.7 | 110   |
| Mar. 21.....       | 10                   | 13                         | .02       | 94           | 21             | 90          | 306           | 62                              | 140                        | .6            | --           | --                         | 574                           | 321                           | 70            | 1,010                                     | 8.3 | 140   |
| May 14.....        | 535                  | 4.5                        | .13       | 50           | 4.6            | 30          | 142           | 19                              | 50                         | .3            | --           | 1.2                        | 230                           | 144                           | 28            | 418                                       | 7.5 | 180   |
| June 5.....        | 70                   | 9.5                        | .05       | 80           | 13             | 49          | 254           | 37                              | 81                         | --            | --           | 1.1                        | 395                           | 253                           | 45            | 652                                       | 7.6 | 160   |
| July 11.....       | 130                  | 8.6                        | .05       | 86           | 14             | 122         | 282           | 66                              | 168                        | --            | --           | 1.1                        | 604                           | 272                           | 41            | 1,030                                     | 7.9 | 150   |
| Aug. 27.....       | 296                  | 5.4                        | .02       | 82           | 6.7            | 41          | 240           | 27                              | 68                         | --            | --           | 1.6                        | 350                           | 232                           | 36            | 618                                       | 7.5 | 100   |

## NORTH NEW RIVER CANAL AT HOLLOWAY LATERAL NEAR FORT LAUDERDALE, FLA.

LOCATION.--About 50 feet above confluence with Holloway Lateral, 4 miles upstream from gaging station near Fort Lauderdale and approximately 10 miles upstream from Fort Lauderdale, Broward County.

RECORDS AVAILABLE.--Chemical analyses: July 1950 to June 1952, October 1953 to August 1957.

EXTREMES 1950-52.--Dissolved solids: Maximum, 864 ppm Mar. 3-7, 1952; minimum, 269 ppm Mar. 6-10, 1951.

Hardness: Maximum, 438 ppm Feb. 6-10, 1952; minimum, 145 ppm Mar. 6-10, 1951.

Specific conductance: Maximum daily, 1,210 micromhos Mar. 6, 1952; minimum daily, 395 micromhos Apr. 22, 1952.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 5, 1956.....  | 5.8                  | 5.1                        | 0.03      | 70           | 7.2            | 30          | 234           | 18                              | 40                         | --            | --           | 2.3                        | 288                           | 204                           | 12            | 502                                       | 7.5 | 140   |
| Dec. 17.....       | 5.1                  | 20                         | .04       | 73           | 5.4            | 33          | 238           | 10                              | 49                         | 0.3           | --           | .5                         | 293                           | 204                           | 9             | 531                                       | 7.7 | 135   |
| Feb. 11, 1957..... | 6.3                  | 6.3                        | .06       | 124          | 4.3            | 103         | 432           | 146                             | 142                        | .6            | --           | 3.3                        | 795                           | 486                           | 132           | 1,280                                     | 7.7 | 220   |
| Mar. 25.....       | 5.2                  | 5.2                        | .01       | 86           | 9.6            | 41          | 284           | 16                              | 65                         | .5            | --           | 1.0                        | 365                           | 254                           | 22            | 665                                       | 8.3 | 70    |
| May 6.....         | 5.2                  | 5.2                        | .05       | 77           | 5.4            | 27          | 225           | 29                              | 40                         | .3            | --           | 2.1                        | 297                           | 214                           | 30            | 521                                       | 7.8 | 80    |
| June 10.....       | 5.9                  | 4.8                        | .00       | 74           | 8.6            | 34          | 238           | 18                              | 56                         | --            | --           | 2.2                        | 316                           | 220                           | 25            | 527                                       | 7.7 | 85    |
| July 22.....       | 4.1                  | 4.1                        | .03       | 78           | 4.3            | 36          | 210           | 14                              | 40                         | --            | --           | .9                         | 277                           | 186                           | 17            | 474                                       | 7.7 | 85    |
| Aug. 27.....       | 4.8                  | 4.8                        | .03       | 65           | 3.8            | 30          | 206           | 16                              | 46                         | --            | --           | 1.8                        | 270                           | 186                           | 17            | 471                                       | 7.7 | 100   |

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## SOUTH NEW RIVER CANAL AT DAVIE, FLA.

LOCATION.--At lock, 1.25 miles west of Davie, Broward County.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 5, 1956.....  |                      | 7.4                        | 0.02      | 93           | 7.8            |             | 25            | 298                             | 24                         | 34            | --           | 0.4                        | 284                           | 264                           | 72            | 573                                       | 7.6 | 90    |
| Dec. 17.....       |                      | 7.3                        | .03       | 87           | 6.1            |             | 30            | 286                             | 15                         | 40            | 0.2          | .6                         | 327                           | 242                           | 8             | 575                                       | 7.8 | 100   |
| Feb. 11, 1957....  |                      | 12                         | .06       | 103          | 21             |             | 49            | 340                             | 68                         | 70            | .3           | 2.6                        | 493                           | 344                           | 65            | 838                                       | 7.9 | --    |
| Mar. 25.....       |                      | 6.9                        | .03       | 102          | 13             |             | 35            | 320                             | 38                         | 56            | .5           | 1.7                        | 411                           | 308                           | 46            | 723                                       | 8.3 | 90    |
| May 6.....         |                      | 7.6                        | .02       | 94           | 7.2            |             | 19            | 282                             | 31                         | 28            | .4           | 2.0                        | 328                           | 264                           | 33            | 564                                       | 7.6 | 65    |
| June 10.....       |                      | 7.5                        | .07       | 94           | 7.7            |             | 25            | 300                             | 24                         | 34            | --           | 1.6                        | 342                           | 266                           | 20            | 574                                       | 8.0 | 75    |
| July 15.....       |                      | 7.4                        | .02       | 94           | 4.3            |             | 23            | 279                             | 24                         | 34            | --           | 1.5                        | 324                           | 252                           | 24            | 550                                       | 7.6 | 80    |
| Aug. 27.....       |                      | 7.1                        | .01       | 88           | 6.0            |             | 17            | 264                             | 22                         | 28            | --           | 1.8                        | 300                           | 244                           | 28            | 504                                       | 7.7 | 100   |

## MIAMI CANAL AT LAKE HARBOR, FLA.

LOCATION.--At bridge on U. S. Highway 27, in Lake Harbor, Palm Beach County, a quarter of a mile south of hurricane gate structure 3 at Lake Okeechobee.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 8, 1956.....  |                      | 7.3                        | 0.02      | 49           | 15             |             | 49            | 176                             | 57                         | 62            | --           | 0.4                        | 327                           | 184                           | 40            | 577                                       | 6.8 | 45    |
| Dec. 20.....       |                      | 6.5                        | .00       | 51           | 15             |             | 40            | 178                             | 48                         | 64            | 0.2          | .1                         | 305                           | 188                           | 42            | 539                                       | 7.9 | --    |
| Feb. 20, 1957....  |                      | 4.6                        | .01       | 58           | 18             |             | 48            | 180                             | 78                         | 66            | .4           | 3.2                        | 363                           | 218                           | 71            | 639                                       | 8.3 | 50    |
| Apr. 17.....       |                      | 8.0                        | .02       | 50           | 14             |             | 41            | 173                             | 48                         | 56            | .2           | .2                         | 302                           | 182                           | 40            | 532                                       | 7.7 | 27    |
| July 10.....       |                      | 9.5                        | .03       | 78           | 16             |             | 45            | 246                             | 65                         | 63            | --           | .2                         | 368                           | 240                           | 59            | 672                                       | 7.7 | 70    |
| Aug. 14.....       |                      | 11                         | .03       | 57           | 25             |             | 63            | 230                             | 92                         | 86            | .7           | .1                         | 508                           | 320                           | 82            | 839                                       | 8.1 | 110   |

## MIAMI CANAL AT WATER PLANT, HIALEAH, FLA.

LOCATION.--At 54th Street Bridge, half a mile downstream from gaging station, at water plant in Hialeah, Dade County.

RECORDS AVAILABLE.--Chemical analyses: March 1941 to February 1942, October 1953 to August 1957.

EXTREMES, 1941-42.--Dissolved solids: Maximum, 328 ppm Feb. 20-28, 1942; minimum, 282 ppm Sept. 21-30, 1941.

Hardness: Maximum, 254 ppm Feb. 20-28, 1942; minimum, 207 ppm Sept. 21-30, 1941.

Specific conductance: Maximum daily, 506 microhos July 1, 1941; minimum daily, 405 microhos Oct. 1, 1941.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) |  | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|--|-------------------------------|---------------|-----------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |  | Calcium-magnesium             | Non-carbonate |                                         |     |       |
| Oct. 31, 1956..... | 344                  | 6.0                        | 0.02      | 87           | 7.5            | 14          |               | 293                             | 11                         | 19            | --           | 0.8                        | 289                           |  | 248                           | 8             | 496                                     | 7.4 | 90    |
| Dec. 20.....       | a205                 | 6.5                        | .01       | 70           | 6.2            | 12          |               | 236                             | .5                         | 22            | 0.1          | .7                         | 234                           |  | 200                           | 6             | 427                                     | 8.1 | 230   |
| Feb. 11, 1957..... | a85                  | 5.8                        | .03       | 87           | 11             | 23          |               | 298                             | 14                         | 38            | .2           | .3                         | 326                           |  | 262                           | 18            | 579                                     | 7.8 | --    |
| Mar. 14.....       | a125                 | 5.3                        | .02       | 78           | 7.7            | 17          |               | 260                             | 13                         | 25            | .3           | 1.2                        | 276                           |  | 226                           | 13            | 479                                     | 8.3 | 55    |
| Aug. 10.....       | 706                  | 5.8                        | .02       | 82           | 7.2            | 21          |               | 272                             | 9.0                        | 32            | .3           | 1.1                        | 292                           |  | 284                           | 61            | 510                                     | 8.0 | 70    |

a Stage discharge relation indefinite because of operation of N.W. 36th Street dam; discharge computed on basis of 10 discharge measurements and record of dam operation.

## TAMIAMI CANAL AT BRIDGE 45, 27 MILES WEST OF MIAMI, FLA.

LOCATION.--At bridge on U. S. Highway 41, 27 miles west of Miami, Dade County.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to August 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-----------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                         |     |       |
| Oct. 31, 1956..... |                      | 7.3                        | 0.60      | 49           | 2.3            | 10          |               | 156                             | 5.0                        | 15            | --           | 0.4                        | 167                           | 132                           | 4             | 283                                     | 7.5 | 200   |
| Dec. 18.....       |                      | 1.7                        | .45       | 55           | 2.9            | 10          |               | 174                             | 5.5                        | 22            | 0.2          | 2.2                        | 315                           | 126                           | 10            | 577                                     | 7.3 | 50    |
| Feb. 13, 1957..... |                      | 4.9                        | .01       | 106          | 5.2            | 15          |               | 336                             | 5.0                        | 26            | .2           | .0                         | 331                           | 286                           | 10            | 577                                     | 8.3 | 50    |
| Mar. 27.....       |                      | 16                         | .02       | 98           | 4.3            | 19          |               | 305                             | 14                         | 27            | .2           | .0                         | 329                           | 262                           | 12            | 533                                     | 7.9 | 28    |
| May 16.....        |                      | 2.7                        | .04       | 47           | 3.0            | 8.3         |               | 150                             | 5.0                        | 13            | .2           | 1.0                        | 154                           | 130                           | 7             | 281                                     | 7.6 | 55    |
| June 21.....       |                      | 2.4                        | .07       | 62           | 3.3            | 9.9         |               | 194                             | 7.5                        | 16            | --           | .2                         | 197                           | 168                           | 9             | 337                                     | 7.1 | 55    |
| July 18.....       |                      | 6.2                        | .02       | 54           | 2.3            | 8.5         |               | 166                             | 6.5                        | 13            | --           | 1.0                        | 174                           | 144                           | 8             | 302                                     | 7.1 | 55    |
| Aug. 29.....       |                      | 7.2                        | .02       | 48           | 2.7            | 8.0         |               | 154                             | 5.0                        | 12            | .2           | .1                         | 159                           | 131                           | 5             | 274                                     | 7.5 | 50    |



## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## CALOOSAHATCHEE CANAL AT MOORE HAVEN, FLA.

LOCATION.--At gaging station at Moore Haven, Glades County, 0.5 mile downstream from hurricane gate and lock 1, at Lake Okeechobee Outlet and 15 miles upstream from lock 2.

RECORDS AVAILABLE.--Chemical analyses: March 1941 to February 1942, November 1954 to September 1957.

EXTREMES, 1941-42.--Dissolved solids: Maximum, 236 ppm Dec. 12-20, 1941; minimum, 38 ppm Sept. 1-10, 1941.

Hardness: Maximum, 167 ppm Dec. 12-20, 1941; minimum, 28 ppm Sept. 1-10, 1941.

Specific conductance: Maximum daily, 556 micromhos Apr. 1, 1941; minimum daily, 63 micromhos Sept. 11, 13, 1941.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504. On days for which no discharge is shown, flow consists of leakage and lockage, estimated to be about 10 cfs.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub><br>Calcium magnesium carbonate | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|--------------------------------------------------------------|------------------------------------------|-----|-------|
| Oct. 29, 1956..... | --                   | 9.8                        | 0.05      | 78           | 11             | 24          | 228           | 49                              | 36                         | 0.3           | 1.6          | 322                        | 240                           | 52                                                           | 549                                      | 8.0 | 100   |
| Nov. 28.....       | --                   | 7.8                        | .03       | 58           | 13             | 30          | 178           | 49                              | 46                         | --            | .5           | 292                        | 198                           | 52                                                           | 519                                      | 7.5 | 55    |
| Jan. 16, 1957..... | --                   | 1.8                        | .00       | 51           | 14             | 35          | 174           | 44                              | 50                         | .3            | 1.3          | 282                        | 184                           | 42                                                           | 519                                      | 7.8 | 35    |
| Feb. 27.....       | --                   | 4.0                        | .03       | 58           | 12             | 33          | 183           | 46                              | 46                         | .3            | 1.1          | 290                        | 194                           | 44                                                           | 511                                      | 7.6 | 45    |
| Apr. 1.....        | --                   | 7.6                        | .04       | 90           | 19             | 42          | 267           | 77                              | 66                         | .3            | 1.1          | 435                        | 302                           | 54                                                           | 741                                      | 7.6 | 70    |
| May 13.....        | --                   | 3.7                        | .00       | 55           | 11             | 34          | 182           | 40                              | 46                         | --            | .2           | 280                        | 182                           | 33                                                           | 494                                      | 7.7 | 45    |
| July 7.....        | 2,850                | 5.5                        | .00       | 32           | 11             | 32          | 132           | 36                              | 46                         | --            | .1           | 232                        | 140                           | 32                                                           | 422                                      | 7.6 | 40    |
| Aug. 7.....        | 2,830                | 5.2                        | .00       | 34           | 9.5            | 27          | 124           | 32                              | 39                         | --            | .2           | 204                        | 124                           | 29                                                           | 370                                      | 7.3 | 50    |
| Sept. 20.....      | 2,030                | 7.3                        | .03       | 40           | 12             | 25          | 138           | 30                              | 42                         | --            | .3           | 225                        | 150                           | 36                                                           | 416                                      | 7.3 | 110   |

## CALOOSAHATCHEE CANAL AT ORTONA LOCK NEAR LABELLE, FLA.

LOCATION.--At gaging station, 350 feet upstream from upstream end of lock chamber, 1.75 miles south of Ortona Station and 9.0 miles from Labelle,

Reynolds County, Florida.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub><br>Calcium magnesium carbonate | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|--------------------------------------------------------------|------------------------------------------|-----|-------|
| Oct. 29, 1956..... |                      | 6.7                        | 0.08      | 36           | 4.4            | 12          | 112           | 13                              | 20                         | 0.2           | 0.7          | 148                        | 108                           | 16                                                           | 274                                      | 7.5 | 120   |
| Nov. 28.....       |                      | 9.8                        | .08       | 48           | 6.8            | 18          | 153           | 19                              | 29                         | --            | .0           | 206                        | 148                           | 22                                                           | 368                                      | 7.4 | 140   |
| Jan. 16, 1957..... |                      | 5.5                        | .02       | 69           | 13             | 29          | 230           | 33                              | 46                         | .3            | .6           | 309                        | 226                           | 37                                                           | 558                                      | 7.8 | 70    |
| Feb. 27.....       |                      | 4.0                        | .03       | 69           | 13             | 33          | 206           | 95                              | 35                         | .3            | .0           | 332                        | 234                           | 64                                                           | 602                                      | 7.6 | 90    |
| Apr. 1.....        |                      | 4.3                        | .05       | 58           | 7.2            | 17          | 173           | 24                              | 30                         | 2             | .0           | 226                        | 174                           | 32                                                           | 411                                      | 7.4 | 90    |
| May 13.....        |                      | 4.2                        | .01       | 52           | 7.4            | 18          | 160           | 16                              | 30                         | --            | .4           | 212                        | 160                           | 20                                                           | 385                                      | 7.5 | 80    |
| July 1.....        |                      | 4.7                        | .02       | 38           | 9.5            | 25          | 126           | 28                              | 40                         | --            | .1           | 207                        | 134                           | 30                                                           | 387                                      | 7.3 | 60    |
| Sept. 20.....      |                      | 6.5                        | .05       | 34           | 7.1            | 21          | 112           | 26                              | 28                         | .2            | .3           | 178                        | 114                           | 22                                                           | 307                                      | 7.7 | 90    |

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## ORANGE RIVER NEAR FORT MYERS, FLA.

LOCATION.--At old staff gage site, 1½ miles southeast of Buckingham, and 8 miles northeast of Fort Myers, Lee County.  
DRAINAGE AREA.--83.4 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1957.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, December 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Dec. 4, 1956.....   |                      | 7.2                        | 0.01      | 68           | 13             |             | 35            | 230                             | 20                         | 62            | 0.3          | 0.4                        | 319                           | 223                           | 34            | 579                                       | 8.0 | 10    |
| Jan. 1, 1957.....   |                      | 11                         | .07       | 76           | 14             |             | 35            | 246                             | 17                         | 70            | --           | .5                         | 345                           | 243                           | 42            | 629                                       | 7.9 | 18    |
| Feb. 5, 1957.....   |                      | 10                         | .01       | 71           | 15             |             | 39            | 246                             | 20                         | 70            | .3           | .5                         | 347                           | 238                           | 37            | 619                                       | 8.1 | 7     |
| Mar. 5, 1957.....   |                      | 7.3                        | .00       | 80           | 9.4            |             | 33            | 246                             | 17                         | 64            | .3           | .5                         | 332                           | 238                           | 36            | 610                                       | 8.3 | 25    |
| Apr. 2, 1957.....   |                      | 15                         | .01       | 86           | 13             |             | 35            | 281                             | 14                         | 70            | .2           | .0                         | 371                           | 268                           | 38            | 662                                       | 8.1 | 13    |
| May 7, 1957.....    |                      | 8.8                        | .00       | 86           | 11             |             | 31            | 274                             | 12                         | 64            | --           | .2                         | 348                           | 260                           | 35            | 623                                       | 7.8 | 35    |
| June 3, 1957.....   |                      | 7.9                        | .00       | 85           | 12             |             | 33            | 268                             | 18                         | 67            | --           | .2                         | 355                           | 262                           | 42            | 636                                       | 7.8 | 30    |
| July 2, 1957.....   |                      | 8.1                        | .03       | 78           | 10             |             | 29            | 248                             | 16                         | 56            | --           | .2                         | 319                           | 236                           | 32            | 566                                       | 7.6 | 45    |
| Sept. 2, 1957.....  |                      | 6.5                        | .02       | 42           | 16             |             | 21            | 179                             | 16                         | 38            | .3           | .0                         | 228                           | 171                           | 24            | 477                                       | 7.4 | 35    |
| Sept. 25, 1957..... |                      | 7.7                        | .02       | 54           | 6.7            |             | 19            | 166                             | 10                         | 40            | .2           | .3                         | 220                           | 162                           | 26            | 402                                       | 7.7 | 42    |

LAKE OKEECHOBEE AND THE EVERGLADES—Continued  
MISCELLANEOUS ANALYSES IN LAKE OKEECHOBEE AND THE EVERGLADES IN FLORIDA

Chemical analyses, in parts per million, water year October 1956 to September 1957

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                        | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| ALLIGATOR LAKE NEAR ASHTON                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 9, 1956.....                         |                      | 5.6                        | 0.03      | 2.4          | 1.0            | 6.2         |               | 4                               | 5.8                        | 10            |              | 0.1                        | 33                            | 10                            | 6             | 55.6                                      | 5.8 | 30    |
| HART LAKE NEAR NARCOOSSEE                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 8, 1956.....                         |                      | 2.2                        | 0.10      | 3.2          | 0.7            | 6.2         |               | 6                               | 5.8                        | 9.5           |              | 0.2                        | 31                            | 11                            | 6             | 55.0                                      | 5.7 | 170   |
| EAST TOHOPEKALIGA LAKE AT ST. CLOUD       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 9, 1956.....                         |                      | 4.2                        | 0.07      | 2.4          | 2.4            | 5.3         |               | 6                               | 6.5                        | 11            |              | 0.1                        | 35                            | 16                            | 11            | 62.9                                      | 6.1 | 80    |
| July 7, 1957.....                         |                      | 6.8                        | .08       | 7.2          | 1.0            | 7.1         |               | 10                              | 12                         | 12            |              | .2                         | 51                            | 22                            | 14            | 93.0                                      | 7.0 | 55    |
| TOHOPEKALIGA LAKE AT KISSIMMEE            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 5, 1956.....                         |                      | 7.3                        | 0.09      | 7.2          | 2.9            | 1.8         |               | 24                              | 6.0                        | 6.0           |              | 0.1                        | 43                            | 30                            | 10            | 77.0                                      | 6.8 | 160   |
| CYPRESS LAKE NEAR ST. CLOUD               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Oct. 26, 1956.....                        |                      | 2.8                        | 0.16      | 3.0          | 0.9            | 7.6         |               | 1                               | 8.8                        | 12            |              | 0.1                        | 36                            | 11                            | 10            | 70.1                                      | 4.6 | 180   |
| Nov. 30.....                              |                      | 6.0                        | .00       | 5.6          | 1.0            | 7.1         |               | 8                               | 9.5                        | 12            |              | --                         | 45                            | 18                            | 12            | 74.0                                      | 6.2 | 180   |
| Jan. 7, 1957.....                         |                      | .6                         | .03       | 4.0          | 1.7            | 9.2         |               | 10                              | 8.5                        | 14            |              | .1                         | 43                            | 17                            | 9             | 74.2                                      | 6.3 | 80    |
| Apr. 3.....                               |                      | .6                         | .03       | 4.0          | 1.9            | 9.2         |               | 11                              | 11                         | 12            |              | .2                         | 44                            | 18                            | 9             | 78.8                                      | 6.3 | 40    |
| LAKE GENTRY NEAR ST. CLOUD                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 14, 1956.....                        |                      | 0.2                        | 0.04      | 1.6          | 0.7            | 6.4         |               | 1                               | 5.0                        | 10            |              | 0.1                        | 25                            | 7                             | 6             | 52.9                                      | 4.7 | 140   |
| Jan. 7, 1957.....                         |                      | .9                         | .10       | 2.8          | 1.1            | 6.0         |               | 4                               | 3.0                        | 10            |              | .0                         | 25                            | 8                             | 4             | 49.1                                      | 5.4 | 130   |
| Apr. 3.....                               |                      | 1.4                        | .05       | 1.6          | 1.0            | 6.7         |               | 4                               | 4.2                        | 10            |              | .1                         | 27                            | 8                             | 4             | 52.0                                      | 5.4 | 90    |
| LAKE HATCHINEHA NEAR HAINES CITY          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 13, 1956.....                        |                      | 1.9                        | 0.04      | 5.6          | 2.4            | 8.0         |               | 13                              | 12                         | 12            |              | 0.2                        | 50                            | 24                            | 14            | 87.8                                      | 6.4 | 150   |
| LAKE KISSIMMEE NEAR LAKE WALES            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 13, 1956.....                        |                      | 2.3                        | 0.03      | 6.8          | 3.6            | 6.0         |               | 16                              | 15                         | 11            |              | 0.2                        | 54                            | 32                            | 19            | 103                                       | 6.5 | 150   |
| WEOTHAKAPKA-ROSALIE CANAL NEAR LAKE WALES |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Oct. 24, 1956.....                        |                      | 5.7                        | 0.05      | 4.4          | 1.7            | 11          |               | 14                              | 6.5                        | 16            |              | 0.1                        | 53                            | 18                            | 6             | 70.0                                      | 6.9 | 45    |
| LAKE ARBUCKLE NEAR AVON PARK              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 9, 1956.....                         |                      | 2.3                        | 0.03      | 7.2          | 2.6            | 11          |               | 10                              | 20                         | 16            |              | 0.1                        | 64                            | 28                            | 20            | 103                                       | 6.3 | 55    |

## HILLSBORO CANAL AT BELLE GLADE

|                   |       |     |      |     |    |     |     |    |     |     |     |      |     |    |       |     |     |
|-------------------|-------|-----|------|-----|----|-----|-----|----|-----|-----|-----|------|-----|----|-------|-----|-----|
| Dec. 20, 1956.... | a-23  | 7.5 | 0.02 | 50  | 16 | 37  | 184 | 48 | 50  | 0.2 | 0.4 | 6336 | 191 | 40 | 554   | 7.8 | 55  |
| Mar. 1, 1957....  | a-20  | 24  | .03  | 102 | 38 | 127 | 431 | 78 | 132 | 1.1 | 4.4 | 186  | 441 | 83 | 1,324 | 6.8 | 200 |
| Apr. 17.....      | a-128 | 20  | .04  | 90  | 34 | 156 | 428 | 76 | 192 | 1.1 | .4  | 781  | 364 | 14 | 1,300 | 7.8 | 120 |

## HILLSBORO CANAL BELOW HGS 4, NEAR SOUTH BAY

|                    |       |    |      |     |    |     |     |    |     |     |     |     |    |       |     |     |
|--------------------|-------|----|------|-----|----|-----|-----|----|-----|-----|-----|-----|----|-------|-----|-----|
| July 10, 1957..... | a-332 | 21 | 0.04 | 106 | 27 | 169 | 427 | 92 | 210 | 0.2 | 836 | 376 | 26 | 1,370 | 7.6 | 200 |
| Aug. 14.....       | a-328 | 23 | .03  | 87  | 33 | 124 | 436 | 48 | 150 | 3.7 | 684 | 352 | 0  | 1,110 | 7.8 | 210 |

## NORTH NEW RIVER CANAL AT SOUTH BAY

|                   |      |     |      |     |    |     |     |     |     |     |     |        |     |     |       |     |     |
|-------------------|------|-----|------|-----|----|-----|-----|-----|-----|-----|-----|--------|-----|-----|-------|-----|-----|
| Nov. 8, 1956....  | a-22 | 22  | 0.03 | 102 | 38 | 128 | 400 | 123 | 164 | --  | 2.5 | 777    | 412 | 84  | 1,260 | 8.0 | 200 |
| Dec. 20.....      | a-67 | 6.0 | .01  | 47  | 14 | 34  | 162 | 45  | 48  | 0.1 | 1.0 | 8311   | 175 | 42  | 494   | 7.7 | 55  |
| Jan. 31, 1957.... | c150 | 32  | .08  | 121 | 49 | 140 | 460 | 144 | 192 | .8  | 9.4 | 61,060 | 504 | 126 | 1,460 | 3.4 | 210 |

## NORTH NEW RIVER CANAL BELOW HGS 4, NEAR SOUTH BAY

|                   |     |     |      |     |    |     |      |    |     |     |     |       |     |    |       |     |     |
|-------------------|-----|-----|------|-----|----|-----|------|----|-----|-----|-----|-------|-----|----|-------|-----|-----|
| Feb. 20, 1957.... | 593 | 5.6 | 0.00 | 56  | 26 | 53  | e200 | 84 | 76  | 0.4 | 2.4 | 402   | 246 | 82 | 715   | 8.4 | 50  |
| Mar. 14.....      | 370 | 26  | .03  | 100 | 37 | 152 | 410  | 85 | 210 | 1.1 | 10  | 823   | 402 | 66 | 1,400 | 5.3 | 190 |
| Apr. 10.....      | 338 | 25  | .06  | 108 | 37 | 153 | 436  | 82 | 222 | 1.1 | .0  | 1,060 | 352 | 28 | 1,240 | 8.1 | 210 |
| July 10.....      | 328 | 21  | .05  | 82  | 31 | 113 | 400  | 57 | 134 | --  | 2.0 | 637   | 332 | 4  | 1,020 | 7.7 | 300 |

## SOUTHWEST FORK LOXAHATCHEE RIVER (C-18) NEAR JUPITER

|                   |     |      |    |     |     |     |     |     |    |     |     |     |     |    |     |     |    |
|-------------------|-----|------|----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|-----|-----|----|
| Feb. 19, 1957.... | 1.6 | 0.02 | 16 | 1.7 | 9.7 | 9.7 | 48  | 2.0 | 18 | 0.2 | 0.5 | 74  | 47  | 7  | 145 | 7.3 | 75 |
| Mar. 14.....      | 8.6 | .05  | 19 | 1.3 | 12  | 12  | 56  | 1.0 | 19 | .0  | .1  | 87  | 53  | 7  | 162 | 7.4 | 75 |
| Apr. 4.....       | 6.6 | .03  | 29 | 1.8 | 12  | 12  | 86  | 6.0 | 20 | .1  | .1  | 118 | 80  | 10 | 211 | 7.3 | 70 |
| Apr. 24.....      | 1.8 | .03  | 26 | 1.2 | 12  | 12  | 64  | 3.5 | 21 | .1  | .3  | 126 | 92  | 17 | 232 | 7.5 | 40 |
| June 12.....      | 2.4 | .01  | 38 | 1.2 | 10  | 10  | 112 | 4.5 | 18 | --  | 2   | 129 | 100 | 8  | 237 | 7.4 | 55 |
| Aug. 15.....      | 3.0 | .01  | 26 | 2.2 | 11  | 11  | 83  | 3.5 | 18 | --  | .3  | 105 | 74  | 6  | 193 | 7.3 | 40 |
| Sept. 5.....      | 3.1 | .01  | 26 | 2.2 | 11  | 11  | 85  | 3.0 | 18 | --  | .1  | 105 | 74  | 4  | 190 | 7.3 | 40 |
| Sept. 26.....     | 3.9 | .02  | 26 | 1.7 | 9.2 | 9.2 | 78  | 3.0 | 17 | .1  | .5  | 99  | 72  | 8  | 188 | 7.2 | 27 |

## EVERGLADES STATION 1-5 - NW 1/4 sec. 4, T. 44 S., R. 40 E.

|                   |     |      |    |    |     |     |    |     |     |     |     |     |    |       |     |     |
|-------------------|-----|------|----|----|-----|-----|----|-----|-----|-----|-----|-----|----|-------|-----|-----|
| Oct. 30, 1956.... | 6.7 | 0.21 | 89 | 14 | 195 | 224 | 84 | 305 | --  | 2.2 | 806 | 380 | 96 | 1,430 | 7.2 | 360 |
| Mar. 5, 1957....  | 25  | .01  | 76 | 21 | 108 | 222 | 87 | 150 | 0.6 | 2.2 | 576 | 276 | 46 | 1,030 | 8.1 | 100 |
| Aug. 16.....      | 16  | .08  | 54 | 19 | 108 | 222 | 50 | 165 | 1.6 | 1.4 | 508 | 212 | 30 | 938   | 7.6 | 220 |
| Sept. 18.....     | 28  | .10  | 86 | 31 | 122 | 356 | 79 | 165 | --  | 2.5 | 689 | 342 | 50 | 1,180 | 7.7 | 400 |

a Negative sign indicates flow toward Lake Okeechobee.

b Residue on evaporation at 180°C.

c Discharge estimated from records of nearby stations or pumping records.

d Includes equivalent of 7 parts per million of carbonate (CO<sub>3</sub>).e Includes equivalent of 2 parts per million of carbonate (CO<sub>3</sub>).

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
MISCELLANEOUS ANALYSES IN LAKE OKEECHOBEE AND THE EVERGLADES IN FLORIDA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                                          | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Mag-<br>nesium (Mg) | Sodium (Na) | Potas-<br>sium (K) | Bicar-<br>bonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calcu-<br>lated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|---------------------|-------------|--------------------|--------------------------------------|----------------------------|---------------|--------------|----------------------------|------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                             |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    | Calcium                       | Non-carbonate |                                           |     |       |
|                                                             |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| EVERGLADES STATION 1-7 - sec. 26, T. 45 S., R. 40 E.        |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Feb. 1, 1957.....                                           |                      | 1.7                        | 0.03      | 12           | 4.1                 | 18          | 24                 | 6.5                                  | 36                         | 0.2           | 10           | 1.9                        | 101                                | 47                            | 28            | 199                                       | 6.3 | 55    |
| Apr. 10.....                                                |                      | 13                         | .03       | 12           | 2.9                 | 17          | 27                 | 4.0                                  | 37                         | 0             |              | 1.9                        | 101                                | 42                            | 20            | 185                                       | 6.6 | 55    |
| June 12.....                                                |                      | 2.6                        | .05       | 6.4          | 5.8                 | 1.4         | 18                 | 2.5                                  | 17                         | --            | 1.6          | 46                         | 46                                 | 40                            | 25            | 103                                       | 6.5 | 55    |
| Sept. 17.....                                               |                      | 2.3                        | .01       | 4.0          | .9                  | 6.0         |                    | .0                                   | 10                         | --            | 1.1          | 31                         | 31                                 | 14                            | 2             | 58.9                                      | 6.5 | 38    |
| EVERGLADES STATION 1-8 - SE 1/4 sec. 35, T. 45 S., R. 41 E. |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Feb. 27, 1957.....                                          |                      | 5.3                        | 0.01      | 84           | 6.0                 | 54          | 250                | 23                                   | 85                         | 0.2           | 1.0          | 362                        | 362                                | 234                           | 29            | 695                                       | 8.2 | 90    |
| Apr. 10.....                                                |                      | 8.6                        | .04       | 102          | 15                  | 138         | 312                | 63                                   | 208                        | 3             | 3            | 1.3                        | 689                                | 316                           | 60            | 1,220                                     | 7.9 | 95    |
| June 12.....                                                |                      | 10                         | .10       | 62           | 17                  | 104         | 204                | 73                                   | 142                        | --            | --           | 9.8                        | 518                                | 224                           | 58            | 900                                       | 7.3 | 250   |
| Aug. 16.....                                                |                      | 15                         | .05       | 61           | 15                  | 110         | 238                | 42                                   | 152                        | --            | --           | .3                         | 512                                | 214                           | 18            | 929                                       | 7.8 | 240   |
| Sept. 18.....                                               |                      | 17                         | .08       | 64           | 18                  | 87          | 248                | 43                                   | 123                        | --            | --           | 1.9                        | 476                                | 234                           | 30            | 870                                       | 7.8 | 300   |
| EVERGLADES STATION 1-9 - sec. 19, T. 46 S., R. 41 E.        |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Feb. 1, 1957.....                                           |                      | 3.6                        | 0.02      | 10           | 1.5                 | 14          | 10                 | 3.5                                  | 30                         | 0.1           | 9.5          | 76                         | 76                                 | 31                            | 23            | 153                                       | 5.9 | 55    |
| Apr. 10.....                                                |                      | 2.0                        | .02       | 12           | 1.9                 | 20          | 16                 | 10                                   | 40                         | --            | 2            | 3.9                        | 95                                 | 38                            | 25            | 190                                       | 6.7 | 70    |
| June 12.....                                                |                      | 1.9                        | .02       | 6.4          | 3.4                 | 7.6         | 12                 | 3.5                                  | 22                         | --            | 2.5          | 53                         | 53                                 | 30                            | 20            | 111                                       | 6.2 | 80    |
| Aug. 16.....                                                |                      | 1.3                        | .01       | 7.2          | 7.7                 | 6.9         | 16                 | .0                                   | 16                         | --            | .4           | 40                         | 40                                 | 21                            | 8             | 89.3                                      | 6.6 | 75    |
| Sept. 17.....                                               |                      | 1.2                        | .02       | 4.6          | .6                  | 7.8         | 15                 | .0                                   | 12                         | --            | 1.8          | 35                         | 35                                 | 14                            | 2             | 60.5                                      | 6.9 | 80    |
| EVERGLADES STATION 1-10 - sec. 3, T. 46 S., R. 39 E.        |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Mar. 21, 1957.....                                          |                      | 12                         | 0.11      | 55           | 6.6                 | 17          | 132                | 55                                   | 25                         | 0.4           | 0.2          | 236                        | 236                                | 164                           | 56            | 342                                       | 7.4 | 320   |
| July 5.....                                                 |                      | 3.7                        | .04       | 26           | 3.2                 | 30          | 56                 | 31                                   | 44                         | --            | 2.4          | 168                        | 168                                | 78                            | 32            | 299                                       | 6.6 | 400   |
| Sept. 19.....                                               |                      | 19                         | .01       | 78           | 26                  | 92          | 354                | 26                                   | 131                        | --            | .6           | 547                        | 547                                | 302                           | 12            | 974                                       | 8.0 | 210   |
| EVERGLADES STATION 1-11 - sec. 24, T. 46 S., R. 39 E.       |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Nov. 14, 1956.....                                          |                      | 3.9                        | 0.10      | 28           | 4.9                 | 13          | 76                 | 6.0                                  | 34                         |               | 1.3          | 128                        | 128                                | 90                            | 28            | 246                                       | 6.7 | 260   |
| Mar. 21, 1957.....                                          |                      | 8.6                        | .05       | 52           | 8.9                 | 74          | 104                | 41                                   | 140                        | 0.3           | .0           | 376                        | 376                                | 166                           | 81            | 678                                       | 7.4 | 150   |
| July 5.....                                                 |                      | 1.9                        | .04       | 18           | 6.2                 | 24          | 50                 | 7.5                                  | 54                         | --            | .2           | 138                        | 138                                | 52                            | 26            | 80.9                                      | 6.8 | 100   |
| Sept. 19.....                                               |                      | 4.0                        | .02       | 6.2          | 1.8                 | 6.9         | 25                 | .0                                   | 12                         | --            | .5           | 43                         | 43                                 | 23                            | 2             | 80.9                                      | 6.6 | 100   |
| EVERGLADES STATION 2-14 - sec. 9, T. 46 S., R. 39 E.        |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Mar. 21, 1957.....                                          |                      | 3.8                        | 0.05      | 63           | 18                  | 105         | 170                | 68                                   | 175                        | 0.5           | 0.5          | 518                        | 518                                | 231                           | 92            | 931                                       | 7.7 | 280   |
| July 5.....                                                 |                      | 7.1                        | .02       | 82           | 23                  | 43          | 87                 | 47                                   | 191                        | --            | 2.2          | 438                        | 438                                | 228                           | 228           | 1,090                                     | 7.5 | 200   |
| EVERGLADES STATION 2-15 - sec. 25, T. 46 S., R. 39 E.       |                      |                            |           |              |                     |             |                    |                                      |                            |               |              |                            |                                    |                               |               |                                           |     |       |
| Mar. 21, 1957.....                                          |                      | 14                         | 0.04      | 66           | 22                  | 124         | 242                | 65                                   | 182                        | 0.6           | 2.0          | 595                        | 595                                | 255                           | 56            | 1,040                                     | 7.7 | 210   |
| July 5.....                                                 |                      | 21                         | .04       | 74           | 26                  | 156         | 350                | 32                                   | 220                        | --            | .3           | 701                        | 701                                | 292                           | 7             | 1,220                                     | 7.7 | 210   |
| Aug. 18.....                                                |                      | 20                         | .05       | 80           | 20                  | 95          | 326                | 46                                   | 122                        | --            | .1           | 544                        | 544                                | 282                           | 14            | 920                                       | 7.8 | 300   |

EVERGLADES STATION 2-16 - sec. 15, T. 47 S., R. 40 E.

|                    |     |      |    |     |     |     |    |     |     |     |     |     |    |       |     |     |
|--------------------|-----|------|----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-------|-----|-----|
| Apr. 17, 1957..... | 5.2 | 0.03 | 75 | 21  | 126 | 303 | 42 | 181 | 0.6 | 0.2 | 600 | 274 | 25 | 1,080 | 7.7 | 130 |
| July 9.....        | 11  | .03  | 73 | 14  | 99  | 240 | 39 | 154 |     | .5  | 509 | 240 | 43 | 911   | 7.4 | 150 |
| Sept. 18.....      | 7.2 | .07  | 32 | 3.9 | 32  | 102 | 15 | 47  |     | .3  | 187 | 96  | 12 | 341   | 7.4 | 200 |

EVERGLADES STATION 2-17 - sec. 11, T. 48 S., R. 39 E.

|                    |     |      |     |     |    |     |     |     |     |     |     |     |    |     |     |     |
|--------------------|-----|------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|
| Jan. 25, 1957..... | 1.0 | 0.02 | 100 | 8.9 | 53 | 296 | 20  | 88  | 0.5 | 15  | 432 | 280 | 44 | 779 | 8.2 | 90  |
| Apr. 24.....       | 2.8 | .09  | 20  | 6.1 | 22 | 77  | 12  | 32  | .4  |     | 134 | 75  | 12 | 240 | 6.9 | 180 |
| June 13.....       | 3.0 | .04  | 42  | 12  | 93 | 160 | 5.0 | 156 | --  | 2.0 | 392 | 154 | 24 | 755 | 7.5 | 150 |
| Sept. 3.....       | 12  | .01  | 38  | 11  | 63 | 174 | 19  | 81  | --  | .1  | 310 | 140 | 0  | 552 | 7.5 | 110 |

EVERGLADES STATION 2-19 - SE 1/4 sec. 24, T. 48 S., R. 40 E.

|                    |     |      |    |     |    |     |    |     |     |     |     |     |    |     |     |     |
|--------------------|-----|------|----|-----|----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|-----|
| Apr. 17, 1957..... | 18  | 0.01 | 59 | 9.0 | 67 | 184 | 20 | 111 | 0.6 | 0.1 | 376 | 184 | 33 | 683 | 7.5 | 130 |
| July 9.....        | 8   | .06  | 58 | 8.6 | 70 | 201 | 14 | 106 |     | 3.5 | 369 | 180 | 16 | 656 | 7.4 | 170 |
| Sept. 19.....      | 7.0 | .05  | 38 | 10  | 46 | 152 | 21 | 64  |     | .0  | 261 | 136 | 12 | 474 | 7.6 | 180 |

EVERGLADES STATION 2-21 - SE 1/4 sec. 32, T. 49 S., R. 40 E.

|                   |     |      |    |     |    |     |     |    |     |     |     |     |    |     |     |     |
|-------------------|-----|------|----|-----|----|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|
| Feb. 6, 1957..... | 5.0 | 0.03 | 90 | 5.7 | 24 | 226 | 43  | 45 | 0.4 | 7.6 | 332 | 248 | 63 | 596 | 7.7 | 110 |
| Apr. 24.....      | 6.2 | .02  | 31 | 3.5 | 16 | 50  | 44  | 16 | .3  | 20  | 162 | 92  | 51 | 254 | 7.2 | 160 |
| June 13.....      | 2.2 | .07  | 27 | 5.0 | 30 | 91  | 5.5 | 52 | --  | .3  | 167 | 88  | 14 | 315 | 7.0 | 160 |
| Aug. 20.....      | 2.0 | .01  | 29 | 5.7 | 40 | 98  | 3.0 | 70 | --  | .2  | 198 | 96  | 16 | 357 | 7.6 | 80  |

EVERGLADES STATION 2-22 - NE 1/4 sec. 27, T. 49 S., R. 39 E.

|                   |    |      |     |     |     |     |     |     |     |     |     |     |     |       |     |     |
|-------------------|----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|
| Feb. 6, 1957..... | 10 | 0.02 | 103 | 14  | 56  | 322 | 47  | 83  | 0.6 | 6.4 | 479 | 314 | 50  | 852   | 8.0 | 90  |
| Apr. 24.....      | 19 | .01  | 94  | 31  | 116 | 372 | 87  | 153 | .9  | 1.0 | 685 | 362 | 57  | 1,160 | 7.9 | 140 |
| June 13.....      | 25 | .05  | 137 | 28  | 109 | 433 | 135 | 140 | --  | 1.6 | 789 | 457 | 102 | 1,210 | 7.7 | 180 |
| Aug. 20.....      | 14 | .01  | 37  | 6.2 | 19  | 130 | 9.0 | 30  | --  | .1  | 179 | 118 | 12  | 305   | 7.5 | 95  |

## LITTLE MANATEE RIVER BASIN

## LITTLE MANATEE RIVER NEAR WIMAUMA, FLA.

LOCATION.--At bridge on U. S. Highway 301, 25 feet upstream from gaging station, 1½ miles upstream from Cypress Creek and 4 miles southwest of Wimauma, Hillsborough County.

DRAINAGE AREA.--145 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 88 ppm Mar. 1-10; minimum, 36 ppm Dec. 1-10.

Hardness: Maximum, 24 ppm Jan. 11-20, 21-31, Feb. 1-10, 11-20; minimum, 9 ppm Aug. 1-10.

Specific conductance: Maximum daily, 90.4 micromhos Jan. 24; minimum daily, 32.5 micromhos June 23.

Water temperatures: Maximum, 87°F June 18, 19, July 11; minimum 51°F Nov. 28.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956    | 347                  | 5.4                        | 0.20      | 3.6          | 1.9            | 5.1         | 0.3           | 6                               | 2.2                        | 11            | 0.4          | 0.3                        | 73                                                 | 17                            | 12            | 55.2                                      | 6.0 | 250   |
| Oct. 11-20         | 95.8                 | 6.7                        | .22       | 3.4          | 2.1            | 5.1         | .2            | 9                               | 2.0                        | 16            | .4           | .2                         | 66                                                 | 17                            | 10            | 59.9                                      | 6.5 | 250   |
| Oct. 21-31         | 69.6                 | 6.7                        | .18       | 4.4          | 1.8            | 5.3         | .2            | 11                              | 1.5                        | 11            | .4           | .1                         | 60                                                 | 18                            | 10            | 64.4                                      | 6.7 | 180   |
| Nov. 1-10          | 24.5                 | 7.5                        | .15       | 5.2          | 2.3            | 5.0         | .2            | 18                              | 2.2                        | 12            | .4           | .1                         | 53                                                 | 22                            | 8             | 69.8                                      | 6.8 | 110   |
| Nov. 11-20         | 20.3                 | 7.5                        | .11       | 4.8          | 2.4            | 4.6         | .2            | 20                              | 2.5                        | 10            | .4           | .1                         | 43                                                 | 22                            | 6             | 68.0                                      | 6.9 | 65    |
| Nov. 21-30         | 17.6                 | 7.3                        | .11       | 5.6          | 2.1            | 4.6         | .2            | 21                              | 3.2                        | 9.0           | .4           | .1                         | 40                                                 | 22                            | 6             | 69.8                                      | 6.8 | 60    |
| Dec. 1-10          | 18.3                 | 9.4                        | .10       | 5.4          | 2.1            | 4.3         | .2            | 21                              | 2.8                        | 9.5           | .3           | .1                         | 36                                                 | 22                            | 5             | 67.1                                      | 6.8 | 55    |
| Dec. 11-20         | 16.2                 | 6.8                        | .10       | 5.0          | 2.3            | 4.3         | .2            | 22                              | 2.2                        | 9.5           | .3           | .1                         | 37                                                 | 22                            | 4             | 67.6                                      | 7.1 | 55    |
| Dec. 21-31         | 19.1                 | 7.0                        | .12       | 4.8          | 2.4            | 4.3         | .3            | 21                              | 2.5                        | 8.8           | .4           | .1                         | 41                                                 | 22                            | 5             | 67.3                                      | 7.0 | 75    |
| Jan. 1-10, 1957    | 17.6                 | 6.0                        | .08       | 4.8          | 2.4            | 4.3         | .3            | 21                              | 2.5                        | 9.8           | .3           | .1                         | 42                                                 | 22                            | 5             | 67.9                                      | 6.9 | 65    |
| Jan. 11-20         | 18.7                 | 6.0                        | .10       | 5.0          | 2.7            | 4.3         | .3            | 22                              | 2.8                        | 9.8           | .3           | .1                         | 39                                                 | 24                            | 6             | 68.0                                      | 6.9 | 70    |
| Jan. 21-31         | 52.7                 | 7.9                        | .07       | 4.8          | 2.9            | 6.4         | .3            | 13                              | 8.0                        | 12            | .2           | .2                         | 75                                                 | 24                            | 14            | 83.2                                      | 6.8 | 70    |
| Feb. 1-10          | 20.1                 | 7.2                        | .08       | 4.8          | 2.9            | 5.5         | .2            | 18                              | 5.2                        | 10            | .3           | .2                         | 66                                                 | 24                            | 9             | 78.2                                      | 7.1 | 75    |
| Feb. 11-20         | 16.6                 | 5.9                        | .07       | 4.4          | 3.2            | 4.9         | .1            | 21                              | 3.5                        | 9.0           | .2           | .3                         | 56                                                 | 24                            | 17            | 73.6                                      | 7.1 | 65    |
| Feb. 21-28         | 16.6                 | 6.1                        | .06       | 4.0          | 2.7            | 4.4         | .3            | 17                              | 6.8                        | 13            | .3           | .3                         | 83                                                 | 24                            | 12            | 75.5                                      | 6.0 | 130   |
| Mar. 1-10          | 298.0                | 6.1                        | .18       | 3.2          | 1.0            | 6.7         | .1            | 17                              | 6.8                        | 13            | .3           | .3                         | 83                                                 | 24                            | 12            | 75.5                                      | 6.0 | 130   |
| Mar. 11-20         | 85.6                 | 6.3                        | .18       | 3.2          | 2.2            | 6.1         | .1            | 10                              | 4.8                        | 12            | .2           | .5                         | 62                                                 | 17                            | 19            | 69.2                                      | 6.6 | 180   |
| Mar. 21-31         | 111                  | 5.7                        | .12       | 3.2          | 2.2            | 5.8         | .1            | 9                               | 4.8                        | 11            | .2           | .5                         | 67                                                 | 17                            | 17            | 65.6                                      | 6.5 | 170   |
| Apr. 1-10          | 260                  | 4.1                        | .12       | 3.6          | 2.8            | 5.6         | .5            | 7                               | 5.2                        | 11            | .3           | .2                         | 67                                                 | 20                            | 15            | 63.2                                      | 6.4 | 140   |
| Apr. 11-20         | 101                  | 5.8                        | .17       | 4.0          | 1.8            | 5.9         | .5            | 10                              | 5.8                        | 11            | .3           | .5                         | 68                                                 | 18                            | 10            | 66.5                                      | 6.8 | 110   |
| Apr. 21-30         | 40.7                 | 6.7                        | .15       | 5.2          | 1.8            | 5.6         | .4            | 17                              | 5.8                        | 10            | .4           | .1                         | 57                                                 | 20                            | 6             | 73.3                                      | 7.2 | 90    |
| May 1-10           | 80.7                 | 5.5                        | .10       | 3.8          | 1.6            | 5.3         | .4            | 10                              | 3.5                        | 10            | .2           | .2                         | 65                                                 | 16                            | 8             | 63.2                                      | 6.8 | 120   |
| May 11-20          | 391                  | 3.9                        | .07       | 4.4          | 2.4            | 4.6         | .4            | 8                               | 4.8                        | 12            | .6           | .0                         | 83                                                 | 15                            | 6             | 68.1                                      | 6.8 | 130   |
| May 21-31          | 67.1                 | 3.9                        | .17       | 4.2          | 1.6            | 4.9         | .4            | 14                              | 3.5                        | 12            | .4           | .2                         | 87                                                 | 17                            | 6             | 68.1                                      | 5.7 | 120   |

|                               |       |     |      |     |     |     |     |    |     |     |     |     |     |    |    |      |     |     |
|-------------------------------|-------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|----|------|-----|-----|
| June 1-10, 1957...            | 111   | 5.2 | 0.09 | 3.6 | 1.7 | 4.4 | 0.4 | 12 | 4.5 | 10  | 0.3 | 0.2 | 56  | 16 | 6  | 59.5 | 6.6 | 100 |
| June 11-19.....               | 108   | 5.2 | .07  | 3.4 | 1.3 | 3.3 | .4  | 11 | 4.5 | 10  | .4  | .2  | 59  | 16 | 8  | 61.4 | 6.3 | 120 |
| June 20-29.....               | 761   | 3.5 | .07  | 2.4 | 1.3 | 3.3 | .4  | 7  | 4.2 | 9.0 | .2  | .7  | 351 | 12 | 6  | 38.0 | 6.6 | 110 |
| July 1-10.....                | 226   | 4.6 | .10  | 2.4 | 1.5 | 3.8 | .4  | 7  | 4.2 | 9.0 | .2  | .1  | 351 | 12 | 6  | 38.0 | 6.6 | 130 |
| July 11-20.....               | 171   | 4.9 | .08  | 2.2 | 1.7 | 3.9 | .2  | 8  | 3.5 | 9.0 | .2  | .1  | 355 | 12 | 6  | 47.4 | 6.2 | 150 |
| July 21-31.....               | 313   | 4.1 | .08  | 2.4 | 1.5 | 3.4 | .4  | 7  | 3.0 | 9.2 | .3  | .1  | 353 | 12 | 6  | 41.8 | 6.0 | 140 |
| Aug. 1-10.....                | 1,206 | 3.5 | .06  | 2.0 | 1.0 | 3.3 | .4  | 6  | 2.8 | 7.2 | .3  | .1  | 345 | 9  | 4  | 37.5 | 5.7 | 130 |
| Aug. 11-20.....               | 197   | 5.4 | .10  | 3.2 | 1.0 | 3.7 | .4  | 9  | 3.5 | 9.0 | .4  | .1  | 350 | 12 | 4  | 45.8 | 6.2 | 130 |
| Sept. 1-10.....               | 154.8 | 5.9 | .09  | 2.6 | 2.7 | 4.2 | .3  | 11 | 4.5 | 8.0 | .2  | .6  | 35  | 20 | 11 | 53.3 | 6.8 | 90  |
| Sept. 11-20.....              | 204   | 2.0 | .08  | 2.8 | 1.9 | 4.1 | .6  | 18 | 3.0 | 8.2 | .3  | .4  | 338 | 14 | 6  | 52.1 | 6.4 | 110 |
| Sept. 21-30.....              | 327   | 4.3 | .08  | 2.8 | 1.3 | 4.0 | .7  | 7  | 2.8 | 7.5 | .2  | .4  | 336 | 12 | 7  | 48.9 | 5.7 | 110 |
| Time-weighted<br>average..... | 171   | 5.8 | 0.11 | 3.8 | 2.0 | 4.8 | 0.3 | 12 | 3.9 | 10  | 0.3 | 0.2 | 57  | 18 | 8  | 61.1 | --  | 120 |

a Organic matter present; equals or exceeds 40 percent.



## LITTLE MANATEE RIVER BASIN--Continued

## LITTLE MANATEE RIVER NEAR WIMAUMA, FLA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 77   | 69   | 57   | 60   | 70   | 65   | 68   | 72  | 82   | 85   | 82   | 84    |
| 2       | 77   | 72   | 58   | 62   | 70   | 61   | 68   | 78  | 82   | 80   | 80   | 85    |
| 3       | 77   | 72   | 58   | 60   | 74   | 64   | 73   | 79  | 75   | 83   | 80   | 84    |
| 4       | 77   | 76   | 58   | 60   | 70   | 63   | 75   | 79  | 84   | 82   | 79   | 78    |
| 5       | 74   | 71   | 60   | 59   | 69   | 64   | 77   | 74  | 79   | 78   | 78   | 78    |
| 6       | 75   | 71   | 59   | 66   | 69   | 66   | 75   | 79  | 84   | 81   | 78   | 80    |
| 7       | 76   | 70   | 62   | 66   | 69   | 67   | 75   | 79  | 78   | --   | 78   | 78    |
| 8       | 74   | 70   | 65   | 64   | 73   | 64   | 74   | 75  | --   | 84   | 80   | 75    |
| 9       | 75   | 67   | 68   | 63   | 72   | 60   | 77   | 76  | 79   | 85   | 81   | 78    |
| 10      | 74   | 59   | 63   | 65   | 73   | 61   | 72   | --  | 84   | 86   | 80   | 79    |
| 11      | 74   | 63   | 67   | 68   | 72   | 56   | 71   | 73  | 83   | 87   | 83   | 80    |
| 12      | 72   | 59   | 65   | 65   | 69   | 65   | 70   | 78  | 82   | 85   | 84   | 83    |
| 13      | 72   | 61   | 67   | 63   | 67   | 64   | 75   | 80  | 83   | 84   | 83   | 80    |
| 14      | 74   | 63   | 69   | 66   | 64   | 68   | 76   | 79  | 85   | 84   | 84   | 83    |
| 15      | 71   | 64   | 71   | 66   | 62   | 69   | 72   | 77  | 86   | 85   | 84   | 81    |
| 16      | 70   | 66   | 74   | 68   | 65   | 68   | 74   | 78  | 85   | 86   | 85   | 82    |
| 17      | 70   | 67   | 72   | 66   | 66   | 74   | 73   | 80  | 86   | 85   | 85   | 83    |
| 18      | 70   | 72   | 74   | 55   | 66   | 70   | 75   | 79  | 87   | 83   | 86   | 78    |
| 19      | 71   | 68   | 74   | 54   | 71   | 75   | 74   | 79  | 87   | 82   | 85   | 81    |
| 20      | 72   | 67   | 69   | 61   | 68   | 74   | 77   | 81  | 80   | 83   | 86   | 79    |
| 21      | 77   | 68   | 72   | 63   | 65   | 73   | --   | 83  | 80   | 82   | 86   | 82    |
| 22      | 72   | 68   | 71   | 64   | 65   | 75   | 77   | 84  | 79   | 83   | 82   | 82    |
| 23      | 72   | 59   | 73   | 65   | 64   | 73   | 73   | 85  | 81   | 84   | 78   | 83    |
| 24      | 70   | 57   | 71   | 70   | --   | 73   | 74   | 86  | 81   | 82   | --   | 83    |
| 25      | 70   | 61   | 64   | 62   | 69   | 70   | 75   | 86  | 82   | 81   | 81   | 82    |
| 26      | 70   | 61   | 56   | 71   | 66   | 70   | 81   | 84  | 82   | 79   | --   | 78    |
| 27      | 70   | 56   | 57   | 72   | 68   | 70   | 80   | 84  | 79   | 82   | 81   | 77    |
| 28      | 74   | 51   | 60   | 72   | 68   | 66   | 79   | 79  | 81   | 83   | 80   | 76    |
| 29      | 68   | 53   | 61   | 72   | --   | 66   | 80   | --  | 83   | 85   | 83   | 79    |
| 30      | 68   | 59   | --   | 68   | --   | 69   | --   | 76  | --   | 81   | 82   | 79    |
| 31      | 68   | --   | 54   | 69   | --   | 71   | --   | 80  | --   | 80   | 82   | --    |
| Average | 73   | 65   | 65   | 65   | 68   | 68   | 75   | 79  | 82   | 83   | 82   | 80    |

## BULLFROG CREEK BASIN

## BULLFROG CREEK NEAR WIMAUMA, FLA.

LOCATION.--At gaging station at bridge on State Highway 672S, 0.6 mile downstream from Little Bullfrog Creek, and 6 miles northwest of Wimauma, Hillsborough County.

DRAINAGE AREA.--29.1 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1956 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 1, 1956.....  | 3.2                  | 4.8                        | 0.10      | 4.0          | 1.9            |             | 6.2           | 9                               | 4.2                        | 14            | --           | 0.1                        | 40                            | 18                            | 10            | 74.3                                      | 6.2 | 140   |
| Dec. 12.....       | 12.6                 | 2.9                        | .04       | 5.6          | 2.9            |             | 5.3           | 13                              | 7.0                        | 14            | --           | .0                         | 43                            | 26                            | 16            | 89.0                                      | 6.5 | 80    |
| Jan. 22, 1957..... | 84                   | 2.4                        | .06       | 3.6          | 2.6            |             | 8.3           | 12                              | 8.5                        | 14            | 0.2          | .1                         | 48                            | 22                            | 12            | 91.3                                      | 6.7 | 55    |
| Mar. 6.....        |                      | 5.4                        | .10       | 3.8          | 2.1            |             | 9.2           | 6                               | 8.8                        | 16            | .1           | .0                         | 49                            | 18                            | 13            | 87.3                                      | 5.6 | 130   |
| Apr. 17.....       | 9.2                  | 3.5                        | .09       | 2.8          | 1.7            |             | 6.9           | 6                               | 3.0                        | 13            | .3           | .5                         | 35                            | 14                            | 9             | 66.5                                      | 6.0 | 110   |
| May 28.....        | 4.9                  | 4.5                        | .04       | 2.6          | 1.7            |             | 6.7           | 6                               | 5.0                        | 12            | .1           | .3                         | 36                            | 14                            | 8             | 59.7                                      | 5.6 | 120   |
| July 17.....       | 5.8                  | 3.1                        | .13       | 2.4          | 1.2            |             | 4.8           | 7                               | 2.0                        | 9.5           | .0           | .0                         | 27                            | 11                            | 6             | 50.5                                      | 5.6 | 120   |
| Aug. 26.....       | 10                   | 5.5                        | .13       | 3.4          | 1.7            |             | 5.1           | 9                               | 3.0                        | 11            | .1           | .0                         | 35                            | 16                            | 8             | 60.7                                      | 5.9 | 150   |

Chemical analyses, in parts per million, November 1956 to August 1957

## ALAFIA RIVER BASIN

## ALAFIA RIVER AT LITHIA, FLA.

LOCATION.--At Marvinia Bridge, 11 feet upstream from gaging station, 1 mile northwest of Lithia, Hillsborough County, and 2.0 miles downstream from Little Alafia River.--335 square miles.

DRAINAGE AREA.--335 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1956 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculation) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|--------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                | Calcium                       | Non-carbonate |                                           |     |       |
| Nov. 1, 1956.....  | 118                  | 24                         | 0.06      | 62           | 8.1            | 0           | 0             | 22                              | 131                        | 12            | --           | 0.1                        | 277                            | 188                           | 170           | 422                                       | 6.8 | 55    |
| Dec. 12.....       | 133                  | 23                         | 0.01      | 78           | 11             | 0           | 0             | 21                              | 169                        | 11            | --           | 0                          | 366                            | 240                           | 222           | 518                                       | 6.6 | 15    |
| Jan. 29, 1957....  | 133                  | 23                         | 0.01      | 45           | 8.1            | 19          | 19            | 14                              | 111                        | 15            | 3.8          | 0.2                        | 280                            | 146                           | 134           | 345                                       | 6.7 | 45    |
| Mar. 6.....        | 437                  | 25                         | 0.05      | 26           | 6.1            | 0           | 0             | 12                              | 20                         | 15            | 6.0          | 0                          | 104                            | 90                            | 80            | 235                                       | 6.9 | 85    |
| Apr. 23.....       | 297                  | 18                         | 0.11      | 25           | 5.2            | 5.3         | 5.3           | 16                              | 35                         | 12            | 5.0          | 0                          | 136                            | 84                            | 71            | 213                                       | 6.7 | 90    |
| June 3.....        | 372                  | 22                         | 0.03      | 33           | 6.9            | 9.2         | 1.6           | 8                               | 99                         | 11            | 3.7          | 0.3                        | 134                            | 111                           | 104           | 253                                       | 6.4 | 60    |
| July 9.....        | 256                  | 24                         | 0.10      | 33           | 6.9            | 8.2         | 0.8           | 11                              | 37                         | 10            | 3.6          | 0.3                        | 111                            | 111                           | 102           | 253                                       | 6.4 | 90    |
| Aug. 22.....       | 433                  | 26                         | 0.02      | --           | --             | --          | --            | 10                              | 86                         | 5.5           | 3.0          | 0.1                        | 225                            | --                            | --            | 296                                       | 6.2 | 35    |

## MISCELLANEOUS ANALYSES OF SPRINGS IN ALAFIA RIVER BASIN IN FLORIDA

Chemical analyses, in parts per million, water year October 1956 to September 1957

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                      | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                           |     |       |
| LITHIA SPRINGS AT LITHIA (MAIN SPRING)  |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 7, 1956.....                       |                      | 19                         | 0.00      | 58           | 12             | 14          | 14            | 132                             | 81                         | 22            |              | 0.1                        | 271                           | 194                           | 86            | 431                                       | 7.5 | 2     |
| Dec. 12.....                            |                      | 17                         | 0.00      | 56           | 12             | 8.0         | 8.0           | 130                             | 74                         | 20            |              | 0                          | 253                           | 194                           | 88            | 418                                       | 7.2 | 4     |
| May 28, 1957.....                       | 46.9                 | 15                         | 0.01      | 57           | 13             | 9.9         | 9.9           | 132                             | 76                         | 21            | 0.1          | 0                          | 257                           | 196                           | 88            | 419                                       | 7.3 | 2     |
| LITHIA SPRINGS AT LITHIA (MINOR SPRING) |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               |                               |               |                                           |     |       |
| Nov. 7, 1956.....                       |                      | 17                         | 0.00      | 62           | 12             | 12          | 12            | 133                             | 85                         | 22            |              | 0.4                        | 276                           | 204                           | 95            | 451                                       | 7.4 | 2     |
| Dec. 12.....                            |                      | 20                         | 0.00      | 61           | 13             | 4.8         | 4.8           | 130                             | 77                         | 21            |              | 0                          | 261                           | 206                           | 99            | 439                                       | 7.2 | 3     |
| May 28, 1957.....                       | 13.0                 | 16                         | 0.00      | 55           | 17             | 8.5         | 8.5           | 132                             | 82                         | 22            | 0.1          | 0.9                        | 266                           | 207                           | 99            | 439                                       | 7.5 | 0     |

## PALM RIVER BASIN

## SIXMILE CREEK AT TAMPA, FLA.

LOCATION.--At bridge on State Highway 374, 50 feet downstream from gaging station, at southeastern city limits of Tampa, Hillsborough County, and 4 miles upstream from mouth.

DRAINAGE AREA.--28 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1956 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Nov. 2, 1956.....  | 21                   | 13                         | 0.01      | 66           | 7.7            | 11          |               | 162                             | 62                         | 16            | --           | 0.0                        | 256                           | 196                           | 63            | 403                                       | 8.2 | 9     |
| Dec. 10, 1956..... | 16                   | 13                         | .00       | 5            | 8.0            | 17.8        |               | 168                             | 74                         | 16            | --           | .0                         | 279                           | 220                           | 82            | 432                                       | 8.0 | 9     |
| Jan. 22, 1957..... | 31                   | 13                         | .06       | 82           | 16             | 17          |               | 173                             | 173                        | 16            | 0.2          | .0                         | 278                           | 220                           | 82            | 432                                       | 7.9 | 20    |
| Mar. 4, 1957.....  | 49                   | 2.0                        | .02       | 46           | 6.6            | 12          |               | 88                              | 60                         | 17            | 1.4          | 4.2                        | 194                           | 142                           | 70            | 340                                       | 7.3 | 42    |
| Apr. 17, 1957..... | 35                   | 9.0                        | .01       | 72           | 7.4            | 9.4         |               | 150                             | 80                         | 16            | .3           | .0                         | 268                           | 210                           | 87            | 440                                       | 7.6 | 35    |
| May 28, 1957.....  | 30                   | 13                         | .02       | 66           | 9.6            | 3.2         |               | 160                             | 58                         | 14            | .0           | .1                         | 243                           | 204                           | 73            | 398                                       | 8.0 | 12    |
| July 16, 1957..... | 66                   | 10                         | .04       | 67           | 6.1            | 5.5         |               | 146                             | 62                         | 14            | .2           | .1                         | 237                           | 192                           | 72            | 393                                       | 7.6 | 65    |
| Aug. 26, 1957..... | 128                  | 6.6                        | .06       | 40           | 2.9            | 6.4         |               | 95                              | 32                         | 9.5           | .3           | .0                         | 145                           | 112                           | 34            | 239                                       | 7.0 | 80    |

## HILLSBOROUGH RIVER BASIN

## HILLSBOROUGH RIVER NEAR ZEPHYRHILLS, FLA.

LOCATION.--At footbridge in Hillsborough River State Park, 10 feet upstream from gaging station, 2 miles downstream from Blackwater Creek, and 7 miles southwest of Zephyrhills, Pasco County.

DRAINAGE AREA.--220 square miles approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES: 1956-57--Dissolved solids: Maximum, 218 ppm Feb. 1-10; minimum, 82 ppm Aug. 5-12.

Hardness: Maximum, 164 ppm Dec. 1-10, 21-31; minimum, 44 ppm Aug. 5-12.

Specific conductance: Maximum daily, 341 micromhos Jan. 23; minimum daily, 68.7 micromhos Aug. 7.

Water temperatures: Maximum, 90°F Aug. 19; minimum, 63°F Jan. 18, 19.

REMARKS.--Record of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 given in NSP 1504.

| Chemical analyses, in parts per million, water year October 1956 to September 1957 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
|------------------------------------------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
| Date of collection                                                                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|                                                                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956..                                                                  | 469                  | 6.4                        | 0.21      | 22           | 2.4            | 5.0         | 0.4           | 67                              | 6.2                        | 11            | 0.4          | 0.1                        | 112                                                | 65                            | 10            | 141                                       | 7.4 | 250   |
| Oct. 11-16.....                                                                    | 262                  | 7.2                        | 0.24      | 30           | 4.1            | 5.4         | 0.4           | 94                              | 7.5                        | 12            | 0.4          | 0.1                        | 143                                                | 92                            | 15            | 188                                       | 7.5 | 220   |
| Oct. 17-31.....                                                                    | 588                  | 5.1                        | 0.24      | 20           | 2.4            | 5.0         | 0.4           | 56                              | 4.5                        | 11            | 0.4          | 0.1                        | 106                                                | 60                            | 14            | 125                                       | 7.3 | 280   |
| Nov. 1-10.....                                                                     | 170                  | 6.7                        | 0.15      | 39           | 4.0            | 5.6         | 0.2           | 121                             | 7.2                        | 12            | 0.4          | 0.1                        | 174                                                | 114                           | 15            | 230                                       | 7.6 | 220   |
| Nov. 11-20.....                                                                    | 98.3                 | 11                         | 0.04      | 45           | 8.9            | 5.5         | 0.2           | 169                             | 11                         | 12            | 0.3          | 0.1                        | 179                                                | 149                           | 10            | 303                                       | 7.8 | 50    |
| Nov. 21-30.....                                                                    | 77.4                 | 12                         | 0.01      | 57           | 4.6            | 4.8         | 0.3           | 183                             | 11                         | 14            | 0.3          | 0.1                        | 179                                                | 161                           | 11            | 319                                       | 7.9 | 30    |
| Dec. 1-10.....                                                                     | 72.7                 | 12                         | 0.01      | 57           | 5.4            | 4.6         | 0.3           | 186                             | 10                         | 9.0           | 0.3          | 0.4                        | 183                                                | 164                           | 12            | 322                                       | 8.0 | 10    |
| Dec. 11-20.....                                                                    | 70.8                 | 12                         | 0.03      | 58           | 4.3            | 4.4         | 0.3           | 187                             | 10                         | 9.0           | 0.3          | 0.1                        | 180                                                | 162                           | 9             | 323                                       | 7.7 | 10    |
| Dec. 21-31.....                                                                    | 71.5                 | 11                         | 0.00      | 57           | 5.4            | 4.6         | 0.4           | 187                             | 11                         | 9.2           | 0.3          | 0.1                        | 184                                                | 164                           | 11            | 323                                       | 7.9 | 25    |
| Jan. 1-10, 1957..                                                                  | 69.0                 | 12                         | 0.00      | 57           | 4.4            | 4.6         | 0.4           | 186                             | 9.2                        | 9.5           | 0.3          | 0.1                        | 189                                                | 160                           | 8             | 324                                       | 8.0 | 10    |
| Jan. 11-20.....                                                                    | 67.9                 | 11.8                       | 0.01      | 56           | 5.0            | 4.8         | 0.5           | 185                             | 9.5                        | 10            | 0.2          | 0.1                        | 200                                                | 160                           | 8             | 321                                       | 8.1 | 10    |
| Jan. 21-31.....                                                                    | 95.5                 | 11                         | 0.02      | 53           | 4.9            | 7.8         | 0.7           | 172                             | 12                         | 14            | 0.2          | 0.2                        | 196                                                | 152                           | 11            | 323                                       | 8.3 | 12    |
| Feb. 1-10.....                                                                     | 78.8                 | 12                         | 0.02      | 54           | 4.7            | 6.4         | 0.4           | 178                             | 10                         | 12            | 0.1          | 0.2                        | 218                                                | 154                           | 8             | 320                                       | 8.3 | 10    |
| Feb. 11-20.....                                                                    | 73.6                 | 12                         | 0.01      | 53           | 4.9            | 5.8         | 0.2           | 180                             | 8.5                        | 9.0           | 0.1          | 0.2                        | 190                                                | 152                           | 4             | 316                                       | 8.3 | 5     |
| Feb. 21-28.....                                                                    | 146                  | 11                         | 0.05      | 46           | 4.6            | 8.2         | 1.2           | 150                             | 12                         | 14            | 0.2          | 0.2                        | 190                                                | 134                           | 11            | 301                                       | 8.1 | 40    |
| Mar. 1-10.....                                                                     | 149                  | 10                         | 0.08      | 44           | 4.9            | 9.1         | 1.7           | 141                             | 16                         | 14            | 0.2          | 0.1                        | 181                                                | 130                           | 14            | 290                                       | 8.2 | 65    |
| Mar. 11-21.....                                                                    | 101                  | 10                         | 0.11      | 51           | 6.1            | 8.0         | 0.8           | 160                             | 32                         | 13            | 0.2          | 0.1                        | 191                                                | 152                           | 21            | 311                                       | 8.3 | 45    |
| Mar. 22-Apr. 1..                                                                   | 512                  | 5.0                        | 0.14      | 21           | 2.3            | 6.7         | 1.2           | 60                              | 9.0                        | 0.3           | 0.3          | 0.3                        | 119                                                | 62                            | 13            | 153                                       | 7.6 | 130   |
| Apr. 2-11.....                                                                     | 511                  | 4.8                        | 0.19      | 20           | 4.1            | 6.1         | 0.7           | 64                              | 6.5                        | 11            | 0.3          | 0.2                        | 118                                                | 67                            | 14            | 148                                       | 7.8 | 160   |
| Apr. 12-20.....                                                                    | 299                  | 5.8                        | 0.22      | 27           | 4.3            | 6.6         | 0.7           | 84                              | 9.5                        | 12            | 0.3          | 0.3                        | 134                                                | 85                            | 16            | 189                                       | 7.9 | 130   |
| Apr. 21-30.....                                                                    | 302                  | 8.2                        | 0.09      | 39           | 3.8            | 6.6         | 0.5           | 124                             | 9.5                        | 11            | 0.3          | 0.2                        | 174                                                | 113                           | 12            | 246                                       | 8.2 | 90    |
| May 1-11.....                                                                      | 131                  | 6.3                        | 0.13      | 28           | 3.3            | 4.8         | 0.6           | 90                              | 6.5                        | 9.0           | 0.3          | 0.2                        | 123                                                | 84                            | 10            | 182                                       | 8.0 | 100   |
| May 13-14.....                                                                     | 182                  | --                         | 0.09      | 37           | 3.3            | --          | --            | 115                             | --                         | 9.5           | 0.3          | --                         | --                                                 | 106                           | 12            | 221                                       | 8.3 | 90    |
| May 15-18.....                                                                     | 757                  | --                         | 0.12      | 15           | 2.1            | 4.6         | 1.1           | 42                              | --                         | 8.5           | 0.3          | --                         | --                                                 | 46                            | 12            | 114                                       | 7.5 | 120   |
| May 19-31.....                                                                     | 264                  | 8.2                        | 0.10      | 30           | 4.6            | 5.6         | 1.8           | 99                              | 6.5                        | 9.5           | 0.3          | 0.1                        | 135                                                | 94                            | 13            | 198                                       | 8.0 | 100   |

|                            |       |     |      |    |     |     |     |     |     |     |     |     |     |     |    |      |     |     |
|----------------------------|-------|-----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|------|-----|-----|
| June 1-10, 1957..          | 211   | 8.1 | 0.06 | 29 | 5.2 | 6.9 | 0.9 | 97  | 8.2 | 10  | 0.4 | 0.2 | 135 | 94  | 14 | 200  | 7.5 | 60  |
| June 11-20.....            | 143   | 9.1 | .03  | 41 | 2.8 | 6.5 | .4  | 128 | 8.8 | 9.5 | .5  | .2  | 169 | 114 | 9  | 242  | 7.2 | 50  |
| June 21-30.....            | 157   | 9.6 | .03  | 41 | 3.9 | 6.2 | .6  | 136 | 8.2 | 8.5 | .3  | .2  | 185 | 118 | 6  | 250  | 7.4 | 50  |
| July 1-10.....             | 157   | 9.6 | .02  | 37 | 3.3 | 6.2 | .8  | 120 | 8.2 | 8.3 | .4  | .2  | 144 | 106 | 8  | 232  | 7.2 | 50  |
| July 11-20.....            | 185   | 7.9 | .02  | 37 | 3.3 | 7.1 | .8  | 120 | 8.2 | 10  | .3  | .2  | 129 | 90  | 10 | 188  | 7.0 | 60  |
| July 21-Aug. 4.....        | 281   | 5.8 | .05  | 30 | 3.6 | 5.0 | .2  | 97  | 5.8 | 7.5 | .3  | .2  | 82  | 44  | 10 | 96.7 | 6.7 | 120 |
| Aug. 5-12.....             | 1,102 | 3.5 | .07  | 13 | 2.9 | 4.3 | .4  | 42  | 4.2 | 6.0 | .4  | .2  | 124 | 78  | 8  | 169  | 6.9 | 110 |
| Aug. 13-24.....            | 336   | 6.3 | .10  | 26 | 3.2 | 5.7 | .4  | 86  | 5.5 | 8.0 | .4  | .3  | 100 | 63  | 10 | 137  | 7.1 | 120 |
| Aug. 25-31.....            | 809   | 6.1 | .08  | 21 | 2.6 | 5.2 | .6  | 65  | 5.5 | 7.0 | .4  | .3  | 100 | 63  | 10 | 137  | 7.1 | 120 |
| Sept. 1-10.....            | 529   | 5.6 | .11  | 17 | 4.5 | 5.4 | .7  | 58  | 5.8 | 7.5 | .4  | .4  | 97  | 61  | 12 | 129  | 7.0 | 140 |
| Sept. 11-20.....           | 753   | 5.1 | .15  | 16 | 2.1 | 5.4 | .6  | 49  | 4.8 | 7.5 | .4  | .3  | 97  | 53  | 10 | 113  | 6.9 | 140 |
| Sept. 21-30.....           | 671   | 5.0 | .13  | 18 | 1.9 | 5.4 | .6  | 53  | 4.8 | 8.0 | .5  | .4  | 97  | 53  | 10 | 118  | 6.7 | 140 |
| Time-weighted average..... | a285  | 8.3 | 0.09 | 37 | 4.1 | 5.8 | 0.6 | 119 | 8.9 | 10  | 0.3 | 0.2 | 150 | 108 | 11 | 227  | --  | 90  |

a Represents more than 99 percent of runoff for water year October 1956 to September 1957.

## HILLSBOROUGH RIVER BASIN--Continued

## HILLSBOROUGH RIVER NEAR ZEPHYRHILLS, FLA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 77   | 72   | 64   | 68   | 73   | 68   | 68   | 72  | 78   | 80   | 78   | 79    |
| 2       | 77   | 72   | 66   | 64   | 73   | 66   | 66   | 74  | 78   | 80   | 76   | --    |
| 3       | 76   | 72   | 68   | 66   | 74   | 67   | 71   | 76  | 78   | 80   | 78   | 78    |
| 4       | 76   | 73   | 68   | 67   | 74   | 67   | 73   | 76  | 79   | 80   | 78   | 78    |
| 5       | 76   | 72   | 70   | 68   | 74   | 68   | 74   | 75  | 79   | 80   | 76   | 78    |
| 6       | 75   | 72   | 69   | 69   | 72   | 68   | 72   | 74  | 79   | 79   | 78   | 79    |
| 7       | 75   | 71   | 70   | 70   | 74   | 68   | 70   | 74  | 79   | 79   | 78   | 78    |
| 8       | 75   | 71   | 70   | 68   | 74   | 67   | 72   | 73  | 79   | 80   | 78   | 77    |
| 9       | 76   | 70   | 70   | 68   | 74   | 64   | 72   | 73  | 78   | 80   | 78   | 77    |
| 10      | 75   | 66   | 70   | 70   | 72   | 64   | 70   | 74  | 80   | 80   | 80   | 79    |
| 11      | 75   | 66   | 70   | 72   | 74   | 66   | 70   | 74  | 80   | 79   | 78   | 80    |
| 12      | 74   | 66   | 71   | 70   | 70   | 66   | 70   | --  | 80   | 78   | 80   | 80    |
| 13      | 73   | 68   | 72   | 68   | 68   | 68   | 72   | 76  | 80   | 79   | 80   | 80    |
| 14      | 73   | 68   | 73   | 71   | 68   | 71   | 73   | 78  | 80   | 80   | 80   | 79    |
| 15      | 72   | 70   | 74   | 72   | 68   | 72   | 72   | 76  | 78   | 78   | 78   | 78    |
| 16      | 72   | 70   | 74   | 72   | 68   | 72   | 70   | 78  | 80   | 80   | 79   | 78    |
| 17      | 70   | 72   | 74   | 71   | 68   | 72   | 72   | 78  | 80   | 80   | 81   | 78    |
| 18      | --   | 72   | 74   | 63   | 68   | 72   | 72   | 78  | 80   | 80   | --   | 78    |
| 19      | --   | 72   | 74   | 63   | 72   | 74   | --   | 79  | 80   | 80   | 90   | 78    |
| 20      | --   | 72   | 74   | 66   | 64   | 74   | 74   | 80  | 80   | 78   | 80   | 78    |
| 21      | --   | 72   | 73   | 70   | 68   | 72   | 74   | 80  | 80   | 79   | 80   | 80    |
| 22      | --   | 71   | 72   | 70   | 67   | 68   | 75   | 80  | 80   | 80   | 78   | 80    |
| 23      | --   | 66   | 72   | 70   | 67   | 69   | 74   | 81  | 80   | 80   | 78   | 80    |
| 24      | --   | 66   | 74   | 70   | 68   | 72   | 75   | 80  | 80   | 80   | 78   | 79    |
| 25      | --   | 67   | 70   | 70   | 70   | 72   | 74   | 80  | 78   | 79   | 74   | 79    |
| 26      | --   | 65   | 64   | 71   | 70   | 69   | 75   | 80  | 78   | --   | 74   | 77    |
| 27      | --   | 65   | 66   | 72   | --   | 68   | 76   | 80  | --   | 79   | 78   | 76    |
| 28      | --   | 64   | 67   | 72   | 70   | 66   | 76   | 79  | 79   | 80   | 78   | 77    |
| 29      | --   | 66   | 66   | 72   | --   | 66   | 76   | 80  | 80   | 79   | 78   | 78    |
| 30      | --   | 68   | 64   | 72   | --   | 66   | 76   | 80  | 80   | 80   | 78   | 78    |
| 31      | --   | --   | 66   | 73   | --   | 68   | --   | 78  | --   | 77   | 79   | --    |
| Average | --   | 69   | 70   | 69   | 70   | 69   | 73   | 77  | 79   | 79   | 79   | 78    |

## HILLSBOROUGH RIVER BASIN--Continued

## HILLSBOROUGH RIVER NEAR TAMPA, FLA.

LOCATION.--At gaging station just upstream from spillway of Tampa Reservoir dam at Thirtieth Street, 5½ miles northeast of Tampa, Hillsborough County.  
DRAINAGE AREA.--650 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: November 1956 to August 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                            |     |       |
| Nov. 6, 1956.....  | 280                  | 9.1                        | 0.11      | 27           | 2.1            |             | 3.0           | 76                              | 5.8                        | 10            | --           | 0.1                        | 94                            | 76                            | 14            | 164                                        | 7.7 | 180   |
| Dec. 18.....       | 42                   | 9.4                        | .02       | 54           | 6.2            |             | 3.7           | 160                             | 22                         | 10            | --           | .0                         | 184                           | 160                           | 29            | 316                                        | 7.8 | 45    |
| Jan. 22, 1957..... | 29                   | .8                         | .02       | 50           | 5.6            |             | 9.2           | 158                             | 22                         | 10            | 0.2          | .5                         | 177                           | 148                           | 18            | 313                                        | 7.9 | 20    |
| Mar. 13.....       | 162                  | 10                         | .04       | 48           | 4.4            |             |               | 132                             | 27                         | 15            | .1           | .0                         | 179                           | 138                           | 30            | 305                                        | 7.8 | 50    |
| Apr. 16.....       | 677                  | 5.1                        | .08       | 24           | 1.9            |             | 6.4           | 68                              | 7.5                        | 12            | .3           | .1                         | 90                            | 68                            | 12            | 156                                        | 7.2 | 110   |
| May 30.....        | 312                  | 5.5                        | .08       | 26           | 1.9            |             | 6.2           | 73                              | 8.0                        | 12            | .2           | .3                         | 97                            | 73                            | 13            | 160                                        | 7.5 | 90    |
| July 11.....       | 320                  | 6.4                        | .05       | 14           | 12             |             | 2.8           | 85                              | 7.5                        | 9.0           | .1           | .1                         | 94                            | 84                            | 15            | 175                                        | 7.1 | 90    |
| Aug. 27.....       | 1,810                | 5.4                        | .07       | 20           | 1.5            |             | 3.4           | 58                              | 5.0                        | 7.5           | .1           | .1                         | 72                            | 56                            | 8             | 128                                        | 6.7 | 110   |

## SULPHUR SPRINGS AT SULPHUR SPRINGS, FLA.

LOCATION.--At gaging station at swimming pool 100 feet west of U. S. Highway 41 in Sulphur Springs, Hillsborough County, and 500 feet upstream from Hillsborough River.  
RECORDS AVAILABLE.--Chemical analyses: November 1956 to August 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, November 1956 to August 1957

| Date of collection | Discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|--------------------|-----------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                    |                 |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium                       | Non-carbonate |                                            |     |       |
| Nov. 8, 1956.....  | 52.3            | 13                         | 0.02      | 77           | 13             | 110         |               | 148                             | 79                         | 200           | --           | 0.0                        | 565                           | 246                           | 134           | 1,030                                      | 7.4 | 28    |
| Dec. 1.....        | 38.6            | 14                         | .00       | 75           | 14             | 92          |               | 134                             | 73                         | 172           | 0.1          | .0                         | 516                           | 244                           | 118           | 945                                        | 7.4 | 7     |
| Jan. 30, 1957..... | 38.6            | 14                         | .01       | 75           | 14             | 98          |               | 134                             | 74                         | 172           | 0.1          | .0                         | 516                           | 244                           | 118           | 945                                        | 7.4 | 7     |
| Mar. 7.....        | 47.5            | 11                         | .01       | 79           | 14             | 115         |               | 160                             | 79                         | 206           | .0           | .0                         | 583                           | 234                           | 124           | 1,050                                      | 7.7 | 6     |
| Apr. 18.....       | 57.7            | 9.5                        | .00       | 78           | 13             | 109         |               | 155                             | 82                         | 193           | .2           | .1                         | 561                           | 248                           | 121           | 991                                        | 7.2 | 5     |
| June 4.....        | 63.9            | 9.9                        | .02       | 74           | 15             | 109         |               | 148                             | 79                         | 198           | .0           | .5                         | 558                           | 246                           | 134           | 984                                        | 7.4 | 5     |
| July 18.....       | 59.0            | 9.8                        | .01       | 73           | 13             | 106         |               | 150                             | 71                         | 190           | .0           | .0                         | 537                           | 236                           | 112           | 942                                        | 7.1 | 2     |
| Aug. 28.....       | 87.3            | 7.5                        | .03       | 64           | 15             | 116         |               | 58                              | 77                         | 245           | .0           | .0                         | 554                           | 221                           | 174           | 1,080                                      | 6.9 | 22    |



## HILLSBOROUGH RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN HILLSBOROUGH RIVER BASIN IN FLORIDA

Chemical analyses, in parts per million, water year October 1956 to September 1957.

| Date of collection            | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (micro-lated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|-------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|--------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                | Calcium magnesium             | Non-carbonate |                                            |     |       |
| FLINT CREEK NEAR THONOTOSASSA |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                |                               |               |                                            |     |       |
| Nov. 7, 1956.....             | 14                   | 2.5                        | 0.03      | 9.6          | 5.4            | 16          | 54            | 7.8                             | 20                         |               |              | 0.1                        | 88                             | 46                            | 2             | 170                                        | 7.1 | 55    |
| Dec. 10.....                  | 5.5                  | 4.0                        | .03       | 10           | 6.1            | 15          | 58            | 7.8                             |                            |               |              | .0                         | 92                             | 50                            | 2             | 178                                        | 6.9 | 55    |
| May 31, 1957.....             | 62                   | 2.9                        | .04       | 15           | 2.8            | 7.6         | 33            | 10                              | 18                         | 0.4           |              | .3                         | 75                             | 49                            | 20            | 161                                        | 7.3 | 90    |

## WITHLACOCHEE RIVER BASIN

## WITHLACOCHEE RIVER NEAR HOLDER, FLA.

LOCATION.--At gaging station, 100 feet downstream from bridge, on State Highway 200, and 4½ miles northeast of Holder, Citrus County.  
DRAINAGE AREA.--1,710 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: January 1950 to December 1951.

Water temperatures: January 1950 to December 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 275 ppm July 11-20, 1950; minimum, 119 ppm Sept. 21-30, 1950.

Hardness: Maximum, 191 ppm July 11-20, 1950; minimum, 63 ppm Sept. 21-30, 1950.

Specific conductance: Maximum daily, 430 micromhos July 18, 1950; minimum daily, 136 micromhos Sept. 28, 1950.

Water temperatures: Maximum, 92°F July 17, 1950; minimum, 56°F Jan. 9-12, 1951.

Remarks.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                          |     |       |
| Oct. 18, 1956....  | 517                  | 7.0                        | 0.03      | 68           | 5.5            | 5.2         | 0.4           | 100                             | 99                         | 12            | 0.1          | 1.9                        | 303                                                | 192                           | 151           | 396                                      | 7.3 | 90    |
| Nov. 26.....       | 714                  | 5.8                        | .23       | 43           | 3.8            | 6.0         | .2            | 84                              | 43                         | 13            | .1           | .6                         | 218                                                | 123                           | 52            | 260                                      | 6.9 | 200   |
| Jan. 10, 1957....  | 295                  | 3.5                        | .00       | 62           | 4.3            | 5.4         | .2            | 140                             | 52                         | 13            | .2           | .3                         | 229                                                | 172                           | 58            | 345                                      | 7.6 | 40    |
| Feb. 21.....       | 237                  | 3.8                        | .02       | 55           | 7.1            | 5.9         | .9            | 143                             | 46                         | 13            | .1           | .3                         | 223                                                | 166                           | 49            | 344                                      | 7.5 | 25    |
| Apr. 2.....        | 388                  | 4.0                        | .01       | 83           | 8.0            | 6.4         | .8            | 136                             | 122                        | 11            | .1           | .4                         | 340                                                | 240                           | 128           | 482                                      | 7.5 | 15    |
| May 14.....        | 424                  | .5                         | .08       | 43           | 3.8            | 6.3         | .5            | 100                             | 34                         | 11            | .2           | .1                         | 194                                                | 123                           | 41            | 266                                      | 7.0 | 75    |
| June 27.....       | 658                  | 8.1                        | .01       | 32           | 3.4            | 4.6         | .0            | 85                              | 62                         | 8.5           | .2           | .2                         | 371                                                | 100                           | 77            | 214                                      | 7.0 | 110   |
| Aug. 8.....        | 1,250                | 9.1                        | .09       | 51           | 3.4            | 4.8         | .1            | 84                              | 66                         | 8.0           | .3           | .2                         | 344                                                | 184                           | 72            | 214                                      | 6.4 | 110   |
| Sept. 19.....      | 1,770                | 2.8                        | .10       | 30           | 2.7            | 4.0         | .1            | 84                              | 9.8                        | 10            | .3           | .2                         | 132                                                | 86                            | 17            | 176                                      | 7.4 | 130   |

## SUWANNEE RIVER BASIN

## ALAPAHA RIVER NEAR ALAPAHA, GA.

LOCATION.--Temperature recorder at gaging station near left bank on downstream side of bridge on State Highway 50, 2 miles east of Alapaha, Berrien County, and 6 miles upstream from Willacoochee River.

DRAINAGE AREA.--644 square miles.

RECORDS AVAILABLE.--Water temperatures: March 1953 to July 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F July 15-16; minimum, 44°F Jan. 20.

EXTREMES, 1953-57.--Water temperatures: Maximum, 91°F June 29, 1954; minimum, freezing point Nov. 3, 1954.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Temperature (°F) of water, October 1956 to July 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1            | 70      | 69  | 66       | 65  | 48       | 47  | 52      | 50  | 65       | 64  | 61    | 60  | 62    | 61  | 72  | 70  | 75   | 73  | 82   | 80  |        |     |           |     |
| 2            | 70      | 69  | 66       | 65  | 48       | 47  | 52      | 51  | 65       | 65  | 60    | 57  | 64    | 61  | 71  | 70  | 76   | 74  | 80   | 78  |        |     |           |     |
| 3            | 71      | 70  | 67       | 65  | 48       | 46  | 51      | 48  | 65       | 64  | 59    | 57  | 66    | 64  | 71  | 70  | 76   | 74  | 80   | 79  |        |     |           |     |
| 4            | 71      | 70  | 67       | 66  | 48       | 48  | 47      | 46  | 65       | 64  | 58    | 57  | 68    | 66  | 71  | 68  | 76   | 74  | 80   | 78  |        |     |           |     |
| 5            | 71      | 71  | 67       | 66  | 49       | 47  | 50      | 48  | 66       | 64  | 58    | 57  | 69    | 68  | 68  | 66  | 76   | 75  | 80   | 77  |        |     |           |     |
| 6            | 72      | 72  | 66       | 64  | 50       | 48  | 52      | 50  | 66       | 64  | 57    | 56  | 69    | 67  | 67  | 64  | 76   | 74  | 80   | 78  |        |     |           |     |
| 7            | 72      | 72  | 65       | 63  | 52       | 50  | 53      | 52  | 67       | 65  | 57    | 56  | 69    | 65  | 65  | 63  | 76   | 74  | 80   | 78  |        |     |           |     |
| 8            | 72      | 71  | 64       | 63  | 53       | 52  | 53      | 52  | 67       | 65  | 57    | 56  | 65    | 65  | 65  | 63  | 76   | 74  | 81   | 78  |        |     |           |     |
| 9            | 72      | 70  | 64       | 61  | 55       | 53  | 52      | 50  | 68       | 65  | 54    | 52  | 65    | 65  | 66  | 64  | 74   | 73  | 81   | 78  |        |     |           |     |
| 10           | 71      | 70  | 61       | 57  | 55       | 54  | 56      | 52  | 68       | 66  | 52    | 51  | 65    | 62  | 67  | 65  | 74   | 73  | 81   | 80  |        |     |           |     |
| 11           | 70      | 69  | 57       | 54  | 54       | 52  | 56      | 55  | 68       | 66  | 54    | 52  | 62    | 62  | 67  | 65  | 73   | 72  | 82   | 80  |        |     |           |     |
| 12           | 69      | 67  | 57       | 55  | 55       | 54  | 56      | 54  | 66       | 60  | 56    | 54  | 62    | 62  | 69  | 67  | 74   | 73  | 82   | 79  |        |     |           |     |
| 13           | 67      | 65  | 57       | 56  | 56       | 54  | 54      | 54  | 60       | 58  | 58    | 56  | 63    | 62  | 71  | 69  | 76   | 74  | 82   | 80  |        |     |           |     |
| 14           | 66      | 65  | 57       | 55  | 59       | 56  | 54      | 54  | 59       | 55  | 61    | 58  | 63    | 63  | 72  | 71  | 76   | 75  | 82   | 80  |        |     |           |     |
| 15           | 66      | 66  | 58       | 56  | 60       | 59  | 53      | 54  | 58       | 54  | 64    | 61  | 63    | 62  | 73  | 72  | 76   | 76  | 84   | 80  |        |     |           |     |
| 16           | 66      | 66  | 60       | 58  | 61       | 60  | 55      | 54  | 57       | 56  | 65    | 64  | 62    | 61  | 73  | 72  | 79   | 77  | 84   | 82  |        |     |           |     |
| 17           | 66      | 66  | 62       | 59  | 61       | 60  | 54      | 52  | 56       | 54  | 64    | 64  | 62    | 63  | 72  | 72  | 80   | 77  | 83   | 82  |        |     |           |     |
| 18           | 66      | 66  | 62       | 60  | 62       | 61  | 52      | 48  | 56       | 52  | 63    | 62  | 64    | 63  | 73  | 72  | 80   | 78  | 82   | 82  |        |     |           |     |
| 19           | 66      | 66  | 60       | 58  | 62       | 62  | 48      | 45  | 58       | 54  | 64    | 62  | 66    | 64  | 74  | 72  | 81   | 78  | --   | --  |        |     |           |     |
| 20           | 66      | 66  | 60       | 58  | 62       | 62  | 46      | 44  | 58       | 58  | 66    | 64  | 68    | 66  | 74  | 73  | 81   | 78  | --   | --  |        |     |           |     |
| 21           | 67      | 66  | 61       | 58  | 62       | 62  | 48      | 46  | 56       | 54  | 65    | 62  | 70    | 68  | 75  | 74  | 81   | 79  | --   | --  |        |     |           |     |
| 22           | 67      | 66  | 61       | 58  | 62       | 62  | 48      | 46  | 56       | 54  | 65    | 62  | 70    | 68  | 75  | 74  | 81   | 79  | --   | --  |        |     |           |     |
| 23           | 67      | 66  | 61       | 58  | 62       | 62  | 48      | 46  | 56       | 54  | 65    | 62  | 70    | 68  | 75  | 74  | 81   | 79  | --   | --  |        |     |           |     |
| 24           | 67      | 66  | 61       | 58  | 62       | 62  | 48      | 46  | 56       | 54  | 65    | 62  | 70    | 68  | 75  | 74  | 81   | 79  | --   | --  |        |     |           |     |
| 25           | 67      | 66  | 63       | 50  | 64       | 64  | 56      | 54  | 59       | 56  | 62    | 61  | 72    | 70  | 76  | 75  | 82   | 80  | --   | --  |        |     |           |     |
| 26           | 66      | 65  | 51       | 50  | 59       | 55  | 57      | 56  | 62       | 60  | 63    | 62  | 71    | 70  | 77  | 76  | 81   | 78  | --   | --  |        |     |           |     |
| 27           | 65      | 64  | 51       | 49  | 55       | 51  | 58      | 57  | 62       | 62  | 62    | 61  | 72    | 71  | 77  | 76  | 80   | 78  | --   | --  |        |     |           |     |
| 28           | 64      | 62  | 49       | 47  | 52       | 51  | 59      | 58  | 63       | 61  | 61    | 59  | 72    | 71  | 77  | 76  | 79   | 78  | --   | --  |        |     |           |     |
| 29           | 64      | 63  | 48       | 47  | 52       | 51  | 62      | 59  | --       | --  | 60    | 59  | 73    | 71  | 77  | 76  | 81   | 78  | --   | --  |        |     |           |     |
| 30           | 65      | 64  | 49       | 48  | 54       | 53  | 64      | 62  | --       | --  | 60    | 59  | 73    | 71  | 77  | 76  | 82   | 79  | --   | --  |        |     |           |     |
| 31           | 65      | 64  | 50       | 49  | 56       | 56  | 64      | 63  | --       | --  | 61    | 60  | --    | --  | 73  | 74  | --   | --  | --   | --  |        |     |           |     |
| Aver-<br>age | 68      | 67  | 59       | 57  | 56       | 54  | 54      | 52  | 62       | 60  | 60    | 59  | 67    | 66  | 72  | 71  | 78   | 76  | --   | --  |        |     |           |     |

SUWANNEE RIVER BASIN--Continued  
SUWANNEE RIVER AT BRANFORD, FLA.

LOCATION.--At gaging station at bridge on U. S. Highways 27 and 129 at Branford, Suwannee County, 10½ miles upstream from Santa Fe River.  
DRAINAGE AREA.--7,090 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: January 1954 to September 1957.

Water temperatures: January 1954 to September 1957.

EXTREMES 1956-57.--Dissolved solids: Maximum, 214 ppm Jan. 11-20; minimum, 74 ppm Apr. 1-10.

Hardness: Maximum, 156 ppm Dec. 11-20, 21-31; minimum, 18 ppm June 11-20.

Specific conductance: Maximum daily, 315 microhmhos Dec. 27; minimum daily, 38.3 microhmhos June 14.

Water temperatures: Maximum, 89°F May 31; minimum, 46°F Jan. 19.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 224 ppm Aug. 11-20, Dec. 11-20, 1954; minimum, 74 ppm May 11-20, 1956, Apr. 1-10, 1957.

Hardness: Maximum, 177 ppm Dec. 11-20, 1954, Jan. 1-10, 1955; minimum, 18 ppm June 11-20, 1957.

Specific conductance: Maximum daily, 435 microhmhos Dec. 13, 1954; minimum daily, 38.3 microhmhos June 14, 1957.

Water temperatures: Maximum, 89°F May 31, 1957; minimum, 46°F Jan. 19, 1957.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhmhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956...  | 2,757                | 13                         | 0.12      | 36           | 7.8            | 5.3         | 0.5           | 127                             | 18                         | 8.0           | 0.2          | 0.5                        | 167                                                | 122                           | 13            | 258                                       | 7.7 | 65    |
| Oct. 11-20, 1956... | 3,219                | 9.7                        | .12       | 26           | 6.1            | 4.7         | .5            | 93                              | 14                         | 7.8           | .1           | .0                         | 133                                                | 90                            | 14            | 193                                       | 7.9 | 90    |
| Oct. 21-31, 1956... | 3,346                | 9.3                        | .13       | 31           | 6.9            | 4.5         | .5            | 109                             | 14                         | 7.5           | .1           | .0                         | 151                                                | 106                           | 12            | 220                                       | 7.8 | 90    |
| Nov. 1-10, 1956...  | 2,359                | 9.5                        | .12       | 43           | 6.2            | 4.5         | .5            | 117                             | 14                         | 7.5           | .1           | .0                         | 139                                                | 112                           | 11            | 234                                       | 7.9 | 90    |
| Nov. 11-20, 1956... | 2,379                | 9.9                        | .06       | 43           | 6.2            | 4.5         | .4            | 143                             | 16                         | 7.5           | .2           | .1                         | 141                                                | 134                           | 14            | 231                                       | 8.1 | 95    |
| Nov. 21-30, 1956... | 2,067                | 10                         | .03       | 44           | 8.8            | 4.4         | .4            | 155                             | 19                         | 6.5           | .2           | .0                         | 181                                                | 146                           | 12            | 293                                       | 8.1 | 30    |
| Dec. 1-10, 1956...  | 1,953                | 9.5                        | .01       | 45           | 9.8            | 4.0         | .6            | 166                             | 21                         | 6.2           | .3           | .2                         | 199                                                | 153                           | 17            | 304                                       | 8.0 | 20    |
| Dec. 11-20, 1956... | 1,883                | 9.1                        | .02       | 41           | 13             | 4.0         | .5            | 169                             | 22                         | 6.0           | .3           | .2                         | 202                                                | 156                           | 18            | 312                                       | 8.1 | 20    |
| Dec. 21-31, 1956... | 1,879                | 9.1                        | .01       | 38           | 15             | 4.3         | .6            | 170                             | 22                         | 6.2           | .3           | .2                         | 203                                                | 156                           | 17            | 312                                       | 8.0 | 20    |
| Jan. 1-10, 1957...  | 2,051                | 9.9                        | .02       | 39           | 11             | 4.6         | .7            | 148                             | 24                         | 7.2           | .4           | .4                         | 194                                                | 142                           | 21            | 288                                       | 7.9 | 25    |
| Jan. 11-20, 1957... | 1,888                | 13                         | .01       | 41           | 9.8            | 3.3         | .2            | 158                             | 16                         | 7.5           | .2           | .1                         | 214                                                | 143                           | 14            | 282                                       | 7.8 | 25    |
| Jan. 21-31, 1957... | 1,751                | 9.7                        | .00       | 43           | 9.1            | 3.0         | .2            | 160                             | 17                         | 7.0           | .2           | .3                         | 213                                                | 145                           | 14            | 292                                       | 8.0 | 10    |
| Feb. 1-10, 1957...  | 1,732                | 10                         | .00       | 42           | 10             | 2.9         | .2            | 165                             | 17                         | 7.0           | .2           | .2                         | 211                                                | 146                           | 11            | 293                                       | 8.0 | 7     |
| Feb. 11-20, 1957... | 1,690                | 8.9                        | .00       | 43           | 9.6            | 3.1         | .2            | 164                             | 18                         | 7.5           | .2           | .1                         | 209                                                | 147                           | 12            | 301                                       | 8.1 | 7     |
| Feb. 21-28, 1957... | 1,669                | 8.7                        | .00       | 44           | 9.2            | 3.3         | .3            | 152                             | 19                         | 7.5           | .2           | .3                         | 201                                                | 148                           | 24            | 304                                       | 7.9 | 15    |
| Mar. 1-10, 1957...  | 1,864                | 8.9                        | .00       | 40           | 9.5            | 3.3         | .3            | 150                             | 17                         | 7.0           | .2           | .3                         | 199                                                | 139                           | 16            | 285                                       | 7.9 | 25    |
| Mar. 11-20, 1957... | 2,038                | 9.2                        | .04       | 34           | 7.8            | 4.5         | .2            | 124                             | 14                         | 9.0           | .2           | .2                         | 179                                                | 117                           | 16            | 250                                       | 7.2 | 45    |
| Mar. 21-31, 1957... | 2,635                | 7.0                        | .03       | 28           | 6.8            | 4.3         | .4            | 102                             | 15                         | 7.8           | .1           | .1                         | 131                                                | 98                            | 14            | 208                                       | 7.0 | 34    |

SUWANNEE RIVER BASIN--Continued  
SUWANNEE RIVER AT BRANFORD, FLA.--Continued

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Apr. 1-10, 1957...         | 4,844                | 7.7                        | 0.08      | 8.8          | 2.1            | 4.3         | 0.8           | 26                              | 5.2                        | 8.5           | 0.1          | 0.2                        | 74                                                 | 30                            | 9             | 85.0                                      | 6.4 | 90    |
| Apr. 11-20.....            | 5,769                | 5.6                        | .11       | 8.4          | 2.2            | 4.3         | .8            | 30                              | 5.2                        | 8.2           | .1           | .0                         | 80                                                 | 30                            | 6             | 81.3                                      | 6.2 | 120   |
| Apr. 21-30.....            | 5,205                | 6.9                        | .09       | 18           | 3.5            | 3.5         | .6            | 59                              | 7.0                        | 7.2           | .1           | .1                         | 100                                                | 60                            | 11            | 135                                       | 6.7 | 80    |
| May 1-10.....              | 3,864                | 10                         | .05       | 32           | 5.4            | 4.0         | .6            | 106                             | 12                         | 6.8           | .1           | .1                         | 142                                                | 102                           | 15            | 215                                       | 6.7 | 50    |
| May 11-20.....             | 4,589                | 5.2                        | .09       | 19           | 3.5            | 4.8         | .6            | 61                              | 9.2                        | 6.8           | .1           | .1                         | 105                                                | 62                            | 12            | 141                                       | 6.7 | 80    |
| May 21-31.....             | 5,252                | 6.0                        | .15       | 17           | 3.2            | 3.5         | .6            | 52                              | 7.8                        | 8.0           | .2           | .0                         | 106                                                | 56                            | 13            | 131                                       | 6.6 | 110   |
| June 1-10.....             | 5,003                | 6.8                        | .13       | 22           | 4.9            | 3.0         | .4            | 80                              | 9.8                        | 6.0           | .1           | .0                         | 120                                                | 75                            | 10            | 159                                       | 6.6 | 100   |
| June 11-20.....            | 11,960               | 4.1                        | .19       | 5.0          | 1.3            | 1.8         | .7            | 17                              | 3.2                        | 4.2           | .1           | .2                         | 83                                                 | 18                            | 4             | 47.2                                      | 5.6 | 210   |
| June 21-29.....            | 11,360               | 6.3                        | .22       | 16           | 4.1            | 3.5         | .7            | 55                              | 5.2                        | 6.0           | .3           | .1                         | 114                                                | 57                            | 12            | 106                                       | 7.2 | 250   |
| July 9-20.....             | 6,856                | 8.4                        | .09       | 32           | 6.1            | 3.7         | .4            | 113                             | 12                         | 6.2           | .3           | .1                         | 146                                                | 105                           | 12            | 198                                       | 7.6 | 100   |
| July 21-31.....            | 5,637                | 7.8                        | .10       | 33           | 6.0            | 3.5         | .3            | 116                             | 13                         | 6.0           | .4           | .1                         | 145                                                | 107                           | 12            | 200                                       | 7.6 | 110   |
| Aug. 1-10.....             | 5,894                | 7.4                        | .12       | 28           | 5.1            | 3.4         | .3            | 97                              | 12                         | 6.0           | .3           | .0                         | 133                                                | 91                            | 12            | 169                                       | 7.6 | 140   |
| Aug. 11-20.....            | 5,327                | 6.4                        | .16       | 31           | 5.2            | 3.8         | .7            | 104                             | 12                         | 6.5           | .1           | .2                         | 147                                                | 99                            | 12            | 189                                       | 7.6 | 160   |
| Aug. 21-31.....            | 4,367                | 7.4                        | .08       | 39           | 7.2            | 3.7         | .5            | 136                             | 16                         | 5.5           | .2           | .1                         | 168                                                | 127                           | 16            | 249                                       | 7.4 | 140   |
| Sept. 1-10.....            | 5,836                | 7.4                        | .15       | 23           | 4.0            | 3.9         | .7            | 73                              | 12                         | 5.8           | .3           | .1                         | 109                                                | 74                            | 14            | 149                                       | 7.6 | 90    |
| Sept. 11-20.....           | 6,727                | 7.5                        | .13       | 20           | 5.4            | 3.9         | .8            | 73                              | 10                         | 6.2           | .3           | .0                         | 117                                                | 72                            | 12            | 147                                       | 7.6 | 180   |
| Time-weighted average..... | 4,105                | 8.4                        | 0.08      | 31           | 6.9            | 3.8         | 0.5           | 111                             | 14                         | 6.8           | 0.2          | 0.1                        | 150                                                | 106                           | 15            | 214                                       | --  | 81    |

a Represents 98 percent of runoff for water year October 1956 to September 1957.

## SUWANNEE RIVER BASIN--Continued

## SUWANNEE RIVER AT BRANFORD, FLA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 75   | 70   | 59   | 65   | 71   | 64   | 64   | 72  | 78   | --   | 79   | 80    |
| 2       | 75   | 72   | 61   | 60   | 70   | 65   | 64   | 72  | 83   | --   | 79   | 78    |
| 3       | 75   | 70   | 63   | 60   | 71   | 66   | 64   | 72  | 79   | --   | 80   | 80    |
| 4       | 75   | 70   | 62   | 62   | 70   | 66   | 69   | 72  | 82   | --   | 80   | 79    |
| 5       | 74   | 70   | 63   | 63   | 71   | 65   | 69   | 71  | 78   | --   | 81   | 79    |
| 6       | 75   | 70   | 64   | 64   | 71   | 64   | 64   | 70  | 78   | --   | 80   | 78    |
| 7       | 74   | 69   | 65   | 64   | 71   | --   | 69   | 73  | 78   | --   | 79   | 77    |
| 8       | 74   | 70   | 68   | 63   | 71   | 62   | 69   | 71  | 77   | --   | 79   | 76    |
| 9       | 74   | 65   | 68   | 64   | 71   | 60   | 66   | 71  | 76   | 80   | 79   | 76    |
| 10      | --   | 64   | 64   | 67   | 71   | 60   | 68   | 72  | 77   | 80   | 79   | 76    |
| 11      | --   | 63   | 65   | 63   | 70   | 62   | 69   | 73  | 71   | 80   | 79   | 79    |
| 12      | --   | 65   | 65   | 64   | 65   | 64   | 69   | 73  | 77   | 79   | 80   | 80    |
| 13      | --   | 65   | 65   | 65   | 63   | 66   | --   | 75  | 79   | 79   | 81   | 80    |
| 14      | --   | 65   | 68   | 65   | 64   | 68   | 66   | 75  | 78   | 80   | 80   | 80    |
| 15      | 72   | 68   | 68   | 65   | 65   | 70   | 65   | 75  | 79   | 80   | 81   | 79    |
| 16      | --   | 68   | 69   | 65   | 65   | 69   | 66   | 74  | 79   | 80   | 80   | 78    |
| 17      | --   | 69   | 69   | 63   | 65   | 70   | --   | --  | 80   | 80   | 79   | 79    |
| 18      | --   | 74   | 70   | 59   | 64   | 69   | 69   | 77  | 80   | 79   | 80   | 81    |
| 19      | --   | 65   | 70   | 46   | 66   | 68   | 68   | 80  | 80   | 79   | 79   | 79    |
| 20      | --   | 68   | 69   | 59   | 66   | 68   | 69   | 78  | 81   | --   | 78   | --    |
| 21      | --   | 68   | 69   | 62   | 62   | 68   | 70   | 79  | 80   | 79   | 78   | 79    |
| 22      | 72   | 69   | 69   | 61   | 60   | 68   | 71   | 79  | 80   | 80   | 78   | 79    |
| 23      | 72   | 60   | 70   | 65   | 65   | 67   | 71   | 79  | 80   | 80   | 77   | 79    |
| 24      | 82   | 63   | 70   | 65   | 65   | 69   | 72   | 80  | 80   | 80   | 77   | 79    |
| 25      | 70   | 62   | 65   | 67   | 65   | 68   | 72   | 78  | 79   | 80   | 77   | 78    |
| 26      | 70   | 62   | 63   | 69   | 67   | 68   | 73   | 78  | 79   | 78   | 78   | 78    |
| 27      | 70   | 60   | 63   | 69   | 68   | 63   | 73   | 79  | 79   | 79   | 78   | 76    |
| 28      | 70   | 58   | 63   | 68   | 68   | 65   | 74   | 80  | 79   | 79   | 78   | 76    |
| 29      | 70   | 60   | 60   | 70   | --   | 64   | 73   | 79  | 80   | 79   | 78   | 78    |
| 30      | 69   | 60   | 62   | 70   | --   | 64   | 72   | 79  | --   | 79   | 79   | 73    |
| 31      | 69   | --   | 62   | 70   | --   | 65   | --   | 89  | --   | 79   | 78   | --    |
| Average | --   | 66   | 66   | 64   | 67   | 66   | 69   | 76  | 79   | --   | 79   | 78    |

SUWANNEE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN SUWANNEE RIVER BASIN IN FLORIDA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nesium            | Non-carbonate |                                           |     |       |
| Aug. 5, 1957.....  |                      | 10                         | 0.45      | 7.6          | 1.5            | 5.4         | 0.4           | 23                              | 5.0                        | 7.8           | 0.4          | 0.7                        | 83                                                 | 25                            | 6             | 83.5                                      | 6.6 | 90    |
| Sept. 12.....      |                      | 8.0                        | .74       | 3.6          | 1.6            | 4.2         | 1.0           | 14                              | 3.8                        | 9.0           | .4           | .4                         | 275                                                | 16                            | 4             | 54.5                                      | 6.2 | 320   |

a Organic matter present; sum of mineral constituents 40 parts per million.

WILHACOCHEE RIVER AT PINETTA, FLA.

ESCAMBIA RIVER BASIN

ESCAMBIA RIVER NEAR CENTURY, FLA.

LOCATION.--At gaging station, 16 feet downstream from bridge, on State Highway 4, 1.2 miles downstream from Escambia Creek and 1½ miles east of Century, Escambia County.

DRAINAGE AREA.--3,817 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1952 to December 1953, September 1954 to August 1957.

Water temperatures: January 1952 to December 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 101 ppm Sept. 11-20, 1953; minimum, 51 ppm Apr. 1-6, 9-10, 1952, Dec. 21-30, 1953.

Hardness: Maximum, 43 ppm Aug. 3, 6-10, 11-14, 1953; minimum, 6 ppm Feb. 15, 1953.

Specific conductance: Maximum daily, 178 micromhos Aug. 27, 1953; minimum daily, 22.4 micromhos Feb. 15, 1953.

Water temperatures: Maximum, 98°F July 1, 1952; minimum, 39°F Dec. 30, 1953.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nesium            | Non-carbonate |                                           |     |       |
| Oct. 17, 1956....  | 1,930                | 11                         | 0.38      | 10           | 1.3            | 4.4         | 0.5           | 32                              | 3.2                        | 8.5           | 0.0          | 0.6                        | 61                                                 | 30                            | 4             | 86.9                                      | 6.7 | 40    |
| Dec. 6.....        | 1,530                | 11                         | .05       | 11           | 1.1            | 5.0         | .6            | 36                              | 4.0                        | 10            | .0           | .3                         | 57                                                 | 32                            | 2             | 94.3                                      | 6.6 | 20    |
| Jan. 31, 1957....  | 5,140                | 10                         | .48       | 8.4          | .7             | 3.0         | .3            | 26                              | .5                         | 7.0           | .0           | .2                         | 63                                                 | 24                            | 2             | 67.1                                      | 7.1 | 45    |
| Mar. 27.....       | 12,800               | 8.2                        | .23       | 5.6          | .9             | 2.4         | .7            | 18                              | 2.2                        | 4.2           | .0           | .5                         | 60                                                 | 18                            | 2             | 51.9                                      | 6.2 | 100   |
| May 23.....        | 5,520                | 8.7                        | .43       | 7.4          | 1.0            | 2.6         | .6            | 26                              | 2.5                        | 4.2           | .1           | .3                         | 61                                                 | 22                            | 1             | 60.9                                      | 6.6 | 75    |
| July 11.....       | 2,220                | 11                         | .22       | 10           | 1.3            | 3.7         | .7            | 36                              | 2.5                        | 6.5           | .1           | .1                         | 67                                                 | 30                            | 1             | 82.1                                      | 6.9 | 45    |
| Aug. 29.....       | 972                  | 9.9                        | .02       | 12           | 1.0            | 5.6         | .4            | 39                              | 2.5                        | 10            | .0           | .4                         | 64                                                 | 34                            | 2             | 97.8                                      | 6.9 | 4     |

## ESCAMBIA RIVER BASIN--Continued

## PINE BARREN CREEK NEAR BARTH, FLA.

LOCATION.--At gaging station, 10 feet downstream from Wiggins Bridge on private road, 0.3 mile upstream from Blue Water Creek, 2.2 miles northeast of Mount Calvary Camp Grounds, and 4 miles northeast of Barth, Escambia County.

DRAINAGE AREA.--75.3 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to August 1957.

Water temperatures: March 1953 to April 1955.

EXTREMES, 1953-55.--Water temperatures: Maximum, 78°F Aug. 6, 7, 9, 10, 1954; minimum, 45°F Feb. 13, 14, 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1504.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 17, 1956..... | 76                   | 8.2                        | 0.37      | 0.6          | 0.4            | 1.6         | 0.1           | 5                               | 0.5                        | 3.5           | 0.0          | 0.1                        | 16                                                 | 3                             | 0             | 16.9                                      | 6.0 | 20    |
| Dec. 6.....        | 75                   | 7.5                        | .06       | .6           | .4             | 1.6         | .2            | 5                               | 2.0                        | 3.2           | .0           | .3                         | 11                                                 | 3                             | 0             | 17.5                                      | 6.1 | 7     |
| Jan. 31, 1957..... | 88                   | 6.9                        | .31       | .8           | .5             | 1.5         | .1            | 6                               | .2                         | 4.2           | .0           | .1                         | 22                                                 | 4                             | 0             | 17.8                                      | 6.2 | 30    |
| Mar. 27.....       | 137                  | 4.7                        | .05       | .8           | .7             | 1.5         | .6            | 4                               | .2                         | 2.8           | .0           | .0                         | 21                                                 | 5                             | 2             | 22.6                                      | 5.6 | 12    |
| May 22.....        | 92                   | 7.1                        | .36       | .8           | .4             | 1.6         | .1            | 5                               | .0                         | 3.2           | .1           | .2                         | 16                                                 | 4                             | 0             | 25.0                                      | 5.5 | 22    |
| July 20.....       | 77                   | 8.2                        | .43       | .6           | .4             | 1.8         | .0            | 4                               | .5                         | 2.2           | .0           | .1                         | 19                                                 | 3                             | 0             | 19.5                                      | 5.9 | 18    |
| Aug. 28.....       | 67                   | 7.5                        | .11       | .6           | .4             | 1.9         | .0            | 5                               | .0                         | 3.2           | .2           | .4                         | 22                                                 | 3                             | 0             | 18.1                                      | 5.9 | 21    |



## MOBILE RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN MOBILE RIVER BASIN IN ALABAMA

Chemical analyses, in parts per million, water from October 1956 to September 1957

| Date of collection                          | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|---------------------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
|                                             |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>magnesium            | Non-carbon-<br>ate |                                                             |     |       |
|                                             |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| TERRAPIN CREEK NEAR PIEDMONT                |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 9, 1956.....                           | a9.8               | 7.5                           | 0.00         | 9.2             | 2.7                    | 2.2            | 1.0                   | 42                                      | 5.2                           | 2.0              | 0.1             | 0.0                           | 54                                                                  | 34                               | 0                  | 83.0                                                        | 7.0 | 10    |
| Feb. 8, 1957.....                           | a167               | 9.4                           | .10          | 3.6             | 1.2                    | 1.8            | .7                    | 22                                      | 3.8                           | 2.5              | .1              | .3                            | 33                                                                  | 14                               | 0                  | 42.0                                                        | 6.7 | 25    |
| June 19.....                                | a73                | 9.5                           | .14          | 4.2             | 1.9                    | 2.3            | .2                    | 26                                      | 1.5                           | 1.2              | .1              | .4                            | 42                                                                  | 18                               | 0                  | 49.4                                                        | 7.1 | 8     |
| NANCES CREEK NEAR PIEDMONT                  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 9, 1956.....                           | 3.91               | 10                            | 0.00         | 22              | 9.5                    | 1.4            | 1.4                   | 115                                     | 4.2                           | 2.0              | 0.1             | 0.1                           | 111                                                                 | 94                               | 0                  | 192                                                         | 7.5 | 7     |
| Feb. 8, 1957.....                           | 48.2               | 8.4                           | .05          | 8.4             | 4.3                    | 1.3            | 1.3                   | 49                                      | 3.2                           | 1.8              | .1              | .7                            | 58                                                                  | 38                               | 0                  | 87.5                                                        | 7.2 | 20    |
| June 19.....                                | 11.3               | 11                            | .06          | 19              | 8.6                    | 1.4            | 1.3                   | 111                                     | 2.8                           | 1.8              | .1              | 1.2                           | 91                                                                  | 83                               | 0                  | 168                                                         | 7.7 | 3     |
| OHATCHEE CREEK NEAR READ'S                  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 10, 1956.....                          | 1.00               | 7.5                           | 0.00         | 29              | 8.1                    | 0.6            | .4                    | 128                                     | 0.2                           | 2.0              | 0.1             | 0.4                           | 112                                                                 | 106                              | 1                  | 205                                                         | 7.6 | 7     |
| Feb. 8, 1957.....                           | 68.7               | 8.3                           | .08          | 12              | 3.4                    | 1.5            | .6                    | 53                                      | 4.2                           | 2.5              | .1              | .8                            | 65                                                                  | 44                               | 0                  | 96.1                                                        | 7.2 | 22    |
| June 18.....                                | 16.0               | 8.0                           | .11          | 22              | 7.1                    | 1.1            | .4                    | 102                                     | 1.0                           | 1.2              | .1              | 1.1                           | 100                                                                 | 84                               | 0                  | 166                                                         | 7.7 | 12    |
| OHATCHEE CREEK AT OHATCHEE                  |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 10, 1956.....                          | 13.9               | 8.0                           | 0.00         | 30              | 9.7                    | 1.4            | 0.8                   | 138                                     | 2.2                           | 2.5              | 0.2             | 0.0                           | 119                                                                 | 115                              | 2                  | 224                                                         | 7.5 | 10    |
| Feb. 8, 1957.....                           | 168                | 8.7                           | .13          | 11              | 2.3                    | 1.7            | .7                    | 43                                      | 5.0                           | 2.5              | .1              | .7                            | 64                                                                  | 37                               | 2                  | 85.6                                                        | 7.0 | 32    |
| June 20.....                                | 26.2               | 8.1                           | .15          | 22              | 5.4                    | 1.6            | .6                    | 92                                      | 3.0                           | 1.5              | .1              | 1.3                           | 108                                                                 | 77                               | 2                  | 155                                                         | 7.4 | 18    |
| LITTLE TALLAHATCHEE CREEK NEAR JACKSONVILLE |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 11, 1956.....                          | 6.33               | 9.2                           | 0.00         | 28              | 13                     | 1.4            | 1.3                   | 149                                     | 2.8                           | 2.5              | 0.1             | 0.8                           | 132                                                                 | 124                              | 2                  | 242                                                         | 7.7 | 3     |
| Feb. 8, 1957.....                           | 36.5               | 7.9                           | .02          | 16              | 6.4                    | 1.3            | .9                    | 79                                      | 3.0                           | 2.5              | .1              | 1.3                           | 75                                                                  | 66                               | 2                  | 137                                                         | 7.4 | 8     |
| June 19.....                                | 13.3               | 8.6                           | .02          | 27              | 12                     | 1.2            | .9                    | 142                                     | 2.2                           | 2.2              | .1              | 1.6                           | 123                                                                 | 117                              | 0                  | 227                                                         | 7.7 | 2     |
| LITTLE CREEK NEAR JACKSONVILLE              |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Feb. 8, 1957.....                           | 62.7               | 7.9                           | 0.05         | 19              | 7.5                    | 1.4            | 0.8                   | 92                                      | 4.0                           | 2.5              | 0.1             | 1.4                           | 88                                                                  | 78                               | 3                  | 156                                                         | 7.5 | 9     |
| June 19.....                                | 30.2               | 8.6                           | .03          | 27              | 11                     | 1.1            | .6                    | 135                                     | 5.8                           | 2.2              | .1              | 1.2                           | 117                                                                 | 112                              | 2                  | 218                                                         | 7.7 | 2     |
| TALLAHATCHEE CREEK NEAR WELLINGTON          |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 10, 1956.....                          | a30                | 7.5                           | 0.00         | 31              | 9.8                    | 1.6            | 0.8                   | 146                                     | 0.5                           | 3.0              | 0.1             | 0.4                           | 130                                                                 | 118                              | 0                  | 237                                                         | 7.5 | 5     |
| Feb. 8, 1957.....                           | a176               | 8.2                           | .03          | 19              | 7.1                    | 1.8            | .8                    | 88                                      | 7.0                           | 2.8              | .1              | 1.9                           | 90                                                                  | 76                               | 4                  | 160                                                         | 7.4 | 6     |
| June 18.....                                | a79                | 8.1                           | .05          | 26              | 9.0                    | 2.1            | 1.0                   | 118                                     | 7.5                           | 2.2              | .1              | 1.7                           | 115                                                                 | 102                              | 6                  | 207                                                         | 7.5 | 7     |
| ANGEL CREEK NEAR WELLINGTON                 |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 10, 1956.....                          | 5.99               | 8.0                           | 0.00         | 33              | 8.1                    | 0.9            | 0.3                   | 144                                     | 0.5                           | 4.5              | 0.1             | 0.3                           | 128                                                                 | 116                              | 0                  | 232                                                         | 7.6 | 10    |
| Feb. 8, 1957.....                           | 21.1               | 8.2                           | .02          | 28              | 6.7                    | 1.3            | .5                    | 114                                     | 4.8                           | 2.2              | .5              | 2.4                           | 109                                                                 | 98                               | 4                  | 194                                                         | 7.6 | 5     |
| June 18.....                                | 13.0               | 8.1                           | .02          | 33              | 7.8                    | 1.0            | .6                    | 140                                     | 2.8                           | 1.8              | .0              | 1.5                           | 130                                                                 | 114                              | 0                  | 223                                                         | 7.8 | 3     |

## CANE CREEK AT FRANCIS MILL

|                    |       |     |      |    |     |     |     |     |     |     |     |     |     |     |    |     |     |    |
|--------------------|-------|-----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|
| Oct. 10, 1956..... | 19.8  | 6.8 | 0.00 | 27 | 13  | 2.2 | 0.6 | 146 | 4.0 | 3.0 | 0.1 | 0.7 | 128 | 121 | 2  | 237 | 7.4 | 10 |
| Feb. 8, 1957.....  | 133.7 | 9.0 | .07  | 18 | 7.3 | 1.9 | .6  | 86  | 5.5 | 3.0 | .1  | 1.7 | 90  | 75  | 4  | 154 | 7.4 | 7  |
| June 20.....       | 54.2  | 8.2 | .12  | 23 | 9.8 | 2.5 | 1.1 | 106 | 4.8 | 4.2 | .1  | 2.3 | 98  | 98  | 11 | 205 | 7.5 | 20 |

## COLDWATER SPRING NEAR ANNISTON

|                   |       |     |      |    |    |     |     |     |     |     |     |     |     |     |   |     |     |   |
|-------------------|-------|-----|------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|---|
| Oct. 8, 1956..... | 37.7  | 9.2 | 0.00 | 22 | 11 | 1.1 | 1.0 | 123 | 1.5 | 2.0 | 0.1 | 0.1 | 104 | 100 | 0 | 185 | 7.8 | 5 |
| Feb. 8, 1957..... | 40.7  | 13  | .00  | 22 | 11 | 1.1 | 1.2 | 126 | 1.2 | 1.8 | .1  | .7  | 109 | 100 | 0 | 199 | 7.7 | 0 |
| June 19.....      | a43.0 | 13  | .00  | 14 | 16 | 1.2 | 1.0 | 128 | 1.8 | 1.8 | .1  | 2.0 | 106 | 101 | 0 | 202 | 7.8 | 2 |

## CHOCOLOCOCO CREEK AT CHOCOLOCOCO

|                   |      |     |      |     |     |     |     |    |     |     |     |     |    |     |   |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|-----|---|------|-----|----|
| Oct. 9, 1956..... | a20  | 9.2 | 0.00 | 14  | 8.0 | 1.7 | 1.2 | 82 | 4.0 | 2.0 | 0.1 | 0.3 | 81 | 68  | 0 | 141  | 7.3 | 10 |
| Feb. 8, 1957..... | a231 | 8.9 | .07  | 7.2 | 3.9 | 1.4 | .7  | 41 | 3.0 | 2.0 | .0  | .7  | 48 | 34  | 0 | 74.5 | 7.2 | 7  |
| June 19.....      | a68  | 11  | .07  | 11  | 5.7 | 1.7 | .8  | 64 | 2.8 | 1.2 | .1  | .6  | 60 | 100 | 0 | 109  | 7.4 | 3  |

## CHOCOLOCOCO CREEK NEAR BOILING SPRINGS

|                   |      |     |      |     |     |     |     |    |     |     |     |     |    |    |   |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|---|------|-----|----|
| Oct. 8, 1956..... | 27.7 | 8.5 | 0.00 | 15  | 8.4 | 1.6 | 1.2 | 88 | 0.8 | 2.0 | 0.1 | 0.2 | 88 | 72 | 0 | 150  | 7.1 | 10 |
| Feb. 8, 1957..... | 360  | 9.4 | .07  | 7.0 | 3.4 | 1.8 | .7  | 40 | 3.0 | 2.5 | .1  | .8  | 47 | 32 | 0 | 75.8 | 7.1 | 7  |
| June 19.....      | 107  | 10  | .04  | 12  | 6.2 | 1.7 | .6  | 70 | .2  | 1.2 | .1  | .7  | 69 | 56 | 0 | 119  | 7.4 | 2  |

## BLACK WARRIOR RIVER AT LOCK 13, NEAR PETERSON

|                    |         |     |      |     |     |     |     |    |    |     |     |     |     |    |    |     |     |    |
|--------------------|---------|-----|------|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|----|-----|-----|----|
| Oct. 31, 1956..... | b582    | 3.4 | 0.00 | 16  | 4.4 | 16  | 2.5 | 48 | 50 | 6.0 | 0.8 | 1.6 | 125 | 58 | 18 | 206 | 7.1 | 5  |
| Jan. 7, 1957.....  | b20,800 | 7.2 | .01  | 7.6 | 3.2 | 3.4 | 1.4 | 16 | 28 | 4.0 | .0  | 2.7 | 58  | 32 | 19 | 185 | 6.6 | 25 |
| Apr. 16.....       | 55100   | 7.2 | .01  | 4.2 | 2.9 | 3.6 | 1.1 | 37 | 16 | 1.0 | .0  | 1.7 | 58  | 32 | 19 | 185 | 6.6 | 25 |
| June 20.....       | b574    | 7.8 | .00  | 14  | 4.9 | 15  | 2.1 | 31 | 51 | 4.0 | .1  | 1.0 | 121 | 55 | 30 | 191 | 6.8 | 3  |

## DAVIS CREEK BELOW ABERNANT

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |    |    |      |     |    |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|----|------|-----|----|
| Oct. 27, 1956..... | a6.4 | 9.2 | 0.00 | 19  | 3.0 | 3.0 | 1.5 | 67 | 12  | 2.5 | 0.6 | 0.5 | 82  | 60 | 5  | 138  | 7.1 | 5  |
| Jan. 7, 1957.....  | a99  | 9.7 | .04  | 4.2 | 1.6 | 2.3 | .7  | 16 | 10  | 2.5 | .0  | .3  | 47  | 17 | 4  | 53.0 | 6.7 | 30 |
| Apr. 16.....       | a42  | 7.8 | .03  | 5.4 | 1.5 | 1.8 | .7  | 24 | 3.2 | 1.5 | .0  | .5  | 39  | 20 | 0  | 53.1 | 6.7 | 8  |
| June 19.....       | 12.8 | 8.7 | .03  | 16  | 4.9 | 9.9 | 1.4 | 52 | 38  | 2.0 | .1  | .1  | 124 | 60 | 18 | 179  | 7.0 | 7  |

## HURRICANE CREEK NEAR BROOKWOOD

|                   |      |     |      |     |     |     |     |   |     |     |     |     |     |    |    |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|----|----|------|-----|----|
| Jan. 6, 1957..... | 81.5 | 8.2 | 0.07 | 2.4 | 3.2 | 1.5 | 0.5 | 5 | 16  | 2.5 | 0.0 | 0.2 | 48  | 16 | 15 | 50.0 | 6.0 | 25 |
| June 20.....      | 5.17 | 12  | .01  | 14  | 15  | 5.4 | 2.4 | 1 | 100 | 3.5 | .1  | .5  | 189 | 96 | 96 | 243  | 4.6 | 3  |

a Mean discharge.

b Mean discharge at Tuscaloosa (9 miles downstream from Lock 13).

## MOBILE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN MOBILE RIVER BASIN IN ALABAMA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection             | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180° C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25° C) | pH  | Color |
|--------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|----------------------------------------------------------------------|----------------------------------|------------------------|--------------------------------------------------------------|-----|-------|
|                                |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      | Calcium                          | Non-<br>carbon-<br>ate |                                                              |     |       |
| BIG SANDY CREEK AT DUNCANVILLE |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      |                                  |                        |                                                              |     |       |
| Oct. 26, 1956.....             | a30                | 13                            | 0.03         | 19                   | 6.2                    | 1.3            | 0.7                   | 88                                      | 4.8                           | 2.5              | 0.6             | 0.4                           | 87                                                                   | 73                               | 1                      | 147                                                          | 7.3 | 5     |
| Jan. 8, 1957.....              | a71                | 12                            | .28          | 10                   | 3.9                    | 1.4            | .7                    | 46                                      | 5.8                           | 3.0              | .0              | .5                            | 68                                                                   | 41                               | 4                      | 88.9                                                         | 7.1 | 25    |
| Apr. 16.....                   | a78                | 11                            | .06          | 11                   | 4.0                    | 1.4            | .8                    | 52                                      | 3.8                           | 2.0              | .0              | .4                            | 59                                                                   | 44                               | 2                      | 98.5                                                         | 6.9 | 5     |
| June 20.....                   | a52                | 11                            | .02          | 11                   | 4.3                    | 1.5            | 1.1                   | 46                                      | 9.8                           | 1.5              | .1              | .3                            | 72                                                                   | 45                               | 8                      | 103                                                          | 6.9 | 4     |

a Daily mean discharge.

## OHIO RIVER BASIN

## MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN IN PENNSYLVANIA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH | Color |
|--------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|----|-------|
|                    |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |    |       |

## ALLEGHENY RIVER BASIN-TRIBUTARIES ABOVE CONEWANGO CREEK BASIN

## ALLEGHENY RIVER AT PORT ALLEGHENY

|                    |  |  |  |  |  |  |  |  |    |  |    |    |    |  |     |    |    |   |  |     |  |     |   |
|--------------------|--|--|--|--|--|--|--|--|----|--|----|----|----|--|-----|----|----|---|--|-----|--|-----|---|
| July 19, 1957 .... |  |  |  |  |  |  |  |  | 12 |  | 32 | 13 | 12 |  | 3.6 | 80 | 34 | 8 |  | 131 |  | 7.6 | 2 |
|--------------------|--|--|--|--|--|--|--|--|----|--|----|----|----|--|-----|----|----|---|--|-----|--|-----|---|

## MARVIN CREEK AT SMETHPORT

|                    |  |  |  |  |  |  |  |  |     |  |    |     |     |  |     |    |    |   |  |    |  |     |   |
|--------------------|--|--|--|--|--|--|--|--|-----|--|----|-----|-----|--|-----|----|----|---|--|----|--|-----|---|
| July 19, 1957 .... |  |  |  |  |  |  |  |  | 7.1 |  | 32 | 9.2 | 2.0 |  | 1.3 | 60 | 24 | 2 |  | 85 |  | 7.7 | 2 |
|--------------------|--|--|--|--|--|--|--|--|-----|--|----|-----|-----|--|-----|----|----|---|--|----|--|-----|---|

## POTATO CREEK AT SMETHPORT

|                    |  |  |  |  |  |  |  |  |     |  |    |    |     |  |     |    |    |   |  |    |  |     |   |
|--------------------|--|--|--|--|--|--|--|--|-----|--|----|----|-----|--|-----|----|----|---|--|----|--|-----|---|
| July 19, 1957 .... |  |  |  |  |  |  |  |  | 6.4 |  | 28 | 12 | 2.0 |  | 1.6 | 60 | 26 | 3 |  | 94 |  | 7.6 | 2 |
|--------------------|--|--|--|--|--|--|--|--|-----|--|----|----|-----|--|-----|----|----|---|--|----|--|-----|---|

## ALLEGHENY RIVER AT KINZUA

|                       |  |  |     |  |      |  |     |     |    |     |    |    |     |     |     |     |     |    |  |     |  |     |   |
|-----------------------|--|--|-----|--|------|--|-----|-----|----|-----|----|----|-----|-----|-----|-----|-----|----|--|-----|--|-----|---|
| Oct. 24, 1956 ....    |  |  | 3.4 |  | 0.00 |  | 25  | 5.2 | 36 | 1.6 | 54 | 16 | 74  | 0.2 | 0.0 | 218 | 84  | 40 |  | 377 |  | 6.3 | 6 |
| Nov. 29 ..... 29      |  |  | 6.0 |  | .29  |  | 14  | 2.7 | 20 | 1.4 | 23 | 13 | 40  | .1  | 1.2 | 135 | 46  | 27 |  | 212 |  | 6.5 | 5 |
| Feb. 7, 1957 ..... 00 |  |  | 8.7 |  | .00  |  | 16  | 3.2 | 17 | 1.2 | 35 | 15 | 34  | .2  | 1.4 | 129 | 53  | 24 |  | 215 |  | 6.5 | 4 |
| Mar. 14 ..... 07      |  |  | 5.2 |  |      |  | 9.4 | 1.6 | 10 | 1.2 | 16 | 13 | 19  | .2  | 1.2 | 73  | 30  | 17 |  | 121 |  | 7.2 | 3 |
| Apr. 22 ..... --      |  |  | --  |  | --   |  | --  | --  | 16 | --  | 28 | 11 | 13  | --  | 5.0 | --  | 22  | 0  |  | 117 |  | 6.2 | 6 |
| June 4 ..... --       |  |  | --  |  | --   |  | --  | --  | 23 | --  | 39 | 14 | 44  | --  | .9  | --  | 58  | 26 |  | 249 |  | 7.0 | 4 |
| Sept. 5 ..... --      |  |  | --  |  | --   |  | --  | --  | 69 | --  | 74 | 18 | 139 | --  | 2.0 | --  | 128 | 66 |  | 631 |  | 7.0 | 5 |

## BROKENSTRAW CREEK BASIN

## BROKENSTRAW CREEK AT GARLAND

|                     |  |  |  |  |  |  |  |  |     |  |    |    |  |  |     |     |    |   |  |     |  |     |   |
|---------------------|--|--|--|--|--|--|--|--|-----|--|----|----|--|--|-----|-----|----|---|--|-----|--|-----|---|
| July 19, 1957 ..... |  |  |  |  |  |  |  |  | 5.3 |  | 90 | 15 |  |  | 2.7 | 130 | 80 | 6 |  | 191 |  | 8.2 | 3 |
|---------------------|--|--|--|--|--|--|--|--|-----|--|----|----|--|--|-----|-----|----|---|--|-----|--|-----|---|

OHIO RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN IN PENNSYLVANIA--Continued  
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection        | Mean discharge (cfs) | Tem- per- a- ture (°F) | Silica (SiO <sub>2</sub> ) | Alum- inum (Al) | Iron (Fe) | Man- ga- nese (Mn) | Cal- cium (Ca) | Mag- ne- sium (Mg) | So- dium (Na) | Po- tas- sium (K) | Bicar- bonate (HCO <sub>3</sub> ) | Sul- fate (SO <sub>4</sub> ) | Chlo- ride (Cl) | Fluo- ride (F) | Ni- trate (NO <sub>3</sub> ) | Dissolved solids (residue on evap- oration at 180°C) | Hardness as CaCO <sub>3</sub> |                  | Total acid- ity as (H <sup>+</sup> ) | Specific conduct- ance (micro- mhos at 25°C) | pH  | Color |    |
|---------------------------|----------------------|------------------------|----------------------------|-----------------|-----------|--------------------|----------------|--------------------|---------------|-------------------|-----------------------------------|------------------------------|-----------------|----------------|------------------------------|------------------------------------------------------|-------------------------------|------------------|--------------------------------------|----------------------------------------------|-----|-------|----|
|                           |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      | Calcium,                      | Non- carbon- ate |                                      |                                              |     |       |    |
| OIL CREEK BASIN           |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| OIL CREEK NEAR TITUSVILLE |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| July 19, 1957 ....        |                      |                        |                            |                 |           |                    |                |                    | 18            |                   | 78                                | 16                           | 20              |                |                              | 2.7                                                  | 135                           | 72               | 8                                    |                                              | 228 | 8.1   | 2  |
| OIL CREEK AT TITUSVILLE   |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| July 19, 1957 ....        |                      |                        |                            |                 |           |                    |                |                    | 5.5           |                   | 77                                | 16                           | 4.7             |                |                              | 3.8                                                  | 115                           | 77               | 14                                   |                                              | 170 | 7.5   | 3  |
| FRENCH CREEK BASIN        |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| FRENCH CREEK AT UTICA     |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| July 1, 1957 .....        |                      |                        |                            |                 |           |                    |                |                    | 2.5           |                   | 37                                | 12                           | 1.8             |                |                              | 2.6                                                  |                               | 42               | 12                                   |                                              | 105 | 7.3   | 35 |
| Sept. 10 .....            |                      |                        |                            |                 |           |                    |                |                    | 15            |                   | 132                               | 38                           | 11              |                |                              | 2.7                                                  |                               | 132              | 24                                   |                                              | 313 | 7.6   | 10 |
| CLARION RIVER BASIN       |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| CLARION RIVER NEAR PINEY  |                      |                        |                            |                 |           |                    |                |                    |               |                   |                                   |                              |                 |                |                              |                                                      |                               |                  |                                      |                                              |     |       |    |
| Oct. 18, 1956 .....       |                      |                        |                            |                 |           |                    |                |                    | 11            |                   | 9                                 | 51                           | 18              |                |                              | 0.5                                                  |                               | 62               | 55                                   |                                              | 197 | 5.7   | 6  |
| Nov. 26 .....             |                      |                        |                            |                 |           |                    |                |                    | 11            |                   | 15                                | 58                           | 22              |                |                              | .7                                                   |                               | 80               | 68                                   |                                              | 229 | 6.6   | 10 |
| Jan. 7, 1957 .....        |                      |                        |                            |                 |           |                    |                |                    | 7.8           |                   | 6                                 | 43                           | 10              |                |                              | 1.4                                                  |                               | 48               | 43                                   |                                              | 144 | 5.5   | 7  |
| Feb. 4 .....              |                      |                        |                            |                 |           |                    |                |                    | 7.1           |                   | 4                                 | 46                           | 8.0             |                |                              | .9                                                   |                               | 48               | 45                                   |                                              | 141 | 5.4   | 5  |
| Mar. 11 .....             |                      |                        |                            |                 |           |                    |                |                    | 7.4           |                   | 6                                 | 46                           | 9.0             |                |                              | .8                                                   |                               | 50               | 45                                   |                                              | 151 | 5.4   | 5  |
| Apr. 15 .....             |                      |                        |                            |                 |           |                    |                |                    | 4.4           |                   | 14                                | 39                           | 5.0             |                |                              | .9                                                   |                               | 50               | 39                                   |                                              | 147 | 5.9   | 7  |
| May 20 .....              |                      |                        |                            |                 |           |                    |                |                    | 7.8           |                   | 4                                 | 42                           | 7.5             |                |                              | 1.9                                                  |                               | 42               | 39                                   |                                              | 132 | 5.7   | 40 |
| July 29 .....             |                      |                        |                            |                 |           |                    |                |                    | 16            |                   | 6                                 | 57                           | 22              |                |                              | 1.7                                                  |                               | 62               | 57                                   |                                              | 221 | 6.0   | 30 |
| Sept. 5 .....             |                      |                        |                            |                 |           |                    |                |                    | 29            |                   | 8                                 | 105                          | 41              |                |                              | 1.8                                                  |                               | 112              | 105                                  |                                              | 389 | 6.2   | 30 |

KISKIMINETAS RIVER BASIN  
BEAR CREEK AT PETROLIA

|                         |  |  |  |  |  |     |     |       |     |  |     |       |     |     |  |       |     |     |
|-------------------------|--|--|--|--|--|-----|-----|-------|-----|--|-----|-------|-----|-----|--|-------|-----|-----|
| July 18, 1957 . . . . . |  |  |  |  |  | 895 | 320 | 1,130 | 920 |  | 1.0 | 3,520 | 790 | 529 |  | 5,000 | 8.2 | 120 |
|-------------------------|--|--|--|--|--|-----|-----|-------|-----|--|-----|-------|-----|-----|--|-------|-----|-----|

## KISKIMINETAS RIVER AT APOLLO

|                         |  |  |  |  |  |    |   |     |    |  |     |  |     |     |     |       |      |  |
|-------------------------|--|--|--|--|--|----|---|-----|----|--|-----|--|-----|-----|-----|-------|------|--|
| Apr. 18, 1957 . . . . . |  |  |  |  |  | 68 | 0 | 426 | 16 |  | 1.1 |  | 275 | 275 | 1.7 | 1,040 | 3.10 |  |
|-------------------------|--|--|--|--|--|----|---|-----|----|--|-----|--|-----|-----|-----|-------|------|--|

## KISKIMINETAS RIVER AT VANDERGRIFF

|                         |    |  |  |  |  |     |     |     |     |    |     |     |     |     |     |       |      |    |
|-------------------------|----|--|--|--|--|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-------|------|----|
| Nov. 8, 1956 . . . . .  |    |  |  |  |  | --  | --  | --  | --  |    | --  |     | 215 | --  | 1.5 | 744   | 3.25 | -- |
| Dec. 11 . . . . .       |    |  |  |  |  | --  | --  | --  | --  |    | --  |     | 138 | --  | .9  | .507  | 3.50 | -- |
| Apr. 30, 1957 . . . . . | 11 |  |  |  |  |     | 0   | 117 | 5.2 |    | 0.4 | 200 | 110 | 110 | .5  | 357   | 3.85 | 2  |
| June 4 . . . . .        |    |  |  |  |  | --  | 3.2 | 0   | 451 | 12 | .2  |     | 290 | 290 | 1.9 | 1,100 | 2.90 | 5  |
| Aug. 4 . . . . .        |    |  |  |  |  | 81  |     | 0   | 564 | 17 |     |     | 365 | 365 | 2.2 | 1,310 | 2.90 | 4  |
| Aug. 13 . . . . .       |    |  |  |  |  | 103 |     | 0   | 745 | 25 |     |     | 495 | 495 | 2.7 | 1,660 | 2.80 | 4  |
| Sept. 23 . . . . .      |    |  |  |  |  |     |     |     |     |    |     |     |     |     |     |       |      |    |

## OHIO RIVER MAIN STEM

## ALLEGHENY RIVER AT NATRONA

|                         |  |  |  |  |  |    |     |     |     |  |     |  |     |     |     |     |     |   |
|-------------------------|--|--|--|--|--|----|-----|-----|-----|--|-----|--|-----|-----|-----|-----|-----|---|
| Oct. 11, 1956 . . . . . |  |  |  |  |  | 18 | 25  | 90  | 20  |  | 1.8 |  | 104 | 84  |     | 317 | 5.9 | 5 |
| Nov. 30 . . . . .       |  |  |  |  |  | 18 | 24  | 57  | 20  |  | 5.5 |  | 72  | 53  |     | 246 | 6.5 | 3 |
| Jan. 4, 1957 . . . . .  |  |  |  |  |  | 14 | 10  | 65  | 11  |  | 8.1 |  | 66  | 58  |     | 210 | 6.0 | 3 |
| Feb. 6 . . . . .        |  |  |  |  |  | 14 | 10  | 71  | 9.3 |  | 6.3 |  | 70  | 62  |     | 214 | 5.6 | 2 |
| Apr. 2 . . . . .        |  |  |  |  |  | 12 | 78  | 1   | 1   |  | 3.9 |  | 80  | 75  |     | 232 | 5.4 | 3 |
| May 17 . . . . .        |  |  |  |  |  | 14 | 15  | 90  | 15  |  | 2.8 |  | 100 | 88  |     | 282 | 5.6 | 3 |
| Aug. 2 . . . . .        |  |  |  |  |  | 33 | 201 | 22  |     |  | 9.8 |  | 176 | 176 | 0.3 | 564 | 4.5 | 3 |
| Sept. 27 . . . . .      |  |  |  |  |  | 37 | 18  | 182 | 40  |  | 4.8 |  | 184 | 169 |     | 543 | 6.0 | 5 |

## OHIO RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN IN PENNSYLVANIA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection          | Mean discharge (cfs) | Tem- perature (° F) | Silica (SiO <sub>2</sub> ) | Alum- inum (Al) | Iron (Fe) | Man- ga- nese (Mn) | Cal- cium (Ca) | Mag- ne- sium (Mg) | So- dium (Na) | Po- tas- sium (K) | Bicar- bonate (HCO <sub>3</sub> ) (SO <sub>4</sub> ) | Chlo- ride (Cl) | Fluo- ride (F) | Ni- trate (NO <sub>3</sub> ) | Dissolved solids (residue on evap- oration at 180° C) | Hardness as CaCO <sub>3</sub> |                  | Total acid- ity as (H <sup>+</sup> ) | Specific conduct- ance (micro- mhos at 25° C) | pH   | Color |  |
|-----------------------------|----------------------|---------------------|----------------------------|-----------------|-----------|--------------------|----------------|--------------------|---------------|-------------------|------------------------------------------------------|-----------------|----------------|------------------------------|-------------------------------------------------------|-------------------------------|------------------|--------------------------------------|-----------------------------------------------|------|-------|--|
|                             |                      |                     |                            |                 |           |                    |                |                    |               |                   |                                                      |                 |                |                              |                                                       | Calcium                       | Non- carbon- ate |                                      |                                               |      |       |  |
| CHARTIERS CREEK BASIN       |                      |                     |                            |                 |           |                    |                |                    |               |                   |                                                      |                 |                |                              |                                                       |                               |                  |                                      |                                               |      |       |  |
| CHARTIERS CREEK AT CARNEGIE |                      |                     |                            |                 |           |                    |                |                    |               |                   |                                                      |                 |                |                              |                                                       |                               |                  |                                      |                                               |      |       |  |
| July 16, 1957 .....         |                      |                     |                            |                 |           |                    |                | 425                |               | 0                 | 1,380                                                | 120             |                | 11                           | 2,070                                                 | 620                           | 620              | 5.3                                  | 2,840                                         | 2.90 | 30    |  |
| July 26, .....              |                      |                     |                            |                 |           |                    |                | 401                |               | 0                 | 1,270                                                | 102             |                | ..3                          |                                                       | 590                           | 590              | 4.0                                  | 2,550                                         | 4.00 | 15    |  |

## CHARTIERS CREEK BASIN

## CHARTIERS CREEK AT CARNEGIE

## OHIO RIVER MAIN STEM

## OHIO RIVER AT SEWICKLEY

|                    |  |  |  |  |  |  |  |  |    |  |    |    |     |  |     |  |    |    |  |     |     |   |
|--------------------|--|--|--|--|--|--|--|--|----|--|----|----|-----|--|-----|--|----|----|--|-----|-----|---|
| Aug. 10, 1957 .... |  |  |  |  |  |  |  |  | 24 |  | 22 | 79 | 6.8 |  | 2.5 |  | 78 | 61 |  | 247 | 6.8 | 4 |
|--------------------|--|--|--|--|--|--|--|--|----|--|----|----|-----|--|-----|--|----|----|--|-----|-----|---|

## OHIO RIVER MAIN STEM

## ALLEGHENY RIVER AT KITTANNING, PA.

LOCATION.--At city raw-water intake, about 1,000 feet upstream from bridge on U. S. Highway 422, at Kittanning, Armstrong County, and about 1,500 feet downstream from gaging station.

DRAINAGE AREA.--8 973 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1906 to September 1907; October 1944 to June 1953; October 1956 to September 1957.

Water temperatures: October 1944 to June 1953: Maximum, 114 ppm Sept. 8-28; minimum, 41 ppm Jan. 24-31.

EXTREMES, 1956-57.--Hardness: Maximum daily, 420 micromhos Sept. 26; minimum daily, 101 micromhos Jan. 25, 26.

Specific conductance: Maximum, 86°F July 31, Aug. 4.

Water temperatures: Maximum, 86°F July 31, Aug. 4.

EXTREMES, (1906-07, 1944-53, 1956-57).--Dissolved solids, (1906-07, 1944-47): Maximum, 304 ppm Oct. 11-20, 1946; minimum, 54 ppm Jan. 7-15, 1907.

Hardness, (1906-07, 1944-47, 1949-53, 1956-57): Maximum, 148 ppm Sept. 11-20, 1952; minimum, 29 ppm Jan. 7-15, 1907.

Specific conductance: Maximum daily, 580 micromhos Oct. 18, 1946; minimum daily, 92 micromhos Mar. 15, 1952.

Water temperatures: Maximum daily, 86°F July 31, Aug. 4, 1957; minimum, freezing point Dec. 17, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg-nesium            | Non-carbonate |     |       |
| Oct. 1-10, 1956    | 6,300                | 1.5                        | 0.03      | 17           | 7.1            | 15          |               | 42                              | 40                         | 19            | 0.1          | 0.4                        | 129                                                | 72                            | 37            | 7.1 | 2     |
| Oct. 11-20         | 5,400                | --                         | --        | --           | --             | 15          |               | 48                              | 35                         | 22            | --           | .5                         | --                                                 | 75                            | 36            | 7.2 | 4     |
| Oct. 21-31         | 3,750                | --                         | --        | --           | --             | 18          |               | 50                              | 43                         | 26            | --           | .4                         | --                                                 | 83                            | 42            | 7.4 | 4     |
| Nov. 1-20          | 4,220                | --                         | --        | --           | --             | 21          |               | 54                              | 46                         | 30            | --           | .7                         | --                                                 | 90                            | 46            | 7.7 | 2     |
| Nov. 21-30         | 10,600               | --                         | --        | --           | --             | 16          |               | 45                              | 33                         | 22            | --           | 1.1                        | --                                                 | 68                            | 31            | 7.3 | 5     |
| Dec. 1-10          | 17,400               | --                         | --        | --           | --             | 12          |               | 40                              | 28                         | 17            | --           | 1.5                        | --                                                 | 60                            | 27            | 6.9 | 4     |
| Dec. 11-23, 29-31  | 26,900               | --                         | --        | --           | --             | 9.2         |               | 37                              | 30                         | 9.9           | --           | 2.0                        | --                                                 | 49                            | 27            | 150 | 3     |
| Jan. 1-10          | 16,400               | --                         | --        | --           | --             | 12          |               | 38                              | 44                         | 16            | --           | 2.7                        | --                                                 | 76                            | 45            | 226 | 3     |
| Jan. 17-23, 1957   | 49,400               | --                         | --        | --           | --             | 6.0         |               | 19                              | 25                         | 7.6           | --           | 2.3                        | --                                                 | 41                            | 25            | 117 | 9     |
| Jan. 24-31         | --                   | --                         | --        | --           | --             | --          |               | --                              | --                         | --            | --           | --                         | --                                                 | --                            | --            | --  | --    |
| Feb. 1-10          | 16,900               | 6.5                        | .07       | 16           | 3.8            | 7.5         | 1.2           | 22                              | 39                         | 10            | .1           | 1.6                        | 96                                                 | 56                            | 38            | 6.8 | 5     |
| Mar. 1-7           | 25,700               | 7.8                        | .06       | 13           | 2.8            | 4.8         | 1.1           | 18                              | 28                         | 9.2           | .1           | 1.4                        | 80                                                 | 44                            | 29            | 137 | 7     |
| Mar. 8-29          | 18,300               | 5.6                        | .08       | 15           | 3.3            | 6.4         | 1.1           | 25                              | 31                         | 11            | .1           | 1.2                        | 89                                                 | 51                            | 30            | 158 | 5     |
| Mar. 30-Apr. 6     | 29,800               | 4.9                        | .12       | 15           | 4.2            | 7.8         | 1.2           | 22                              | 39                         | 11            | .1           | 1.0                        | 109                                                | 55                            | 37            | 168 | 8     |
| Apr. 17-May 6      | 33,600               | --                         | --        | --           | --             | 6.2         |               | 21                              | 27                         | 7.3           | --           | 1.3                        | --                                                 | 43                            | 26            | 130 | 13    |
| May 7-21           | 13,100               | --                         | --        | --           | --             | 11          |               | 31                              | 35                         | 13            | --           | .9                         | --                                                 | 58                            | 32            | 178 | 13    |
| May 22-27          | 17,400               | --                         | --        | --           | --             | 14          |               | 30                              | 27                         | 13            | --           | 1.3                        | --                                                 | 42                            | 18            | 157 | 4     |
| May 28-June 17     | 5,710                | --                         | --        | --           | --             | 14          |               | 38                              | 36                         | 16            | --           | .6                         | --                                                 | 60                            | 29            | 202 | 5     |



OHIO RIVER MAIN STEM--Continued  
ALLEGHENY RIVER AT KITTANNING, PA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| June 18-29, 1957.....  | 6,770                | --                         | --        | --           | --             | 20          |               | 53                              | 43                         | 22            | --           | 0.8                        | --                                                 | 76                            | 33            | 262                                       | 7.1 | 4     |
| June 30-July 7.....    | 16,800               | --                         | --        | --           | --             | 7.6         |               | 32                              | 26                         | 11            | --           | 2.5                        | --                                                 | 54                            | 28            | 157                                       | 6.8 | 7     |
| July 8-17, 19, 20..... | 4,940                | --                         | --        | --           | --             | 17          |               | 48                              | 33                         | 22            | --           | .9                         | --                                                 | 68                            | 29            | 204                                       | 6.1 | 5     |
| July 21-Aug. 8.....    | 2,020                | --                         | --        | --           | --             | 22          |               | 58                              | 43                         | 25            | --           | .8                         | --                                                 | 80                            | 33            | 275                                       | 6.7 | 4     |
| Aug. 9-Sept. 7.....    | 1,240                | 5.1                        | 0.01      | 28           | 7.0            | 24          | 2.0           | 64                              | 61                         | 33            | 0.2          | .8                         | 214                                                | 99                            | 47            | 328                                       | 7.4 | 3     |
| Sept. 8-28.....        | 1,540                | 4.4                        | .01       | 33           | 7.5            | 30          | 2.2           | 64                              | 71                         | 42            | .1           | .8                         | 246                                                | 114                           | 61            | 387                                       | 7.3 | 3     |
| Weighted average       | 12,500               | ---                        | --        | --           | --             | --          | --            | 42                              | 40                         | 20            | --           | 1.1                        | --                                                 | 70                            | 36            | 224                                       | --  | 5     |

## OHIO RIVER MAIN STEM--Continued

## ALLEGHENY RIVER AT KITTANNING, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 63   | 59   | 39   | --   | 39   | 43   | 56   | 69  | --   | 78   | 79   | 82    |
| 2       | 64   | 60   | 41   | --   | 38   | 44   | 50   | 65  | 72   | 72   | 79   | 76    |
| 3       | 64   | 59   | 42   | --   | 39   | 42   | 48   | 66  | 70   | 71   | 79   | 72    |
| 4       | 64   | 59   | 44   | --   | --   | 40   | 46   | 62  | 70   | 75   | 86   | 74    |
| 5       | 64   | 60   | 44   | --   | 39   | 43   | 46   | 61  | 74   | 76   | 78   | 69    |
| 6       | 63   | 59   | 42   | --   | 40   | 44   | 45   | 66  | 71   | 76   | 77   | 66    |
| 7       | 62   | 60   | 43   | --   | 42   | 42   | 47   | 65  | 73   | 76   | 75   | 66    |
| 8       | 63   | 60   | 45   | --   | 43   | 42   | 48   | 64  | 73   | 75   | 73   | 68    |
| 9       | 61   | 58   | 46   | --   | 42   | 41   | --   | 61  | 72   | 79   | 75   | 67    |
| 10      | 59   | 56   | 46   | --   | 45   | 43   | --   | 63  | 72   | 74   | 76   | 71    |
| 11      | 52   | 56   | 45   | --   | 47   | 43   | 46   | 65  | 73   | 73   | 80   | 72    |
| 12      | 57   | 55   | 47   | --   | 42   | 43   | 47   | 66  | 73   | 74   | 77   | 75    |
| 13      | 57   | 53   | 46   | --   | 42   | --   | 49   | 67  | 79   | 71   | 76   | 78    |
| 14      | 56   | --   | 46   | --   | 45   | 50   | 48   | 67  | 74   | 78   | 75   | 75    |
| 15      | 58   | 54   | 47   | --   | 40   | 50   | 49   | 68  | 74   | 77   | 79   | 74    |
| 16      | 58   | 52   | 48   | --   | 42   | 49   | 47   | 67  | 78   | 79   | 81   | 70    |
| 17      | 58   | 52   | 46   | 36   | 41   | 50   | 49   | 62  | 76   | 76   | 80   | 72    |
| 18      | 59   | 48   | 48   | 38   | 40   | 49   | 50   | 66  | 81   | 80   | 76   | 71    |
| 19      | 60   | 48   | 44   | 38   | 42   | 48   | 51   | 62  | 80   | 81   | 74   | 74    |
| 20      | 60   | 49   | 44   | 40   | 41   | 45   | 57   | 64  | 77   | 85   | 74   | 80    |
| 21      | 59   | 50   | 45   | 43   | 40   | 48   | 55   | 62  | 76   | 85   | 71   | 78    |
| 22      | 63   | 48   | 45   | 40   | 40   | 49   | --   | --  | 77   | 84   | 76   | 73    |
| 23      | 62   | 46   | 45   | 39   | 40   | 49   | 60   | 68  | 82   | 81   | 69   | 72    |
| 24      | 60   | 45   | --   | 40   | 44   | 47   | 60   | 64  | 83   | 82   | 70   | 69    |
| 25      | 60   | --   | --   | 39   | 46   | 48   | 62   | 65  | 76   | 82   | 74   | 69    |
| 26      | 60   | 41   | --   | 38   | 43   | 49   | 63   | 68  | 76   | 80   | 75   | 71    |
| 27      | 60   | 40   | --   | 39   | 45   | 49   | 62   | 68  | 80   | 84   | 74   | 64    |
| 28      | 60   | 41   | --   | 39   | 46   | 50   | 66   | 66  | 80   | 82   | 68   | 68    |
| 29      | 60   | 42   | 42   | 40   | --   | 47   | --   | 68  | 76   | 80   | 70   | --    |
| 30      | 60   | 41   | 41   | 41   | --   | 46   | 64   | 69  | 79   | 82   | 77   | --    |
| 31      | 60   | --   | --   | 42   | --   | 47   | --   | 69  | --   | 86   | 78   | --    |
| Average | 60   | 52   | --   | --   | 42   | 46   | 53   | 65  | 76   | 79   | 76   | 72    |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## MONONGAHELA RIVER BASIN

## TYGART RIVER AT ELKINS, W. VA.

LOCATION.--At city waterplant, at Elkins, Randolph County, 2½ miles upstream from gaging station near Elkins.

DRAINAGE AREA.--268 square miles above water plant; 272 square miles above gaging station. RECORDS AVAILABLE.--Water temperatures: January 1947 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F June 18, July 22; minimum, 33°F Jan. 16, 17.

EXTREMES, 1947-57.--Water temperatures: Maximum, 92°F July 22, 1952; minimum, freezing point on several days during winter months.

REMARKS.--Records of discharge for gaging station near Elkins for water year October 1956 to September 1957 given in WSP 1505. No appreciable inflow between waterplant and gaging station except during periods of heavy local rains. During flood periods part of the flow is diverted around the water plant in a flood by-pass channel.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 63   | 58   | 36   | 35   | 44   | 44   | 48   | 63  | 72   | 68   | 78   | 74    |
| 2       | 64   | 58   | 37   | 35   | 44   | 42   | 50   | 63  | 71   | 67   | 78   | 76    |
| 3       | 66   | 56   | 39   | 34   | 44   | 40   | 50   | 61  | 72   | 70   | 78   | 76    |
| 4       | 65   | 56   | 40   | 35   | 47   | 40   | 51   | 58  | 72   | 74   | 78   | 75    |
| 5       | 66   | 56   | 43   | 37   | 45   | 42   | 52   | 57  | 71   | 74   | 75   | 74    |
| 6       | 64   | 55   | 44   | 37   | 46   | 45   | 47   | 57  | 66   | 76   | 75   | 72    |
| 7       | 60   | 56   | 48   | 36   | 47   | 45   | 48   | 59  | 69   | 74   | 74   | 71    |
| 8       | 58   | 54   | 52   | 36   | 46   | 44   | 48   | 62  | 68   | 74   | 74   | 71    |
| 9       | 57   | 48   | 50   | 38   | 47   | 40   | 46   | 65  | 64   | 76   | 74   | 71    |
| 10      | 54   | 44   | 45   | 42   | 46   | 38   | 48   | 67  | 67   | 74   | 75   | 70    |
| 11      | 56   | 42   | 44   | 38   | 46   | 43   | 50   | 68  | 68   | 75   | 75   | 71    |
| 12      | 56   | 46   | 46   | 40   | 42   | 48   | 50   | 70  | 71   | 76   | 75   | 72    |
| 13      | 56   | 46   | 50   | 38   | 41   | 48   | 48   | 72  | 73   | 76   | 76   | 73    |
| 14      | 58   | 46   | 50   | 34   | 37   | 48   | 44   | 71  | 75   | 76   | 76   | 72    |
| 15      | 58   | 46   | 51   | 34   | 38   | 49   | 47   | 73  | 75   | 80   | 77   | 73    |
| 16      | 60   | 46   | 48   | 33   | 38   | 48   | 48   | 64  | 76   | 78   | 77   | 73    |
| 17      | 60   | 47   | 48   | 33   | 36   | 48   | 51   | 65  | 78   | 78   | 74   | 72    |
| 18      | 60   | 44   | 46   | 34   | 38   | 48   | 54   | 70  | 81   | 79   | 74   | 71    |
| 19      | 60   | 44   | 44   | 34   | 38   | 48   | 58   | 70  | 80   | 79   | 74   | 72    |
| 20      | 60   | 43   | 47   | 36   | 36   | 46   | 61   | 70  | 79   | 80   | 72   | 72    |
| 21      | 58   | 42   | 51   | 35   | 36   | 44   | 62   | 68  | 78   | 80   | 72   | 72    |
| 22      | 60   | 40   | 50   | 37   | 38   | 46   | 63   | 69  | 78   | 81   | 72   | 72    |
| 23      | 59   | 36   | 48   | 40   | 38   | 47   | 65   | 72  | 79   | 78   | 72   | 70    |
| 24      | 57   | 36   | 49   | 38   | 42   | 46   | 65   | 73  | 80   | 78   | 71   | 68    |
| 25      | 58   | 36   | 44   | 40   | 46   | 48   | 64   | 75  | 77   | 78   | 70   | 67    |
| 26      | 56   | 36   | 41   | 40   | 50   | 48   | 64   | 75  | 76   | 77   | 69   | 65    |
| 27      | 56   | 36   | 40   | 38   | 50   | 46   | 66   | 72  | 79   | 76   | 70   | 63    |
| 28      | 56   | 36   | 42   | 42   | 46   | 43   | 66   | 71  | 77   | 78   | 71   | 61    |
| 29      | 56   | 36   | 38   | 40   | --   | 44   | 60   | 73  | 74   | 74   | 72   | 60    |
| 30      | 57   | 36   | 34   | 44   | --   | 44   | 61   | 72  | 68   | 75   | 73   | 61    |
| 31      | 59   | --   | 36   | 43   | --   | 44   | --   | 72  | --   | 78   | 74   | --    |
| Average | 59   | 45   | 45   | 37   | 43   | 45   | 54   | 68  | 74   | 76   | 74   | 70    |

## MONONGAHELA RIVER BASIN--Continued

SALEM FORK AT SALEM, W. VA.

LOCATION.--At wire weight gage at bridge, 0.4 mile downstream from gaging station, 0.6 mile downstream from Dog Run, 0.4 mile upstream from Cherrycamp Run, and 1.4 miles northeast of Salem, Harrison County.

DRAINAGE AREA.--8.32 square miles.

RECORDS AVAILABLE.--Sediment records: October 1954 to September 1957, periodic.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow partly regulated by 4 detention reservoirs having combined temporary storage capacity of 346.4 acre-feet.

Periodic determinations of suspended-sediment discharge, water year October 1956 to September 1957

| Date               | Time       | Discharge<br>(cfs) | Suspended sediment             |                             |
|--------------------|------------|--------------------|--------------------------------|-----------------------------|
|                    |            |                    | Mean<br>concentration<br>(ppm) | Discharge<br>(tons per day) |
| Oct. 23, 1956..... | 3:10 p.m.  | 1.4                | 9                              | (t)                         |
| Nov. 1.....        | 9:25 a.m.  | 3.5                | 18                             | 0.2                         |
| Nov. 9.....        | 9:05 a.m.  | .8                 | 11                             | (t)                         |
| Nov. 11.....       | 10:25 a.m. | .8                 | 12                             | (t)                         |
| Dec. 7.....        | 2:05 p.m.  | 3.1                | 8                              | .1                          |
| Dec. 13.....       | 3:25 p.m.  | 63                 | 80                             | 14                          |
| Dec. 14.....       | 7:45 a.m.  | 1,090              | 984                            | 2,900                       |
| Dec. 14.....       | 9:00 a.m.  | 1,490              | 931                            | 3,740                       |
| Dec. 15.....       | 8:30 a.m.  | 89                 | 98                             | 24                          |
| Dec. 21.....       | 11:15 a.m. | 126                | 104                            | 35                          |
| Dec. 26.....       | 2:00 p.m.  | 18                 | 19                             | .9                          |
| Jan. 10, 1957..... | 9:00 a.m.  | 169                | 106                            | 48                          |
| Jan. 21.....       | 2:40 p.m.  | 38                 | 207                            | 21                          |
| Jan. 29.....       | 11:30 a.m. | 74                 | 50                             | 10                          |
| Feb. 1.....        | 3:50 p.m.  | 126                | 250                            | 85                          |
| Feb. 1.....        | 8:00 p.m.  | 165                | 194                            | 86                          |
| Feb. 5.....        | 10:35 a.m. | 9.2                | 14                             | .3                          |
| Feb. 12.....       | 12:30 p.m. | 27                 | 56                             | 4.1                         |
| Feb. 19.....       | 2:30 p.m.  | 7.5                | 8                              | .2                          |
| Feb. 26.....       | 11:15 a.m. | 4.8                | 14                             | .2                          |
| Feb. 27.....       | 3:25 p.m.  | 31                 | 57                             | 4.8                         |
| Mar. 1.....        | 11:30 a.m. | 60                 | 46                             | 7.4                         |
| Mar. 5.....        | 11:05 a.m. | 7.8                | 12                             | .2                          |
| Mar. 13.....       | 2:00 p.m.  | 8.3                | 22                             | .5                          |
| Mar. 19.....       | 3:30 p.m.  | 4.3                | 16                             | .2                          |
| Mar. 25.....       | 11:00 a.m. | 4.1                | 14                             | .2                          |
| Apr. 2.....        | 2:30 p.m.  | 94                 | 91                             | 23                          |
| Apr. 4.....        | 11:45 a.m. | 30                 | 80                             | 6.5                         |
| Apr. 8.....        | 11:00 a.m. | 295                | 2,240                          | 1,780                       |
| Apr. 8.....        | 12:30 p.m. | 231                | 676                            | 422                         |
| Apr. 8.....        | 2:30 p.m.  | 185                | 238                            | 119                         |
| Apr. 9.....        | 2:00 p.m.  | 46                 | 52                             | 6.4                         |
| Apr. 16.....       | 1:30 p.m.  | 4.3                | 16                             | .2                          |
| Apr. 17.....       | 11:45 a.m. | 5.4                | 17                             | .2                          |
| Apr. 23.....       | 2:15 p.m.  | 5.6                | 17                             | .2                          |
| Apr. 30.....       | 2:00 p.m.  | 3.4                | 14                             | .1                          |
| May 7.....         | 1:05 p.m.  | .9                 | 18                             | (t)                         |
| May 15.....        | 11:30 a.m. | 1.5                | 51                             | .2                          |
| May 21.....        | 4:00 p.m.  | 3.7                | 24                             | .2                          |
| May 28.....        | 4:20 p.m.  | .4                 | 20                             | (t)                         |
| June 4.....        | 9:00 a.m.  | .06                | 40                             | (t)                         |
| June 11.....       | 11:30 a.m. | .06                | 18                             | (t)                         |
| June 18.....       | 7:45 a.m.  | .08                | 68                             | (t)                         |
| June 25.....       | 11:30 a.m. | .1                 | 36                             | (t)                         |
| July 2.....        | 3:30 p.m.  | .8                 | 18                             | (t)                         |
| July 9.....        | 8:30 a.m.  | 1.2                | 20                             | .1                          |
| July 15.....       | 3:30 p.m.  | .08                | 36                             | (t)                         |
| July 23.....       | 8:30 a.m.  | 8.6                | 31                             | .7                          |
| July 30.....       | 1:30 p.m.  | .3                 | 24                             | (t)                         |
| Aug. 13.....       | 8:00 a.m.  | .1                 | 35                             | (t)                         |
| Aug. 23.....       | 8:00 a.m.  | .2                 | 22                             | (t)                         |
| Aug. 28.....       | 2:45 p.m.  | .2                 | 27                             | (t)                         |
| Sept. 4.....       | 12:05 p.m. | .2                 | 12                             | (t)                         |
| Sept. 16.....      | 2:45 p.m.  | 6.1                | 20                             | .3                          |
| Sept. 18.....      | 3:45 p.m.  | .6                 | 8                              | (t)                         |
| Sept. 24.....      | 2:45 p.m.  | .7                 | 9                              | (t)                         |

t Less than 0.05 ton.

## MONONGAHELA RIVER BASIN--Continued

## SALEM FORK AT SALEM, W. VA.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 14, 1956 ...  | 7:45 a. m.  | 1,090           |                        | 984                           | 1,390                                      | 32                                                | 41    | 56    | 70    | 81    | 87    | 93    | 98    |       | 100   | BSWCM               |
| Dec. 14.....       | 9:00 a. m.  | 1,490           |                        | 931                           | 1,787                                      | 34                                                | 47    | 61    | 76    | 84    | 90    | 93    | 97    |       | 100   | BSWCM               |
| Apr. 6, 1957 ....  | 11:00 a. m. | 295             |                        | 2,240                         | 1,560                                      | 31                                                | 44    | 58    | 72    | 86    | 95    | 99    | 100   |       | 99    | BSWCM               |
| Apr. 6.....        | 12:30 p. m. | 231             |                        | 676                           | 743                                        | 25                                                | 39    | 52    | 67    | 81    | 90    | 96    | 99    |       | 100   | BSWCM               |
| Apr. 8.....        | 12:30 p. m. | 231             |                        | 676                           | 804                                        | 17                                                | 29    | 49    | 66    | 77    | 89    | 95    | 99    |       | 100   | BSNM                |

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SHIVERS FORK AT PARSONS, W. VA.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505

Temperature (°F) of water, water year October 1956 to September 1957

[illegible]

## MONONGAHELA RIVER BASIN--Continued

## CHEAT RIVER AT LAKE LYNN, PA.

LOCATION.--At the Lake Lynn hydro-electric plant of the West Penn Power Company at Lake Lynn on the Cheat River, 3 miles above the mouth, and 13.8 miles below gaging station near Pisgah, W. Va.

DRAINAGE AREA.--1,411 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F July 22, 23; minimum, 33°F Jan 8.

EXTREMES, 1948-57.--Water temperatures: Maximum, 85°F July 30, 1949, July 28, 1952,

Aug. 6, 1955; minimum, 33°F on several days during winter months.

REMARKS.--Temperature records furnished by the West Penn Power Company. Records of discharge for gaging station near Pisgah, W. Va. for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | 60   | 47   | 41   | 41   | 43   | 46   | 70  | 72   | 78   | 80   | --    |
| 2       | 65   | 60   | 46   | 40   | 40   | 44   | 46   | 69  | 72   | 78   | 78   | --    |
| 3       | 65   | --   | 46   | 40   | 40   | 44   | 46   | 69  | 72   | 76   | --   | 77    |
| 4       | 65   | --   | 45   | 36   | 42   | 44   | 46   | 66  | 74   | 76   | --   | 77    |
| 5       | 65   | 60   | 46   | 36   | 42   | 43   | 46   | 66  | 74   | 78   | 80   | 75    |
| 6       | 65   | 60   | 46   | 37   | 42   | 43   | 48   | 65  | 75   | 77   | --   | 74    |
| 7       | 65   | 60   | 46   | 35   | 42   | 43   | 47   | 67  | 75   | 77   | 77   | --    |
| 8       | 64   | 59   | 46   | 33   | 43   | 42   | 48   | 67  | 75   | 76   | 77   | --    |
| 9       | 64   | 58   | 47   | 35   | 44   | 42   | 48   | 67  | 73   | 78   | 77   | 73    |
| 10      | 63   | 56   | 45   | 36   | 42   | 42   | 46   | 66  | 74   | 78   | --   | 73    |
| 11      | 63   | 58   | 45   | 36   | 45   | 41   | 48   | 68  | 74   | 77   | --   | 73    |
| 12      | 62   | 58   | 46   | 36   | 45   | 42   | 48   | 66  | 74   | 77   | 79   | 75    |
| 13      | 62   | 58   | 46   | 36   | 44   | 42   | 46   | 71  | 75   | 77   | 77   | 75    |
| 14      | 62   | 58   | 46   | 36   | 44   | 43   | 46   | 71  | 76   | 77   | 77   | --    |
| 15      | 62   | 57   | 45   | 35   | 42   | 44   | 46   | 72  | 77   | 77   | 80   | --    |
| 16      | 62   | 57   | 46   | 34   | 42   | 45   | 46   | 68  | 78   | 77   | 79   | 75    |
| 17      | 62   | 51   | 46   | 34   | 41   | 44   | 46   | 69  | 76   | 78   | --   | 74    |
| 18      | 61   | 50   | 46   | 34   | 41   | 44   | 48   | 68  | 81   | 79   | --   | 73    |
| 19      | 61   | 53   | 44   | 34   | 41   | 45   | 48   | 70  | 79   | 79   | 75   | 73    |
| 20      | 61   | 54   | 47   | 34   | --   | 45   | 49   | 70  | 81   | 79   | 76   | 75    |
| 21      | 61   | 54   | 48   | 34   | 38   | 46   | 52   | 70  | 80   | 81   | 75   | --    |
| 22      | 61   | 52   | --   | 37   | 39   | 46   | 56   | 70  | 80   | 84   | 75   | --    |
| 23      | 61   | 54   | 47   | 35   | 39   | 46   | 60   | 70  | 81   | 84   | 75   | 73    |
| 24      | 61   | 52   | 47   | 34   | 40   | 47   | 62   | 70  | 83   | 79   | --   | 73    |
| 25      | 60   | 50   | 46   | 35   | 41   | 46   | 66   | 70  | 82   | 78   | --   | 72    |
| 26      | 59   | 49   | 46   | 37   | 40   | 47   | 66   | 71  | 83   | 79   | 75   | 72    |
| 27      | 59   | 49   | 46   | 36   | 40   | 47   | 66   | 73  | 81   | 78   | 75   | 70    |
| 28      | 60   | 49   | 46   | 36   | 42   | 46   | 70   | 71  | 82   | 81   | 75   | --    |
| 29      | 60   | 47   | 46   | 37   | --   | 46   | 68   | 71  | 80   | 80   | 75   | --    |
| 30      | 60   | 47   | 43   | 37   | --   | 46   | 69   | 72  | 80   | 80   | 76   | 69    |
| 31      | 60   | --   | 43   | 39   | --   | 46   | --   | 73  | --   | 82   | --   | --    |
| Average | 62   | 55   | 46   | 36   | 42   | 44   | 52   | 69  | 77   | 79   | --   | --    |

## MONONGAHELA RIVER BASIN--Continued

## MONONGAHELA RIVER AT PORT MARION, PA.

LOCATION.--At Point Marion, Fayette County, approximately 750 feet upstream from dam 8 at center of stream.

DRAINAGE AREA--2,720 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 554 ppm May 21-31; minimum, 110 ppm Feb. 1-10.

Hardness: Maximum, 251 ppm May 21-31; minimum, 60 ppm Feb. 1-10.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH   | Color |
|----------------------|----------------------|----------------------------|---------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|------|-------|
|                      |                      |                            |               |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium                       | Non-carbonate |                                            |      |       |
| Oct. 11-20, 1956     | .....                | 9.6                        | 7.0           | 43           | 14             | 32          | 2.4           | 0                               | 275                        | 16            | 0.6          | 0.8                        | 403                                                 | 165                           | 165           | 704                                        | 3.20 | 1     |
| Oct. 22-31           | .....                | 10                         | 5.6           | 46           | 13             | 31          | 1.6           | 0                               | 270                        | 12            | .2           | .4                         | 418                                                 | 168                           | 168           | 697                                        | 3.50 | 3     |
| Nov. 1-8, 10         | .....                | 8.4                        | 2.9           | 42           | 11             | 30          | 1.5           | 0                               | 218                        | 10            | .2           | .5                         | 352                                                 | 150                           | 150           | 536                                        | 3.90 | 2     |
| Nov. 11-20           | .....                | 6.3                        | 2.2           | 18           | 5.9            | 11          | 1.4           | 0                               | 98                         | 7.0           | .1           | .2                         | 163                                                 | 69                            | 69            | 308                                        | 3.90 | 4     |
| Nov. 22-29           | .....                | 6.6                        | .8            | 26           | 7.6            | 19          | 1.9           | 0                               | 134                        | 5.8           | .2           | .6                         | 224                                                 | 96                            | 96            | 373                                        | 4.00 | 3     |
| Dec. 1-10            | .....                | 5.8                        | .6            | 21           | 5.6            | 14          | 1.4           | 0                               | 103                        | 5.4           | .2           | .7                         | 172                                                 | 76                            | 76            | 299                                        | 4.10 | 7     |
| Dec. 11-20           | .....                | 5.8                        | .4            | 20           | 5.6            | 4.5         | 2.1           | 0                               | 80                         | 3.8           | .1           | 2.6                        | 133                                                 | 73                            | 73            | 210                                        | 4.5  | 1     |
| Dec. 21-29, 31       | .....                | 6.2                        | .4            | 16           | 5.5            | 5.7         | 1.8           | 1                               | 68                         | 2.1           | .2           | 1.6                        | 113                                                 | 82                            | 82            | 182                                        | 4.6  | 1     |
| Jan. 1-7, 9-10, 1957 | .....                | 6.6                        | 1.2           | 23           | 7.6            | 9.4         | 1.4           | 0                               | 108                        | 2.3           | .2           | 1.6                        | 177                                                 | 88                            | 88            | 281                                        | 4.20 | 2     |
| Jan. 11-20           | .....                | 6.2                        | .7            | 17           | 6.6            | 6.2         | 1.2           | 0                               | 81                         | 3.0           | .1           | 1.3                        | 119                                                 | 70                            | 70            | 194                                        | 4.25 | 1     |
| Jan. 22-31           | .....                | 6.0                        | .8            | 22           | 7.4            | 8.2         | 1.1           | 0                               | 97                         | 5.3           | .1           | 2.1                        | 158                                                 | 86                            | 86            | 256                                        | 4.40 | 2     |
| Feb. 1-10            | .....                | 5.3                        | .4            | 16           | 4.9            | 4.5         | .7            | 1                               | 69                         | 2.2           | .1           | 2.0                        | 110                                                 | 60                            | 59            | 176                                        | 4.8  | 1     |
| Feb. 11-20           | .....                | 5.0                        | .7            | 17           | 5.3            | 6.3         | 1             | 0                               | 76                         | 1.6           | .1           | .8                         | 120                                                 | 64                            | 64            | 201                                        | 4.45 | 1     |
| Feb. 21-28, 28       | .....                | 6.4                        | 2.5           | 27           | 10.3           | 13          | 1.7           | 0                               | 144                        | 5.5           | .2           | 1.8                        | 213                                                 | 109                           | 109           | 367                                        | 4.00 | 1     |
| Mar. 1-10            | .....                | 6.0                        | 1.2           | 21           | 6.8            | 10          | 1.0           | 0                               | 96                         | 2.5           | .1           | 1.5                        | 154                                                 | 80                            | 80            | 259                                        | 4.20 | 1     |
| Mar. 11-20           | .....                | 6.5                        | 1.3           | 28           | 9.4            | 12          | 1.3           | 0                               | 140                        | 4.2           | .2           | 1.8                        | 212                                                 | 109                           | 109           | 353                                        | 3.95 | 3     |
| Mar. 21-31           | .....                | 7.4                        | 3.5           | 38           | 12             | 22          | 1.3           | 0                               | 215                        | 8.2           | .3           | 1.3                        | 309                                                 | 145                           | 145           | 519                                        | 3.60 | 1     |
| Apr. 1-10            | .....                | 6.4                        | .0            | 30           | 8.0            | 10          | 1.5           | 0                               | 118                        | 3.6           | .2           | 1.4                        | 192                                                 | 108                           | 108           | 295                                        | 4.35 | 3     |
| Apr. 11-13, 20       | .....                | 6.2                        | 1.3           | 20           | 6.4            | 9.0         | 1.9           | 0                               | 98                         | 4.0           | .2           | 1.4                        | 144                                                 | 76                            | 76            | 266                                        | 4.10 | 1     |
| Apr. 21-30           | .....                | 8.1                        | 2.7           | 43           | 14             | 20          | 1.6           | 0                               | 223                        | 5.2           | .1           | 1.0                        | 325                                                 | 165                           | 165           | 520                                        | 3.60 | 1     |
| May 1-10             | .....                | 8.5                        | 3.4           | 41           | 12             | 21          | 1.9           | 0                               | 218                        | 5.6           | .4           | 1.0                        | 311                                                 | 152                           | 152           | 524                                        | 3.40 | 2     |
| May 11-20            | .....                | 9.7                        | 2.9           | 45           | 16             | 29          | 1.8           | 0                               | 271                        | 10            | .5           | .7                         | 394                                                 | 178                           | 178           | 630                                        | 3.35 | 1     |
| May 21-31            | .....                | 10                         | 4.6           | 66           | 21             | 47          | 2.2           | 0                               | 384                        | 12            | .2           | .5                         | 554                                                 | 251                           | 251           | 828                                        | 3.45 | 2     |



MONONGAHELA RIVER BASIN--Continued  
MONONGAHELA RIVER AT PORT MARION, PA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection            | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH   | Color |
|-------------------------------|----------------------|----------------------------|---------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|------|-------|
|                               |                      |                            |               |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg./l.               | Non-carbonate |                                            |      |       |
| June 1-7, 9-10, 1957 ..       |                      | 9.5                        | 4.8           | 65           | 18             | 38          | 2.2           | 0                               | 358                        | 14            | 0.4          | 0.7                        | 528                                                 | 239                           | 239           | 833                                        | 3.20 | 2     |
| June 11-16, 18, 19 .....      |                      | 8.4                        | 3.5           | 44           | 14             | 33          | 2.5           | 0                               | 259                        | 9.0           | .3           | .7                         | 379                                                 | 188                           | 188           | 826                                        | 3.45 | 1     |
| June 21-30 .....              |                      | 7.7                        | 3.1           | 35           | 9.5            | 28          | 2.5           | 0                               | 210                        | 8.5           | .2           | .6                         | 302                                                 | 127                           | 127           | 538                                        | 3.55 | 1     |
| July 1-6, 8, 10 .....         |                      | 6.8                        | 1.6           | 32           | 12             | 21          | 1.5           | 0                               | 175                        | 7.0           | .2           | .4                         | 272                                                 | 130                           | 130           | 421                                        | 3.55 | 2     |
| July 11-19 .....              |                      | 6.5                        | 2.4           | 25           | 7.8            | 14          | 1.4           | 0                               | 145                        | 10            | .1           | .5                         | 204                                                 | 94                            | 94            | 424                                        | 3.50 | 1     |
| July 21-31 .....              |                      | 7.4                        | 3.0           | 32           | 10             | 25          | 1.7           | 0                               | 198                        | 14            | .1           | .9                         | 289                                                 | 121                           | 121           | 586                                        | 3.40 | 1     |
| Aug. 1-6, 9-10 .....          |                      | 8.0                        | 2.8           | 38           | 12             | 34          | 2.1           | 0                               | 236                        | 12            | .3           | .8                         | 363                                                 | 145                           | 145           | 630                                        | 3.50 | 1     |
| Aug. 11-20 .....              |                      | 8.6                        | 1.9           | 41           | 15             | 41          | 2.2           | 0                               | 280                        | 13            | .3           | .4                         | 416                                                 | 164                           | 164           | 719                                        | 3.45 | 3     |
| Aug. 21-31 .....              |                      | 8.6                        | 3.4           | 44           | 16             | 45          | 2.7           | 0                               | 238                        | 16            | .5           | .6                         | 439                                                 | 184                           | 184           | 761                                        | 3.40 | 3     |
| Sept. 1, 3, 4, 6, 7, 9, 10 .. |                      | 8.7                        | 3.4           | 44           | 14             | 42          | 2.3           | 0                               | 294                        | 16            | .4           | .7                         | 421                                                 | 168                           | 168           | 745                                        | 3.45 | 3     |
| Sept. 11-20 .....             |                      | 8.4                        | 4.2           | 56           | 16             | 50          | 2.9           | 0                               | 319                        | 30            | .5           | .7                         | 462                                                 | 206                           | 206           | 826                                        | 3.45 | 1     |
| Sept. 21-30 .....             |                      | 7.1                        | 3.1           | 42           | 12             | 36          | 2.3           | 0                               | 244                        | 21            | .2           | .9                         | 366                                                 | 135                           | 135           | 652                                        | 3.50 | 1     |
| Weighted Average ....         |                      | 7.4                        | 2.4           | 34           | 11             | 22          | 1.7           | 0                               | 189                        | 9.4           | .2           | 1.0                        | 284                                                 | 129                           | 129           | 479                                        | --   | 2     |

## MONONGAHELA RIVER BASIN--Continued

MONONGAHELA RIVER AT LOCK AND DAM 8, AT POINT MARION, PA.

LOCATION.--About 750 feet upstream from dam, lock and dam 8 (mile 90.8) at Point Marion, Fayette County, and 1.5 miles upstream from Cheat River. DRAINAGE AREA.--2 720 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 554 ppm May 21-31; minimum, 110 ppm Feb. 1-10.

Hardness: Maximum, 251 ppm May 21-31; minimum, 60 ppm Feb. 1-10.

Specific conductance: Maximum daily, 1 020 micromhos May 30; minimum daily, 153 micromhos Feb. 4-5.

Water temperatures: Maximum, 78°F July 28; minimum, freezing point Jan. 12, 17-20.

EXTREMES, 1955-57.--Dissolved solids: Maximum, 554 ppm May 21-31, 1957; minimum, 105 ppm June 1-10, 1956.

Hardness: Maximum, 251 ppm May 21-31, 1957; minimum, 54 ppm June 1-10, 1956.

Specific conductance: Maximum daily, 1 080 micromhos Oct. 21, 1955; minimum daily, 136 micromhos June 6, 1956.

Water temperatures: Maximum, 79°F July 11, 12, 1956; minimum, freezing point on several days during winter months.

REMARKS.--Acidity determined to pH 7.0. Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957.

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                 | Specific conductance (micro-mhos at 25°C) | pH   | Color |
|----------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|-----------------|-------------------------------------------|------|-------|
|                      |                      |                            |               |           |                |              |                |             |               |                                 |               |              |                            |                                                    | Calcium, mg-nestum            | Non-carbonate | Im-mediate                | Poten-tial free |                                           |      |       |
| Oct. 1-7, 9-10, 1956 |                      | 8.5                        | 8.3           | 10        | 1.6            | 52           | 16             | 29          | 2.8           | 0                               | 309           | 0.3          | 0.6                        | 450                                                | 196                           | 196           | 1.2                       | 1.4             | 768                                       | 3.40 | 1     |
| Oct. 11-20, 1956     |                      | 9.6                        | 7.0           | 4.0       | 1.6            | 43           | 14             | 32          | 2.4           | 0                               | 275           | 16           | .6                         | 403                                                | 165                           | 165           | 1.2                       | 1.1             | 704                                       | 3.20 | 1     |
| Oct. 21-31, 1956     |                      | 10                         | 5.6           | 7.1       | 2.7            | 46           | 13             | 31          | 1.6           | 0                               | 270           | 12           | .2                         | 418                                                | 168                           | 168           | 1.1                       | 1.0             | 697                                       | 3.50 | 3     |
| Nov. 1-8, 10, 1956   |                      | 8.4                        | 2.9           | 3.4       | 1.2            | 42           | 11             | 30          | 1.5           | 0                               | 218           | 10           | .2                         | 352                                                | 150                           | 150           | .4                        | .4              | 536                                       | 3.90 | 2     |
| Nov. 11-20, 1956     |                      | 6.3                        | 2.2           | 2.2       | .10            | 18           | 5.9            | 11          | 1.4           | 0                               | 98            | 7.0          | .1                         | 163                                                | 69                            | 69            | .4                        | .3              | 308                                       | 3.90 | 4     |
| Nov. 22-29, 1956     |                      | 6.6                        | .8            | 3.8       | 1.1            | 26           | 7.6            | 19          | 1.9           | 0                               | 134           | 5.8          | .2                         | 224                                                | 96                            | 96            | .3                        | .3              | 373                                       | 4.00 | 3     |
| Dec. 1-10, 1956      |                      | 5.8                        | .6            | 3.9       | .84            | 21           | 5.6            | 14          | 1.4           | 0                               | 103           | 5.4          | .2                         | 172                                                | 76                            | 76            | .3                        | .2              | 299                                       | 4.10 | 7     |
| Dec. 11-20, 1956     |                      | 5.2                        | .4            | 3.0       | .92            | 20           | 5.6            | 4.5         | 2.1           | 0                               | 80            | 3.8          | .1                         | 133                                                | 73                            | 73            | .1                        | .1              | 210                                       | 4.5  | 1     |
| Dec. 21-29, 31, 1956 |                      | 6.8                        | 4             | 1.0       | .61            | 16           | 5.5            | 5.7         | 1.8           | 1                               | 68            | 2.1          | .2                         | 116                                                | 113                           | 113           | .1                        | .1              | 182                                       | 4.6  | 1     |
| Jan. 1-7, 9-10, 1957 |                      | 6.6                        | 1.2           | 3.2       | 1.8            | 23           | 7.6            | 9.4         | .4            | 0                               | 108           | 23           | .2                         | 177                                                | 88                            | 88            | .3                        | .2              | 281                                       | 4.20 | 2     |
| Jan. 11-20, 1957     |                      | 6.2                        | .7            | 2.0       | .67            | 17           | 6.6            | 6.2         | 1.2           | 0                               | 81            | 3.0          | .1                         | 119                                                | 70                            | 70            | .2                        | .2              | 194                                       | 4.25 | 1     |
| Jan. 22-31, 1957     |                      | 6.0                        | .8            | 1.8       | .04            | 22           | 7.4            | 8.2         | 1.1           | 0                               | 97            | 5.3          | .1                         | 158                                                | 86                            | 86            | .2                        | .2              | 256                                       | 4.40 | 2     |
| Feb. 1-10, 1957      |                      | 5.3                        | .4            | 1.7       | .07            | 16           | 4.9            | 4.5         | .7            | 1                               | 69            | 2.2          | .1                         | 110                                                | 60                            | 59            | .1                        | .1              | 176                                       | 4.8  | 1     |
| Feb. 11-20, 1957     |                      | 5.0                        | .7            | 2.0       | .09            | 17           | 5.3            | 10          | 1.0           | 0                               | 76            | 1.6          | .1                         | 120                                                | 64                            | 64            | .2                        | .1              | 201                                       | 4.45 | 1     |
| Feb. 21-26, 28, 1957 |                      | 6.4                        | 2.5           | 4.8       | .93            | 27           | 10             | 13          | .7            | 0                               | 144           | 5.5          | .2                         | 183                                                | 109                           | 109           | .4                        | .4              | 387                                       | 4.00 | 1     |
| Mar. 1-10, 1957      |                      | 6.0                        | 1.2           | 2.5       | .04            | 21           | 6.8            | 7.8         | 1.0           | 0                               | 96            | 2.5          | .1                         | 154                                                | 80                            | 80            | .2                        | .2              | 259                                       | 4.20 | 1     |
| Mar. 11-20, 1957     |                      | 6.5                        | 1.3           | 3.9       | .55            | 28           | 9.4            | 12          | 1.3           | 0                               | 140           | 4.4          | .2                         | 182                                                | 109                           | 109           | .3                        | .3              | 353                                       | 3.95 | 3     |
| Mar. 21-31, 1957     |                      | 7.4                        | 3.5           | 6.5       | .97            | 38           | 12             | 22          | 1.3           | 0                               | 215           | 8.2          | .3                         | 309                                                | 145                           | 145           | .6                        | .6              | 519                                       | 3.60 | 1     |
| Apr. 1-10, 1957      |                      | 6.4                        | .0            | 1.9       | .62            | 30           | 8.0            | 10          | 1.5           | 0                               | 118           | 3.6          | .2                         | 192                                                | 108                           | 108           | .0                        | .0              | 295                                       | 4.35 | 3     |
| Apr. 11, 13-20, 1957 |                      | 6.2                        | 1.3           | 3.0       | .74            | 40           | 6.4            | 9.0         | .9            | 0                               | 98            | 4.0          | .2                         | 144                                                | 76                            | 76            | .3                        | .2              | 266                                       | 4.10 | 1     |
| Apr. 21-30, 1957     |                      | 8.1                        | 2.7           | 2.6       | 1.3            | 43           | 14             | 20          | 1.6           | 0                               | 223           | 5.2          | .1                         | 325                                                | 165                           | 165           | .6                        | .6              | 520                                       | 3.60 | 1     |
| May 1-10, 1957       |                      | 8.5                        | 2.4           | 3.5       | 1.1            | 41           | 12             | 21          | 1.9           | 0                               | 218           | 5.6          | .4                         | 311                                                | 152                           | 152           | .6                        | .5              | 524                                       | 3.40 | 2     |

## MONONGAHELA RIVER BASIN--Continued

## MONONGAHELA RIVER AT LOCK AND DAM 8, AT POINT MARION, PA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                       | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |           | Specific conductance (micro-mhos at 25°C) | pH   | Color |
|------------------------------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|-----------|-------------------------------------------|------|-------|
|                                          |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate | Immediate                 | Potential |                                           |      |       |
| May 11-20, 1957....                      |                      | 9.7                        | 3.9           | 5.1       | 1.2            | 45           | 16             | 29          | 1.8           | 0                               | 271                        | 10            | 0.5          | 0.7                        | 394                                                | 178                           | 178           | 0.8                       | 0.9       | 630                                       | 3.34 | 1     |
| May 21-31.....                           |                      | 10                         | 4.6           | 5.4       | 1.9            | 66           | 21             | 47          | 2.2           | 0                               | 384                        | 12            | .2           | .5                         | 554                                                | 251                           | 251           | 1.0                       | 1.0       | 828                                       | 3.45 | 2     |
| June 1-7, 9-10.....                      |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                           |           |                                           |      |       |
| June 11-16, 18-19..                      |                      | 9.5                        | 4.8           | 1.2       | 1.6            | 66           | 18             | 38          | 2.2           | 0                               | 358                        | 14            | .4           | .7                         | 528                                                | 239                           | 239           | 1.1                       | 1.1       | 833                                       | 3.20 | 2     |
| June 21-30.....                          |                      | 8.4                        | 3.5           | 2.3       | 1.3            | 44           | 14             | 33          | 2.5           | 0                               | 259                        | 9.0           | .3           | .7                         | 379                                                | 168                           | 168           | .8                        | .7        | 626                                       | 3.45 | 1     |
| July 1-6, 8, 10.....                     |                      | 7.7                        | 3.1           | .94       | 1.2            | 35           | 9.5            | 28          | 2.5           | 0                               | 210                        | 8.5           | .2           | .6                         | 302                                                | 127                           | 127           | .8                        | .7        | 548                                       | 3.45 | 1     |
| July 11-19.....                          |                      | 6.8                        | 1.6           | .12       | 1.1            | 32           | 12             | 21          | 1.5           | 0                               | 175                        | 7.0           | .2           | .4                         | 272                                                | 130                           | 130           | .4                        | .4        | 421                                       | 3.95 | 2     |
| July 21-31.....                          |                      | 6.5                        | 2.4           | .74       | .70            | 25           | 7.8            | 14          | 1.4           | 0                               | 145                        | 10            | .1           | .9                         | 204                                                | 94                            | 94            | .6                        | .6        | 424                                       | 3.50 | 1     |
| Aug. 1-6, 8-10.....                      |                      | 7.4                        | 3.0           | 1.2       | 1.0            | 32           | 10             | 25          | 1.7           | 0                               | 198                        | 14            | .1           | .9                         | 289                                                | 121                           | 121           | .8                        | .8        | 586                                       | 3.40 | 1     |
| Aug. 11-20.....                          |                      | 8.0                        | 2.8           | .82       | .90            | 38           | 12             | 34          | 2.1           | 0                               | 236                        | 12            | .3           | .8                         | 363                                                | 145                           | 145           | .8                        | .6        | 630                                       | 3.50 | 1     |
| Aug. 21-31.....                          |                      | 8.6                        | 1.9           | 1.9       | .31            | 41           | 15             | 41          | 2.2           | 0                               | 280                        | 13            | .3           | .4                         | 416                                                | 164                           | 164           | 1.7                       | 1.6       | 719                                       | 3.45 | 3     |
| Sept. 1, 3-4, 6-7, 9-10.....             |                      | 8.8                        | 3.4           | .59       | 1.4            | 44           | 18             | 45          | 2.7           | 0                               | 298                        | 16            | .5           | .8                         | 439                                                | 184                           | 184           | .8                        | .8        | 761                                       | 3.40 | 3     |
| Sept. 11-20.....                         |                      | 8.7                        | 3.4           | 1.2       | .79            | 44           | 14             | 42          | 2.3           | 0                               | 294                        | 16            | .4           | .7                         | 421                                                | 168                           | 168           | 1.0                       | .9        | 745                                       | 3.45 | 3     |
| Sept. 21-30.....                         |                      | 8.4                        | 4.2           | 1.4       | 1.7            | 56           | 16             | 50          | 2.9           | 0                               | 319                        | 30            | .5           | .7                         | 482                                                | 206                           | 206           | .9                        | .9        | 826                                       | 3.45 | 1     |
| Time-weighted average <sup>a</sup> ..... |                      | 7.1                        | 3.1           | .88       | 1.3            | 42           | 12             | 36          | 2.3           | 0                               | 244                        | 21            | .2           | .9                         | 366                                                | 155                           | 155           | .6                        | .6        | 652                                       | 3.60 | 1     |
|                                          |                      | 7.4                        | 2.6           | 2.8       | 1.0            | 34           | 11             | 22          | 1.7           | 0                               | 192                        | 9.4           | 0.2          | 1.0                        | 289                                                | 130                           | 130           | 0.6                       | 0.6       | 487                                       | --   | 2     |

<sup>a</sup> Represents 95 percent of days.

## MONONGAHELA RIVER BASIN--Continued

MONONGAHELA RIVER AT LOCK AND DAM 8, AT POINT MARION, PA.--Continued

| Temperature (°F) of water, water year October 1956 to September 1957 |      |      |      |      |      |      |      |     |      |      |      |       |
|----------------------------------------------------------------------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| Day                                                                  | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
| 1                                                                    | 66   | 64   | 42   | 37   | 38   | 40   | 45   | 64  | 68   | 72   | 74   | 68    |
| 2                                                                    | 66   | 64   | 41   | 35   | 39   | 39   | 45   | 63  | 65   | 73   | 76   | --    |
| 3                                                                    | 66   | 63   | 42   | 35   | 38   | 38   | 44   | 63  | 68   | 75   | 74   | 69    |
| 4                                                                    | 66   | 62   | 42   | 34   | 42   | 40   | 44   | 62  | 69   | 74   | 74   | 70    |
| 5                                                                    | 66   | 62   | 42   | 35   | --   | 40   | 47   | 62  | 70   | 72   | 72   | --    |
| 6                                                                    | 66   | 62   | 45   | 34   | 40   | 39   | 45   | 62  | 70   | 67   | 72   | 66    |
| 7                                                                    | 65   | 62   | 44   | 34   | 42   | 40   | 47   | 58  | 71   | --   | --   | 66    |
| 8                                                                    | --   | 60   | 45   | 35   | 40   | 40   | 46   | 62  | --   | 70   | 71   | --    |
| 9                                                                    | 64   | --   | 45   | 34   | 44   | 38   | 45   | 62  | 66   | --   | 71   | 66    |
| 10                                                                   | 63   | 55   | 45   | 36   | 44   | 38   | 44   | 63  | 67   | 70   | 72   | 66    |
| 11                                                                   | 63   | 55   | 43   | 35   | 43   | 39   | 46   | 66  | 68   | 68   | 71   | 65    |
| 12                                                                   | 64   | 55   | 44   | 32   | 43   | 40   | --   | 63  | 69   | 68   | 74   | 68    |
| 13                                                                   | 64   | 55   | 43   | 35   | 42   | 42   | 45   | 65  | 74   | 70   | 72   | 66    |
| 14                                                                   | 61   | 53   | 47   | 35   | 41   | 44   | 43   | 64  | 72   | 74   | 76   | 65    |
| 15                                                                   | 62   | 53   | 46   | 34   | 41   | 45   | 45   | 67  | 74   | 74   | 74   | 68    |
| 16                                                                   | 62   | 52   | 46   | 34   | 40   | 46   | 44   | 68  | 73   | 72   | 75   | 66    |
| 17                                                                   | 63   | 53   | 47   | 32   | 37   | 44   | 45   | 67  | --   | 74   | 73   | 65    |
| 18                                                                   | 64   | 52   | 46   | 32   | 38   | --   | 46   | 65  | 75   | 74   | 69   | 66    |
| 19                                                                   | 62   | 52   | 45   | 32   | 40   | 45   | 48   | 66  | 75   | 75   | 74   | 66    |
| 20                                                                   | 62   | 52   | 45   | 32   | 36   | 44   | 52   | 65  | --   | --   | 71   | 67    |
| 21                                                                   | 62   | 51   | 46   | --   | 37   | 45   | 51   | 64  | 74   | 75   | 71   | 66    |
| 22                                                                   | 63   | 49   | 47   | 35   | 36   | 44   | 54   | 65  | 75   | 77   | 69   | 66    |
| 23                                                                   | 63   | 48   | 46   | 34   | 38   | 44   | 55   | 68  | 75   | 75   | 68   | 64    |
| 24                                                                   | 63   | 45   | 46   | 35   | 36   | 44   | 58   | 68  | 75   | 74   | 68   | 64    |
| 25                                                                   | 62   | 44   | 45   | 36   | 42   | 44   | 64   | 68  | 74   | 75   | 70   | 63    |
| 26                                                                   | 60   | 45   | 44   | 35   | 48   | 44   | 64   | 68  | 73   | 73   | 66   | 62    |
| 27                                                                   | 63   | 43   | 42   | 35   | --   | 44   | 64   | 68  | 74   | 74   | 67   | 58    |
| 28                                                                   | 62   | 42   | 44   | 36   | 40   | 44   | 65   | 68  | 74   | 78   | 68   | 59    |
| 29                                                                   | 65   | 40   | 43   | 37   | --   | 43   | 65   | 66  | 74   | 74   | 69   | 56    |
| 30                                                                   | 63   | --   | --   | 36   | --   | 43   | 65   | 68  | 73   | 74   | 66   | 60    |
| 31                                                                   | 64   | --   | 40   | 37   | --   | 44   | --   | 68  | --   | 75   | 68   | --    |
| Average                                                              | 64   | 53   | 44   | 34   | 40   | 42   | 51   | 65  | 72   | 73   | 71   | 65    |

MONONGAHELA RIVER BASIN--Continued  
MONONGAHELA RIVER AT CHARLEROI, PA.

LOCATION.--At Mercantile Bridge Company toll bridge approximately 1½ miles downstream from gaging station at Charleroi, Washington County, and 1 mile downstream from lock 4.

DRAINAGE AREA.--5,213 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, October 1956 to September 1957.

Water temperatures: October 1944 to June 1953, October 1956 to September 1957.

EXTREMES, 1956-57.--Hardness: Maximum, 252 ppm Sept. 1-24; minimum, 58 ppm July 5-9.

Specific conductance: Maximum daily, 1,000 micromhos Sept. 28; minimum daily, 153 micromhos Feb. 12.

Water temperatures: Maximum, 83°F July 23; minimum, freezing point Jan. 11, 19, 24, 25.

EXTREMES, 1944-53, 1956-57.--Dissolved solids (1944-47): Maximum, 749 ppm Sept. 11-20, 1946; minimum, 99 ppm Feb. 11-20, 1946.

Hardness: Maximum, 399 ppm Sept. 11-20, 1946; minimum, 44 ppm Dec. 1-10, 1949.

Specific conductance (1945-52): Maximum daily, 1,330 micromhos Oct. 27, 1946; minimum daily, 123 micromhos Dec. 4, 1949.

Water temperatures: Maximum, 86°F Sept. 1, 1948; June 29, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity (H <sup>+</sup> ) | Specific conductance (micromhos at 25°C) | pH   | Color |
|---------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------------|------------------------------------------|------|-------|
|                     |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                 |                                          |      |       |
| Oct. 1-10, 1956 ... | 3,100                | 9.8                        | 0.5           | 0.13      | --             | 45           | 15             | 42          | 3.4           | 0                               | 261                        | 12            | 0.1          | 2.9                        | 404                                                | 182                           | 182           | 0.8                             | 628                                      | 3.90 | 3     |
| Oct. 11-20 ...      | 2,320                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 279                        | 10            | --           | 1.4                        | --                                                 | 184                           | 184           | .9                              | 665                                      | 4.00 | 1     |
| Oct. 21-31 ...      | 2,250                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 271                        | 16            | --           | .9                         | --                                                 | 170                           | 170           | .8                              | 651                                      | 3.80 | 1     |
| Nov. 1-10 ...       | 4,970                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 238                        | 9.2           | --           | 1.3                        | --                                                 | 146                           | 146           | .8                              | 608                                      | 3.90 | 1     |
| Nov. 11-20 ...      | 3,450                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 191                        | 7.2           | --           | 3.7                        | --                                                 | 126                           | 126           | .5                              | 470                                      | 4.00 | 2     |
| Nov. 21-30 ...      | 4,440                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 160                        | 4.6           | --           | 2.0                        | --                                                 | 96                            | 96            | .5                              | 398                                      | 4.10 | 1     |
| Dec. 1-10 ...       | 7,490                | --                         | --            | --        | --             | --           | --             | --          | --            | 0                               | 155                        | 7.1           | --           | 3.1                        | --                                                 | 104                           | 104           | .4                              | 399                                      | 4.25 | 1     |
| Dec. 11-20 ...      | 30,800               | --                         | --            | --        | --             | --           | --             | 9.5         | --            | 2                               | 76                         | 2.9           | --           | 2.3                        | --                                                 | 66                            | 66            | --                              | 208                                      | 4.7  | 2     |
| Dec. 21-31 ...      | 22,400               | --                         | --            | --        | --             | --           | --             | 9.5         | --            | 2                               | 76                         | 3.1           | --           | 1.8                        | --                                                 | 66                            | 66            | --                              | 204                                      | 4.8  | 3     |
| Jan. 1-10, 1957 ... | 10,400               | --                         | --            | --        | --             | --           | --             | 18          | --            | 1                               | 113                        | 3.6           | --           | 1.8                        | --                                                 | 86                            | 85            | --                              | 283                                      | 4.6  | 2     |
| Jan. 11-31 ...      | 21,500               | --                         | --            | --        | --             | --           | --             | 12          | --            | 2                               | 89                         | 3.3           | --           | 2.0                        | --                                                 | 74                            | 72            | --                              | 232                                      | 4.6  | 1     |
| Feb. 21-28 ...      | 8,690                | 7.7                        | 1.9           | .01       | 0.32           | 26           | 7.7            | 14          | 1.3           | 0                               | 131                        | 3.6           | .2           | 1.2                        | 199                                                | 112                           | 112           | .4                              | 337                                      | 4.10 | 3     |
| Mar. 4-13 ...       | 12,400               | 6.5                        | .5            | .01       | .29            | 23           | 6.3            | 9.8         | 1.1           | 2                               | 98                         | 3.2           | .1           | 1.9                        | 162                                                | 87                            | 86            | --                              | 255                                      | 4.8  | 3     |
| Mar. 15-Apr. 3 ...  | 8,370                | 7.7                        | 1.5           | .00       | .68            | 30           | 8.2            | 17          | 1.4           | 0                               | 146                        | 5.2           | .2           | 1.9                        | 228                                                | 122                           | 122           | .3                              | 371                                      | 4.10 | 3     |
| Apr. 4-17 ...       | 20,300               | --                         | --            | --        | --             | --           | --             | 11          | --            | 4                               | 86                         | 4.0           | --           | 1.9                        | --                                                 | 77                            | 74            | --                              | 215                                      | 5.7  | 1     |
| Apr. 18-25 ...      | 7,090                | --                         | --            | --        | --             | --           | --             | 22          | --            | 11                              | 119                        | 7.0           | --           | 2.5                        | --                                                 | 96                            | 87            | --                              | 295                                      | 6.2  | 3     |
| Apr. 27-May 4 ...   | 5,890                | --                         | --            | --        | --             | --           | --             | 0           | --            | 1                               | 167                        | 6.5           | --           | .5                         | --                                                 | 120                           | 120           | .3                              | 393                                      | 4.5  | 2     |
| May 5-8 ...         | 2,640                | --                         | --            | --        | --             | --           | --             | 37          | --            | 1                               | 246                        | 7.0           | --           | .6                         | --                                                 | 188                           | 187           | .3                              | 545                                      | 4.6  | 2     |
| May 9-15 ...        | 2,060                | --                         | --            | --        | --             | --           | --             | 41          | --            | 2                               | 190                        | 7.0           | --           | .9                         | --                                                 | 120                           | 118           | --                              | 449                                      | 4.9  | 3     |

|                       |       |    |     |      |     |    |    |    |     |     |     |    |     |     |     |     |     |     |      |   |
|-----------------------|-------|----|-----|------|-----|----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|---|
| May 16-20, 1957 ..... | 3,200 | -- | --  | --   | --  | -- | -- | 18 | 2   | 228 | 10  | -- | 0.9 | --  | 157 | 156 | --  | 540 | 4.7  | 3 |
| May 21-June 7 .....   | 3,060 | -- | --  | --   | --  | -- | -- | -- | 0   | 196 | 7.7 | -- | 3.2 | --  | 120 | 120 | 0.5 | 477 | 3.80 | 5 |
| June 8-24 .....       | 2,790 | -- | --  | --   | --  | -- | -- | -- | 0   | 284 | 12  | -- | 3.6 | --  | 166 | 166 | .9  | 705 | 3.50 | 5 |
| June 25-July 4 .....  | 4,110 | -- | --  | --   | --  | -- | -- | -- | 0   | 204 | 8.5 | -- | 2.7 | --  | 112 | 112 | .6  | 525 | 3.60 | 2 |
| July 5-9 .....        | 2,400 | -- | --  | --   | --  | -- | -- | -- | 0   | 108 | 8.6 | -- | 3.6 | --  | 58  | 58  | .4  | 296 | 3.70 | 3 |
| July 10-21 .....      | 1,380 | -- | --  | --   | --  | -- | -- | -- | 0   | 231 | 9.9 | -- | 3.8 | --  | 136 | 136 | .6  | 586 | 3.60 | 5 |
| July 22-31 .....      | 1,190 | -- | --  | --   | --  | -- | -- | -- | 0   | 348 | 11  | -- | 3.3 | --  | 195 | 195 | .9  | 508 | 3.50 | 5 |
| Aug. 1-12 .....       | 947   | -- | --  | --   | --  | -- | -- | -- | 0   | 227 | 10  | -- | 2.6 | --  | 130 | 130 | .6  | 565 | 3.65 | 2 |
| Aug. 13-31 .....      | 726   | -- | --  | --   | --  | -- | -- | -- | 0   | 286 | 11  | -- | 2.1 | --  | 140 | 140 | 1.1 | 732 | 3.45 | 2 |
| Sept. 1-24 .....      | 841   | 12 | 2.5 | 0.11 | 1.8 | 51 | 20 | 54 | 3.4 | 347 | 11  | -- | .7  | 536 | 252 | 252 | 1.0 | 816 | 3.35 | 2 |
| Sept. 25-30 .....     | 968   | -- | --  | --   | --  | -- | -- | -- | 0   | 424 | 19  | -- | 1.1 | --  | 245 | 245 | 1.3 | 964 | 3.45 | 3 |
| Weighted-average      | 7,110 | -- | --  | --   | --  | -- | -- | -- | 1   | 202 | 8.0 | -- | 2.2 | --  | 133 | 132 | 0.5 | 496 | --   | 3 |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## MONONGAHELA RIVER BASIN--Continued

## MONONGAHELA RIVER AT CHARLEROI, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 66   | 80   | 42   | 39   | 40   | --   | 49   | 65  | 71   | --   | 78   | 76    |
| 2       | 64   | 64   | 43   | 34   | 40   | --   | 49   | 65  | 71   | --   | 76   | 76    |
| 3       | 68   | 59   | 45   | 34   | 41   | --   | 49   | 61  | 71   | 76   | 78   | 76    |
| 4       | 65   | 59   | 44   | 38   | 41   | 40   | 49   | 61  | 71   | 76   | 78   | 76    |
| 5       | 64   | 59   | 44   | 39   | 41   | 39   | 47   | 65  | 74   | 76   | 76   | 74    |
| 6       | 64   | 80   | 44   | 38   | 42   | --   | 48   | 63  | 75   | 75   | 75   | --    |
| 7       | 63   | 60   | 42   | 38   | 43   | 38   | 48   | --  | 76   | 76   | 75   | 72    |
| 8       | 63   | 60   | 45   | 38   | 44   | 40   | --   | 63  | 70   | 76   | 80   | --    |
| 9       | 61   | 55   | 44   | 38   | --   | 40   | 50   | 64  | 70   | 77   | 76   | 72    |
| 10      | 61   | 55   | 44   | 38   | 45   | 44   | 50   | 64  | 72   | 77   | 76   | 72    |
| 11      | 59   | 54   | 46   | 31   | 45   | 44   | --   | 65  | 73   | 76   | 78   | 73    |
| 12      | 59   | 55   | 45   | 34   | 45   | 50   | 46   | 69  | 73   | 75   | 76   | 73    |
| 13      | 60   | 54   | 40   | 35   | 44   | 50   | 48   | 71  | 72   | 76   | 78   | 73    |
| 14      | 59   | 52   | 45   | 35   | 44   | --   | 48   | 65  | 75   | 77   | 76   | 73    |
| 15      | 60   | 54   | 45   | 33   | 43   | 44   | 49   | 70  | 76   | 76   | 78   | 74    |
| 16      | 59   | 55   | 48   | 34   | 44   | 45   | 48   | 66  | 76   | 76   | 78   | 75    |
| 17      | 61   | 51   | 47   | 34   | 44   | 45   | 49   | 68  | 75   | 77   | 74   | 73    |
| 18      | 61   | 50   | 46   | 33   | 44   | 43   | 50   | --  | 76   | 79   | 75   | 73    |
| 19      | 60   | 50   | 44   | 32   | 39   | 47   | 51   | 69  | 75   | 79   | 75   | 73    |
| 20      | 60   | 54   | 44   | 34   | 42   | 48   | 51   | 70  | 76   | 80   | 75   | 74    |
| 21      | 60   | 50   | 48   | --   | 44   | 48   | 51   | 67  | 76   | 81   | 74   | 74    |
| 22      | 62   | 50   | 49   | 34   | 38   | 47   | 56   | 68  | 78   | 81   | 76   | 75    |
| 23      | 62   | 45   | 48   | 35   | 40   | 46   | 60   | 70  | 78   | 83   | 74   | 67    |
| 24      | 61   | 40   | 48   | 31   | 44   | 45   | 61   | 71  | 78   | 78   | 74   | 71    |
| 25      | 60   | 43   | 49   | 31   | 36   | 47   | 62   | --  | 76   | 78   | 74   | 68    |
| 26      | 60   | 43   | 40   | 34   | 40   | 48   | --   | 70  | 78   | 77   | 75   | 70    |
| 27      | 60   | 43   | 41   | 34   | 39   | 48   | 65   | 70  | 78   | 78   | 73   | 65    |
| 28      | 60   | 42   | 46   | 35   | 46   | 49   | --   | 68  | 79   | 77   | 73   | 65    |
| 29      | 59   | 45   | 41   | 40   | --   | 53   | 65   | 69  | 76   | 78   | 73   | 65    |
| 30      | 59   | 44   | 41   | 37   | --   | 52   | 64   | 70  | 76   | 78   | 75   | 66    |
| 31      | 61   | --   | 42   | 40   | --   | 47   | --   | 71  | --   | 77   | 75   | --    |
| Average | 61   | 52   | 45   | 35   | 42   | 46   | 52   | 67  | 75   | 77   | 76   | 72    |

MONONGAHELA RIVER BASIN--Continued  
YOUGHIOCHENY RIVER AT MCKEESPORT, PA.

LOCATION.--At base of 15th Street Bridge in McKeesport, Allegheny County, site of raw-water intake for McKeesport Water Works, approximately 1½ miles from junction of Monongahela and Youghiochenny River.

DRAINAGE AREA.--1,732 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES 1956-57.--Hardness: Maximum, 172 ppm June 1-9; minimum, 52 ppm Feb. 1-17.

Specific conductance: Maximum daily, 782 micromhos Aug. 21; minimum daily, 162 micromhos Feb. 3.

Water temperatures: Maximum daily, 83°F July 22.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Philadelphia, Pa.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection              | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH | Color |
|---------------------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------------|-------------------------------------------|----|-------|
|                                 |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                 |                                           |    |       |
| Oct. 1-10, 1956...              |                      | 6.1              | 2.3                        | 0.00          | 0.57      | 32             | 7.6          | 28             | 1.8         | 0             | 169                             | 6.0                        | 0.1           | 1.3          | 274                        | 127                                                | 127                           | 0.2           | 430                             | 4.30                                      | 3  |       |
| Oct. 11-20 .....                |                      | --               | --                         | --            | .52       | --             | --           | --             | --          | 0             | 174                             | 6.0                        | --            | 1.1          | --                         | 116                                                | 116                           | .2            | 451                             | 4.35                                      | 1  |       |
| Oct. 21-31 .....                |                      | --               | --                         | --            | .62       | --             | --           | --             | --          | 0             | 203                             | 6.0                        | --            | 1.0          | --                         | 133                                                | 133                           | .2            | 519                             | 4.15                                      | 2  |       |
| Nov. 1-10 .....                 |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 184                             | 5.9                        | --            | 3.3          | --                         | 118                                                | 118                           | .2            | 460                             | 4.30                                      | 2  |       |
| Nov. 11-20 .....                |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 188                             | 5.5                        | --            | 1.9          | --                         | 116                                                | 116                           | .3            | 480                             | 4.10                                      | 1  |       |
| Nov. 21-30 .....                |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 154                             | 5.8                        | --            | 1.8          | --                         | 94                                                 | 94                            | .4            | 392                             | 4.20                                      | 3  |       |
| Dec. 1-4 .....                  |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 176                             | 4.1                        | --            | 2.4          | --                         | 110                                                | 110                           | .2            | 455                             | 4.20                                      | 1  |       |
| Dec. 14, 24, 25, 28             |                      | --               | --                         | --            | --        | --             | --           | 15             | 15          | 15            | 81                              | 4.6                        | --            | 4.0          | --                         | 74                                                 | 62                            | --            | 234                             | 6.7                                       | 1  |       |
| Jan. 2, 5, 10, 1957             |                      | --               | --                         | --            | --        | --             | --           | 17             | 17          | 9             | 104                             | 4.6                        | --            | 4.3          | --                         | 88                                                 | 81                            | --            | 276                             | 6.5                                       | 1  |       |
| Jan. 16, 18, 20 ..              |                      | --               | --                         | --            | --        | --             | --           | 18             | 18          | 6             | 106                             | 4.3                        | --            | 3.2          | --                         | 84                                                 | 79                            | --            | 272                             | 6.0                                       | 2  |       |
| Jan. 21-31 .....                |                      | --               | --                         | --            | --        | --             | --           | 16             | 16          | 6             | 84                              | 4.2                        | --            | 3.2          | --                         | 65                                                 | 60                            | --            | 209                             | 6.2                                       | 2  |       |
| Feb. 1-17 .....                 |                      | --               | --                         | --            | --        | --             | --           | 14             | 14          | 5             | 68                              | 4.0                        | --            | 3.8          | --                         | 52                                                 | 48                            | --            | 184                             | 5.9                                       | 2  |       |
| Feb. 18-25 .....                |                      | --               | --                         | --            | --        | --             | --           | 13             | 13          | 2             | 85                              | 4.2                        | --            | 2.8          | --                         | 70                                                 | 68                            | --            | 223                             | 5.1                                       | 3  |       |
| Mar. 1-19 .....                 |                      | --               | --                         | --            | --        | --             | --           | 20             | 20          | 4             | 113                             | 5.2                        | --            | 2.8          | --                         | 88                                                 | 84                            | --            | 286                             | 5.8                                       | 4  |       |
| Mar. 20-Apr. 2...               |                      | --               | --                         | --            | --        | --             | --           | 26             | 26          | 1             | 136                             | 6.0                        | --            | 3.4          | --                         | 98                                                 | 97                            | --            | 341                             | 4.6                                       | 1  |       |
| Apr. 3-11 .....                 |                      | --               | --                         | --            | --        | --             | --           | 14             | 14          | 11            | 82                              | 4.2                        | --            | 3.6          | --                         | 74                                                 | 65                            | --            | 229                             | 6.1                                       | 3  |       |
| Apr. 15-25 .....                |                      | --               | --                         | --            | --        | --             | --           | 18             | 18          | 7             | 118                             | 4.7                        | --            | 3.0          | --                         | 98                                                 | 92                            | --            | 303                             | 5.9                                       | 2  |       |
| Apr. 30-May 7...                |                      | --               | --                         | --            | --        | --             | --           | 31             | 31          | 2             | 161                             | 6.4                        | --            | 2.0          | --                         | 112                                                | 110                           | --            | 378                             | 5.0                                       | 4  |       |
| May 8-13 .....                  |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 248                             | 8.2                        | --            | 1.5          | --                         | 164                                                | 164                           | .3            | 589                             | 4.00                                      | 4  |       |
| May 15-25, 27, 28, 30, 31 ..... |                      | --               | --                         | --            | --        | --             | --           | --             | --          | 0             | 208                             | 6.1                        | --            | 3.0          | --                         | 128                                                | 128                           | .4            | 502                             | 3.90                                      | 3  |       |





## MONONGAHELA RIVER BASIN--Continued

## YOUGHIOGHENY RIVER AT McKEESPORT, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | 62   | 39   | --   | 40   | --   | 42   | 65  | 74   | 72   | 75   | 76    |
| 2       | 62   | 62   | 41   | 39   | 42   | --   | 48   | 65  | 73   | 71   | 76   | 77    |
| 3       | 66   | 62   | 41   | --   | 38   | --   | 46   | 61  | 72   | 72   | 76   | 77    |
| 4       | 66   | 60   | 38   | --   | 40   | --   | 46   | 58  | 73   | 75   | --   | 76    |
| 5       | 64   | 57   | --   | 40   | 40   | --   | 46   | 56  | 72   | 76   | 75   | 72    |
| 6       | 64   | 59   | --   | --   | 40   | --   | --   | 56  | 73   | 75   | 69   | 72    |
| 7       | --   | 59   | --   | --   | 42   | --   | 46   | 58  | 74   | --   | 68   | --    |
| 8       | 60   | 58   | --   | --   | 43   | --   | 48   | 61  | 73   | 75   | 71   | 68    |
| 9       | 59   | 53   | --   | --   | 44   | --   | 47   | 66  | 65   | 74   | 73   | 68    |
| 10      | 58   | 50   | --   | 39   | 46   | --   | 46   | 67  | 67   | 74   | 71   | 69    |
| 11      | 56   | 43   | --   | --   | --   | --   | 42   | 69  | 71   | 70   | 76   | 70    |
| 12      | 56   | 47   | --   | --   | 42   | --   | --   | 71  | 72   | 70   | 76   | 71    |
| 13      | 57   | 49   | --   | --   | 41   | --   | --   | 72  | 76   | 75   | 72   | 69    |
| 14      | --   | 48   | 46   | --   | 40   | --   | --   | --  | 74   | --   | 73   | 71    |
| 15      | 60   | 51   | --   | --   | 39   | --   | 46   | 72  | --   | 74   | 77   | 73    |
| 16      | 60   | 49   | --   | 34   | 39   | --   | --   | 69  | 76   | 77   | 78   | 73    |
| 17      | 61   | 49   | --   | --   | 38   | --   | 48   | 65  | 77   | --   | 71   | 71    |
| 18      | 61   | 43   | --   | 34   | 34   | --   | --   | 67  | 80   | 77   | 71   | 70    |
| 19      | 60   | --   | --   | 34   | 39   | --   | 56   | 70  | 81   | 79   | 70   | 70    |
| 20      | 61   | 45   | --   | 33   | 38   | 48   | 57   | 69  | 76   | 79   | 75   | 73    |
| 21      | 59   | --   | --   | 35   | 38   | 46   | 61   | 65  | 74   | 82   | 70   | 72    |
| 22      | 62   | 44   | --   | 35   | --   | 43   | 62   | 65  | 76   | 83   | 71   | 72    |
| 23      | 63   | 43   | --   | 39   | 42   | 44   | --   | 68  | --   | 82   | 70   | 72    |
| 24      | 61   | 38   | 49   | 37   | 41   | 47   | 64   | 69  | 79   | 74   | 76   | 68    |
| 25      | 60   | 37   | 46   | 37   | 41   | 43   | 66   | 68  | 77   | 73   | 72   | --    |
| 26      | 58   | 38   | --   | 39   | --   | 45   | --   | --  | 74   | 73   | 73   | 66    |
| 27      | 62   | 38   | --   | 35   | --   | 47   | --   | 74  | 76   | 73   | --   | 61    |
| 28      | 56   | 41   | 42   | 37   | --   | 46   | --   | 67  | 77   | --   | 69   | 60    |
| 29      | 58   | 41   | --   | 39   | --   | 44   | --   | --  | 74   | 77   | 70   | --    |
| 30      | 60   | --   | --   | 39   | --   | 44   | 66   | 67  | 74   | 78   | 73   | --    |
| 31      | --   | --   | 46   | --   | --   | --   | --   | 69  | --   | 77   | --   | --    |
| Average | 60   | 49   | --   | --   | --   | --   | --   | 66  | 74   | 75   | 73   | 71    |

MONONGAHELA RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN MONONGAHELA RIVER BASIN IN PENNSYLVANIA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl)      | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> | Total acidity (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH | Color |
|--------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|--------------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------------------------|-------------------------------------------|----|-------|
|                    |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            | Calcium, magnesium |              |                            |                                                    |                               | Non-carbonate                   |                                           |    |       |

MONONGAHELA RIVER AT BROWNSVILLE

|                   |  |  |  |  |  |  |  |  |    |   |     |     |  |  |     |  |     |     |     |     |      |   |
|-------------------|--|--|--|--|--|--|--|--|----|---|-----|-----|--|--|-----|--|-----|-----|-----|-----|------|---|
| Dec. 5, 1956 .... |  |  |  |  |  |  |  |  | 25 | 0 | 142 | 7.4 |  |  | 2.2 |  | 100 | 100 | 0.3 | 402 | 3.90 | 3 |
|-------------------|--|--|--|--|--|--|--|--|----|---|-----|-----|--|--|-----|--|-----|-----|-----|-----|------|---|

MONONGAHELA RIVER AT COURTNEY

|                    |  |  |  |  |  |  |  |  |    |   |     |     |  |  |     |  |     |     |     |     |      |   |
|--------------------|--|--|--|--|--|--|--|--|----|---|-----|-----|--|--|-----|--|-----|-----|-----|-----|------|---|
| Dec. 4, 1956 ..... |  |  |  |  |  |  |  |  | 36 | 0 | 180 | 8.6 |  |  | 2.8 |  | 115 | 115 | 0.5 | 489 | 3.80 | 3 |
|--------------------|--|--|--|--|--|--|--|--|----|---|-----|-----|--|--|-----|--|-----|-----|-----|-----|------|---|

YOUGHIOGHENY RIVER AT CONNELLSVILLE

|                    |  |  |  |  |  |  |  |  |     |   |    |     |  |  |     |  |    |    |  |    |     |   |
|--------------------|--|--|--|--|--|--|--|--|-----|---|----|-----|--|--|-----|--|----|----|--|----|-----|---|
| Dec. 5, 1956 ..... |  |  |  |  |  |  |  |  | 3.7 | 4 | 29 | 2.3 |  |  | 1.5 |  | 30 | 27 |  | 90 | 6.4 | 3 |
|--------------------|--|--|--|--|--|--|--|--|-----|---|----|-----|--|--|-----|--|----|----|--|----|-----|---|

TURTLE CREEK AT TURTLE CREEK

|                     |  |  |  |  |  |  |  |  |     |   |       |    |  |  |     |       |     |     |     |       |      |   |
|---------------------|--|--|--|--|--|--|--|--|-----|---|-------|----|--|--|-----|-------|-----|-----|-----|-------|------|---|
| July 17, 1957 ..... |  |  |  |  |  |  |  |  | 303 | 0 | 1,080 | 80 |  |  | 2.2 | 1,480 | 510 | 510 | 4.4 | 2,420 | 2.90 | 5 |
|---------------------|--|--|--|--|--|--|--|--|-----|---|-------|----|--|--|-----|-------|-----|-----|-----|-------|------|---|

## OHIO RIVER MAIN STEM

## OHIO RIVER AT AMBRIDGE, PA.

LOCATION.--At bridge on State Highway 930 at Ambridge, Beaver County, 1.2 miles downstream from Sewickley Creek, and approximately 5 miles below gaging station at Sewickley, Allegheny County.

DRAINAGE AREA.--19,560 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to June 1953, October 1956 to September 1957.

Water temperatures: October 1945 to June 1953, October 1956 to September 1957.

EXTREMES, 1956-57.--Hardness: Maximum, 210 ppm Aug. 18 to Sept. 19, Sept. 20-30; minimum, 52 ppm Jan. 24-31, Apr. 7-15.

Specific conductance: Maximum daily, 799 microhmhos Sept. 19; minimum daily, 139 microhmhos Jan. 26.

Water temperatures: Maximum, 86°F July 22, 29, Aug. 3.

EXTREMES, 1945-53, 1956-57.--Dissolved solids (1945-47): Maximum, 600 ppm Oct. 1-10, 1946; minimum, 79 ppm Apr. 1-10, 1947.

Hardness (1945-53, 1956-57): Maximum, 302 ppm Oct. 1-10, 1946; minimum, 43 ppm Apr. 1-10, 1947.

Specific conductance: Maximum daily, 994 microhmhos Sept. 25, 1952; minimum daily, 107 microhmhos Mar. 24, 1948.

Water temperatures: Maximum, 86°F Aug. 20, 21, 1947; July 22, 23, 1952; July 22, 29, Aug. 3, 1957; minimum (1945-53), freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for gaging station at Sewickley for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhmhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-10, 1956    | 13,000               | 5.7                        | 0.00      | 34           | 10             | 27          |               | 6                               | 147                        | 15            | 0.2          | 5.2                        | 256                                                | 126                           | 121           | 401                                       | 6.1 | 1     |
| Oct. 11-20         | 10,200               | --                         | --        | --           | --             | 28          |               | 10                              | 153                        | 19            | --           | 5.4                        | --                                                 | 138                           | 130           | 452                                       | 6.1 | 3     |
| Oct. 21-31         | 7,720                | --                         | --        | --           | --             | 36          |               | 7                               | 186                        | 22            | --           | 6.2                        | --                                                 | 138                           | 132           | 517                                       | 6.5 | 2     |
| Nov. 1-20          | 10,200               | --                         | --        | --           | --             | 43          |               | 4                               | 208                        | 21            | --           | 4.1                        | --                                                 | 160                           | 137           | 520                                       | 7.5 | 2     |
| Nov. 21-30         | 17,100               | --                         | --        | --           | --             | 29          |               | 18                              | 128                        | 24            | --           | 5.4                        | --                                                 | 124                           | 109           | 406                                       | 6.9 | 3     |
| Dec. 1-10          | 27,000               | --                         | --        | --           | --             | 24          |               | 16                              | 102                        | 17            | --           | 4.2                        | --                                                 | 94                            | 81            | 323                                       | 6.7 | 3     |
| Dec. 11-31         | 68,200               | --                         | --        | --           | --             | 9.5         |               | 14                              | 57                         | 7.9           | --           | 3.3                        | --                                                 | 64                            | 53            | 182                                       | 6.9 | 2     |
| Jan. 1-20, 1957    | 31,300               | --                         | --        | --           | --             | 14          |               | 8                               | 85                         | 9.0           | --           | 3.9                        | --                                                 | 80                            | 73            | 253                                       | 6.3 | 2     |
| Jan. 21-23         | 43,400               | --                         | --        | --           | --             | 17          |               | 11                              | 100                        | 13            | --           | 5.6                        | --                                                 | 100                           | 91            | 305                                       | 6.7 | 2     |
| Jan. 24-31         | 98,900               | --                         | --        | --           | --             | 8.1         |               | 10                              | 137                        | 6.9           | --           | 3.3                        | --                                                 | 52                            | 44            | 158                                       | 6.5 | 3     |
| Feb. 1-19          | 72,500               | 6.9                        | .02       | 20           | 5.1            | 6.5         | 1.7           | 6                               | 70                         | 7.2           | .1           | 3.2                        | 120                                                | 71                            | 66            | 201                                       | 6.7 | 3     |
| Feb. 20-28         | 33,200               | --                         | --        | --           | --             | 20          |               | 7                               | 89                         | 11            | --           | 2.9                        | --                                                 | 85                            | 80            | 270                                       | 6.0 | 3     |
| Mar. 1-23          | 43,600               | 6.3                        | .01       | 20           | 4.8            | 9.8         | 1.7           | 12                              | 67                         | 10            | --           | 3.0                        | 127                                                | 70                            | 60            | 222                                       | 6.9 | 2     |
| Mar. 24-Apr. 4     | 39,800               | 6.7                        | .01       | 25           | 5.7            | 13          | 2.0           | 10                              | 91                         | 10            | .2           | 3.2                        | 159                                                | 86                            | 78            | 274                                       | 6.6 | 3     |
| Apr. 7-15          | 113,000              | --                         | --        | --           | --             |             |               | 8                               | 51                         | 6.5           | --           | 2.7                        | --                                                 | 52                            | 46            | 161                                       | 6.3 | 4     |
| Apr. 16-May 2      | 59,200               | --                         | --        | --           | --             | 14          |               | 14                              | 54                         | 8.0           | --           | 2.5                        | --                                                 | 59                            | 48            | 186                                       | 6.5 | 4     |
| May 3-8            | 23,600               | --                         | .16       | --           | --             | 17          |               | 11                              | 87                         | 9.0           | --           | 2.3                        | --                                                 | 76                            | 67            | 258                                       | 6.2 | 3     |
| May 10-22          | 20,900               | --                         | --        | --           | --             | 32          |               | 10                              | 129                        | 15            | --           | 2.5                        | --                                                 | 97                            | 89            | 355                                       | 6.0 | 4     |
| May 23-June 8      | 15,500               | --                         | --        | --           | --             | 26          |               | 8                               | 116                        | 14            | --           | 8.1                        | --                                                 | 98                            | 92            | 342                                       | 5.8 | 6     |

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT AMBRIDGE, PA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg.                  | Non-carbonate |                                            |     |       |
| June 9-15, 1957 .....  | 11,400               | --                         | --        | --           | --             | 37          |               | 6                               | 173                        | 18            | --           | 6.3                        | --                                                  | 136                           | 131           | 456                                        | 6.5 | 4     |
| June 16-30 .....       | 13,000               | --                         | --        | --           | --             | 37          |               | 4                               | 190                        | 20            | --           | 6.5                        | --                                                  | 154                           | 151           | 501                                        | 6.1 | 4     |
| July 1-15 .....        | 17,100               | 8.4                        | 0.01      | 30           | 6.6            | 21          | 2.7           | 11                              | 118                        | 14            | 0.2          | 6.0                        | 210                                                 | 103                           | 94            | 335                                        | 6.1 | 3     |
| July 16-28 .....       | 5,480                | --                         | --        | --           | --             | 37          |               | 10                              | 159                        | 18            | --           | --                         | --                                                  | 128                           | 120           | 437                                        | 6.3 | 5     |
| July 29-Aug. 6 .....   | 4,280                | --                         | --        | --           | --             | 49          |               | 9                               | 203                        | 24            | --           | 9.9                        | --                                                  | 154                           | 147           | 543                                        | 6.1 | 6     |
| Aug. 7-17 .....        | 4,020                | --                         | --        | --           | --             | 54          |               | 6                               | 240                        | 26            | --           | 11                         | --                                                  | 184                           | 179           | 627                                        | 5.9 | 4     |
| Aug. 18-Sept. 19 ..... | 2,150                | 9.9                        | .01       | 59           | 15             | 62          | 6.6           | 10                              | 286                        | 34            | .8           | 11                         | 507                                                 | 210                           | 202           | 734                                        | 5.9 | 5     |
| Sept. 20-30 .....      | 4,730                | --                         | --        | --           | --             | 59          |               | 6                               | 290                        | 15            | --           | 12                         | --                                                  | 210                           | 205           | 735                                        | 5.6 | 2     |
| Weighted average ..    | 29,400               | --                         | --        | --           | --             | 28          |               | 9                               | 139                        | 16            | --           | 5.5                        | --                                                  | 116                           | 109           | 386                                        | --  | 3     |

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT AMBRIDGE, PA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 67   | 69   | 40   | 38   |      |      | --   | 65  | 72   | 76   | 84   | 79    |
| 2       | 68   | 64   | 40   | 36   |      |      | --   | 65  | 73   | 74   | 85   | 81    |
| 3       | 68   | 66   | 42   | 36   |      |      | --   | 64  | 75   | 74   | 86   | 81    |
| 4       | 67   | 65   | 42   | 38   |      |      | --   | 63  | 75   | 76   | 84   | 81    |
| 5       | 68   | 65   | 43   | 37   |      |      | --   | 61  | 75   | 77   | 82   | 80    |
| 6       | 68   | 63   | 45   | 38   |      |      | --   | 61  | 76   | --   | 81   | 80    |
| 7       | 66   | 62   | 47   | 38   |      |      | 44   | 62  | 75   | 78   | 81   | 76    |
| 8       | 66   | 57   | 45   | 37   |      |      | 42   | 61  | 73   | 77   | 82   | 76    |
| 9       | 65   | --   | 41   | 39   |      |      | 42   | --  | 75   | 77   | 83   | 78    |
| 10      | 63   | 59   | 44   | 39   |      |      | 42   | 65  | 76   | 77   | 83   | 77    |
| 11      | 62   | 58   | 43   | 40   |      |      | 45   | 65  | 76   | 77   | 82   | 78    |
| 12      | 63   | 58   | 43   | 37   |      |      | 44   | 68  | 78   | 79   | --   | 77    |
| 13      | 63   | 57   | 41   | 35   |      |      | 43   | 68  | 79   | 79   | 82   | 78    |
| 14      | 64   | 58   | 41   | 36   |      |      | 43   | 69  | 78   | 80   | 82   | 79    |
| 15      | 64   | 58   | 44   | 36   |      |      | 44   | 69  | 80   | 81   | 83   | 78    |
| 16      | 64   | 57   | 44   | 33   |      |      | 44   | 69  | 81   | 81   | 82   | 78    |
| 17      | 65   | 56   | 44   | 33   |      |      | 44   | 69  | 84   | 81   | 81   | 78    |
| 18      | 65   | 56   | 42   | 33   |      |      | 48   | 69  | 84   | 82   | 80   | 78    |
| 19      | 65   | 56   | 43   | 36   |      |      | 47   | 70  | 82   | 83   | 80   | --    |
| 20      | 65   | 55   | 44   | 34   |      |      | 50   | 69  | 83   | 84   | 80   | --    |
| 21      | 65   | 55   | 45   | 37   |      |      | 53   | 68  | 83   | 85   | 80   | --    |
| 22      | 65   | 52   | 45   | 39   |      |      | 52   | 68  | 83   | 86   | 79   | 80    |
| 23      | 65   | 50   | 45   | 36   |      |      | 55   | 67  | 84   | 84   | 81   | 80    |
| 24      | 66   | 46   | 45   | 33   |      |      | 59   | 66  | 84   | 83   | 80   | 78    |
| 25      | 64   | 44   | 44   | 34   |      |      | 61   | 65  | 83   | 82   | 79   | 78    |
| 26      | 66   | 43   | 43   | 34   |      |      | 64   | 67  | 82   | 83   | 79   | 74    |
| 27      | 61   | 42   | 43   | 35   |      |      | 65   | 67  | 84   | 83   | 80   | 72    |
| 28      | 64   | 43   | 41   | 35   |      |      | 65   | 67  | 83   | 84   | 77   | 74    |
| 29      | 64   | 41   | 41   | 36   |      |      | 64   | 69  | 81   | 86   | 80   | 72    |
| 30      | 65   | 41   | 38   | 36   |      |      | 64   | 71  | 79   | --   | 80   | 73    |
| 31      | 66   | --   | 39   | 37   |      |      | --   | 74  | --   | 85   | 80   | --    |
| Average | 65   | 55   | 43   | 36   |      |      | --   | 67  | 79   | 80   | 81   | 78    |

BEAVER RIVER BASIN  
MAHONING RIVER AT LEAVITTSBURG, OHIO

LOCATION.--Temperature recorder at gaging station on highway bridge at Leavittsburg, Trumbull County, 300 feet downstream from Duck Creek, and 1½ miles downstream from Eagle Creek.

DRAINAGE AREA.--380 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1953.

Water temperatures: April 1943 to December 1945, October 1946 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79 F. June 17, 18; minimum, freezing point on several days during December and January.

EXTREMES, 1948-57.--Water temperatures: Maximum, 86 F. July 2, 1949; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1503.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/7

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 57      | 56  | 55       | 55  | 36       | 35      | 33       | 38    | 45    | 65  | 61   | 69   | 70     | 74        |
| 2.....       | 57      | 56  | 55       | 55  | 35       | 34      | 33       | 37    | 45    | 64  | 61   | 69   | 76     | 74        |
| 3.....       | 57      | 56  | 56       | 56  | 34       | 33      | 33       | 37    | 45    | 64  | 61   | 69   | 76     | 74        |
| 4.....       | 58      | 57  | 56       | 56  | 34       | 33      | 34       | 36    | 45    | 59  | 56   | 70   | 76     | 74        |
| 5.....       | 58      | 58  | 55       | 55  | 35       | 35      | 32       | 34    | 35    | 41  | 36   | 59   | 75     | 72        |
| 6.....       | 58      | 57  | 55       | 55  | 38       | 35      | 32       | 34    | 37    | 58  | 51   | 67   | 75     | 70        |
| 7.....       | 57      | 55  | 55       | 54  | 42       | 38      | 32       | 34    | 41    | 57  | 55   | 71   | 73     | 68        |
| 8.....       | 56      | 55  | 54       | 53  | 42       | 41      | 32       | 34    | 41    | 58  | 55   | 70   | 72     | 68        |
| 9.....       | 55      | 55  | 53       | 52  | 41       | 37      | 32       | 36    | 41    | 60  | 57   | 69   | 71     | 66        |
| 10.....      | 55      | 54  | 52       | 50  | 37       | 35      | 32       | 37    | 40    | 63  | 60   | 69   | 73     | 66        |
| 11.....      | 54      | 53  | 50       | 48  | 35       | 34      | 32       | 38    | 44    | 63  | 61   | 65   | 73     | 67        |
| 12.....      | 54      | 53  | 48       | 48  | 35       | 34      | 33       | 37    | 44    | 62  | 68   | 71   | 76     | 69        |
| 13.....      | 54      | 53  | 48       | 47  | 35       | 35      | 34       | 45    | 44    | 65  | 63   | 72   | 74     | 68        |
| 14.....      | 55      | 54  | 48       | 47  | 35       | 34      | 33       | 48    | 43    | 68  | 64   | 72   | 75     | 68        |
| 15.....      | 56      | 55  | 49       | 48  | 35       | 34      | 34       | 48    | 43    | 68  | 66   | 75   | 74     | 67        |
| 16.....      | 58      | 56  | 49       | 48  | 35       | 34      | 35       | 49    | 44    | 68  | 74   | 75   | 71     | 70        |
| 17.....      | 58      | 58  | 49       | 48  | 36       | 35      | 34       | 48    | 45    | 63  | 63   | 74   | 72     | 69        |
| 18.....      | 59      | 58  | 49       | 48  | 37       | 36      | 34       | 47    | 45    | 63  | 61   | 75   | 74     | 70        |
| 19.....      | 59      | 58  | 46       | 46  | 37       | 36      | 34       | 46    | 48    | 61  | 59   | 76   | 74     | 69        |
| 20.....      | 58      | 58  | 43       | 42  | 35       | 34      | 33       | 44    | 48    | 61  | 60   | 76   | 74     | 67        |
| 21.....      | 58      | 57  | 43       | 42  | 35       | 34      | 33       | 44    | 42    | 60  | 58   | 75   | 71     | 69        |
| 22.....      | 57      | 57  | 42       | 40  | 38       | 35      | 33       | 42    | 59    | 58  | 71   | 77   | 75     | 69        |
| 23.....      | 58      | 57  | 40       | 38  | 38       | 36      | 35       | 43    | 62    | 61  | 57   | 76   | 72     | 68        |
| 24.....      | 58      | 58  | 38       | 36  | 40       | 38      | 35       | 45    | 62    | 60  | 64   | 77   | 76     | 68        |
| 25.....      | 58      | 57  | 36       | 35  | 39       | 37      | 34       | 45    | 66    | 59  | 66   | 76   | 74     | 67        |
| 26.....      | 57      | 56  | 35       | 35  | 37       | 36      | 34       | 42    | 63    | 68  | 73   | 72   | 71     | 63        |
| 27.....      | 56      | 55  | 36       | 35  | 36       | 35      | 34       | 41    | 66    | 68  | 65   | 70   | 72     | 62        |
| 28.....      | 55      | 54  | 36       | 36  | 35       | 34      | 34       | 42    | 66    | 68  | 73   | 71   | 70     | 61        |
| 29.....      | 54      | 54  | 36       | 36  | 34       | 33      | --       | 43    | 65    | 68  | 70   | 73   | 70     | 59        |
| 30.....      | 54      | 54  | 36       | 36  | 33       | 33      | --       | 44    | 63    | 68  | 70   | 76   | 74     | 60        |
| 31.....      | 54      | 54  | --       | --  | 33       | 33      | --       | 44    | 62    | 64  | 69   | 76   | 75     | 58        |
| Average..... | 57      | 56  | 47       | 46  | 36       | 35      | 34       | 42    | 40    | 64  | 61   | 73   | 72     | 66        |

BEAVER RIVER BASIN--Continued

MAHONING RIVER AT LOWELLVILLE, OHIO

LOCATION.--At Washington Street bridge at Lowellville, Mahoning County, 300 feet downstream from gaging station, 1 mile upstream from Ohio-Pennsylvania State line, and 3 miles downstream from Yellow Creek.

DRAINAGE AREA.--1,076 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1953, October 1956 to September 1957.

Water temperatures: October 1943 to September 1944 incomplete, October 1949 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 537 ppm Nov. 11-19; minimum, 224 ppm Apr. 11, 13-20.

Hardness: Maximum, 284 ppm Nov. 21-30; minimum, 138 ppm Apr. 22-27, 29-30.

Specific conductance: Maximum daily, 968 microhms Jan. 21; minimum daily, 213 microhms Apr. 6.

Water temperatures: Maximum, 100°F June 15-19; minimum, 42°F Apr. 4-6.

EXTREMES, 1951-53.--Dissolved solids: Maximum 629 ppm Jan. 1-10, 1953; minimum, 182 ppm Feb. 1-10, 1952.

Hardness: Maximum, 328 ppm Jan. 1-10, 1953; minimum, 107 ppm Feb. 1-10, 1952.

Specific conductance: Maximum daily, 1,160 microhms May 30, 1952; minimum daily, 186 microhms Jan. 28, May 30, 1952.

Water temperatures (1949-57): Maximum, 112°F Aug. 19, 1955; minimum, freezing point Dec. 5, 1950.

REMARKS.--Water temperatures affected by cooling water return from steel mills. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean dis-charge | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Man-gan-ese (Mn) | Cal-cium (Ca) | Mag-ne-sium (Mg) | So-dium (Na) | Po-tas-sium (K) | Am-mo-nia Nitro-gen (NH <sub>4</sub> ) as NH <sub>4</sub> | Bicar-bonate (HCO <sub>3</sub> ) | Sul-fate (SO <sub>4</sub> ) | Chlo-ride (Cl) | Fluo-ride (F) | Ni-trite (NO <sub>2</sub> ) | Ni-trate (NO <sub>3</sub> ) | Phenols as C <sub>6</sub> H <sub>5</sub> OH | Dissolved solids (residue on evap-oration at 180° C) | Hardness as CaCO <sub>3</sub> |                | Specific conduct-ance (microhms at 25°C) | pH  | Color |
|--------------------|-----------------|----------------------------|-----------|------------------|---------------|------------------|--------------|-----------------|-----------------------------------------------------------|----------------------------------|-----------------------------|----------------|---------------|-----------------------------|-----------------------------|---------------------------------------------|------------------------------------------------------|-------------------------------|----------------|------------------------------------------|-----|-------|
|                    |                 |                            |           |                  |               |                  |              |                 |                                                           |                                  |                             |                |               |                             |                             |                                             |                                                      | Calcium, mag-nesium           | Non-carbon-ate |                                          |     |       |
| Oct. 1-10, 1956    | 735             | 8.7                        | 0.27      | 0.32             | 51            | 11               | 20           | 10              | --                                                        | 51                               | 146                         | 25             | 1.2           | --                          | 0.9                         | a. 0.019                                    | 322                                                  | 172                           | 130            | 511                                      | 6.8 | 9     |
| Oct. 11-14, 16-20  | 593             | 7.5                        | 0.06      | 1.2              | 54            | 13               | 22           | 10              | --                                                        | 13                               | 178                         | 28             | 1.2           | --                          | 18                          | b. 227                                      | 346                                                  | 188                           | 178            | 515                                      | 5.9 | 4     |
| Oct. 21-31         | 460             | 8.5                        | 0.04      | 1.4              | 60            | 14               | 27           | 14              | --                                                        | 13                               | 218                         | 32             | 1.4           | --                          | 2.4                         | c. 005                                      | 392                                                  | 207                           | 197            | 593                                      | 5.8 | 3     |
| Nov. 1-10          | 395             | 10                         | 0.36      | 1.8              | 68            | 14               | 33           | 6.5             | --                                                        | 59                               | 207                         | 31             | 1.7           | --                          | 1.8                         | b. 001                                      | 440                                                  | 227                           | 179            | 685                                      | 6.8 | 7     |
| Nov. 11-19         | 303             | 12                         | 0.12      | 1.7              | 79            | 18               | 44           | 19              | --                                                        | 77                               | 247                         | 52             | 2.4           | --                          | 3                           | b. 010                                      | 537                                                  | 271                           | 208            | 833                                      | 6.9 | 7     |
| Nov. 21-30         | 390             | 12                         | 0.32      | 1.6              | 79            | 21               | 38           | 16              | --                                                        | 73                               | 252                         | 47             | 2.0           | --                          | 3                           | c. 000                                      | 516                                                  | 284                           | 224            | 775                                      | 6.9 | 12    |
| Dec. 1-10          | 540             | 10                         | 0.46      | 1.7              | 77            | 17               | 55           | 16              | --                                                        | 65                               | 258                         | 44             | 1.8           | --                          | 6                           | a. 016                                      | 516                                                  | 262                           | 209            | 771                                      | 6.8 | 9     |
| Dec. 11-20         | 818             | 9.7                        | 0.21      | 1.2              | 64            | 16               | 25           | 12              | --                                                        | 65                               | 193                         | 32             | 1.0           | --                          | 4                           | b. 071                                      | 406                                                  | 226                           | 173            | 628                                      | 6.8 | 10    |
| Dec. 21-31         | 641             | 9.1                        | 0.27      | 1.0              | 66            | 17               | 27           | 12              | --                                                        | 76                               | 192                         | 33             | 1.2           | --                          | 3                           | c. 042                                      | 414                                                  | 235                           | 173            | 645                                      | 6.7 | 9     |
| Jan. 1-10, 1957    | 468             | 9.3                        | 0.67      | 1.7              | 72            | 19               | 34           | 12              | --                                                        | 69                               | 232                         | 43             | 1.3           | --                          | 2                           | --                                          | 474                                                  | 258                           | 203            | 747                                      | 6.8 | 10    |
| Jan. 11-20         | 406             | 8.9                        | 0.21      | 1.7              | 79            | 18               | 42           | 16              | --                                                        | 87                               | 248                         | 50             | 1.4           | --                          | 2                           | --                                          | 519                                                  | 271                           | 200            | 824                                      | 7.1 | 15    |
| Jan. 21-31         | 2,163           | 8.0                        | 0.22      | 0.90             | 53            | 11               | 26           | 9.1             | --                                                        | 68                               | 142                         | 32             | 0.8           | --                          | 9                           | --                                          | 326                                                  | 177                           | 122            | 523                                      | 6.7 | 3     |
| Feb. 1-10          | 1,060           | 8.0                        | 0.22      | 1.1              | 57            | 14               | 27           | 8.5             | --                                                        | 57                               | 174                         | 30             | 0.8           | --                          | 1.1                         | a. 080                                      | 366                                                  | 200                           | 153            | 560                                      | 6.6 | 3     |
| Feb. 11-20         | 1,010           | 9.0                        | 0.50      | 0.76             | 55            | 14               | 22           | 8.2             | 3.5                                                       | 55                               | 170                         | 31             | 0.6           | 0.32                        | 1.1                         | b. 164                                      | 347                                                  | 195                           | 150            | 549                                      | 6.9 | 7     |
| Feb. 21-29         | 1,018           | 7.8                        | 0.22      | 0.96             | 54            | 16               | 25           | 9.2             | 4.2                                                       | 71                               | 187                         | 34             | 0.7           | 0.19                        | 3.4                         | c. 323                                      | 392                                                  | 226                           | 168            | 611                                      | 7.0 | 6     |
| Mar. 1-10          | 1,106           | 7.8                        | 0.38      | 0.80             | 54            | 14               | 23           | 7.6             | 3.9                                                       | 64                               | 156                         | 32             | 0.7           | 0.15                        | 2.0                         | a. 394                                      | 340                                                  | 192                           | 140            | 506                                      | 7.0 | 6     |
| Mar. 11-20         | 1,204           | 7.8                        | 0.01      | 0.63             | 53            | 13               | 21           | 7.9             | 3.1                                                       | 76                               | 142                         | 28             | 0.9           | 0.34                        | 2.1                         | b. 254                                      | 323                                                  | 186                           | 124            | 482                                      | 7.2 | 4     |
| Mar. 21-31         | 753             | 7.4                        | 0.01      | 0.89             | 63            | 14               | 25           | 10              | 2.8                                                       | 79                               | 176                         | 34             | 1.0           | 1.6                         | 3.5                         | c. 001                                      | 370                                                  | 215                           | 158            | 602                                      | 7.0 | 3     |

a. Collected on 5th of month.

b. Collected on 15th of month.

c. Collected on 25th of month.



BEAVER RIVER BASIN--Continued  
MAHONING RIVER AT LOWELLVILLE, OHIO--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                  | Mean dis-charge | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Man-gan-ese (Mn) | Cal-cium (Ca) | Mag-nesium (Mg) | So-dium (Na) | Po-tas-sium (K) | Am-mo-nia Nitro-gen as NH <sub>4</sub> | Bicar-bonate (HCO <sub>3</sub> ) | Sul-fate (SO <sub>4</sub> ) | Chlo-ride (Cl) | Fluo-ride (F) | Ni-trite (NO <sub>3</sub> ) | Ni-trate (NO <sub>3</sub> ) | Phenols as C <sub>6</sub> H <sub>5</sub> OH | Dissolved solids (residue on evap-oration at 180° C) | Hardness as CaCO <sub>3</sub> |                | Specific conduct-ance (micro-mhos at 25° C) | pH  | Color |
|-------------------------------------|-----------------|----------------------------|-----------|------------------|---------------|-----------------|--------------|-----------------|----------------------------------------|----------------------------------|-----------------------------|----------------|---------------|-----------------------------|-----------------------------|---------------------------------------------|------------------------------------------------------|-------------------------------|----------------|---------------------------------------------|-----|-------|
|                                     |                 |                            |           |                  |               |                 |              |                 |                                        |                                  |                             |                |               |                             |                             |                                             |                                                      | Calcium, mag-nesium           | Non-carbon-ate |                                             |     |       |
| Apr. 1-10, 1957.....                | 5,804           | 6.4                        | 0.43      | 0.06             | 41            | 9.7             | 12           | 4.7             | 0.5                                    | 68                               | 90                          | 17             | 0.4           | 0.13                        | 4.2                         | a. 0.015                                    | 228                                                  | 142                           | 86             | 366                                         | 7.2 | 5     |
| Apr. 11, 13-20.....                 | 4,186           | 5.6                        | .11       | .05              | 40            | 11              | 12           | 4.5             | .0                                     | 56                               | 92                          | 16             | .5            | .60                         | 7.1                         | b. .024                                     | 224                                                  | 145                           | 99             | 358                                         | 6.8 | 4     |
| Apr. 22-27, 29-30.....              | 2,756           | 8.1                        | .30       | .44              | 40            | 9.2             | 13           | 6.6             | .6                                     | 52                               | 100                         | 17             | .6            | .20                         | 6.8                         | c. .058                                     | 230                                                  | 138                           | 96             | 363                                         | 6.7 | 8     |
| May 1-4, 6-10.....                  | 1,682           | 7.6                        | .05       | .44              | 54            | 12              | 23           | 12              | 1.4                                    | 31                               | 170                         | 30             | .6            | 5.0                         | 6.2                         | --                                          | 333                                                  | 184                           | 159            | 523                                         | 6.3 | 3     |
| May 13-20.....                      | 1,360           | 9.6                        | .07       | .96              | 52            | 11              | 17           | 9.7             | 3.0                                    | 68                               | 131                         | 22             | .8            | 1.2                         | 4.7                         | --                                          | 301                                                  | 175                           | 119            | 443                                         | 6.9 | 3     |
| May 21-25, 27-31.....               | 1,582           | 11                         | .10       | .62              | 58            | 14              | 26           | 13              | 1.8                                    | 36                               | 182                         | 34             | .9            | 8.0                         | 8.7                         | --                                          | 391                                                  | 202                           | 173            | 552                                         | 6.3 | 3     |
| June 1-4, 6-9.....                  | 520             | 8.5                        | .06       | .89              | 56            | 14              | 26           | 14              | 3.1                                    | 20                               | 193                         | 32             | 1.2           | 7.0                         | 5.6                         | --                                          | 399                                                  | 197                           | 181            | 537                                         | 6.1 | 3     |
| June 11-13, 15, 18-20.....          | 814             | 8.0                        | .04       | .66              | 49            | 11              | 21           | 12              | 4.6                                    | 50                               | 144                         | 26             | 1.0           | 2.0                         | 3.5                         | --                                          | 317                                                  | 167                           | 126            | 480                                         | 6.8 | 3     |
| June 21-30.....                     | 1,747           | 9.0                        | .06       | .55              | 46            | 11              | 17           | 8.9             | 3.6                                    | 77                               | 113                         | 20             | .8            | 1.0                         | .2                          | --                                          | 274                                                  | 160                           | 97             | 448                                         | 7.0 | 7     |
| July 1-2, 4-8, 10.....              | 1,556           | 9.1                        | .01       | .56              | 44            | 10              | 15           | 9.3             | 2.1                                    | 66                               | 112                         | 20             | 1.0           | .40                         | 1.1                         | a. .075                                     | 256                                                  | 151                           | 97             | 423                                         | 6.8 | 6     |
| July 11, 13-15, 19.....             | 1,360           | 8.2                        | .16       | .47              | 42            | 11              | 16           | 7.9             | 1.6                                    | 61                               | 110                         | 20             | .8            | .40                         | 2.3                         | b. .082                                     | 253                                                  | 150                           | 100            | 419                                         | 6.9 | 9     |
| July 22-27, 31.....                 | 1,760           | 7.4                        | .04       | .66              | 49            | 12              | 21           | 9.9             | 2.6                                    | 37                               | 154                         | 28             | 1.0           | .10                         | 6.8                         | c. .006                                     | 318                                                  | 172                           | 141            | 502                                         | 6.5 | 3     |
| Aug. 3-5, 8-10.....                 | 669             | 7.1                        | .02       | .73              | 49            | 12              | 22           | 10              | 4.0                                    | 43                               | 155                         | 28             | 1.4           | 1.8                         | .2                          | a. .031                                     | 312                                                  | 172                           | 137            | 523                                         | 6.6 | 4     |
| Aug. 11-12, 14-16, 18-20.....       | 645             | 8.7                        | .01       | .63              | 50            | 13              | 21           | 11              | 3.4                                    | 53                               | 149                         | 28             | 1.4           | 1.5                         | 3.6                         | b. .046                                     | 318                                                  | 179                           | 135            | 519                                         | 6.7 | 5     |
| Aug. 22-25, 27-30.....              | 542             | 7.5                        | .01       | 1.0              | 54            | 13              | 22           | 12              | 4.2                                    | 23                               | 184                         | 29             | 1.3           | 1.8                         | 1.2                         | c. .009                                     | 352                                                  | 188                           | 169            | 537                                         | 6.3 | 4     |
| Sept. 1, 3, 5-7, 9, 10.....         | 515             | 8.2                        | .00       | 1.2              | 53            | 12              | 26           | 13              | 6.4                                    | 50                               | 173                         | 32             | 1.0           | 3.3                         | .0                          | a. .049                                     | 341                                                  | 182                           | 141            | 564                                         | 6.5 | 5     |
| Sept. 11, 13-20.....                | 583             | 10                         | .00       | .74              | 56            | 13              | 23           | 13              | 6.3                                    | 42                               | 195                         | 30             | 1.6           | .00                         | 2.8                         | b. .011                                     | 360                                                  | 193                           | 139            | 574                                         | 6.4 | 3     |
| Sept. 21-25, 27, 29-30.....         | 474             | 10                         | .04       | .78              | 63            | 16              | 30           | 14              | 4.6                                    | 45                               | 224                         | 36             | 1.3           | 6.6                         | .1                          | c. .189                                     | 418                                                  | 223                           | 186            | 631                                         | 6.4 | 6     |
| Time-weighted averaged <sup>d</sup> | 1,107           | 8.7                        | 0.15      | 0.95             | 56            | 14              | 25           | 11              | --                                     | 56                               | 174                         | 31             | 1.1           | --                          | 2.9                         | --                                          | 366                                                  | 202                           | 156            | 568                                         | --  | 6     |

<sup>a</sup> Collected on 8th of month.

<sup>b</sup> Collected on 15th of month.

<sup>c</sup> Collected on 25th of month.

<sup>d</sup> Represents 81 percent of days and 88 percent of runoff

BEAVER RIVER BASIN--Continued  
 MAHONING RIVER AT LOWELLVILLE, OHIO--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 Recorder with temperature attachment, seven-day gas-actuated thermograph<sup>7</sup>

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 86      | 85  | 91       | 82  | 82       | 73      | 72       | 71    | 61    | 89  | 97   | 79   | 99     | 97        |
| 2.....       | 86      | 85  | 92       | 82  | 82       | 73      | 72       | 71    | 65    | 89  | 97   | 80   | 99     | 95        |
| 3.....       | 87      | 86  | 91       | 83  | 82       | 73      | 72       | 71    | 64    | 89  | 97   | 86   | 99     | 95        |
| 4.....       | 88      | 87  | 91       | 83  | 82       | 73      | 72       | 71    | 62    | 88  | 96   | 82   | 98     | 95        |
| 5.....       | 89      | 88  | 90       | 86  | 85       | 76      | 75       | 72    | 63    | 87  | 93   | 83   | 96     | 94        |
| 6.....       | 89      | 88  | 90       | 86  | 85       | 76      | 75       | 72    | 63    | 87  | 93   | 83   | 96     | 94        |
| 7.....       | 89      | 88  | 91       | 88  | 86       | 78      | 78       | 64    | 63    | 85  | 99   | 96   | 94     | 94        |
| 8.....       | 88      | 83  | 92       | 91  | 88       | 85      | 79       | 66    | 63    | 89  | 98   | 94   | 93     | 94        |
| 9.....       | 83      | 83  | 92       | 90  | 85       | 82      | 80       | 79    | 66    | 90  | 98   | 93   | 95     | 93        |
| 10.....      | 84      | 83  | 88       | 87  | 74       | 69      | 82       | 80    | 70    | 98  | 94   | 90   | 96     | 94        |
| 11.....      | 84      | 83  | 87       | 87  | 69       | 80      | 80       | 62    | 60    | 96  | 94   | 83   | 96     | 94        |
| 12.....      | 86      | 84  | 88       | 87  | 69       | 80      | 80       | 61    | 59    | 85  | 94   | 88   | 96     | 96        |
| 13.....      | 87      | 86  | 88       | 87  | 69       | 80      | 78       | 65    | 61    | 83  | 98   | 89   | 96     | 97        |
| 14.....      | 89      | 87  | 90       | 88  | 68       | 77      | 78       | 65    | 50    | 85  | 98   | 89   | 95     | 94        |
| 15.....      | 89      | 88  | 92       | 90  | 70       | 78      | 67       | 65    | 53    | 81  | 100  | 89   | 94     | 94        |
| 16.....      | 89      | 88  | 92       | 92  | 71       | 70      | 78       | 67    | 54    | 81  | 100  | 92   | 96     | 94        |
| 17.....      | 88      | 87  | 92       | 90  | 74       | 71      | 78       | 65    | 54    | 79  | 100  | 92   | 95     | 94        |
| 18.....      | 89      | 87  | 90       | 89  | 74       | 70      | 78       | 63    | 57    | 81  | 100  | 93   | 95     | 94        |
| 19.....      | 88      | 87  | 89       | 87  | 75       | 74      | 81       | 79    | 60    | 82  | 100  | 94   | 93     | 96        |
| 20.....      | 87      | 87  | 89       | 88  | 78       | 75      | 81       | 66    | 63    | 82  | 96   | 94   | 94     | 96        |
| 21.....      | 87      | 87  | 89       | 85  | 79       | 81      | 68       | 71    | 70    | 82  | 94   | 95   | 94     | 93        |
| 22.....      | 89      | 87  | 85       | 84  | 80       | 79      | 69       | 66    | 71    | 82  | 94   | 95   | 94     | 92        |
| 23.....      | 89      | 88  | 84       | 80  | 80       | 78      | 69       | 74    | 73    | 82  | 96   | 95   | 94     | 93        |
| 24.....      | 90      | 88  | 80       | 79  | 78       | 73      | 60       | 53    | 71    | 86  | 97   | 97   | 94     | 90        |
| 25.....      | 90      | 88  | 79       | 78  | 73       | 70      | 57       | 52    | 71    | 89  | 92   | 97   | 93     | 91        |
| 26.....      | 88      | 86  | 79       | 78  | 72       | 71      | 62       | 57    | 73    | 90  | 92   | 97   | 93     | 92        |
| 27.....      | 87      | 86  | 80       | 79  | 73       | 72      | 64       | 62    | 71    | 80  | 88   | 87   | 92     | 91        |
| 28.....      | 87      | 87  | 82       | 80  | 74       | 73      | 67       | 63    | 64    | 80  | 93   | 86   | 93     | 91        |
| 29.....      | 89      | 87  | 82       | 82  | 74       | 74      | 68       | 66    | --    | 83  | 90   | 86   | 93     | 90        |
| 30.....      | 89      | 89  | 83       | 82  | 74       | 72      | 69       | 68    | 85    | 93  | 81   | 97   | 94     | 90        |
| 31.....      | 91      | 86  | --       | --  | 73       | 71      | 69       | --    | --    | 97  | --   | 98   | 97     | --        |
| Average..... | 88      | 86  | 88       | 86  | 77       | 75      | 72       | 68    | 63    | 88  | 93   | 93   | 95     | 94        |

## BEAVER RIVER BASIN--Continued

## BEAVER RIVER AT NEW BRIGHTON, PA.

LOCATION.--At head of intake canal of Beaver Falls Municipal Authority, 3 miles upstream from mouth, and 2.5 miles downstream from gaging station at Beaver Falls, Beaver County.

DRAINAGE AREA.--3,112 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to June 1953, October 1956 to September 1957.

Water temperatures: October 1945 to June 1953.

EXTREMES, 1945-53.--Dissolved solids: Maximum, 453 ppm Oct. 21-31, 1952; minimum, 136 ppm Apr. 1-10, 1947.

Hardness: Maximum, 248 ppm Nov. 11-20, 1952; minimum, 80 ppm Jan. 21-31, 1952.

Specific conductance: Maximum daily, 710 micromhos Nov. 19, 1952; minimum daily, 161 micromhos Jan. 29, 1952.

Water temperatures: Maximum, 88°F July 6, 1949; minimum, freezing point on several days during winter months.

REMARKS.--Intake canal located on east bank of river. Samples collected by Beaver Falls Municipal Authority. Records of specific conductance of daily samples for period October 1945 to June 1953 available in district office at Philadelphia, Pa. Records of discharge for gaging station at Beaver Falls for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                          |     |       |
| Oct. 3, 1956       | 1,470                | 4.7                        | 0.04      | 46           | 9.2            | 15          | 3.1           | 54                              | 108                        | 18            | 0.8          | 13                         | 254                                                | 153                           | 108           | 411                                      | 6.8 | 2     |
| Nov. 5             | 982                  | 4.9                        | 0.04      | 61           | 12             | 23          | 4.6           | 48                              | 163                        | 27            | .7           | 16                         | 361                                                | 202                           | 162           | 544                                      | 6.6 | 4     |
| Dec. 3             | 882                  | 7.6                        | .03       | 60           | 13             | 26          | 4.7           | 46                              | 162                        | 33            | .6           | 16                         | 372                                                | 203                           | 165           | 566                                      | 6.7 | 5     |
| Jan. 3, 1957       | 1,850                | 8.6                        | .03       | 44           | 12             | 16          | 2.8           | 54                              | 107                        | 24            | .4           | 13                         | 269                                                | 159                           | 115           | 411                                      | 7.4 | 5     |
| Feb. 16            | 3,910                | 8.7                        | .03       | 35           | 7.5            | 10          | 3.6           | 32                              | 88                         | 15            | .3           | 6.4                        | 200                                                | 118                           | 92            | 317                                      | 7.4 | 4     |
| Mar. 5             | 4,100                | 6.7                        | .04       | 32           | 7.4            | 8.2         | 3.0           | 44                              | 74                         | 13            | .2           | 4.6                        | 177                                                | 110                           | 74            | 291                                      | 7.4 | 5     |
| Apr. 2             | 4,390                | 6.2                        | .02       | 37           | 8.3            | 10          | 3.7           | 51                              | 85                         | 14            | .4           | 4.4                        | 203                                                | 126                           | 84            | 332                                      | 7.6 | 5     |
| May 5              | 2,480                | 4.5                        | .02       | 42           | 8.5            | 12          | 4.7           | 50                              | 98                         | 15            | .4           | 6.4                        | 240                                                | 140                           | 98            | 366                                      | 6.6 | 7     |
| June 3             | 1,400                | 6.8                        | .02       | 51           | 11             | 19          | 7.4           | 62                              | 128                        | 24            | .6           | 10                         | 318                                                | 174                           | 124           | 487                                      | 6.8 | 7     |
| July 1             | 12,400               | 10                         | .03       | 23           | 3.5            | 3.0         | 3.4           | 50                              | 35                         | 5.4           | .2           | .9                         | 123                                                | 72                            | 31            | 183                                      | 6.6 | 12    |
| Aug. 1             | 1,150                | 5.4                        | .02       | 46           | 9.0            | 18          | 8.0           | 52                              | 117                        | 23            | 1.0          | 13                         | 296                                                | 154                           | 111           | 447                                      | 6.9 | 8     |
| Sept. 3            | 846                  | --                         | --        | --           | --             | 25          | --            | 87                              | 147                        | 26            | --           | 16                         | --                                                 | 220                           | 149           | 528                                      | 7.3 | 7     |

## OHIO RIVER MAIN STEM

## OHIO RIVER AT LOCK AND DAM 8, AT NEWELL, W. VA.

LOCATION. About 1,000 feet upstream from dam, lock and dam 8 (mile 46.4) at Newell, Hancock County, 2,500 feet upstream from Rows Run, and 3,300 feet downstream from Mucknores Run.

DRAINAGE AREA. --23,500 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57 --Dissolved solids: Maximum, 470 ppm Sept. 1-10; minimum, 135 ppm Jan. 21-31.

Hardness: Maximum, 232 ppm Sept. 21-30; minimum, 70 ppm Jan. 21-31.

Specific conductance: Maximum daily, 734 micromhos Sept. 24; minimum daily, 193 micromhos Feb. 4, Apr. 25.

Water temperatures: Maximum, 86°F July 24, minimum freezing point Jan. 18,

EXTREMES, 1954-57 --Dissolved solids: 470 ppm Sept. 1-10, 1957; minimum, 113 ppm Jan. 1-10, 1955.

Hardness: Maximum, 232 ppm Sept. 21-30, 1957; minimum, 66 ppm Jan. 1-10, 1955.

Specific conductance: Maximum daily, 734 micromhos Sept. 24, 1957; minimum daily, 158 micromhos Mar. 10, 1956.

Water temperatures: Maximum, 88°F July 31, 1955; minimum freezing point Jan. 29, Dec. 31, 1955, Jan. 7, 8, 10, 1956, Jan. 18, 1957.

REMARKS --Acidity determined to pH 7.0. Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micromhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|------------------------------------------|-----|-------|
|                       |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./nesium           | Non-carbonate | Immediate                 | Potential free |                                          |     |       |
|                       |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                           |                |                                          |     |       |
| Oct. 1-10, 1956 ...   | 8.9                  | 0.2                        | 0.00          | 0.20      | 35             | 9.0          | 21             | 2.9         | 14            | 135                             | 15                         | 0.4           | 4.5          | 243                        | 124                                                | 113                           | 0.1           | 0.0                       | 0.0            | 376                                      | 6.4 | 2     |
| Oct. 11-20 ...        | 9.1                  | -0.3                       | -0.07         | 41        | 11             | 57           | 26             | 3.2         | 11            | 163                             | 16                         | -4            | 4.9          | 294                        | 148                                                | 138                           | 0             | -0                        | -0             | 439                                      | 6.3 | 2     |
| Oct. 21-29 ...        | 6.6                  | 0.1                        | -0.00         | 26        | 44             | 12           | 30             | 4.0         | 12            | 172                             | 22                         | -5            | 5.8          | 322                        | 160                                                | 150                           | -2            | -0                        | -0             | 491                                      | 6.0 | 2     |
| Nov. 3-10 ...         | 7.5                  | -0.2                       | -0.00         | 1.6       | 50             | 14           | 37             | 4.2         | 4             | 213                             | 22                         | -5            | 6.0          | 380                        | 183                                                | 179                           | -2            | -0                        | -0             | 562                                      | 5.4 | 2     |
| Nov. 11-20 ...        | 7.6                  | -0.2                       | -0.00         | 1.8       | 47             | 13           | 35             | 4.3         | 2             | 194                             | 27                         | -5            | 5.2          | 355                        | 171                                                | 169                           | -1            | -1                        | -1             | 538                                      | 5.2 | 1     |
| Nov. 21-30 ...        | 8.7                  | -0.1                       | -0.00         | -0.27     | 44             | 12           | 32             | 3.8         | 15            | 168                             | 30                         | -5            | 4.8          | 322                        | 160                                                | 148                           | -1            | -0                        | -0             | 499                                      | 6.4 | 3     |
| Dec. 1-10 ...         | 7.6                  | -0.0                       | -0.00         | 0.19      | 35             | 10           | 26             | 3.0         | 13            | 134                             | 24                         | -4            | 4.4          | 263                        | 129                                                | 118                           | -0            | -0                        | -0             | 411                                      | 6.3 | 2     |
| Dec. 11-13, 15, 17-20 | 6.8                  | -0.0                       | -0.00         | 0.04      | 21             | 5.4          | 10             | 1.5         | 8             | 74                              | 10                         | -1            | 2.7          | 141                        | 74                                                 | 68                            | -1            | -0                        | -0             | 225                                      | 6.2 | 3     |
| Dec. 21-31 ...        | 6.8                  | -0.0                       | -0.00         | 0.46      | 22             | 6.0          | 10             | 1.8         | 9             | 79                              | 10                         | -1            | 2.3          | 150                        | 80                                                 | 72                            | -1            | -0                        | -0             | 236                                      | 6.1 | 2     |
| Jan. 1-10, 1957 ...   | 6.5                  | -0.0                       | -0.00         | 0.78      | 24             | 7.2          | 12             | 1.8         | 10            | 91                              | 11                         | -2            | 2.3          | 168                        | 90                                                 | 82                            | -0            | -0                        | -0             | 265                                      | 6.5 | 2     |
| Jan. 11-20 ...        | 6.1                  | -0.0                       | -0.00         | 0.72      | 24             | 7.6          | 12             | 1.7         | 8             | 94                              | 11                         | -2            | 2.7          | 172                        | 91                                                 | 84                            | -0            | -0                        | -0             | 273                                      | 6.6 | 2     |
| Jan. 21-31 ...        | 5.4                  | -0.0                       | -0.06         | 0.48      | 19             | 5.6          | 13             | 1.6         | 8             | 69                              | 16                         | -2            | 2.4          | 135                        | 70                                                 | 64                            | -1            | -0                        | -0             | 220                                      | 6.4 | 2     |
| Feb. 1-10 ...         | 5.6                  | -0.0                       | -0.01         | 0.56      | 21             | 5.6          | 8.9            | 1.4         | 8             | 72                              | 8.4                        | -1            | 2.5          | 138                        | 76                                                 | 69                            | -1            | -0                        | -0             | 215                                      | 6.3 | 2     |
| Feb. 11-20 ...        | 5.9                  | -0.0                       | -0.00         | 0.36      | 21             | 6.3          | 9.0            | 1.8         | 8             | 77                              | 7.5                        | -1            | 2.6          | 147                        | 78                                                 | 72                            | -0            | -0                        | -0             | 233                                      | 6.2 | 3     |
| Feb. 21-23, 25-28 ... | 6.1                  | -0.0                       | -0.01         | 0.79      | 25             | 8.2          | 12             | 1.8         | 9             | 96                              | 10                         | -1            | 2.9          | 176                        | 96                                                 | 88                            | -0            | -0                        | -0             | 284                                      | 6.2 | 2     |
| Mar. 1-7, 9-10 ...    | 5.8                  | -0.1                       | -0.00         | 0.46      | 25             | 7.0          | 12             | 1.5         | 8             | 93                              | 12                         | -1            | 3.0          | 159                        | 92                                                 | 85                            | -0            | -0                        | -0             | 267                                      | 6.5 | 1     |
| Mar. 11-20 ...        | 5.9                  | -0.1                       | -0.04         | 0.48      | 25             | 7.1          | 12             | 1.5         | 16            | 88                              | 12                         | -3            | 2.4          | 157                        | 92                                                 | 78                            | -0            | -0                        | -0             | 267                                      | 6.5 | 2     |
| Mar. 21-31 ...        | 5.9                  | -0.1                       | -0.01         | 0.69      | 28             | 8.1          | 14             | 1.6         | 16            | 100                             | 11                         | -2            | 3.4          | 190                        | 104                                                | 90                            | -1            | -0                        | -0             | 299                                      | 6.7 | 1     |

OHIO RIVER MAIN STEM--Continued  
OHIO RIVER AT LOCK AND DAM 8, AT NEWELL, W. VA.--Continued  
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, nesium               | Non-carbonate |                                           |     |       |
| Apr. 1-7, 9, 1957     |                      | 6.8                        | 0.0           | 0.01      | 0.07           | 25           | 8.3            | 11          | 1.5           | 16                              | 92                         | 9.7           | 0.2          | 3.0                        | 176                                                | 96                            | 84            | 253                                       | 6.3 | 2     |
| Apr. 21-30            |                      | 7.2                        | .1            | .06       | .00            | 21           | 6.1            | 8.7         | 1.4           | 13                              | 68                         | 8.6           | .2           | 2.1                        | 141                                                | 78                            | 67            | .0                                        | .0  | 208   |
| May 1-10              |                      | 6.2                        | .1            | .04       | .29            | 28           | 8.4            | 14          | 2.0           | 16                              | 102                        | 13            | .3           | 2.5                        | 194                                                | 105                           | 92            | .0                                        | .0  | 288   |
| May 11-17             |                      | 6.3                        | .1            | .00       | .00            | 36           | 7.6            | 19          | 2.1           | 16                              | 118                        | 16            | .3           | 3.3                        | 232                                                | 121                           | 108           | .0                                        | .0  | 347   |
| June 1-6, 8-10        |                      | 7.4                        | .1            | .00       | .34            | 44           | 11             | 31          | 3.4           | 18                              | 171                        | 21            | .3           | 5.0                        | 317                                                | 155                           | 140           | .0                                        | .0  | 458   |
| June 11-20            |                      | 10                         | .1            | .00       | .17            | 48           | 9.3            | 31          | 3.6           | 19                              | 172                        | 21            | .4           | 5.7                        | 322                                                | 158                           | 143           | .0                                        | .0  | 461   |
| June 21-30            |                      | 9.5                        | .0            | .02       | .00            | 46           | 11             | 28          | 3.6           | 18                              | 166                        | 22            | .5           | 5.0                        | 316                                                | 160                           | 145           | .0                                        | .0  | 484   |
| July 1-10             |                      | 7.5                        | .0            | .02       | .03            | 28           | 7.4            | 19          | 2.4           | 18                              | 99                         | 16            | .3           | 3.4                        | 200                                                | 101                           | 86            | .0                                        | .0  | 317   |
| July 11-20            |                      | 9.5                        | .1            | .00       | .03            | 38           | 8.0            | 20          | 3.2           | 26                              | 118                        | 17            | .4           | 4.9                        | 239                                                | 128                           | 107           | .0                                        | .0  | 378   |
| July 21-31            |                      | 7.7                        | .1            | .04       | .00            | 44           | 10             | 30          | 4.6           | 25                              | 151                        | 31            | .6           | 6.5                        | 300                                                | 151                           | 131           | .1                                        | .0  | 470   |
| Aug. 1-8-10           |                      | 5.8                        | .0            | .00       | .00            | 48           | 12             | 33          | 4.7           | 20                              | 178                        | 23            | .6           | 5.0                        | 336                                                | 170                           | 153           | .0                                        | .0  | 505   |
| Aug. 11-20            |                      | 3.9                        | .1            | .00       | .00            | 52           | 14             | 38          | 5.5           | 21                              | 208                        | 25            | .6           | 5.7                        | 376                                                | 187                           | 170           | .0                                        | .0  | 567   |
| Aug. 21-25, 28-31     |                      | 3.4                        | .2            | .03       | .41            | 59           | 16             | 42          | 6.6           | 16                              | 241                        | 26            | .8           | 11                         | 427                                                | 213                           | 200           | .2                                        | .2  | 648   |
| Sept. 1-10            |                      | 5.6                        | .1            | .02       | .36            | 65           | 16             | 53          | 7.3           | 21                              | 258                        | 32            | 1.2          | 12                         | 470                                                | 228                           | 211           | .0                                        | .0  | 699   |
| Sept. 11-12, 19-20    |                      | 5.9                        | .1            | .01       | .65            | 64           | 16             | 50          | 7.6           | 15                              | 267                        | 35            | .8           | 7.5                        | 459                                                | 226                           | 214           | .0                                        | .0  | 704   |
| Sept. 21-30           |                      | 6.3                        | .1            | .01       | .90            | 65           | 17             | 53          | 7.4           | 26                              | 265                        | 36            | 1.0          | 8.4                        | 466                                                | 232                           | 211           | .0                                        | .0  | 722   |
| Time-weighted average |                      | 6.9                        | 0.1           | 0.01      | 0.36           | 36           | 10             | 23          | 3.2           | 14                              | 138                        | 18            | 0.4          | 4.5                        | 256                                                | 131                           | 120           | 0.0                                       | 0.0 | 393   |
|                       |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           | --  | 3     |

a Represents 86 percent of days.

OHIO RIVER MAIN STEM--Continued  
OHIO RIVER AT LOCK AND DAM 8, AT NEWELL, W. VA.--Continued  
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection    | Chromium (Cr) |       | Nickel (Ni) | Copper (Cu) | Lead (Pb) | Zinc (Zn) | Cobalt (Co) | Arsenic (As) | Cadmium (Cd) |
|-----------------------|---------------|-------|-------------|-------------|-----------|-----------|-------------|--------------|--------------|
|                       | Hexa-valent   | Total |             |             |           |           |             |              |              |
| Oct. 1-10, 1956       | 0.00          | 0.00  | 0.00        | 0.00        | 0.01      | 0.13      | 0.00        | 0.00         | 0.0          |
| Oct. 11-20            | .00           | .00   | .00         | .00         | .01       | .08       | .00         | .00          | .0           |
| Oct. 21-29            | .00           | .00   | .00         | .00         | .00       | .16       | .00         | .00          | .0           |
| Nov. 3-10             | .00           | .00   | .00         | .00         | .00       | .34       | .00         | .00          | .0           |
| Nov. 11-20            | .00           | .00   | .00         | .00         | .00       | .27       | .00         | .00          | .0           |
| Nov. 21-30            | .00           | .00   | .00         | .00         | .00       | .33       | .00         | .00          | .0           |
| Dec. 1-10             | .00           | .00   | .00         | .00         | .00       | .23       | .00         | .00          | .0           |
| Dec. 11-13, 15, 17-20 | .00           | .00   | .00         | .00         | .00       | .05       | .00         | .00          | .0           |
| Dec. 21-31            | .00           | .00   | .00         | .00         | .00       | .09       | .00         | .00          | .0           |
| July 1-10, 1957       | .00           | .00   | .00         | .00         | .00       | .02       | .00         | .00          | .0           |
| July 11-20            | .00           | .00   | .00         | .00         | .00       | .01       | .00         | .00          | .0           |
| July 21-31            | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Aug. 1, 8-10          | .00           | .00   | .00         | .00         | .00       | .10       | .00         | .00          | .0           |
| Aug. 11-20            | .00           | .00   | .00         | .00         | .00       | .08       | .00         | .00          | .0           |
| Aug. 21-25, 28-31     | .00           | .00   | .20         | .00         | .00       | .01       | .04         | .00          | .0           |
| Sept. 1-10            | .00           | .00   | .00         | .00         | .00       | .02       | .00         | .00          | .0           |
| Sept. 11-12, 19-20    | .00           | .00   | .05         | .00         | .00       | .02       | .00         | .00          | .0           |
| Sept. 21-30           | .00           | .00   | .03         | .00         | .00       | .01       | .01         | .00          | .0           |

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection | Phenols as $C_6H_5OH$ | Cyanides as CN | Date of collection | Phenols as $C_6H_5OH$ | Cyanides as CN |
|--------------------|-----------------------|----------------|--------------------|-----------------------|----------------|
|                    |                       |                |                    |                       |                |
| Oct. 5, 1956       | 0.000                 | 0.00           | Mar. 5, 1957       | 0.043                 | --             |
| Oct. 15            | .000                  | .00            | Mar. 15            | .031                  | --             |
| Oct. 25            | .000                  | .00            | Mar. 25            | .112                  | --             |
| Nov. 5             | .045                  | .00            | July 5             | .001                  | .01            |
| Nov. 15            | .006                  | .02            | July 15            | .006                  | .01            |
| Nov. 25            | --                    | .02            | July 25            | .003                  | .01            |
| Dec. 5             | .042                  | .01            | Aug. 5             | .012                  | .01            |
| Dec. 15            | .019                  | .01            | Aug. 15            | .005                  | .02            |
| Dec. 25            | .020                  | .01            | Aug. 25            | .010                  | .02            |
| Jan. 5, 1957       | .033                  | --             | Sept. 5            | .009                  | .02            |
| Jan. 15            | .034                  | --             | Sept. 15           | .038                  | .01            |
| Jan. 25            | .012                  | --             | Sept. 25           | .004                  | .02            |
| Feb. 5             | .032                  | --             |                    |                       |                |
| Feb. 15            | .038                  | --             |                    |                       |                |
| Feb. 25            | .050                  | --             |                    |                       |                |

Temperature ( $^{\circ}F$ ) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 67   | --   | 44   | --   | 43   | 43   | 48   | 65  | 78   | --   | 85   | 80    |
| 2       | 64   | --   | 43   | 38   | 43   | 42   | 49   | 64  | 78   | 78   | --   | 81    |
| 3       | 68   | 63   | 44   | 38   | 42   | 43   | 47   | 64  | 78   | 79   | --   | 80    |
| 4       | 66   | 65   | 44   | 37   | 40   | 44   | 47   | 63  | 78   | 78   | --   | 76    |
| 5       | 65   | 63   | 43   | 36   | 40   | 45   | 46   | --  | 78   | 78   | --   | 76    |
| 6       | 66   | 65   | 45   | 36   | 40   | 45   | 45   | 65  | 78   | 78   | --   | 77    |
| 7       | 65   | 65   | 45   | 37   | 41   | 48   | 45   | 66  | --   | 76   | --   | 77    |
| 8       | 65   | 63   | 44   | 38   | 41   | --   | --   | 67  | 78   | 77   | 78   | 78    |
| 9       | 64   | 62   | 47   | 38   | 40   | 36   | 46   | 66  | 78   | 77   | 80   | 78    |
| 10      | 64   | 59   | 45   | 36   | 43   | 40   | --   | 67  | 79   | 76   | 79   | 77    |
| 11      | 63   | 58   | 44   | 38   | 45   | 44   | --   | 69  | 78   | 76   | 81   | 77    |
| 12      | 63   | 56   | 44   | 36   | 43   | 46   | --   | 68  | 77   | 76   | 80   | 77    |
| 13      | 64   | 55   | 44   | 36   | 43   | 45   | --   | 68  | 76   | 80   | 78   | --    |
| 14      | 62   | 56   | --   | 35   | --   | 44   | --   | 68  | 76   | 80   | 80   | --    |
| 15      | 64   | 56   | 46   | 34   | 40   | 46   | --   | 69  | 78   | 80   | 81   | --    |
| 16      | 63   | 52   | 45   | 34   | 40   | 44   | --   | 70  | 77   | 83   | 81   | --    |
| 17      | 65   | 56   | 45   | --   | 43   | 48   | --   | 71  | 78   | 83   | 76   | --    |
| 18      | 62   | 55   | 45   | 32   | 45   | 49   | --   | --  | 77   | 84   | 77   | --    |
| 19      | 66   | 55   | 48   | 33   | 41   | 50   | --   | --  | 76   | 84   | 78   | 76    |
| 20      | 66   | 51   | 48   | 33   | 40   | 45   | --   | --  | 76   | 84   | 78   | 76    |
| 21      | 68   | 49   | 48   | 33   | 42   | 46   | 61   | --  | 76   | 83   | 78   | 77    |
| 22      | 68   | 47   | --   | 34   | 46   | 47   | 80   | --  | 77   | 83   | 78   | 76    |
| 23      | 69   | 46   | --   | 34   | 44   | 48   | 82   | --  | 77   | 85   | 78   | 76    |
| 24      | 68   | 50   | --   | 35   | 45   | 44   | 82   | --  | 76   | 86   | 77   | 75    |
| 25      | 64   | 46   | --   | 37   | 43   | 46   | 66   | --  | 85   | 84   | 78   | 73    |
| 26      | 62   | 46   | --   | 36   | 48   | 45   | 67   | --  | 82   | 84   | --   | 73    |
| 27      | 61   | 44   | --   | 36   | 46   | 44   | 65   | --  | 82   | 83   | --   | 73    |
| 28      | 65   | 46   | --   | 37   | 45   | 47   | 66   | --  | 80   | 85   | 80   | 71    |
| 29      | 64   | 45   | --   | 36   | --   | 48   | 68   | --  | 80   | 85   | 80   | 70    |
| 30      | --   | 45   | 40   | 36   | --   | 46   | 66   | --  | 77   | 83   | 80   | --    |
| 31      | --   | --   | 40   | 36   | --   | 46   | --   | --  | --   | 85   | 80   | --    |
| Average | 65   | 54   | --   | 36   | 43   | 45   | --   | --  | 78   | 81   | --   | --    |

## MUSKINGUM RIVER BASIN

## TUSCARAWAS RIVER AT NEWCOMERTOWN, OHIO

LOCATION.-- At gaging station at highway bridge, three-quarters of a mile south of Newcomertown, Tuscarawas County, 2 miles upstream from Buckhorn Creek, and 4 miles downstream from Dunlap Creek.

DRAINAGE AREA.-- 2,436 square miles.

RECORDS AVAILABLE.-- Chemical analyses: July 1946 to September 1948, October 1955 to September 1957.

Chloride and specific conductance: October 1948 to May 1949.

Water temperatures: July 1946 to September 1948, October 1955 to September 1957.

EXTREMES, 1956-57.-- Dissolved solids: Maximum, 2,990 ppm Sept. 22; minimum, 250 ppm Apr. 4-13.

Hardness: Maximum, 1,470 ppm Sept. 22; minimum, 160 ppm Apr. 4-13.

Specific conductance: Maximum daily, 1,160 microhos Sept. 22; minimum daily, 384 microhos Apr. 6.

Water temperatures: Maximum, 85°F July 22, 31; minimum, freezing point Jan. 2, 14-18.

EXTREMES, 1946-48, 1955-57.-- Dissolved solids: Maximum, 3,787 ppm Oct. 20, 1955; minimum, 250 ppm Apr. 4-13, 1957.

Hardness: Maximum, 1,782 ppm Oct. 20, 1955; minimum, 153 ppm Feb. 26-29, May 28-30, 1956.

Specific conductance (1946-49, 1955-57): Maximum daily, 6,530 microhos Sept. 21, 1948; minimum daily, 232 microhos May 9, 1947.

Water temperatures: Maximum, 85°F July 22, 31, 1957; minimum, freezing point on several days during winter months.

REMARKS.-- Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Ohio Canal diverts small amount of water from river at Portage Lakes, 3 miles south of Akron; part of diverted water flows into Cuyahoga River basin. Flow regulated by eight flood-control reservoirs.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhos at 25°C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-----------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium, mg-nesium            | Non-carbonate |                                         |     |       |
| Oct. 1-7, 1956.....    | 623                  | 12                         | 0.01      | 336          | 25             | 289         | 5.6           | 126                             | 206                        | 864           | 1.9          | 14                         | 1,820                         | 946                           | 844           | 3,270                                   | 7.1 | 2     |
| Oct. 8-14.....         | 730                  | 18                         | .00       | 211          | 20             | 175         | 4.2           | 122                             | 194                        | 462           | 1.8          | 15                         | 1,160                         | 608                           | 508           | 2,000                                   | 7.1 | 2     |
| Oct. 15-21.....        | 575                  | 9.8                        | .00       | 348          | 23             | 300         | 5.6           | 128                             | 200                        | 896           | 1.8          | 15                         | 1,860                         | 962                           | 858           | 3,330                                   | 7.1 | 2     |
| Oct. 22-31.....        | 568                  | 10                         | .00       | 238          | 22             | 208         | 5.7           | 140                             | 198                        | 568           | 2.2          | 18                         | 1,340                         | 685                           | 570           | 2,390                                   | 7.2 | 3     |
| Nov. 1-10.....         | 666                  | 11                         | .00       | 384          | 26             | 351         | 9.5           | 138                             | 208                        | 1,020         | 2.0          | 15                         | 2,090                         | 1,070                         | 953           | 3,760                                   | 7.4 | 3     |
| Nov. 11-13.....        | 1,023                | 9.3                        | .00       | 288          | 16             | 238         | 5.1           | 108                             | 148                        | 740           | 1.2          | 11                         | 1,510                         | 785                           | 697           | 2,800                                   | 7.3 | 3     |
| Nov. 14-17, 19-20..... | 1,028                | 8.7                        | .00       | 164          | 18             | 140         | 6.3           | 113                             | 142                        | 378           | 1.2          | 11                         | 1,275                         | 483                           | 391           | 1,680                                   | 7.2 | 5     |
| Nov. 21-25.....        | 1,460                | 8.3                        | .04       | 236          | 17             | 196         | 7.3           | 91                              | 158                        | 592           | 1.1          | 12                         | 1,270                         | 660                           | 585           | 2,320                                   | 7.0 | 3     |
| Nov. 26-Dec. 4.....    | 1,327                | 7.0                        | .03       | 165          | 24             | 137         | 5.3           | 94                              | 127                        | 424           | .8           | 5.7                        | 1,942                         | 510                           | 433           | 1,750                                   | 7.2 | 4     |
| Dec. 5-9.....          | 1,318                | 17                         | .01       | 213          | 41             | 210         | 7.7           | 107                             | 175                        | 635           | 1.1          | 10                         | 1,360                         | 701                           | 613           | 2,470                                   | 7.1 | 4     |
| Dec. 10-18.....        | 3,120                | 13                         | .00       | 103          | 16             | 68          | 4.3           | 70                              | 125                        | 198           | .3           | 5.2                        | 567                           | 323                           | 266           | 1,030                                   | 7.1 | 4     |
| Dec. 19-31.....        | 1,922                | 9.2                        | .03       | 134          | 22             | 104         | 4.4           | 88                              | 136                        | 301           | .4           | 4.7                        | 769                           | 425                           | 353           | 1,360                                   | 7.0 | 5     |
| Jan. 1-3, 1957.....    | 1,400                | 8.6                        | .00       | 129          | 21             | 91          | 2.3           | 85                              | 147                        | 284           | .6           | 9.0                        | 734                           | 409                           | 339           | 1,280                                   | 7.1 | 2     |
| Jan. 4-9.....          | 1,155                | 9.8                        | .00       | 162          | 19             | 128         | 4.8           | 96                              | 145                        | 354           | .8           | 12                         | 883                           | 482                           | 404           | 1,600                                   | 7.1 | 2     |
| Jan. 10-16.....        | 1,117                | 8.8                        | .00       | 132          | 17             | 94          | 3.3           | 100                             | 143                        | 260           | .8           | 11                         | 719                           | 400                           | 318           | 1,310                                   | 7.1 | 1     |

|                       |        |     |      |     |     |     |     |     |     |       |     |     |       |       |       |       |     |    |
|-----------------------|--------|-----|------|-----|-----|-----|-----|-----|-----|-------|-----|-----|-------|-------|-------|-------|-----|----|
| Jan. 17-23.....       | 1,886  | 10  | 0.11 | 244 | 20  | 182 | 5.1 | 113 | 223 | 515   | 1.0 | 12  | 1,270 | 692   | 599   | 2,140 | 7.0 | 1  |
| Jan. 24-29.....       | 6,213  | 7.8 | .02  | 66  | 11  | 33  | 3.2 | 66  | 101 | 85    | .3  | 9.1 | 349   | 210   | 156   | 605   | 7.3 | 2  |
| Jan. 30-Feb. 5.....   | 2,474  | 9.0 | .03  | 140 | 16  | 104 | 2.2 | 80  | 128 | 300   | .6  | 9.8 | 749   | 350   | 350   | 1,360 | 7.3 | 1  |
| Feb. 6-7.....         | 2,825  | 8.6 | .03  | 114 | 14  | 77  | 2.6 | 74  | 118 | 221   | .4  | 9.6 | 602   | 342   | 282   | 1,090 | 7.4 | 2  |
| Feb. 8-15.....        | 3,065  | 8.8 | .03  | 105 | 16  | 66  | 3.7 | 72  | 127 | 188   | .6  | 11  | 562   | 328   | 269   | 1,000 | 7.2 | 4  |
| Feb. 16-28.....       | 1,734  | 9.7 | .06  | 133 | 18  | 90  | 4.1 | 91  | 146 | 256   | .7  | 11  | 713   | 406   | 332   | 1,290 | 7.2 | 3  |
| Mar. 1-4.....         | 3,155  | 8.4 | .04  | 84  | 15  | 52  | 2.8 | 73  | 113 | 141   | .3  | 6.3 | 459   | 271   | 211   | 836   | 7.0 | 2  |
| Mar. 5-19.....        | 2,613  | 8.8 | .06  | 92  | 16  | 58  | 3.4 | 73  | 130 | 158   | .5  | 7.0 | 510   | 296   | 236   | 911   | 7.3 | 3  |
| Mar. 20-29.....       | 2,022  | 10  | .02  | 148 | 17  | 105 | 4.0 | 79  | 142 | 310   | .6  | 4.2 | 780   | 439   | 375   | 1,420 | 7.2 | 2  |
| Mar. 30-Apr. 3.....   | 2,896  | 8.9 | .03  | 114 | 15  | 72  | 3.2 | 63  | 125 | 222   | .6  | 5.0 | 597   | 346   | 295   | 1,060 | 7.0 | 1  |
| Apr. 4-13.....        | 10,650 | 7.2 | .20  | 48  | 9.6 | 20  | 2.7 | 40  | 87  | 50    | .3  | 5.4 | 250   | 160   | 127   | 450   | 6.9 | 7  |
| Apr. 14-24.....       | 8,511  | 11  | .05  | 65  | 12  | 31  | 2.6 | 53  | 111 | 85    | .2  | 3.6 | 348   | 212   | 168   | 600   | 7.2 | 1  |
| Apr. 25-May 1.....    | 4,000  | 16  | .06  | 95  | 15  | 63  | 3.8 | 84  | 123 | 166   | .5  | 2.5 | 528   | 239   | 230   | 907   | 7.3 | 3  |
| May. 2-12.....        | 1,728  | 12  | .01  | 184 | 20  | 117 | 4.6 | 98  | 175 | 354   | .7  | 4.2 | 900   | 491   | 411   | 1,500 | 7.2 | 2  |
| May. 13-21.....       | 3,661  | 11  | .01  | 98  | 15  | 59  | 3.5 | 71  | 136 | 168   | .3  | 5.0 | 531   | 306   | 248   | 880   | 7.0 | 3  |
| May. 22-23.....       | 3,720  | 11  | .04  | 83  | 16  | 50  | 3.7 | 80  | 130 | 128   | .3  | 5.6 | 467   | 273   | 208   | 771   | 7.1 | 4  |
| May. 24-June 1.....   | 1,997  | 12  | .00  | 127 | 19  | 89  | 4.0 | 98  | 148 | 245   | .6  | 7.7 | 701   | 395   | 315   | 1,250 | 7.4 | 5  |
| June. 2-3.....        | 1,905  | 14  | .01  | 183 | 24  | 153 | 4.1 | 108 | 180 | 425   | 1.1 | 12  | 1,050 | 556   | 467   | 1,840 | 7.4 | 5  |
| June. 4.....          | 1,390  | 13  | .02  | 349 | 29  | 335 | 6.0 | 122 | 162 | 1,000 | .8  | 9.8 | 1,960 | 991   | 891   | 3,610 | 6.9 | 5  |
| June. 5-18.....       | 1,243  | 10  | .04  | 159 | 23  | 126 | 5.2 | 93  | 179 | 348   | .8  | 9.7 | 906   | 491   | 415   | 1,610 | 6.9 | 5  |
| June. 19-26.....      | 1,366  | 5.6 | .01  | 224 | 21  | 206 | 5.8 | 71  | 185 | 590   | 1.0 | 8.2 | 1,280 | 646   | 588   | 2,320 | 6.7 | 3  |
| June. 27-29.....      | 3,270  | 13  | .02  | 93  | 16  | 67  | 3.2 | 78  | 121 | 165   | .6  | 18  | 532   | 298   | 234   | 842   | 7.0 | 5  |
| June. 30-July 6.....  | 5,651  | 11  | .04  | 65  | 12  | 33  | 4.2 | 66  | 133 | 188   | .4  | 6.1 | 306   | 212   | 156   | 613   | 7.0 | 10 |
| July. 7-10.....       | 2,375  | 12  | .03  | 142 | 18  | 99  | 4.2 | 90  | 154 | 280   | .4  | 4.8 | 758   | 428   | 355   | 1,340 | 7.0 | 4  |
| July. 11-12.....      | 3,900  | 11  | .00  | 78  | 11  | 53  | 4.2 | 92  | 96  | 121   | .4  | 6.4 | 426   | 240   | 164   | 742   | 7.0 | -- |
| July. 13-16.....      | 2,880  | 14  | .04  | 143 | 16  | 100 | 4.6 | 108 | 123 | 296   | .6  | 4.2 | 755   | 423   | 395   | 1,350 | 7.0 | 6  |
| July. 17-21.....      | 1,156  | 11  | .00  | 231 | 19  | 281 | 6.7 | 112 | 162 | 544   | .8  | 3.4 | 1,200 | 655   | 563   | 2,190 | 7.2 | 5  |
| July. 22-Aug. 12..... | 677    | 4.7 | .00  | 289 | 20  | 173 | 6.9 | 76  | 200 | 819   | 1.1 | 2.8 | 1,700 | 819   | 737   | 3,070 | 6.9 | 4  |
| Aug. 13-14.....       | 475    | 9.4 | .00  | 387 | 21  | 490 | 9.0 | 62  | 210 | 1,310 | 1.6 | 3.1 | 2,480 | 1,650 | 1,000 | 4,360 | 6.8 | 7  |
| Aug. 15-16.....       | 888    | 5.5 | .03  | 240 | 23  | 302 | 8.6 | 88  | 220 | 704   | 1.2 | 3.1 | 1,550 | 694   | 622   | 2,630 | 7.0 | 2  |



## MUSKINGUM RIVER BASIN - Continued

## TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO-Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957 -Continued

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (calculated) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                               | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Aug. 17-24 .....       | 539                  | 7.6                        | 0.02      | 190          | 23             | 185         | 7.6           | 83                              | 218                        | 480           | 1.5          | 6.8                        | 1,160                         | 569                           | 501           | 1,940                                     | 6.9 | 4     |
| Aug. 25-27, 31-Sept. 5 | 431                  | 5.2                        | .06       | 284          | 28             | 285         | 7.9           | 72                              | 214                        | 810           | 2.3          | 14                         | 1,680                         | 824                           | 765           | 3,040                                     | 6.9 | 5     |
| Sept. 6-14 .....       | 440                  | 2.1                        | .11       | 426          | 26             | 457         | 12            | 76                              | 226                        | 1,300         | 2.1          | 12                         | 2,500                         | 1,170                         | 1,110         | 4,400                                     | 6.8 | 5     |
| Sept. 15-21 .....      | 567                  | 3.9                        | .12       | 294          | 25             | 267         | 9.4           | 94                              | 228                        | 760           | 1.6          | 16                         | 1,650                         | 837                           | 760           | 2,970                                     | 6.9 | 4     |
| Sept. 22 .....         | 1,590                | 15                         | .15       | 547          | 26             | 513         | 12            | 129                             | 238                        | 1,550         | 3.2          | 26                         | 2,990                         | 1,470                         | 1,370         | 5,160                                     | 6.8 | 6     |
| Sept. 23-30 .....      | 944                  | 12                         | .06       | 244          | 20             | 216         | 9.4           | 100                             | 191                        | 800           | 1.1          | 13                         | 1,360                         | 692                           | 610           | 2,420                                     | 7.0 | 4     |
| Time weighted average  | 2,226                | 9.5                        | 0.03      | 186          | 19             | 156         | 5.3           | 88                              | 160                        | 450           | 0.9          | 8.6                        | 1,040                         | 542                           | 470           | 1,654                                     | --  | 4     |

a. Estimated.

b. Represents 99 percent of days and 100 percent of discharge.

## MUSKINGUM RIVER BASIN--Continued

## TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurements at approximately 6 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 59   | 39   | 36   | 38   | 43   | 48   | 69  | 72   | 70   | 83   | 79    |
| 2       | --   | 60   | 41   | 32   | 39   | 42   | 47   | 61  | 70   | 73   | 82   | 79    |
| 3       | --   | 60   | 42   | 33   | 39   | 42   | 44   | 61  | 73   | 73   | 83   | 80    |
| 4       | --   | 59   | 43   | 35   | 39   | 41   | 43   | 57  | 73   | 72   | 79   | 74    |
| 5       | --   | 60   | 43   | 36   | 38   | 42   | 45   | 57  | 74   | 74   | 78   | 75    |
| 6       | --   | 60   | 49   | 35   | 39   | 42   | 43   | 60  | 74   | 72   | 78   | 75    |
| 7       | --   | 59   | 50   | 35   | 39   | 41   | 45   | 62  | 74   | 75   | 79   | 69    |
| 8       | --   | 53   | 50   | 36   | 41   | 40   | 42   | 65  | 67   | 73   | 80   | 69    |
| 9       | --   | 50   | 47   | 38   | 44   | 42   | --   | 65  | 71   | 75   | 79   | 72    |
| 10      | --   | 49   | 41   | 37   | 44   | 42   | 45   | 68  | 72   | 74   | 79   | 70    |
| 11      | --   | 51   | 41   | 35   | 43   | 45   | 48   | 68  | 72   | 71   | 81   | 75    |
| 12      | 57   | 49   | 42   | 36   | 40   | 49   | 46   | 70  | 74   | 74   | 83   | 74    |
| 13      | 59   | 48   | 41   | 35   | 41   | 51   | 46   | 72  | 74   | 73   | 82   | 72    |
| 14      | 59   | 49   | 43   | 32   | 39   | 51   | 44   | 70  | 75   | 76   | 82   | 72    |
| 15      | 61   | 53   | 45   | 32   | 40   | 53   | 48   | 70  | 78   | 77   | 81   | 72    |
| 16      | 62   | 50   | 45   | 31   | 40   | 50   | 46   | 67  | 80   | 79   | 79   | 72    |
| 17      | 62   | 43   | 45   | 32   | 39   | 50   | 47   | 61  | 82   | 80   | 75   | 73    |
| 18      | 62   | --   | 43   | 32   | 39   | 47   | 50   | 64  | 83   | 81   | 74   | 72    |
| 19      | 62   | 46   | 42   | 33   | 39   | 48   | 54   | 63  | 80   | 82   | 75   | 74    |
| 20      | 61   | 45   | 43   | 34   | 38   | 45   | 57   | 61  | 82   | 83   | 75   | 72    |
| 21      | 61   | 45   | 46   | 35   | 40   | 48   | 62   | 61  | 80   | 83   | 76   | 73    |
| 22      | 60   | 41   | 47   | 36   | 42   | 48   | 63   | 63  | 79   | 85   | 78   | 70    |
| 23      | 62   | 39   | 49   | --   | 42   | 49   | 63   | 66  | 78   | 78   | 78   | 71    |
| 24      | 60   | 39   | 45   | 35   | 43   | 48   | 63   | 67  | 75   | 78   | 75   | 67    |
| 25      | 60   | 39   | 43   | 34   | 48   | 45   | 67   | 69  | 76   | 78   | 73   | 68    |
| 26      | 57   | 38   | 41   | 36   | 49   | 47   | 68   | 71  | 76   | 75   | 79   | 67    |
| 27      | 57   | 39   | 41   | 37   | 46   | 44   | 68   | 66  | 77   | 77   | 72   | 63    |
| 28      | 57   | 41   | 39   | 37   | 43   | 45   | 68   | 66  | 74   | 77   | --   | 61    |
| 29      | 58   | 39   | 38   | 38   | --   | 45   | 67   | 70  | 70   | 79   | --   | 61    |
| 30      | 60   | 39   | 35   | 38   | --   | 47   | 68   | 70  | 70   | 82   | --   | 66    |
| 31      | 60   | --   | 38   | 38   | --   | 48   | --   | 72  | --   | 85   | --   | --    |
| Average | --   | 48   | 43   | 35   | 41   | 46   | 53   | 66  | 75   | 77   | 78   | 71    |

## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT DRESDEN, OHIO

LOCATION.--At gaging station at bridge on State Highway 208, half a mile east of Dresden, Muskingum County, and half a mile downstream from Wakatomika Creek.

DRAINAGE AREA.--5,982 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1957.

Sediment records: October 1952 to September 1957.

EXTREMES, 1952-57.--Water temperatures: Maximum, 81°F Aug. 3; minimum, freezing point Jan. 4, 23, 26-27.

Sediment concentrations: Maximum daily, 695 ppm June 29; minimum daily, 1 ppm Oct. 29, Nov. 14.

Sediment loads: Maximum daily, 33,200 tons June 29; minimum daily, 3 tons Oct. 29. EXTREMES, 1952-57.--Water temperatures: Maximum, 88°F Aug. 4, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 870 ppm Nov. 17, 1955; minimum daily, 1 ppm on several days during December 1952, November 1954, and October to November 1956.

Sediment loads: Maximum daily, 45,500 tons Feb. 26, 1956; minimum daily, 3 tons on several days during December 1952, November 1953, November 1954, and October 1956. REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow affected by ice Jan. 17-22. Flow regulated by 14 flood control reservoirs.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | 57   | 37   | 34   | 36   | 40   | 46   | 65  | 69   | 68   | 77   | 76    |
| 2       | 62   | 57   | 37   | --   | 36   | 40   | 47   | 66  | 69   | 70   | 73   | 77    |
| 3       | 60   | 56   | 39   | --   | 36   | 38   | 44   | 61  | 66   | 70   | 81   | 75    |
| 4       | 63   | 56   | 39   | 32   | 37   | 38   | 43   | 59  | 68   | 71   | 78   | 74    |
| 5       | 60   | 56   | 40   | 33   | 37   | 40   | 45   | 56  | 67   | 71   | 76   | 71    |
| 6       | 59   | 56   | 45   | 33   | 36   | 41   | 43   | 53  | 71   | 71   | 74   | 68    |
| 7       | 60   | 56   | 48   | 33   | 37   | 40   | 46   | 60  | 71   | 72   | 72   | 68    |
| 8       | 59   | 54   | 48   | 33   | 37   | 39   | 44   | 62  | 67   | 72   | 73   | 68    |
| 9       | 59   | 51   | 45   | 34   | 40   | 38   | 42   | 64  | 66   | 73   | 75   | 66    |
| 10      | 55   | 47   | 41   | 33   | 42   | 40   | 44   | 66  | 66   | 72   | 75   | 67    |
| 11      | 52   | 47   | 41   | 33   | 41   | 40   | 46   | 66  | 68   | 70   | 78   | 73    |
| 12      | 52   | 50   | 42   | 34   | 39   | 43   | 45   | 67  | 68   | 72   | 75   | 68    |
| 13      | 53   | 47   | 40   | 33   | 39   | 46   | 45   | 66  | 70   | 73   | 73   | 70    |
| 14      | 54   | 50   | 41   | --   | 38   | 49   | 44   | 68  | 71   | 74   | 73   | 68    |
| 15      | 58   | 52   | 42   | --   | 37   | 48   | 43   | 67  | 75   | 73   | 76   | 73    |
| 16      | 58   | 50   | 40   | --   | 38   | 48   | 45   | 64  | --   | 72   | 76   | 70    |
| 17      | 60   | 48   | 39   | --   | 38   | 49   | 46   | 65  | 76   | 72   | 73   | 72    |
| 18      | 60   | --   | 43   | --   | 37   | 47   | 48   | 65  | 77   | 72   | 72   | 68    |
| 19      | 59   | 47   | 40   | --   | 36   | 47   | 52   | 64  | 77   | 74   | 71   | 69    |
| 20      | 59   | 44   | 42   | --   | 37   | 45   | 53   | 63  | 77   | 76   | 71   | 70    |
| 21      | 61   | 44   | 45   | --   | 38   | 44   | 55   | 59  | 74   | 77   | 74   | 72    |
| 22      | 61   | 41   | 46   | 34   | 36   | 45   | 57   | 59  | 73   | 78   | 70   | 70    |
| 23      | 61   | 38   | 46   | 32   | 39   | 45   | 58   | 61  | 74   | 77   | 69   | 67    |
| 24      | 57   | 36   | 45   | 33   | 38   | 46   | 61   | 65  | 73   | 72   | 70   | 66    |
| 25      | 60   | 35   | 42   | 33   | 41   | 44   | 62   | 63  | 69   | 72   | 70   | 64    |
| 26      | 57   | 36   | 40   | 32   | 44   | 45   | 64   | 67  | 69   | 73   | 69   | 64    |
| 27      | 57   | 37   | 40   | 32   | 44   | 44   | 66   | 65  | 70   | 72   | 70   | 60    |
| 28      | 57   | 37   | 39   | 33   | 41   | 44   | 66   | 64  | 71   | 73   | 69   | 59    |
| 29      | 54   | 33   | 38   | 35   | --   | 43   | 65   | 64  | 68   | 74   | 70   | 58    |
| 30      | 56   | 37   | 35   | 34   | --   | 43   | 67   | 68  | 68   | 76   | 75   | 58    |
| 31      | 57   | --   | 35   | 35   | --   | 45   | --   | 67  | --   | 78   | 74   | --    |
| Average | 58   | 47   | 41   | --   | 38   | 43   | 51   | 64  | 71   | 73   | 73   | 68    |

## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1,220                 | 13                        | 43           | 1,090                 | 5                         | 15           | 2,060                 | 11                        | 61           |
| 2.....  | 1,180                 | 18                        | 57           | 1,090                 | 5                         | 15           | 1,940                 | 8                         | 42           |
| 3.....  | 1,130                 | 13                        | 40           | 1,090                 | 4                         | 12           | 1,700                 | 6                         | 28           |
| 4.....  | 1,200                 | 14                        | 45           | 1,070                 | 5                         | 14           | 1,640                 | 6                         | 26           |
| 5.....  | 1,280                 | 15                        | 52           | 1,070                 | 4                         | 12           | 1,470                 | 7                         | 28           |
| 6.....  | 1,280                 | 14                        | 48           | 1,050                 | 8                         | 23           | 1,340                 | 5                         | 18           |
| 7.....  | 1,380                 | 12                        | 45           | 1,040                 | 9                         | 25           | 1,470                 | 9                         | 36           |
| 8.....  | 1,520                 | 12                        | 49           | 1,040                 | 10                        | 28           | 1,940                 | 17                        | s 96         |
| 9.....  | 1,580                 | 11                        | 47           | 1,200                 | 7                         | 23           | 3,810                 | 82                        | s 897        |
| 10..... | 1,520                 | 12                        | 49           | 1,440                 | 10                        | 39           | 6,380                 | 133                       | 2,290        |
| 11..... | 1,390                 | 8                         | 30           | 1,470                 | 12                        | 48           | 7,340                 | 110                       | 2,180        |
| 12..... | 1,280                 | 5                         | 17           | 1,450                 | 9                         | 35           | 6,740                 | 69                        | 1,260        |
| 13..... | 1,230                 | 2                         | 7            | 1,450                 | 3                         | 12           | 5,840                 | 51                        | 804          |
| 14..... | 1,200                 | 3                         | 10           | 1,440                 | 1                         | 4            | 5,130                 | 36                        | 499          |
| 15..... | 1,180                 | 5                         | 16           | 1,450                 | 2                         | 8            | 5,130                 | 30                        | 416          |
| 16..... | 1,140                 | 4                         | 12           | 1,460                 | 4                         | 16           | 5,480                 | 35                        | 518          |
| 17..... | 1,110                 | 4                         | 12           | 1,440                 | 3                         | 12           | 5,840                 | 36                        | 568          |
| 18..... | 1,100                 | 6                         | 18           | 1,450                 | 2                         | 8            | 5,130                 | 36                        | 499          |
| 19..... | 1,070                 | 4                         | 12           | 1,420                 | 2                         | 8            | 4,450                 | 28                        | 336          |
| 20..... | 1,070                 | 3                         | 7            | 1,450                 | 2                         | 8            | 3,740                 | 17                        | 172          |
| 21..... | 1,060                 | 2                         | 6            | 1,560                 | 6                         | 25           | 3,440                 | 14                        | 130          |
| 22..... | 1,070                 | 4                         | 12           | 1,820                 | 11                        | 54           | 3,580                 | 14                        | 135          |
| 23..... | 1,080                 | 7                         | 20           | 2,130                 | 15                        | 86           | 4,290                 | 22                        | 255          |
| 24..... | 1,080                 | 6                         | 17           | 2,260                 | 11                        | 67           | 4,790                 | 23                        | 297          |
| 25..... | 1,040                 | 2                         | 6            | 2,000                 | 6                         | 32           | 4,790                 | 24                        | 310          |
| 26..... | 1,150                 | 4                         | 12           | 1,880                 | 4                         | 20           | 4,130                 | 18                        | 201          |
| 27..... | 1,110                 | 4                         | 12           | 2,000                 | 11                        | 59           | 3,810                 | 12                        | 123          |
| 28..... | 1,100                 | 3                         | 9            | 2,060                 | 14                        | 78           | 3,660                 | 14                        | 138          |
| 29..... | 1,100                 | 1                         | 3            | 2,060                 | 11                        | 61           | 3,890                 | 14                        | 147          |
| 30..... | 1,080                 | 4                         | 12           | 2,060                 | 12                        | 67           | 4,130                 | 15                        | 167          |
| 31..... | 1,020                 | 6                         | 16           | --                    | --                        | --           | 4,130                 | 12                        | 134          |
| Total.  | 36,950                | --                        | 741          | 45,490                | --                        | 914          | 123,210               | --                        | 12,811       |
|         | January               |                           |              | February              |                           |              | March                 |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| 1.....  | 3,970                 | 6                         | 64           | 5,840                 | 26                        | 410          | 7,740                 | 126                       | 2,630        |
| 2.....  | 3,740                 | 5                         | a 50         | 5,300                 | 18                        | 258          | 7,940                 | 77                        | 1,650        |
| 3.....  | 3,280                 | 5                         | a 40         | 5,300                 | 18                        | 258          | 8,600                 | 57                        | 1,320        |
| 4.....  | 3,070                 | 4                         | 33           | 5,660                 | 18                        | 275          | 7,940                 | 53                        | 1,140        |
| 5.....  | 2,930                 | 11                        | 87           | 6,560                 | 28                        | 496          | 6,560                 | 38                        | 673          |
| 6.....  | 2,720                 | 11                        | 81           | 7,340                 | 44                        | 872          | 5,480                 | 27                        | 399          |
| 7.....  | 2,650                 | 9                         | 64           | 6,560                 | 43                        | 762          | 5,130                 | 21                        | 291          |
| 8.....  | 2,580                 | 13                        | 90           | 6,200                 | 38                        | 636          | 5,130                 | 17                        | 235          |
| 9.....  | 2,580                 | 10                        | 70           | 6,200                 | 41                        | 686          | 5,480                 | 16                        | 237          |
| 10..... | 2,650                 | 10                        | 72           | 8,160                 | 57                        | 1,260        | 5,840                 | 18                        | 284          |
| 11..... | 2,860                 | 10                        | 77           | 11,700                | 118                       | 3,730        | 6,560                 | 25                        | 443          |
| 12..... | 3,580                 | 11                        | 106          | 11,700                | 122                       | 3,850        | 7,740                 | 65                        | sb 1,400     |
| 13..... | 3,810                 | 17                        | 175          | 10,100                | 75                        | 2,040        | 10,800                | 181                       | 5,280        |
| 14..... | 3,360                 |                           |              | 8,600                 | 46                        | 1,070        | 10,800                | 155                       | 4,520        |
| 15..... | 2,790                 |                           |              | 7,740                 | 29                        | 606          | 9,040                 | 122                       | 2,980        |
| 16..... | 2,460                 |                           |              | 6,940                 | 24                        | 450          | 7,540                 | 83                        | 1,690        |
| 17..... | 1,800                 |                           |              | 6,200                 | 18                        | 301          | 6,380                 | 58                        | 999          |
| 18..... | 1,600                 | --                        | e 180        | 5,480                 | 14                        | 207          | 5,660                 | 42                        | 642          |
| 19..... | 1,700                 |                           |              | 4,790                 | 12                        | 155          | 5,130                 | 29                        | 402          |
| 20..... | 1,900                 |                           |              | 4,130                 | 13                        | 145          | 5,130                 | 26                        | 360          |
| 21..... | 2,300                 |                           |              | 3,660                 | 12                        | 118          | 5,300                 | 26                        | 372          |
| 22..... | 5,000                 | 56                        | 756          | 3,360                 | 10                        | 91           | 5,130                 | 22                        | 305          |
| 23..... | 14,800                | 492                       | s 21,500     | 3,280                 | 11                        | 97           | 4,970                 | 21                        | 272          |
| 24..... | 20,700                | 408                       | 22,800       | 3,280                 | 8                         | 71           | 4,450                 | 22                        | 264          |
| 25..... | 19,900                | 219                       | 11,800       | 3,280                 | 9                         | 80           | 4,130                 | 18                        | 201          |
| 26..... | 17,700                | 139                       | 6,640        | 3,440                 | 13                        | 121          | 4,290                 | 18                        | 208          |
| 27..... | 13,600                | 93                        | 3,410        | 4,450                 | --                        | e 1,600      | 5,130                 | 27                        | 374          |
| 28..... | 9,920                 | 68                        | 1,820        | 7,140                 | 337                       | 6,500        | 5,840                 | 33                        | 520          |
| 29..... | 8,160                 | 52                        | 1,140        | --                    | --                        | --           | 6,020                 | 31                        | 504          |
| 30..... | 7,140                 | 30                        | 578          | --                    | --                        | --           | 5,840                 | 33                        | 520          |
| 31..... | 6,560                 | 29                        | 514          | --                    | --                        | --           | 5,660                 | 29                        | 443          |
| Total.  | 161,810               | --                        | 73,407       | 172,390               | --                        | 27,145       | 197,300               | --                        | 31,558       |

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 5,300                | 30                       | 429          | 10,400               | 54                       | 1,520        | 4,790                | 54                       | 698          |
| 2.....  | 6,020                | 44                       | 715          | 7,540                | 76                       | 1,550        | 5,840                | 98                       | s1,620       |
| 3.....  | 9,480                | 132                      | 3,380        | 6,200                | 55                       | 921          | 6,940                | 251                      | 4,700        |
| 4.....  | 19,900               | 532                      | 28,600       | 5,660                | 38                       | 581          | 6,020                | 142                      | 2,310        |
| 5.....  | 26,900               | 314                      | 22,800       | 5,130                | 26                       | 360          | 4,790                | 71                       | 918          |
| 6.....  | 25,700               | 218                      | 15,100       | 4,790                | 28                       | 362          | 4,130                | 42                       | 468          |
| 7.....  | 25,400               | 146                      | 10,000       | 4,450                | 21                       | 252          | 3,890                | 48                       | 504          |
| 8.....  | 26,300               | 133                      | 9,440        | 4,290                | 22                       | 255          | 4,620                | 103                      | 1,280        |
| 9.....  | 27,500               | 132                      | 9,800        | 4,050                | 21                       | 230          | 4,960                | 117                      | 1,570        |
| 10..... | 27,800               | 108                      | 8,110        | 3,890                | 20                       | 210          | 4,450                | 51                       | 613          |
| 11..... | 27,200               | 95                       | 6,980        | 4,290                | 80                       | sb1,100      | 3,890                | 42                       | 441          |
| 12..... | 27,200               | 87                       | 6,390        | 8,820                | 383                      | 9,120        | 3,580                | 39                       | 377          |
| 13..... | 26,900               | 82                       | 5,960        | 10,600               | 211                      | 6,040        | 5,130                | 306                      | s4,550       |
| 14..... | 26,600               | 78                       | 5,600        | 10,100               | 205                      | 5,590        | 4,960                | 120                      | 1,610        |
| 15..... | 25,400               | 68                       | 4,660        | 13,600               | 311                      | 11,400       | 5,130                | 82                       | 1,140        |
| 16..... | 22,700               | 62                       | 3,800        | 14,800               | 227                      | 9,070        | 4,620                | 69                       | 861          |
| 17..... | 21,000               | 53                       | 3,000        | 14,100               | 168                      | 6,400        | 5,300                | 130                      | 1,860        |
| 18..... | 20,200               | 53                       | 2,890        | 10,800               | 138                      | 4,020        | 4,790                | 160                      | 2,070        |
| 19..... | 20,700               | 66                       | 3,690        | 8,600                | 114                      | 2,650        | 3,970                | 110                      | 1,180        |
| 20..... | 21,000               | 70                       | 3,970        | 9,040                | 156                      | 3,810        | 4,050                | 123                      | 1,340        |
| 21..... | 21,000               | 61                       | 3,460        | 11,900               | 275                      | 8,840        | 3,740                | 97                       | 980          |
| 22..... | 19,600               | 76                       | 4,020        | 14,100               | 171                      | 6,510        | 3,210                | 71                       | 615          |
| 23..... | 17,900               | 66                       | 3,190        | 14,600               | 135                      | 5,320        | 3,000                | 65                       | 526          |
| 24..... | 15,600               | 86                       | 3,580        | 13,600               | 110                      | 4,040        | 4,450                | 120                      | 1,440        |
| 25..... | 15,600               | 117                      | 4,930        | 12,400               | 95                       | 3,180        | 9,480                | 466                      | 11,900       |
| 26..... | 16,100               | 97                       | 4,220        | 11,500               | 87                       | 2,700        | 10,400               | 286                      | 8,030        |
| 27..... | 15,900               | 106                      | 4,550        | 10,600               | 62                       | 1,770        | 9,040                | 178                      | 4,340        |
| 28..... | 15,100               | 93                       | 3,790        | 10,100               | 48                       | 1,310        | 9,260                | 177                      | 4,420        |
| 29..... | 13,600               | 78                       | 2,860        | 9,480                | 49                       | 1,250        | 17,700               | 695                      | 33,200       |
| 30..... | 11,700               | 58                       | 1,830        | 7,540                | 61                       | 1,240        | 21,000               | 336                      | 19,000       |
| 31..... | --                   | --                       | --           | 5,130                | 67                       | 928          | --                   | --                       | --           |
| Total.  | 601,300              | --                       | 191,744      | 282,100              | --                       | 102,529      | 187,130              | --                       | 114,561      |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 20,500               | 250                      | 13,800       | 1,760                | 15                       | 71           | 1,050                | 34                       | 96           |
| 2.....  | 18,800               | 162                      | 8,220        | 1,820                | 23                       | 113          | 1,020                | 38                       | 105          |
| 3.....  | 17,400               | 121                      | 5,680        | 1,700                | 21                       | 96           | 1,010                | 29                       | 79           |
| 4.....  | 15,100               | 118                      | 4,810        | 1,620                | 17                       | 74           | 951                  | 31                       | 80           |
| 5.....  | 12,900               | 104                      | 3,620        | 1,530                | 17                       | 70           | 932                  | 35                       | 88           |
| 6.....  | 11,200               | 92                       | 2,780        | 1,460                | 14                       | 55           | 904                  | 38                       | 93           |
| 7.....  | 10,400               | 84                       | 2,360        | 1,400                | 23                       | 87           | 894                  | 40                       | 97           |
| 8.....  | 9,260                | 83                       | 2,080        | 1,330                | 24                       | 86           | 875                  | 45                       | 106          |
| 9.....  | 7,140                | 224                      | 4,320        | 1,300                | 25                       | 88           | 857                  | 44                       | 102          |
| 10..... | 8,160                | 261                      | 5,750        | 1,270                | 25                       | 86           | 848                  | 46                       | 105          |
| 11..... | 8,160                | 191                      | 4,210        | 1,250                | 21                       | 71           | 848                  | 55                       | 126          |
| 12..... | 8,160                | 202                      | 4,450        | 1,220                | 19                       | 62           | 904                  | 50                       | 122          |
| 13..... | 8,160                | 217                      | 4,780        | 1,160                | 18                       | 56           | 1,100                | 58                       | 172          |
| 14..... | 7,340                | 180                      | 3,570        | 1,110                | 20                       | 60           | 1,580                | 74                       | 312          |
| 15..... | 6,020                | 127                      | 2,060        | 1,370                | 30                       | 111          | 1,700                | 78                       | 358          |
| 16..... | 4,960                | 87                       | 1,160        | 2,000                | 40                       | 216          | 1,420                | 76                       | 291          |
| 17..... | 4,130                | 66                       | 736          | 1,880                | 42                       | 213          | 1,180                | 68                       | 217          |
| 18..... | 3,580                | 46                       | 445          | 1,570                | 37                       | 157          | 1,040                | 44                       | 124          |
| 19..... | 3,140                | 36                       | 305          | 1,320                | 25                       | 89           | 990                  | 36                       | 96           |
| 20..... | 2,860                | 27                       | 208          | 1,210                | 20                       | 66           | 990                  | 35                       | 94           |
| 21..... | 2,650                | 20                       | 143          | 1,160                | 25                       | 78           | 2,090                | 96                       | s706         |
| 22..... | 2,460                | 19                       | 126          | 1,130                | 25                       | 76           | 4,790                | 483                      | 6,250        |
| 23..... | 2,650                | 26                       | 186          | 1,090                | 27                       | 79           | 5,480                | 308                      | 4,560        |
| 24..... | 3,210                | 24                       | 208          | 1,050                | 25                       | 71           | 5,300                | 292                      | 4,180        |
| 25..... | 3,000                | 24                       | 194          | 1,030                | 25                       | 70           | 4,960                | 169                      | 2,260        |
| 26..... | 2,580                | 29                       | 202          | 1,030                | 24                       | 67           | 4,450                | 127                      | 1,520        |
| 27..... | 2,260                | 25                       | 152          | 1,020                | 32                       | 88           | 3,660                | 86                       | 850          |
| 28..... | 2,130                | 22                       | 126          | 1,000                | 36                       | 97           | 2,790                | 53                       | 399          |
| 29..... | 2,000                | 21                       | 113          | 1,000                | 40                       | 108          | 2,200                | 32                       | 190          |
| 30..... | 1,940                | 19                       | 100          | 1,000                | 45                       | 122          | 1,820                | 24                       | 118          |
| 31..... | 1,820                | 14                       | 69           | 1,000                | 32                       | 86           | --                   | --                       | --           |
| Total.  | 214,070              | --                       | 76,963       | 40,790               | --                       | 2,889        | 58,613               | --                       | 23,896       |

Total discharge for year (cfs-days)

2,141,053

Total load for year (tons)

659,138

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

b Computed from partly estimated concentration graph.

MUSKINGUM RIVER BASIN--Continued  
MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Jan. 23, 1957 ...  | 6:15 p.m.  | 18,500          |                        | 670                           | 828                                        | 44                                                | 53    | 67    | 78    | 87    | 94    | 97    | 98    |       | 100   | --                  | BSWCM |
| Jan. 23 .....      | 6:15 p.m.  | 18,500          |                        | 670                           | 792                                        | 17                                                | 25    | 39    | 66    | 87    | 95    | 98    | 100   |       | --    | --                  | BSNM  |
| Jan. 26 .....      | 11:00 a.m. | 17,700          |                        | 143                           | 493                                        | 56                                                | 66    | 74    | 83    | 91    | 95    | 96    | 98    |       | 100   | --                  | BSWCM |
| Feb. 28 .....      | 4:00 p.m.  | 7,540           |                        | 298                           | 431                                        | 49                                                | 64    | 77    | 87    | 94    | 97    | 99    | 100   |       | --    | --                  | BSWCM |
| Apr. 4 .....       | 10:00 a.m. | 18,800          |                        | 588                           | 818                                        | 36                                                | 47    | 59    | 72    | 86    | 93    | 96    | 97    |       | 99    | 100                 | BSWCM |
| Apr. 4 .....       | 11:00 a.m. | 19,600          |                        | 648                           | 760                                        | 28                                                | 41    | 55    | 72    | 84    | 94    | 97    | 98    |       | 100   | --                  | BSWCM |
| Apr. 4 .....       | 11:00 a.m. | 19,600          |                        | 648                           | 867                                        | 12                                                | 19    | 31    | 62    | 89    | 94    | 97    | 98    |       | 100   | --                  | BSNM  |
| Apr. 4 .....       | 4:30 p.m.  | 23,600          |                        | 620                           | 923                                        | 35                                                | 45    | 54    | 64    | 80    | 92    | 95    | 96    |       | 99    | 100                 | BSWCM |
| May 12 .....       | 3:00 p.m.  | 9,920           |                        | 375                           | 541                                        | 39                                                | 52    | 64    | 81    | 91    | 96    | 98    | 99    |       | 100   | --                  | BSWCM |
| May 15 .....       | 7:30 p.m.  | 14,600          |                        | 318                           | 438                                        | 40                                                | 51    | 62    | 76    | 84    | 91    | 93    | 95    |       | 100   | --                  | BSWCM |
| May 21 .....       | 4:00 p.m.  | 12,400          |                        | 297                           | 399                                        | 51                                                | 60    | 71    | 81    | 88    | 93    | 95    | 97    |       | 100   | --                  | BSWCM |
| June 13 .....      | 11:30 a.m. | 6,200           |                        | 446                           | 683                                        | 39                                                | 55    | 72    | 85    | 93    | 97    | 98    | 99    |       | 100   | --                  | BSWCM |
| June 29 .....      | 9:30 a.m.  | 19,300          |                        | 1,020                         | 1,370                                      | 37                                                | 50    | 62    | 74    | 83    | 88    | 90    | 90    |       | 95    | 100                 | BSWCM |
| June 29 .....      | 1:30 p.m.  | 21,000          |                        | 1,000                         | 1,250                                      | 41                                                | 50    | 59    | 67    | 71    | 75    | 76    | 77    |       | 83    | 100                 | BSWCM |

MUSKINGUM RIVER BASIN--Continued  
MUSKINGUM RIVER AT MCCONNELSVILLE, OHIO

LOCATION.--At bridge on State Highway 37, at McConnelsville, Morgan County, half a mile upstream from gaging station and dam 7, 3 miles downstream from Olispring Run.

DRAINAGE AREA.--7,411 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1954 to September 1957.

Water temperatures: October 1950 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 1,150 ppm Nov. 12-19; minimum, 185 ppm Apr. 5-14.

Hardness: Maximum, 627 ppm Nov. 12-19; minimum, 127 ppm Apr. 5-14.

Specific conductance: Maximum daily, 2,510 micromhos Nov. 17; minimum daily, 286 micromhos July 2.

Water temperatures: Maximum, 85° F Aug. 2, 3; minimum, 36° F Jan. 24, 31, Feb. 1.

EXTREMES, 1950-51, 1954-57.--Dissolved solids: Maximum, 2,070 ppm Oct. 13-15, 1954; minimum, 185 ppm Apr. 5-14, 1957.

Hardness: Maximum, 916 ppm Oct. 13-15, 1954; minimum, 118 ppm Feb. 21-28, 1951.

Specific conductance: Maximum daily, 3,410 micromhos Oct. 14, 1954; minimum daily, 249 micromhos Dec. 8, 1950.

Water temperatures: Maximum, 94° F Aug. 4, 1955; minimum, freezing point Feb. 2, 1951, Feb. 10, 11, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow regulated by 14 flood-control reservoirs.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection      | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) (B) | Dissolved solids (calculated) |                    | Hardness as CaCO <sub>3</sub> |               | Percent adsorption | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|-------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|--------------------------------|-------------------------------|--------------------|-------------------------------|---------------|--------------------|--------------------------------------------|-----|-------|
|                         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                                | Parts per million             | Tons per acre-foot | Calcium, magnesium            | Non-carbonate |                    |                                            |     |       |
| Oct. 1-8, 1956 ...      | 1,680                | 4.0                        | 0.00      | 133          | 20             | 84          | 5.0           | 155                             | 148                        | 223           | 0.7          | 5.9                            | 705                           | 3,198              | 414                           | 278           |                    | 1,220                                      | 7.2 | 2     |
| Oct. 9-16, .....        | 1,660                | 4.6                        | 0.00      | 169          | 23             | 128         | 5.0           | 142                             | 177                        | 349           | 7            | 6.6                            | 933                           | 4,182              | 516                           | 400           |                    | 1,610                                      | 7.1 | 3     |
| Oct. 17-25, .....       | 1,417                | 4.6                        | 0.00      | 133          | 21             | 87          | 3.9           | 146                             | 156                        | 226           | 8            | 7.1                            | 710                           | 2,716              | 418                           | 299           |                    | 1,240                                      | 7.2 | 3     |
| Oct. 26-Nov. 11, .....  | 1,389                | 7.4                        | 0.00      | 166          | 23             | 126         | 4.8           | 154                             | 160                        | 340           | 9            | 4.1                            | 908                           | 3,405              | 509                           | 383           |                    | 1,580                                      | 7.4 | 2     |
| Nov. 12-19, .....       | 1,685                | 7.8                        | .03       | 208          | 26             | 166         | 6.4           | 180                             | 166                        | 484           | 1.0          | 3.1                            | 1,150                         | 5,232              | 627                           | 495           |                    | 2,000                                      | 7.4 | 4     |
| Nov. 20-23, .....       | 1,998                | 7.2                        | .07       | 167          | 20             | 128         | 5.1           | 141                             | 135                        | 360           | 8            | 3.3                            | 896                           | 4,834              | 499                           | 383           |                    | 1,580                                      | 7.4 | 3     |
| Nov. 24-Dec. 12, .....  | 3,227                | 6.0                        | .01       | 132          | 16             | 82          | 4.7           | 123                             | 129                        | 246           | 6            | 4.2                            | 682                           | 5,942              | 396                           | 295           |                    | 1,240                                      | 7.2 | 4     |
| Dec. 13-31, 1956, ..... | 5,515                | 8.2                        | .04       | 76           | 15             | 41          | 3.0           | 64                              | 104                        | 101           | 4            | 3.1                            | 398                           | 5,931              | 251                           | 174           |                    | 1,712                                      | 7.3 | 5     |
| Jan. 1-15, 1957, .....  | 3,933                | 7.5                        | .00       | 83           | 16             | 44          | 2.4           | 106                             | 114                        | 112           | 3            | 5.3                            | 437                           | 4,640              | 273                           | 186           |                    | 775                                        | 7.3 | 1     |
| Jan. 16-24, .....       | 6,022                | 7.3                        | .07       | 17           | 39             | 3.3         | 106           | 106                             | 98                         | 98            | 4            | 6.0                            | 411                           | 7,348              | 270                           | 180           |                    | 725                                        | 7.1 | 7     |
| Jan. 25-30, .....       | 13,700               | 7.2                        | .04       | 48           | 12             | 16          | 2.8           | 78                              | 81                         | 37            | 2            | 5.5                            | 248                           | 9,174              | 170                           | 106           |                    | 419                                        | 7.4 | 1     |
| Jan. 31-Feb. 6, .....   | 7,930                | 7.2                        | .02       | 68           | 14             | 30          | 2.6           | 88                              | 95                         | 76            | 2            | 6.4                            | 348                           | 6,380              | 227                           | 147           |                    | 612                                        | 7.5 | 1     |
| Feb. 7-8, .....         | 7,600                | 8.6                        | .02       | 99           | 16             | 38          | 1.3           | 86                              | 108                        | 172           | 3            | 6.6                            | 519                           | 10,850             | 313                           | 233           |                    | 920                                        | 7.5 | 1     |
| Feb. 9-16, .....        | 10,430               | 7.3                        | .04       | 64           | 13             | 27          | 2.6           | 84                              | 89                         | 91            | 3            | 6.6                            | 322                           | 8,068              | 213                           | 174           |                    | 568                                        | 7.5 | 2     |
| Feb. 19-Mar. 3, .....   | 5,680                | 7.8                        | .04       | 75           | 17             | 37          | 2.6           | 107                             | 106                        | 94            | 1            | 5.0                            | 397                           | 6,068              | 237                           | 170           |                    | 715                                        | 7.6 | 2     |
| Mar. 4-23, .....        | 7,314                | 7.2                        | .06       | 60           | 15             | 25          | 2.2           | 92                              | 89                         | 62            | 1            | 4.8                            | 311                           | 6,142              | 211                           | 136           |                    | 558                                        | 7.5 | 3     |
| Mar. 24-Apr. 4, .....   | 7,808                | 7.2                        | .03       | 77           | 16             | 39          | 2.6           | 100                             | 102                        | 109           | 3            | 3.4                            | 406                           | 8,599              | 258                           | 176           |                    | 722                                        | 7.6 | 3     |

|                              |          |     |      |     |     |     |     |     |     |     |     |     |     |        |     |     |       |     |    |
|------------------------------|----------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|-------|-----|----|
| Apr. 5-14, 1957.             | 31,390   | 7.2 | 0.20 | 36  | 8.9 | 10  | 2.2 | 57  | 63  | 24  | 0.3 | 5.0 | 185 | 15,680 | 127 | 80  | 323   | 7.3 | 11 |
| Apr. 15-May 3 ..             | 16,560   | 7.4 | .03  | 51  | 12  | 18  | 2.3 | 85  | 81  | 41  | .2  | 3.9 | 259 | 11,580 | 177 | 107 | 428   | 7.4 | 2  |
| May 4-15 .....               | 6,603    | 6.4 | .04  | 44  | 17  | 44  | 2.9 | 118 | 110 | 111 | .3  | 2.9 | 438 | 7,809  | 282 | 186 | 734   | 7.5 | 1  |
| May 16-30 .....              | 12,870   | 9.0 | .06  | 52  | 12  | 19  | 2.6 | 96  | 74  | 46  | .2  | 3.9 | 266 | 9,243  | 179 | 101 | 442   | 7.5 | 1  |
| May 31-June 5 ..             | 6,147    | 10  | .00  | 84  | 15  | 27  | 2.6 | 121 | 82  | 64  | .3  | 2.3 | 327 | 5,427  | 221 | 122 | 579   | 7.3 | 6  |
| June 6-23 .....              | 4,573    | 7.1 | .05  | 78  | 16  | 43  | 3.3 | 121 | 96  | 110 | .3  | 2.5 | 416 | 5,136  | 261 | 162 | 749   | 7.2 | 4  |
| June 24-28 .....             | 10,100   | 6.4 | .00  | 73  | 12  | 44  | 3.8 | 96  | 79  | 114 | .3  | 2.5 | 382 | 10,420 | 232 | 153 | 705   | 7.0 | 7  |
| June 29, July 1-9            | 14,790   | 9.5 | .11  | 46  | 10  | 15  | 3.0 | 94  | 58  | 34  | .3  | 3.6 | 226 | 9,025  | 156 | 79  | 400   | 7.0 | 10 |
| July 10-15 .....             | 7,358    | 13  | .01  | 72  | 13  | 33  | 3.3 | 124 | 83  | 86  | .3  | 5.3 | 370 | 7,351  | 233 | 132 | 631   | 7.3 | 4  |
| July 16-21 .....             | 3,695    | 11  | .09  | 85  | 16  | 42  | 3.6 | 138 | 88  | 116 | .3  | 4.0 | 434 | 4,330  | 278 | 165 | 754   | 7.4 | 4  |
| July 22-31 .....             | 2,774    | 6.2 | .02  | 115 | 20  | 85  | 4.4 | 128 | 122 | 228 | .4  | 1.6 | 646 | 4,838  | 369 | 264 | 1,120 | 7.3 | 4  |
| Aug. 1-15 .....              | 1,679    | 8.6 | .03  | 141 | 22  | 110 | 4.2 | 124 | 136 | 318 | .5  | 1.5 | 803 | 3,640  | 443 | 341 | 1,420 | 7.3 | 4  |
| Aug. 16-26 .....             | 1,473    | 5.0 | .01  | 142 | 21  | 141 | 4.8 | 122 | 137 | 348 | .6  | 1.1 | 861 | 3,424  | 441 | 341 | 1,520 | 7.2 | 4  |
| Aug. 27-Sept. 6              | a, 1,122 | 3.2 | .00  | 105 | 22  | 78  | 5.9 | 116 | 143 | 192 | .6  | 1.7 | 608 | 1,842  | 353 | 258 | 1,090 | 7.1 | 5  |
| Sept. 7-16 .....             | 1,173    | 3.9 | .01  | 131 | 23  | 119 | 5.9 | 96  | 144 | 318 | .7  | .6  | 793 | 2,512  | 422 | 343 | 1,430 | 7.0 | 4  |
| Sept. 17-23 .....            | 2,078    | 4.6 | .26  | 156 | 24  | 156 | 6.8 | 100 | 145 | 420 | .7  | .1  | 963 | 5,403  | 488 | 406 | 1,730 | 7.0 | 8  |
| Sept. 24-30 .....            | 3,660    | 13  | .04  | 106 | 16  | 80  | 5.4 | 112 | 94  | 215 | .4  | 2.5 | 588 | 5,811  | 331 | 239 | 1,090 | 7.0 | 5  |
| Time-weighted average b..... | 6,521    | 7.3 | 0.04 | 97  | 17  | 64  | 3.6 | 112 | 112 | 166 | 0.4 | 3.8 | 525 | 6,284  | 312 | 220 | 925   | --  | 4  |

a Estimated.

b Represents 99 percent of days and 99 percent of runoff.



## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT McCONNELSVILLE, OHIO--Continued

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 68      | 65  | 59       | 59  | 42       | 42      | 39       | 39    | 45    | 66  | 66   | 69   | 82     | 80        |
| 2.....       | 66      | 65  | 62       | 59  | 42       | 42      | 37       | 42    | 41    | 45  | 66   | 70   | 85     | 81        |
| 3.....       | 66      | 64  | 62       | 60  | 42       | 42      | 39       | 39    | 47    | 67  | 65   | 69   | 85     | 82        |
| 4.....       | 65      | 64  | 63       | 61  | 42       | 42      | 39       | 37    | 40    | 47  | 63   | 69   | 82     | 83        |
| 5.....       | 67      | 65  | 63       | 61  | 42       | 41      | 39       | 39    | 45    | 63  | 61   | 69   | 83     | 81        |
| 6.....       | 66      | 65  | 61       | 61  | 44       | 42      | 39       | 38    | 46    | 61  | 59   | 71   | 81     | 80        |
| 7.....       | 67      | 65  | 61       | 60  | 46       | 44      | 39       | 38    | 46    | 60  | 59   | 74   | 81     | 79        |
| 8.....       | 66      | 64  | 60       | 56  | 48       | 46      | 38       | 37    | 45    | 62  | 60   | 74   | 82     | 79        |
| 9.....       | 65      | 63  | 57       | 56  | 49       | 48      | 38       | 37    | 45    | 63  | 62   | 72   | 81     | 78        |
| 10.....      | 63      | 61  | 56       | 55  | 48       | 45      | 39       | 38    | 45    | 63  | 60   | 76   | 80     | 74        |
| 11.....      | 64      | 61  | 55       | 54  | 45       | 44      | 39       | 38    | 46    | 65  | 63   | 70   | 80     | 74        |
| 12.....      | 63      | 61  | 54       | 53  | 44       | 44      | 39       | 38    | 47    | 69  | 67   | 73   | 81     | 80        |
| 13.....      | 63      | 61  | 53       | 51  | 44       | 44      | 39       | 38    | 47    | 69  | 67   | 74   | 81     | 80        |
| 14.....      | 64      | 61  | 51       | 49  | 44       | 44      | 38       | 38    | 46    | 69  | 67   | 74   | 82     | 79        |
| 15.....      | 65      | 61  | 50       | 49  | 44       | 43      | 38       | 38    | 46    | 70  | 69   | 77   | 81     | 78        |
| 16.....      | 64      | 61  | 50       | 50  | 43       | 43      | 38       | 37    | 46    | 70  | 67   | 79   | 80     | 79        |
| 17.....      | 63      | 61  | 50       | 49  | 43       | 43      | 38       | 37    | 46    | 66  | 66   | 81   | 80     | 79        |
| 18.....      | 62      | 60  | 49       | 48  | 44       | 43      | 37       | 39    | 48    | 66  | 66   | 83   | 81     | 78        |
| 19.....      | 66      | 62  | 48       | 47  | 44       | 44      | 37       | 39    | 51    | 65  | 65   | 82   | 80     | 79        |
| 20.....      | 63      | 63  | 48       | 47  | 44       | 44      | 38       | 37    | 53    | 64  | 63   | 81   | 77     | 76        |
| 21.....      | 64      | 63  | 47       | 45  | 44       | 44      | 38       | 38    | 55    | 64  | 63   | 82   | 77     | 75        |
| 22.....      | 63      | 63  | 45       | 43  | 45       | 44      | 39       | 38    | 57    | 63  | 62   | 82   | 75     | 74        |
| 23.....      | 63      | 63  | 43       | 42  | 45       | 44      | 38       | 37    | 59    | 63  | 62   | 81   | 79     | 76        |
| 24.....      | 63      | 63  | 42       | 41  | 45       | 45      | 37       | 36    | 60    | 63  | 61   | 80   | 79     | 77        |
| 25.....      | 62      | 61  | 41       | 41  | 45       | 44      | 37       | 41    | 62    | 68  | 65   | 80   | 77     | 76        |
| 26.....      | 61      | 61  | 41       | 41  | 44       | 43      | 37       | 45    | 64    | 67  | 66   | 74   | 77     | 76        |
| 27.....      | 61      | 60  | 41       | 41  | 43       | 42      | 37       | 45    | 65    | 67  | 67   | 73   | 78     | 76        |
| 28.....      | 61      | 60  | 42       | 41  | 43       | 42      | 37       | 45    | 66    | 67  | 67   | 74   | 78     | 76        |
| 29.....      | 62      | 61  | 42       | 41  | 43       | 42      | 37       | 45    | 66    | 67  | 67   | 74   | 78     | 76        |
| 30.....      | 62      | 60  | 42       | 41  | 40       | 37      | 37       | 45    | 66    | 67  | 67   | 74   | 78     | 76        |
| 31.....      | 61      | 59  | --       | --  | 40       | 39      | 37       | 45    | 69    | --  | --   | 81   | 78     | --        |
| Average..... | 64      | 62  | 51       | 50  | 44       | 43      | 38       | 38    | 52    | 65  | 65   | 74   | 80     | 78        |

## LITTLE KANAWHA RIVER AT GLENVILLE, W. VA.

LOCATION.--At waterplant, at Glenville, Gilmer County, half a mile upstream from gaging station.

DRAINAGE AREA.--386 square miles, above gaging station.

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F July 20-22; minimum, 33°F Jan. 17-19.

EXTREMES, 1946-57.--Water temperatures: Maximum, 86°F Aug. 22, 1947, July 31, Aug. 1-6, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 63   | 59   | 37   | 38   | 43   | 45   | 50   | 70  | 74   | 74   | 78   | 74    |
| 2       | 63   | 59   | 39   | 37   | 44   | 44   | 51   | 68  | 72   | 75   | 78   | 74    |
| 3       | 64   | 60   | 40   | 36   | 45   | 43   | 52   | 65  | 73   | 76   | 78   | 74    |
| 4       | 64   | 61   | 41   | 36   | 46   | 42   | 53   | 64  | 73   | 77   | 78   | 74    |
| 5       | 64   | 61   | 42   | 37   | 46   | 41   | 54   | 65  | 70   | 78   | 76   | 73    |
| 6       | 63   | 60   | 43   | 38   | 44   | 43   | 55   | 67  | 70   | 78   | 73   | 73    |
| 7       | 62   | 59   | 42   | 38   | 45   | 44   | 53   | 68  | 70   | 78   | 74   | 72    |
| 8       | 62   | 58   | 42   | 38   | 46   | 43   | 52   | 69  | 71   | 77   | 75   | 72    |
| 9       | 61   | 57   | 42   | 38   | 45   | 42   | 50   | 70  | 71   | 75   | 74   | 71    |
| 10      | 60   | 56   | 43   | 37   | 45   | 43   | 49   | 70  | 74   | 74   | 73   | 70    |
| 11      | 59   | 55   | 44   | 36   | 44   | 44   | 50   | 71  | 75   | 76   | 74   | 70    |
| 12      | 58   | 53   | 44   | 36   | 43   | 46   | 52   | 71  | 75   | 78   | 74   | 70    |
| 13      | 59   | 52   | 48   | 36   | 43   | 48   | 51   | 72  | 76   | 78   | 74   | 70    |
| 14      | 60   | 51   | 48   | 35   | 42   | 50   | 51   | 72  | 77   | 79   | 74   | 70    |
| 15      | 59   | 50   | 49   | 34   | 41   | 49   | 52   | 72  | 78   | 79   | 74   | 70    |
| 16      | 58   | 49   | 49   | 34   | 41   | 48   | 52   | 72  | 76   | 80   | 74   | 70    |
| 17      | 60   | 48   | 50   | 33   | 41   | 48   | 53   | 71  | 74   | 80   | 74   | 71    |
| 18      | 60   | 47   | 47   | 33   | 41   | 47   | 56   | 72  | 75   | 80   | 75   | 71    |
| 19      | 60   | 46   | 44   | 33   | 40   | 45   | 58   | 71  | 75   | 80   | 74   | 71    |
| 20      | 61   | 45   | 46   | 34   | 40   | 46   | 61   | 68  | 76   | 81   | 74   | 71    |
| 21      | 61   | 43   | 47   | 35   | 40   | 48   | 66   | 66  | 78   | 81   | 73   | 71    |
| 22      | 61   | 43   | 49   | 38   | 40   | 48   | 62   | 67  | 78   | 81   | 72   | 72    |
| 23      | 61   | 42   | 50   | 44   | 40   | 48   | 63   | 68  | 78   | 77   | 71   | 67    |
| 24      | 61   | 40   | 48   | 42   | 43   | 49   | 64   | 70  | 78   | 78   | 70   | 65    |
| 25      | 60   | 39   | 47   | 40   | 46   | 49   | 68   | 72  | 78   | 77   | 71   | 63    |
| 26      | 60   | 39   | 45   | 38   | 48   | 50   | 70   | 73  | 78   | 77   | 71   | 63    |
| 27      | 60   | 38   | 44   | 38   | 48   | 50   | 71   | 74  | 75   | 78   | 72   | 62    |
| 28      | 60   | 37   | 43   | 40   | 48   | 48   | 72   | 71  | 73   | 78   | 71   | 60    |
| 29      | 60   | 37   | 41   | 44   | --   | 47   | 72   | 70  | 74   | 78   | 72   | 60    |
| 30      | 60   | 36   | 40   | 45   | --   | 48   | 72   | 74  | 75   | 78   | 73   | 60    |
| 31      | 59   | --   | 39   | 44   | --   | 48   | --   | 74  | --   | 78   | 74   | --    |
| Average | 61   | 49   | 44   | 38   | 44   | 46   | 58   | 70  | 75   | 78   | 74   | 69    |

## HOCKING RIVER BASIN

## HOCKING RIVER AT ATHENS, OHIO

LOCATION.--At gaging station at Mill Street Bridge at Athens, Athens County, and 3½ miles downstream from Margaret Creek.

DRAINAGE AREA.--944 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1956 to September 1957.

Sediment records: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 790 ppm Nov. 1-15, Dec. 1-9; minimum, 174 ppm Feb. 10-12.

Hardness: Maximum, 455 ppm Dec. 1-9; minimum, 111 ppm Feb. 10-12.

Specific conductance: Maximum daily, 1,220 micromhos Sept. 20; minimum daily, 240 micromhos Feb. 10.

Water temperatures: Maximum, 80°F July 22; minimum, 33°F on several days during January.

Sediment concentrations: Maximum daily, 1,080 ppm Jan. 10; minimum daily, 1 ppm on several days during October and November.

Sediment loads: Maximum daily, 14,000 tons Jan. 10; minimum daily, less than 0.5 ton on many days during October, November, August and September.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 1,093 ppm Oct. 10, 1955; minimum, 150 ppm Feb. 7-8, 1955.

Hardness: Maximum, 596 ppm Oct. 10, 1955; minimum, 94 ppm Feb. 7-8, 1955.

Specific conductance: Maximum daily, 1,360 micromhos Oct. 10, 1955; minimum daily, 221 micromhos Feb. 7, 1955.

Water temperatures: Maximum, 84°F Aug. 7, 1955; minimum, freezing point on several days during December 1954, January, February, and December 1955.

REMARKS.--Records of specific conductance of daily samples available at district office at Columbus, Ohio. Records of discharge for water year.

October 1956 to September 1957 given in WSP 1505. Tom Jenkins Reservoir and mill above station have some effect on flow. Flow affected by ice.

Jan. 16-20.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|----------------------------------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                    |                      |                  |                            |               |           |                |              |                |             |               |                                                    |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| Oct. 1-15, 1956... | 107                  |                  | 12                         |               | 0.00      | 0.00           | 96           | 39             | 48          | 3.9           | 78                                                 | 344           | 55           | 4.0                        | 685                                                | 400                           | 336           |                                    | 944                                       | 7.5 | 1     |
| Oct. 16-31.....    | 98.4                 |                  | 11                         |               | 0.00      | 0.04           | 106          | 44             | 55          | 4.5           | 74                                                 | 395           | 57           | 2.9                        | 770                                                | 446                           | 385           |                                    | 1,040                                     | 7.5 | 1     |
| Nov. 1-15.....     | 89.3                 |                  | 11                         |               | 0.06      | 0.00           | 105          | 45             | 58          | 4.2           | 81                                                 | 403           | 68           | 2.6                        | 790                                                | 451                           | 385           |                                    | 1,060                                     | 7.5 | 1     |
| Nov. 16-30.....    | 118                  |                  | 10                         |               | 0.06      | 0.89           | 98           | 44             | 56          | 3.6           | 78                                                 | 372           | 62           | 2.0                        | 740                                                | 426                           | 382           |                                    | 1,010                                     | 7.3 | 1     |
| Dec. 1-9.....      | 171                  |                  | 12                         |               | 0.01      | 0.04           | 105          | 47             | 56          | 3.9           | 39                                                 | 410           | 68           | 3.2                        | 790                                                | 455                           | 423           |                                    | 1,070                                     | 7.2 | 1     |
| Dec. 10-20.....    | 111                  |                  | 8.8                        |               | 0.03      | 0.72           | 48           | 20             | 18          | 2.9           | 37                                                 | 158           | 27           | 3.2                        | 329                                                | 202                           | 172           |                                    | 503                                       | 7.0 | 3     |
| Dec. 21-31.....    | 642                  |                  | 9.6                        |               | 0.05      | 1.9            | 54           | 23             | 25          | 2.5           | 57                                                 | 175           | 32           | 3.3                        | 377                                                | 229                           | 183           |                                    | 564                                       | 7.4 | 4     |
| Jan. 1-9, 1957...  | 380                  |                  | 9.3                        |               | 0.00      | 1.5            | 61           | 26             | 26          | 1.4           | 67                                                 | 193           | 33           | 1                          | 421                                                | 259                           | 204           |                                    | 630                                       | 7.8 | 1     |
| Jan. 10-15.....    | 1,940                |                  | 6.0                        |               | 0.00      | 0.62           | 42           | 13             | 1.5         | 4.2           | 134                                                | 16            | 2            | 5.8                        | 253                                                | 179                           | 145           |                                    | 393                                       | 7.4 | 3     |
| Jan. 16-22.....    | 466                  |                  | 9.6                        |               | 0.00      | 2.2            | 61           | 26             | 26          | 1.7           | 64                                                 | 197           | 32           | 2                          | 424                                                | 259                           | 207           |                                    | 624                                       | 7.5 | 2     |
| Jan. 23-Feb. 9...  | 1,500                |                  | 7.6                        |               | 0.02      | 0.56           | 43           | 16             | 1.4         | 1.9           | 48                                                 | 125           | 19           | 3.4                        | 269                                                | 173                           | 134           |                                    | 423                                       | 7.6 | 2     |
| Feb. 10-12.....    | 6,350                |                  | 7.6                        |               | 0.10      | 0.08           | 28           | 16             | 6.7         | 2.5           | 32                                                 | 82            | 9.6          | 2                          | 174                                                | 111                           | 85            |                                    | 276                                       | 7.4 | 5     |
| Feb. 13-16.....    | 1,940                |                  | 7.6                        |               | 0.05      | 0.31           | 42           | 16             | 12          | 1.6           | 52                                                 | 125           | 16           | 3.4                        | 261                                                | 171                           | 129           |                                    | 400                                       | 7.6 | 1     |
| Feb. 17-28.....    | 717                  |                  | 9.2                        |               | 0.03      | 0.04           | 61           | 24             | 20          | 1.7           | 68                                                 | 186           | 24           | 1                          | 397                                                | 251                           | 195           |                                    | 598                                       | 7.9 | 2     |
| Mar. 1-15.....     | 997                  |                  | 8.0                        |               | 0.03      | 0.41           | 48           | 19             | 17          | 1.6           | 59                                                 | 144           | 19           | 0                          | 313                                                | 198                           | 150           |                                    | 490                                       | 7.7 | 3     |
| Mar. 16-30.....    | 724                  |                  | 7.9                        |               | 0.07      | 1.5            | 52           | 23             | 19          | 1.7           | 68                                                 | 172           | 23           | 0                          | 352                                                | 224                           | 169           |                                    | 542                                       | 7.7 | 3     |
| Mar. 31-Apr. 4...  | 1,500                |                  | 8.3                        |               | 0.05      | 0.25           | 43           | 17             | 13          | 2.1           | 58                                                 | 136           | 16           | 2                          | 282                                                | 177                           | 130           |                                    | 444                                       | 7.7 | 3     |
| Apr. 5-10.....     | 5,980                |                  | 8.3                        |               | 0.14      | 0.12           | 30           | 11             | 7.5         | 1.9           | 66                                                 | 136           | 17           | 2                          | 187                                                | 120                           | 82            |                                    | 290                                       | 7.4 | 7     |
| Apr. 11-16.....    | 1,740                |                  | 8.7                        |               | 0.08      | 0.03           | 47           | 19             | 14          | 1.7           | 68                                                 | 136           | 17           | 2                          | 296                                                | 195                           | 140           |                                    | 445                                       | 8.0 | 2     |
| Apr. 19-21.....    | 3,580                |                  | 8.7                        |               | 0.08      | 0.00           | 31           | 13             | 8.4         | 1.7           | 43                                                 | 94            | 10           | 2                          | 296                                                | 131                           | 96            |                                    | 311                                       | 7.6 | 4     |
| Apr. 22-30.....    | 1,390                |                  | 9.5                        |               | 0.05      | 0.00           | 45           | 18             | 13          | 1.6           | 60                                                 | 138           | 14           | 2                          | 286                                                | 186                           | 137           |                                    | 430                                       | 7.8 | 2     |

|                             |      |     |      |      |     |    |    |     |     |     |    |     |     |     |     |     |       |     |   |
|-----------------------------|------|-----|------|------|-----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-------|-----|---|
| May 1-10, 1957...           | 472  | 8.2 | 0.03 | 0.07 | 68  | 29 | 23 | 2.8 | 88  | 227 | 26 | 0.2 | 2.2 | 454 | 289 | 217 | 624   | 7.9 | 1 |
| May 11-22.....              | 519  | 8.4 | .03  | .21  | 69  | 29 | 26 | 2.7 | 68  | 239 | 32 | .2  | 2.2 | 455 | 291 | 236 | 648   | 7.3 | 2 |
| May 23-June 4....           | 982  | 10  | .07  | .11  | 46  | 23 | 14 | 2.4 | 64  | 155 | 16 | .2  | 3.9 | 319 | 210 | 157 | 458   | 7.3 | 5 |
| June 5-12.....              | 312  | 12  | .00  | .03  | 66  | 24 | 22 | 2.8 | 102 | 198 | 24 | .2  | 3.8 | 410 | 263 | 180 | 625   | 7.7 | 3 |
| June 13-25.....             | 288  | 12  | .03  | .23  | 80  | 30 | 32 | 2.5 | 102 | 257 | 35 | .2  | 2.6 | 542 | 323 | 240 | 773   | 7.9 | 4 |
| June 26-July 5....          | 501  | 10  | .41  | .04  | 58  | 20 | 14 | 3.2 | 92  | 150 | 17 | .2  | 7.6 | 338 | 227 | 151 | 506   | 7.8 | 8 |
| July 6-16.....              | 146  | 9.2 | .01  | .03  | 82  | 34 | 30 | 3.0 | 144 | 236 | 34 | .2  | 1.8 | 521 | 345 | 227 | 770   | 8.0 | 4 |
| July 17-24.....             | 129  | 5.3 | .01  | .00  | 87  | 37 | 44 | 3.0 | 144 | 268 | 43 | .3  | .9  | 557 | 369 | 251 | 851   | 8.0 | 3 |
| July 25-30.....             | 158  | 6.7 | .02  | .00  | 66  | 27 | 32 | 3.9 | 96  | 208 | 32 | .3  | 4.1 | 428 | 276 | 197 | 652   | 7.7 | 4 |
| July 31-Aug. 15...          | 82.6 | 4.7 | .01  | .00  | 88  | 36 | 42 | 4.2 | 108 | 294 | 43 | .4  | 1.6 | 581 | 368 | 279 | 854   | 7.7 | 4 |
| Aug. 16-31.....             | 60.4 | 2.5 | .01  | .00  | 93  | 37 | 54 | 3.8 | 130 | 297 | 60 | .3  | 1.3 | 632 | 384 | 278 | 918   | 7.9 | 4 |
| Sept. 1-10.....             | 57.8 | 4.9 | .05  | .03  | 97  | 42 | 58 | 4.2 | 120 | 332 | 62 | .4  | 1.8 | 682 | 415 | 316 | 992   | 7.7 | 2 |
| Sept. 11-19.....            | 75.1 | 4.9 | .12  | .06  | 94  | 37 | 60 | 4.2 | 131 | 298 | 66 | .2  | 2.7 | 657 | 387 | 279 | 962   | 7.7 | 3 |
| Sept. 20-30.....            | 71.7 | 10  | .06  | .57  | 105 | 44 | 62 | 4.5 | 71  | 412 | 58 | .3  | 5.1 | 750 | 443 | 385 | 1,060 | 7.3 | 5 |
| Time-weighted average ..... | 690  | 8.6 | 0.04 | 0.37 | 72  | 30 | 33 | 2.9 | 79  | 240 | 37 | 0.2 | 3.1 | 490 | 303 | 239 | 708   | --  | 3 |

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--Continued

Temperature (°F) of water, water year October 1956 to September 1957

Once-daily measurement at approximately 7 a. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 57   | 58   | 35   | 35   | 36   | 41   | 47   | 63  | 68   | 70   | 76   | 74    |
| 2       | 62   | 56   | 36   | 33   | 37   | 41   | 49   | 63  | 66   | 71   | 77   | 75    |
| 3       | 61   | 56   | 40   | 33   | 38   | 39   | 47   | 60  | 65   | 71   | 78   | 76    |
| 4       | 62   | 57   | 37   | 33   | 40   | 37   | 46   | 51  | 64   | 73   | 79   | 75    |
| 5       | 61   | 57   | 39   | 33   | 40   | 37   | 48   | 53  | 66   | 73   | 77   | 73    |
| 6       | 60   | 55   | 42   | 33   | 38   | 39   | 48   | 52  | 68   | 72   | 73   | 71    |
| 7       | 59   | 57   | 46   | 34   | 39   | 40   | 44   | 53  | 69   | 73   | 72   | 70    |
| 8       | 56   | 54   | 46   | 33   | 39   | 41   | 47   | 55  | 69   | 75   | 72   | 68    |
| 9       | 56   | 51   | 48   | 34   | 39   | 37   | 42   | 58  | 67   | 76   | 73   | 69    |
| 10      | 53   | 50   | 43   | 36   | 41   | 38   | 43   | 61  | 67   | 75   | 74   | 71    |
| 11      | 52   | 48   | 41   | 34   | 43   | 40   | 46   | 64  | 69   | 75   | 75   | 69    |
| 12      | 53   | 51   | 41   | 33   | 38   | 41   | 49   | 65  | 70   | 76   | 75   | 71    |
| 13      | 53   | 46   | 40   | 34   | 38   | 42   | 47   | 66  | 70   | 76   | 74   | 71    |
| 14      | 53   | 46   | 42   | 33   | 40   | 48   | 45   | 69  | 72   | 76   | 74   | 71    |
| 15      | 54   | 46   | 45   | 33   | 38   | 49   | 44   | 69  | 72   | 76   | 76   | 72    |
| 16      | 54   | 50   | 46   | 33   | 38   | 49   | 46   | 65  | 74   | 76   | 76   | 71    |
| 17      | 55   | 42   | 44   | 33   | 37   | 47   | 47   | 64  | 76   | 75   | 75   | 70    |
| 18      | 50   | 42   | 44   | 33   | 36   | 48   | 50   | 65  | 78   | 76   | 72   | 70    |
| 19      | 57   | 45   | 40   | 33   | 38   | 49   | 52   | 65  | 79   | 78   | 73   | 70    |
| 20      | 59   | 45   | 42   | 33   | 36   | 46   | 50   | 65  | 77   | 78   | 71   | 72    |
| 21      | 58   | 46   | 44   | 34   | 36   | 44   | 59   | 62  | 76   | 79   | 66   | 71    |
| 22      | 60   | 40   | 46   | 35   | 36   | 45   | 62   | 63  | 75   | 80   | 70   | 72    |
| 23      | 60   | 40   | 47   | 37   | 40   | 45   | 61   | 63  | 76   | 79   | 70   | 70    |
| 24      | 58   | 35   | 48   | 35   | 40   | 46   | 63   | 65  | 76   | 76   | 71   | 66    |
| 25      | 57   | 35   | 40   | 35   | 43   | 45   | 64   | 64  | 75   | 74   | 71   | 63    |
| 26      | --   | 35   | 40   | 35   | 48   | 45   | 65   | 67  | 70   | 72   | 70   | 66    |
| 27      | 55   | 35   | 40   | 35   | 49   | 44   | 64   | 67  | 70   | 74   | 70   | 62    |
| 28      | 54   | 34   | 40   | 36   | 45   | 43   | 66   | 62  | 73   | 74   | 71   | 60    |
| 29      | 54   | 36   | 35   | 36   | --   | 42   | 65   | 62  | 72   | 74   | 70   | 59    |
| 30      | 55   | 35   | 36   | 35   | --   | 41   | 63   | 64  | 71   | 76   | 72   | 61    |
| 31      | 57   | --   | 36   | 36   | --   | 42   | --   | 65  | --   | 76   | 73   | --    |
| Average | 56   | 46   | 42   | 34   | 40   | 43   | 52   | 62  | 71   | 75   | 73   | 69    |

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                                                     |                    | November              |                                                     |                    | December              |                                                     |                    |
|---------|-----------------------|-----------------------------------------------------|--------------------|-----------------------|-----------------------------------------------------|--------------------|-----------------------|-----------------------------------------------------|--------------------|
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day |
| 1.....  | 88                    |                                                     |                    | 97                    | 1                                                   | (t)                | 116                   |                                                     |                    |
| 2.....  | 84                    |                                                     |                    | 95                    | 2                                                   | (t)                | 111                   |                                                     |                    |
| 3.....  | 84                    |                                                     |                    | 97                    | 3                                                   | 1                  | 111                   | --                                                  | e 1                |
| 4.....  | 126                   |                                                     |                    | 97                    | 7                                                   | 2                  | 111                   |                                                     |                    |
| 5.....  | 150                   |                                                     |                    | 90                    | 7                                                   | 2                  | 111                   | 2                                                   | 1                  |
| 6.....  | 163                   |                                                     |                    | 90                    | 6                                                   | 1                  | 109                   | 4                                                   | 1                  |
| 7.....  | 139                   |                                                     |                    | 88                    | 7                                                   | 2                  | 109                   | 12                                                  | 4                  |
| 8.....  | 121                   | --                                                  | e 1                | 90                    | 6                                                   | 1                  | 147                   | 3                                                   | 1                  |
| 9.....  | 111                   |                                                     |                    | 90                    | 4                                                   | 1                  | 618                   | 95                                                  | sb 330             |
| 10..... | 100                   |                                                     |                    | 88                    | 2                                                   | (t)                | 1,870                 | 658                                                 | s 3,510            |
| 11..... | 93                    |                                                     |                    | 86                    | 1                                                   | (t)                | 1,030                 | 36                                                  | s 110              |
| 12..... | 86                    |                                                     |                    | 84                    | 2                                                   | (t)                | 664                   | 11                                                  | 20                 |
| 13..... | 86                    |                                                     |                    | 84                    | 2                                                   | (t)                | 546                   | 4                                                   | 6                  |
| 14..... | 86                    | 2                                                   | (t)                | 82                    | 2                                                   | (t)                | 1,410                 | 380                                                 | sb 2,000           |
| 15..... | 86                    | 2                                                   | (t)                | 82                    | 1                                                   | (t)                | 2,380                 | 546                                                 | 3,510              |
| 16..... | 86                    | 2                                                   | (t)                | 84                    | 2                                                   | (t)                | 1,540                 | 88                                                  | 366                |
| 17..... | 84                    | 4                                                   | a 1                | 84                    | 3                                                   | 1                  | 995                   | 33                                                  | 89                 |
| 18..... | 84                    | 7                                                   | 2                  | 86                    | 3                                                   | 1                  | 730                   | 17                                                  | 34                 |
| 19..... | 84                    | 4                                                   | a 1                | 84                    | 3                                                   | 1                  | 552                   | 11                                                  | 16                 |
| 20..... | 86                    | 2                                                   | (t)                | 84                    | 3                                                   | a 1                | 465                   | 11                                                  | 14                 |
| 21..... | 90                    | 2                                                   | (t)                | 93                    | 3                                                   | 1                  | 766                   | 27                                                  | 56                 |
| 22..... | 97                    | 3                                                   | 1                  | 139                   | 2                                                   | 1                  | 960                   | 32                                                  | 83                 |
| 23..... | 118                   | 2                                                   | 1                  | 204                   | 3                                                   | 2                  | 890                   | 24                                                  | 58                 |
| 24..... | 118                   | 2                                                   | 1                  | 166                   | 2                                                   | 1                  | 724                   | 18                                                  | 35                 |
| 25..... | 114                   | 2                                                   | 1                  | 131                   | 2                                                   | 1                  | 602                   | 14                                                  | 23                 |
| 26..... | 106                   | 2                                                   | 1                  | 116                   | 1                                                   | (t)                | 514                   | 12                                                  | 17                 |
| 27..... | 104                   | 3                                                   | 1                  | 126                   | 1                                                   | (t)                | 465                   | 11                                                  | 14                 |
| 28..... | 104                   | 1                                                   | (t)                | 128                   | 1                                                   | (t)                | 470                   | 11                                                  | 14                 |
| 29..... | 102                   | 2                                                   | 1                  | 126                   | 1                                                   | (t)                | 558                   | 13                                                  | 20                 |
| 30..... | 100                   | 3                                                   | 1                  | 121                   | 1                                                   | (t)                | 560                   | 15                                                  | 23                 |
| 31..... | 97                    | 2                                                   | 1                  | --                    | --                                                  | --                 | 530                   | 15                                                  | 22                 |
| Total.. | 3,177                 | --                                                  | 29                 | 3,112                 | --                                                  | 25                 | 20,784                | --                                                  | 10,380             |
|         |                       |                                                     |                    |                       |                                                     |                    |                       |                                                     |                    |
| Day     | January               |                                                     |                    | February              |                                                     |                    | March                 |                                                     |                    |
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons<br>per<br>day |
| 1.....  | 519                   | 16                                                  | 22                 | 1,100                 | 34                                                  | 101                | 1,320                 | 94                                                  | 335                |
| 2.....  | 454                   | 18                                                  | 22                 | 1,480                 | 90                                                  | 360                | 1,380                 | 92                                                  | 343                |
| 3.....  | 380                   | 16                                                  | a 16               | 1,320                 | 50                                                  | 178                | 1,160                 | 63                                                  | 197                |
| 4.....  | 380                   | 13                                                  | 13                 | 1,200                 | 36                                                  | 117                | 890                   | 39                                                  | 94                 |
| 5.....  | 375                   | 10                                                  | 10                 | 1,160                 | 25                                                  | 78                 | 806                   | 25                                                  | a 55               |
| 6.....  | 336                   | 10                                                  | 9                  | 1,320                 | 65                                                  | 232                | 730                   | 21                                                  | 41                 |
| 7.....  | 320                   | 7                                                   | 6                  | 1,200                 | 49                                                  | 159                | 718                   | 22                                                  | 43                 |
| 8.....  | 305                   | 6                                                   | 5                  | 1,300                 | 38                                                  | 133                | 754                   | 18                                                  | 37                 |
| 9.....  | 356                   | 10                                                  | 10                 | 2,840                 | 470                                                 | sb 3,900           | 806                   | 33                                                  | 72                 |
| 10..... | 4,350                 | 1,080                                               | s 14,000           | 7,480                 | 581                                                 | 11,700             | 1,030                 | 44                                                  | 122                |
| 11..... | 3,400                 | 288                                                 | s 2,860            | 7,180                 | 246                                                 | 4,770              | 1,260                 | 64                                                  | 218                |
| 12..... | 1,500                 | 122                                                 | 494                | 4,400                 | 168                                                 | 2,000              | 1,230                 | 48                                                  | 159                |
| 13..... | 1,030                 | 50                                                  | 139                | 2,780                 | 120                                                 | 901                | 1,130                 | 46                                                  | 140                |
| 14..... | 766                   | 34                                                  | 70                 | 2,130                 | 84                                                  | 483                | 925                   | 31                                                  | 77                 |
| 15..... | 590                   |                                                     |                    | 1,600                 | 65                                                  | 281                | 812                   | 25                                                  | 55                 |
| 16..... | 500                   | --                                                  | e 35               | 1,260                 | 57                                                  | 194                | 724                   |                                                     |                    |
| 17..... | 430                   |                                                     |                    | 1,100                 | 50                                                  | 148                | 652                   |                                                     |                    |
| 18..... | 380                   |                                                     |                    | 925                   | 38                                                  | 95                 | 596                   | --                                                  | e 35               |
| 19..... | 340                   | 16                                                  | 15                 | 858                   | 37                                                  | 86                 | 590                   |                                                     |                    |
| 20..... | 310                   | 11                                                  | 9                  | 760                   | 32                                                  | 66                 | 629                   |                                                     |                    |
| 21..... | 375                   | 16                                                  | 16                 | 658                   | 28                                                  | 50                 | 590                   | 12                                                  | 19                 |
| 22..... | 928                   | 34                                                  | s 99               | 629                   | 26                                                  | 44                 | 541                   | 12                                                  | 18                 |
| 23..... | 3,580                 | 340                                                 | sb 3,500           | 602                   | 24                                                  | 39                 | 524                   | 13                                                  | 18                 |
| 24..... | 3,060                 | 368                                                 | 3,040              | 580                   | 19                                                  | 30                 | 480                   | 9                                                   | 10                 |
| 25..... | 1,440                 | 112                                                 | 435                | 563                   | 16                                                  | 24                 | 449                   | 9                                                   | 11                 |
| 26..... | 1,100                 | 57                                                  | 169                | 552                   | 12                                                  | 18                 | 585                   | 12                                                  | 19                 |
| 27..... | 890                   | 37                                                  | 89                 | 629                   | 12                                                  | 20                 | 1,300                 | 107                                                 | s 400              |
| 28..... | 818                   | 31                                                  | 68                 | 773                   | 21                                                  | 44                 | 1,260                 | 74                                                  | 252                |
| 29..... | 1,030                 | 39                                                  | 108                | --                    | --                                                  | --                 | 1,030                 | 41                                                  | 114                |
| 30..... | 1,160                 | 47                                                  | 147                | --                    | --                                                  | --                 | 890                   | 27                                                  | 65                 |
| 31..... | 1,030                 | 37                                                  | 103                | --                    | --                                                  | --                 | 766                   | 25                                                  | 52                 |
| Total.. | 32,432                | --                                                  | 25,614             | 48,379                | --                                                  | 26,251             | 26,675                | --                                                  | 3,141              |

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASIN

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 706                  | 21                       | 40           | 700                  | 13                       | 24           | 409                  | 6                        | 7            |
| 2.....                                   | 1,390                | 70                       | s 306        | 634                  | 9                        | 15           | 766                  | 18                       | s 51         |
| 3.....                                   | 2,330                | 225                      | 1,420        | 563                  | 6                        | 9            | 1,230                | 246                      | s 750        |
| 4.....                                   | 2,330                | 146                      | s 993        | 492                  | 6                        | 8            | 624                  | 63                       | s 112        |
| 5.....                                   | 5,520                | 526                      | 7,840        | 459                  | 8                        | 10           | 449                  | 15                       | 18           |
| 6.....                                   | 7,090                | 283                      | 5,420        | 428                  | 7                        | 8            | 375                  | 9                        | 9            |
| 7.....                                   | 5,450                | 142                      | 2,090        | 404                  | 6                        | 6            | 332                  | 8                        | 7            |
| 8.....                                   | 3,460                | 265                      | s 2,620      | 371                  | 4                        | 4            | 312                  | 8                        | 7            |
| 9.....                                   | 4,790                | 271                      | 3,500        | 341                  | 3                        | 3            | 279                  | 7                        | 5            |
| 10.....                                  | 4,140                | 182                      | 2,030        | 324                  | 4                        | 3            | 257                  | 6                        | 4            |
| 11.....                                  | 2,530                | 123                      | 840          | 320                  | 4                        | 3            | 250                  | 5                        | 3            |
| 12.....                                  | 1,870                | 88                       | 444          | 320                  | 5                        | 4            | 240                  | 4                        | 2            |
| 13.....                                  | 1,540                | 70                       | 291          | 301                  | 4                        | 3            | 250                  | 5                        | 3            |
| 14.....                                  | 1,300                | 57                       | 200          | 297                  | 7                        | 6            | 349                  | 7                        | 6            |
| 15.....                                  | 1,100                | 44                       | 131          | 600                  | 17                       | 28           | 354                  | 8                        | 8            |
| 16.....                                  | 960                  | 40                       | 104          | 634                  | 17                       | 29           | 271                  | 4                        | 3            |
| 17.....                                  | 960                  | 75                       | 194          | 394                  | 8                        | 8            | 226                  | 3                        | 2            |
| 18.....                                  | 3,700                | 399                      | s 4,330      | 332                  | 8                        | 7            | 201                  | 3                        | 2            |
| 19.....                                  | 5,590                | 189                      | 2,850        | 480                  | 18                       | 23           | 186                  | 4                        | 2            |
| 20.....                                  | 3,110                | 114                      | 957          | 694                  | 50                       | 94           | 163                  | 5                        | 2            |
| 21.....                                  | 2,030                | 87                       | 477          | 730                  | 17                       | 34           | 158                  | 8                        | 3            |
| 22.....                                  | 1,540                | 62                       | 258          | 1,130                | 80                       | sb 310       | 141                  | 8                        | 3            |
| 23.....                                  | 1,380                | 56                       | 209          | 2,130                | 283                      | 1,630        | 136                  | 7                        | 2            |
| 24.....                                  | 1,360                | 62                       | 228          | 1,260                | 66                       | s 255        | 141                  | 9                        | 3            |
| 25.....                                  | 1,870                | 255                      | 1,290        | 760                  | 16                       | 33           | 1,170                | 85                       | sb 390       |
| 26.....                                  | 1,920                | 221                      | 1,140        | 706                  | 17                       | 32           | 960                  | 240                      | sb 750       |
| 27.....                                  | 1,360                | 71                       | 261          | 1,820                | 216                      | s 1,130      | 389                  | 54                       | 57           |
| 28.....                                  | 1,160                | 47                       | 147          | 1,360                | 124                      | s 502        | 268                  | 30                       | 22           |
| 29.....                                  | 1,060                | 52                       | 149          | 718                  | 17                       | 33           | 528                  | 30                       | s 57         |
| 30.....                                  | 825                  | 18                       | 40           | 536                  | 6                        | 9            | 1,200                | 153                      | s 528        |
| 31.....                                  | --                   | --                       | --           | 449                  | 5                        | 6            | --                   | --                       | --           |
| Total.                                   | 74,371               | --                       | 40,799       | 20,687               | --                       | 4,269        | 12,614               | --                       | 2,818        |
|                                          | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....                                   | 590                  | 32                       | 51           | 111                  | 4                        | 1            | 50                   | 3                        | (t)          |
| 2.....                                   | 366                  | 18                       | 18           | 88                   | 6                        | 1            | 48                   | 4                        | 1            |
| 3.....                                   | 261                  | 13                       | 9            | 84                   | 12                       | 3            | 56                   | 5                        | 1            |
| 4.....                                   | 226                  | 14                       | 8            | 84                   | 11                       | 2            | 72                   | 4                        | 1            |
| 5.....                                   | 220                  | 12                       | 7            | 90                   | 12                       | 3            | 82                   | 4                        | 1            |
| 6.....                                   | 223                  | 7                        | 4            | 121                  | 12                       | 4            | 68                   | 4                        | 1            |
| 7.....                                   | 198                  | 6                        | 3            | 88                   | 10                       | 2            | 54                   | 6                        | 1            |
| 8.....                                   | 169                  | 5                        | 2            | 74                   | 10                       | 2            | 50                   | 8                        | 1            |
| 9.....                                   | 160                  | 4                        | 2            | 68                   | 9                        | 2            | 50                   | 3                        | (t)          |
| 10.....                                  | 150                  | 4                        | 2            | 68                   | 8                        | 1            | 48                   | 8                        | 1            |
| 11.....                                  | 136                  | 4                        | 1            | 66                   | 8                        | 1            | 51                   | 13                       | 2            |
| 12.....                                  | 128                  | 5                        | 2            | 66                   | 8                        | 1            | 60                   | 7                        | 1            |
| 13.....                                  | 118                  | 8                        | 2            | 66                   | 7                        | 1            | 65                   | 9                        | 2            |
| 14.....                                  | 114                  | 13                       | 4            | 65                   | 6                        | 1            | 70                   | 11                       | 2            |
| 15.....                                  | 109                  | 13                       | 4            | 65                   | 6                        | 1            | 82                   | 13                       | 3            |
| 16.....                                  | 104                  | 11                       | 3            | 93                   | 7                        | 2            | 114                  | 11                       | 3            |
| 17.....                                  | 100                  | 12                       | 3            | 80                   | 9                        | 2            | 95                   | 9                        | 2            |
| 18.....                                  | 90                   | 11                       | 3            | 68                   | 11                       | 2            | 74                   | 11                       | 2            |
| 19.....                                  | 88                   | 12                       | 3            | 60                   | 9                        | 1            | 65                   | 11                       | 2            |
| 20.....                                  | 86                   | 11                       | 2            | 54                   | 9                        | 1            | 60                   | 6                        | 1            |
| 21.....                                  | 86                   | 10                       | 2            | 53                   | 12                       | 2            | 58                   | 4                        | 1            |
| 22.....                                  | 82                   | 11                       | 2            | 51                   | 13                       | 2            | 63                   | 7                        | 1            |
| 23.....                                  | 128                  | 26                       | 9            | 51                   | 11                       | a 2          | 88                   | 10                       | 2            |
| 24.....                                  | 373                  | 32                       | 32           | 50                   | 8                        | 1            | 109                  | 8                        | 2            |
| 25.....                                  | 269                  | 19                       | 14           | 54                   | 7                        | 1            | 100                  | 8                        | 2            |
| 26.....                                  | 144                  | 12                       | 5            | 63                   | 6                        | 1            | 78                   | 7                        | 1            |
| 27.....                                  | 114                  | 8                        | 2            | 60                   | 6                        | 1            | 65                   | 7                        | 1            |
| 28.....                                  | 121                  | 7                        | 2            | 65                   | 6                        | 1            | 60                   | 7                        | 1            |
| 29.....                                  | 155                  | 10                       | 4            | 56                   | 5                        | 1            | 54                   | 8                        | 1            |
| 30.....                                  | 147                  | 11                       | 4            | 56                   | 3                        | (t)          | 54                   | 6                        | 1            |
| 31.....                                  | 118                  | 8                        | 2            | 53                   | 3                        | (t)          | --                   | --                       | --           |
| Total.                                   | 5,373                | --                       | 211          | 2,171                | --                       | 47           | 2,043                | --                       | 42           |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      |                          | 251,718      |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      |                          | 113,626      |

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;

W, in distilled water; C, Chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       | Methods of analysis |       |       |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|-------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |                     |       |       |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 |                     | 0.500 | 1.000 |
| Dec. 10, 1956      | 7:00 a. m.  | 2,080           |                        | 1,110                         | 1,790                                      | 39                                                | 50    | 67    | 86    | 96    | 99    | 100   | --    |       | BSWCM               |       |       |
| Jan. 10, 1957      | 8:00 a. m.  | 4,400           |                        | 1,370                         | 1,140                                      | 40                                                | 55    | 71    | 83    | 92    | 96    | 98    | 99    | 100   | BSWCM               |       |       |
| Feb. 9             | 8:00 a. m.  | 1,540           |                        | 1,460                         | 926                                        | 43                                                | 54    | 67    | 80    | 92    | 98    | 99    | 100   | --    | BSWCM               |       |       |
| Feb. 10            | 7:30 p. m.  | 7,760           |                        | 304                           | 612                                        | 46                                                | 60    | 72    | 83    | 92    | 96    | 98    | 100   | --    | BSWCM               |       |       |
| Apr. 5             | 12:30 p. m. | 5,660           |                        | 591                           | 922                                        | 44                                                | 55    | 71    | 83    | 91    | 96    | 98    | 99    | 100   | BSWCM               |       |       |
| Apr. 5             | 2:30 p. m.  | 5,870           |                        | 591                           | 1,200                                      | 48                                                | 62    | 75    | 86    | 92    | 95    | 97    | 99    | 100   | BSWCM               |       |       |
| Apr. 5             | 2:30 p. m.  | 5,670           |                        | 591                           | 1,260                                      | 28                                                | 43    | 65    | 83    | 92    | 95    | 97    | 99    | 100   | BSNM                |       |       |
| Apr. 8             | 3:00 p. m.  | 3,700           |                        | 572                           | 866                                        | 42                                                | 53    | 69    | 84    | 93    | 97    | 99    | 100   | --    | BSWCM               |       |       |
| Apr. 9             | 11:30 a. m. | 4,790           |                        | 318                           | 1,190                                      | 39                                                | 50    | 62    | 73    | 82    | 96    | 98    | 99    | 100   | BSWCM               |       |       |
| Apr. 9             | 11:30 a. m. | 4,790           |                        | 318                           | 1,010                                      | 13                                                | 25    | 41    | 65    | 87    | 96    | 98    | 99    | 100   | BSNM                |       |       |
| Apr. 9             | 5:00 p. m.  | 4,960           |                        | 298                           | 358                                        | 45                                                | 55    | 64    | 76    | 87    | 95    | 98    | 100   | --    | BSWCM               |       |       |
| Apr. 18            | 11:15 a. m. | 3,860           |                        | 534                           | 1,210                                      | 38                                                | 48    | 61    | 76    | 88    | 95    | 98    | 99    | 100   | BSWCM               |       |       |
| Apr. 25            | 9:00 a. m.  | 1,820           |                        | 434                           | 526                                        | 43                                                | 56    | 72    | 84    | 92    | 96    | 97    | 98    | 100   | BSWCM               |       |       |
| May 23             | 11:00 a. m. | 2,330           |                        | 357                           | 582                                        | 36                                                | 48    | 65    | 79    | 89    | 96    | 98    | 99    | 100   | BSWCM               |       |       |



## OHIO RIVER MAIN STEM

## OHIO RIVER AT LOCK AND DAM 22, AT RAVENSWOOD, W. VA.

LOCATION. --About 650 feet upstream from dam, lock and dam 22 (mile 220.9) at Ravenswood, Jackson County, 450 feet downstream from Sandy Creek, and 7,600 feet downstream from Turkey Run.  
DRAINAGE AREA. --39,840 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES 1956-57. --Dissolved solids: Maximum, 595 ppm Sept. 21-30; minimum, 129 ppm Feb. 1-10.

Hardness: Maximum, 270 ppm Sept. 21-30; minimum, 73 ppm Feb. 1-10.

Specific conductance: Maximum daily, 1,210 micromhos Sept. 30; minimum daily, 173 micromhos Feb. 13.

Water temperatures: Maximum, 82°F June 29; minimum, freezing point Jan. 16-24.

EXTREMES 1954-57. --Dissolved solids: Maximum, 595 ppm Sept. 21-30, 1957; minimum, 117 ppm Feb. 21-29, 1956.

Hardness: Maximum, 270 ppm Sept. 21-30, 1957; minimum, 69 ppm Mar. 1-10, 1955.

Specific conductance: Maximum daily, 1,210 micromhos Sept. 30, 1957; minimum daily, 109 micromhos Feb. 28, 1955.

Water temperatures: Maximum, 87°F Aug. 5-8, 1955; minimum, freezing point Jan. 30, 1955; Jan. 16-24, 1957.  
REMARKS. --Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection      | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-------------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                         |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| Oct. 1-10, 1956 .       |                      | 9.6                        | 0.00      | 0.00           | 38           | 9.8            | 22          | 2.5           | 30                              | 118                        | 26            | 0.3          | 3.2                        | 261                                                | 135                           | 110           |                                    | 392                                       | 7.0 | 2     |
| Oct. 11-20 .            |                      | 9.4                        | .00       | .05            | 45           | 12             | 26          | 3.1           | 42                              | 135                        | 29            | .4           | 6.1                        | 297                                                | 162                           | 128           |                                    | 460                                       | 7.0 | 2     |
| Oct. 21-31 .            |                      | 7.0                        | .06       | .00            | 57           | 12             | 38          | 3.8           | 26                              | 163                        | 54            | .4           | 4.5                        | 384                                                | 182                           | 169           |                                    | 600                                       | 6.6 | 2     |
| Nov. 1-10 .             |                      | 8.3                        | .03       | .15            | 56           | 13             | 42          | 3.8           | 35                              | 170                        | 53            | .5           | 4.6                        | 376                                                | 185                           | 165           |                                    | 618                                       | 6.7 | 5     |
| Nov. 11-20 .            |                      | 7.6                        | .00       | .38            | 65           | 14             | 46          | 4.8           | 29                              | 186                        | 66            | .5           | 3.6                        | 431                                                | 220                           | 186           |                                    | 705                                       | 6.7 | 2     |
| Nov. 21-31 .            |                      | 7.6                        | .01       | .78            | 65           | 15             | 54          | 4.3           | 23                              | 205                        | 70            | .3           | 3.8                        | 439                                                | 205                           | 205           |                                    | 712                                       | 6.4 | 1     |
| Dec. 1-10 .             |                      | 7.6                        | .06       | .66            | 56           | 13             | 44          | 4.5           | 37                              | 170                        | 54            | .3           | 1.6                        | 393                                                | 193                           | 163           |                                    | 622                                       | 6.7 | 5     |
| Dec. 11-14 .            |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                    |                                           |     |       |
| Dec. 15-20 .            |                      | 8.7                        | .00       | .75            | 46           | 12             | 37          | 4.4           | 41                              | 154                        | 43            | .5           | .6                         | 341                                                | 165                           | 131           |                                    | 530                                       | 6.9 | 6     |
| Dec. 21-31 .            |                      | 7.8                        | .00       | .20            | 27           | 7.0            | 15          | 1.8           | 27                              | 80                         | 20            | .1           | 2.1                        | 176                                                | 96                            | 74            |                                    | 286                                       | 6.7 | 5     |
| Jan. 1, 3, 5-10, 1957 . |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                    |                                           |     |       |
| Jan. 11-20 .            |                      | 6.7                        | .05       | .14            | 28           | 7.4            | 14          | 1.7           | 28                              | 75                         | 20            | .2           | 3.3                        | 176                                                | 101                           | 78            |                                    | 298                                       | 6.6 | 3     |
| Jan. 21-31 .            |                      | 6.5                        | .02       | .70            | 28           | 8.7            | 15          | 1.7           | 23                              | 89                         | 18            | .2           | 3.4                        | 186                                                | 106                           | 87            |                                    | 303                                       | 6.6 | 4     |
| Feb. 1-10 .             |                      | 5.9                        | .08       | .13            | 26           | 6.7            | 14          | 2.0           | 28                              | 70                         | 17            | .2           | 4.2                        | 167                                                | 92                            | 70            |                                    | 267                                       | 6.7 | 5     |
| Feb. 11-20 .            |                      | 5.7                        | .06       | .00            | 21           | 5.0            | 9.3         | 1.8           | 24                              | 56                         | 12            | .2           | 3.1                        | 129                                                | 73                            | 54            |                                    | 207                                       | 7.1 | 4     |
| Feb. 21-28 .            |                      | 6.4                        | .04       | .00            | 22           | 5.7            | 8.6         | 1.6           | 23                              | 58                         | 12            | .3           | 3.0                        | 137                                                | 78                            | 60            |                                    | 223                                       | 6.7 | 8     |
| Mar. 1-6, 8-10 .        |                      | 6.9                        | .05       | .03            | 31           | 8.6            | 13          | 1.5           | 26                              | 88                         | 19            | .2           | 3.5                        | 199                                                | 113                           | 92            |                                    | 318                                       | 6.8 | 4     |
| Mar. 11-20 .            |                      | 5.9                        | .03       | .03            | 27           | 7.4            | 13          | 1.5           | 26                              | 80                         | 16            | .3           | 3.3                        | 162                                                | 98                            | 76            |                                    | 273                                       | 7.0 | 2     |
| Mar. 21, 23-31 .        |                      | 5.8                        | .02       | .06            | 34           | 8.6            | 14          | 1.4           | 30                              | 84                         | 16            | .3           | 3.3                        | 178                                                | 105                           | 80            |                                    | 282                                       | 7.0 | 2     |
| Apr. 1-8, 10 .          |                      | 6.6                        | .06       | .19            | 35           | 8.6            | 15          | 1.8           | 34                              | 91                         | 19            | .2           | 3.5                        | 213                                                | 123                           | 95            |                                    | 335                                       | 7.0 | 1     |
| Apr. 11-20 .            |                      | 6.3                        | .04       | .00            | 27           | 7.1            | 9.0         | 1.5           | 30                              | 70                         | 11            | .2           | 3.0                        | 153                                                | 96                            | 72            |                                    | 255                                       | 6.9 | 4     |

|                             |     |      |      |    |     |    |     |    |     |     |     |     |     |     |     |     |     |   |
|-----------------------------|-----|------|------|----|-----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| Apr. 21-30, 1957            | 6.2 | 0.05 | 0.00 | 28 | 7.7 | 12 | 1.5 | 32 | 75  | 14  | 0.3 | 2.3 | 170 | 102 | 76  | 278 | 6.8 | 5 |
| May 1, 3, 5-10...           | 7.0 | .00  | .03  | 31 | 8.2 | 14 | 3.3 | 40 | 80  | 20  | .2  | 2.4 | 194 | 111 | 78  | 289 | 7.2 | 3 |
| May 11-20 .....             | 6.7 | .01  | .03  | 42 | 10  | 22 | 2.1 | 47 | 105 | 33  | .3  | 3.1 | 287 | 146 | 108 | 405 | 7.1 | 3 |
| May 21-30 .....             | 7.5 | .00  | .00  | 44 | 9.4 | 21 | 2.5 | 46 | 108 | 33  | .3  | 3.1 | 273 | 149 | 111 | 404 | 7.1 | 4 |
| June 1-10 .....             | 8.3 | .02  | .00  | 45 | 10  | 23 | 2.5 | 52 | 108 | 34  | .3  | 3.1 | 278 | 153 | 111 | 419 | 7.2 | 5 |
| June 11-20 .....            | 8.6 | .00  | .03  | 51 | 10  | 31 | 2.7 | 48 | 127 | 44  | .4  | 3.3 | 318 | 168 | 129 | 507 | 6.7 | 2 |
| June 21, 22,                |     |      |      |    |     |    |     |    |     |     |     |     |     |     |     |     |     |   |
| 26-30 .....                 | 7.5 | .00  | .03  | 57 | 12  | 38 | 3.4 | 49 | 155 | 50  | .5  | 3.5 | 364 | 192 | 152 | 585 | 6.9 | 3 |
| July 1-10 .....             | 9.0 | .01  | .03  | 49 | 7.0 | 23 | 3.0 | 53 | 102 | 31  | .3  | 3.6 | 260 | 151 | 108 | 425 | 6.8 | 7 |
| July 11, 14-18...           | 8.2 | .01  | .00  | 44 | 8.8 | 24 | 2.6 | 60 | 94  | 33  | .3  | 2.5 | 264 | 146 | 97  | 425 | 7.1 | 7 |
| July 21-25, 28-31           | 5.8 | .01  | .00  | 51 | 11  | 33 | 3.5 | 56 | 122 | 48  | .5  | 4.0 | 314 | 172 | 126 | 520 | 7.1 | 5 |
| Aug. 1-10 .....             | 2.0 | .00  | .18  | 61 | 12  | 44 | 3.7 | 62 | 136 | 76  | .3  | 2.2 | 381 | 202 | 151 | 629 | 7.1 | 7 |
| Aug. 11-20 .....            | 3.9 | .00  | .24  | 63 | 15  | 52 | 3.9 | 53 | 151 | 90  | .4  | 3.0 | 423 | 219 | 175 | 697 | 7.0 | 5 |
| Aug. 21-31 .....            | 3.5 | .03  | .00  | 70 | 15  | 47 | 4.6 | 52 | 168 | 94  | .5  | 3.7 | 443 | 236 | 194 | 754 | 7.1 | 3 |
| Sept. 1-10 .....            | 3.2 | .02  | .02  | 73 | 15  | 69 | 5.0 | 50 | 178 | 113 | .7  | 4.3 | 492 | 244 | 203 | 795 | 7.1 | 5 |
| Sept. 11-17, 19,            |     |      |      |    |     |    |     |    |     |     |     |     |     |     |     |     |     |   |
| 20 .....                    | 4.2 | .01  | .00  | 76 | 15  | 74 | 5.5 | 52 | 198 | 120 | .8  | 4.5 | 531 | 251 | 209 | 874 | 7.0 | 5 |
| Sept. 21-30 .....           | 3.0 | .05  | .00  | 80 | 17  | 86 | 6.4 | 47 | 224 | 132 | 1.0 | 4.2 | 595 | 270 | 231 | 957 | 7.0 | 6 |
| Time-weighted average ..... | 6.6 | 0.02 | 0.14 | 45 | 10  | 30 | 3.0 | 39 | 122 | 44  | 0.4 | 3.4 | 295 | 153 | 121 | 473 | --  | 4 |

a Represents 95 percent of days.

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 22, AT RAVENSWOOD, W. VA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection        | Chromium (Cr) |       | Nickel (Ni) | Copper (Cu) | Lead (Pb) | Zinc (Zn) | Cobalt (Co) | Arsenic (As) | Cadmium (Cd) |
|---------------------------|---------------|-------|-------------|-------------|-----------|-----------|-------------|--------------|--------------|
|                           | Hexa-valent   | Total |             |             |           |           |             |              |              |
| Oct. 1-10, 1956 .....     | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0.0          |
| Oct. 11-20 .....          | .00           | .00   | .00         | .00         | .01       | .00       | .00         | .00          | .0           |
| Oct. 21-31 .....          | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Nov. 1-10 .....           | .00           | .00   | .00         | .00         | .00       | .06       | .00         | .00          | .0           |
| Nov. 11-19 .....          | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Nov. 21-30 .....          | .00           | .00   | .00         | .00         | .00       | .27       | .00         | .00          | .0           |
| Dec. 1-10 .....           | .00           | .00   | .00         | .00         | .00       | .20       | .00         | .00          | .0           |
| Dec. 11-14, 16-20 .....   | .00           | .00   | .00         | .00         | .00       | .22       | .00         | .00          | .0           |
| Dec. 21-31 .....          | .00           | .00   | .00         | .00         | .00       | .06       | .00         | .00          | .0           |
| July 1-10, 1957 .....     | .00           | .00   | .00         | .00         | .00       | .08       | .00         | .00          | .0           |
| July 11, 14-18 .....      | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| July 21-25, 28-31 .....   | .00           | .00   | .00         | .00         | .00       | .00       | .01         | .00          | .0           |
| Aug. 1-10 .....           | .00           | .00   | .00         | .00         | .00       | .01       | .00         | .01          | .0           |
| Aug. 11-20 .....          | .00           | .00   | .00         | .00         | .00       | .04       | .00         | .00          | .0           |
| Aug. 21-31 .....          | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Sept. 1-10 .....          | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Sept. 11-17, 19, 20 ..... | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |
| Sept. 21-30 .....         | .00           | .00   | .00         | .00         | .00       | .00       | .00         | .00          | .0           |

| Date of collection | Phenols<br>as $C_6H_5OH$ | Cyanides<br>as CN |
|--------------------|--------------------------|-------------------|
| Oct. 5, 1956 ..... | 0.000                    | 0.00              |
| Oct. 15 .....      | .000                     | .00               |
| Oct. 25 .....      | .045                     | .00               |
| Nov. 5 .....       | .000                     | .01               |
| Nov. 15 .....      | .000                     | .01               |
| Nov. 25 .....      | .002                     | .01               |
| Dec. 5 .....       | .001                     | .00               |
| Dec. 15 .....      | .000                     | .01               |
| Dec. 25 .....      | .000                     | .01               |
| Jan. 5, 1957 ..... | .000                     | --                |
| Jan. 15 .....      | .009                     | --                |
| Jan. 25 .....      | .033                     | --                |
| Feb. 5 .....       | .005                     | --                |
| Feb. 15 .....      | .002                     | --                |
| Feb. 25 .....      | .016                     | --                |
| Mar. 5 .....       | .006                     | --                |
| Mar. 15 .....      | .000                     | --                |
| Mar. 25 .....      | .062                     | --                |
| July 5 .....       | .002                     | .01               |
| July 15 .....      | .000                     | .01               |
| July 25 .....      | .001                     | .00               |
| Aug. 5 .....       | .003                     | .01               |
| Aug. 15 .....      | .003                     | .01               |
| Aug. 25 .....      | .001                     | .01               |
| Sept. 5 .....      | .007                     | .00               |
| Sept. 15 .....     | .001                     | .00               |
| Sept. 25 .....     | .004                     | .01               |

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 22, AT RAVENSWOOD, W. VA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 6 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | 63   | 48   | 44   | 36   | 40   | 48   | 45  | 70   | 75   | 81   | 75    |
| 2       | 63   | 60   | 48   | --   | 36   | 40   | 47   | --  | 70   | 75   | 80   | 74    |
| 3       | 63   | 60   | 49   | 44   | 36   | 40   | 48   | 50  | 70   | 76   | 80   | 74    |
| 4       | 65   | 63   | 48   | --   | 36   | 40   | 47   | --  | 70   | 76   | 80   | 76    |
| 5       | 78   | 63   | 48   | 38   | 36   | 41   | 46   | 46  | 70   | 76   | 80   | 74    |
| 6       | 78   | 62   | 48   | 44   | 36   | 41   | 48   | 46  | 67   | 76   | 80   | 74    |
| 7       | 65   | 62   | 49   | 44   | 38   | --   | 48   | 47  | 74   | 77   | 80   | 74    |
| 8       | 65   | 60   | 49   | 44   | 40   | 38   | 48   | 46  | 74   | 78   | 80   | 74    |
| 9       | 63   | 58   | 49   | 38   | 40   | 38   | 49   | 47  | 74   | 78   | 80   | 74    |
| 10      | 62   | 58   | 48   | 38   | 40   | 41   | 49   | 68  | 75   | 79   | 79   | 74    |
| 11      | 65   | 62   | 48   | 38   | 40   | 41   | 49   | 69  | 75   | 78   | 79   | 70    |
| 12      | 65   | 55   | 48   | 38   | 40   | 44   | 48   | 69  | 76   | --   | 79   | 72    |
| 13      | 65   | 55   | 48   | 36   | 40   | 45   | 48   | 69  | 76   | --   | 79   | 71    |
| 14      | 65   | 55   | 48   | 36   | 40   | 46   | 48   | 69  | 77   | 79   | 79   | 72    |
| 15      | 63   | --   | --   | 37   | 40   | 48   | 47   | 69  | 77   | 80   | 78   | 74    |
| 16      | 62   | 56   | 48   | 32   | 41   | 48   | 46   | 69  | 80   | 79   | 78   | 74    |
| 17      | 62   | 54   | 47   | 32   | 41   | 48   | 46   | 65  | 30   | 79   | 78   | 74    |
| 18      | 62   | 54   | 48   | 32   | 40   | 48   | 48   | 68  | 80   | 80   | 78   | --    |
| 19      | 65   | 54   | 48   | 32   | 41   | 49   | 48   | 68  | 81   | --   | 78   | 74    |
| 20      | 63   | --   | 47   | 32   | 40   | 49   | 48   | 65  | 77   | --   | 78   | 74    |
| 21      | 63   | 55   | 48   | 32   | 40   | 48   | 48   | 65  | 78   | 80   | 78   | 74    |
| 22      | 63   | 50   | 48   | 32   | 40   | 48   | 48   | 68  | 78   | 80   | 78   | 74    |
| 23      | 63   | 48   | 48   | 32   | 40   | 48   | 46   | 67  | --   | 80   | 78   | 74    |
| 24      | 62   | 48   | 48   | 32   | 40   | 48   | 44   | 70  | --   | 80   | 77   | 74    |
| 25      | 62   | 48   | 47   | 40   | 43   | 48   | 46   | 70  | --   | 80   | 77   | 74    |
| 26      | 63   | 48   | 48   | 40   | 45   | 45   | 47   | 70  | 81   | --   | 77   | 73    |
| 27      | 63   | 48   | 44   | 34   | 45   | 46   | 49   | 70  | 81   | --   | 77   | 72    |
| 28      | 63   | 47   | 38   | 34   | 42   | 46   | 46   | 70  | 81   | 80   | 77   | 70    |
| 29      | 63   | 47   | 38   | 34   | --   | 44   | 46   | 70  | 82   | 80   | 77   | 70    |
| 30      | 63   | 45   | 44   | 34   | --   | 46   | 46   | 70  | 79   | 80   | 74   | 70    |
| 31      | 63   | --   | 44   | 34   | --   | 45   | --   | --  | --   | 80   | 76   | --    |
| Average | 64   | 55   | 47   | 36   | 40   | 44   | 47   | 63  | 76   | 78   | 78   | 73    |

## KANAWHA RIVER BASIN

## NEW RIVER AT GLENLYN, VA.

LOCATION.--At the Glenlyn steam electric plant of the Appalachian Electric Power

Company on the right bank of New River, across the river from gaging station.

DRAINAGE AREA.--3,768 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1930 to March 1931, October 1949 to September 1950, October 1951 to September 1952, October 1954 to September 1956.

Water temperatures: October 1950 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79°F July 17, 22, 23; minimum, freezing point on several days during December and January.

EXTREMES, 1951-57.--Water temperatures: Maximum, 84°F June 28, 1952; minimum, freezing point on several days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | 56   | 38   | 35   | 41   | 42   | 49   | 63  | 67   | 71   | 77   | 72    |
| 2       | 63   | 55   | 37   | 33   | 40   | 41   | 48   | 63  | 68   | 71   | 76   | 73    |
| 3       | 64   | 55   | 38   | 32   | 41   | 41   | 48   | 63  | 71   | 71   | 76   | 72    |
| 4       | 66   | 56   | 40   | 32   | 44   | 41   | 48   | 61  | 70   | 72   | 78   | 73    |
| 5       | 64   | 56   | 42   | 35   | 44   | 41   | 45   | 59  | 69   | 75   | 76   | 70    |
| 6       | 62   | 55   | 44   | 36   | 42   | 41   | --   | 58  | 66   | 74   | 72   | 70    |
| 7       | 60   | 56   | 47   | 36   | 44   | 41   | 47   | 59  | 68   | 73   | 73   | 70    |
| 8       | 57   | 56   | 50   | 35   | 44   | 41   | 50   | 60  | 69   | 75   | 72   | 69    |
| 9       | 56   | 51   | 50   | 36   | 44   | 39   | 47   | 62  | 68   | 75   | 68   | 68    |
| 10      | 58   | 46   | 46   | 40   | 46   | 38   | --   | 64  | 65   | 74   | 70   | 67    |
| 11      | 57   | 45   | 42   | 38   | 45   | 40   | --   | 64  | 62   | 73   | 69   | 71    |
| 12      | 55   | 47   | 43   | 35   | 42   | 44   | 50   | 66  | 65   | 74   | 68   | 73    |
| 13      | 56   | 46   | 44   | 39   | 42   | 44   | 50   | 67  | 67   | 76   | 70   | 76    |
| 14      | 57   | 46   | 47   | 38   | 42   | 45   | 49   | 70  | 69   | 76   | 72   | 75    |
| 15      | 57   | 47   | 45   | 34   | 40   | 47   | 49   | 69  | 71   | 77   | 74   | 73    |
| 16      | 58   | 50   | 45   | 33   | 41   | 42   | 50   | 68  | 70   | 77   | 74   | 73    |
| 17      | 60   | 49   | 46   | 32   | 39   | --   | 50   | 68  | 74   | 79   | 72   | 71    |
| 18      | 59   | 46   | 46   | 32   | --   | --   | 52   | 66  | 74   | 76   | 70   | 70    |
| 19      | 60   | 46   | 41   | 32   | 43   | 46   | 53   | 70  | 75   | 74   | 68   | 67    |
| 20      | 58   | 44   | 40   | 32   | 40   | 45   | 56   | 69  | 71   | 75   | 66   | 68    |
| 21      | 58   | 45   | 44   | 34   | 40   | 42   | 56   | 66  | 70   | 75   | 67   | 69    |
| 22      | 58   | 45   | 45   | 37   | 40   | 46   | 61   | 67  | 72   | 79   | 68   | 70    |
| 23      | 56   | 40   | 47   | 40   | 42   | 45   | 61   | 66  | 73   | 79   | 68   | 71    |
| 24      | 57   | 38   | 46   | 36   | 42   | 45   | 63   | 68  | 75   | 78   | 69   | 66    |
| 25      | 57   | 37   | 43   | 35   | 44   | 48   | 64   | 68  | 74   | 74   | 67   | 65    |
| 26      | 56   | 38   | 38   | 36   | 44   | 45   | 65   | --  | 71   | 75   | 66   | 65    |
| 27      | 55   | 39   | 37   | 38   | 45   | 43   | 66   | 70  | 72   | 75   | 65   | 65    |
| 28      | 55   | 38   | 38   | 39   | 45   | 44   | 65   | 68  | 73   | 74   | 67   | 63    |
| 29      | 55   | 49   | 39   | 42   | --   | 41   | 67   | 66  | 70   | 76   | 70   | 61    |
| 30      | 55   | 38   | 35   | 44   | --   | --   | 67   | 66  | 71   | 76   | 71   | 58    |
| 31      | 56   | --   | 32   | 40   | --   | --   | --   | 67  | --   | 76   | 72   | --    |
| Average | 58   | 47   | 42   | 36   | 42   | 43   | 55   | 65  | 70   | 75   | 71   | 69    |

## KANAWHA RIVER BASIN--Continued

NEW RIVER AT BLUESTONE DAM, W. VA.  
(Formerly published under name New River at Bluestone Dam stilling basin near Hinton, W. Va.)

LOCATION --Temperature recorder at Bluestone Dam stilling basin 0.9 mile upstream from mouth of Greenbrier River, near Hinton, Summers County, 1,000 feet above gaging station.

DRAINAGE AREA (revised) --4,604 square miles.

RECORDS AVAILABLE --Water temperatures: May 1953 to September 1957.

EXTREMES 1956-57 --Water temperatures: Maximum, 82°F July 20; minimum, 33°F Jan. 21-23.

EXTREMES 1953-57 --Water temperatures: Maximum, 83°F Aug. 5, 1953, July 6, Aug. 13, 14, 16-19, 1956; minimum, 33°F Jan. 21-23, 1957.

REMARKS --Records of discharge for gaging station, water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 66      | 65  | 60       | 60  | 39       | 38      | 40       | 47    | 46    | 68  | 73   | 73   | 75     | 76        |
| 2.....       | 68      | 66  | 60       | 60  | 39       | 38      | 40       | 47    | 47    | 69  | 73   | 76   | 80     | 79        |
| 3.....       | 68      | 67  | 60       | 60  | 40       | 39      | 38       | 47    | 46    | 68  | 73   | 76   | 80     | 78        |
| 4.....       | 69      | 68  | 60       | 60  | 40       | 39      | 37       | 44    | 44    | 67  | 72   | 76   | 80     | 78        |
| 5.....       | 69      | 69  | 60       | 60  | 40       | 36      | 36       | 45    | 44    | 66  | 73   | 72   | 80     | 77        |
| 6.....       | 70      | 69  | 60       | 60  | 42       | 40      | 36       | 46    | 45    | 64  | 73   | 72   | 80     | 77        |
| 7.....       | 70      | 68  | 60       | 60  | 44       | 42      | 36       | 46    | 45    | 64  | 73   | 72   | 80     | 78        |
| 8.....       | 68      | 67  | 60       | 60  | 47       | 44      | 36       | 46    | 45    | 64  | 72   | 71   | 80     | 78        |
| 9.....       | 67      | 65  | 60       | 58  | 48       | 47      | 38       | 46    | 45    | 64  | 72   | 71   | 79     | 78        |
| 10.....      | 65      | 64  | 58       | 54  | 47       | 46      | 42       | 48    | 46    | 66  | 72   | 71   | 78     | 76        |
| 11.....      | 64      | 63  | 54       | 53  | 47       | 46      | 42       | 48    | 48    | 68  | 72   | 71   | 78     | 76        |
| 12.....      | 64      | 62  | 53       | 52  | 48       | 47      | 42       | 48    | 46    | 68  | 71   | 70   | 78     | 75        |
| 13.....      | 63      | 62  | 52       | 51  | 48       | 47      | 41       | 46    | 48    | 70  | 74   | 70   | 78     | 76        |
| 14.....      | 62      | 62  | 51       | 50  | 47       | 47      | 41       | 46    | 48    | 70  | 74   | 73   | 78     | 76        |
| 15.....      | 63      | 62  | 49       | 49  | 48       | 47      | 41       | 45    | 44    | 72  | 77   | 74   | 78     | 79        |
| 16.....      | 63      | 62  | 49       | 49  | 50       | 48      | 41       | 40    | 44    | 70  | 78   | 77   | 78     | 77        |
| 17.....      | 62      | 62  | 49       | 49  | 50       | 49      | 40       | 38    | 44    | 74  | 78   | 80   | 78     | 77        |
| 18.....      | 63      | 62  | 49       | 49  | 49       | 48      | 38       | 44    | 43    | 74  | 80   | 80   | 78     | 76        |
| 19.....      | 63      | 62  | 49       | 49  | 48       | 36      | 34       | 44    | 50    | 72  | 80   | 81   | 78     | 72        |
| 20.....      | 62      | 62  | 49       | 49  | 48       | 46      | 35       | 44    | 50    | 74  | 79   | 82   | 77     | 70        |
| 21.....      | 62      | 62  | 49       | 48  | 46       | 46      | 34       | 43    | 58    | 74  | 77   | 81   | 77     | 71        |
| 22.....      | 62      | 62  | 48       | 48  | 46       | 46      | 33       | 42    | 60    | 74  | 77   | 80   | 76     | 73        |
| 23.....      | 62      | 62  | 48       | 47  | 48       | 46      | 36       | 43    | 63    | 73  | 78   | 80   | 76     | 73        |
| 24.....      | 62      | 62  | 47       | 45  | 49       | 48      | 40       | 45    | 63    | 72  | 78   | 80   | 76     | 72        |
| 25.....      | 62      | 62  | 45       | 43  | 49       | 49      | 41       | 40    | 64    | 72  | 77   | 81   | 76     | 71        |
| 26.....      | 62      | 62  | 43       | 41  | 49       | 47      | 41       | 40    | 65    | 74  | 77   | 81   | 75     | 70        |
| 27.....      | 62      | 61  | 41       | 41  | 47       | 45      | 40       | 40    | 74    | 74  | 78   | 80   | 74     | 70        |
| 28.....      | 61      | 60  | 40       | 38  | 45       | 43      | 42       | 40    | 73    | 78  | 78   | 80   | 74     | 70        |
| 29.....      | 60      | 60  | 38       | 38  | 43       | 42      | 46       | 42    | 74    | 77  | 79   | 78   | 76     | 69        |
| 30.....      | 60      | 60  | 38       | 38  | 42       | 41      | 46       | 46    | 74    | 77  | 77   | 79   | 76     | 68        |
| 31.....      | 60      | 60  | --       | --  | 41       | 40      | 47       | 46    | 74    | 73  | --   | 79   | 76     | --        |
| Average..... | 64      | 63  | 51       | 51  | 46       | 45      | 59       | 38    | 54    | 71  | 69   | 75   | 78     | 73        |

## KANAWHA RIVER BASIN--Continued

## KNAPP CREEK AT MARLINTON, W. VA.

LOCATION.--At city waterplant, at Marlinton, Pocohontas County, 1 mile upstream from mouth and 2 miles downstream from gaging station.

DRAINAGE AREA.--108 square miles (above gaging station).

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 74°F July 22, 23, Sept. 4; minimum freezing point on many days during November, December, January and February.

EXTREMES, 1946-57.--Water temperatures: Maximum, 82°F July 24, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 59   | 54   | 32   | 33   | 37   | 38   | 44   | 62  | 63   | 68   | 69   | 70    |
| 2       | 60   | 54   | 34   | 32   | 36   | 37   | 43   | 60  | 62   | 67   | 68   | 70    |
| 3       | 58   | 54   | 33   | 34   | 37   | 34   | 45   | 59  | 63   | 67   | 70   | 72    |
| 4       | 61   | 56   | 34   | 36   | 40   | 35   | 43   | 57  | 64   | 68   | 70   | 74    |
| 5       | 62   | 54   | 35   | 37   | 40   | 34   | 44   | 56  | 66   | 70   | 68   | 67    |
| 6       |      |      |      |      |      |      |      |     |      |      |      |       |
| 7       | 57   | 52   | 38   | 32   | 38   | 37   | 43   | 56  | 65   | 70   | 64   | 64    |
| 8       | 57   | 52   | 41   | 34   | 40   | 38   | 42   | 52  | 64   | 70   | 66   | 65    |
| 9       | 56   | 52   | 41   | 32   | 40   | 37   | 44   | 54  | 64   | 72   | 64   | 64    |
| 10      | 56   | 48   | 46   | 32   | 41   | 35   | 42   | 54  | 62   | 69   | 66   | 64    |
| 11      | 54   | 48   | 38   | 32   | 40   | 34   | 43   | 58  | 60   | 70   | 69   | 65    |
| 12      |      |      |      |      |      |      |      |     |      |      |      |       |
| 13      | 54   | 38   | 34   | 32   | 37   | 33   | 44   | 58  | 62   | 68   | 66   | 65    |
| 14      | 55   | 40   | 36   | 32   | 34   | 35   | 44   | 62  | 64   | 71   | 68   | 67    |
| 15      | 54   | 41   | 35   | 34   | 35   | 36   | 42   | 65  | 65   | 70   | 68   | 65    |
| 16      | 50   | 36   | 36   | 32   | 34   | 35   | 42   | 67  | 66   | 70   | 69   | 65    |
| 17      | 52   | 39   | 36   | 32   | 32   | 36   | 41   | 68  | 64   | 69   | 73   | 69    |
| 18      |      |      |      |      |      |      |      |     |      |      |      |       |
| 19      | 52   | 42   | 38   | 32   | 34   | 36   | 43   | 67  | 65   | 70   | 72   | 68    |
| 20      | 51   | 40   | 36   | 32   | 32   | 40   | 43   | 67  | 68   | 70   | 70   | 65    |
| 21      | 52   | 36   | 36   | 32   | 32   | 43   | 49   | 66  | 66   | 68   | 67   | 62    |
| 22      | 54   | 32   | 32   | 32   | 36   | 42   | 52   | 67  | 70   | 68   | 68   | 61    |
| 23      | 52   | 34   | 34   | 32   | 33   | 42   | 54   | 65  | 68   | 68   | 68   | 63    |
| 24      |      |      |      |      |      |      |      |     |      |      |      |       |
| 25      | 54   | 34   | 36   | 32   | 32   | 36   | 55   | 64  | 65   | 72   | 63   | 65    |
| 26      | 56   | 35   | 36   | 32   | 33   | 42   | 54   | 65  | 69   | 74   | 64   | 64    |
| 27      | 57   | 32   | 45   | 36   | 35   | 40   | 55   | 66  | 66   | 74   | 64   | 63    |
| 28      | 57   | 32   | 44   | 34   | 35   | 42   | 56   | 65  | 65   | 71   | 65   | 60    |
| 29      | 58   | 32   | 42   | 33   | 35   | 40   | 62   | 67  | 65   | 68   | 62   | 59    |
| 30      |      |      |      |      |      |      |      |     |      |      |      |       |
| 31      | 58   | 32   | 40   | 35   | 37   | 39   | 64   | 68  | 68   | 68   | 62   | 60    |
| 1       | 56   | 32   | 37   | 36   | 38   | 38   | 64   | 66  | 70   | 68   | 60   | 60    |
| 2       | 52   | 32   | 38   | 36   | 36   | 38   | 64   | 64  | 70   | 67   | 60   | 58    |
| 3       | 52   | 33   | 37   | 37   | --   | 36   | 63   | 64  | 70   | 68   | 62   | 55    |
| 4       | 52   | 32   | 34   | 38   | --   | 36   | 60   | 64  | 68   | 68   | 64   | 52    |
| 5       | 52   | --   | 36   | 37   | --   | 38   | --   | 63  | --   | 70   | 64   | --    |
| Average | 55   | 41   | 37   | 34   | 36   | 37   | 49   | 62  | 66   | 69   | 66   | 64    |

## KANAWHA RIVER BASIN--Continued

## KANAWHA RIVER AT CABIN CREEK, W. VA.

LOCATION.--At the Cabin Creek steam electric plant of the Appalachian Electric Power Company on the left bank of the Kanawha River, at the cooling water intakes.

DRAINAGE AREA.--8,661 square miles above the power plant.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 87°F July 22, Aug. 15; minimum, 35°F Jan. 17-20.

EXTREMES, 1950-57.--Water temperatures: Maximum, 92°F Aug. 1-4, 6, 1955; minimum, freezing point Feb. 10, 1951.

REMARKS.--Temperature records furnished by the Appalachian Electric Power Company. No discharge records available for this station.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 86   | 81   | 41   | 40   | 46   | 49   | 49   | 72  | 78   | 79   | 86   | 84    |
| 2       | 87   | 80   | 41   | 38   | 46   | 49   | 50   | 72  | 77   | 79   | 86   | 84    |
| 3       | 88   | 80   | 41   | 37   | 46   | 45   | 52   | 72  | 77   | 78   | 86   | 85    |
| 4       | 89   | 80   | 42   | 38   | 47   | 44   | 52   | 69  | 78   | 78   | 86   | 86    |
| 5       | 70   | 60   | 42   | 37   | 46   | 45   | 53   | 68  | 77   | 80   | 85   | 86    |
| 6       | 70   | 61   | 44   | 36   | 46   | 44   | 49   | 67  | 78   | 80   | 85   | 86    |
| 7       | 89   | 80   | 44   | 37   | 48   | 45   | 50   | 67  | 75   | 80   | 85   | 84    |
| 8       | 88   | 80   | 46   | 38   | 49   | 46   | 51   | 67  | 75   | 81   | 85   | 83    |
| 9       | 86   | 58   | 47   | 39   | 50   | 45   | 49   | 67  | 75   | 83   | 86   | 84    |
| 10      | 88   | 57   | 49   | 41   | 50   | 45   | 50   | 70  | 75   | 82   | 84   | 82    |
| 11      | 64   | 56   | 47   | 41   | 49   | 45   | 52   | 69  | 75   | 83   | 84   | 81    |
| 12      | 64   | 54   | 47   | 41   | 47   | 47   | 51   | 71  | 75   | 83   | 84   | 81    |
| 13      | 64   | 55   | 46   | 42   | 47   | 47   | 52   | 73  | 77   | 83   | 83   | 80    |
| 14      | 64   | 53   | 48   | 40   | 45   | 49   | 52   | 76  | 77   | 82   | 86   | 79    |
| 15      | 63   | 53   | 50   | 39   | 45   | 50   | 52   | 76  | 78   | 84   | 87   | 78    |
| 16      | 65   | 54   | 52   | 38   | 44   | 51   | 52   | 75  | 80   | 84   | 84   | 79    |
| 17      | 65   | 53   | 50   | 35   | 44   | 52   | 53   | 75  | 82   | 85   | 84   | 79    |
| 18      | 64   | 53   | 50   | 35   | 43   | 52   | 54   | 75  | 83   | 85   | 82   | 79    |
| 19      | 64   | 51   | 49   | 35   | 43   | 52   | 56   | 77  | 82   | 85   | 83   | 76    |
| 20      | 64   | 50   | 48   | 35   | 42   | 51   | 58   | 75  | 82   | 85   | 83   | 74    |
| 21      | 66   | 50   | 49   | 36   | 41   | 51   | 59   | 75  | 81   | 86   | 83   | 74    |
| 22      | 68   | 47   | 50   | 36   | 42   | 50   | 62   | 74  | 82   | 87   | 79   | 73    |
| 23      | 66   | 46   | 50   | 39   | 42   | 49   | 56   | 74  | 82   | 86   | 81   | 74    |
| 24      | 65   | 46   | 51   | 39   | 44   | 52   | 66   | 75  | 82   | 85   | 82   | 75    |
| 25      | 63   | 44   | 49   | 40   | 46   | 50   | 68   | 76  | 82   | 85   | 81   | 75    |
| 26      | 63   | 42   | 47   | 40   | 47   | 49   | 69   | 76  | 83   | 85   | 81   | 71    |
| 27      | 62   | 41   | 45   | 40   | 48   | 50   | 70   | 77  | 83   | 84   | 81   | 72    |
| 28      | 63   | 43   | 45   | 40   | 50   | 48   | 72   | 77  | 80   | 82   | 83   | 71    |
| 29      | 61   | 42   | 43   | 45   | --   | 47   | 72   | 77  | 80   | 85   | 84   | 64    |
| 30      | 62   | 41   | 42   | 45   | --   | 47   | 72   | 77  | 79   | 83   | 80   | 69    |
| 31      | 62   | --   | 41   | 45   | --   | 49   | --   | 77  | --   | 82   | 84   | --    |
| Average | 65   | 52   | 46   | 39   | 46   | 48   | 57   | 73  | 79   | 83   | 84   | 78    |



## KANAWHA RIVER BASIN--Continued

KANAWHA RIVER AT CHARLESTON, W. VA.

LOCATION.--Temperature recorder at gaging station at old lock 6, 1.0 mile upstream from Davis Creek, 1½ miles downstream from Twomile Creek, and 3½ miles downstream from Elk River.

DRAINAGE AREA.--10,419 square miles.

RECORDS AVAILABLE.--Water temperatures: March 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 90°F July 22, Sept. 3; minimum, 37°F Jan. 19.

EXTREMES, 1953-57.--Water temperatures: Maximum, 93°F Aug. 7, 1955; minimum, 36°F Feb. 1, 1955, Jan 31, Feb. 1, 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957  
/Continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 68      | 67  | 66       | 65  | 52       | 48  | 46      | 46  | 46       | 46  | 50    | 50  | 52    | 52  | 74  | 72  | 82   | 80  | 82   | 80  | 87     | 86  | 85        | 83  |
| 2.....       | 69      | 67  | 66       | 63  | 51       | 49  | 47      | 44  | 46       | 46  | 50    | 48  | 54    | 52  | 74  | 72  | 81   | 80  | 80   | 74  | 88     | 86  | 86        | 84  |
| 3.....       | 69      | 68  | 63       | 62  | 51       | 48  | 45      | 43  | 46       | 46  | 48    | 48  | 54    | 54  | 73  | 71  | 80   | 78  | 78   | 76  | 88     | 86  | 90        | 84  |
| 4.....       | 70      | 68  | 63       | 62  | 53       | 48  | 44      | 42  | 46       | 46  | 48    | 47  | 54    | 54  | 72  | 70  | 80   | 78  | 79   | 78  | 88     | 86  | 88        | 86  |
| 5.....       | 71      | 69  | 63       | 63  | 53       | 48  | 45      | 42  | 46       | 46  | 48    | 46  | 56    | 54  | 71  | 70  | 80   | 78  | 78   | 77  | 87     | 86  | 88        | 86  |
| 6.....       | 71      | 69  | 64       | 63  | 55       | 49  | 44      | 42  | 46       | 46  | 48    | 47  | 56    | 53  | 71  | 69  | 80   | 80  | 80   | 79  | 88     | 85  | 86        | 84  |
| 7.....       | 71      | 70  | 64       | 64  | 55       | 49  | 44      | 43  | 48       | 46  | 48    | 48  | 53    | 52  | 70  | 68  | 80   | 78  | 82   | 78  | 86     | 85  | 85        | 83  |
| 8.....       | 71      | 70  | 64       | 62  | 53       | 49  | 45      | 42  | 48       | 48  | 48    | 48  | 53    | 52  | 70  | 68  | 80   | 78  | 83   | 80  | 88     | 84  | 84        | 82  |
| 9.....       | 70      | 68  | 62       | 62  | 53       | 49  | 46      | 42  | 48       | 48  | 48    | 47  | 53    | 52  | 70  | 69  | 77   | 77  | 83   | 82  | 86     | 84  | 84        | 82  |
| 10.....      | 69      | 68  | 62       | 61  | 53       | 51  | 44      | 42  | 48       | 49  | 47    | 47  | 52    | 52  | 70  | 70  | 77   | 76  | 82   | 80  | 86     | 84  | 85        | 82  |
| 11.....      | 69      | 66  | 61       | 60  | 53       | 51  | 43      | 42  | 49       | 48  | 47    | 47  | 54    | 52  | 72  | 70  | 77   | 76  | 84   | 80  | 87     | 85  | 86        | 82  |
| 12.....      | 69      | 66  | 61       | 60  | 53       | 51  | 42      | 42  | 48       | 48  | 49    | 47  | 54    | 54  | 73  | 71  | 77   | 76  | 84   | 82  | 87     | 85  | 87        | 85  |
| 13.....      | 69      | 66  | 61       | 57  | 52       | 52  | 44      | 43  | 48       | 48  | 50    | 49  | 54    | 54  | 74  | 72  | 78   | 77  | 84   | 84  | 88     | 86  | 87        | 84  |
| 14.....      | 69      | 66  | 60       | 56  | 52       | 49  | 44      | 44  | 48       | 46  | 51    | 50  | 56    | 54  | 76  | 74  | 79   | 78  | 84   | 83  | 88     | 87  | 84        | 83  |
| 15.....      | 68      | 67  | 61       | 57  | 52       | 50  | 44      | 43  | 46       | 46  | 53    | 51  | 56    | 56  | 77  | 74  | 80   | 79  | 86   | 84  | 88     | 86  | 84        | 82  |
| 16.....      | 68      | 66  | 60       | 58  | 53       | 52  | 44      | 42  | 46       | 46  | 53    | 52  | 58    | 56  | 78  | 76  | 82   | 80  | 87   | 85  | 87     | 86  | 84        | 82  |
| 17.....      | 68      | 66  | 60       | 57  | 53       | 53  | 43      | 41  | 46       | 46  | 55    | 53  | 58    | 56  | 78  | 74  | 83   | 81  | 87   | 85  | 88     | 86  | 81        | 80  |
| 18.....      | 69      | 66  | 59       | 56  | 53       | 53  | 42      | 40  | 46       | 46  | 55    | 54  | 59    | 57  | 79  | 76  | 84   | 83  | 88   | 85  | 86     | 85  | 81        | 80  |
| 19.....      | 69      | 66  | 58       | 56  | 53       | 52  | 42      | 37  | 47       | 46  | 55    | 54  | 59    | 58  | 79  | 77  | 84   | 84  | 89   | 86  | 88     | 86  | 81        | 78  |
| 20.....      | 68      | 66  | 59       | 56  | 53       | 52  | 42      | 38  | 46       | 46  | 55    | 54  | 62    | 59  | 78  | 76  | 84   | 83  | 89   | 88  | 88     | 86  | 78        | 78  |
| 21.....      | 68      | 67  | 58       | 56  | 53       | 52  | 42      | 38  | 46       | 43  | 55    | 54  | 64    | 62  | 76  | 76  | 84   | 83  | 89   | 87  | 87     | 84  | 78        | 76  |
| 22.....      | 69      | 68  | 57       | 55  | 53       | 52  | 43      | 39  | 44       | 43  | 54    | 54  | 64    | 64  | 77  | 76  | 84   | 83  | 90   | 88  | 86     | 82  | 76        | 75  |
| 23.....      | 69      | 66  | 55       | 54  | 53       | 52  | 43      | 41  | 46       | 44  | 54    | 54  | 66    | 64  | 77  | 76  | 84   | 84  | 89   | 86  | 84     | 82  | 76        | 74  |
| 24.....      | 69      | 67  | 54       | 52  | 53       | 53  | 41      | 41  | 46       | 46  | 54    | 53  | 69    | 66  | 77  | 77  | 85   | 84  | 88   | 86  | 84     | 83  | 77        | 74  |
| 25.....      | 69      | 66  | 53       | 52  | 53       | 52  | 41      | 40  | 48       | 46  | 54    | 53  | 70    | 69  | 78  | 76  | 85   | 83  | 87   | 86  | 84     | 82  | 76        | 74  |
| 26.....      | --      | --  | 52       | 50  | 52       | 50  | 42      | 40  | 50       | 48  | 54    | 54  | 72    | 70  | 78  | 84  | 82   | 88  | 86   | 83  | 81     | 76  | 73        | 73  |
| 27.....      | --      | --  | 52       | 48  | 50       | 50  | 44      | 42  | 50       | 50  | 54    | 54  | 73    | 70  | 79  | 84  | 84   | 88  | 86   | 83  | 81     | 76  | 74        | 74  |
| 28.....      | --      | --  | 54       | 49  | 50       | 50  | 44      | 44  | 50       | 50  | 54    | 53  | 73    | 72  | 79  | 84  | 83   | 87  | 86   | 83  | 82     | 76  | 73        | 73  |
| 29.....      | --      | --  | 53       | 48  | 50       | 49  | 44      | 42  | --       | --  | 53    | 52  | 73    | 72  | 78  | 83  | 82   | 88  | 86   | 82  | 81     | 74  | 73        | 73  |
| 30.....      | 65      | 64  | 52       | 48  | 49       | 48  | 45      | 44  | --       | --  | 52    | 51  | 73    | 72  | 80  | 78  | 82   | 88  | 86   | 86  | 81     | 74  | 72        | --  |
| 31.....      | 65      | 65  | --       | --  | 48       | 47  | 46      | 45  | --       | --  | 52    | 51  | --    | --  | 81  | 80  | --   | --  | 88   | 86  | 84     | 82  | --        | --  |
| Average..... | 69      | 67  | 59       | 57  | 52       | 50  | 44      | 42  | 47       | 47  | 51    | 51  | 60    | 59  | 75  | 74  | 81   | 80  | 85   | 83  | 86     | 84  | 82        | 80  |

KANAWHA RIVER BASIN--Continued  
KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.

LOCATION.--About 1,200 feet upstream from Winfield Dam at Winfield, Putnam County, 2.6 miles downstream from Little Guano Creek, 4.7 miles downstream from Guano Creek, 0.7 mile upstream from Little Hurricane Creek, and 31.3 miles upstream from mouth.

DRAINAGE AREA.--11,809 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-1957.--Dissolved solids: Maximum, 252 ppm Sept. 1-10; minimum, 70 ppm Feb. 1-10.

Hardness: Maximum, 122 ppm Aug. 21-31; minimum, 40 ppm Feb. 1-10.

Specific conductance: Maximum daily, 564 micromhos Sept. 14; minimum daily, 77 micromhos Jan. 31.

Water temperatures: Maximum, 87°F July 21; minimum, 35°F Jan. 19.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Ammonium (NH <sub>4</sub> ) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|-----------------------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                      |                      |                            |           |                |              |                |             |               |                             |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| Oct. 1-10, 1956..... |                      | 6.3                        | 0.03      | 0.00           | 24           | 6.2            | 12          | 1.8           | --                          | 64                              | 30                         | 19            | 0.1          | --                         | 144                                                | 86                            | 33            |                                    | 250                                       | 6.9 | 5     |
| Oct. 11-20.....      |                      | 1.8                        | .14       | .00            | 23           | 5.2            | 16          | 2.8           | --                          | 59                              | 36                         | 28            | .1           | --                         | 158                                                | 84                            | 36            |                                    | 278                                       | 7.0 | 6     |
| Oct. 21-31.....      |                      | 9.1                        | .10       | .00            | 26           | 6.1            | 17          | 1.9           | --                          | 65                              | 38                         | 32            | .1           | --                         | 181                                                | 95                            | 42            |                                    | 309                                       | 7.0 | 6     |
| Nov. 1-10.....       |                      | 7.6                        | .01       | .03            | 17           | 3.1            | 17          | 1.2           | --                          | 39                              | 22                         | 12            | .2           | --                         | 195                                                | 56                            | 26            |                                    | 182                                       | 6.8 | 4     |
| Nov. 11-20.....      |                      | 8.7                        | .03       | .09            | 23           | 5.0            | 12          | 1.0           | --                          | 47                              | 28                         | 27            | .2           | --                         | 139                                                | 78                            | 40            |                                    | 239                                       | 6.9 | 3     |
| Nov. 21-30.....      |                      | 7.1                        | .02       | .04            | 25           | 5.6            | 14          | 1.5           | --                          | 58                              | 32                         | 28            | .3           | --                         | 194                                                | 86                            | 38            |                                    | 270                                       | 6.7 | 3     |
| Dec. 1-10.....       |                      | 6.2                        | .03       | .07            | 26           | 4.9            | 17          | 1.6           | --                          | 54                              | 34                         | 33            | .1           | --                         | 163                                                | 85                            | 41            |                                    | 283                                       | 6.9 | 4     |
| Dec. 11-20.....      |                      | 5.5                        | .06       | .10            | 17           | 3.3            | 6.7         | 1.6           | --                          | 36                              | 26                         | 14            | .2           | --                         | 105                                                | 56                            | 26            |                                    | 196                                       | 6.8 | 8     |
| Dec. 21-31.....      |                      | 6.4                        | .04       | .08            | 13           | 3.5            | 5.7         | 1.2           | --                          | 33                              | 21                         | 8.8           | .2           | --                         | 82                                                 | 47                            | 20            |                                    | 135                                       | 6.9 | 7     |
| Jan. 1-10, 1957..... |                      | 7.5                        | .03       | .01            | 16           | 4.1            | 9.4         | 1.0           | --                          | 38                              | 30                         | 13            | .4           | --                         | 101                                                | 57                            | 26            |                                    | 178                                       | 6.9 | 5     |
| Jan. 11-20.....      |                      | 9.6                        | .13       | .11            | 12           | 3.4            | 5.3         | 1.0           | --                          | 29                              | 22                         | 6.0           | .4           | --                         | 82                                                 | 44                            | 20            |                                    | 129                                       | 6.9 | 7     |
| Jan. 21-31.....      |                      | 6.3                        | .02       | .00            | 12           | 3.2            | 6.4         | 1.1           | --                          | 26                              | 24                         | 8.2           | .1           | --                         | 82                                                 | 43                            | 22            |                                    | 133                                       | 7.3 | 3     |
| Feb. 1-10.....       |                      | 6.9                        | .02       | .00            | 11           | 3.0            | 3.8         | 1.4           | --                          | 28                              | 19                         | 3.5           | .1           | --                         | 70                                                 | 40                            | 17            |                                    | 107                                       | 6.6 | 3     |
| Feb. 11-20.....      |                      | 8.1                        | .02       | .00            | 12           | 4.4            | 4.8         | 1.5           | --                          | 34                              | 21                         | 5.0           | .1           | --                         | 81                                                 | 48                            | 20            |                                    | 131                                       | 7.0 | 4     |
| Feb. 21-28.....      |                      | 7.2                        | .03       | .00            | 15           | 4.8            | 6.2         | 1.8           | --                          | 40                              | 27                         | 7.5           | .2           | --                         | 95                                                 | 58                            | 24            |                                    | 158                                       | 7.0 | 5     |
| Mar. 1-10.....       |                      | 6.2                        | .04       | .00            | 12           | 4.4            | 4.6         | 1.1           | --                          | 33                              | 20                         | 5.8           | .2           | --                         | 77                                                 | 48                            | 21            |                                    | 129                                       | 7.1 | 5     |
| Mar. 11-20.....      |                      | 6.4                        | .06       | .00            | 15           | 4.6            | 6.7         | 1.4           | --                          | 35                              | 25                         | 10            | .1           | --                         | 94                                                 | 56                            | 28            |                                    | 160                                       | 7.1 | 5     |
| Mar. 21-31.....      |                      | 6.2                        | .03       | .00            | 17           | 5.0            | 8.6         | 1.3           | --                          | 43                              | 27                         | 14            | .1           | --                         | 115                                                | 63                            | 28            |                                    | 191                                       | 7.0 | 2     |
| Apr. 1-10.....       |                      | 6.1                        | .05       | .00            | 13           | 3.7            | 5.6         | 1.1           | --                          | 35                              | 19                         | 8.0           | .1           | --                         | 82                                                 | 48                            | 19            |                                    | 133                                       | 7.0 | 6     |
| Apr. 11-20.....      |                      | 7.5                        | .09       | .03            | 13           | 4.3            | 4.9         | 1.1           | --                          | 35                              | 18                         | 8.0           | .1           | --                         | 84                                                 | 50                            | 22            |                                    | 137                                       | 6.9 | 5     |
| Apr. 21-30.....      |                      | 8.0                        | .06       | .01            | 16           | 4.7            | 7.8         | 1.3           | --                          | 42                              | 24                         | 13            | .1           | --                         | 101                                                | 60                            | 25            |                                    | 172                                       | 7.0 | 5     |
| May 1-10.....        |                      | 6.9                        | .14       | .00            | 18           | 4.6            | 9.0         | 1.5           | --                          | 43                              | 27                         | 16            | .1           | --                         | 106                                                | 64                            | 29            |                                    | 189                                       | 6.9 | 6     |
| May 11-20.....       |                      | 6.4                        | .16       | .04            | 23           | 5.6            | 14          | 1.5           | --                          | 58                              | 29                         | 26            | .1           | --                         | 134                                                | 80                            | 33            |                                    | 250                                       | 6.9 | 3     |
| May 21-31.....       |                      | 5.7                        | .07       | .04            | 21           | 5.8            | 14          | 1.3           | --                          | 64                              | 27                         | 22            | .1           | --                         | 141                                                | 76                            | 24            |                                    | 234                                       | 6.9 | 2     |

KANAWHA RIVER BASIN--Continued  
KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

| Date of collection           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Ammonium (NH <sub>4</sub> ) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Nitrite (NO <sub>2</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|-----------------------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                              |                      |                            |           |                |              |                |             |               |                             |                                 |                            |               |              |                            |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| June 1-10, 1957....          |                      | 6.6                        | 0.10      | 0.00           | 26           | 4.7            | 13          | 1.5           | --                          | 64                              | 27                         | 26            | 0.1          | --                         | --                         | 161                                                | 84                            | 32            |                                    | 247                                       | 7.3 | 10    |
| June 11-20.....              |                      | 7.4                        | .00       | .00            | 19           | 4.6            | 9.3         | 1.2           | --                          | 51                              | 21                         | 18            | .1           | --                         | --                         | 124                                                | 66                            | 24            |                                    | 190                                       | 7.2 | 5     |
| June 21-30.....              |                      | 9.6                        | .07       | .00            | 21           | 5.2            | 12          | 1.6           | --                          | 49                              | 24                         | 22            | .2           | --                         | --                         | 129                                                | 74                            | 34            |                                    | 232                                       | 6.9 | 5     |
| July 1-10.....               |                      | 7.2                        | .06       | .00            | 19           | 4.5            | 9.8         | 1.8           | --                          | 45                              | 22                         | 20            | .2           | --                         | --                         | 121                                                | 66                            | 29            |                                    | 199                                       | 7.1 | 2     |
| July 11-20.....              |                      | 7.5                        | .24       | .00            | 24           | 5.4            | 17          | 1.8           | --                          | 51                              | 27                         | 30            | .2           | --                         | --                         | 147                                                | 82                            | 40            |                                    | 286                                       | 7.0 | 4     |
| July 21-31.....              |                      | 5.4                        | .21       | .14            | 27           | 5.8            | 22          | 2.8           | --                          | 67                              | 32                         | 42            | .4           | --                         | --                         | 180                                                | 92                            | 36            |                                    | 331                                       | 7.0 | 8     |
| Aug. 1-6.....                |                      | 6.5                        | .28       | .16            | 27           | 6.3            | 22          | 2.0           | --                          | 76                              | 37                         | 36            | .2           | --                         | --                         | 180                                                | 94                            | 32            |                                    | 333                                       | 7.2 | 8     |
| Aug. 7-20.....               |                      | 11                         | .13       | .16            | 35           | 6.5            | 28          | 2.5           | 4.3                         | 86                              | 46                         | 53            | .1           | 0.00                       | .8                         | 228                                                | 114                           | 44            |                                    | 418                                       | 7.1 | 4     |
| Aug. 21-31.....              |                      | 8.5                        | .03       | .13            | 37           | 7.0            | 30          | 2.5           | 7.0                         | 102                             | 44                         | 60            | .1           | .00                        | .4                         | 237                                                | 122                           | 38            |                                    | 452                                       | 7.2 | 6     |
| Sept. 1-10.....              |                      | 14                         | .22       | .09            | 35           | 7.5            | 35          | 2.1           | 5.2                         | 90                              | 55                         | 60            | .2           | .00                        | .0                         | 252                                                | 119                           | 44            |                                    | 464                                       | 7.0 | 9     |
| Sept. 11-20.....             |                      | 8.5                        | .42       | .03            | 34           | 7.8            | 32          | 2.8           | 5.6                         | 97                              | 50                         | 57            | .2           | .00                        | .0                         | 241                                                | 117                           | 38            |                                    | 458                                       | 7.0 | 7     |
| Sept. 21-30.....             |                      | 9.0                        | .03       | .00            | 22           | 5.4            | 12          | 1.8           | .2                          | 61                              | 28                         | 18            | .2           | .40                        | 4.8                        | 132                                                | 77                            | 27            |                                    | 228                                       | 6.8 | 6     |
| Time-weighted average a..... |                      | 7.3                        | 0.09      | 0.04           | 21           | 5.0            | 13          | 1.6           | --                          | 52                              | 29                         | 22            | 0.2          | --                         | --                         | 134                                                | 73                            | 30            |                                    | 232                                       | --  | 5     |

a Represents 99 percent of days.

## KANAWHA RIVER BASIN--Continued

## KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 68   | 64   | 46   | 48   | 46   | 48   | 50   | 71  | 78   | 83   | 85   | 82    |
| 2       | 67   | 63   | 45   | 46   | 46   | 50   | 50   | 71  | 78   | 82   | 84   | 83    |
| 3       | 67   | 63   | 46   | 42   | 47   | 46   | 50   | 71  | 77   | 80   | 85   | 82    |
| 4       | 68   | 58   | 45   | 44   | 46   | 46   | 50   | 68  | 77   | 80   | 85   | 82    |
| 5       | 68   | 61   | 55   | 44   | 46   | 46   | 52   | 69  | 78   | 79   | 85   | 82    |
| 6       | 68   | 61   | 54   | 40   | 42   | 45   | 52   | 70  | 79   | 79   | 85   | 80    |
| 7       | 69   | 62   | 48   | 41   | 46   | 46   | 52   | 68  | 79   | 80   | --   | 81    |
| 8       | 69   | 62   | 48   | 38   | 49   | 47   | 52   | 68  | 79   | 80   | --   | 80    |
| 9       | 69   | 61   | 49   | 40   | 50   | 45   | 50   | 69  | --   | 80   | --   | 80    |
| 10      | 69   | 60   | 49   | 40   | 50   | 45   | 51   | 70  | 76   | 80   | --   | 80    |
| 11      | 69   | 58   | 50   | 44   | 48   | 45   | 51   | 70  | 76   | 80   | 83   | 80    |
| 12      | 69   | 58   | 50   | 44   | 42   | 46   | 50   | 71  | 77   | 81   | 85   | 81    |
| 13      | 68   | 58   | 49   | 41   | 44   | 48   | 51   | 72  | 78   | 81   | 83   | 82    |
| 14      | 68   | 58   | 49   | 40   | 44   | 48   | 50   | 74  | 77   | 85   | 84   | 82    |
| 15      | 68   | 56   | 49   | 48   | 42   | 48   | 52   | 74  | 80   | 83   | 83   | 82    |
| 16      | 68   | 58   | 51   | 49   | 46   | 49   | 51   | 72  | --   | 81   | 84   | 82    |
| 17      | 66   | 56   | 51   | 38   | 45   | 52   | 54   | 73  | 80   | 80   | 82   | 82    |
| 18      | 68   | 57   | 54   | 36   | 44   | 52   | 54   | 75  | 83   | 82   | 82   | 82    |
| 19      | 66   | 54   | 52   | 35   | 45   | 48   | 55   | 71  | 81   | 80   | 82   | 80    |
| 20      | 68   | 50   | 51   | 37   | 43   | 54   | 59   | 75  | 82   | 85   | 82   | 79    |
| 21      | 67   | 60   | 52   | 38   | 45   | 52   | 59   | 75  | 82   | 87   | 82   | 77    |
| 22      | 67   | 58   | 52   | 38   | 45   | 54   | 60   | 75  | 83   | 86   | 82   | 76    |
| 23      | 68   | 51   | 50   | 38   | 43   | 53   | 62   | 76  | 83   | 86   | 82   | 75    |
| 24      | 68   | 52   | 52   | 40   | 43   | 52   | 65   | 75  | 84   | 84   | 82   | 75    |
| 25      | 68   | 50   | 53   | 42   | 45   | 52   | 66   | 75  | 83   | 82   | 82   | 74    |
| 26      | 68   | 50   | 48   | 40   | 48   | 53   | 67   | 78  | 82   | 85   | 82   | 73    |
| 27      | 67   | 48   | 46   | 41   | 47   | 53   | 69   | 77  | 83   | 85   | 80   | 72    |
| 28      | 65   | 44   | 46   | 42   | 48   | 53   | 70   | 77  | 85   | 85   | 80   | 72    |
| 29      | 64   | 46   | 46   | 43   | --   | 50   | 70   | 75  | 83   | 85   | 80   | 72    |
| 30      | 65   | 44   | 46   | 45   | --   | 50   | 70   | --  | 83   | 84   | 81   | 72    |
| 31      | 64   | --   | 45   | 46   | --   | 50   | --   | 78  | --   | 85   | 82   | --    |
| Average | 67   | 56   | 49   | 42   | 46   | 49   | 56   | 73  | 80   | 82   | 82   | 79    |

KANAWHA RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN KANAWHA RIVER BASIN IN NORTH CAROLINA  
Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                  | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180° C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25° C) | pH  | Color |
|-------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|----------------------------------------------------------------------|----------------------------------|------------------------|--------------------------------------------------------------|-----|-------|
|                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      | Calcium                          | Non-<br>carbon-<br>ate |                                                              |     |       |
| SOUTH FORK NEW RIVER NEAR JEFFERSON |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      |                                  |                        |                                                              |     |       |
| Nov. 21, 1956,....                  | 280                | 9.2                           | 0.07         | 2.8                  | 0.7                    | 1.4            | 0.6                   | 13                                      | 0.4                           | 0.6              | 0.1             | 1.3                           | a23                                                                  | 10                               | 0                      | 29.4                                                         | 6.8 | 9     |
| July 17, 1957,....                  | 514                | 8.3                           | .02          | 1.6                  | .9                     | 1.2            | .8                    | 12                                      | .8                            | 1.2              | .1              | 1.0                           | a22                                                                  | 8                                | 0                      | 24.9                                                         | 6.3 | 11    |
| NORTH FORK NEW RIVER AT CRUMPLER    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                      |                                  |                        |                                                              |     |       |
| Nov. 21, 1956,....                  | 374                | 11                            | 0.04         | 3.9                  | 0.9                    | 1.8            | 0.7                   | 17                                      | 0.6                           | 1.0              | 0.0             | 2.1                           | a30                                                                  | 13                               | 0                      | 38.6                                                         | 6.7 | 7     |
| July 16, 1957,....                  | 255                | 6.4                           | .00          | 4.4                  | 2.0                    | 1.9            | 1.0                   | 22                                      | 2.5                           | 1.8              | .2              | 1.2                           | a32                                                                  | 19                               | 1                      | 48.8                                                         | 6.6 | 11    |

a Calculated from determined constituents.

## BIG SANDY RIVER BASIN

JOHNS CREEK NEAR VAN LEAR, KY.

LOCATION.--Temperature recorder at gaging station, 100 feet upstream from Daniels Creek, 0.3 mile upstream from Daniels Creek, 0.5 mile downstream from Dewey Dam, and 2½ miles southeast of Van Lear, Johnson County.

DRAINAGE AREA.--208 square miles.

RECORDS AVAILABLE.--Water temperatures: April 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79°F June 17; minimum, 37°F Jan. 19-20, 22.

EXTREMES, 1954-57.--Water temperatures: Maximum, 79°F July 3, 1956; minimum, 34°F Feb. 2, 6, 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow regulated by Dewey Reservoir.

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 64      | 64  | 62       | 62  | 48       | 48  | --      | --  | 46       | 45  | 45    | 43  | 51    | 50  | 57  | 55  | 67   | 66  | 68   | 68  | 61     | 59  | 62        |  |
| 2.....       | 64      | 64  | 62       | 62  | 47       | 47  | 45      | --  | 45       | 43  | 45    | 45  | 51    | 51  | 56  | 55  | 65   | 65  | 68   | 68  | 61     | 60  | 63        |  |
| 3.....       | 64      | 63  | 62       | 61  | 47       | 47  | 45      | 43  | 46       | 43  | 45    | 45  | 51    | 51  | 58  | 56  | 65   | 65  | 68   | 68  | 61     | 60  | 62        |  |
| 4.....       | 64      | 64  | 61       | 61  | 47       | 47  | 46      | 44  | 45       | 45  | 45    | 44  | 51    | 50  | 58  | 58  | 65   | 64  | 68   | 68  | 61     | 59  | 62        |  |
| 5.....       | 64      | 63  | 62       | 60  | 47       | 46  | 45      | 43  | 45       | 45  | 45    | 44  | 53    | 50  | 58  | 64  | 64   | 69  | 68   | 61  | 59     | 61  | 59        |  |
| 6.....       | 63      | 62  | 61       | 61  | 48       | 48  | 45      | 44  | 46       | 45  | 45    | 45  | 53    | 50  | 58  | 67  | 64   | 68  | 68   | 61  | 58     | 61  | 59        |  |
| 7.....       | 62      | 62  | 62       | 62  | 49       | 48  | 45      | 44  | 46       | 46  | 46    | 45  | 52    | 52  | 57  | 67  | 72   | 64  | 68   | 68  | 61     | 58  | 60        |  |
| 8.....       | 62      | 61  | 62       | 61  | 49       | 49  | 45      | 44  | 46       | 46  | 45    | 44  | 53    | 52  | 57  | 67  | 65   | 65  | 69   | 68  | 61     | 58  | 59        |  |
| 9.....       | 61      | 61  | 61       | 61  | 49       | 49  | 44      | 43  | 47       | 46  | 45    | 43  | 53    | 53  | 59  | 67  | 65   | 65  | 76   | 68  | 61     | 58  | 59        |  |
| 10.....      | 61      | 61  | 61       | 61  | 49       | 48  | 43      | 41  | 47       | 47  | 45    | 44  | 53    | 53  | 61  | 59  | 65   | 65  | 69   | 69  | 61     | 58  | 60        |  |
| 11.....      | 61      | 60  | 61       | 60  | 48       | 48  | 44      | 43  | 47       | 47  | 45    | 45  | 53    | 53  | 62  | 61  | 65   | 65  | 69   | 68  | 61     | 59  | 59        |  |
| 12.....      | 61      | 61  | 60       | 60  | 49       | 48  | 44      | 41  | 48       | 47  | 45    | 45  | 53    | 53  | 63  | 62  | 66   | 65  | 68   | 68  | 61     | 58  | 60        |  |
| 13.....      | 61      | 61  | 60       | 58  | 48       | 46  | 46      | 43  | 48       | 48  | 45    | 45  | 53    | 52  | 64  | 63  | 68   | 66  | 69   | 68  | 61     | 59  | 60        |  |
| 14.....      | 61      | 61  | 58       | 58  | 48       | 46  | 44      | 43  | 48       | 48  | 46    | 45  | 52    | 52  | 65  | 64  | 68   | 67  | 69   | 68  | 61     | 59  | 59        |  |
| 15.....      | 61      | 61  | 58       | 58  | 48       | 47  | 46      | 41  | 48       | 48  | 46    | 46  | 52    | 52  | 65  | 64  | 69   | 68  | 70   | 69  | 61     | 59  | 60        |  |
| 16.....      | 62      | 61  | 58       | 58  | 50       | 46  | 42      | 42  | 48       | 47  | 48    | 48  | 52    | 52  | 64  | 64  | 70   | 69  | 68   | 60  | 59     | 60  | 58        |  |
| 17.....      | 62      | 62  | 56       | 56  | 47       | 46  | 42      | 42  | 47       | 47  | 48    | 48  | 52    | 52  | 64  | 63  | 79   | 70  | 68   | 68  | 60     | 58  | 58        |  |
| 18.....      | 62      | 62  | 56       | 55  | 47       | 47  | 44      | 39  | 47       | 47  | 46    | 48  | 52    | 52  | 64  | 63  | 71   | 70  | 71   | 67  | 60     | 58  | 58        |  |
| 19.....      | 64      | 62  | 55       | 55  | 50       | 47  | 40      | 37  | 47       | 46  | 48    | 48  | 54    | 52  | 64  | 63  | 70   | 68  | 67   | 60  | 58     | 60  | 59        |  |
| 20.....      | 65      | 64  | 55       | 55  | 47       | 47  | 40      | 37  | 47       | 45  | 48    | 48  | 52    | 52  | 64  | 64  | 75   | 69  | 67   | 65  | 60     | 58  | 60        |  |
| 21.....      | 65      | 65  | 55       | 54  | 50       | 47  | 39      | 39  | 45       | 44  | 48    | 48  | 52    | 52  | 64  | 63  | 69   | 68  | 85   | 64  | 60     | 57  | 60        |  |
| 22.....      | 65      | 64  | 54       | 52  | 47       | 47  | 39      | 37  | 45       | 45  | 48    | 48  | 56    | 52  | 66  | 84  | 76   | 68  | 84   | 63  | 61     | 58  | 61        |  |
| 23.....      | 64      | 63  | 53       | 51  | 47       | 47  | 40      | 39  | 45       | 45  | 48    | 48  | 53    | 53  | 64  | 84  | 71   | 68  | 83   | 62  | 61     | 58  | 61        |  |
| 24.....      | 63      | 63  | 51       | 50  | 47       | 47  | 42      | 40  | 45       | 44  | 48    | 48  | 53    | 53  | 65  | 84  | 68   | 67  | 83   | 63  | 61     | 58  | 60        |  |
| 25.....      | 63      | 62  | 50       | 49  | 50       | 47  | 42      | 42  | 44       | 44  | 48    | 48  | 69    | 53  | 65  | 65  | 67   | 67  | 83   | 61  | 60     | 60  | 58        |  |
| 26.....      | 64      | 62  | 48       | 48  | 47       | 47  | 42      | 39  | 44       | 44  | 49    | 48  | 55    | 55  | 68  | 65  | 67   | 67  | 82   | 61  | 59     | 60  | 59        |  |
| 27.....      | 63      | 62  | 48       | 48  | 47       | 45  | 46      | 42  | 46       | 44  | 49    | 49  | 55    | 54  | 67  | 67  | 67   | 67  | 83   | 60  | 62     | 59  | 60        |  |
| 28.....      | 62      | 61  | 48       | 48  | 45       | 45  | 42      | 41  | 45       | 44  | 50    | 49  | 54    | 54  | 67  | 67  | 70   | 68  | 82   | 60  | 62     | 60  | 59        |  |
| 29.....      | 61      | 60  | 48       | 48  | 45       | 44  | 41      | 41  | --       | --  | 50    | 50  | 54    | 54  | 67  | 68  | 68   | 68  | 82   | 60  | 62     | 60  | 58        |  |
| 30.....      | 62      | 61  | 49       | 48  | 45       | 44  | 45      | 43  | --       | --  | 50    | 49  | 64    | 54  | 66  | 85  | 68   | 68  | 81   | 59  | 62     | 60  | 59        |  |
| 31.....      | 63      | 62  | --       | --  | --       | 44  | 46      | 43  | --       | --  | 50    | 50  | --    | --  | 67  | 86  | --   | --  | 61   | 59  | 62     | 60  | --        |  |
| Average..... | 63      | 62  | 57       | 56  | 48       | 44  | 41      | 46  | 46       | 46  | 47    | 47  | 54    | 52  | 63  | 62  | 68   | 67  | 67   | 65  | 61     | 59  | 60        |  |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## BIG SANDY RIVER BASIN--Continued

## TUG FORK AT KERMIT, W. VA.

LOCATION.--At city waterplant, at Kermit, Mingo County, three quarters of a mile downstream from Wolf Creek, and 3 miles downstream from gaging station near Kermit.  
DRAINAGE AREA.--1,274 square miles above waterplant; 1,185 square miles above gaging station.

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 85°F July 7; minimum, 35°F Jan. 3, 18.

EXTREMES, 1946-57.--Water temperatures: Maximum, 90°F July 29, 1949; minimum, freezing point on several days during winter months.

REMARKS.--Records of discharge for gaging station near Kermit for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 66   | 62   | 38   | 50   | 50   | 51   | 80   | 72  | 76   | 75   | 80   | 80    |
| 2       | 68   | 62   | 41   | 49   | 52   | 49   | 56   | 68  | 78   | 76   | 80   | 76    |
| 3       | 69   | 60   | 43   | 35   | 50   | 47   | 62   | 67  | 74   | 75   | 80   | 78    |
| 4       | 69   | 61   | 43   | 38   | 52   | 46   | 61   | 66  | 75   | 75   | 81   | 75    |
| 5       | 70   | 61   | 44   | 40   | 51   | 46   | 63   | 67  | 77   | 75   | 78   | 74    |
| 6       | 68   | 60   | 47   | 41   | 54   | 47   | 62   | 60  | 74   | 80   | 76   | 70    |
| 7       | 67   | 61   | 50   | 42   | 52   | 48   | 60   | 61  | 75   | 85   | 72   | 69    |
| 8       | 63   | 60   | 55   | 42   | 55   | 48   | 56   | 63  | 77   | 78   | 75   | 69    |
| 9       | 63   | 55   | 55   | 42   | 53   | 45   | 52   | 66  | 80   | 79   | 77   | 72    |
| 10      | 60   | 58   | 50   | 45   | 55   | 45   | 52   | 68  | 76   | 77   | 76   | 74    |
| 11      | 59   | 50   | 47   | 47   | 55   | 46   | 53   | 70  | 74   | 76   | 79   | 75    |
| 12      | 58   | 54   | 50   | 47   | 49   | 52   | 56   | 71  | 77   | 78   | 80   | 75    |
| 13      | 58   | 49   | 53   | 47   | 48   | 59   | 53   | 76  | 78   | 78   | 79   | 76    |
| 14      | 60   | 48   | 52   | 45   | 49   | 59   | 56   | 78  | 79   | 76   | 78   | 76    |
| 15      | 61   | 49   | 53   | 43   | 46   | 55   | 55   | 75  | 78   | 79   | 80   | 76    |
| 16      | 61   | 54   | 55   | 40   | 48   | 54   | 53   | 76  | 84   | 80   | 80   | 77    |
| 17      | 61   | 51   | 55   | 36   | 47   | 52   | 54   | 72  | 84   | 79   | 78   | 75    |
| 18      | 60   | 47   | 54   | 35   | 40   | 54   | 60   | 74  | 82   | 80   | 73   | 74    |
| 19      | 63   | 46   | 50   | 39   | 47   | 53   | 62   | 76  | 80   | 81   | 74   | 72    |
| 20      | 64   | 45   | 50   | 36   | 43   | 52   | 65   | 74  | 80   | 81   | 72   | 74    |
| 21      | 63   | 48   | 52   | 39   | 43   | 48   | 67   | 70  | 76   | 81   | 72   | 73    |
| 22      | 63   | 47   | 54   | 43   | 43   | 51   | 69   | 74  | 78   | 80   | 70   | 75    |
| 23      | 65   | 40   | 55   | 48   | 46   | 50   | 69   | 70  | 78   | 79   | 71   | 72    |
| 24      | 63   | 38   | 56   | 48   | 47   | 51   | 67   | 75  | 76   | 77   | 72   | 70    |
| 25      | 64   | 39   | 51   | 48   | 51   | 53   | 68   | 75  | 77   | 74   | 74   | 68    |
| 26      | 60   | 40   | 48   | 46   | 54   | 55   | 68   | 75  | 76   | 75   | 70   | 64    |
| 27      | 58   | 40   | 48   | 45   | 56   | 54   | 69   | 77  | 77   | 77   | 72   | 63    |
| 28      | 60   | 41   | 47   | 48   | 54   | 51   | 71   | 72  | 76   | 76   | 73   | 63    |
| 29      | 59   | 42   | 46   | 50   | --   | 48   | 73   | 73  | 75   | 79   | 83   | 62    |
| 30      | 61   | 43   | 42   | 50   | --   | 47   | 72   | 74  | 75   | 80   | 75   | 60    |
| 31      | 62   | --   | 42   | 50   | --   | 48   | --   | 75  | --   | 78   | 76   | --    |
| Average | 63   | 50   | 49   | 44   | 50   | 50   | 61   | 71  | 77   | 78   | 76   | 72    |

## BIG SANDY RIVER BASIN--Continued

BIG SANDY RIVER AT CATLETTSBURG, KY.

LOCATION.--At the Catlettsburg, Kenova, and Ceredo Water Company intake at Catlettsburg, Boyd County, 300 feet upstream from bridge on U. S. Highway 60, 0.3 mile upstream from Ice Dam Creek, and 0.9 mile upstream from mouth.

DRAINAGE AREA.--4,281 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 490 ppm Sept. 1-10; minimum, 99 ppm Feb. 1-9.

Hardness: Maximum, 198 ppm Sept. 1-10; minimum, 54 ppm Feb. 1-9.

Specific conductance: Maximum daily, 876 micromhos Sept. 10; minimum daily, 109 micromhos Apr. 10.

Water temperatures: Maximum, 86°F June 17; minimum, freezing point Nov. 24, 27, Jan. 3, 8.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micromhos at 25°C) | pH  | Color |
|----------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------------|-----|-------|
|                      |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                          |     |       |
| Oct. 1-10, 1956..... | 8.3                  | 0.13                       | 0.00      | 34             | 14           | 40             | 3.8         | 91            | 123                             | 23                         | 0.2           | 1.0          | 306                        | 306                                                | 142                           | 68            | 479                                      | 7.5 | 2     |
| Oct. 11-20.....      | 10                   | .08                        | .00       | 33             | 14           | 40             | 3.8         | 85            | 113                             | 27                         | .2            | 2.2          | 303                        | 303                                                | 140                           | 70            | 477                                      | 7.3 | 2     |
| Oct. 21-31.....      | 10                   | .02                        | .00       | 37             | 16           | 55             | 4.1         | 104           | 113                             | 38                         | .2            | 1.4          | 339                        | 339                                                | 138                           | 73            | 566                                      | 7.4 | 2     |
| Nov. 1-10.....       | 8.5                  | .04                        | .00       | 32             | 15           | 42             | 3.6         | 78            | 117                             | 38                         | .1            | 1.7          | 312                        | 312                                                | 142                           | 78            | 486                                      | 7.4 | 6     |
| Nov. 11-20.....      | 9.7                  | .04                        | .00       | 27             | 13           | 34             | 3.1         | 68            | 95                              | 27                         | .2            | 2.3          | 255                        | 255                                                | 121                           | 66            | 406                                      | 7.1 | 4     |
| Nov. 21-30.....      | 6.6                  | .00                        | .00       | 28             | 12           | 39             | 2.7         | 71            | 96                              | 33                         | .1            | 1.9          | 271                        | 271                                                | 120                           | 62            | 424                                      | 7.1 | 5     |
| Dec. 1-10.....       | 6.9                  | .02                        | .00       | 26             | 11           | 32             | 2.5         | 61            | 90                              | 26                         | .1            | 2.6          | 235                        | 235                                                | 110                           | 60            | 400                                      | 7.1 | 5     |
| Dec. 11-20.....      | 7.5                  | .19                        | .00       | 16             | 6.4          | 15             | 2.8         | 34            | 50                              | 17                         | .1            | 2.4          | 135                        | 135                                                | 67                            | 39            | 226                                      | 7.0 | 6     |
| Dec. 21-31.....      | 8.6                  | .05                        | .15       | 13             | 6.0          | 9.3            | 1.5         | 27            | 42                              | 9.0                        | .1            | 2.5          | 110                        | 110                                                | 57                            | 35            | 175                                      | 7.0 | 7     |
| Jan. 1-10, 1957..... | 9.2                  | .05                        | .00       | 21             | 8.1          | 17             | 2.0         | 42            | 67                              | 14                         | .1            | 3.1          | 171                        | 171                                                | 86                            | 52            | 268                                      | 7.0 | 5     |
| Jan. 11-20.....      | 8.2                  | .13                        | .04       | 16             | 6.8          | 11             | 1.7         | 28            | 56                              | 7.7                        | .2            | 2.6          | 131                        | 131                                                | 68                            | 45            | 206                                      | 6.9 | 18    |
| Jan. 21-31.....      | 7.6                  | .04                        | .00       | 13             | 5.5          | 9.0            | 1.8         | 22            | 44                              | 6.1                        | .2            | 2.6          | 104                        | 104                                                | 55                            | 37            | 162                                      | 7.2 | 6     |
| Feb. 1-9.....        | 7.5                  | .01                        | .00       | 13             | 5.2          | 6.8            | 1.7         | 17            | 49                              | 3.6                        | .1            | 1.8          | 99                         | 99                                                 | 54                            | 40            | 157                                      | 7.1 | 2     |
| Feb. 11-20.....      | 8.4                  | .02                        | .00       | 16             | 7.8          | 10             | 1.8         | 31            | 60                              | 4.5                        | .2            | 1.6          | 134                        | 134                                                | 72                            | 46            | 216                                      | 6.8 | 5     |
| Feb. 21-28.....      | 8.2                  | .01                        | .00       | 16             | 8.1          | 12             | 1.6         | 32            | 60                              | 6.0                        | .1            | 1.3          | 138                        | 138                                                | 74                            | 48            | 226                                      | 6.9 | 4     |
| Mar. 1-10.....       | 8.1                  | .08                        | .04       | 14             | 7.2          | 11             | 1.4         | 31            | 53                              | 5.2                        | .2            | 1.5          | 126                        | 126                                                | 64                            | 39            | 203                                      | 7.2 | 7     |
| Mar. 11-20.....      | 8.1                  | .07                        | .00       | 15             | 7.6          | 12             | 1.4         | 33            | 56                              | 6.2                        | .2            | 1.1          | 133                        | 133                                                | 68                            | 42            | 212                                      | 7.2 | 5     |
| Mar. 21-31.....      | 9.3                  | .05                        | .04       | 19             | 9.1          | 18             | 1.6         | 44            | 70                              | 9.3                        | .3            | 1.5          | 158                        | 158                                                | 85                            | 49            | 264                                      | 7.3 | 1     |
| Apr. 1-10.....       | 8.3                  | .00                        | .00       | 16             | 6.5          | 16             | 1.6         | 32            | 52                              | 8.8                        | .3            | 1.4          | 127                        | 127                                                | 66                            | 40            | 203                                      | 7.2 | 1     |
| Apr. 12-20.....      | 8.5                  | .06                        | .01       | 15             | 7.0          | 11             | 1.7         | 31            | 54                              | 6.0                        | .2            | 1.4          | 127                        | 127                                                | 66                            | 41            | 200                                      | 6.7 | 7     |
| Apr. 21-30.....      | 8.8                  | .03                        | .02       | 18             | 7.9          | 12             | 1.8         | 40            | 62                              | 8.0                        | .2            | 1.5          | 154                        | 154                                                | 78                            | 44            | 242                                      | 6.9 | 5     |
| May 1-10.....        | 9.9                  | .09                        | .09       | 22             | 9.6          | 21             | 2.2         | 57            | 74                              | 11                         | .3            | 1.3          | 190                        | 190                                                | 94                            | 48            | 302                                      | 7.2 | 6     |
| May 11-20.....       | 8.2                  | .00                        | .02       | 30             | 12           | 36             | 2.7         | 80            | 108                             | 20                         | .1            | 1.4          | 270                        | 270                                                | 135                           | 59            | 405                                      | 7.6 | 2     |
| May 21-31.....       | 8.6                  | .01                        | .03       | 25             | 13           | 34             | 2.7         | 75            | 92                              | 22                         | .2            | 1.9          | 252                        | 252                                                | 116                           | 54            | 378                                      | 7.5 | 3     |



BIG SANDY RIVER BASIN--Continued  
BIG SANDY RIVER AT CATLETTSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                            |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg./nesium           | Non-carbonate |                                            |     |       |
| June 1-10, 1957.....       |                      | 9.5                        | 0.04      | 0.03           | 36           | 15             | 50          | 3.3           | 107                             | 135                        | 27            | 0.1          | 2.0                        | 334                                                 | 152                           | 64            | 538                                        | 7.3 | 2     |
| June 11-20.....            |                      | 9.4                        | .05       | .00            | 32           | 13             | 41          | 3.1           | 83                              | 114                        | 28            | .1           | 2.1                        | 287                                                 | 134                           | 66            | 467                                        | 7.2 | 2     |
| June 21-30.....            |                      | 9.4                        | .03       | .01            | 26           | 11             | 32          | 2.8           | 73                              | 92                         | 17            | .2           | 2.0                        | 234                                                 | 110                           | 50            | 379                                        | 7.3 | 5     |
| July 1-10.....             |                      | 11                         | .03       | .00            | 29           | 9.7            | 31          | 2.7           | 73                              | 88                         | 23            | .2           | 2.2                        | 239                                                 | 113                           | 52            | 384                                        | 7.3 | 3     |
| July 11-20.....            |                      | 9.0                        | .02       | .00            | 31           | 12             | 56          | 4.3           | 94                              | 110                        | 42            | .4           | 2.3                        | 310                                                 | 127                           | 50            | 515                                        | 7.2 | 3     |
| July 21-31.....            |                      | 7.6                        | .02       | .00            | 32           | 13             | 56          | 2.8           | 104                             | 116                        | 38            | .5           | 2.3                        | 323                                                 | 134                           | 48            | 534                                        | 7.3 | 7     |
| Aug. 1-10.....             |                      | 11                         | .04       | .02            | 37           | 15             | 65          | 3.9           | 95                              | 145                        | 41            | .2           | 2.9                        | 362                                                 | 154                           | 76            | 579                                        | 7.3 | 6     |
| Aug. 11-17, 19-20.....     |                      | 8.9                        | .00       | .06            | 41           | 17             | 66          | 4.1           | 119                             | 157                        | 44            | .2           | 1.8                        | 407                                                 | 172                           | 74            | 648                                        | 7.5 | 7     |
| Aug. 21, 23-24, 26-31..    |                      | 11                         | .09       | .06            | 37           | 16             | 70          | 4.2           | 117                             | 142                        | 48            | .2           | 1.6                        | 396                                                 | 159                           | 62            | 642                                        | 7.3 | 7     |
| Sept. 1-10.....            |                      | 8.4                        | .22       | .24            | 43           | 22             | 90          | 6.4           | 144                             | 174                        | 66            | .2           | 4.2                        | 490                                                 | 198                           | 80            | 786                                        | 7.2 | 8     |
| Sept. 11-20.....           |                      | 7.2                        | .19       | .15            | 36           | 17             | 78          | 4.5           | 115                             | 154                        | 54            | .2           | 1.0                        | 428                                                 | 160                           | 66            | 673                                        | 7.1 | 6     |
| Sept. 21-30.....           |                      | 9.4                        | .01       | .02            | 35           | 17             | 44          | 4.3           | 79                              | 144                        | 29            | .2           | 2.4                        | 329                                                 | 158                           | 93            | 520                                        | 7.0 | 3     |
| Time-weighted average..... |                      | 8.7                        | 0.06      | 0.03           | 26           | 11             | 34          | 2.8           | 67                              | 94                         | 23            | 0.2          | 2.0                        | 243                                                 | 110                           | 55            | 387                                        | --  | 5     |

<sup>a</sup> Represents 99 percent of days.

## BIG SANDY RIVER BASIN--Continued

## BIG SANDY RIVER AT CATLETTSBURG, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
/Once-daily measurement at approximately 8 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 62   | 39   | 44   | 49   | 50   | 55   | 70  | 77   | 79   | 80   | 81    |
| 2       | --   | 61   | 40   | 45   | 47   | 49   | 55   | 70  | 75   | 81   | 82   | 82    |
| 3       | 68   | 61   | 39   | 32   | 48   | 48   | 53   | 66  | 73   | 76   | 83   | 83    |
| 4       | 69   | 60   | 39   | 40   | 49   | 43   | 50   | 60  | 73   | 81   | 80   | 82    |
| 5       | 68   | 60   | 45   | 40   | 48   | 41   | 50   | 62  | 74   | 79   | 80   | 75    |
| 6       | 68   | 60   | 49   | 40   | 42   | 43   | 54   | 60  | 75   | 79   | 75   | 75    |
| 7       | 65   | 60   | 53   | 40   | 43   | 44   | 55   | 61  | 72   | 81   | 72   | 75    |
| 8       | 68   | 59   | 59   | 31   | 50   | 40   | 45   | 63  | 75   | 82   | 75   | 74    |
| 9       | 64   | 50   | 42   | 33   | 51   | 40   | 52   | 65  | 76   | 83   | 76   | 75    |
| 10      | 60   | 52   | 40   | 42   | 50   | 43   | 53   | 68  | 75   | 79   | 78   | 78    |
| 11      | 59   | 53   | 46   | 44   | 52   | 44   | --   | 70  | 76   | 78   | 77   | 75    |
| 12      | 59   | 49   | 47   | 45   | 50   | 45   | 53   | 71  | 77   | 80   | 73   | 78    |
| 13      | 60   | 49   | 49   | 44   | 50   | 42   | 51   | 72  | 80   | 82   | 78   | 78    |
| 14      | 59   | 50   | 48   | 43   | 40   | 51   | 50   | 75  | 78   | 80   | 80   | 77    |
| 15      | 64   | 50   | 50   | 47   | 42   | 52   | 51   | 75  | 80   | 84   | 81   | 77    |
| 16      | 59   | 52   | 50   | 42   | 45   | 53   | 53   | 72  | 82   | 84   | 82   | 75    |
| 17      | 59   | 49   | 49   | 38   | 44   | 53   | 53   | 68  | 86   | 82   | 79   | 72    |
| 18      | 65   | 52   | 49   | --   | 43   | 51   | 54   | 72  | 85   | 82   | --   | 73    |
| 19      | 61   | 40   | 46   | 39   | 40   | 54   | 57   | 75  | 83   | 83   | 75   | 72    |
| 20      | 60   | 50   | 50   | 40   | 42   | 51   | 63   | 73  | 75   | 84   | 76   | 74    |
| 21      | 60   | 50   | 48   | 40   | 40   | 49   | 65   | 67  | 79   | 85   | 75   | 75    |
| 22      | 61   | 48   | 48   | 47   | 40   | 50   | 67   | 68  | 79   | 84   | --   | 76    |
| 23      | 67   | 33   | 47   | 48   | 40   | 51   | 68   | 70  | 80   | 85   | 74   | 70    |
| 24      | 62   | 32   | 46   | 44   | 43   | 50   | 68   | 71  | 81   | 79   | 75   | 65    |
| 25      | 64   | 46   | 47   | 42   | 46   | 50   | 68   | 69  | 75   | 78   | --   | 67    |
| 26      | 64   | 38   | 47   | 41   | 49   | 50   | --   | 68  | 74   | 80   | 76   | 70    |
| 27      | 60   | 32   | 46   | 38   | 49   | 50   | 69   | 74  | 76   | 77   | 75   | 66    |
| 28      | 62   | 39   | 45   | 45   | 51   | 51   | 69   | 69  | 78   | 77   | 77   | 63    |
| 29      | 58   | 40   | 45   | 44   | --   | 50   | 70   | 70  | 78   | 79   | 78   | 65    |
| 30      | 60   | 39   | 45   | 44   | --   | 49   | 69   | 74  | 78   | 80   | 78   | 65    |
| 31      | 62   | --   | 44   | 50   | --   | 49   | --   | 75  | --   | 80   | 80   | --    |
| Average | 63   | 49   | 46   | 42   | 46   | 48   | 58   | 69  | 78   | 81   | 78   | 74    |

## TYGARTS CREEK BASIN

## TYGARTS CREEK NEAR GREENUP, KY.

LOCATION.--At gaging station at bridge on State Highway, 7,100 feet downstream from Lick Run, 0.4 mile upstream from White Oak Creek, and  $6\frac{1}{4}$  miles west of Greenup, Greenup County.

DRAINAGE AREA.--241 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1957.

Sediment records: October 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 83°F July 16, 23, 31; minimum, freezing point Jan. 15-18.

Sediment concentrations: Maximum daily, 857 ppm May 23; minimum daily, 1 ppm Dec. 31, Jan. 1, 3-4, Sept. 25.

Sediment loads: Maximum daily, 5,420 tons Dec. 15; minimum daily, less than 0.05 ton on many days during July to September.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Occasional regulation at low flow caused by withdrawing cooling water for gas transmission station.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 62   | 60   | 42   | 44   | 41   | 45   | 48   | 72  | 72   | 80   | 82   | 81    |
| 2       | 64   | 60   | 42   | 44   | 42   | 43   | 50   | 71  | 70   | 80   | 81   | 81    |
| 3       | 64   | 62   | 43   | 42   | 41   | 43   | 51   | 68  | 71   | 80   | 80   | 72    |
| 4       | 63   | 60   | 45   | 45   | 45   | 42   | 50   | 62  | 72   | 80   | 81   | 72    |
| 5       | 63   | 61   | 47   | 39   | 47   | 44   | 54   | 60  | 72   | 79   | 78   | 75    |
| 6       | 65   | 62   | 47   | 39   | 43   | 43   | 51   | 64  | 73   | 79   | 78   | 73    |
| 7       | 63   | 60   | 47   | 38   | 45   | 41   | 52   | 65  | 72   | 77   | 80   | 73    |
| 8       | 62   | 59   | 54   | 37   | 45   | 39   | 49   | 65  | 72   | 78   | 81   | 75    |
| 9       | 59   | 54   | 48   | 39   | 47   | 40   | 50   | 66  | 72   | 80   | 80   | 75    |
| 10      | 58   | 55   | 47   | 39   | 51   | 44   | 53   | 66  | 73   | 77   | 81   | 73    |
| 11      | 55   | 54   | 46   | 39   | 44   | 49   | 54   | 67  | 73   | 81   | 79   | 75    |
| 12      | 57   | 54   | 47   | 39   | 43   | 53   | 50   | 70  | 73   | 82   | 79   | 75    |
| 13      | 58   | 52   | 45   | 39   | 44   | 54   | 50   | 74  | 75   | 79   | 80   | 75    |
| 14      | 56   | 52   | 47   | 39   | 43   | 55   | 50   | 74  | 75   | 79   | 80   | 75    |
| 15      | 60   | 52   | 46   | 32   | 44   | 54   | 54   | 74  | 77   | 80   | 81   | 75    |
| 16      | 59   | 52   | 46   | 32   | --   | 54   | 51   | 70  | 80   | 83   | 78   | 70    |
| 17      | 60   | 49   | 46   | 32   | 41   | 54   | 51   | 71  | 80   | 81   | 75   | 70    |
| 18      | 59   | 49   | 46   | 32   | 43   | 55   | 50   | 70  | 78   | 81   | 75   | 70    |
| 19      | 60   | 49   | 46   | 35   | 40   | 52   | 60   | 70  | 80   | 82   | 75   | 73    |
| 20      | 68   | 48   | 45   | 34   | 40   | 49   | 64   | 65  | 81   | 81   | 74   | 75    |
| 21      | 64   | 49   | 41   | 41   | 41   | 49   | 62   | 67  | 78   | 82   | 74   | 77    |
| 22      | 60   | 45   | 46   | 44   | 42   | 46   | 65   | 65  | 79   | 82   | 75   | 75    |
| 23      | 59   | 43   | 45   | 42   | 42   | 49   | 64   | 66  | 80   | 83   | 77   | 75    |
| 24      | 60   | 43   | 46   | 40   | 44   | 50   | 68   | 70  | 78   | 82   | 74   | 70    |
| 25      | 63   | 42   | 45   | 40   | 46   | 42   | 70   | 70  | 78   | 81   | 74   | 71    |
| 26      | 62   | 42   | 41   | 39   | 52   | 49   | 70   | 70  | 79   | 80   | 74   | 70    |
| 27      | 58   | 43   | 45   | 39   | 46   | 46   | 69   | 68  | 79   | 80   | 75   | 65    |
| 28      | 58   | 41   | 45   | 39   | 42   | 47   | 69   | 70  | 80   | 80   | 78   | 60    |
| 29      | 60   | 41   | 44   | 41   | --   | 46   | 71   | 71  | 76   | 81   | 80   | 62    |
| 30      | 59   | 41   | 44   | 42   | --   | 48   | 71   | 70  | 80   | 81   | 80   | 65    |
| 31      | 60   | --   | 44   | 40   | --   | 50   | --   | --  | --   | 83   | 82   | --    |
| Average | 60   | 51   | 45   | 39   | 44   | 48   | 57   | 68  | 76   | 80   | 78   | 72    |

## TYGARTS CREEK BASIN

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## TYGARTS CREEK BASIN--Continued

## TYGARTS CREEK NEAR GREENUP, KY.--Continued

Suspended sediment, water year October 1953 to September 1957

| Suspended sediment, water year October 1951 to September 1957 |                       |                          |              |                       |                          |              |                       |                          |              |
|---------------------------------------------------------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
| Day                                                           | October               |                          |              | November              |                          |              | December              |                          |              |
|                                                               | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|                                                               |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....                                                        | 28                    | 36                       | 2.7          | 355                   | --                       | e 75         | 71                    | 5                        | 1.0          |
| 2.....                                                        | 27                    | 15                       | 1.1          | 692                   | 110                      | sa 240       | 65                    | 5                        | .9           |
| 3.....                                                        | 26                    | 8                        | .6           | 290                   | --                       | e 45         | 57                    | 5                        | .8           |
| 4.....                                                        | 29                    | 9                        | .7           | 172                   | 40                       | 18           | 52                    | 5                        | .7           |
| 5.....                                                        | 36                    | 7                        | .7           | 132                   | 36                       | 13           | 48                    | 5                        | .6           |
| 6.....                                                        | 73                    | 8                        | 1.6          | 104                   | 26                       | 7.3          | 45                    | 5                        | .6           |
| 7.....                                                        | 65                    | 8                        | 1.4          | 87                    | 18                       | 4.2          | 42                    | 7                        | .8           |
| 8.....                                                        | 52                    | 6                        | .8           | 73                    | 15                       | 3.0          | 46                    | 8                        | 1.0          |
| 9.....                                                        | 45                    | 4                        | .5           | 63                    | 10                       | 1.7          | 370                   | --                       | e 120        |
| 10.....                                                       | 34                    | 3                        | .3           | 52                    | 8                        | 1.1          | 1,140                 | 180                      | a 550        |
| 11.....                                                       | 34                    | 2                        | .2           | 46                    | 8                        | 1.0          | 580                   | 51                       | 80           |
| 12.....                                                       | 31                    | 2                        | .2           | 42                    | 7                        | .8           | 442                   | 21                       | 25           |
| 13.....                                                       | 30                    | 3                        | .2           | 38                    | 6                        | .6           | 596                   | 21                       | s 37         |
| 14.....                                                       | 26                    | 2                        | .1           | 34                    | 4                        | .4           | 3,210                 | 400                      | s 4,160      |
| 15.....                                                       | 25                    | 3                        | .2           | 31                    | 5                        | .4           | 5,700                 | 352                      | 5,420        |
| 16.....                                                       | 23                    | 5                        | .3           | 30                    | 8                        | .6           | 1,680                 | 135                      | s 718        |
| 17.....                                                       | 21                    | 4                        | .2           | 29                    | 8                        | .6           | 744                   | 41                       | 82           |
| 18.....                                                       | 18                    | 3                        | .1           | 29                    | 5                        | .4           | 516                   | 12                       | 17           |
| 19.....                                                       | 16                    | 3                        | .1           | 28                    | 6                        | .4           | 392                   | 7                        | 7.4          |
| 20.....                                                       | 18                    | 4                        | .2           | 28                    | 6                        | .4           | 490                   | 21                       | s 43         |
| 21.....                                                       | 24                    | 7                        | .4           | 36                    | 8                        | .8           | 2,110                 | 137                      | s 819        |
| 22.....                                                       | 22                    | 4                        | .2           | 424                   | 43                       | s 57         | 1,500                 | 68                       | 275          |
| 23.....                                                       | 24                    | 4                        | .2           | 374                   | 24                       | 24           | 1,570                 | 60                       | 254          |
| 24.....                                                       | 38                    | 4                        | .4           | 208                   | 23                       | 13           | 1,690                 | 71                       | 324          |
| 25.....                                                       | 44                    | 4                        | .5           | 155                   | 24                       | 10           | 1,080                 | 31                       | 90           |
| 26.....                                                       | 40                    | 7                        | .8           | 134                   | 20                       | 7.2          | 660                   | 15                       | 27           |
| 27.....                                                       | 35                    | 6                        | .6           | 122                   | 16                       | 5.3          | 492                   | 11                       | 15           |
| 28.....                                                       | 31                    | 4                        | .3           | 102                   | 10                       | 2.8          | 397                   | 6                        | 6.4          |
| 29.....                                                       | 30                    | 4                        | .3           | 90                    | 10                       | 2.4          | 345                   | 2                        | 1.9          |
| 30.....                                                       | 33                    | 4                        | .4           | 77                    | 7                        | 1.4          | 275                   | 2                        | 1.5          |
| 31.....                                                       | 31                    | 7                        | .6           | --                    | --                       | --           | 225                   | 1                        | .6           |
| Total.                                                        | 1,009                 | --                       | 16.9         | 4,077                 | --                       | 537.8        | 26,630                | --                       | 13,080.2     |
|                                                               |                       |                          |              |                       |                          |              |                       |                          |              |
| January                                                       |                       |                          | February     |                       |                          | March        |                       |                          |              |
| 1.....                                                        | 200                   | 1                        | 0.5          | 1,260                 | 80                       | sa 380       | 350                   | 10                       | 9.4          |
| 2.....                                                        | 166                   | 2                        | .9           | 2,650                 | 226                      | 1,620        | 428                   | 10                       | 12           |
| 3.....                                                        | 140                   | 1                        | .4           | 1,170                 | 60                       | 190          | 345                   | 7                        | 6.5          |
| 4.....                                                        | 130                   | 1                        | .4           | 744                   | 23                       | 46           | 280                   | 7                        | 5.3          |
| 5.....                                                        | 134                   | 2                        | .7           | 556                   | 12                       | 18           | 235                   | 5                        | 3.2          |
| 6.....                                                        | 130                   | 4                        | 1.4          | 784                   | 18                       | 38           | 204                   | 6                        | 3.3          |
| 7.....                                                        | 124                   | 6                        | 2.0          | 692                   | 16                       | 30           | 204                   | 5                        | 2.8          |
| 8.....                                                        | 120                   | 5                        | 1.6          | 528                   | 12                       | 17           | 330                   | 6                        | 5.3          |
| 9.....                                                        | 547                   | 85                       | sa 280       | 818                   | 220                      | sa 1,000     | 464                   | 8                        | 10           |
| 10.....                                                       | 2,430                 | 375                      | 2,460        | 3,010                 | 624                      | s 4,820      | 740                   | 22                       | 44           |
| 11.....                                                       | 1,280                 | 104                      | s 403        | 1,960                 | 119                      | 630          | 716                   | 15                       | 29           |
| 12.....                                                       | 688                   | 25                       | 46           | 1,170                 | 43                       | 136          | 556                   | 15                       | 22           |
| 13.....                                                       | 512                   | 14                       | 19           | 804                   | 22                       | 48           | 442                   | 12                       | 14           |
| 14.....                                                       | 420                   | 14                       | 16           | 576                   | 14                       | 22           | 360                   | 10                       | 9.7          |
| 15.....                                                       | 315                   | 13                       | 11           | 446                   | 11                       | 13           | 330                   | 10                       | 8.9          |
| 16.....                                                       | 220                   | 4                        | 2.4          | 370                   | 7                        | 7.0          | 270                   | 8                        | 5.8          |
| 17.....                                                       | 160                   | 2                        | .9           | 305                   | 5                        | 4.1          | 216                   | 7                        | 4.1          |
| 18.....                                                       | 130                   | 3                        | 1.0          | 250                   | 4                        | 2.7          | 192                   | 5                        | 2.6          |
| 19.....                                                       | 120                   | 2                        | .6           | 208                   | 2                        | 1.1          | 196                   | 5                        | 2.6          |
| 20.....                                                       | 135                   | 2                        | .7           | 188                   | 4                        | 2.0          | 204                   | 6                        | 3.3          |
| 21.....                                                       | 166                   | 2                        | .9           | 163                   | 2                        | .9           | 184                   | 4                        | 2.0          |
| 22.....                                                       | 583                   | 55                       | s 210        | 147                   | 2                        | .8           | 172                   | 3                        | 1.4          |
| 23.....                                                       | 3,360                 | 546                      | 4,950        | 140                   | 2                        | .8           | 192                   | 4                        | 2.1          |
| 24.....                                                       | 1,980                 | 178                      | s 1,150      | 130                   | 2                        | .7           | 188                   | 8                        | 4.1          |
| 25.....                                                       | 756                   | 43                       | 88           | 120                   | 17                       | 5.5          | 174                   | 7                        | 3.3          |
| 26.....                                                       | 552                   | 34                       | 51           | 122                   | 9                        | 3.0          | 230                   | 6                        | 3.7          |
| 27.....                                                       | 446                   | 19                       | 23           | 134                   | 4                        | 1.4          | 340                   | 7                        | 6.4          |
| 28.....                                                       | 616                   | 60                       | sa 140       | 158                   | 6                        | 2.6          | 397                   | 7                        | 7.5          |
| 29.....                                                       | 1,660                 | --                       | e 2,000      | --                    | --                       | --           | 345                   | 6                        | 5.6          |
| 30.....                                                       | 2,260                 | 360                      | sa 2,400     | --                    | --                       | --           | 315                   | 8                        | 6.8          |
| 31.....                                                       | 985                   | 56                       | 149          | --                    | --                       | --           | 270                   | 7                        | 5.1          |
| Total.                                                        | 21,465                | --                       | 14,410.4     | 19,603                | --                       | 9,040.6      | 9,869                 | --                       | 251.8        |

e Estimated.

a Computed from partly estimated concentration graph.

s Computed by subdividing day.

## TYGARTS CREEK BASIN--Continued

## TYGARTS CREEK NEAR GREENUP, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                        |                                  |                    | May                          |                                  |                    | June                         |                                  |                    |
|-------------------------------------|------------------------------|----------------------------------|--------------------|------------------------------|----------------------------------|--------------------|------------------------------|----------------------------------|--------------------|
|                                     | Mean dis-<br>charge<br>(cfs) | Suspended sediment               |                    | Mean dis-<br>charge<br>(cfs) | Suspended sediment               |                    | Mean dis-<br>charge<br>(cfs) | Suspended sediment               |                    |
|                                     |                              | Mean concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                              | Mean concen-<br>tration<br>(ppm) | Tons<br>per<br>day |                              | Mean concen-<br>tration<br>(ppm) | Tons<br>per<br>day |
| 1.....                              | 255                          | 8                                | 5.5                | 158                          | 6                                | 2.6                | 124                          | 31                               | 10                 |
| 2.....                              | 850                          | 60                               | sa180              | 134                          | 5                                | 1.8                | 90                           | 22                               | 5.3                |
| 3.....                              | 1,170                        | 64                               | s 219              | 114                          | 5                                | 1.5                | 71                           | 19                               | 3.6                |
| 4.....                              | 1,540                        | 160                              | sa950              | 97                           | 5                                | 1.3                | 63                           | 21                               | 3.6                |
| 5.....                              | 2,080                        | 242                              | s1,430             | 82                           | 4                                | .9                 | 57                           | 20                               | 3.1                |
| 6.....                              | 1,000                        | 48                               | s 144              | 73                           | 4                                | .8                 | 51                           | 16                               | 2.2                |
| 7.....                              | 596                          | 17                               | 27                 | 63                           | 4                                | .7                 | 50                           | 17                               | 2.3                |
| 8.....                              | 2,190                        | 291                              | s2,610             | 54                           | 5                                | .7                 | 52                           | 19                               | 2.7                |
| 9.....                              | 3,270                        | 414                              | s3,950             | 50                           | 3                                | .4                 | 48                           | 16                               | 2.1                |
| 10.....                             | 1,050                        | 88                               | s 273              | 45                           | 3                                | .4                 | 39                           | 15                               | 1.6                |
| 11.....                             | 672                          | 31                               | 56                 | 44                           | 3                                | .4                 | 38                           | 14                               | 1.4                |
| 12.....                             | 512                          | 22                               | 30                 | 41                           | 3                                | .3                 | 34                           | 13                               | 1.2                |
| 13.....                             | 428                          | 13                               | 15                 | 40                           | 3                                | .3                 | 31                           | 14                               | 1.2                |
| 14.....                             | 360                          | 10                               | 9.7                | 39                           | 2                                | .2                 | 31                           | 17                               | 1.4                |
| 15.....                             | 290                          | 9                                | 7.0                | 45                           | 4                                | .5                 | 38                           | 21                               | 2.2                |
| 16.....                             | 240                          | 9                                | 5.8                | 45                           | 3                                | .4                 | 40                           | 23                               | 2.5                |
| 17.....                             | 240                          | 12                               | 7.8                | 39                           | 2                                | .2                 | 34                           | 16                               | 1.5                |
| 18.....                             | 524                          | 29                               | 41                 | 39                           | 3                                | .3                 | 33                           | 22                               | 2.0                |
| 19.....                             | 532                          | 12                               | 17                 | 667                          | --                               | e 900              | 34                           | 28                               | 2.6                |
| 20.....                             | 424                          | 11                               | 12                 | 1,290                        | 550                              | sa2,000            | 30                           | 18                               | 1.4                |
| 21.....                             | 370                          | 9                                | 9.0                | 492                          | 285                              | 378                | 27                           | 13                               | .9                 |
| 22.....                             | 612                          | 40                               | sa 75              | 1,610                        | 676                              | s 4,220            | 25                           | 19                               | 1.3                |
| 23.....                             | 516                          | 92                               | 128                | 2,020                        | 857                              | s 5,240            | 19                           | 15                               | .8                 |
| 24.....                             | 438                          | 67                               | 79                 | 616                          | 159                              | s 287              | 16                           | 12                               | .5                 |
| 25.....                             | 379                          | 30                               | 31                 | 388                          | 38                               | 40                 | 14                           | 12                               | .4                 |
| 26.....                             | 320                          | 16                               | 14                 | 692                          | 140                              | sa300              | 10                           | 11                               | .3                 |
| 27.....                             | 255                          | 12                               | 8.3                | 480                          | 65                               | 84                 | 8.8                          | 9                                | .2                 |
| 28.....                             | 204                          | 9                                | 5.0                | 280                          | 36                               | 27                 | 10                           | 10                               | .3                 |
| 29.....                             | 192                          | 8                                | 4.1                | 172                          | 31                               | 14                 | 9.6                          | 13                               | .3                 |
| 30.....                             | 208                          | 10                               | 5.6                | 132                          | 24                               | 8.6                | 9.6                          | 13                               | .3                 |
| 31.....                             | --                           | --                               | --                 | 112                          | 26                               | 7.9                | --                           | --                               | --                 |
| Total.                              | 21,717                       | --                               | 10,348.8           | 10,153                       | --                               | 13,520.2           | 1,137.0                      | --                               | 59.2               |
|                                     |                              |                                  |                    |                              |                                  |                    |                              |                                  |                    |
| July                                |                              |                                  | August             |                              |                                  | September          |                              |                                  |                    |
| 1.....                              | 10                           | 13                               | 0.4                | 2.2                          | 6                                | (t)                | 2.0                          | 2                                |                    |
| 2.....                              | 8.8                          | 15                               | .4                 | 2.6                          | 7                                | (t)                | 2.1                          | 3                                |                    |
| 3.....                              | 8.8                          | 15                               | .4                 | 2.8                          | 6                                | (t)                | 2.1                          | 2                                |                    |
| 4.....                              | 8.4                          | 15                               | .3                 | 4.2                          | 7                                | 0.1                | 2.2                          | 2                                |                    |
| 5.....                              | 8.0                          | 13                               | .3                 | 3.9                          | 7                                | .1                 | 1.8                          | 2                                |                    |
| 6.....                              | 7.6                          | 15                               | .3                 | 3.9                          | 8                                | .1                 | 2.0                          | 2                                | (t)                |
| 7.....                              | 7.2                          | 15                               | .3                 | 2.1                          | 9                                | .1                 | 2.1                          | 2                                |                    |
| 8.....                              | 12                           | 14                               | .4                 | 2.2                          | 6                                |                    | 2.1                          | 2                                |                    |
| 9.....                              | 18                           | 18                               | .9                 | 2.6                          | 6                                |                    | 2.2                          | 2                                |                    |
| 10.....                             | 13                           | 15                               | .5                 | 2.4                          | 5                                |                    | 2.2                          | 2                                |                    |
| 11.....                             | 10                           | 15                               | .4                 | 2.4                          | 5                                | (t)                | 2.2                          | 2                                |                    |
| 12.....                             | 8.4                          | 14                               | .3                 | 2.4                          | 5                                |                    | 2.4                          | 2                                |                    |
| 13.....                             | 7.2                          | 11                               | .2                 | 1.3                          | 3                                |                    | 3.3                          | 2                                |                    |
| 14.....                             | 6.0                          | 14                               | .2                 | 1.4                          | 8                                |                    | 3.6                          | 3                                |                    |
| 15.....                             | 5.1                          | 13                               | .2                 | 4.2                          | 13                               | .1                 | 3.6                          | 3                                |                    |
| 16.....                             | 2.6                          | 10                               | .1                 | 5.4                          | 12                               | .2                 | 14                           | 13                               | 0.5                |
| 17.....                             | 3.6                          | 14                               | .1                 | 6.4                          | 15                               | .2                 | 29                           | 14                               | 1.1                |
| 18.....                             | 3.6                          | 19                               | .2                 | 4.5                          | 14                               | .2                 | 20                           | 6                                | .3                 |
| 19.....                             | 3.3                          | 19                               | .2                 | 3.6                          | 12                               | .1                 | 15                           | 2                                | .1                 |
| 20.....                             | 3.0                          | 15                               | .1                 | 3.0                          | 9                                | .1                 | 12                           | 2                                | .1                 |
| 21.....                             | 3.0                          | 11                               | .1                 | 2.7                          | 13                               | .1                 | 9.2                          | 4                                | .1                 |
| 22.....                             | 3.0                          | 10                               | .1                 | 2.4                          | 11                               | .1                 | 7.6                          | 5                                | .1                 |
| 23.....                             | 3.9                          | 10                               | .1                 | 2.2                          | 10                               | .1                 | 7.2                          | 5                                | .1                 |
| 24.....                             | 3.6                          | 11                               | .1                 | 2.1                          | 9                                | .1                 | 6.8                          | 2                                | (t)                |
| 25.....                             | 3.6                          | 11                               | .1                 | 2.4                          | 9                                | .1                 | 5.4                          | 1                                |                    |
| 26.....                             | 3.0                          | 9                                | .1                 | 2.6                          | 7                                |                    | 4.2                          | 4                                |                    |
| 27.....                             | 3.0                          | 7                                | .1                 | 2.1                          | 4                                |                    | 3.3                          | 2                                |                    |
| 28.....                             | 2.7                          | 8                                | .1                 | 2.1                          | 2                                | (t)                | 2.8                          | 2                                |                    |
| 29.....                             | 2.7                          | 7                                | .1                 | 2.0                          | 2                                |                    | 3.0                          | 3                                |                    |
| 30.....                             | 2.7                          | 5                                | (t)                | 2.0                          | 2                                |                    | 4.5                          | 2                                |                    |
| 31.....                             | 1.8                          | 4                                | (t)                | 2.0                          | 2                                | --                 | --                           | --                               | --                 |
| Total.                              | 187.6                        | --                               | 7.2                | 88.1                         | --                               | 2.2                | 179.9                        | --                               | 2.8                |
| Total discharge for year (cfs-days) |                              |                                  |                    |                              |                                  |                    |                              |                                  | 116,115.6          |
| Total load for year (tons)          |                              |                                  |                    |                              |                                  |                    |                              |                                  | 61,278.1           |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

## TYGARTS CREEK BASIN--Continued

## TYGARTS CREEK NEAR GREENUP, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection        | Time      | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |       |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |
|---------------------------|-----------|-----------------|------------------------|-------------------------------|-------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                           |           |                 |                        | Concentration of sample (ppm) |       | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |
|                           |           |                 |                        | 0.002                         | 0.004 |                                            | 0.008                                             | 0.016 | 0.081 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 14, 1956 ...         | 6:05 p.m. | 4,060           |                        | 633                           | 1,200 | 33                                         | 50                                                | 64    | 80    | 91    | 98    | 100   | --    |       | BSWCM               |
| Dec. 14, ..... 10:45 p.m. |           | 4,600           |                        | 655                           | 1,630 | 41                                         | 55                                                | 67    | 83    | 94    | 98    | 100   | --    |       | BSWCM               |
| Dec. 14, ..... 10:45 p.m. |           | 4,600           |                        | 655                           | 1,790 | 29                                         | 47                                                | 64    | 83    | 94    | 98    | 100   | --    |       | BSNM                |
| Jan. 10, 1957 ...         | 4:30 p.m. | 2,740           |                        | 325                           | 595   | 38                                         | 48                                                | 59    | 71    | 83    | 94    | 98    | 100   |       | BSWCM               |
| Jan. 23, ..... 4:30 p.m.  |           | 3,680           |                        | 547                           | 1,010 | 38                                         | 50                                                | 64    | 79    | 89    | 96    | 98    | 100   |       | BSWCM               |
| Feb. 2, ..... 11:15 p.m.  |           | 1,970           |                        | 138                           | 365   | --                                         | 54                                                | 70    | 84    | 91    | 97    | 99    | 100   |       | BSWCM               |
| Feb. 2, ..... 11:15 p.m.  |           | 1,970           |                        | 138                           | 374   | 38                                         | 63                                                | 77    | 89    | 94    | 98    | 100   | --    |       | BSNM                |
| Feb. 10, ..... 8:30 a.m.  |           | 3,170           |                        | 1,090                         | 939   | 34                                         | 48                                                | 64    | 75    | 89    | 97    | 99    | 100   |       | BSWCM               |
| Feb. 10, ..... 4:30 p.m.  |           | 3,180           |                        | 248                           | 329   | 33                                         | 49                                                | 61    | 75    | 86    | 95    | 98    | 100   |       | BSNM                |
| Feb. 10, ..... 4:30 p.m.  |           | 3,180           |                        | 248                           | 363   | 25                                         | 38                                                | 58    | 72    | 86    | 95    | 98    | 100   |       | BSWCM               |
| Apr. 9, ..... 4:00 p.m.   |           | 3,470           |                        | 356                           | 620   | 47                                         | 61                                                | 72    | 84    | 92    | 97    | 99    | 100   |       | BSWCM               |
| May 20, ..... 5:00 p.m.   |           | 985             |                        | 464                           | 839   | 57                                         | 69                                                | 84    | 92    | 96    | 99    | 100   | --    |       | BSWCM               |
| May 22, ..... 5:30 p.m.   |           | 2,650           |                        | 1,130                         | 2,100 | 39                                         | 50                                                | 66    | 82    | 93    | 98    | 99    | 100   |       | BSWCM               |
| May 23, ..... 12:15 p.m.  |           | 2,140           |                        | 926                           | 779   | 34                                         | 56                                                | 78    | 93    | 97    | 99    | 99    | 100   |       | BSWCM               |

## SCIOTO RIVER BASIN

## OLENTANGY RIVER NEAR DELAWARE, OHIO

LOCATION.--Temperature recorder at gaging station, 500 feet upstream from highway bridge, 1,000 feet downstream from Delaware dam, 1,300 feet upstream from Pennsylvania Railroad bridge, and 4 miles north of Delaware, Delaware County.

DRAINAGE AREA.--387 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1957.

EXTREMES, 1936-57.--Water temperatures: Maximum, 76° F Aug. 20, 22, 23; minimum, 33° F on several days during January.

EXTREMES, 1946-57.--Water temperatures: Maximum, 93° F June 29, 1952; minimum, freezing point on several days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 64      | 63  | 57       | 37  | 37       | 35      | 34       | 35    | 38    | 43  | 64   | 62   | 63     | 63        |
| 2.....       | 63      | 62  | 58       | 37  | 37       | 34      | 33       | 35    | 38    | 43  | 65   | 62   | 66     | 63        |
| 3.....       | 63      | 62  | 58       | 37  | 36       | 33      | 33       | 35    | 38    | 43  | 65   | 66   | 66     | 63        |
| 4.....       | 63      | 62  | 58       | 37  | 36       | 33      | 33       | 35    | 38    | 46  | 65   | 66   | 66     | 63        |
| 5.....       | 64      | 62  | 59       | 38  | 37       | 33      | 33       | 35    | 38    | 49  | 63   | 61   | 66     | 64        |
| 6.....       | 64      | 62  | 58       | 39  | 37       | 33      | 33       | 35    | 38    | 45  | 62   | 61   | 65     | 64        |
| 7.....       | 62      | 62  | 58       | 37  | 39       | 39      | 34       | 33    | 38    | 43  | 62   | 61   | 66     | 64        |
| 8.....       | 62      | 61  | 57       | 35  | 40       | 39      | 34       | 35    | 38    | 37  | 61   | 60   | 67     | 65        |
| 9.....       | 61      | 60  | 55       | 54  | 40       | 38      | 34       | 35    | 37    | 42  | 62   | 60   | 67     | 66        |
| 10.....      | 61      | 60  | 54       | 53  | 39       | 38      | 35       | 35    | 37    | 42  | 63   | 60   | 66     | 66        |
| 11.....      | 60      | 59  | 53       | 52  | 38       | 38      | 36       | 35    | 38    | 42  | 62   | 61   | 66     | 66        |
| 12.....      | 60      | 59  | 52       | 51  | 38       | 38      | 36       | 36    | 39    | 42  | 64   | 62   | 66     | 66        |
| 13.....      | 60      | 58  | 51       | 50  | 38       | 38      | 36       | 35    | 40    | 42  | 64   | 64   | 66     | 66        |
| 14.....      | 60      | 58  | 50       | 50  | 38       | 37      | 36       | 35    | 41    | 40  | 64   | 64   | 67     | 66        |
| 15.....      | 60      | 58  | 50       | 50  | 37       | 37      | 36       | 35    | 42    | 41  | 67   | 64   | 67     | 67        |
| 16.....      | 60      | 58  | 50       | 49  | 37       | 37      | 36       | 37    | 42    | 43  | 67   | 68   | 67     | 68        |
| 17.....      | 60      | 58  | 49       | 49  | 39       | 37      | 36       | 37    | 44    | 43  | 67   | 66   | 69     | 68        |
| 18.....      | 60      | 58  | 49       | 48  | 38       | 37      | 37       | 37    | 44    | 43  | 66   | 65   | 70     | 69        |
| 19.....      | 59      | 58  | 46       | 47  | 38       | 38      | 37       | 37    | 44    | 44  | 67   | 65   | 72     | 70        |
| 20.....      | 59      | 59  | 47       | 47  | 38       | 38      | 37       | 36    | 44    | 44  | 65   | 65   | 74     | 72        |
| 21.....      | 60      | 59  | 47       | 47  | 38       | 38      | 37       | 36    | 44    | 44  | 64   | 62   | 74     | 73        |
| 22.....      | 60      | 59  | 47       | 45  | 39       | 38      | 36       | 36    | 44    | 55  | 64   | 62   | 74     | 73        |
| 23.....      | 60      | 59  | 45       | 42  | 39       | 39      | 36       | 37    | 46    | 54  | 65   | 59   | 72     | 72        |
| 24.....      | 60      | 59  | 42       | 41  | 39       | 39      | 36       | 34    | 46    | 52  | 60   | 59   | 72     | 74        |
| 25.....      | 60      | 59  | 41       | 40  | 39       | 38      | 34       | 37    | 46    | 56  | 62   | 60   | 74     | 72        |
| 26.....      | 59      | 58  | 40       | 39  | 38       | 38      | 34       | 38    | 44    | 59  | 62   | 62   | 74     | 73        |
| 27.....      | 58      | 58  | 39       | 38  | 38       | 38      | 35       | 34    | 44    | 60  | 63   | 62   | 74     | 73        |
| 28.....      | 58      | 58  | 38       | 38  | 36       | 36      | 34       | 38    | 44    | 61  | 64   | 63   | 71     | 75        |
| 29.....      | 58      | 57  | 38       | 37  | 36       | 36      | 34       | 38    | 43    | 65  | 64   | 63   | 71     | 74        |
| 30.....      | 58      | 57  | 37       | 36  | 35       | 35      | 34       | 38    | 43    | 64  | 64   | 63   | 70     | 74        |
| 31.....      | 58      | 57  | --       | --  | 35       | 35      | 35       | --    | --    | 64  | 63   | --   | --     | --        |
| Average..... | 61      | 59  | 50       | 49  | 38       | 37      | 35       | 36    | 41    | 50  | 64   | 62   | 69     | 68        |

SCIOTO RIVER BASIN--Continued  
OLENTANGY RIVER NEAR WORTHINGTON, OHIO

LOCATION.--Temperature recorder at gaging station, 30 feet downstream from Wilson Road bridge, 1½ miles northwest of Worthington, Franklin County, and 2½ miles upstream from Rush Run.

DRAINAGE AREA.--493 square miles.

RECORDS AVAILABLE.--October 1955 to September 1957.

EXTREMES, 1955-57.--Water temperatures: Maximum, 85°F July 21, 22, 1957; minimum, 33°F on several days during November and January.

EXTREMES, 1955-57.--Water temperatures: Maximum, 85°F July 21, 22, 1957; minimum, freezing point Dec. 13, 14, 17, 24, 25, 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1305.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 66      | 61  | 60       | 59  | 36       | 35  | 35      | 33  | 38       | 38  | 42    | 39  | 48    | 47  | 68  | 62  | 70   | 66  | 72   | 68  | 82     | 78  | 79        | 75  |
| 2.....       | 67      | 64  | 61       | 59  | 38       | 36  | 34      | 33  | 39       | 38  | 42    | 41  | 47    | 45  | 67  | 63  | 69   | 66  | 72   | 68  | 82     | 76  | 79        | 75  |
| 3.....       | 66      | 63  | 60       | 57  | 40       | 38  | 34      | 33  | 39       | 38  | 41    | 38  | 45    | 37  | 63  | 58  | 68   | 61  | 72   | 69  | 83     | 78  | 79        | 76  |
| 4.....       | 66      | 65  | 61       | 59  | 40       | 38  | 34      | 33  | 40       | 39  | 42    | 39  | 44    | 36  | 58  | 54  | 58   | 63  | 70   | 69  | 82     | 78  | 77        | 70  |
| 5.....       | 66      | 63  | 61       | 58  | 41       | 38  | 33      | 33  | 41       | 38  | 43    | 39  | 48    | 44  | 60  | 52  | 70   | 66  | 71   | 69  | 79     | 73  | 71        | 66  |
| 6.....       | 65      | 61  | 60       | 57  | 47       | 41  | 33      | 33  | 39       | 37  | 43    | 42  | 48    | 42  | 62  | 54  | 70   | 68  | 72   | 70  | 73     | 69  | 70        | 64  |
| 7.....       | 64      | 61  | 58       | 56  | 49       | 47  | 33      | 33  | 39       | 39  | 42    | 40  | 42    | 41  | 66  | 57  | 72   | 68  | 74   | 71  | 75     | 69  | 67        | 64  |
| 8.....       | 61      | 57  | 56       | 51  | 49       | 46  | 33      | 33  | 40       | 39  | 40    | 39  | 41    | 38  | 68  | 60  | 69   | 63  | 73   | 72  | 76     | 70  | 68        | 62  |
| 9.....       | 60      | 57  | 51       | 49  | 46       | 40  | 34      | 33  | 45       | 40  | 42    | 37  | 42    | 38  | 68  | 63  | 65   | 61  | 76   | 72  | 79     | 73  | 68        | 64  |
| 10.....      | 57      | 54  | 49       | 48  | 40       | 37  | 34      | 34  | 45       | 40  | 42    | 40  | 43    | 40  | 71  | 65  | 68   | 65  | 75   | 72  | 81     | 76  | 68        | 68  |
| 11.....      | 56      | 53  | 49       | 46  | 37       | 36  | 35      | 34  | 40       | 39  | 46    | 42  | 43    | 41  | 70  | 68  | 69   | 67  | 73   | 71  | 81     | 77  | 71        | 66  |
| 12.....      | 57      | 53  | 49       | 47  | 39       | 37  | 35      | 34  | 39       | 37  | 50    | 46  | 43    | 41  | 68  | 64  | 71   | 68  | 78   | 72  | 81     | 77  | 71        | 69  |
| 13.....      | 59      | 55  | 47       | 45  | 39       | 36  | 35      | 34  | 41       | 38  | 49    | 45  | 42    | 40  | 70  | 65  | 72   | 68  | 76   | 76  | 78     | 73  | 70        | 69  |
| 14.....      | 61      | 57  | 47       | 44  | 38       | 37  | 35      | 34  | 41       | 41  | 50    | 45  | 41    | 40  | 70  | 66  | 73   | 70  | 78   | 73  | 78     | 72  | 71        | 67  |
| 15.....      | 62      | 58  | 51       | 47  | 40       | 38  | 35      | 34  | 41       | 40  | 51    | 48  | 43    | 40  | 69  | 64  | 74   | 71  | 78   | 76  | 81     | 75  | 74        | 70  |
| 16.....      | 63      | 59  | 51       | 46  | 41       | 40  | 35      | 34  | 42       | 41  | 48    | 45  | 42    | 41  | 68  | 66  | 75   | 72  | 77   | 73  | 80     | 76  | 73        | 71  |
| 17.....      | 64      | 60  | 46       | 43  | 42       | 41  | 35      | 35  | 42       | 40  | 48    | 44  | 44    | 42  | 67  | 65  | 77   | 72  | 78   | 72  | 77     | 73  | 71        | 67  |
| 18.....      | 64      | 61  | 43       | 41  | 42       | 39  | 35      | 35  | 41       | 40  | 48    | 47  | 50    | 44  | 67  | 63  | 77   | 73  | 79   | 72  | 75     | 70  | 69        | 66  |
| 19.....      | 61      | 59  | 41       | 39  | 39       | 36  | 35      | 35  | 41       | 40  | 48    | 46  | 56    | 48  | 65  | 64  | 74   | 71  | 82   | 76  | 75     | 70  | 72        | 69  |
| 20.....      | 62      | 60  | 42       | 41  | 39       | 37  | 35      | 34  | 40       | 36  | 48    | 44  | 59    | 48  | 64  | 59  | 72   | 68  | 84   | 78  | 74     | 69  | 74        | 72  |
| 21.....      | 62      | 59  | 44       | 42  | 41       | 39  | 34      | 33  | 39       | 36  | 44    | 41  | 55    | 48  | 64  | 59  | 75   | 70  | 85   | 80  | 73     | 69  | 75        | 73  |
| 22.....      | 62      | 61  | 43       | 38  | 43       | 41  | 37      | 33  | 40       | 37  | 47    | 44  | 57    | 54  | 64  | 61  | 74   | 72  | 85   | 80  | 74     | 68  | 74        | 69  |
| 23.....      | 63      | 61  | 38       | 35  | 43       | 43  | 40      | 37  | 41       | 40  | 50    | 45  | 58    | 54  | 64  | 63  | 76   | 72  | 83   | 75  | 73     | 69  | 69        | 66  |
| 24.....      | 62      | 58  | 35       | 34  | 43       | 41  | 37      | 37  | 44       | 40  | 48    | 45  | 59    | 56  | 63  | 59  | 75   | 68  | 76   | 71  | 74     | 70  | 70        | 68  |
| 25.....      | 60      | 56  | 34       | 33  | 41       | 38  | 37      | 36  | 50       | 44  | 45    | 42  | 61    | 55  | 65  | 62  | 71   | 67  | 76   | 70  | 71     | 69  | 67        | 67  |
| 26.....      | 58      | 56  | 34       | 33  | 39       | 37  | 37      | 37  | 50       | 48  | 43    | 42  | 65    | 56  | 65  | 61  | 73   | 69  | 75   | 72  | 74     | 69  | 69        | 65  |
| 27.....      | 56      | 55  | 35       | 34  | 37       | 37  | 38      | 36  | 48       | 40  | 43    | 43  | 66    | 62  | 64  | 61  | 73   | 70  | 78   | 73  | 72     | 70  | 65        | 59  |
| 28.....      | 56      | 53  | 32       | 34  | 37       | 36  | 38      | 38  | 40       | 39  | 43    | 42  | 66    | 62  | 63  | 59  | 73   | 68  | 80   | 74  | 71     | 68  | 62        | 59  |
| 29.....      | 57      | 54  | 36       | 35  | 36       | 35  | 37      | --  | --       | --  | 46    | 42  | 66    | 60  | 60  | 60  | 70   | 67  | 79   | 76  | 74     | 68  | 62        | 58  |
| 30.....      | 55      | 53  | 36       | 35  | 39       | 34  | 37      | 35  | --       | --  | 42    | 42  | 68    | 62  | 61  | 63  | 71   | 68  | 81   | 76  | 78     | 72  | 65        | 61  |
| 31.....      | 59      | 56  | --       | --  | 35       | 34  | 38      | 37  | --       | --  | 47    | 42  | --    | --  | 69  | 66  | --   | --  | 84   | 78  | 78     | 73  | --        | --  |
| Average..... | 61      | 58  | 47       | 45  | 40       | 38  | 35      | 35  | 42       | 39  | 45    | 42  | 51    | 47  | 66  | 61  | 72   | 68  | 77   | 73  | 77     | 72  | 71        | 67  |



## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT CHILLICOTHE, OHIO

LOCATION --Temperature recorder at gaging station at north end of Chillicothe, Ross County, 450 feet downstream from Bridge Street Bridge on U. S. Highway 23.

DRAINAGE AREA 3,847 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1951

Water temperatures: October 1950 to September 1951 October 1953 to September 1957, 22.

EXTREMES 1956-57: Water temperatures: Maximum, 83°F Aug. 23; minimum, 33°F Jan. 19.

EXTREMES 1950-51: Water temperatures: Maximum, 89°F July 14, 1954, Aug. 2, 3, 1955; minimum, freezing point on several days during December 1950; January to February 1951.

REMARKS --Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 66      | 63  | 61       | 60  | 41       | 41  | 39      | 38  | 37       | 36  | 40    | 38  | 45    | 45  | 68  | 68  | 69   | 67  | 71   | 82  | 77     | 79  | 75        |  |
| 2.....       | 65      | 64  | 62       | 61  | 42       | 41  | 38      | 36  | 37       | 37  | 38    | 38  | 45    | 45  | 66  | 66  | 69   | 69  | 72   | 81  | 77     | 80  | 76        |  |
| 3.....       | 65      | 63  | 62       | 60  | 43       | 42  | 36      | 35  | 38       | 37  | 38    | 38  | 45    | 43  | 66  | 63  | 69   | 68  | 73   | 83  | 79     | 79  | 77        |  |
| 4.....       | 64      | 64  | 61       | 61  | 44       | 43  | 35      | 35  | 39       | 38  | 38    | 37  | 43    | 41  | 63  | 59  | 68   | 73  | 82   | 82  | 79     | 77  | 74        |  |
| 5.....       | 65      | 63  | 61       | 60  | 45       | 44  | 36      | 35  | 39       | 38  | 38    | 37  | 43    | 42  | 59  | 56  | 71   | 68  | 73   | 80  | 76     | 75  | 71        |  |
| 6.....       | 65      | 63  | 60       | 59  | 49       | 45  | 36      | 35  | 38       | 38  | 39    | 38  | 43    | 42  | 59  | 56  | 72   | 70  | 73   | 77  | 73     | 73  | 70        |  |
| 7.....       | 65      | 62  | 60       | 59  | 51       | 49  | 36      | 35  | 38       | 38  | 39    | 39  | 42    | 41  | 61  | 57  | 73   | 71  | 74   | 72  | 76     | 72  | 69        |  |
| 8.....       | 63      | 60  | 59       | 54  | 51       | 51  | 36      | 36  | 39       | 38  | 39    | 37  | 42    | 41  | 64  | 59  | 72   | 69  | 74   | 73  | 77     | 72  | 70        |  |
| 9.....       | 62      | 60  | 54       | 53  | 51       | 47  | 37      | 36  | 43       | 39  | 39    | 37  | 41    | 40  | 64  | 62  | 69   | 67  | 76   | 76  | 73     | 70  | 68        |  |
| 10.....      | 61      | 58  | 53       | 51  | 47       | 46  | 37      | 35  | 43       | 42  | 40    | 38  | 42    | 41  | 67  | 63  | 69   | 67  | 76   | 74  | 77     | 74  | 70        |  |
| 11.....      | 59      | 56  | 52       | 50  | 46       | 44  | 36      | 35  | 42       | 41  | 41    | 39  | 44    | 42  | 68  | 66  | 70   | 69  | 76   | 73  | 76     | 75  | 71        |  |
| 12.....      | 59      | 56  | 52       | 51  | 44       | 44  | 37      | 36  | 41       | 38  | 44    | 41  | 44    | 43  | 70  | 67  | 72   | 70  | 77   | 74  | 77     | 74  | 71        |  |
| 13.....      | 60      | 57  | 51       | 49  | 44       | 44  | 37      | 36  | 38       | 38  | 47    | 43  | 43    | 42  | 73  | 70  | 73   | 71  | 77   | 76  | 78     | 73  | 71        |  |
| 14.....      | 61      | 58  | 51       | 49  | 45       | 44  | 36      | 34  | 38       | 38  | 48    | 45  | 42    | 42  | 72  | 70  | 73   | 72  | 79   | 75  | 78     | 74  | 70        |  |
| 15.....      | 62      | 59  | 52       | 50  | 46       | 45  | 34      | 34  | 38       | 38  | 49    | 47  | 44    | 42  | 71  | 69  | 76   | 73  | 80   | 76  | 79     | 75  | 71        |  |
| 16.....      | 63      | 60  | 54       | 52  | 46       | 46  | 34      | 34  | 38       | 37  | 49    | 47  | 44    | 44  | 70  | 66  | 78   | 75  | 79   | 76  | 79     | 77  | 71        |  |
| 17.....      | 63      | 60  | 52       | 50  | 47       | 46  | 34      | 37  | 36       | 43  | 46    | 45  | 44    | 66  | 65  | 80  | 77   | 79  | 75   | 78  | 75     | 71  | 69        |  |
| 18.....      | 63      | 61  | 50       | 48  | 47       | 46  | 34      | 37  | 36       | 47  | 46    | 48  | 45    | 67  | 65  | 80  | 78   | 78  | 75   | 77  | 73     | 70  | 69        |  |
| 19.....      | 62      | 61  | 48       | 47  | 46       | 44  | 34      | 33  | 36       | 46  | 46    | 50  | 48    | 67  | 67  | 80  | 78   | 80  | 75   | 76  | 73     | 71  | 69        |  |
| 20.....      | 62      | 61  | 48       | 47  | 45       | 44  | 33      | 33  | 36       | 35  | 46    | 44  | 53    | 50  | 67  | 64  | 79   | 76  | 81   | 77  | 75     | 72  | 71        |  |
| 21.....      | 63      | 61  | 49       | 48  | 47       | 45  | 33      | 33  | 36       | 35  | 44    | 42  | 55    | 53  | 64  | 61  | 78   | 75  | 82   | 78  | 74     | 72  | 73        |  |
| 22.....      | 62      | 62  | 48       | 45  | 47       | 46  | 38      | 33  | 37       | 36  | 44    | 44  | 57    | 55  | 62  | 61  | 78   | 76  | 82   | 78  | 74     | 73  | 71        |  |
| 23.....      | 63      | 62  | 45       | 43  | 47       | 46  | 39      | 38  | 38       | 37  | 46    | 43  | 60    | 57  | 64  | 62  | 78   | 76  | 82   | 75  | 75     | 71  | 71        |  |
| 24.....      | 63      | 62  | 45       | 43  | 47       | 46  | 39      | 38  | 37       | 46  | 43    | 60  | 57    | 64  | 62  | 78  | 76   | 82  | 75   | 75  | 71     | 71  | 68        |  |
| 25.....      | 62      | 60  | 43       | 42  | 47       | 46  | 38      | 35  | 40       | 38  | 45    | 45  | 62    | 60  | 65  | 64  | 77   | 73  | 75   | 73  | 74     | 71  | 70        |  |
| 26.....      | 60      | 58  | 42       | 41  | 46       | 44  | 35      | 35  | 43       | 40  | 45    | 43  | 65    | 62  | 65  | 64  | 73   | 72  | 75   | 72  | 74     | 72  | 69        |  |
| 27.....      | 60      | 58  | 42       | 41  | 44       | 42  | 35      | 35  | 46       | 43  | 43    | 43  | 67    | 64  | 66  | 64  | 73   | 70  | 74   | 72  | 75     | 71  | 68        |  |
| 28.....      | 58      | 56  | 42       | 42  | 41       | 41  | 35      | 35  | 45       | 44  | 43    | 42  | 68    | 65  | 66  | 65  | 75   | 72  | 77   | 73  | 75     | 71  | 67        |  |
| 29.....      | 57      | 55  | 42       | 40  | 41       | 41  | 35      | 35  | 44       | 40  | 43    | 42  | 68    | 67  | 65  | 64  | 74   | 72  | 78   | 74  | 74     | 72  | 64        |  |
| 30.....      | 58      | 56  | 42       | 41  | 40       | 39  | 35      | 35  | --       | --  | 43    | 42  | 68    | 67  | 65  | 63  | 72   | 71  | 79   | 75  | 76     | 72  | 63        |  |
| 31.....      | 59      | 57  | 42       | 41  | 40       | 39  | 36      | 35  | --       | --  | 44    | 42  | 68    | 65  | 67  | 65  | 71   | 80  | 76   | 77  | 73     | 63  | 62        |  |
| Average..... | 62      | 60  | 59       | --  | --       | 45  | 39      | 39  | 36       | 36  | --    | 43  | --    | --  | 68  | 67  | --   | --  | 81   | 78  | 74     | --  | --        |  |
| Average..... | 62      | 60  | 51       | 50  | 45       | 44  | 36      | 35  | 39       | 38  | 43    | 42  | 51    | 49  | 66  | 64  | 74   | 72  | 77   | 74  | 77     | 74  | 71        |  |

## SCIOTO RIVER BASIN--Continued

## PAINT CREEK NEAR BOURNEVILLE, OHIO

LOCATION.--At gaging station at highway bridge, 1½ miles southwest of Bourneville, Ross County, and 1½ miles upstream from Upper Twin Creek.

DRAINAGE AREA.--808 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1957.

Sediment records: October 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79°F July 21; minimum, freezing point on several days during January.

Sediment concentrations: Maximum daily, 1,680 ppm Apr. 4; minimum daily, 2 ppm on several days during November to January.

Sediment loads: Maximum daily, 70,600 tons Apr. 4; minimum daily, less than 0.5 ton Nov. 26, Dec. 1, 4.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow regulated slightly by Rock Fork Reservoir (capacity 34,100 acre-feet).

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 65   | --   | 34   | 34   | 36   | 39   | 48   | 69  | 67   | 71   | 75   | 73    |
| 2       | 62   | --   | 37   | 33   | 38   | 39   | 50   | 64  | 67   | 70   | 74   | 73    |
| 3       | 59   | 55   | 43   | 33   | 37   | 39   | 45   | 53  | 64   | 74   | 77   | 73    |
| 4       | 62   | --   | 38   | 35   | 43   | --   | 47   | 49  | 65   | 72   | 77   | 70    |
| 5       | 60   | 56   | 41   | 38   | 37   | 36   | 50   | 53  | 66   | 72   | 73   | 65    |
| 6       | 67   | 55   | 49   | 32   | 37   | 40   | 46   | 50  | 67   | 71   | 67   | 64    |
| 7       | 57   | 56   | 50   | 35   | 39   | 40   | 43   | 55  | 69   | 72   | 68   | 64    |
| 8       | 56   | 51   | 50   | 33   | 39   | 37   | 46   | 57  | 68   | 74   | 69   | 64    |
| 9       | 55   | 47   | 46   | 35   | 46   | 35   | 36   | 60  | 66   | 75   | 71   | 64    |
| 10      | 51   | 45   | 40   | 33   | 47   | 38   | 47   | 67  | 67   | 73   | 72   | 64    |
| 11      | 50   | 45   | 40   | 32   | --   | 41   | 47   | 67  | 68   | 76   | 73   | 65    |
| 12      | 50   | 50   | 40   | 32   | 38   | 47   | 49   | 67  | 69   | 73   | 77   | 66    |
| 13      | --   | 43   | --   | 36   | --   | 45   | 47   | 68  | 71   | 74   | 68   | 68    |
| 14      | --   | 47   | 41   | 33   | 38   | 46   | 46   | 70  | 73   | 73   | 71   | 68    |
| 15      | 50   | 50   | 41   | --   | 36   | 50   | 44   | 66  | 76   | 74   | 74   | 69    |
| 16      | 51   | 50   | 45   | 32   | 37   | 47   | 48   | 65  | 74   | 74   | 75   | 69    |
| 17      | 52   | 43   | 45   | 32   | 37   | 54   | 49   | 66  | 76   | 73   | 73   | 66    |
| 18      | 51   | 39   | 43   | 32   | 35   | 48   | 51   | 65  | 78   | 74   | 73   | 66    |
| 19      | 56   | 37   | 44   | 33   | 38   | 49   | 54   | 67  | 77   | 75   | 69   | 69    |
| 20      | 59   | 44   | --   | 33   | 36   | 45   | 64   | 65  | 73   | 77   | 70   | 70    |
| 21      | 59   | --   | 37   | 35   | 36   | 42   | 64   | 67  | 73   | 79   | 66   | 71    |
| 22      | --   | 40   | 48   | 36   | 35   | 44   | 69   | 63  | 74   | 78   | 66   | 73    |
| 23      | --   | 35   | 47   | 40   | 39   | 43   | 65   | 65  | 75   | 78   | 66   | 65    |
| 24      | 58   | 36   | 36   | 33   | 39   | 46   | 64   | 66  | 74   | 73   | 67   | 61    |
| 25      | --   | 36   | 39   | 33   | 44   | 45   | 64   | 65  | 68   | 71   | 68   | 60    |
| 26      | 56   | 36   | 36   | 33   | 43   | 38   | 65   | 68  | 68   | 71   | 67   | 59    |
| 27      | --   | 34   | 37   | 33   | 45   | 45   | 66   | 68  | 69   | 73   | 67   | 58    |
| 28      | 50   | 33   | --   | 34   | 38   | 43   | 66   | 63  | 73   | 75   | 68   | 55    |
| 29      | 51   | 36   | 35   | 36   | --   | 42   | --   | 62  | 69   | 71   | 70   | 57    |
| 30      | --   | 33   | 33   | 34   | --   | 41   | 64   | 63  | 73   | 73   | 70   | 60    |
| 31      | --   | --   | 35   | 33   | --   | 44   | --   | 65  | --   | 74   | 71   | --    |
| Average | --   | 44   | 41   | 34   | 39   | 43   | 53   | 63  | 70   | 74   | 71   | 66    |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## SCIOTO RIVER BASIN--Continued

## PAINT CREEK NEAR BOURNEVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 60                    | 11                       | 2            | 175                   | --                       | e 45         | 63                    | 2                        | (t)          |
| 2.....  | 60                    | 18                       | 3            | 135                   | 56                       | 20           | 62                    | 5                        | a 1          |
| 3.....  | 60                    | 17                       | 3            | 90                    | 45                       | 11           | 62                    | 6                        | 1            |
| 4.....  | 69                    | 20                       | 4            | 81                    | 38                       | 8            | 60                    | 2                        | (t)          |
| 5.....  | 72                    | 21                       | 4            | 72                    | 36                       | 7            | 60                    | 4                        | 1            |
| 6.....  | 70                    | 17                       | 3            | 72                    | 33                       | 6            | 63                    | 8                        | 1            |
| 7.....  | 64                    | 17                       | 3            | 70                    | 26                       | 5            | 63                    | 12                       | 2            |
| 8.....  | 63                    | 13                       | 2            | 69                    | 25                       | 5            | 91                    | 14                       | 3            |
| 9.....  | 62                    | 9                        | 2            | 66                    | 15                       | 3            | 1,180                 | --                       | e 2,000      |
| 10..... | 60                    | 11                       | 2            | 64                    | 11                       | 2            | 1,300                 | 280                      | sb 1,100     |
| 11..... | 59                    | 7                        | 1            | 62                    | 13                       | 2            | 940                   | 85                       | 216          |
| 12..... | 57                    | 8                        | 1            | 60                    | 17                       | 3            | 687                   | 44                       | 79           |
| 13..... | 57                    | 32                       | 5            | 60                    | 15                       | 2            | 573                   | 32                       | 50           |
| 14..... | 59                    | 31                       | 5            | 59                    | 12                       | 2            | 647                   | 50                       | sb 95        |
| 15..... | 57                    | 26                       | 4            | 57                    | 17                       | 3            | 783                   | 54                       | 114          |
| 16..... | 59                    | 31                       | 5            | 59                    | 20                       | 3            | 610                   | 43                       | 71           |
| 17..... | 59                    | 24                       | 4            | 59                    | 16                       | 2            | 513                   | 28                       | 39           |
| 18..... | 57                    | 22                       | 3            | 59                    | 9                        | 1            | 411                   | 23                       | 26           |
| 19..... | 57                    | 22                       | 3            | 57                    | 8                        | 1            | 342                   | 14                       | 13           |
| 20..... | 57                    | 22                       | 3            | 59                    | 12                       | 2            | 312                   | 14                       | 12           |
| 21..... | 59                    | 23                       | 4            | 69                    | 14                       | 3            | 487                   | 22                       | 29           |
| 22..... | 59                    | 26                       | 4            | 90                    | 12                       | 3            | 567                   | 38                       | 58           |
| 23..... | 66                    | 19                       | 3            | 84                    | 8                        | 2            | 537                   | 41                       | 59           |
| 24..... | 64                    | 21                       | 4            | 75                    | 3                        | 1            | 507                   | 29                       | 40           |
| 25..... | 63                    | 18                       | 3            | 70                    | 3                        | 1            | 433                   | 17                       | 20           |
| 26..... | 62                    | 18                       | 3            | 69                    | 2                        | (t)          | --                    | 10                       | 10           |
| 27..... | 64                    | 16                       | 3            | 69                    | 3                        | 1            | 322                   | 9                        | 8            |
| 28..... | 63                    | 15                       | 2            | 64                    | 3                        | 1            | 312                   | 7                        | 6            |
| 29..... | 60                    | 16                       | 2            | 63                    | 6                        | 1            | 337                   | 8                        | 7            |
| 30..... | 60                    | 17                       | 3            | 64                    | 4                        | 1            | 312                   | 7                        | 7            |
| 31..... | 59                    | 15                       | 2            | --                    | --                       | --           | 293                   | 8                        | 6            |
| Total.  | 1,897                 | --                       | 95           | 2,202                 | --                       | 147          | 13,277                | --                       | 4,075        |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 312                   | 8                        | 7            | 975                   | 22                       | 58           | 2,280                 | 75                       | 462          |
| 2.....  | 252                   | 10                       | 7            | 1,300                 | 44                       | 154          | 1,880                 | 44                       | 223          |
| 3.....  | 236                   | 6                        | 4            | 1,190                 | 37                       | 119          | 1,490                 | 34                       | 137          |
| 4.....  | 256                   | 2                        | 1            | 1,300                 | 38                       | 133          | 1,190                 | 27                       | 87           |
| 5.....  | 236                   | 2                        | 1            | 1,230                 | 34                       | 113          | 1,010                 | 28                       | 76           |
| 6.....  | 215                   | 2                        | 1            | 1,340                 | 33                       | 119          | 891                   | 21                       | 50           |
| 7.....  | 215                   | 2                        | 1            | 1,560                 | 40                       | 168          | 898                   | 20                       | 48           |
| 8.....  | 198                   | 3                        | 2            | 1,530                 | 68                       | 281          | 940                   | 15                       | 38           |
| 9.....  | 223                   | 5                        | 3            | 2,900                 | 300                      | sb 3,000     | 905                   | 23                       | 56           |
| 10..... | 4,340                 | 1,250                    | s 20,300     | 6,400                 | 799                      | 13,800       | 1,040                 | 27                       | 76           |
| 11..... | 2,040                 | 137                      | 754          | 4,630                 | 314                      | 3,920        | 1,190                 | 42                       | 135          |
| 12..... | 1,380                 | 60                       | 224          | 3,410                 | 176                      | 1,620        | 1,340                 | 55                       | 199          |
| 13..... | 1,040                 | 25                       | 70           | 2,610                 | 115                      | 810          | 1,080                 | 56                       | 163          |
| 14..... | 776                   | 20                       | 42           | 2,200                 | 89                       | 529          | 905                   | 32                       | 78           |
| 15..... | 667                   | 23                       | 41           | 1,800                 | 48                       | 233          | 822                   | 27                       | 60           |
| 16..... | 610                   | 17                       | 28           | 1,450                 | 28                       | 110          | 718                   | 21                       | 41           |
| 17..... | 600                   | 16                       | 26           | 1,230                 | 19                       | 63           | 629                   | 16                       | 27           |
| 18..... | 500                   | 14                       | 19           | 1,040                 | 15                       | 42           | 604                   | 20                       | 33           |
| 19..... | 390                   | 8                        | 8            | 940                   | 14                       | 36           | 616                   | 20                       | 33           |
| 20..... | 370                   | 4                        | 4            | 816                   | 10                       | 22           | 616                   | 18                       | 30           |
| 21..... | 410                   | 5                        | 6            | 712                   | 10                       | 19           | 543                   | 11                       | 16           |
| 22..... | 1,590                 | --                       | e 4,300      | 660                   | 8                        | 14           | 502                   | 9                        | 12           |
| 23..... | 3,610                 | 600                      | sb 6,400     | 604                   | 11                       | 18           | 490                   | 13                       | 17           |
| 24..... | 2,520                 | 130                      | 884          | 567                   | 14                       | 21           | 450                   | 13                       | 16           |
| 25..... | 1,760                 | 65                       | a 320        | 543                   | 15                       | 22           | 422                   | 12                       | 14           |
| 26..... | 1,300                 | 40                       | 140          | 754                   | 35                       | sb 80        | 490                   | 12                       | 16           |
| 27..... | 1,010                 | 24                       | 65           | 2,120                 | 380                      | sb 2,500     | 679                   | 19                       | 35           |
| 28..... | 905                   | 16                       | 39           | 2,860                 | 270                      | 2,080        | 828                   | 22                       | 49           |
| 29..... | 1,080                 | 24                       | 70           | --                    | --                       | --           | 744                   | 15                       | 30           |
| 30..... | 1,080                 | 27                       | 79           | --                    | --                       | --           | 673                   | 12                       | 22           |
| 31..... | 940                   | 20                       | 51           | --                    | --                       | --           | 561                   | 13                       | 20           |
| Total.  | 31,061                | --                       | 33,897       | 48,671                | --                       | 30,084       | 27,426                | --                       | 2,299        |

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

SCIOTO RIVER BASIN  
SCIOTO RIVER BASIN--Continued

425

PAINT CREEK NEAR BOURNEVILLE, OHIO.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                     | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                     |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                              | 628                  | 35                       | s 78         | 537                  | 17                       | 25           | 2,190                | 1,460                    | s 9,090      |
| 2.....                              | 3,040                | 519                      | 4,260        | 496                  | 18                       | 24           | 2,120                | 888                      | 5,080        |
| 3.....                              | 2,700                | 210                      | 1,530        | 490                  | 19                       | 25           | 1,380                | 360                      | 1,340        |
| 4.....                              | 11,600               | 1,680                    | s 70,600     | 444                  | 22                       | 26           | 884                  | 159                      | 380          |
| 5.....                              | 17,300               | 840                      | s 42,900     | 411                  | 13                       | 14           | 673                  | 125                      | 227          |
| 6.....                              | 10,700               | 462                      | 13,300       | 389                  | 10                       | 10           | 537                  | 99                       | 144          |
| 7.....                              | 5,180                | 269                      | 3,760        | 357                  | 9                        | 9            | 543                  | 140                      | sb 260       |
| 8.....                              | 6,290                | 690                      | s 13,900     | 337                  | 10                       | 9            | 856                  | 332                      | 767          |
| 9.....                              | 6,140                | 346                      | 5,740        | 307                  | 8                        | 7            | 537                  | 197                      | 286          |
| 10.....                             | 4,410                | 169                      | 2,010        | 297                  | 10                       | 8            | 478                  | 124                      | 160          |
| 11.....                             | 3,130                | 130                      | 1,100        | 307                  | 28                       | 23           | 405                  | 109                      | 119          |
| 12.....                             | 2,360                | 103                      | 656          | 288                  | 31                       | 24           | 368                  | 98                       | 97           |
| 13.....                             | 1,760                | 63                       | 299          | 279                  | 33                       | 25           | 327                  | 86                       | 76           |
| 14.....                             | 1,490                | 47                       | 189          | 322                  | 34                       | 30           | 688                  | --                       | e 1,000      |
| 15.....                             | 1,300                | 45                       | 158          | 337                  | 37                       | 34           | 679                  | 500                      | sb 1,000     |
| 16.....                             | 1,120                | 47                       | 142          | 307                  | 29                       | 24           | 394                  | 256                      | 272          |
| 17.....                             | 1,080                | 43                       | 125          | 270                  | 35                       | 26           | 302                  | 113                      | 92           |
| 18.....                             | 3,560                | 360                      | s 4,160      | 274                  | 28                       | 21           | 279                  | 80                       | 60           |
| 19.....                             | 3,040                | 223                      | 1,830        | 297                  | 19                       | 15           | 252                  | 68                       | 46           |
| 20.....                             | 2,000                | 122                      | 659          | 519                  | 40                       | sb 70        | 227                  | 53                       | 32           |
| 21.....                             | 1,560                | 70                       | 295          | 905                  | 78                       | 190          | 212                  | 44                       | 25           |
| 22.....                             | 1,300                | 62                       | 218          | 2,960                | 579                      | s 7,260      | 198                  | 42                       | 22           |
| 23.....                             | 1,530                | 88                       | 364          | 3,310                | 328                      | 2,930        | 362                  | --                       | e 160        |
| 24.....                             | 1,260                | 83                       | 282          | 2,610                | 188                      | 1,320        | 2,220                | 1,530                    | s 18,700     |
| 25.....                             | 1,040                | 70                       | 196          | 1,680                | 109                      | 494          | 3,410                | 835                      | s 9,510      |
| 26.....                             | 856                  | 55                       | 127          | 1,420                | 102                      | 391          | 1,450                | 172                      | s 716        |
| 27.....                             | 796                  | 43                       | 92           | 1,300                | 145                      | 509          | 667                  | 101                      | 182          |
| 28.....                             | 712                  | 38                       | 73           | 975                  | 86                       | 226          | 1,290                | 114                      | s 770        |
| 29.....                             | 654                  | 31                       | 55           | 738                  | 65                       | 130          | 8,420                | 603                      | s 15,600     |
| 30.....                             | 579                  | 25                       | 39           | 598                  | 55                       | 89           | 3,220                | 198                      | 1,720        |
| 31.....                             | --                   | --                       | --           | 525                  | 51                       | 72           | --                   | --                       | --           |
| Total.                              | 99,115               | --                       | 169,137      | 24,286               | --                       | 14,060       | 35,568               | --                       | 67,933       |
| Day                                 | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                     | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                              | 1,920                | 138                      | 715          | 201                  | 72                       | 39           | 30                   | 88                       | 7            |
| 2.....                              | 1,420                | 108                      | 414          | 159                  | 55                       | 24           | 29                   | 95                       | 7            |
| 3.....                              | 1,080                | 91                       | 265          | 135                  | 42                       | 15           | 29                   | 83                       | 6            |
| 4.....                              | 898                  | 74                       | 179          | 130                  | 37                       | 13           | 27                   | 73                       | 5            |
| 5.....                              | 905                  | 74                       | 181          | 119                  | 37                       | 12           | 25                   | 78                       | 5            |
| 6.....                              | 870                  | 72                       | 169          | 102                  | 68                       | 19           | 24                   | 78                       | 5            |
| 7.....                              | 898                  | 84                       | 204          | 91                   | 78                       | 19           | 24                   | 77                       | 5            |
| 8.....                              | 856                  | 74                       | 171          | 86                   | 78                       | 18           | 23                   | 71                       | 4            |
| 9.....                              | 856                  | 68                       | 157          | 83                   | 80                       | 18           | 23                   | 67                       | 4            |
| 10.....                             | 738                  | 58                       | 116          | 81                   | 78                       | 17           | 23                   | 58                       | 4            |
| 11.....                             | 604                  | 46                       | 75           | 81                   | 76                       | 17           | 23                   | 46                       | 3            |
| 12.....                             | 525                  | 37                       | 52           | 219                  | --                       | e 230        | 23                   | 44                       | 3            |
| 13.....                             | 461                  | 38                       | 47           | 110                  | 188                      | 56           | 24                   | 44                       | 3            |
| 14.....                             | 416                  | 48                       | 54           | 88                   | 92                       | 22           | 35                   | 45                       | 4            |
| 15.....                             | 368                  | 31                       | 31           | 81                   | 79                       | 17           | 37                   | 38                       | 4            |
| 16.....                             | 332                  | 28                       | 25           | 80                   | 79                       | 17           | 37                   | 43                       | 4            |
| 17.....                             | 288                  | 21                       | 16           | 76                   | 72                       | 15           | 46                   | 78                       | 10           |
| 18.....                             | 252                  | 36                       | 24           | 75                   | 65                       | 13           | 43                   | 83                       | 10           |
| 19.....                             | 227                  | 34                       | 21           | 72                   | 65                       | 13           | 38                   | 84                       | 9            |
| 20.....                             | 204                  | 40                       | 22           | 57                   | 66                       | 10           | 33                   | 79                       | 7            |
| 21.....                             | 180                  | 51                       | 25           | 48                   | 68                       | 9            | 35                   | 72                       | 7            |
| 22.....                             | 165                  | 45                       | 20           | 43                   | 59                       | 7            | 46                   | 65                       | 8            |
| 23.....                             | 230                  | 62                       | s 43         | 41                   | 54                       | 6            | 64                   | 82                       | 14           |
| 24.....                             | 567                  | 87                       | 133          | 39                   | 56                       | 6            | 56                   | 54                       | 8            |
| 25.....                             | 389                  | 33                       | 35           | 36                   | 60                       | 6            | 42                   | 49                       | 6            |
| 26.....                             | 307                  | 20                       | 16           | 35                   | 68                       | 6            | 37                   | 55                       | 5            |
| 27.....                             | 248                  | 18                       | 12           | 33                   | 70                       | 6            | 32                   | 47                       | 4            |
| 28.....                             | 1,100                | --                       | e 1,900      | 33                   | 71                       | 6            | 29                   | 45                       | 4            |
| 29.....                             | 604                  | 290                      | sb 550       | 32                   | 90                       | 8            | 27                   | 33                       | 2            |
| 30.....                             | 352                  | 154                      | s 155        | 31                   | 88                       | 7            | 27                   | 32                       | 2            |
| 31.....                             | 298                  | 190                      | sb 170       | 31                   | 82                       | 7            | --                   | --                       | --           |
| Total.                              | 18,558               | --                       | 5,997        | 2,528                | --                       | 678          | 991                  | --                       | 169          |
| Total discharge for year (cfs-days) |                      |                          |              |                      |                          |              |                      |                          | 305,580      |
| Total load for year (tons)          |                      |                          |              |                      |                          |              |                      |                          | 328,571      |

e Estimated.

b Computed from partly estimated concentration graph.

s Computed by subdividing day.

SCIOTO RIVER BASIN--Continued  
PAINT CREEK NEAR BOURNEVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time       | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |            |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 | 1.000 |                     |
| Dec. 10, 1956 ...  | 7:00 a.m.  | 1,340           |                         | 351                           | 541                                        | 61                                                | 72    | 84    | 92    | 96    | 98    | 98    | 99    |       | 100   | --    | BSWCM               |
| Jan. 10, 1957 ...  | 7:00 a.m.  | 7,390           |                         | 2,950                         | 2,430                                      | 33                                                | 44    | 57    | 73    | 83    | 95    | 97    | 98    |       | 100   | --    | BSWCM               |
| Jan. 10 .....      | 9:00 a.m.  | 8,670           |                         | 3,180                         | 1,220                                      | 37                                                | 46    | 60    | 78    | 92    | 97    | 99    | 100   |       | --    | --    | BSWCM               |
| Jan. 10 .....      | 9:00 a.m.  | 8,670           |                         | 3,180                         | 1,230                                      | 21                                                | 32    | 49    | 73    | 91    | 97    | 98    | 100   |       | --    | --    | BSNM                |
| Jan. 23 .....      | 3:15 p.m.  | 3,220           |                         | 274                           | 865                                        | 39                                                | 48    | 62    | 78    | 91    | 96    | 97    | 98    |       | 100   | --    | BSWCM               |
| Jan. 23 .....      | 3:15 p.m.  | 3,220           |                         | 274                           | 841                                        | 17                                                | 28    | 49    | 73    | 90    | 96    | 98    | 98    |       | 100   | --    | BSNM                |
| Feb. 10 .....      | 9:00 a.m.  | 7,690           |                         | 928                           | 1,690                                      | 33                                                | 42    | 55    | 69    | 85    | 94    | 97    | 98    |       | 100   | --    | BSWCM               |
| Feb. 10 .....      | 7:30 p.m.  | 5,650           |                         | 528                           | 395                                        | 42                                                | 51    | 60    | 73    | 87    | 96    | 98    | 99    |       | 100   | --    | BSWCM               |
| Feb. 28 .....      | 7:00 p.m.  | 3,130           |                         | 232                           | 412                                        | 38                                                | 47    | 60    | 74    | 87    | 94    | 97    | 100   |       | --    | --    | BSWCM               |
| Apr. 2 .....       | 7:00 a.m.  | 3,220           |                         | 738                           | 1,310                                      | 43                                                | 53    | 67    | 81    | 91    | 96    | 98    | 99    |       | 100   | --    | BSWCM               |
| Apr. 4 .....       | 12:15 a.m. | 9,920           |                         | 2,550                         | 4,200                                      | 32                                                | 42    | 54    | 68    | 80    | 95    | 98    | 99    |       | 100   | --    | BSWCM               |
| Apr. 4 .....       | 9,920      | 9,920           |                         | 2,550                         | 4,850                                      | 13                                                | 20    | 31    | 50    | 79    | 94    | 98    | 99    |       | 100   | --    | BSNM                |
| Apr. 4 .....       | 11:20 p.m. | 24,500          |                         | 2,030                         | 4,330                                      | 37                                                | 48    | 68    | 81    | 89    | 95    | 98    | 99    |       | 100   | --    | BSWCM               |
| Apr. 8 .....       | 1:00 p.m.  | 7,390           |                         | 1,050                         | 1,880                                      | 31                                                | 39    | 49    | 62    | 81    | 92    | 97    | 99    |       | 100   | --    | BSWCM               |
| Apr. 8 .....       | 4:00 p.m.  | 9,550           |                         | 1,480                         | 2,360                                      | 36                                                | 46    | 56    | 70    | 82    | 94    | 97    | 98    |       | 99    | 100   | BSWCM               |
| Apr. 8 .....       | 4:00 p.m.  | 9,550           |                         | 1,480                         | 2,280                                      | 20                                                | 31    | 44    | 59    | 75    | 89    | 92    | 93    |       | 94    | 100   | BSNM                |
| Apr. 8 .....       | 7:00 p.m.  | 9,190           |                         | 972                           | 966                                        | 45                                                | 57    | 69    | 81    | 91    | 96    | 98    | 99    |       | 100   | --    | BSWCM               |
| Apr. 18 .....      | 12:45 p.m. | 5,410           |                         | 666                           | 2,180                                      | 37                                                | 48    | 58    | 71    | 80    | 94    | 97    | 99    |       | 100   | --    | BSWCM               |
| Apr. 18 .....      | 12:45 p.m. | 5,410           |                         | 666                           | 2,140                                      | 15                                                | 25    | 41    | 66    | 90    | 94    | 97    | 99    |       | 100   | --    | BSNM                |
| May 22 .....       | 5:00 p.m.  | 5,530           |                         | 1,450                         | 1,660                                      | 39                                                | 50    | 66    | 82    | 90    | 95    | 97    | 98    |       | 100   | --    | BSWCM               |
| June 1 .....       | 7:00 a.m.  | 3,610           |                         | 1,890                         | 1,340                                      | 33                                                | 48    | 68    | 84    | 94    | 97    | 98    | 99    |       | 100   | --    | BSWCM               |
| June 2 .....       | 2,040      | 2,040           |                         | 1,130                         | 1,280                                      | 47                                                | 62    | 79    | 93    | 98    | 99    | 99    | 100   |       | --    | --    | BSWCM               |
| June 24 .....      | 7:00 p.m.  | 5,180           |                         | 4,650                         | 3,440                                      | 29                                                | 40    | 56    | 75    | 85    | 96    | 98    | 99    |       | 100   | --    | BSWCM               |
| June 29 .....      | 7:00 a.m.  | 12,900          |                         | 934                           | 744                                        | 44                                                | 58    | 70    | 82    | 89    | 94    | 94    | 96    |       | 100   | --    | BSWCM               |

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO

LOCATION.--At gaging station at highway bridge, three-quarters of a mile downstream from Walnut Creek, and 1½ miles north of Higby, Ross County.

DRAINAGE AREA.--5,129 square miles.

RECORDS AVAILABLE.--water temperatures: October 1953 to September 1957.

Sediment records: October 1953 to September 1957.

EXTREMES, 1956-57.--water temperatures: Maximum, 84°F July 20; minimum, freezing point Jan. 16-19.

Sediment concentrations: Maximum daily, 1,820 ppm June 25; minimum daily, 1 ppm Nov. 10, 11, Dec. 6.

Sediment loads: Maximum daily, 142,000 tons Apr. 5; minimum daily, 1 ton Nov. 10, 11, Dec. 6.

EXTREMES, 1953-57.--water temperatures: Maximum, 84°F July 20, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 2,130 ppm July 21, 1954; minimum daily, 1 ppm on several days during September 1955, and November and December 1956.

Sediment loads: Maximum daily, 142,000 tons Apr. 5, 1957; minimum daily, 1 ton on several days during September 1955, and November and December 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow slightly affected by O'Shaughnessy, Griggs, Delaware, and Hoover Reservoirs.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 61   | 61   | 39   | 37   | 37   | 39   | 50   | 65  | 69   | 81   | 77   | 77    |
| 2       | 66   | 60   | 41   | 34   | 38   | 39   | 51   | 65  | 72   | 71   | 78   | --    |
| 3       | 64   | 60   | 44   | 33   | 39   | 42   | 48   | 63  | 67   | 70   | 78   | 80    |
| 4       | 65   | 61   | 42   | 35   | 41   | 38   | 46   | 59  | 68   | 72   | 79   | 78    |
| 5       | 63   | 59   | 44   | 36   | 40   | 38   | 48   | 59  | 69   | 72   | 76   | 76    |
| 6       | 64   | 59   | 49   | --   | 39   | 41   | 46   | 56  | 69   | 75   | 78   | 78    |
| 7       | 64   | 58   | 54   | 36   | 39   | 41   | 45   | 59  | 72   | --   | 77   | 71    |
| 8       | 60   | 55   | 52   | 35   | 40   | 39   | 46   | 60  | 71   | 75   | 74   | 72    |
| 9       | 60   | 51   | 48   | 37   | 44   | 40   | 41   | 63  | 67   | --   | 77   | 73    |
| 10      | 61   | 49   | 44   | 34   | 46   | 41   | 44   | 66  | 71   | --   | 77   | 73    |
| 11      | 56   | 50   | 43   | 33   | 44   | 42   | 45   | 67  | 70   | --   | 78   | 71    |
| 12      | 55   | 48   | 43   | 34   | 39   | 48   | 46   | 71  | 72   | --   | 79   | 75    |
| 13      | --   | 48   | 43   | 35   | 38   | 44   | 45   | 73  | 72   | 78   | 77   | 73    |
| 14      | --   | 50   | 43   | 33   | 38   | 49   | 44   | 72  | 73   | 79   | 77   | 72    |
| 15      | 59   | 52   | 45   | 33   | 37   | 52   | 44   | 70  | 73   | 81   | 78   | 72    |
| 16      | 60   | 52   | 46   | 32   | 39   | 51   | 46   | 67  | 79   | 78   | 79   | 74    |
| 17      | 59   | 46   | 45   | 32   | 38   | 50   | 47   | 64  | 78   | 79   | 78   | 72    |
| 18      | 60   | 45   | 45   | 32   | 37   | 51   | 49   | 68  | 79   | 83   | 80   | 73    |
| 19      | 61   | 44   | 40   | 32   | 39   | 51   | 49   | 68  | 78   | 82   | 74   | 76    |
| 20      | 62   | 47   | 45   | 34   | --   | 50   | 56   | 65  | 76   | 84   | 75   | 74    |
| 21      | 61   | 51   | 44   | 37   | 36   | 45   | 59   | 63  | 74   | 81   | 75   | --    |
| 22      | 62   | --   | 49   | 40   | 37   | 48   | 60   | 62  | 76   | 82   | 75   | 73    |
| 23      | 63   | 40   | 48   | 39   | 41   | 46   | 61   | 65  | 79   | 88   | 73   | 73    |
| 24      | 60   | --   | 49   | 34   | 44   | 48   | 63   | 68  | 77   | 77   | 72   | 70    |
| 25      | 60   | 37   | 44   | 34   | 47   | 47   | 63   | 67  | 70   | 78   | 75   | 70    |
| 26      | 57   | 38   | 41   | 34   | 50   | 47   | 65   | 68  | 69   | 74   | 75   | 70    |
| 27      | 54   | 38   | 42   | 35   | 47   | 46   | 66   | 68  | 72   | 77   | 77   | 72    |
| 28      | 56   | 37   | 42   | 35   | 42   | 45   | 70   | 64  | 74   | 78   | 73   | --    |
| 29      | 57   | 42   | 39   | 37   | --   | 44   | 66   | 65  | 70   | 83   | --   | --    |
| 30      | 58   | 39   | 37   | 34   | --   | 45   | --   | 65  | 74   | 83   | 72   | 68    |
| 31      | 61   | --   | 39   | 36   | --   | 46   | --   | 72  | --   | 82   | 78   | --    |
| Average | 60   | 49   | 44   | 35   | 40   | 45   | 52   | 65  | 73   | 78   | 76   | 73    |

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 455                   | 9                        | 11           | 503                   | 9                        | 12           | 497                   | 6                        | 8            |
| 2.....  | 503                   | 5                        | 7            | 652                   | 13                       | 23           | 491                   | 5                        | 7            |
| 3.....  | 533                   | 4                        | 6            | 584                   | 4                        | 6            | 485                   | 5                        | 6            |
| 4.....  | 545                   | 5                        | 7            | 545                   | 5                        | 7            | 479                   | 3                        | 4            |
| 5.....  | 552                   | 7                        | 10           | 521                   | 3                        | 4            | 479                   | 4                        | 5            |
| 6.....  | 604                   | 4                        | 6            | 497                   | 2                        | 3            | 485                   | 1                        | 1            |
| 7.....  | 552                   | 6                        | 9            | 497                   | 2                        | 3            | 497                   | 2                        | 3            |
| 8.....  | 509                   | 7                        | 10           | 497                   | 2                        | 3            | 571                   | 3                        | 5            |
| 9.....  | 503                   | 8                        | 11           | 491                   | 2                        | 3            | 1,860                 | --                       | e 2,100      |
| 10..... | 491                   | 7                        | 9            | 491                   | 1                        | 1            | 3,790                 | 510                      | 5,220        |
| 11..... | 485                   | 8                        | 10           | 485                   | 1                        | 1            | 2,710                 | 150                      | 1,100        |
| 12..... | 473                   | 9                        | 11           | 473                   | 2                        | 2            | 2,010                 | 74                       | 402          |
| 13..... | 461                   | 10                       | 12           | 467                   | 3                        | 4            | 1,770                 | 46                       | 220          |
| 14..... | 449                   | 10                       | 12           | 467                   | 3                        | 4            | 2,450                 | --                       | e 700        |
| 15..... | 437                   | 8                        | 9            | 473                   | 2                        | 2            | 2,360                 | 91                       | 580          |
| 16..... | 425                   | 7                        | 8            | 473                   | 3                        | 4            | 1,840                 | 54                       | 268          |
| 17..... | 415                   | 6                        | 7            | 473                   | 3                        | 4            | 1,610                 | 48                       | 209          |
| 18..... | 425                   | 9                        | 10           | 473                   | 4                        | 5            | 1,360                 | 32                       | 118          |
| 19..... | 415                   | 9                        | 10           | 473                   | 2                        | 2            | 1,220                 | 23                       | 76           |
| 20..... | 425                   | 8                        | 9            | 473                   | 3                        | 4            | 1,130                 | 19                       | 58           |
| 21..... | 420                   | 10                       | 11           | 521                   | 7                        | 10           | 1,270                 | 18                       | 62           |
| 22..... | 437                   | 12                       | 14           | 584                   | 3                        | 5            | 1,630                 | 27                       | 119          |
| 23..... | 437                   | 7                        | 8            | 617                   | 9                        | 15           | 1,660                 | 22                       | 99           |
| 24..... | 431                   | 9                        | 10           | 564                   | 8                        | 12           | 1,470                 | 11                       | 44           |
| 25..... | 431                   | 10                       | 12           | 527                   | 5                        | 7            | 1,300                 | 10                       | 35           |
| 26..... | 479                   | 10                       | 13           | 521                   | 5                        | 7            | 1,170                 | 7                        | 22           |
| 27..... | 479                   | 8                        | 10           | 509                   | 6                        | 8            | 1,070                 | 19                       | 55           |
| 28..... | 473                   | 10                       | 13           | 509                   | 7                        | 10           | 1,040                 | 20                       | 56           |
| 29..... | 479                   | 14                       | 13           | 509                   | 7                        | 10           | 1,160                 | 17                       | 53           |
| 30..... | 461                   | 9                        | 11           | 509                   | 6                        | 8            | 1,220                 | 14                       | 46           |
| 31..... | 461                   | 9                        | 11           | --                    | --                       | --           | 1,200                 | 15                       | 49           |
| Total.  | 14,645                | --                       | 315          | 15,378                | --                       | 189          | 42,284                | --                       | 11,730       |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,150                 | 17                       | 53           | 2,620                 | 65                       | 460          | 10,500                | 153                      | 4,340        |
| 2.....  | 1,070                 | 19                       | 55           | 2,800                 | 63                       | 476          | 9,340                 | 87                       | 2,190        |
| 3.....  | 940                   | 20                       | 51           | 2,710                 | 62                       | 454          | 7,810                 | 56                       | 1,180        |
| 4.....  | 962                   | 19                       | 49           | 2,710                 | 53                       | 388          | 6,100                 | 45                       | 741          |
| 5.....  | 962                   | 19                       | 49           | 2,800                 | 55                       | 416          | 4,510                 | 44                       | 536          |
| 6.....  | 930                   | 16                       | 40           | 2,890                 | 48                       | 374          | 3,700                 | 45                       | 450          |
| 7.....  | 890                   | 19                       | 46           | 3,340                 | 58                       | 523          | 3,340                 | 42                       | 379          |
| 8.....  | 870                   | 16                       | 38           | 4,240                 | 68                       | 778          | 3,340                 | 38                       | 343          |
| 9.....  | 899                   | 36                       | s 99         | 7,050                 | 370                      | sa 9,600     | 3,430                 | 47                       | 435          |
| 10..... | 8,530                 | 1,650                    | s 40,000     | 19,300                | 1,100                    | 57,300       | 3,970                 | 51                       | 547          |
| 11..... | 4,960                 | 489                      | s 7,110      | 15,200                | 380                      | 15,600       | 4,330                 | 62                       | 725          |
| 12..... | 3,250                 | 118                      | 1,040        | 11,800                | 183                      | 5,830        | 4,510                 | 64                       | 779          |
| 13..... | 2,280                 | 67                       | 412          | 9,140                 | 108                      | 2,660        | 3,970                 | 67                       | 718          |
| 14..... | 1,790                 | 43                       | 208          | 7,430                 | 92                       | 1,840        | 3,520                 | 55                       | 523          |
| 15..... | 1,220                 | 38                       | 125          | 6,100                 | 75                       | 1,240        | 3,250                 | 43                       | 377          |
| 16..... | 1,150                 | 23                       | 71           | 4,960                 | 54                       | 723          | 2,980                 | 40                       | 322          |
| 17..... | 806                   | 18                       | 39           | 4,240                 | 43                       | 492          | 2,620                 | 35                       | 248          |
| 18..... | 832                   | 16                       | 36           | 3,610                 | 32                       | 312          | 2,450                 | 30                       | 198          |
| 19..... | 850                   | 14                       | 32           | 3,160                 | 33                       | 282          | 2,360                 | 26                       | 166          |
| 20..... | 798                   | 18                       | 39           | 2,800                 | 27                       | 204          | 2,360                 | 28                       | 178          |
| 21..... | 840                   | 16                       | 36           | 2,450                 | 22                       | 146          | 2,230                 | 22                       | 132          |
| 22..... | 2,490                 | 180                      | sa 2,200     | 2,180                 | 17                       | 100          | 2,130                 | 17                       | 98           |
| 23..... | 8,950                 | 808                      | 19,500       | 1,990                 | 9                        | 48           | 2,090                 | 14                       | 79           |
| 24..... | 12,200                | 600                      | 19,800       | 1,910                 | 19                       | 98           | 1,920                 | 26                       | 135          |
| 25..... | 12,600                | 368                      | 12,500       | 1,870                 | 19                       | 96           | 1,740                 | 22                       | 103          |
| 26..... | 8,570                 | 153                      | 3,540        | 2,010                 | 27                       | 146          | 1,920                 | 26                       | 135          |
| 27..... | 6,100                 | 100                      | 1,650        | 4,060                 | 164                      | s 2,000      | 3,160                 | 105                      | 896          |
| 28..... | 4,240                 | 100                      | 1,140        | 8,380                 | 278                      | 6,290        | 3,430                 | 38                       | 352          |
| 29..... | 3,250                 | 94                       | 825          | --                    | --                       | --           | 3,610                 | 44                       | 429          |
| 30..... | 2,980                 | 77                       | 620          | --                    | --                       | --           | 3,340                 | 48                       | 433          |
| 31..... | 2,800                 | 66                       | 499          | --                    | --                       | --           | 3,070                 | 34                       | 282          |
| Total.  | 100,159               | --                       | 111,902      | 143,750               | --                       | 108,876      | 117,030               | --                       | 18,449       |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Suspended sediment   |                          |              | Suspended sediment   |                          |              | Suspended sediment   |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 3,070                | 41                       | s 380        | 3,790                | 51                       | 522          | 5,530                | 1,270                    | s 19,900     |
| 2.....  | 8,570                | 502                      | 11,600       | 3,610                | 44                       | 429          | 7,240                | 595                      | 11,600       |
| 3.....  | 11,800               | 268                      | 8,540        | 3,340                | 33                       | 298          | 7,620                | 312                      | 6,420        |
| 4.....  | 22,500               | 1,060                    | s 82,700     | 3,070                | 33                       | 274          | 6,480                | 194                      | 3,390        |
| 5.....  | 46,200               | 1,140                    | 142,000      | 2,800                | 28                       | 212          | 5,340                | 128                      | 1,840        |
| 6.....  | 59,100               | 590                      | 94,100       | 2,620                | 20                       | 141          | 3,970                | 81                       | 868          |
| 7.....  | 59,000               | 300                      | 47,800       | 2,450                | 19                       | 126          | 3,340                | 56                       | 505          |
| 8.....  | 44,600               | 314                      | 37,800       | 2,360                | 19                       | 121          | 3,340                | 71                       | 640          |
| 9.....  | 40,900               | 282                      | 31,100       | 2,280                | 20                       | 123          | 3,070                | 102                      | 845          |
| 10..... | 36,400               | 181                      | 17,800       | 2,160                | 28                       | 163          | 3,160                | 102                      | 870          |
| 11..... | 33,700               | 148                      | 13,500       | 2,020                | 22                       | 120          | 3,790                | 100                      | 1,020        |
| 12..... | 26,400               | 138                      | 9,840        | 2,160                | 28                       | 163          | 3,250                | 68                       | 597          |
| 13..... | 19,800               | 117                      | 6,250        | 3,070                | 62                       | 514          | 2,800                | 51                       | 386          |
| 14..... | 14,300               | 113                      | 4,700        | 4,780                | 115                      | 1,480        | 2,890                | 82                       | 640          |
| 15..... | 11,800               | 87                       | 2,770        | 5,910                | 190                      | 3,030        | 4,060                | 315                      | 3,450        |
| 16..... | 10,500               | 83                       | 2,350        | 8,570                | 168                      | 3,890        | 3,520                | 127                      | 1,210        |
| 17..... | 9,140                | 76                       | 1,880        | 7,620                | 135                      | 2,780        | 3,070                | 75                       | 622          |
| 18..... | 12,800               | 250                      | sa 9,600     | 5,530                | 96                       | 1,430        | 2,710                | 59                       | 432          |
| 19..... | 13,400               | 250                      | 9,040        | 4,420                | 88                       | 1,050        | 2,710                | 62                       | 454          |
| 20..... | 17,000               | 200                      | 9,180        | 5,150                | 100                      | sa 1,500     | 2,620                | 47                       | 332          |
| 21..... | 15,800               | 126                      | 5,380        | 13,600               | 320                      | 11,800       | 2,620                | 47                       | 332          |
| 22..... | 13,000               | 147                      | 5,160        | 21,200               | 330                      | 18,900       | 3,340                | 73                       | 658          |
| 23..... | 13,000               | 200                      | 7,020        | 26,400               | 245                      | 17,500       | 2,710                | 60                       | 439          |
| 24..... | 10,500               | 132                      | 3,740        | 28,200               | 174                      | 13,200       | 4,240                | 181                      | s 2,770      |
| 25..... | 7,810                | 104                      | 2,190        | 22,800               | 90                       | 5,540        | 9,940                | 1,820                    | 48,800       |
| 26..... | 7,050                | 90                       | 1,710        | 14,300               | 102                      | 3,940        | 8,190                | 450                      | 9,950        |
| 27..... | 6,290                | 68                       | 1,150        | 10,700               | 113                      | 3,260        | 6,670                | 200                      | 3,600        |
| 28..... | 5,150                | 64                       | 890          | 7,810                | 105                      | 2,210        | 5,150                | 180                      | 2,500        |
| 29..... | 4,510                | 61                       | 743          | 5,910                | 89                       | 1,420        | 16,300               | 1,240                    | 54,600       |
| 30..... | 4,060                | 52                       | 570          | 4,780                | 66                       | 852          | 19,300               | 450                      | 23,400       |
| 31..... | --                   | --                       | --           | 3,970                | 65                       | 697          | --                   | --                       | --           |
| Total.  | 588,150              | --                       | 571,143      | 237,380              | --                       | 97,685       | 158,970              | --                       | 203,070      |

| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 17,400               | 188                      | 8,830        | 1,180                | 41                       | 131          | 527                  | 33                       | 47           |
| 2.....  | 13,600               | 181                      | 6,650        | 1,070                | 36                       | 104          | 497                  | 35                       | b 45         |
| 3.....  | 10,900               | 176                      | 5,180        | 1,020                | 48                       | 132          | 491                  | 36                       | 48           |
| 4.....  | 10,100               | 177                      | 4,830        | 1,030                | 36                       | 100          | 558                  | 38                       | 57           |
| 5.....  | 9,340                | 155                      | 3,910        | 1,030                | 42                       | 117          | 597                  | 34                       | 55           |
| 6.....  | 7,810                | 133                      | 2,800        | 940                  | 42                       | 106          | 515                  | 78                       | 108          |
| 7.....  | 8,000                | --                       | e 3,500      | 860                  | 36                       | 84           | 485                  | 95                       | 124          |
| 8.....  | 8,000                | 165                      | 3,560        | 840                  | 39                       | 88           | 461                  | 45                       | 56           |
| 9.....  | 5,910                | --                       | e 2,600      | 806                  | 41                       | 89           | 431                  | 65                       | 76           |
| 10..... | 4,060                | --                       | e 950        | 772                  | 42                       | 88           | 420                  | 52                       | 59           |
| 11..... | 3,610                | --                       | e 750        | 755                  | 42                       | 86           | 425                  | 34                       | 39           |
| 12..... | 3,520                | --                       | e 650        | 740                  | 43                       | 86           | 503                  | 36                       | 49           |
| 13..... | 2,980                | 55                       | 442          | 789                  | 35                       | 74           | 527                  | 34                       | 48           |
| 14..... | 2,540                | 47                       | 322          | 718                  | 30                       | 58           | 624                  | 37                       | 62           |
| 15..... | 2,360                | 37                       | 236          | 710                  | 31                       | 59           | 910                  | 24                       | 59           |
| 16..... | 2,180                | 32                       | 188          | 725                  | 26                       | 51           | 710                  | 10                       | 19           |
| 17..... | 1,960                | 26                       | 138          | 732                  | 28                       | 55           | 590                  | 9                        | 14           |
| 18..... | 1,750                | 24                       | 113          | 780                  | 31                       | 65           | 571                  | 10                       | 15           |
| 19..... | 1,530                | 28                       | 116          | 695                  | 18                       | 34           | 539                  | 13                       | 19           |
| 20..... | 1,380                | 25                       | 93           | 638                  | 13                       | 22           | 533                  | 12                       | 17           |
| 21..... | 1,260                | 15                       | 51           | 624                  | 19                       | 32           | 533                  | 10                       | b 14         |
| 22..... | 1,200                | 8                        | 26           | 604                  | 25                       | 41           | 533                  | 9                        | 13           |
| 23..... | 1,330                | 31                       | s 124        | 590                  | 16                       | 25           | 571                  | 12                       | 18           |
| 24..... | 2,620                | 155                      | 1,100        | 578                  | 20                       | 31           | 2,700                | 74                       | s 607        |
| 25..... | 2,160                | 64                       | 373          | 564                  | 35                       | 53           | 5,340                | 187                      | 2,700        |
| 26..... | 1,720                | 36                       | 167          | 590                  | 28                       | 45           | 4,960                | 158                      | 2,120        |
| 27..... | 1,610                | 36                       | 156          | 666                  | 47                       | 84           | 2,540                | 106                      | 727          |
| 28..... | 1,630                | --                       | e 280        | 584                  | 23                       | 36           | 1,560                | 75                       | b 320        |
| 29..... | 2,090                | --                       | e 800        | 558                  | 30                       | b 45         | 1,130                | 50                       | b 150        |
| 30..... | 1,420                | 52                       | 199          | 545                  | 51                       | 75           | 1,020                | 30                       | 83           |
| 31..... | 1,550                | 50                       | 209          | 533                  | 44                       | 63           | --                   | --                       | --           |
| Total.  | 137,520              | --                       | 49,343       | 23,266               | --                       | 2,159        | 31,801               | --                       | 7,768        |

Total discharge for year (cfs-days)..... 1,610,333

Total load for year (tons)..... 1,182,629

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.



## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature per surface (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|-------------|-----------------|-------------------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |             |                 |                                     | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |             |                 |                                     |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Jan. 11, 1957..... | 8:30 a. m.  | 5, 150          |                                     | 578                           | 769                                        | 51                                                | 62    | 76    | 90    | 97    | 99    | 100   | --    |       | --    | BSWCM               |
| Jan. 24.....       | 4:45 p. m.  | 13, 000         |                                     | 618                           | 640                                        | 40                                                | 55    | 67    | 81    | 84    | 88    | 95    | 98    | 100   | --    | BSWCM               |
| Jan. 24.....       | 4:45 p. m.  | 13, 000         |                                     | 618                           | 630                                        | 10                                                | 19    | 34    | 69    | 93    | 96    | 98    | 100   | 100   | --    | BSNM                |
| Feb. 10.....       | 2:00 p. m.  | 20, 800         |                                     | 1,010                         | 1,500                                      | 31                                                | 45    | 62    | 81    | 93    | 98    | 99    | 100   | 98    | --    | BSWCM               |
| Apr. 4.....        | 3:00 p. m.  | 28, 200         |                                     | 1,850                         | 1,550                                      | 31                                                | 41    | 54    | 69    | 87    | 95    | 99    | 100   | 100   | --    | BSWCM               |
| Apr. 4.....        | 3:00 p. m.  | 35, 200         |                                     | 1,820                         | 3,750                                      | 38                                                | 51    | 64    | 80    | 91    | 97    | 98    | 99    | 100   | --    | BSWCM               |
| Apr. 4.....        | 8:25 p. m.  | 35, 200         |                                     | 1,820                         | 3,560                                      | 11                                                | 21    | 34    | 61    | 89    | 97    | 98    | 99    | 100   | --    | BSNM                |
| Apr. 5.....        | 1:00 p. m.  | 47, 000         |                                     | 1,090                         | 1,580                                      | 50                                                | 64    | 74    | 86    | 93    | 96    | 98    | 98    | 100   | --    | BSWCM               |
| Apr. 7.....        | 8:00 a. m.  | 63, 800         |                                     | 221                           | 467                                        | 50                                                | 63    | 71    | 80    | 87    | 92    | 93    | 94    | 100   | --    | BSWCM               |
| Apr. 7.....        | 5:25 p. m.  | 56, 800         |                                     | 313                           | 927                                        | 61                                                | 70    | 78    | 83    | 87    | 91    | 93    | 94    | 98    | 100   | BSWCM               |
| Apr. 7.....        | 5:25 p. m.  | 56, 800         |                                     | 313                           | 814                                        | 25                                                | 41    | 65    | 87    | 94    | 95    | 96    | 97    | 98    | 100   | BSNM                |
| May 21.....        | 8:00 a. m.  | 12, 600         |                                     | 373                           | 598                                        | 44                                                | 59    | 72    | 83    | 91    | 96    | 99    | 100   | --    | --    | BSWCM               |
| May 24.....        | 1:45 p. m.  | 29, 000         |                                     | 177                           | 1,040                                      | 45                                                | 56    | 65    | 73    | 82    | 91    | 95    | 99    | 100   | --    | BSWCM               |
| June 1.....        | 8:00 a. m.  | 4, 780          |                                     | 1,420                         | 1,060                                      | 55                                                | 70    | 83    | 92    | 96    | 99    | 100   | --    | --    | --    | BSWCM               |
| June 25.....       | 7:00 a. m.  | 10, 900         |                                     | 2,640                         | 2,160                                      | 37                                                | 51    | 67    | 80    | 91    | 99    | 100   | --    | --    | --    | BSWCM               |
| June 29.....       | 10:00 a. m. | 17, 200         |                                     | 2,420                         | 1,830                                      | 37                                                | 49    | 66    | 83    | 94    | 98    | 100   | --    | --    | --    | BSWCM               |
| June 29.....       | 10:00 a. m. | 17, 200         |                                     | 2,420                         | 1,840                                      | 19                                                | 30    | 48    | 80    | 95    | 98    | 100   | --    | --    | --    | BSNM                |

SCIOTO RIVER BASIN--Continued  
SCIOTO RIVER AT LUCASVILLE, OHIO

LOCATION.--At bridge on State Highway 348 at Lucasville, Scioto County, 0.4 mile downstream from Miller Run, and 4.9 miles upstream from Scioto Brush Creek.  
DRAINAGE AREA.--6,176 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 479 ppm Nov. 11-20; minimum, 204 ppm Apr. 1-7, 9-10.

Hardness: Maximum, 326 ppm Nov. 11-20; minimum, 156 ppm Apr. 1-7, 9-10.

Specific conductance: Maximum daily, 784 micromhos Nov. 19; minimum daily, 268 micromhos Apr. 5.

Water temperatures: Maximum, 85°F July 22; minimum, 34°F Jan. 21.

REMARKS.--Records of specific conductance of daily samples available at district office in Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |                         | Total acidity as carbonic acid (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|-------------------------|--------------------------------------------------|-------------------------------------------|-----|-------|
|                       |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-magnesium carbonate |                                                  |                                           |     |       |
| Oct. 17-20, 1956...   |                      |                  | 9.5                        |               | 0.03      | 0.00           | 82           | 28             | 34          | 3.8           | 284                             | 101                        | 36            | 0.2          | 4.2                        | 443                                                | 320                           | 87                      |                                                  | 695                                       | 7.8 | 15    |
| Oct. 21-31 .....      |                      |                  | 11                         |               | .03       | .00            | 82           | 28             | 38          | 5.2           | 283                             | 104                        | 38            | .3           | 7.2                        | 459                                                | 320                           | 88                      |                                                  | 720                                       | 7.5 | 20    |
| Nov. 1-10 .....       |                      |                  | 11                         |               | .03       | .12            | 83           | 26             | 34          | 5.1           | 273                             | 98                         | 35            | .5           | 9.2                        | 447                                                | 314                           | 90                      |                                                  | 722                                       | 7.3 | 20    |
| Nov. 11-20 .....      |                      |                  | 8.3                        |               | .03       | .09            | 83           | 29             | 38          | 4.8           | 284                             | 109                        | 39            | .5           | 7.6                        | 479                                                | 326                           | 94                      |                                                  | 740                                       | 7.5 | 18    |
| Nov. 21-22, 26-30 .   |                      |                  |                            |               | .08       | .06            | 71           | 25             | 38          | 5.2           | 242                             | 99                         | 38            | .5           | 8.5                        | 429                                                | 280                           | 82                      |                                                  | 675                                       | 6.5 | 20    |
| Dec. 1-3, 6-10 .....  |                      |                  | 7.2                        |               | .03       | .04            | 73           | 25             | 31          | 3.9           | 246                             | 90                         | 32            | .4           | 6.9                        | 414                                                | 285                           | 84                      |                                                  | 664                                       | 7.6 | 10    |
| Dec. 11-20 .....      |                      |                  | 8.0                        |               | .06       | .04            | 77           | 16             | 14          | 3.1           | 150                             | 60                         | 15            | .4           | 6.1                        | 256                                                | 183                           | 60                      |                                                  | 422                                       | 7.3 | 9     |
| Dec. 21-31 .....      |                      |                  | 8.5                        |               | .04       | .03            | 55           | 21             | 17          | 2.7           | 184                             | 70                         | 16            | .3           | 5.5                        | 308                                                | 224                           | 72                      |                                                  | 490                                       | 7.4 | 9     |
| Jan. 1-5, 1957 .....  |                      |                  | 7.9                        |               | .03       | .00            | 56           | 23             | 15          | 2.8           | 195                             | 76                         | 19            | .2           | 8.1                        | 318                                                | 234                           | 74                      |                                                  | 502                                       | 7.5 | 9     |
| Jan. 21-31 .....      |                      |                  | 7.0                        |               | .05       | .02            | 55           | 20             | 13          | 2.8           | 172                             | 78                         | 14            | .2           | 9.6                        | 294                                                | 219                           | 78                      |                                                  | 475                                       | 7.5 | 15    |
| Feb. 1-10 .....       |                      |                  | 7.2                        |               | .05       | .02            | 49           | 18             | 10          | 2.5           | 156                             | 66                         | 13            | .2           | 8.3                        | 265                                                | 186                           | 68                      |                                                  | 421                                       | 7.4 | 12    |
| Feb. 11, 15-20 .....  |                      |                  | 3.9                        |               | .03       | .00            | 47           | 21             | 9.0         | 2.5           | 156                             | 66                         | 12            | .2           | 7.0                        | 266                                                | 204                           | 76                      |                                                  | 434                                       | 7.7 | 10    |
| Feb. 21-28 .....      |                      |                  | 7.1                        |               | .02       | .00            | 64           | 25             | 11          | 2.5           | 214                             | 79                         | 16            | .2           | 9.0                        | 346                                                | 263                           | 87                      |                                                  | 551                                       | 7.7 | 9     |
| Mar. 1-10 .....       |                      |                  | 7.7                        |               | .02       | .00            | 56           | 23             | 13          | 2.3           | 167                             | 84                         | 14            | .2           | 9.7                        | 314                                                | 234                           | 87                      |                                                  | 482                                       | 8.0 | 7     |
| Mar. 11-20 .....      |                      |                  | 7.0                        |               | .03       | .00            | 59           | 23             | 12          | 2.1           | 194                             | 73                         | 14            | .3           | 7.8                        | 312                                                | 242                           | 82                      |                                                  | 496                                       | 7.9 | 7     |
| Mar. 21-31 .....      |                      |                  | 6.2                        |               | .01       | .04            | 58           | 23             | 11          | 2.1           | 164                             | 73                         | 13            | .2           | 7.2                        | 307                                                | 239                           | 80                      |                                                  | 496                                       | 7.8 | 5     |
| Apr. 1-7, 9-10 .....  |                      |                  | 6.4                        |               | .02       | .04            | 41           | 13             | 5.0         | 2.0           | 123                             | 44                         | 7.0           | .3           | 8.1                        | 204                                                | 156                           | 54                      |                                                  | 332                                       | 7.7 | 10    |
| Apr. 11-20 .....      |                      |                  | 9.3                        |               | .06       | .00            | 52           | 17             | 5.2         | 2.4           | 160                             | 59                         | 8.8           | .3           | 11                         | 254                                                | 200                           | 68                      |                                                  | 406                                       | 8.0 | 10    |
| Apr. 23-30 .....      |                      |                  | 9.3                        |               | .16       | .00            | 60           | 20             | 7.1         | 2.4           | 192                             | 65                         | 9.8           | .4           | 6.7                        | 290                                                | 232                           | 74                      |                                                  | 463                                       | 8.1 | 10    |
| May. 1-10 .....       |                      |                  | 7.4                        |               | .01       | .00            | 73           | 26             | 11          | 2.4           | 249                             | 78                         | 14            | .4           | 5.6                        | 354                                                | 289                           | 85                      |                                                  | 574                                       | 8.2 | 8     |
| May. 11-19 .....      |                      |                  | 7.1                        |               | .02       | .00            | 65           | 24             | 11          | 2.4           | 214                             | 84                         | 15            | .4           | 4.7                        | 333                                                | 261                           | 85                      |                                                  | 541                                       | 7.4 | 10    |
| May. 21, 23-30 .....  |                      |                  | 13                         |               | .01       | .00            | 55           | 18             | 6.5         | 2.4           | 176                             | 53                         | 9.5           | .3           | 9.7                        | 268                                                | 211                           | 67                      |                                                  | 426                                       | 7.5 | 15    |
| June. 5-10 .....      |                      |                  | 11                         |               | .02       | .00            | 71           | 24             | 11          | 2.4           | 242                             | 73                         | 14            | .4           | 7.2                        | 352                                                | 276                           | 77                      |                                                  | 552                                       | 7.6 | 7     |
| June. 11-20 .....     |                      |                  | 11                         |               | .08       | .00            | 69           | 24             | 12          | 2.7           | 232                             | 77                         | 14            | .4           | 7.8                        | 344                                                | 271                           | 80                      |                                                  | 551                                       | 7.5 | 7     |
| June. 21, 22, 24-30 . |                      |                  | 10                         |               | .03       | .00            | 66           | 19             | 10          | 2.9           | 208                             | 67                         | 14            | .4           | 9.1                        | 318                                                | 243                           | 72                      |                                                  | 494                                       | 7.6 | 10    |

SCIOTO RIVER BASIN--Continued  
SCIOTO RIVER AT LUCASVILLE, OHIO--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection          | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> | Total acidity (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|-----------------------------|----------------------|------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------------------------|--------------------------------------------|-----|-------|
| July 1, 2, 4, 6-9, 1957     |                      |                  | 11                         |               | 0.05      | 0.00           | 54           | 18             | 6.4         | 3.2           | 181                             | 52                         | 8.7           | 0.4          | 12                         | 276                                                 | 209                           | 60                              | 425                                        | 7.5 | 15    |
| July 11-15 .....            |                      |                  | 15                         |               | .02       | .01            | 73           | 26             | 11          | 3.4           | 264                             | 66                         | 12            | .4           | 6.2                        | 359                                                 | 269                           | 72                              | 571                                        | 7.9 | 8     |
| July 21-31 .....            |                      |                  | 12                         |               | .02       | .02            | 66           | 27             | 16          | 4.1           | 245                             | 72                         | 17            | .3           | 4.7                        | 350                                                 | 276                           | 74                              | 571                                        | 7.7 | 10    |
| Aug 1, 4, 6-7 .....         |                      |                  | 6.5                        |               | .21       | .06            | 64           | 26             | 17          | 3.4           | 228                             | 84                         | 22            | .4           | 2.6                        | 348                                                 | 267                           | 80                              | 572                                        | 7.4 | 20    |
| Aug 12-14, 16-20 ..         |                      |                  | 10                         |               | .00       | .13            | 72           | 28             | 23          | 3.6           | 274                             | 88                         | 27            | .5           | .6                         | 397                                                 | 295                           | 70                              | 632                                        | 7.6 | 10    |
| Aug 22, 24, 26, 27, ..      |                      |                  |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                     |                               |                                 |                                            |     |       |
| Aug 29-30 .....             |                      |                  | 8.8                        |               | .00       | .10            | 80           | 29             | 27          | 3.9           | 288                             | 100                        | 30            | .6           | 2.1                        | 429                                                 | 319                           | 82                              | 700                                        | 7.7 | 9     |
| Sept 1, 5, 9-10 .....       |                      |                  | 8.2                        |               | .01       | .00            | 73           | 28             | 32          | 4.2           | 264                             | 104                        | 33            | .7           | 1.4                        | 425                                                 | 297                           | 80                              | 693                                        | 7.4 | 12    |
| Sept 11-19 .....            |                      |                  | 9.3                        |               | .13       | .02            | 78           | 29             | 34          | 4.6           | 274                             | 108                        | 36            | .8           | 2.0                        | 450                                                 | 314                           | 89                              | 729                                        | 7.5 | 12    |
| Sept 21-22, 25-30 ..        |                      |                  | 14                         |               | .02       | .00            | 72           | 27             | 24          | 4.1           | 232                             | 113                        | 24            | .6           | 4.2                        | 415                                                 | 291                           | 101                             | 648                                        | 7.4 | 16    |
| Time-weighted average ..... |                      |                  | 8.9                        |               | 0.04      | 0.02           | 64           | 23             | 18          | 3.2           | 216                             | 79                         | 20            | 0.4          | 6.8                        | 345                                                 | 254                           | 77                              | 551                                        | --  | 12    |

a Represents 80 percent of days.

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT LUCASVILLE, OHIO--Continued

Temperature(°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | --   | 63   | 40   | 39   | 37   | 43   | 49   | 65  | --   | 74   | 82   | 80    |
| 2       | --   | 63   | 40   | 35   | 38   | 43   | 50   | 65  | --   | 74   | 82   | 80    |
| 3       | --   | 61   | 40   | 35   | 40   | 43   | 48   | 63  | --   | --   | 82   | 74    |
| 4       | --   | 62   | --   | 36   | 41   | 42   | 48   | 64  | --   | 74   | 82   | 74    |
| 5       | --   | 61   | --   | 39   | 40   | 41   | 50   | 61  | 71   | --   | --   | --    |
| 6       | --   | 60   | 51   | --   | 41   | 42   | 47   | 61  | 73   | 76   | 76   | --    |
| 7       | --   | 60   | 52   | --   | 42   | 42   | 44   | 63  | 72   | 76   | 76   | --    |
| 8       | --   | 55   | 52   | --   | 43   | 40   | --   | 58  | 72   | 76   | --   | --    |
| 9       | --   | 52   | 42   | --   | 45   | 41   | 45   | 67  | 72   | 77   | --   | 71    |
| 10      | --   | 50   | 40   | --   | 45   | 42   | 45   | 68  | 72   | --   | --   | 71    |
| 11      | --   | 52   | 39   | --   | 44   | 45   | 47   | 67  | 71   | 75   | --   | 74    |
| 12      | --   | 54   | 42   | --   | --   | 48   | 47   | 71  | 76   | 75   | 78   | 73    |
| 13      | --   | 48   | 39   | --   | --   | 50   | 46   | 73  | 76   | 75   | 81   | 73    |
| 14      | --   | 50   | 40   | --   | --   | 52   | 44   | 71  | 76   | 75   | 77   | 74    |
| 15      | --   | 54   | 40   | --   | 41   | 53   | 47   | 69  | 77   | 74   | --   | 74    |
| 16      | --   | 52   | 40   | --   | 41   | 52   | 47   | 65  | 77   | --   | 76   | 71    |
| 17      | 63   | 48   | 40   | --   | 40   | 54   | 48   | 68  | 79   | --   | 76   | 70    |
| 18      | 63   | 48   | 40   | --   | 40   | 52   | 52   | 66  | 80   | --   | 72   | 74    |
| 19      | 64   | 46   | 37   | --   | 40   | 52   | 55   | 67  | 79   | --   | 75   | 74    |
| 20      | 63   | 47   | 40   | --   | 40   | 50   | 59   | --  | 75   | --   | 74   | --    |
| 21      | 66   | 44   | 43   | 34   | 40   | 49   | --   | 68  | 80   | 82   | --   | 71    |
| 22      | 68   | 39   | 49   | 37   | 40   | 48   | --   | --  | 80   | 85   | 74   | 71    |
| 23      | 64   | --   | 49   | 36   | 43   | 49   | 63   | 63  | --   | 79   | 74   | --    |
| 24      | 62   | --   | 46   | 37   | 45   | 50   | 67   | 65  | 74   | 78   | 72   | --    |
| 25      | 63   | --   | 49   | 39   | 49   | 49   | 67   | 65  | 76   | 77   | --   | 70    |
| 26      | 59   | 37   | 43   | 39   | 51   | 49   | 67   | 65  | 74   | 77   | 78   | 70    |
| 27      | 57   | 37   | 43   | 37   | 49   | 47   | 66   | 64  | 76   | 80   | 79   | 66    |
| 28      | 56   | 39   | 42   | 38   | 45   | 46   | 66   | 64  | 75   | 82   | --   | 64    |
| 29      | 58   | 40   | 40   | 38   | --   | 46   | 66   | 65  | 75   | 82   | 82   | 67    |
| 30      | 60   | 40   | 36   | 38   | --   | 46   | 65   | 66  | 72   | 82   | 82   | 67    |
| 31      | 61   | --   | 39   | 37   | --   | 45   | --   | --  | --   | 82   | --   | --    |
| Average | --   | 50   | 42   | --   | 42   | 47   | 54   | 66  | 75   | --   | --   | --    |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## LITTLE MIAMI RIVER BASIN

## LITTLE MIAMI RIVER NEAR SELMA, OHIO

LOCATION.--At gaging station at bridge on Selma Pike, 2.3 miles northwest of Selma, Clark County, and 3.1 miles upstream from North Fork.

DRAINAGE AREA.--50.6 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1952 to September 1954.

Water temperatures: September 1952 to September 1957.

Sediment records: September 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 78°F July 30; minimum, freezing point Jan. 16-17.

Sediment concentrations: Maximum daily, 654 ppm June 28; minimum daily, 2 ppm on several days during November, December, January, and March.

Sediment loads: Maximum daily, 1,170 tons Apr. 4; minimum daily, less than 0.05 ton on several days during November to January.

EXTREMES, 1952-57.--Water temperatures: Maximum, 81°F Aug. 18, 19, 1955; minimum, freezing point on several days during January, February, and November 1955, and January 1957.

Sediment concentrations: Maximum daily, 658 ppm Feb. 25, 1956; minimum daily, 1 ppm on several days during May 1953, February and December 1954, and January 1956.

Sediment loads: Maximum daily, 1,170 tons Apr. 4, 1957; minimum daily, less than 0.05 ton on many days during 1952 to 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow affected by ice Jan. 12-20.

Temperature (°F) of water, water year October 1956 to September 1957  
/Once-daily measurements at approximately 7:30 a.m. 7

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 62   | 57   | 34   | 33   | 38   | 36   | 44   | 59  | 63   | 64   | 72   | 71    |
| 2       | 61   | 56   | 36   | 34   | 35   | 37   | 47   | 57  | 61   | 63   | 73   | 70    |
| 3       | 56   | 53   | 39   | 35   | 40   | 35   | 40   | 48  | 60   | 66   | 73   | 71    |
| 4       | 58   | 58   | 38   | 34   | 39   | 34   | 41   | 46  | 63   | 69   | 74   | 67    |
| 5       | 56   | 57   | 42   | 34   | 37   | 35   | 50   | 47  | 64   | 64   | 67   | 58    |
| 6       | 57   | 52   | 50   | 34   | 36   | 38   | 39   | 49  | 66   | 65   | 63   | 58    |
| 7       | 59   | 52   | 56   | 34   | 40   | 39   | 42   | 53  | 68   | 66   | 64   | 60    |
| 8       | 51   | 46   | 57   | 33   | 38   | 37   | 40   | 56  | 62   | 69   | 66   | 58    |
| 9       | 50   | 42   | 40   | 35   | 47   | 35   | 35   | 60  | 60   | 70   | 69   | 60    |
| 10      | 46   | 41   | 34   | 34   | 42   | 39   | 40   | 62  | 64   | 64   | 71   | 64    |
| 11      | 45   | 43   | 39   | 33   | 38   | 41   | 43   | 63  | 65   | 69   | 73   | 62    |
| 12      | 48   | --   | 38   | 34   | 35   | 46   | 41   | 64  | 66   | 70   | 72   | 66    |
| 13      | 52   | 38   | 37   | 33   | 35   | 44   | 38   | 66  | 70   | 71   | 67   | 67    |
| 14      | 55   | 48   | 37   | 33   | 36   | 47   | 38   | 67  | 70   | 73   | 70   | 63    |
| 15      | 53   | 49   | 45   | 33   | 34   | 47   | 39   | 66  | 73   | 72   | 72   | 68    |
| 16      | 55   | 44   | 44   | 32   | 35   | 38   | 45   | 64  | 76   | 68   | 73   | 67    |
| 17      | 56   | 36   | 43   | 32   | 36   | 42   | 46   | 52  | 73   | 67   | 70   | 61    |
| 18      | 56   | 35   | 40   | 33   | 36   | 45   | 51   | 61  | 70   | 66   | 69   | 63    |
| 19      | 54   | 37   | 35   | 33   | 36   | 47   | 50   | 64  | 68   | 73   | 67   | 65    |
| 20      | 56   | 45   | 45   | 34   | 34   | 39   | 56   | 58  | 66   | 74   | 64   | 68    |
| 21      | 56   | 49   | 50   | 34   | 35   | 38   | 58   | 55  | 67   | 76   | 63   | 71    |
| 22      | 58   | 33   | 48   | 42   | 38   | 43   | 58   | 62  | 70   | 74   | 65   | 70    |
| 23      | 59   | 34   | 47   | 35   | 40   | 41   | 59   | 61  | 73   | 72   | 67   | 68    |
| 24      | 55   | 34   | 44   | 34   | 42   | 43   | 60   | 58  | 68   | 66   | 68   | 56    |
| 25      | 53   | 34   | 35   | 35   | 47   | 39   | 61   | 59  | 63   | 68   | 67   | 60    |
| 26      | 53   | 37   | 34   | 34   | 52   | 40   | 63   | 67  | 64   | 66   | 64   | 60    |
| 27      | 48   | 34   | 35   | 33   | 36   | 39   | 62   | 58  | 68   | 68   | 65   | 55    |
| 28      | 49   | 33   | 35   | 34   | 34   | 40   | 62   | 54  | 67   | --   | 65   | 52    |
| 29      | 53   | 34   | 34   | 37   | --   | 41   | 57   | 59  | 65   | --   | 67   | 58    |
| 30      | 54   | 34   | 34   | 33   | --   | 42   | 58   | 60  | 66   | 78   | 69   | 60    |
| 31      | 55   | --   | 34   | 36   | --   | 42   | --   | 63  | --   | 73   | 70   | --    |
| Average | 54   | 43   | 41   | 34   | 38   | 40   | 49   | 59  | 67   | 69   | 68   | 63    |

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 2.0                   | 60                       | 0.3          | 5.2                   | 30                       | 0.4          | 3.0                   | 17                       | 0.1          |
| 2.....  | 2.0                   | 47                       | .2           | 4.4                   | 25                       | .3           | 3.0                   | 17                       | .1           |
| 3.....  | 2.0                   | 52                       | .3           | 3.3                   | 25                       | .2           | 3.0                   | 23                       | .2           |
| 4.....  | 4.4                   | 41                       | .5           | 3.0                   | 25                       | .2           | 3.0                   | 23                       | .2           |
| 5.....  | 3.0                   | 38                       | .3           | 3.0                   | 22                       | .2           | 3.0                   | 36                       | .3           |
| 6.....  | 2.7                   | 15                       | .1           | 3.0                   | 23                       | .2           | 3.0                   | 35                       | .3           |
| 7.....  | 2.7                   | 23                       | .2           | 3.0                   | 20                       | .2           | 8.5                   | 27                       | .6           |
| 8.....  | 2.0                   | 30                       | .2           | 3.0                   | 19                       | .2           | 9.3                   | 20                       | .5           |
| 9.....  | 2.0                   | 32                       | .2           | 3.0                   | 11                       | .1           | 26                    | 21                       | 1.5          |
| 10..... | 1.7                   | 30                       | .1           | 2.7                   | 34                       | .2           | 23                    | 15                       | .9           |
| 11..... | 1.7                   | 30                       | .1           | 3.0                   | 15                       | .1           | 17                    | 10                       | .4           |
| 12..... | 1.7                   | 32                       | .1           | 3.0                   | 13                       | .1           | 14                    | 11                       | .4           |
| 13..... | 1.7                   | 27                       | .1           | 3.0                   | 23                       | .2           | 12                    | 11                       | .4           |
| 14..... | 1.7                   | 33                       | .2           | 3.0                   | 23                       | .2           | 11                    | 7                        | .2           |
| 15..... | 1.7                   | 50                       | .2           | 3.0                   | 22                       | .2           | 10                    | 11                       | .3           |
| 16..... | 1.7                   | 45                       | .2           | 3.3                   | 28                       | .2           | 9.3                   | 11                       | .3           |
| 17..... | 1.7                   | 35                       | .2           | 3.0                   | 3                        | (t)          | 8.9                   | 10                       | .2           |
| 18..... | 1.7                   | 25                       | .1           | 3.0                   | 2                        | (t)          | 8.0                   | 9                        | .2           |
| 19..... | 1.7                   | 46                       | .2           | 3.0                   | 3                        | (t)          | 7.6                   | 9                        | .2           |
| 20..... | 1.7                   | 46                       | .2           | 3.7                   | 19                       | .2           | 8.5                   | 14                       | .3           |
| 21..... | 1.7                   | 54                       | .2           | 5.2                   | 38                       | .5           | 11                    | 18                       | .5           |
| 22..... | 2.0                   | 49                       | .3           | 5.6                   | 11                       | .2           | 12                    | 9                        | .3           |
| 23..... | 2.0                   | 46                       | .2           | 4                     | 3                        |              | 11                    | 6                        | .2           |
| 24..... | 2.0                   | 48                       | .2           | 3.3                   | 3                        |              | 10                    | 12                       | .3           |
| 25..... | 2.0                   | 36                       | .2           | 3.0                   | 3                        |              | 9.8                   | 4                        | .1           |
| 26..... | 2.3                   | 33                       | .2           | 3.3                   | 2                        | (t)          | 8.9                   | 2                        | (t)          |
| 27..... | 2.7                   | 28                       | .2           | 3.3                   | 2                        |              | 8.9                   | 4                        | .1           |
| 28..... | 2.3                   | 42                       | .3           | 3.0                   | 2                        |              | 9.3                   | 3                        | .1           |
| 29..... | 2.3                   | 38                       | .2           | 3.0                   | 3                        |              | 11                    | 2                        | .1           |
| 30..... | 2.3                   | 33                       | .2           | 3.0                   | 11                       | .1           | 10                    | 2                        | .1           |
| 31..... | 2.3                   | 29                       | .2           | --                    | --                       | --           | --                    | 4                        | .1           |
| Total.  | 65.4                  | --                       | 6.4          | 101.3                 | --                       | 4.4          | 304.0                 | --                       | 9.6          |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 9.8                   | 4                        | 0.1          | 17                    | 8                        | 0.4          | 49                    | 12                       | 1.6          |
| 2.....  | 8.5                   | 7                        | .2           | 17                    | 38                       | 1.7          | 41                    | 13                       | 1.4          |
| 3.....  | 8.5                   | 4                        | .1           | 18                    | 38                       | 1.8          | 32                    | 11                       | 1.0          |
| 4.....  | 8.9                   | 3                        | .1           | 21                    | 8                        | .4           | 28                    | 10                       | .8           |
| 5.....  | 8.5                   | 2                        | (t)          | 23                    | 8                        | .5           | 24                    | 8                        | .5           |
| 6.....  | 8.0                   | 2                        | (t)          | 22                    | 5                        | .3           | 24                    | 17                       | 1.1          |
| 7.....  | 8.0                   | 3                        | .1           | 34                    | 14                       | 1.3          | 24                    | 6                        | .4           |
| 8.....  | 8.0                   | 2                        | (t)          | 41                    | 15                       | 1.7          | 24                    | 7                        | .4           |
| 9.....  | 8.9                   | 2                        | (t)          | 159                   | 303                      | s 196        | 22                    | 8                        | .5           |
| 10..... | 13                    | 5                        | .2           | 164                   | 134                      | s 63         | 19                    | 12                       | .6           |
| 11..... | 11                    | 5                        | .1           | 105                   | 38                       | 11           | 19                    | 12                       | .6           |
| 12..... | 9                     | 5                        | .1           | 76                    | 19                       | 3.9          | 22                    | 15                       | .9           |
| 13..... | 8                     | 6                        | .1           | 62                    | 15                       | 2.5          | 20                    | 15                       | .8           |
| 14..... | 7                     | 8                        | .2           | 56                    | 11                       | 1.7          | 19                    | 23                       | 1.2          |
| 15..... | 6                     | 9                        | .1           | 45                    | 7                        | .8           | 19                    | 26                       | 1.3          |
| 16..... | 5                     | 9                        | .1           | 40                    | 4                        | .4           | 17                    | 24                       | 1.1          |
| 17..... | 5                     | 5                        | .1           | 32                    | 3                        | .2           | 16                    | 20                       | .9           |
| 18..... | 5                     | 2                        | (t)          | 28                    | 3                        | .2           | 17                    | 31                       | 1.4          |
| 19..... | 5                     | 2                        | (t)          | 26                    | 5                        | .4           | 18                    | 27                       | 1.3          |
| 20..... | 5                     | 3                        | (t)          | 22                    | 4                        | .2           | 16                    | 20                       | .9           |
| 21..... | 34                    | --                       | e 5          | 20                    | 4                        | .2           | 15                    | 10                       | .4           |
| 22..... | 93                    | 95                       | sa 25        | 19                    | 6                        | .3           | 15                    | 10                       | .4           |
| 23..... | 127                   | 80                       | sa 30        | 19                    | 5                        | .2           | 15                    | 8                        | .3           |
| 24..... | 68                    | 11                       | 2.0          | 18                    | 8                        | .4           | 13                    | 6                        | .2           |
| 25..... | 48                    | 7                        | .9           | 18                    | 18                       | .9           | 15                    | 4                        | .2           |
| 26..... | 35                    | 5                        | .5           | 55                    | --                       | e 10         | 21                    | 5                        | .3           |
| 27..... | 28                    | 2                        | .2           | 96                    | 16                       | sa 5         | 23                    | 5                        | .3           |
| 28..... | 24                    | 2                        | .1           | 65                    | 20                       | 3.5          | 21                    | 6                        | .3           |
| 29..... | 22                    | 2                        | .1           | --                    | --                       | --           | 21                    | 8                        | .4           |
| 30..... | 18                    | 2                        | .1           | --                    | --                       | --           | 20                    | 4                        | .2           |
| 31..... | 18                    | 3                        | .1           | --                    | --                       | --           | 18                    | 2                        | .1           |
| Total.  | 671.1                 | --                       | 65.9         | 1,318                 | --                       | 308.9        | 667                   | --                       | 21.8         |

e Estimated.

t Less than 0.05 ton.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                          | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 40                   | --                       | e 11         | 27                   | 30                       | 2.2          | 54                   | 120                      | s 19         |
| 2.....                                   | 147                  | 132                      | s 56         | 24                   | 39                       | 2.5          | 36                   | 32                       | 3.1          |
| 3.....                                   | 186                  | 75                       | sa 90        | 22                   | 32                       | 1.9          | 28                   | 22                       | 1.7          |
| 4.....                                   | 1,280                | 338                      | 1,170        | 21                   | 27                       | 1.5          | 24                   | 19                       | 1.2          |
| 5.....                                   | 670                  | 224                      | 405          | 20                   | 25                       | 1.4          | 22                   | 20                       | 1.2          |
| 6.....                                   | 339                  | 133                      | s 139        | 18                   | 27                       | 1.3          | 20                   | 16                       | .9           |
| 7.....                                   | 176                  | 55                       | 26           | 17                   | 30                       | 1.4          | 19                   | 50                       | 2.6          |
| 8.....                                   | 372                  | 140                      | s 156        | 17                   | 30                       | 1.4          | 17                   | 56                       | 2.6          |
| 9.....                                   | 301                  | 62                       | 50           | 16                   | 26                       | 1.1          | 17                   | 59                       | 2.7          |
| 10.....                                  | 185                  | 35                       | 17           | 16                   | 28                       | 1.2          | 16                   | 46                       | 2.0          |
| 11.....                                  | 135                  | 28                       | 10           | 18                   | 25                       | 1.2          | 16                   | 48                       | 2.1          |
| 12.....                                  | 105                  | 25                       | 7.1          | 17                   | 18                       | .8           | 17                   | 68                       | 3.1          |
| 13.....                                  | 89                   | 20                       | 4.8          | 16                   | 13                       | .6           | 18                   | 65                       | 3.2          |
| 14.....                                  | 74                   | 17                       | 3.4          | 22                   | 17                       | 1.0          | 15                   | 67                       | 2.7          |
| 15.....                                  | 65                   | 12                       | 2.1          | 31                   | 12                       | 1.0          | 13                   | 60                       | 2.1          |
| 16.....                                  | 59                   | 12                       | 1.9          | 21                   | 10                       | .6           | 12                   | 62                       | 2.0          |
| 17.....                                  | 65                   | 17                       | 3.0          | 18                   | 9                        | .4           | 11                   | 50                       | 1.5          |
| 18.....                                  | 136                  | 75                       | sa 30        | 18                   | 12                       | .6           | 11                   | 35                       | 1.0          |
| 19.....                                  | 129                  | 43                       | 15           | 24                   | 30                       | 1.9          | 28                   | 46                       | 3.5          |
| 20.....                                  | 93                   | 26                       | 6.5          | 62                   | 42                       | 7.0          | 18                   | 36                       | 1.7          |
| 21.....                                  | 73                   | 19                       | 3.7          | 58                   | 36                       | 5.6          | 14                   | 46                       | 1.7          |
| 22.....                                  | 63                   | 13                       | 2.2          | 465                  | 390                      | s 539        | 12                   | 42                       | 1.4          |
| 23.....                                  | 58                   | 12                       | 1.9          | 228                  | 52                       | 32           | 11                   | 30                       | .9           |
| 24.....                                  | 50                   | 11                       | 1.5          | 131                  | 35                       | 12           | 33                   | 65                       | sa 8         |
| 25.....                                  | 60                   | 40                       | 6.5          | 93                   | 36                       | 9.0          | 81                   | 67                       | 15           |
| 26.....                                  | 47                   | 18                       | 2.3          | 79                   | 41                       | 8.7          | 40                   | 66                       | 7.1          |
| 27.....                                  | 40                   | 40                       | 4.3          | 60                   | 37                       | 6.0          | 26                   | 42                       | 2.9          |
| 28.....                                  | 36                   | 42                       | 4.1          | 46                   | 37                       | 4.6          | 502                  | 65                       | s 964        |
| 29.....                                  | 34                   | 40                       | 3.7          | 39                   | 34                       | 3.6          | 422                  | 104                      | s 153        |
| 30.....                                  | 29                   | 32                       | 2.5          | 32                   | 26                       | 2.2          | 161                  | 47                       | 20           |
| 31.....                                  | ---                  | ---                      | ---          | 29                   | 26                       | 2.0          | ---                  | ---                      | ---          |
| Total.                                   | 5,136                | --                       | 2,236.5      | 1,705                | --                       | 655.7        | 1,714                | --                       | 1,233.9      |
| Day                                      | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                          | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 100                  | 75                       | 20           | 8.4                  | 84                       | 1.9          | 2.1                  | 64                       | 0.4          |
| 2.....                                   | 72                   | 78                       | 15           | 8.0                  | 79                       | 1.7          | 2.1                  | 57                       | .3           |
| 3.....                                   | 54                   | 73                       | 11           | 8.0                  | 70                       | 1.5          | 2.1                  | 55                       | .3           |
| 4.....                                   | 59                   | 110                      | sa 25        | 7.6                  | 55                       | 1.1          | 2.1                  | 60                       | .3           |
| 5.....                                   | 129                  | 276                      | 96           | 6.9                  | 66                       | 1.2          | 2.1                  | 64                       | .4           |
| 6.....                                   | 75                   | 93                       | 19           | 6.9                  | 77                       | 1.4          | 1.9                  | 60                       | .3           |
| 7.....                                   | 268                  | 292                      | s 242        | 6.2                  | 66                       | 1.4          | 2.1                  | 44                       | .2           |
| 8.....                                   | 117                  | 95                       | 30           | 5.8                  | 60                       | .9           | 2.1                  | 38                       | .2           |
| 9.....                                   | 79                   | 92                       | 20           | 5.5                  | 52                       | .8           | 5.1                  | 35                       | .2           |
| 10.....                                  | 56                   | 84                       | 13           | 5.5                  | 54                       | .8           | 5.1                  | 37                       | .5           |
| 11.....                                  | 43                   | 72                       | 8.4          | 5.5                  | 55                       | .8           | 4.5                  | 60                       | .7           |
| 12.....                                  | 35                   | 68                       | 6.4          | 5.1                  | 48                       | .7           | 4.2                  | 57                       | .8           |
| 13.....                                  | 29                   | 69                       | 5.4          | 4.8                  | 48                       | .6           | 7.6                  | 41                       | .8           |
| 14.....                                  | 26                   | 61                       | 4.3          | 4.5                  | 50                       | .6           | 6.9                  | 25                       | .5           |
| 15.....                                  | 22                   | 52                       | 3.1          | 4.5                  | 43                       | .5           | 5.1                  | 15                       | .2           |
| 16.....                                  | 18                   | 54                       | 2.6          | 4.2                  | 37                       | .4           | 4.2                  | 20                       | .2           |
| 17.....                                  | 17                   | 54                       | 2.5          | 3.9                  | 35                       | .4           | 3.6                  | 32                       | .3           |
| 18.....                                  | 16                   | 55                       | 2.4          | 3.9                  | 47                       | .5           | 3.3                  | 38                       | .3           |
| 19.....                                  | 14                   | 67                       | 2.5          | 3.9                  | 37                       | .4           | 3.6                  | 29                       | .3           |
| 20.....                                  | 13                   | 46                       | 1.6          | 3.6                  | 28                       | .3           | 4.2                  | 35                       | .4           |
| 21.....                                  | 12                   | 46                       | 1.5          | 3.3                  | 57                       | .5           | 6.9                  | 33                       | .6           |
| 22.....                                  | 11                   | 42                       | 1.2          | 3.1                  | 58                       | .5           | 5.1                  | 28                       | .4           |
| 23.....                                  | 38                   | 65                       | sa 8         | 2.8                  | 60                       | .4           | 5.1                  | 26                       | .4           |
| 24.....                                  | 28                   | 53                       | 4.0          | 3.1                  | 65                       | .5           | 3.9                  | 24                       | .2           |
| 25.....                                  | 18                   | 33                       | 1.6          | 5.1                  | 68                       | .9           | 3.6                  | 18                       | .2           |
| 26.....                                  | 15                   | 45                       | 1.1          | 3.6                  | 70                       | .7           | 3.3                  | 18                       | .2           |
| 27.....                                  | 13                   | 52                       | 1.8          | 3.1                  | 67                       | .6           | 3.1                  | 18                       | .2           |
| 28.....                                  | 12                   | 45                       | b 1          | 2.8                  | 72                       | .5           | 3.1                  | 23                       | .2           |
| 29.....                                  | 11                   | 35                       | b 1          | 2.8                  | 63                       | .5           | 3.1                  | 15                       | .1           |
| 30.....                                  | 10                   | 25                       | .7           | 2.6                  | 71                       | .5           | 3.3                  | 32                       | .3           |
| 31.....                                  | 9.2                  | 40                       | b 1          | 2.3                  | 72                       | .4           | --                   | --                       | --           |
| Total.                                   | 1,419.2              | --                       | 553.8        | 147.3                | --                       | 23.9         | 111.5                | --                       | 10.2         |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      |                          | 13,359.8     |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      |                          | 5,131.0      |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Feb. 9, 1957.....  | 2:15 p. m.  | 291             |                         | 790                           | 890                                        | 55                                                | 67    | 77    | 88    | 96    | 99    | 100   | --    |       |       |                     | BSWCM |
| Feb. 9.....        | 2:15 p. m.  | 291             |                         | 790                           | 870                                        | 20                                                | 32    | 54    | 89    | 98    | 100   | --    |       |       |       |                     | BSNM  |
| Apr. 4.....        | 10:15 a. m. | 1,520           |                         | 486                           | 699                                        | 65                                                | 76    | 87    | 93    | 96    | 98    | 99    | 100   |       |       |                     | BSWCM |
| Apr. 4.....        | 10:15 a. m. | 1,560           |                         | 466                           | 892                                        | 45                                                | 60    | 82    | 90    | 96    | 99    | 99    | 100   |       |       |                     | BSNM  |
| Apr. 4.....        | 6:15 p. m.  | 1,160           |                         | 242                           | 539                                        | 70                                                | 78    | 87    | 92    | 96    | 98    | 98    | 100   |       |       |                     | BSWCM |
| May 22.....        | 7:45 a. m.  | 535             |                         | 856                           | 755                                        | 53                                                | 64    | 75    | 84    | 93    | 99    | 100   | --    |       |       |                     | BSWCM |
| May 22.....        | 1:25 p. m.  | 460             |                         | 322                           | 554                                        | 97                                                | 76    | 83    | 89    | 94    | 98    | 99    | 100   |       |       |                     | BSWCM |
| June 28.....       | 7:45 a. m.  | 520             |                         | 1,890                         | 1,870                                      | 63                                                | 79    | 88    | 96    | 99    | 100   | --    |       |       |       |                     | BSWCM |
| June 28.....       | 2:00 p. m.  | 735             |                         | 490                           | 458                                        | 73                                                | 85    | 91    | 95    | 97    | 99    | 99    | 100   |       |       |                     | BSWCM |
| July 5.....        | 7:10 a. m.  | 163             |                         | 348                           | 363                                        | 64                                                | 79    | 92    | 97    | 99    | 99    | 100   | --    |       |       |                     | BSWCM |
| July 7.....        | 8:30 a. m.  | 358             |                         | 469                           | 390                                        | 69                                                | 83    | 92    | 96    | 97    | 98    | 99    | 100   |       |       |                     | BSWCM |
| July 7.....        | 8:30 a. m.  | 358             |                         | 489                           | 414                                        | 54                                                | 77    | 92    | 97    | 98    | 99    | 100   | --    |       |       |                     | BSNM  |



## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO

LOCATION.--At gaging station at bridge on Jackson Road, 1.1 miles upstream from Goose Creek, and 1.3 miles southwest of Pitchin, Clark County.

DRAINAGE AREA.--29.1 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.

Water temperatures: August 1952 to September 1957.

Sediment records: August 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 90°F Aug. 23; minimum, freezing point Jan. 9, 15, 19.

Sediment concentrations: Maximum daily, 346 ppm Apr. 4; minimum daily, 1 ppm Feb. 17-20, 1957.

Sediment loads: Maximum daily, 467 tons Apr. 4; minimum daily, less than 0.05 ton Jan. 7, Feb. 17-20.

EXTREMES, 1952-57.--Water temperatures: Maximum, 90°F Aug. 23, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 669 ppm June 10, 1953; minimum daily, 1 ppm on several days during February and December 1953, October and November 1955, January 1956, and February 1957.

Sediment loads: Maximum daily, 467 tons Apr. 4, 1957; minimum daily, less than 0.05 ton on many days during 1952 to 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 68   | 54   | 38   | --   | 42   | 45   | 45   | 66  | 71   | 68   | --   | 80    |
| 2       | 68   | 65   | 39   | 34   | 40   | 40   | 46   | 60  | 68   | 77   | 80   | 80    |
| 3       | 64   | 55   | 45   | 38   | 43   | 33   | --   | 55  | 59   | 69   | 80   | 70    |
| 4       | 64   | 56   | 47   | 40   | 42   | 44   | --   | 50  | 72   | 70   | 65   | 70    |
| 5       | 59   | 53   | 59   | 40   | 42   | 42   | 52   | 60  | 71   | 75   | 65   | 81    |
| 6       | 55   | 56   | --   | 35   | 41   | 40   | 40   | 65  | 75   | 78   | 65   | 62    |
| 7       | 60   | 58   | 35   | 34   | 42   | 42   | 45   | 67  | 70   | 80   | 80   | 80    |
| 8       | 61   | 59   | 46   | 34   | 44   | 36   | 38   | 53  | 60   | 72   | 80   | 65    |
| 9       | 59   | 49   | 45   | 32   | 50   | 45   | 40   | --  | 60   | 70   | 80   | --    |
| 10      | 58   | 46   | 40   | 40   | 52   | 39   | 45   | 70  | 68   | 76   | 82   | 65    |
| 11      | 55   | 45   | 44   | 40   | 40   | --   | 52   | 68  | 65   | 75   | 82   | 69    |
| 12      | 62   | --   | 44   | 41   | 38   | --   | 42   | 65  | 69   | 80   | 83   | 69    |
| 13      | 59   | 44   | 46   | 34   | 45   | 59   | 48   | 68  | 77   | 73   | 81   | 69    |
| 14      | 56   | 46   | 43   | 33   | 40   | 44   | 45   | 71  | --   | 70   | 81   | 70    |
| 15      | 68   | 47   | 44   | 32   | 40   | 45   | 45   | 75  | 80   | 60   | 80   | --    |
| 16      | 65   | 47   | 45   | 35   | 40   | 50   | 50   | 55  | 80   | 66   | 82   | 70    |
| 17      | 66   | 46   | 45   | 34   | 40   | 55   | 50   | 65  | 75   | 72   | 80   | 70    |
| 18      | 67   | 44   | 46   | 33   | 42   | --   | 58   | 68  | 72   | 78   | 80   | 70    |
| 19      | 64   | 45   | 47   | 32   | 40   | 40   | 66   | 65  | 72   | 84   | 70   | 70    |
| 20      | 64   | 44   | 46   | 40   | 33   | 40   | 66   | 65  | 73   | 80   | 80   | 65    |
| 21      | 56   | 35   | --   | 35   | 40   | 45   | 62   | 60  | 73   | 78   | 60   | 65    |
| 22      | 61   | 34   | --   | 50   | 46   | 40   | 65   | 70  | 76   | 82   | 85   | 70    |
| 23      | 69   | 35   | --   | --   | 45   | 50   | 68   | 70  | 74   | 74   | 90   | 65    |
| 24      | 58   | 34   | 44   | 36   | 52   | 42   | 70   | 72  | 60   | 74   | --   | 60    |
| 25      | 68   | 36   | --   | 35   | 52   | 42   | 62   | 68  | 70   | 75   | 80   | 65    |
| 26      | 54   | --   | 40   | 40   | 50   | 45   | 70   | 72  | 74   | 76   | --   | 65    |
| 27      | 58   | --   | 41   | 36   | 40   | 44   | 65   | 63  | 74   | 76   | 79   | 65    |
| 28      | 59   | --   | 39   | 34   | 45   | 45   | 70   | 70  | 66   | 82   | 80   | 60    |
| 29      | 51   | --   | 36   | 40   | --   | 45   | 56   | 70  | 70   | 80   | 80   | 60    |
| 30      | 64   | 39   | 39   | 40   | --   | 45   | 66   | 64  | 78   | 82   | 64   | 64    |
| 31      | 65   | --   | 37   | 40   | --   | 42   | --   | 66  | --   | 75   | 80   | --    |
| Average | 61   | 47   | 43   | 37   | 43   | 44   | 54   | 65  | 71   | 75   | 78   | 68    |

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October              |                          |              | November             |                          |              | December             |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1.6                  | 38                       | 0.2          | 7                    | 23                       | 0.4          | 2.3                  | 39                       | 0.2          |
| 2.....  | 1.6                  | 30                       | .1           | 5                    | 92                       | 1.2          | 2.3                  | 40                       | a.2          |
| 3.....  | 1.5                  | 22                       | .1           | 4                    | 58                       | .6           | 2.3                  | 40                       | .2           |
| 4.....  | 2.2                  | 17                       | .1           | 3                    | 28                       | .2           | 2.4                  | 33                       | .2           |
| 5.....  | 1.9                  | 14                       | a.1          | 3                    | 54                       | .4           | 2.4                  | 14                       | .1           |
| 6.....  | 1.8                  | 17                       | .1           | 3                    | 123                      | 1.0          | 2.7                  | 25                       | a.2          |
| 7.....  | 2.2                  | 22                       | .1           | 2.9                  | 171                      | 1.3          | 6.6                  | 58                       | 1.0          |
| 8.....  | 1.9                  | 21                       | .1           | 2.9                  | 202                      | 1.6          | 7.8                  | 44                       | .9           |
| 9.....  | 1.8                  | 20                       | .1           | 2.9                  | 143                      | 1.1          | 14                   | 6                        | .2           |
| 10..... | 1.7                  | 25                       | a.1          | 2.8                  | 95                       | .7           | 13                   | 5                        | .2           |
| 11..... | 1.7                  | 37                       | .2           | 2.8                  | 129                      | 1.0          | 9.9                  | 7                        | .2           |
| 12..... | 1.7                  | 47                       | .2           | 2.7                  | 135                      | 1.0          | 8.1                  | 12                       | .3           |
| 13..... | 1.8                  | 27                       | .1           | 2.6                  | 128                      | .9           | 6.7                  | 20                       | .4           |
| 14..... | 1.8                  | 32                       | .2           | 2.5                  | 124                      | .8           | 6.3                  | 50                       | .8           |
| 15..... | 1.7                  | 37                       | .2           | 2.5                  | 119                      | .8           | 6.0                  | 53                       | .8           |
| 16..... | 1.7                  | 42                       | .2           | 2.5                  | 101                      | .7           | 5.6                  | 30                       | .4           |
| 17..... | 1.7                  | 48                       | .2           | 2.5                  | 64                       | .4           | 5.2                  | 35                       | .5           |
| 18..... | 1.8                  | 35                       | .2           | 2.4                  | 32                       | .2           | 4.9                  | 14                       | .2           |
| 19..... | 1.7                  | 50                       | .2           | 2.4                  | 19                       | .2           | 4.9                  | 10                       | .1           |
| 20..... | 1.8                  | 52                       | .2           | 2.5                  | 18                       | .1           | 5.2                  | 8                        | .1           |
| 21..... | 1.8                  | 59                       | .3           | 3                    | 25                       | .2           | 6.3                  | 18                       | .3           |
| 22..... | 1.9                  | 63                       | .3           | 4                    | 41                       | .4           | 6.3                  | 29                       | .5           |
| 23..... | 1.9                  | 30                       | .2           | 3.3                  | 50                       | .4           | 6.0                  | 16                       | .2           |
| 24..... | 1.9                  | 32                       | .2           | 3.0                  | 47                       | .4           | 6.0                  | 23                       | .4           |
| 25..... | 1.9                  | 28                       | .1           | 3.0                  | 70                       | .6           | 5.6                  | 30                       | a.4          |
| 26..... | 2.0                  | 24                       | .1           | 2.7                  | --                       | e.4          | 5.2                  | 34                       | .5           |
| 27..... | 2.0                  | 30                       | .2           | 2.7                  |                          |              | 5.2                  | 13                       | .2           |
| 28..... | 2.0                  | 32                       | .2           | 2.4                  |                          |              | 5.2                  | 15                       | .2           |
| 29..... | 1.9                  | 30                       | a.2          | 2.4                  | 31                       | .2           | 5.6                  | 8                        | .1           |
| 30..... | 2.0                  | 25                       | a.1          | 2.4                  |                          |              | 6.0                  | 5                        | .1           |
| 31..... | 2.2                  | 25                       | a.1          | --                   |                          |              | 5.6                  | 8                        | .1           |
| Total.  | 57.1                 | --                       | 5.0          | 90.8                 | --                       | 18.4         | 181.6                | --                       | 10.2         |
| Day     | January              |                          |              | February             |                          |              | March                |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 4.9                  | 4                        | 0.1          | 8.8                  | 3                        | 0.1          | 18                   | 22                       | 1.1          |
| 2.....  | 4.6                  | 5                        | .1           | 8.5                  | 27                       | .6           | 16                   | 16                       | .7           |
| 3.....  | 4.6                  | 9                        | .1           | 8.8                  | 14                       | .3           | 14                   | 11                       | .4           |
| 4.....  | 4.9                  | 14                       | a.2          | 9.2                  | 11                       | .3           | 14                   | 10                       | .4           |
| 5.....  | 4.6                  | 19                       | .2           | 9.2                  | 6                        | .1           | 12                   | 11                       | .4           |
| 6.....  | 4.6                  | 6                        | .1           | 9.2                  | 6                        | .1           | 12                   | 9                        | .3           |
| 7.....  | 4.6                  | 2                        | (t)          | 11                   | 7                        | .2           | 12                   | 8                        | .2           |
| 8.....  | 4.2                  | 7                        | .1           | 13                   | 3                        | .1           | 11                   | 7                        | .2           |
| 9.....  | 4.6                  | 6                        | a.1          | 35                   | 182                      | s 25         | 11                   | 6                        | .2           |
| 10..... | 5.2                  | 4                        | .1           | 53                   | --                       | e 17         | 10                   | 8                        | .2           |
| 11..... | 4.9                  | 9                        | .1           | 35                   | 13                       | 1.2          | 10                   | 9                        | .2           |
| 12..... | 4.9                  | 10                       | .1           | 26                   | 14                       | 1.0          | 11                   | 12                       | .4           |
| 13..... | 4.6                  | 8                        | .1           | 22                   | 7                        | .4           | 10                   | 12                       | .3           |
| 14..... | 3.8                  | 12                       | .1           | 20                   | 4                        | .2           | 9.9                  | 13                       | .3           |
| 15..... | 3.6                  | 15                       | a.1          | 17                   | 2                        | .1           | 9.6                  | 12                       | .3           |
| 16..... | 3.3                  | 20                       | .2           | 16                   | 2                        | .1           | 8.8                  | 12                       | .3           |
| 17..... | 3.0                  | 31                       | .2           | 15                   | 1                        | (t)          | 8.1                  | 12                       | .3           |
| 18..... | 3                    | 23                       | .2           | 14                   | 1                        | (t)          | 8.5                  | 16                       | .4           |
| 19..... | 3.0                  | 19                       | .2           | 13                   | 1                        | (t)          | 9.2                  | 17                       | .4           |
| 20..... | 3.8                  | 16                       | .2           | 12                   | 1                        | (t)          | 8.8                  | 15                       | .4           |
| 21..... | 9.8                  | 31                       | .8           | 11                   | 2                        | a.1          | 8.5                  | 15                       | .3           |
| 22..... | 25                   | 38                       | 2.6          | 11                   | 2                        | .1           | 8.5                  | 27                       | .6           |
| 23..... | 38                   | 52                       | s 5.8        | 11                   | 9                        | .3           | 7.8                  | 21                       | .4           |
| 24..... | 21                   | 8                        | .4           | 10                   | 14                       | .4           | 7.0                  | 13                       | .2           |
| 25..... | 17                   | 5                        | .2           | 10                   | 21                       | .6           | 7.8                  | 6                        | .1           |
| 26..... | 14                   | 3                        | .1           | 15                   | 31                       | s 1.5        | 9.6                  | 4                        | .1           |
| 27..... | 12                   | 3                        | .1           | 30                   | 39                       | 3.2          | 9.9                  | 5                        | .1           |
| 28..... | 11                   | 2                        | .1           | 22                   | 13                       | .8           | 9.6                  | 12                       | .3           |
| 29..... | 10                   | 2                        | .1           | --                   | --                       | --           | 9.6                  | 10                       | .2           |
| 30..... | 9.6                  | 2                        | .1           | --                   | --                       | --           | 9.6                  | 8                        | .2           |
| 31..... | 9.2                  | 3                        | .1           | --                   | --                       | --           | 9.2                  | 8                        | .2           |
| Total.  | 261.3                | --                       | 13.0         | 475.7                | --                       | 54.0         | 321.0                | --                       | 10.1         |

e Estimated.

t Less than 0.05 ton.

s Computed by subdividing day.

a Computed from estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Suspended sediment, water year October 1955 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 12                   | 17                       | 0.6          | 18                   | 30                       | 1.4          | 21                   | 20                       | 1.1          |
| 2.....                                   | 48                   | 62                       | 8.0          | 17                   | 27                       | 1.2          | 21                   | 16                       | .9           |
| 3.....                                   | 47                   | 102                      | s 20         | 16                   | 17                       | .7           | 17                   | 20                       | .9           |
| 4.....                                   | 500                  | 346                      | 467          | 15                   | 20                       | .8           | 15                   | 11                       | .4           |
| 5.....                                   | 318                  | 146                      | s 141        | 15                   | 24                       | 1.0          | 14                   | 22                       | .8           |
| 6.....                                   | 135                  | 65                       | 24           | 14                   | 21                       | .8           | 13                   | 21                       | .7           |
| 7.....                                   | 96                   | 39                       | 10           | 14                   | 18                       | .7           | 13                   | 51                       | 1.8          |
| 8.....                                   | 117                  | 73                       | s 25         | 13                   | 20                       | .7           | 13                   | 46                       | 1.6          |
| 9.....                                   | 131                  | 56                       | 20           | 13                   | 18                       | .6           | 12                   | 33                       | 1.1          |
| 10.....                                  | 96                   | 20                       | 5.2          | 12                   | 16                       | .5           | 12                   | 43                       | 1.4          |
| 11.....                                  | 77                   | 23                       | 4.8          | 13                   | 14                       | .5           | 12                   | 66                       | 2.1          |
| 12.....                                  | 63                   | 28                       | 4.8          | 12                   | 17                       | .6           | 13                   | 58                       | 2.0          |
| 13.....                                  | 55                   | 19                       | 2.8          | 12                   | 13                       | .4           | 13                   | 60                       | 2.1          |
| 14.....                                  | 48                   | 24                       | 3.1          | 14                   | 11                       | .4           | 12                   | 65                       | 2.1          |
| 15.....                                  | 43                   | 30                       | 3.5          | 14                   | 9                        | .3           | 11                   | 50                       | 1.5          |
| 16.....                                  | 40                   | 23                       | 2.5          | 12                   | 7                        | .2           | 10                   | 45                       | 1.2          |
| 17.....                                  | 44                   | 24                       | 2.8          | 11                   | 7                        | .2           | 9.4                  | 44                       | 1.1          |
| 18.....                                  | 68                   | 35                       | 6.4          | 12                   | 16                       | .5           | 9.4                  | 49                       | 1.2          |
| 19.....                                  | 72                   | 23                       | 4.5          | 16                   | 29                       | 1.2          | 12                   | 54                       | 1.7          |
| 20.....                                  | 53                   | 18                       | 2.6          | 35                   | 30                       | 2.8          | 9.8                  | 46                       | 1.2          |
| 21.....                                  | 44                   | 20                       | 2.4          | 32                   | 44                       | 3.8          | 8.7                  | 48                       | 1.1          |
| 22.....                                  | 38                   | 11                       | 1.1          | 115                  | 158                      | 49           | 8.0                  | 62                       | 1.3          |
| 23.....                                  | 35                   | 5                        | .5           | 114                  | 28                       | 8.6          | 7.7                  | 66                       | 1.4          |
| 24.....                                  | 31                   | 3                        | .2           | 65                   | 27                       | 4.7          | 10                   | 68                       | 1.8          |
| 25.....                                  | 29                   | 4                        | .3           | 46                   | 32                       | 4.0          | 19                   | 92                       | 4.7          |
| 26.....                                  | 25                   | 6                        | .4           | 39                   | 40                       | 4.2          | 14                   | 88                       | 3.3          |
| 27.....                                  | 24                   | 14                       | .9           | 31                   | 46                       | 3.8          | 11                   | 90                       | 2.7          |
| 28.....                                  | 22                   | 25                       | 1.5          | 26                   | 43                       | 3.0          | 56                   | --                       | e 35         |
| 29.....                                  | 21                   | 23                       | 1.3          | 22                   | 23                       | 1.4          | 99                   | --                       | e 45         |
| 30.....                                  | 19                   | 26                       | 1.3          | 20                   | 36                       | 1.9          | 52                   | 98                       | 14           |
| 31.....                                  | --                   | --                       | --           | 19                   | 31                       | 1.6          | --                   | --                       | --           |
| Total.                                   | 2,351                | --                       | 768.5        | 827                  | --                       | 101.5        | 548.0                | --                       | 137.2        |
|                                          | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....                                   | 33                   | 100                      | 8.9          | 7.1                  | 72                       | 1.4          | 2.4                  | 53                       | 0.3          |
| 2.....                                   | 25                   | 101                      | 6.8          | 6.8                  | 51                       | .9           | 2.4                  | 71                       | .5           |
| 3.....                                   | 20                   | 114                      | 6.2          | 6.8                  | 38                       | .7           | 2.4                  | 30                       | .2           |
| 4.....                                   | 20                   | 93                       | 5.0          | 6.8                  | 39                       | .7           | 2.3                  | 31                       | .2           |
| 5.....                                   | 37                   | 153                      | 15           | 6.0                  | 39                       | .6           | 2.3                  | 36                       | .2           |
| 6.....                                   | 26                   | 111                      | 7.8          | 5.8                  | 34                       | .5           | 2.1                  | 30                       | .2           |
| 7.....                                   | 81                   | 152                      | 33           | 5.5                  | 33                       | .5           | 2.1                  | 20                       | .1           |
| 8.....                                   | 52                   | 94                       | 13           | 5.3                  | 51                       | .7           | 2.1                  | 20                       | .1           |
| 9.....                                   | 35                   | 102                      | 9.6          | 5.1                  | 60                       | .8           | 2.1                  | 17                       | a.1          |
| 10.....                                  | 25                   | 100                      | 6.8          | 4.9                  | 46                       | .6           | 3.2                  | 13                       | .1           |
| 11.....                                  | 21                   | 84                       | 4.8          | 4.9                  | 33                       | .4           | 2.8                  | 15                       | a.1          |
| 12.....                                  | 19                   | 75                       | 3.8          | 4.7                  | 31                       | .4           | 2.6                  | 20                       | .1           |
| 13.....                                  | 17                   | 78                       | 3.6          | 4.5                  | 35                       | .4           | 3.4                  | 22                       | .2           |
| 14.....                                  | 16                   | 84                       | 3.6          | 4.3                  | 31                       | .4           | 3.4                  | 27                       | .2           |
| 15.....                                  | 14                   | 101                      | 3.8          | 4.3                  | 20                       | .2           | 3.1                  | 29                       | .2           |
| 16.....                                  | 13                   | 101                      | 3.5          | 4.1                  | 13                       | .1           | 2.6                  | 25                       | .2           |
| 17.....                                  | 12                   | 95                       | 3.1          | 3.9                  | 9                        | .1           | 2.4                  | 14                       | .1           |
| 18.....                                  | 11                   | 94                       | 2.8          | 3.8                  | 11                       | .1           | 2.4                  | 12                       | .1           |
| 19.....                                  | 10                   | 73                       | 2.0          | 3.6                  | 8                        | a.1          | 2.4                  | 10                       | .1           |
| 20.....                                  | 9.4                  | 63                       | 1.6          | 3.4                  | 7                        | .1           | 2.8                  | 11                       | .1           |
| 21.....                                  | 9.4                  | 58                       | 1.5          | 3.2                  | 23                       | .2           | 3.4                  | 11                       | .1           |
| 22.....                                  | 9.0                  | 53                       | 1.3          | 3.2                  | 35                       | .3           | 3.6                  | 12                       | .1           |
| 23.....                                  | 17                   | 73                       | 3.4          | 3.1                  | 37                       | .3           | 4.1                  | 13                       | .1           |
| 24.....                                  | 16                   | 52                       | 2.2          | 3.1                  | 51                       | .4           | 3.6                  | 20                       | .2           |
| 25.....                                  | 12                   | 53                       | 1.7          | 3.6                  | 54                       | .5           | 3.2                  | 92                       | .8           |
| 26.....                                  | 10                   | 53                       | 1.4          | 3.2                  | 50                       | .4           | 3.3                  | 151                      | 1.3          |
| 27.....                                  | 9.4                  | 53                       | 1.3          | 2.9                  | 55                       | .4           | 2.7                  | 126                      | .9           |
| 28.....                                  | 9.0                  | 32                       | .8           | 2.9                  | 39                       | .3           | 3.4                  | 47                       | .4           |
| 29.....                                  | 8.4                  | 34                       | .8           | 2.8                  | 50                       | .4           | 3.4                  | 19                       | .2           |
| 30.....                                  | 8.0                  | 44                       | 1.0          | 2.6                  | 50                       | a.4          | 3.2                  | 65                       | .6           |
| 31.....                                  | 7.7                  | 51                       | 1.1          | 2.4                  | 48                       | .3           | --                   | --                       | --           |
| Total.                                   | 612.3                | --                       | 161.2        | 134.6                | --                       | 13.6         | 85.2                 | --                       | 8.1          |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      |                          | 5,945.6      |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      |                          | 1,300.8      |

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

LITTLE MIAMI RIVER BASIN--Continued  
NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date<br>of<br>Collection | Time       | Discharge<br>(cfs) | Water<br>tem-<br>per-<br>ature<br>(° F) | Suspended sediment                  |                                                     |                                                   |       |       |       |       |       |       |       |       | Methods<br>of<br>analysis |
|--------------------------|------------|--------------------|-----------------------------------------|-------------------------------------|-----------------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|
|                          |            |                    |                                         | Concentration<br>of sample<br>(ppm) | Concentration<br>of suspension<br>analyzed<br>(ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |                           |
|                          |            |                    |                                         |                                     |                                                     | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 |                           |
| Feb. 9, 1957...          | 2:50 p. m. | 37                 |                                         | 249                                 | 397                                                 | 68                                                | 75    | 82    | 89    | 95    | 98    | 99    | 100   |       | BSWCM                     |
| May 22 .....             | 1:45 p. m. | 118                |                                         | 247                                 | 595                                                 | 50                                                | 58    | 67    | 73    | 83    | 93    | 97    | 99    | 100   | BSWCM                     |

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO

LOCATION.--At gaging station at bridge on U. S. Highway 68, 0.9 mile upstream from Massie Creek, 1.3 miles northeast of Oldtown, Green County, and 4.5 miles north of Xenia.

DRAINAGE AREA.--129 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1947 to August 1948, August 1952 to September 1954.

Water temperatures: August 1952 to September 1957.

Sediment records: August 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 74°F July 31, Aug. 16; minimum, freezing point on several days during November to January.

Sediment concentrations: Maximum daily, 804 ppm Apr. 4; minimum daily, 1 ppm Nov. 24-26, Jan. 6-7, 30.

Sediment loads: Maximum daily, 5,940 tons Apr. 4; minimum daily, less than 0.05 ton Nov. 24-26.

EXTREMES, 1952-57.--Water temperatures: Maximum, 81°F July 28, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,370 ppm June 8, 1954; minimum daily, less than 0.5 ppm on several days during October to December 1952.

Sediment loads: Maximum daily, 13,600 tons June 8, 1954; minimum daily, less than 0.05 ton on many days during 1952 to 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow affected by ice Jan. 12-21.

Temperature (°F) of water, water year October 1956 to September 1957

Once-daily measurements at approximately 7 a. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 55   | 59   | 34   | 33   | 37   | 33   | 49   | 60  | 65   | 67   | 72   | 73    |
| 2       | 59   | 57   | 37   | 32   | 34   | 39   | 49   | 62  | 64   | 67   | 73   | 73    |
| 3       | 57   | 59   | 40   | 32   | 38   | 37   | 43   | 56  | 62   | 68   | 72   | 73    |
| 4       | 60   | 58   | 38   | 33   | 40   | 35   | 47   | 56  | 63   | 70   | 73   | 70    |
| 5       | 57   | 55   | --   | 33   | 38   | 36   | 45   | 48  | 65   | 70   | 70   | 61    |
| 6       | 56   | 55   | 48   | 33   | 37   | 41   | 44   | 50  | 66   | 67   | 64   | 59    |
| 7       | 57   | 52   | 54   | 33   | 40   | 40   | 43   | 56  | 68   | --   | 64   | 63    |
| 8       | 51   | 48   | 49   | 32   | 39   | 38   | 46   | 57  | 64   | --   | 64   | 59    |
| 9       | 53   | 44   | 43   | 34   | 45   | 36   | 35   | 60  | 62   | --   | 68   | 62    |
| 10      | 48   | 44   | 35   | 34   | 46   | 38   | 44   | 63  | 64   | --   | 71   | 66    |
| 11      | 49   | 45   | 40   | 33   | 42   | 44   | 48   | 64  | 66   | --   | 72   | --    |
| 12      | 49   | 47   | 40   | 33   | 38   | 47   | 48   | 65  | 67   | --   | 71   | 69    |
| 13      | 52   | 41   | 40   | 33   | 35   | 46   | 43   | 66  | 68   | --   | 68   | 68    |
| 14      | 54   | 44   | 39   | 32   | 38   | 47   | 43   | 68  | 70   | --   | 70   | 64    |
| 15      | 54   | 50   | 43   | 32   | 36   | 51   | 42   | 67  | 71   | --   | 72   | 67    |
| 16      | 55   | 47   | 45   | 32   | 36   | 46   | 48   | 62  | 72   | --   | 74   | 69    |
| 17      | 56   | 40   | 45   | 32   | 36   | 45   | 48   | 59  | 73   | --   | 70   | 63    |
| 18      | 56   | 37   | 42   | 32   | 35   | 47   | 50   | 61  | 73   | --   | 68   | 63    |
| 19      | 57   | 38   | 35   | 32   | 37   | 48   | 52   | 63  | 73   | --   | 70   | 66    |
| 20      | 58   | 45   | 43   | 33   | 34   | 43   | 59   | 60  | 68   | --   | 65   | 71    |
| 21      | 58   | 48   | 47   | 35   | 34   | 37   | 62   | 58  | 67   | --   | 66   | 70    |
| 22      | 60   | 38   | 48   | 36   | 36   | 45   | --   | 61  | 70   | --   | 66   | 70    |
| 23      | 60   | 33   | 45   | 38   | 41   | 41   | 60   | 65  | --   | --   | 65   | 62    |
| 24      | 57   | 32   | 45   | 34   | 41   | 45   | 62   | 64  | 71   | --   | 68   | 58    |
| 25      | 55   | 34   | 39   | 35   | 46   | 40   | --   | 61  | 65   | --   | 68   | 57    |
| 26      | 57   | 36   | 34   | 34   | 52   | 42   | 65   | --  | 64   | --   | 65   | 62    |
| 27      | 50   | 34   | 37   | 33   | 43   | 43   | 64   | 64  | 67   | 70   | 66   | 57    |
| 28      | 51   | 33   | 37   | 33   | 35   | 41   | 62   | 52  | 70   | 70   | --   | 53    |
| 29      | 54   | 38   | 32   | 37   | --   | 42   | 61   | 58  | 68   | 71   | 68   | 54    |
| 30      | 55   | 36   | 32   | 35   | --   | 41   | 59   | 62  | 70   | 72   | 70   | 59    |
| 31      | 58   | --   | 35   | 35   | --   | 41   | --   | 65  | --   | 74   | 71   | --    |
| Average | 55   | 44   | 41   | 33   | 39   | 42   | 51   | 60  | 67   | --   | 69   | 64    |

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 14                    | 25                       | 0.9          | 60                    | --                       | e 25         | 16                    | 10                       | 0.4          |
| 2.....  | 14                    | 21                       | .8           | 34                    | 28                       | 2.6          | 16                    | 6                        | .2           |
| 3.....  | 14                    | 20                       | .8           | 25                    | 21                       | 1.4          | 16                    | 6                        | .2           |
| 4.....  | 21                    | 24                       | 1.4          | 21                    | 19                       | 1.1          | 17                    | 6                        | .3           |
| 5.....  | 18                    | 24                       | 1.2          | 21                    | 18                       | 1.0          | 16                    | 9                        | .4           |
| 6.....  | 15                    | 22                       | .9           | 20                    | 17                       | .9           | 16                    | 6                        | .2           |
| 7.....  | 15                    | 23                       | .9           | 21                    | 18                       | 1.0          | 29                    | 16                       | 1.2          |
| 8.....  | 15                    | 22                       | .9           | 20                    | 17                       | .9           | 40                    | 18                       | 1.9          |
| 9.....  | 15                    | 22                       | .9           | 20                    | 11                       | .6           | 126                   | 116                      | s 42         |
| 10..... | 15                    | 23                       | .9           | 20                    | 14                       | .8           | 102                   | 21                       | 5.8          |
| 11..... | 14                    | 21                       | .8           | 20                    | 13                       | .7           | 69                    | 9                        | 1.7          |
| 12..... | 14                    | 22                       | .8           | 19                    | 14                       | .7           | 56                    | 7                        | 1.0          |
| 13..... | 14                    | 23                       | .9           | 17                    | 11                       | .5           | 48                    | 10                       | 1.3          |
| 14..... | 14                    | 22                       | .8           | 17                    | 10                       | .4           | 43                    | 8                        | .9           |
| 15..... | 13                    | 19                       | .7           | 17                    | 11                       | .5           | 40                    | 16                       | 1.7          |
| 16..... | 13                    | 20                       | .7           | 17                    | 10                       | .4           | 38                    | 12                       | 1.2          |
| 17..... | 13                    | 20                       | .7           | 17                    | 5                        | .2           | 36                    | 10                       | 1.0          |
| 18..... | 12                    | 17                       | .6           | 16                    | 4                        | .2           | 34                    | 7                        | .6           |
| 19..... | 12                    | 11                       | .4           | 16                    | 5                        | .2           | 32                    | 5                        | .4           |
| 20..... | 12                    | 14                       | .4           | 16                    | 9                        | .4           | 35                    | 10                       | .9           |
| 21..... | 13                    | 14                       | .5           | 21                    | 7                        | .4           | 42                    | 13                       | 1.5          |
| 22..... | 14                    | 13                       | .5           | 23                    | 4                        | .2           | 42                    | 26                       | 2.9          |
| 23..... | 15                    | 15                       | .6           | 21                    | 2                        | .1           | 41                    | 35                       | 3.9          |
| 24..... | 15                    | 14                       | .6           | 18                    | 1                        | (t)          | 39                    | 36                       | 3.8          |
| 25..... | 15                    | 11                       | .4           | 18                    | 1                        | (t)          | 38                    | 26                       | 2.7          |
| 26..... | 15                    | 12                       | .5           | 18                    | 1                        | (t)          | 35                    | 19                       | 1.8          |
| 27..... | 16                    | 12                       | .5           | 17                    | 2                        | a. 1         | 35                    | 14                       | 1.3          |
| 28..... | 15                    | 17                       | .7           | 17                    | 2                        | a. 1         | 37                    | 10                       | 1.0          |
| 29..... | 15                    | 22                       | .9           | 17                    | 3                        | .1           | 39                    | 8                        | .8           |
| 30..... | 15                    | 14                       | .6           | 17                    | 6                        | .3           | 38                    | 6                        | .6           |
| 31..... | 15                    | 14                       | .6           | --                    | --                       | --           | 38                    | 10                       | 1.0          |
| Total.  | 450                   | --                       | 22.8         | 621                   | --                       | 41.0         | 1,249                 | --                       | 84.6         |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 37                    | 8                        | 0.8          | 50                    | 6                        | 0.8          | 110                   | 23                       | 6.8          |
| 2.....  | 31                    | 7                        | .6           | 49                    | 16                       | 2.1          | 92                    | 29                       | 7.2          |
| 3.....  | 33                    | 3                        | .3           | 50                    | 25                       | 3.4          | 76                    | 19                       | 3.9          |
| 4.....  | 33                    | 2                        | .2           | 54                    | 36                       | 5.2          | 70                    | 19                       | 3.6          |
| 5.....  | 32                    | 2                        | .2           | 57                    | 31                       | 4.8          | 65                    | 24                       | 4.2          |
| 6.....  | 30                    | 1                        | .1           | 58                    | 23                       | 3.6          | 64                    | 29                       | 5.0          |
| 7.....  | 32                    | 1                        | .1           | 69                    | 30                       | 5.6          | 66                    | 25                       | 4.4          |
| 8.....  | 30                    | 2                        | .2           | 81                    | 35                       | 7.6          | 63                    | 14                       | 2.4          |
| 9.....  | 34                    | 5                        | .4           | 252                   | 150                      | sb 130       | 59                    | 13                       | 2.1          |
| 10..... | 43                    | 8                        | .9           | 367                   | 229                      | 227          | 56                    | 19                       | 2.9          |
| 11..... | 39                    | 8                        | .8           | 244                   | 65                       | 43           | 54                    | 20                       | 2.9          |
| 12..... | 35                    | 23                       | 2.2          | 171                   | 28                       | 13           | 60                    | 20                       | 3.2          |
| 13..... | 30                    | 23                       | 1.9          | 138                   | 20                       | 7.4          | 57                    | 20                       | 3.1          |
| 14..... | 25                    | 24                       | 1.6          | 121                   | 27                       | 8.8          | 54                    | 19                       | 2.8          |
| 15..... | 25                    | 24                       | 1.6          | 102                   | 21                       | 5.8          | 54                    | 13                       | 1.9          |
| 16..... | 20                    | 17                       | .9           | 92                    | 16                       | 4.0          | 51                    | 24                       | 3.3          |
| 17..... | 20                    | 15                       | .8           | 78                    | 11                       | 2.3          | 48                    | 21                       | 2.7          |
| 18..... | 20                    | 16                       | .9           | 71                    | 12                       | 2.3          | 50                    | 23                       | 3.1          |
| 19..... | 20                    | 18                       | 1.0          | 67                    | 13                       | 2.4          | 53                    | 27                       | 3.9          |
| 20..... | 20                    | 6                        | .3           | 60                    | 10                       | 1.6          | 51                    | 16                       | 2.2          |
| 21..... | 55                    | 14                       | s 2.6        | 58                    | 8                        | 1.2          | 47                    | 15                       | 1.9          |
| 22..... | 203                   | --                       | e 75         | 57                    | 6                        | .9           | 46                    | 18                       | 2.2          |
| 23..... | 303                   | 122                      | 100          | 56                    | 9                        | 1.4          | 46                    | 16                       | 2.0          |
| 24..... | 159                   | 34                       | 14           | 54                    | 30                       | 4.4          | 43                    | 17                       | 2.0          |
| 25..... | 115                   | 13                       | 4.0          | 54                    | 47                       | 6.8          | 46                    | 15                       | 1.9          |
| 26..... | 84                    | 9                        | 2.0          | 100                   | 60                       | sb 19        | 53                    | 15                       | 2.1          |
| 27..... | 69                    | 2                        | .4           | 204                   | 76                       | 42           | 57                    | 17                       | 2.6          |
| 28..... | 63                    | 3                        | .5           | 144                   | 32                       | 12           | 54                    | 15                       | 2.2          |
| 29..... | 60                    | 5                        | .8           | --                    | --                       | --           | 54                    | 16                       | 2.3          |
| 30..... | 54                    | 1                        | .1           | --                    | --                       | --           | 53                    | 16                       | 2.3          |
| 31..... | 51                    | 2                        | .3           | --                    | --                       | --           | 51                    | 17                       | 2.3          |
| Total.  | 1,805                 | --                       | 215.5        | 2,958                 | --                       | 568.4        | 1,803                 | --                       | 95.4         |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                       | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                           | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                           |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                    | 66                   | 40                       | sb 11        | 93                   | 28                       | 7.0          | 123                  | 75                       | 25           |
| 2.....                                    | 267                  | 111                      | .80          | 88                   | 24                       | 5.7          | 117                  | 46                       | 14           |
| 3.....                                    | 380                  | 180                      | sb 320       | 81                   | 23                       | 5.0          | 93                   | 47                       | 12           |
| 4.....                                    | 2,900                | 804                      | s 5,940      | 76                   | 19                       | 3.9          | 83                   | 32                       | 7.2          |
| 5.....                                    | 1,900                | 265                      | s 1,460      | 75                   | 16                       | 3.2          | 76                   | 30                       | 6.2          |
| 6.....                                    | 804                  | 160                      | s 372        | 72                   | 23                       | 4.5          | 72                   | 26                       | 5.0          |
| 7.....                                    | 457                  | 61                       | .75          | 69                   | 22                       | 4.1          | 79                   | 53                       | 11           |
| 8.....                                    | 646                  | --                       | e 240        | 66                   | 21                       | 3.7          | 78                   | 55                       | 12           |
| 9.....                                    | 708                  | 97                       | 185          | 65                   | 21                       | 3.7          | 69                   | 64                       | 12           |
| 10.....                                   | 471                  | 43                       | 55           | 64                   | 19                       | 3.3          | 67                   | 51                       | 9.2          |
| 11.....                                   | 355                  | 35                       | 34           | 65                   | 14                       | 2.4          | 71                   | 43                       | 8.2          |
| 12.....                                   | 292                  | 35                       | 28           | 61                   | 10                       | 1.6          | 71                   | 39                       | 7.5          |
| 13.....                                   | 248                  | 26                       | 17           | 61                   | 8                        | 1.3          | 69                   | 42                       | 7.8          |
| 14.....                                   | 221                  | 21                       | 12           | 83                   | --                       | e 9          | 64                   | 45                       | 7.8          |
| 15.....                                   | 199                  | 22                       | 12           | 90                   | 32                       | 7.8          | 59                   | 36                       | 5.7          |
| 16.....                                   | 184                  | 29                       | 14           | 70                   | 20                       | 3.8          | 56                   | 30                       | 4.5          |
| 17.....                                   | 197                  | 26                       | 14           | 64                   | 17                       | 2.9          | 53                   | 30                       | 4.3          |
| 18.....                                   | 320                  | 69                       | 60           | 69                   | 22                       | 4.1          | 52                   | 31                       | 4.4          |
| 19.....                                   | 343                  | 71                       | 66           | 101                  | 63                       | 17           | 66                   | 33                       | 5.9          |
| 20.....                                   | 257                  | 42                       | 29           | 208                  | 115                      | 64           | 64                   | 31                       | 5.4          |
| 21.....                                   | 208                  | 31                       | 17           | 171                  | 55                       | 25           | 54                   | 25                       | 3.6          |
| 22.....                                   | 180                  | 25                       | a 13         | 741                  | 314                      | 628          | 51                   | 22                       | 3.0          |
| 23.....                                   | 169                  | 23                       | 10           | 574                  | 116                      | s 195        | 48                   | 21                       | 2.7          |
| 24.....                                   | 153                  | 19                       | 7.8          | 320                  | 56                       | 48           | 60                   | 20                       | 3.2          |
| 25.....                                   | 149                  | 18                       | a 7          | 228                  | 50                       | 31           | 115                  | 82                       | s 28         |
| 26.....                                   | 138                  | 15                       | 5.6          | 208                  | 65                       | a 35         | 92                   | 58                       | 14           |
| 27.....                                   | 124                  | 44                       | 15           | 161                  | 55                       | 24           | 69                   | 75                       | 14           |
| 28.....                                   | 119                  | 43                       | 14           | 134                  | 44                       | 16           | 375                  | --                       | e 330        |
| 29.....                                   | 113                  | 41                       | 12           | 115                  | 44                       | 14           | 617                  | 231                      | 385          |
| 30.....                                   | 102                  | 35                       | 9.6          | 101                  | 29                       | 7.9          | 308                  | 93                       | 77           |
| 31.....                                   | --                   | --                       | --           | 106                  | 52                       | 15           | --                   | --                       | --           |
| Total.                                    | 12,670               | --                       | 9,135.0      | 4,480                | --                       | 1,196.9      | 3,271                | --                       | 1,035.6      |
|                                           |                      |                          |              |                      |                          |              |                      |                          |              |
| Day                                       | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                           | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                           |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                    | 186                  | 94                       | 47           | 35                   | 48                       | 4.5          | 15                   | 18                       | 0.7          |
| 2.....                                    | 140                  | 98                       | 37           | 36                   | 80                       | sb 9         | 15                   | 18                       | .7           |
| 3.....                                    | 108                  | 97                       | 28           | 36                   | 105                      | 10           | 15                   | 16                       | .6           |
| 4.....                                    | 110                  | 101                      | 30           | 29                   | 68                       | 5.3          | 15                   | 16                       | .6           |
| 5.....                                    | 202                  | 166                      | 90           | 26                   | 68                       | 4.8          | 15                   | 13                       | .5           |
| 6.....                                    | 147                  | 134                      | 53           | 23                   | 62                       | 3.8          | 15                   | 15                       | .6           |
| 7.....                                    | 288                  | --                       | e 150        | 22                   | 55                       | 3.3          | 15                   | 15                       | .6           |
| 8.....                                    | 228                  | --                       | e 100        | 21                   | 53                       | 3.0          | 15                   | 13                       | .5           |
| 9.....                                    | 149                  | --                       | e 50         | 21                   | 50                       | 2.8          | 15                   | 16                       | .6           |
| 10.....                                   | 110                  | --                       | --           | 21                   | 49                       | 2.8          | 20                   | 14                       | .8           |
| 11.....                                   | 90                   | --                       | --           | 20                   | 45                       | 2.4          | 20                   | 17                       | .9           |
| 12.....                                   | 79                   | --                       | e 18         | 20                   | 40                       | 2.2          | 19                   | 22                       | 1.1          |
| 13.....                                   | 72                   | --                       | --           | 20                   | 31                       | 1.7          | 23                   | 33                       | 2.0          |
| 14.....                                   | 67                   | --                       | --           | 18                   | 31                       | 1.5          | 24                   | 31                       | 2.0          |
| 15.....                                   | 63                   | --                       | --           | 18                   | 29                       | 1.4          | 20                   | 33                       | 1.8          |
| 16.....                                   | 57                   | --                       | --           | 18                   | 26                       | 1.3          | 19                   | 38                       | 1.9          |
| 17.....                                   | 53                   | --                       | --           | 17                   | 24                       | 1.1          | 17                   | 38                       | 1.7          |
| 18.....                                   | 50                   | --                       | --           | 16                   | 23                       | 1.0          | 16                   | 33                       | 1.4          |
| 19.....                                   | 48                   | --                       | --           | 17                   | 23                       | 1.0          | 17                   | 26                       | 1.2          |
| 20.....                                   | 44                   | --                       | ee 5         | 16                   | 18                       | .8           | 18                   | 26                       | 1.3          |
| 21.....                                   | 41                   | --                       | --           | 16                   | 32                       | 1.4          | 21                   | 26                       | 1.5          |
| 22.....                                   | 40                   | --                       | --           | 16                   | 36                       | 1.6          | 23                   | 22                       | 1.4          |
| 23.....                                   | 92                   | --                       | e 20         | 15                   | 36                       | 1.4          | 24                   | 23                       | 1.5          |
| 24.....                                   | 81                   | --                       | --           | 15                   | 28                       | 1.1          | 20                   | 25                       | 1.4          |
| 25.....                                   | 56                   | --                       | e 10         | 20                   | 24                       | 1.3          | 18                   | 24                       | 1.2          |
| 26.....                                   | 48                   | --                       | --           | 18                   | 24                       | 1.2          | 18                   | 24                       | 1.2          |
| 27.....                                   | 44                   | 28                       | 3.3          | 17                   | 35                       | 1.6          | 17                   | 20                       | .9           |
| 28.....                                   | 41                   | 35                       | 3.9          | 16                   | 32                       | 1.4          | 16                   | 18                       | .8           |
| 29.....                                   | 39                   | 36                       | 3.8          | 16                   | 24                       | 1.0          | 18                   | 17                       | .8           |
| 30.....                                   | 38                   | 25                       | 2.6          | 16                   | 21                       | .9           | 20                   | 21                       | 1.1          |
| 31.....                                   | 37                   | 50                       | 5.0          | 15                   | 18                       | .7           | --                   | --                       | --           |
| Total.                                    | 2,848                | --                       | 796.6        | 630                  | --                       | 77.3         | 543                  | --                       | 33.3         |
|                                           |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days) ..... |                      |                          |              |                      |                          |              |                      |                          | 33,328       |
| Total load for year (tons) .....          |                      |                          |              |                      |                          |              |                      |                          | 13,302.4     |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection   | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|----------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                      |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                      |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Feb. 9, 1957 . . . . | 6:00 p. m.  | 367             |                        | 171                           | 269                                        | 51                                                | 62    | 73    | 81    | 91    | 96    | 98    | 100   |       | --    | BSWCM               |
| Feb. 9 . . . . .     | 6:00 p. m.  | 367             |                        | 231                           | 231                                        | 14                                                | 32    | 51    | 71    | 85    | 95    | 98    | 100   |       | --    | BSNM                |
| Apr. 4 . . . . .     | 8:30 a. m.  | 2,460           |                        | 1,280                         | 907                                        | 37                                                | 48    | 59    | 71    | 84    | 93    | 96    | 98    |       | 99    | BSWCM               |
| Apr. 4 . . . . .     | 2:45 p. m.  | 3,880           |                        | 657                           | 1,100                                      | 54                                                | 64    | 74    | 85    | 92    | 97    | 98    | 99    |       | 100   | BSWCM               |
| Apr. 4 . . . . .     | 2:45 p. m.  | 3,880           |                        | 657                           | 1,010                                      | 28                                                | 43    | 62    | 84    | 94    | 97    | 98    | 99    |       | 100   | BSNM                |
| Apr. 4 . . . . .     | 6:45 p. m.  | 3,880           |                        | 549                           | 466                                        | 59                                                | 68    | 77    | 86    | 92    | 97    | 98    | 100   |       | --    | BSWCM               |
| May 22 . . . . .     | 12:10 p. m. | 870             |                        | 306                           | 688                                        | 54                                                | 66    | 76    | 85    | 92    | 96    | 98    | 99    |       | 100   | BSWCM               |



## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO

LOCATION.--At gaging station at bridge on James Barber Road, 1 mile upstream from confluence with South Fork, and 1 mile northeast of Cedarville, Green County.

DRAINAGE AREA.--25.6 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1957.

Sediment records: July 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 86° F July 31; minimum, freezing point on several days during December to March.

Sediment concentrations: Maximum daily, 262 ppm Feb. 9; minimum daily, 2 ppm Feb. 25, Mar. 23.

Sediment loads: Maximum daily, 503 tons Apr. 4; minimum daily, less than 0.05 ton on several days during October, November, August, September.

EXTREMES, 1954-57.--Water temperatures: Maximum, 87° F July 22, 27, Aug. 6, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 688 ppm Mar. 4, 1955; minimum daily, no flow on many days during July to September 1954 and August to September 1955.

Sediment loads: Maximum daily, 653 tons Mar. 5, 1955; minimum daily, no flow on many days during July to September 1954 and August to September 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow affected by ice Jan. 15-20.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 63   | 58   | 37   |      |      |      |      |     |      |      |      |       |
| 2       | 67   | 64   | 40   | 32   | 39   | 46   | 45   | 72  | 66   | 75   | --   | 85    |
| 3       | 67   | 55   | 50   | 32   | 40   | 40   | 43   | 73  | 70   | 78   | 76   | 82    |
| 4       | 67   | 64   | 46   | 32   | 42   | 39   | 48   | 60  | --   | 75   | 84   | 76    |
| 5       | 65   | 61   | 55   | 32   | 35   | 39   | 40   | --  | 71   | 70   | 80   | 71    |
|         |      |      |      |      |      |      |      | 61  | 75   | 74   | 75   | 72    |
| 6       | 58   | 60   | 44   | 36   | 43   | 39   | 38   | 66  | 68   | 73   | 77   | 74    |
| 7       | 59   | 57   | --   | 32   | 40   | 39   | 51   | 68  | 69   | --   | 79   | 65    |
| 8       | 58   | --   | 45   | 34   | 43   | 41   | 38   | 67  | 62   | 77   | 81   | 73    |
| 9       | 56   | 45   | 39   | 32   | 46   | 40   | 45   | --  | 68   | 75   | --   | 74    |
| 10      | 55   | --   | 41   | 32   | 44   | 48   | 50   | --  | 67   | 75   | 77   | --    |
| 11      | 55   | 54   | 45   | 39   | 43   | 54   | 52   | 76  | --   | 79   | 81   | 74    |
| 12      | 63   | 51   | 49   | 42   | 38   | 52   | --   | 81  | 77   | 78   | 80   | 72    |
| 13      | --   | 47   | 40   | 32   | 41   | 58   | 42   | 80  | 74   | 78   | --   | 69    |
| 14      | 55   | 45   | 45   | 32   | 39   | 50   | 44   | 77  | 75   | 82   | 79   | 70    |
| 15      | 66   | 47   | 52   | 34   | 40   | 49   | 54   | 68  | --   | 77   | 76   | 75    |
| 16      | 67   | 45   | 46   | 32   | 39   | 51   | 45   | 65  | 79   | 80   | 78   | 74    |
| 17      | 60   | 34   | --   | 35   | 41   | 47   | 48   | 73  | 80   | 76   | 77   | --    |
| 18      | 65   | 40   | 42   | 32   | 42   | 44   | --   | 66  | 75   | 82   | 78   | 75    |
| 19      | 69   | 49   | 45   | 33   | 37   | 32   | 64   | 67  | 75   | 79   | 77   | 75    |
| 20      | 57   | 48   | --   | --   | 45   | 33   | --   | 68  | 80   | 78   | 72   | 76    |
| 21      | 67   | 45   | 42   | 38   | 47   | --   | 64   | 70  | --   | --   | 73   | 74    |
| 22      | 68   | 34   | 48   | 45   | 32   | 41   | 64   | 70  | 78   | 85   | 72   | 66    |
| 23      | 59   | 34   | 49   | 38   | 45   | --   | 63   | 67  | --   | 74   | --   | 66    |
| 24      | 65   | 35   | 50   | 40   | 53   | 45   | 69   | 64  | 64   | 80   | 70   | 70    |
| 25      | 58   | 35   | 40   | 38   | 33   | 38   | 70   | 70  | --   | 78   | 70   | 67    |
| 26      | 57   | 36   | 41   | 33   | 32   | 44   | 68   | 72  | 63   | 76   | 77   | --    |
| 27      | 55   | 37   | 41   | 38   | 41   | 40   | 81   | --  | 76   | 78   | 76   | --    |
| 28      | 59   | 37   | 39   | 38   | 39   | 45   | 76   | 66  | 66   | 84   | 77   | 64    |
| 29      | 58   | 36   | 32   | 36   | --   | 47   | 70   | --  | 76   | 85   | 77   | 63    |
| 30      | 63   | 36   | 34   | 35   | --   | 45   | 75   | 75  | 74   | 84   | 80   | 64    |
| 31      | 65   | --   | 42   | --   | --   | 55   | --   | 70  | --   | 86   | 81   | --    |
| Average | 62   | 46   | 44   | 35   | 41   | 44   | 56   | 70  | --   | 78   | 77   | 72    |

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 1.3                   | 30                       | 0.1          | 3.7                   | 32                       | 0.3          | 2.8                   | 38                       | 0.3          |
| 2.....  | 1.4                   | 34                       | .1           | 3.2                   | 10                       | .1           | 2.7                   | 29                       | .2           |
| 3.....  | 1.4                   | 47                       | .2           | 2.1                   | 13                       | .1           | 2.7                   | 30                       | .2           |
| 4.....  | 2.5                   | 25                       | .2           | 1.9                   | 9                        | (t)          | 2.6                   | 31                       | .2           |
| 5.....  | 2.0                   | 15                       | .1           | 1.8                   | 5                        | (t)          | 2.5                   | 27                       | .2           |
| 6.....  | 1.5                   | 23                       | .1           | 1.7                   | 5                        | (t)          | 2.6                   | 18                       | .1           |
| 7.....  | 1.4                   | 21                       | .1           | 1.7                   | 5                        | (t)          | 16                    | --                       | e 4          |
| 8.....  | 1.4                   | 18                       | .1           | 1.6                   | 8                        | (t)          | 24                    | 55                       | 3.6          |
| 9.....  | 1.3                   | 17                       | .1           | 1.5                   | 15                       | .1           | 71                    | 160                      | sb 35        |
| 10..... | 1.2                   | 16                       | .1           | 1.5                   | 20                       | a. 1         | 62                    | 47                       | 7.9          |
| 11..... | 1.2                   | 22                       | .1           | 1.5                   | 25                       | .1           | 45                    | 35                       | 4.2          |
| 12..... | 1.3                   | 29                       | .1           | 1.5                   | 28                       | .1           | 33                    | 35                       | 3.1          |
| 13..... | 1.3                   | 25                       | a. 1         | 1.6                   | 34                       | .1           | 24                    | 32                       | 2.1          |
| 14..... | 1.2                   | 18                       | .1           | 1.6                   | 45                       | .2           | 19                    | 27                       | 1.4          |
| 15..... | 1.2                   | 17                       | .1           | 1.7                   | 34                       | .2           | 16                    | 23                       | 1.0          |
| 16..... | 1.2                   | 18                       | .1           | 1.9                   | 34                       | .2           | 14                    | 14                       | .5           |
| 17..... | 1.2                   | 21                       | .1           | 1.8                   | 30                       | .1           | 12                    | 9                        | a. 3         |
| 18..... | 1.2                   | 21                       | .1           | 1.7                   | 20                       | .1           | 10                    | 10                       | .3           |
| 19..... | 1.2                   | 26                       | .1           | 1.7                   | 21                       | .1           | 8.8                   | 11                       | .3           |
| 20..... | 1.2                   | 23                       | .1           | 2.2                   | 22                       | .1           | 11                    | 20                       | a. 6         |
| 21..... | 1.2                   | 24                       | .1           | 4.2                   | 21                       | .2           | 22                    | 40                       | 2.4          |
| 22..... | 1.2                   | 19                       | .1           | 4.4                   | 26                       | .3           | 20                    | 38                       | 1.5          |
| 23..... | 1.3                   | 18                       | .1           | 3.6                   | 27                       | .3           | 17                    | 12                       | .6           |
| 24..... | 1.2                   | 15                       | (t)          | 3.4                   | 24                       | .2           | 15                    | 10                       | .4           |
| 25..... | 1.2                   | 14                       | (t)          | 3.2                   | 20                       | .2           | 13                    | 8                        | .3           |
| 26..... | 1.5                   | 19                       | .1           | 3.3                   | 16                       | .1           | 11                    | 10                       | .3           |
| 27..... | 1.5                   | 23                       | .1           | 3.0                   | 16                       | .1           | 11                    | 9                        | .3           |
| 28..... | 1.4                   | 20                       | .1           | 2.7                   | 18                       | .1           | 12                    | 13                       | .4           |
| 29..... | 1.2                   | 15                       | (t)          | 3.0                   | 21                       | .2           | 13                    | 12                       | .4           |
| 30..... | 1.2                   | 15                       | (t)          | 2.6                   | 34                       | .2           | 14                    | 11                       | .4           |
| 31..... | 1.2                   | 26                       | .1           | --                    | --                       | --           | 12                    | 8                        | .2           |
| Total.  | 41.7                  | --                       | 3.1          | 71.3                  | --                       | 4.0          | 541.7                 | --                       | 72.7         |
|         | January               |                          |              | February              |                          |              | March                 |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| 1.....  | 9.8                   | 7                        | 0.2          | 18                    | 17                       | 0.8          | 40                    | 20                       | 2.2          |
| 2.....  | 9.4                   | 15                       | .4           | 18                    | 18                       | .9           | 33                    | 12                       | 1.1          |
| 3.....  | 9.5                   | 10                       | .2           | 22                    | 13                       | .8           | 26                    | 11                       | .8           |
| 4.....  | 9.0                   | 11                       | .3           | 28                    | 12                       | .9           | 22                    | 6                        | .4           |
| 5.....  | 7.3                   | 4                        | .1           | 30                    | 18                       | 1.4          | 19                    | 3                        | .2           |
| 6.....  | 8.0                   | 3                        | .1           | 27                    | 18                       | 1.3          | 19                    | 8                        | .4           |
| 7.....  | 7.5                   | 7                        | .1           | 40                    | 23                       | 2.5          | 19                    | 7                        | .4           |
| 8.....  | 7.2                   | 8                        | .2           | 44                    | 17                       | 2.0          | 18                    | 4                        | .2           |
| 9.....  | 9.4                   | 15                       | .4           | 118                   | 262                      | s 108        | 16                    | 4                        | .2           |
| 10..... | 31                    | 59                       | 4.9          | 143                   | 187                      | s 80         | 14                    | 4                        | .2           |
| 11..... | 22                    | 31                       | s 1.9        | 96                    | 46                       | 12           | 15                    | 4                        | .2           |
| 12..... | 17                    | 26                       | 1.2          | 71                    | 33                       | 6.3          | 18                    | 10                       | .5           |
| 13..... | 15                    | 22                       | .9           | 59                    | 25                       | 4.0          | 17                    | 8                        | .4           |
| 14..... | 12                    | 24                       | .8           | 54                    | 15                       | 2.2          | 16                    | 7                        | .3           |
| 15..... | 10                    | 25                       | .7           | 44                    | 16                       | 1.9          | 15                    | 7                        | .3           |
| 16..... | 9                     | 32                       | .8           | 38                    | 18                       | 1.8          | 13                    | 8                        | .3           |
| 17..... | 8                     | 28                       | .6           | 31                    | 18                       | 1.5          | 12                    | 13                       | .4           |
| 18..... | 7                     | 29                       | .5           | 27                    | 12                       | .9           | 12                    | 16                       | .5           |
| 19..... | 7                     | 27                       | .5           | 23                    | 10                       | .6           | 13                    | 12                       | .4           |
| 20..... | 7                     | 30                       | a. 6         | 20                    | 16                       | .9           | 11                    | 7                        | .2           |
| 21..... | 39                    | 86                       | s 11         | 18                    | 17                       | .8           | 11                    | 3                        | a. 1         |
| 22..... | 87                    | 167                      | s 44         | 16                    | 17                       | .7           | 11                    | 3                        | .1           |
| 23..... | 120                   | 167                      | s 59         | 16                    | 11                       | .5           | 9.5                   | 2                        | a. 1         |
| 24..... | 71                    | 35                       | 6.7          | 15                    | 5                        | .2           | 8.8                   | 4                        | .1           |
| 25..... | 54                    | 19                       | 2.8          | 15                    | 2                        | .1           | 11                    | 12                       | .4           |
| 26..... | 40                    | 23                       | 2.5          | 38                    | 39                       | s 5.9        | 15                    | 10                       | .4           |
| 27..... | 32                    | 19                       | 1.6          | 69                    | 53                       | 9.9          | 17                    | 5                        | .2           |
| 28..... | 28                    | 12                       | .9           | 51                    | 25                       | 3.4          | 16                    | 3                        | .1           |
| 29..... | 25                    | 10                       | .7           | --                    | --                       | --           | 16                    | 4                        | .2           |
| 30..... | 19                    | 8                        | .4           | --                    | --                       | --           | 14                    | 4                        | .2           |
| 31..... | 18                    | 10                       | a. 5         | --                    | --                       | --           | 13                    | 3                        | .1           |
| Total.  | 755.1                 | --                       | 145.5        | 1,189                 | --                       | 252.2        | 510.3                 | --                       | 11.6         |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 23                   | 30                       | sb3          | 17                   | 47                       | 2.2          | 27                   | 55                       | sb4          |
| 2.....  | 90                   | 87                       | s23          | 16                   | 46                       | 2.0          | 56                   | --                       | e10          |
| 3.....  | 94                   | --                       | e25          | 15                   | 37                       | 1.5          | 37                   | 35                       | a4           |
| 4.....  | 717                  | 260                      | 503          | 14                   | 40                       | a2           | 28                   | 33                       | 2.5          |
| 5.....  | 439                  | 162                      | 192          | 13                   | 38                       | 1.3          | 23                   | 22                       | 1.4          |
| 6.....  | 243                  | 125                      | 82           | 12                   | 26                       | .8           | 22                   | 7                        | .4           |
| 7.....  | 130                  | 57                       | 20           | 11                   | 17                       | .5           | 42                   | 131                      | 15           |
| 8.....  | 178                  | 110                      | s58          | 11                   | 16                       | .5           | 33                   | 52                       | 4.6          |
| 9.....  | 183                  | 73                       | s40          | 10                   | 15                       | a.4          | 26                   | 33                       | 2.3          |
| 10..... | 117                  | 35                       | 11           | 9.9                  | 16                       | a.4          | 22                   | 23                       | 1.4          |
| 11..... | 90                   | 26                       | 6.3          | 9.9                  | 19                       | .5           | 21                   | 18                       | a1           |
| 12..... | 73                   | 25                       | a5           | 9.5                  | 17                       | .4           | 19                   | 20                       | 1.0          |
| 13..... | 60                   | 21                       | 3.4          | 8.8                  | 18                       | .4           | 17                   | 18                       | .8           |
| 14..... | 50                   | 23                       | 3.1          | 12                   | 16                       | .5           | 15                   | 20                       | .8           |
| 15..... | 41                   | 32                       | 3.5          | 17                   | 20                       | .9           | 13                   | 25                       | a.9          |
| 16..... | 37                   | 31                       | 3.0          | 13                   | 15                       | .5           | 12                   | 32                       | 1.0          |
| 17..... | 40                   | 31                       | 3.3          | 11                   | 16                       | .5           | 11                   | 32                       | 1.0          |
| 18..... | 72                   | 50                       | 9.7          | 11                   | 21                       | .6           | 11                   | 32                       | 1.0          |
| 19..... | 76                   | 38                       | 7.8          | 17                   | 52                       | 2.4          | 27                   | 95                       | sb7          |
| 20..... | 56                   | 20                       | a3           | 25                   | 72                       | 4.9          | 20                   | 52                       | 2.8          |
| 21..... | 44                   | 20                       | 2.4          | 24                   | 50                       | a3           | 15                   | 32                       | 1.3          |
| 22..... | 36                   | 15                       | 1.4          | 196                  | 249                      | s140         | 13                   | 25                       | .9           |
| 23..... | 32                   | 12                       | 1.0          | 189                  | 64                       | s37          | 11                   | 17                       | .5           |
| 24..... | 29                   | 24                       | 1.9          | 87                   | 36                       | 8.5          | 24                   | 50                       | sb6          |
| 25..... | 41                   | 36                       | 4.0          | 64                   | 46                       | 7.9          | 61                   | --                       | e18          |
| 26..... | 29                   | 22                       | 1.7          | 60                   | 67                       | 11           | 35                   | 49                       | 4.6          |
| 27..... | 25                   | 26                       | 1.8          | 47                   | 40                       | a5           | 25                   | 50                       | 3.4          |
| 28..... | 23                   | 19                       | 1.2          | 35                   | 28                       | 2.6          | 178                  | 255                      | 126          |
| 29..... | 21                   | 22                       | 1.2          | 28                   | 25                       | a2           | 328                  | 57                       | 50           |
| 30..... | 19                   | 32                       | 1.6          | 24                   | 28                       | 1.8          | 214                  | 55                       | 32           |
| 31..... | --                   | --                       | --           | 22                   | 38                       | 2.2          | --                   | --                       | --           |
| Total.  | 3,108                | --                       | 1,023.3      | 1,039.1              | --                       | 244.2        | 1,386                | --                       | 305.6        |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day | Mean discharge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 87                   | 73                       | 17           | 4.8                  | 55                       | a0.7         | 0.8                  | 13                       | (t)          |
| 2.....  | 61                   | 92                       | 15           | 11                   | 105                      | s5.4         | .8                   | 21                       | (t)          |
| 3.....  | 45                   | 96                       | 12           | 9.2                  | 55                       | s1.3         | .8                   | 22                       | (t)          |
| 4.....  | 46                   | 103                      | 13           | 5.3                  | 48                       | .7           | .8                   | 33                       | .1           |
| 5.....  | 85                   | 130                      | b30          | 4.1                  | 47                       | .5           | .8                   | 41                       | .1           |
| 6.....  | 57                   | 75                       | a12          | 3.8                  | 43                       | .4           | .8                   | 19                       |              |
| 7.....  | 115                  | 220                      | 68           | 3.3                  | 34                       | .3           | .8                   | 7                        |              |
| 8.....  | 71                   | 95                       | 18           | 3.0                  | 30                       | .2           | .8                   | 7                        | (t)          |
| 9.....  | 51                   | 71                       | 9.8          | 2.9                  | 30                       | a.2          | .8                   | 4                        |              |
| 10..... | 37                   | 63                       | 6.3          | 2.6                  | 25                       | .2           | 1.6                  | 18                       | a.1          |
| 11..... | 28                   | 55                       | 4.2          | 2.6                  | 22                       | .2           | 1.5                  | 23                       | .1           |
| 12..... | 23                   | 56                       | 3.5          | 2.4                  | 31                       | .2           | 1.4                  | 22                       | .1           |
| 13..... | 20                   | 60                       | 3.2          | 2.1                  | 35                       | a.2          | 2.6                  | 29                       | .2           |
| 14..... | 18                   | 60                       | a3           | 2.0                  | 29                       | .2           | 2.3                  | 32                       | .2           |
| 15..... | 16                   | 61                       | 2.6          | 2.0                  | 23                       | .1           | 1.6                  | 34                       | .1           |
| 16..... | 14                   | 53                       | 2.0          | 1.9                  | 13                       | .1           | 1.6                  | 31                       | .1           |
| 17..... | 12                   | 44                       | 1.4          | 1.8                  | 13                       | .1           | 1.5                  | 30                       | a.1          |
| 18..... | 11                   | 50                       | a2           | 1.7                  | 13                       | .1           | 1.3                  | 28                       | .1           |
| 19..... | 9.9                  | 58                       | 1.6          | 1.6                  | 9                        | (t)          | 1.5                  | 27                       | .1           |
| 20..... | 8.8                  | 54                       | 1.3          | 1.6                  | 12                       | .1           | 2.0                  | 29                       | .2           |
| 21..... | 8.0                  | 53                       | 1.1          | 1.6                  | 22                       | .1           | 3.1                  | 32                       | .3           |
| 22..... | 7.1                  | 72                       | 1.4          | 1.5                  | 28                       | .1           | 2.5                  | 28                       | .2           |
| 23..... | 15                   | 80                       | 3.2          | 1.4                  | 30                       | a.1          | 2.1                  | 30                       | .2           |
| 24..... | 15                   | 43                       | 1.7          | 1.4                  | 24                       | .1           | 1.9                  | 33                       | .2           |
| 25..... | 10                   | 43                       | 1.2          | 1.5                  | 22                       | .1           | 1.6                  | 35                       | .2           |
| 26..... | 8.8                  | 38                       | .9           | 1.1                  | 20                       | .1           | 1.6                  | 35                       | a.2          |
| 27..... | 8.0                  | 39                       | .8           | 1.0                  | 23                       | .1           | 1.6                  | 35                       | a.2          |
| 28..... | 7.1                  | 44                       | .8           | 1.0                  | 23                       | .1           | 1.5                  | 28                       | .1           |
| 29..... | 6.5                  | 41                       | .7           | .9                   | 25                       | a.1          | 1.5                  | 23                       | .1           |
| 30..... | 5.7                  | 36                       | .6           | .9                   | 30                       | .1           | 1.5                  | 22                       | .1           |
| 31..... | 5.5                  | 50                       | .7           | .8                   | 19                       | (t)          | --                   | --                       | --           |
| Total.  | 912.4                | --                       | 239.0        | 82.8                 | --                       | 12.3         | 45.0                 | --                       | 36.1         |

Total discharge for year (cfs-days) .....

9,682.4

Total load for year (tons) .....

2,349.6

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO--Continued

Particle size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |       |
|--------------------|-------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|-------|
|                    |             |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |       |
|                    |             |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 | 0.500 |
| Feb. 9, 1957.....  | 3:30 p. m.  | 177             |                         | 560                           | 580                                        | 53                                                | 65    | 77    | 88    | 95    | 98    | 99    | 100   |                     |       | SBWCM |
| Feb. 9.....        | 3:30 p. m.  | 177             |                         | 560                           | 636                                        | 31                                                | 47    | 72    | 89    | 96    | 98    | 99    | 100   |                     |       | SBNM  |
| May 22.....        | 10:40 a. m. | 226             |                         | 422                           | 499                                        | 63                                                | 72    | 81    | 89    | 94    | 98    | 99    | 100   |                     |       | SBWCM |
| May 22.....        | 10:40 a. m. | 226             |                         | 422                           | 522                                        | 39                                                | 55    | 71    | 75    | 79    | 98    | 99    | 100   |                     |       | SBNM  |
| May 22.....        | 5:00 p. m.  | 281             |                         | 405                           | 714                                        | 59                                                | 68    | 76    | 85    | 92    | 97    | 98    | 99    | 100                 | 100   | SBWCM |
| June 28.....       | 1:00 p. m.  | 208             |                         | 472                           | 853                                        | 68                                                | 83    | 90    | 94    | 97    | 99    | 99    | 100   |                     |       | SBWCM |
| July 7.....        | 7:00 p. m.  | 102             |                         | 275                           | 448                                        | 76                                                | 89    | 94    | 96    | 97    | 98    | 99    | 100   |                     |       | SBWCM |

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO

LOCATION.--At gaging station at bridge on Weimer Road, 2.3 miles east of Cedarville, Green County, and 2.4 miles upstream from confluence with North Fork.

DRAINAGE AREA.--20.2 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1957.

Sediment records: July 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 74°F Sept. 2; minimum, freezing point on several days during November, December, and January.

Sediment concentrations: Minimum daily, no flow Sept. 4-9.

Sediment loads: Maximum daily, 660 tons Apr. 4; minimum daily, no flow Sept. 4-9.

EXTREMES, 1954-57.--Water temperatures: Maximum, 86°F July 1, 1954; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 561 ppm Apr. 3, 1956; minimum daily, no flow on many days during August to September 1954 and September 1957.

Sediment loads: Maximum daily, 660 tons Apr. 4, 1957; minimum daily, no flow on many days during August to September 1954 and September 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow affected by ice Dec. 30, Jan. 1-8, 14-21.

REVISIONS (1955-56).--WSP 1450, p. 192, particle-size analysis Apr. 2, 11:50 p.m., discharge should be 228 cfs.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 52   | 58   | 35   | 32   | 38   | 36   | 42   | 55  | 61   | 62   | 71   | 70    |
| 2       | 59   | 57   | 35   | 32   | 37   | 38   | 41   | 55  | 58   | 62   | 71   | 74    |
| 3       | 54   | 51   | 39   | 33   | 38   | 33   | 40   | 45  | 55   | 62   | 70   | 70    |
| 4       | 60   | 56   | 35   | 34   | 42   | 34   | 47   | 42  | 59   | 66   | 73   | 64    |
| 5       | 53   | 53   | 42   | 33   | 37   | 34   | 48   | 43  | 61   | 64   | 67   | 55    |
| 6       | 54   | 52   | 51   | 32   | 37   | 39   | 40   | 46  | 62   | 62   | 61   | 56    |
| 7       | 50   | 46   | 56   | 34   | 41   | 38   | 43   | 51  | 64   | 66   | 62   | 60    |
| 8       | 48   | 44   | 47   | 32   | 40   | 35   | 42   | 54  | 59   | 67   | 64   | 54    |
| 9       | 48   | 39   | 40   | 35   | 42   | 33   | 37   | 56  | 52   | 68   | 68   | 57    |
| 10      | 44   | 39   | 39   | 33   | 43   | 36   | 40   | 60  | 61   | 63   | 70   | 68    |
| 11      | 43   | 40   | 40   | 32   | 40   | 42   | 43   | 61  | 64   | 63   | 73   | 59    |
| 12      | 51   | 45   | 42   | 35   | 37   | 45   | 41   | 62  | 65   | 67   | 70   | 67    |
| 13      | 51   | 35   | 41   | 34   | 37   | 42   | 38   | 65  | 61   | 68   | 68   | 67    |
| 14      | 50   | 40   | 38   | 33   | 37   | 44   | 32   | 66  | 67   | 69   | --   | 62    |
| 15      | 52   | 47   | 45   | 32   | 35   | 46   | 40   | 64  | 69   | 68   | --   | 68    |
| 16      | 52   | --   | 45   | 32   | 37   | 37   | 46   | 54  | 70   | 64   | --   | 67    |
| 17      | 54   | --   | 43   | 32   | 33   | 40   | 47   | 52  | 72   | 65   | --   | 58    |
| 18      | 54   | 32   | 40   | 32   | 36   | 43   | 50   | 60  | 71   | 65   | --   | 68    |
| 19      | 53   | 36   | 34   | 32   | 37   | 46   | 48   | 63  | 68   | 70   | 66   | 67    |
| 20      | 55   | 44   | 45   | 33   | 33   | 37   | 50   | 58  | 62   | 71   | 64   | 70    |
| 21      | 55   | 50   | 49   | 35   | 33   | 35   | 54   | 55  | 63   | 73   | 63   | 70    |
| 22      | 59   | 32   | 49   | 45   | 35   | 42   | 55   | 60  | 66   | 72   | 63   | 70    |
| 23      | 58   | 32   | 45   | 35   | 42   | 39   | 56   | 59  | 72   | 73   | 63   | 37    |
| 24      | 54   | 32   | 45   | 34   | 39   | 43   | 57   | 56  | 68   | 62   | 61   | 52    |
| 25      | 50   | 32   | 35   | 38   | 47   | 35   | 57   | 56  | 61   | 62   | 67   | 54    |
| 26      | 51   | 34   | 35   | 36   | 50   | 40   | 58   | 63  | 61   | 65   | 63   | 58    |
| 27      | 46   | 33   | 35   | 35   | 39   | 41   | 58   | 57  | 64   | 68   | 63   | 49    |
| 28      | 46   | 33   | 38   | 37   | 35   | 40   | 59   | 52  | 67   | 71   | 65   | 45    |
| 29      | 49   | 34   | 33   | 38   | --   | 40   | 55   | 56  | 63   | 72   | 68   | 50    |
| 30      | 52   | 33   | 32   | 33   | --   | 38   | 72   | 58  | 64   | 71   | 66   | 59    |
| 31      | 57   | --   | 34   | 37   | --   | 38   | --   | 62  | --   | 72   | 68   | --    |
| Average | 52   | 41   | 41   | 34   | 38   | 39   | 48   | 57  | 64   | 67   | 66   | 62    |

## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 0.3                   | 52                       | (t)          | 1.5                   | 52                       | 0.2          | 0.8                   | 16                       | (t)          |
| 2.....  | .3                    | 53                       | (t)          | 1.4                   | 38                       | .1           | .8                    | 15                       | (t)          |
| 3.....  | .3                    | 51                       | (t)          | .8                    | 22                       | (t)          | .7                    | 12                       | (t)          |
| 4.....  | .6                    | 47                       | 0.1          | .7                    | 20                       | (t)          | .7                    | 12                       | (t)          |
| 5.....  | .4                    | 50                       | .1           | .7                    | 19                       | (t)          | .7                    | 10                       | (t)          |
| 6.....  | .4                    | 38                       | (t)          | .6                    | 22                       | (t)          | .7                    | 13                       | (t)          |
| 7.....  | .4                    | 35                       | (t)          | .6                    | 18                       | (t)          | 5.4                   | 78                       | s 1.4        |
| 8.....  | .3                    | 38                       | (t)          | .6                    | 15                       | (t)          | 9.6                   | 56                       | 1.4          |
| 9.....  | .3                    | 39                       | (t)          | .5                    | 15                       | (t)          | 50                    | 126                      | s 19         |
| 10..... | .3                    | 34                       | (t)          | .5                    | 37                       | (t)          | 39                    | 50                       | 5.3          |
| 11..... | .3                    | 32                       | (t)          | .5                    | 42                       | .1           | 23                    | 41                       | 2.5          |
| 12..... | .3                    | 29                       | (t)          | .5                    | 35                       | (t)          | 15                    | 40                       | 1.6          |
| 13..... | .3                    | 37                       | (t)          | .5                    | 37                       | (t)          | 11                    | 37                       | 1.1          |
| 14..... | .3                    | 30                       | (t)          | .5                    | 35                       | (t)          | 9.2                   | 34                       | .8           |
| 15..... | .3                    | 31                       | (t)          | .4                    | 31                       | (t)          | 7.9                   | 31                       | .7           |
| 16..... | .3                    | 27                       | (t)          | .5                    | 28                       | (t)          | 6.9                   | 35                       | .6           |
| 17..... | .3                    | 24                       | (t)          | .5                    | 29                       | (t)          | 6.1                   | 28                       | .5           |
| 18..... | .3                    | 30                       | (t)          | .5                    | 28                       | (t)          | 5.2                   | 23                       | .3           |
| 19..... | .3                    | 37                       | (t)          | .5                    | 33                       | (t)          | 4.7                   | 18                       | .2           |
| 20..... | .3                    | 40                       | (t)          | .7                    | 46                       | .1           | 5.1                   | 19                       | .3           |
| 21..... | .4                    | 44                       | (t)          | 1.0                   | 49                       | .1           | 9.6                   | 37                       | 1.0          |
| 22..... | .4                    | 48                       | .1           | 1.0                   | 52                       | .1           | 9.6                   | 37                       | 1.0          |
| 23..... | .4                    | 46                       | (t)          | 1.0                   | 51                       | .1           | 8.4                   | 34                       | .8           |
| 24..... | .4                    | 55                       | .1           | .8                    | 25                       | .1           | 7.7                   | 21                       | .4           |
| 25..... | .4                    | 36                       | (t)          | .8                    | 33                       | .1           | 6.5                   | 25                       | .4           |
| 26..... | .4                    | 33                       | (t)          | .8                    | 21                       | (t)          | 5.8                   | 24                       | .4           |
| 27..... | .5                    | 26                       | (t)          | .8                    | 20                       | (t)          | 5.8                   | 21                       | .3           |
| 28..... | .4                    | 27                       | (t)          | .8                    | 23                       | (t)          | 5.8                   | 19                       | .3           |
| 29..... | .4                    | 36                       | (t)          | .8                    | 21                       | (t)          | 5.7                   | 20                       | .3           |
| 30..... | .4                    | 30                       | (t)          | .8                    | 20                       | (t)          | 6.5                   | 24                       | .4           |
| 31..... | .4                    | 28                       | (t)          | --                    | --                       | --           | 6.1                   | 19                       | .3           |
| Total.  | 11.1                  | --                       | 1.3          | 21.6                  | --                       | 1.8          | 280.0                 | --                       | 41.4         |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 6                     | 23                       | 0.4          | 9.6                   | 18                       | 0.5          | 26                    | 25                       | 1.8          |
| 2.....  | 5                     | 23                       | .3           | 10                    | 26                       | .7           | 22                    | 26                       | 1.5          |
| 3.....  | 5                     | 16                       | .2           | 13                    | 31                       | 1.1          | 17                    | 27                       | 1.2          |
| 4.....  | 5                     | 15                       | .2           | 18                    | 30                       | 1.4          | 15                    | 18                       | .7           |
| 5.....  | 4                     | 12                       | .1           | 20                    | 26                       | 1.4          | 13                    | 15                       | .5           |
| 6.....  | 5                     | 16                       | .2           | 17                    | 21                       | 1.0          | 13                    | 15                       | .5           |
| 7.....  | 4                     | 12                       | .1           | 26                    | 28                       | 2.0          | 12                    | 11                       | .4           |
| 8.....  | 4                     | 8                        | .1           | 31                    | 33                       | 2.8          | 12                    | 12                       | .4           |
| 9.....  | 4.8                   | 13                       | .2           | 136                   | 310                      | sa 170       | 11                    | 10                       | .3           |
| 10..... | 19                    | 68                       | s 3.8        | 153                   | 116                      | 48           | 9.4                   | 11                       | .3           |
| 11..... | 16                    | 19                       | .8           | 87                    | 55                       | 13           | 9.8                   | 12                       | .3           |
| 12..... | 11                    | 41                       | 1.2          | 56                    | 42                       | 6.4          | 10                    | 15                       | .4           |
| 13..... | 9.6                   | 42                       | 1.1          | 40                    | 34                       | 3.7          | 9.6                   | 13                       | .3           |
| 14..... | 7                     | 20                       | .4           | 36                    | 35                       | 3.4          | 9.0                   | 15                       | .4           |
| 15..... | 5                     | 26                       | .4           | 27                    | 31                       | 2.2          | 8.8                   | 15                       | .4           |
| 16..... | 4                     | 33                       | .4           | 23                    | 27                       | 1.7          | 7.9                   | 23                       | .5           |
| 17..... | 3.5                   | 30                       | .3           | 18                    | 29                       | 1.4          | 7.7                   | 16                       | .3           |
| 18..... | 3.5                   | 26                       | .2           | 16                    | 25                       | 1.1          | 7.9                   | 16                       | .3           |
| 19..... | 3.5                   | 19                       | .2           | 14                    | 28                       | 1.0          | 8.4                   | 13                       | .3           |
| 20..... | 3.5                   | 16                       | .2           | 13                    | 25                       | .9           | 7.3                   | 13                       | .2           |
| 21..... | 18                    | 37                       | s 2.1        | 11                    | 26                       | .8           | 6.8                   | 13                       | .2           |
| 22..... | 67                    | 130                      | sa 40        | 10                    | 23                       | .6           | 6.9                   | 12                       | .2           |
| 23..... | 110                   | 110                      | sa 40        | 9.4                   | 24                       | .6           | 6.5                   | 10                       | .2           |
| 24..... | 48                    | 27                       | 3.5          | 9.0                   | 33                       | .8           | 5.8                   | 11                       | .2           |
| 25..... | 31                    | 22                       | 1.8          | 9.4                   | 36                       | .9           | 6.6                   | 18                       | .3           |
| 26..... | 21                    | 17                       | 1.0          | 33                    | --                       | e 16         | 8.8                   | 18                       | .4           |
| 27..... | 17                    | 13                       | .6           | 60                    | 80                       | s 14         | 11                    | 14                       | .4           |
| 28..... | 14                    | 4                        | .2           | 38                    | 28                       | 2.9          | 10                    | 12                       | .3           |
| 29..... | 13                    | 8                        | .3           | --                    | --                       | --           | 10                    | 12                       | .3           |
| 30..... | 10                    | 8                        | .2           | --                    | --                       | --           | 9.0                   | 11                       | .3           |
| 31..... | 10                    | 9                        | .2           | --                    | --                       | --           | 8.0                   | 10                       | .2           |
| Total.  | 487.4                 | --                       | 100.7        | 943.4                 | --                       | 300.3        | 326.2                 | --                       | 14.0         |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                     | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                     |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                              | 22                   | --                       | e 9          | 9.6                  | 35                       | 0.9          | 40                   | 78                       | 8.4          |
| 2.....                              | 85                   | 110                      | sa25         | 9.0                  | 33                       | .8           | 59                   | 91                       | s16          |
| 3.....                              | 100                  | 90                       | s56          | 8.0                  | 30                       | .6           | 34                   | 28                       | 2.6          |
| 4.....                              | 585                  | 418                      | 660          | 7.5                  | 32                       | .6           | 22                   | 22                       | 1.3          |
| 5.....                              | 307                  | 261                      | 216          | 6.9                  | 32                       | .6           | 17                   | 19                       | .9           |
| 6.....                              | 178                  | 118                      | 57           | 6.3                  | 35                       | .6           | 14                   | 13                       | .5           |
| 7.....                              | 116                  | 60                       | 19           | 5.8                  | 46                       | .7           | 39                   | --                       | e25          |
| 8.....                              | 145                  | --                       | e60          | 5.4                  | 37                       | .5           | 33                   | 119                      | 11           |
| 9.....                              | 143                  | 68                       | 26           | 5.2                  | 34                       | .5           | 20                   | 69                       | 3.7          |
| 10.....                             | 92                   | 41                       | 10           | 5.1                  | 40                       | .6           | 16                   | 56                       | 2.4          |
| 11.....                             | 68                   | 36                       | 6.6          | 5.2                  | 38                       | .5           | 15                   | 62                       | 2.5          |
| 12.....                             | 50                   | 34                       | 4.6          | 4.8                  | 29                       | .4           | 12                   | 57                       | 1.8          |
| 13.....                             | 38                   | 32                       | 3.3          | 4.4                  | 28                       | .3           | 10                   | 63                       | 1.7          |
| 14.....                             | 30                   | 25                       | 2.0          | 7.1                  | 40                       | .9           | 9.6                  | 57                       | 1.5          |
| 15.....                             | 24                   | 23                       | 1.5          | 10                   | 90                       | 2.4          | 8.0                  | 63                       | 1.4          |
| 16.....                             | 21                   | 33                       | 1.9          | 6.8                  | 22                       | .4           | 6.8                  | 61                       | 1.1          |
| 17.....                             | 24                   | 30                       | 1.9          | 5.8                  | 13                       | .2           | 6.1                  | 66                       | 1.1          |
| 18.....                             | 39                   | 38                       | 4.0          | 6.0                  | 17                       | .3           | 6.8                  | 63                       | 1.2          |
| 19.....                             | 37                   | 32                       | 3.2          | 7.9                  | 37                       | .8           | 21                   | 68                       | 3.8          |
| 20.....                             | 30                   | 28                       | 2.3          | 12                   | 47                       | 1.5          | 12                   | 31                       | 1.0          |
| 21.....                             | 25                   | 26                       | 1.8          | 13                   | 50                       | 1.8          | 8.6                  | 31                       | .7           |
| 22.....                             | 22                   | 28                       | 1.7          | 268                  | 370                      | s313         | 7.1                  | 29                       | .6           |
| 23.....                             | 19                   | 20                       | 1.0          | 143                  | 48                       | 18           | 6.1                  | 25                       | .4           |
| 24.....                             | 18                   | 19                       | .9           | 85                   | 36                       | 8.3          | 31                   | --                       | e10          |
| 25.....                             | 20                   | 26                       | 1.4          | 55                   | 36                       | 5.3          | 66                   | 100                      | sa19         |
| 26.....                             | 16                   | 21                       | .9           | 74                   | 138                      | 28           | 28                   | 76                       | 5.7          |
| 27.....                             | 14                   | 47                       | 1.8          | 46                   | 42                       | 5.2          | 18                   | 68                       | 3.3          |
| 28.....                             | 13                   | 50                       | 1.8          | 29                   | 37                       | 2.9          | 208                  | --                       | e330         |
| 29.....                             | 12                   | 32                       | 1.0          | 21                   | 34                       | 1.9          | 210                  | 230                      | sa150        |
| 30.....                             | 10                   | 32                       | .9           | 17                   | 25                       | 1.1          | 133                  | 93                       | 33           |
| 31.....                             | --                   | --                       | --           | 16                   | 35                       | sa2          | --                   | --                       | --           |
| Total.                              | 2,303                | --                       | 1,182.5      | 905.8                | --                       | 401.6        | 1,117.1              | --                       | 641.6        |
| Day                                 | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                     | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                     |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                              | 74                   | 86                       | 17           | 2.3                  | 53                       | 0.3          | 0.1                  | 19                       | (t)          |
| 2.....                              | 43                   | 77                       | 8.9          | 3.4                  | 67                       | .6           | .1                   | 13                       | (t)          |
| 3.....                              | 28                   | 83                       | 6.3          | 2.5                  | 55                       | .4           | .1                   | 13                       | (t)          |
| 4.....                              | 34                   | 110                      | sa12         | 2.4                  | 48                       | .3           | 0                    | --                       | 0            |
| 5.....                              | 63                   | 100                      | sa18         | 2.1                  | 43                       | .2           | 0                    | --                       | 0            |
| 6.....                              | 33                   | 66                       | 5.9          | 1.8                  | 41                       | .2           | 0                    | --                       | 0            |
| 7.....                              | 50                   | 182                      | 25           | 1.6                  | 43                       | .2           | 0                    | --                       | 0            |
| 8.....                              | 31                   | 88                       | 7.4          | 1.5                  | 53                       | .2           | 0                    | --                       | 0            |
| 9.....                              | 22                   | 78                       | 4.6          | 1.4                  | 45                       | .2           | 0                    | --                       | 0            |
| 10.....                             | 15                   | 63                       | 2.6          | 1.4                  | 48                       | .2           | .4                   | 46                       | (t)          |
| 11.....                             | 13                   | 63                       | 2.2          | 1.4                  | 57                       | .2           | .2                   | 50                       | (t)          |
| 12.....                             | 11                   | 73                       | 2.2          | 1.2                  | 65                       | .2           | .2                   | 52                       | (t)          |
| 13.....                             | 10                   | 71                       | 1.9          | 1.0                  | 64                       | .2           | .6                   | 57                       | .1           |
| 14.....                             | 8.6                  | 69                       | 1.6          | 1.0                  |                          | .6           | .6                   | 57                       | .1           |
| 15.....                             | 7.7                  | 63                       | 1.3          | .9                   |                          | .4           | .4                   | 57                       | .1           |
| 16.....                             | 6.6                  | 60                       | 1.1          | .8                   | --                       | e.1          | .3                   | 46                       | (t)          |
| 17.....                             | 6.0                  | 56                       | .9           | .8                   |                          |              | .2                   | 49                       | (t)          |
| 18.....                             | 5.5                  | 57                       | .8           | .7                   |                          |              | .2                   | 48                       | (t)          |
| 19.....                             | 5.1                  | 59                       | .8           | .6                   | 23                       | (t)          | .2                   | 48                       | (t)          |
| 20.....                             | 4.5                  | 60                       | .7           | .5                   | 24                       | (t)          | .4                   | 42                       | (t)          |
| 21.....                             | 4.0                  | 51                       | .6           | .5                   | 38                       | .1           | .7                   | 40                       | .1           |
| 22.....                             | 3.7                  | 50                       | .5           | .4                   | 40                       | (t)          | .6                   | 40                       | .1           |
| 23.....                             | 8.4                  | 68                       | 1.5          | .4                   | 38                       | (t)          | .5                   | 33                       | (t)          |
| 24.....                             | 6.8                  | 40                       | .7           | .3                   | 35                       | (t)          | .4                   | 31                       | (t)          |
| 25.....                             | 4.8                  | 33                       | .4           | .4                   | 39                       | (t)          | .3                   | 30                       | (t)          |
| 26.....                             | 4.1                  | 35                       | .4           | .3                   | 38                       | (t)          | .3                   | 33                       | (t)          |
| 27.....                             | 3.7                  | 35                       | .3           | .2                   | 32                       | (t)          | .3                   | 26                       | (t)          |
| 28.....                             | 3.4                  | 25                       | .2           | .2                   | 30                       | (t)          | .3                   | 23                       | (t)          |
| 29.....                             | 3.0                  | 29                       | .2           | .2                   | 24                       | (t)          | .3                   | 23                       | (t)          |
| 30.....                             | 2.6                  | 32                       | .2           | .2                   | 18                       | (t)          | .3                   | 25                       | (t)          |
| 31.....                             | 2.6                  | 56                       | .4           | .1                   | 17                       | (t)          | --                   | --                       | --           |
| Total.                              | 518.3                | --                       | 126.6        | 32.5                 | --                       | 4.3          | 8.0                  | --                       | 1.0          |
| Total discharge for year (cfs-days) |                      |                          |              |                      |                          |              |                      |                          | 6,954.4      |
| Total load for year (tons)          |                      |                          |              |                      |                          |              |                      |                          | 2,817.1      |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Feb. 9, 1957.....  | 4:20 p. m.  | 228             |                        | 516                           | 561                                        | 64                                                | 71    | 81    | 87    | 96    | 99    | 100   | --    |       |       | BSWCM               |
| Feb. 9 .....       | 4:20 p. m.  | 228             |                        | 516                           | 587                                        | 47                                                | 62    | 76    | 89    | 97    | 99    | 100   | --    |       |       | BSNM                |
| Apr. 4 .....       | 12:05 a. m. | 685             |                        | 464                           | 739                                        | 52                                                | 63    | 72    | 84    | 91    | 98    | 99    | 100   |       |       | BSWCM               |
| Apr. 4 .....       | 12:05 a. m. | 685             |                        | 464                           | 708                                        | 33                                                | 47    | 66    | 82    | 91    | 97    | 98    | 100   |       |       | BSNM                |
| May 22 .....       | 6:45 a. m.  | 403             |                        | 1,060                         | 1,970                                      | 57                                                | 69    | 81    | 89    | 95    | 99    | 100   | --    |       |       | BSWCM               |
| May 22 .....       | 11:00 a. m. | 470             |                        | 393                           | 622                                        | 63                                                | 72    | 81    | 90    | 96    | 99    | 100   | --    |       |       | BSWCM               |
| June 28 .....      | 6:30 a. m.  | 220             |                        | 982                           | 1,700                                      | 67                                                | 81    | 92    | 97    | 99    | 100   | --    | --    |       |       | BSWCM               |
| July 7 .....       | 7:30 a. m.  | 56              |                        | 240                           | 418                                        | 58                                                | 75    | 83    | 88    | 94    | 98    | 100   | --    |       |       | BSWCM               |



## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## LITTLE MIAMI RIVER BASIN--Continued

## MASSIE CREEK AT WILBERFORCE, OHIO

LOCATION.--At gaging station at bridge on Wilberforce-Clifton Road, 0.5 mile northwest of Wilberforce, Greene County, 1.7 miles upstream from Clark Run, and 3.5 miles northeast of Xenia.

DRAINAGE AREA.--64.3 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1952 to September 1954.

Water temperatures: September 1952 to September 1957.

Sediment records: September 1952 to September 1957.

EXTREMES, 1956-57.--Maximum, 77°F May 15; minimum, freezing point on several days during November to February.

Sediment concentrations: Maximum daily, 691 ppm Apr. 4; minimum daily, 2 ppm on several days during November, January, March, May and September.

Sediment loads: Maximum daily, 3,430 tons Apr. 4; minimum daily, less than 0.05 ton on several days during October, November and September.

EXTREMES, 1952-57.--Water temperatures: Maximum, 79°F Aug. 15, 1953; minimum, freezing point on many days during winter months.

Sediment concentrations: Minimum daily, 1 ppm on many days during 1952 to 1956.

Sediment loads: Maximum daily, 3,430 tons Apr. 4, 1957; minimum daily, less than 0.05 ton on many days during 1952 to 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Periodic discharge from Central State College sewage plant enters stream about 1,000 feet upstream from gage. Flow affected by ice Jan. 2, 15-20.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | 58   | 35   | 33   | 37   | 42   | 48   | 73  | 68   | 65   | 74   | 72    |
| 2       | 67   | 62   | 41   | 32   | 40   | 41   | 45   | 70  | 63   | 66   | 73   | 71    |
| 3       | 62   | 58   | 44   | 32   | 41   | 40   | 56   | 62  | 60   | 68   | --   | 71    |
| 4       | 64   | 57   | 44   | 33   | 41   | 43   | 43   | 50  | 63   | 70   | 71   | 70    |
| 5       | 64   | 61   | 47   | 35   | 35   | 45   | 50   | 60  | 65   | 65   | 68   | 68    |
| 6       | 65   | 58   | 56   | --   | 39   | 40   | 40   | 66  | 65   | 68   | 62   | 68    |
| 7       | 64   | 56   | 54   | 32   | 40   | 40   | 49   | 68  | 66   | 69   | 64   | --    |
| 8       | 64   | 46   | 45   | 35   | 40   | 33   | 39   | 70  | 62   | 71   | 65   | 60    |
| 9       | 59   | 46   | 40   | 34   | 42   | 42   | 45   | 70  | 59   | 71   | 68   | 66    |
| 10      | --   | 43   | 33   | 32   | 43   | 50   | 48   | 72  | 65   | 67   | 70   | 65    |
| 11      | 56   | 48   | 43   | 33   | 39   | --   | 51   | 72  | 65   | 75   | 72   | 68    |
| 12      | 61   | 48   | 45   | 38   | 32   | 55   | 44   | 72  | 63   | 70   | 70   | 69    |
| 13      | 62   | 46   | 39   | 33   | 41   | 56   | 44   | 75  | 67   | 71   | 67   | 67    |
| 14      | 63   | 52   | 42   | 32   | 32   | 58   | 43   | 70  | 68   | 72   | 69   | 66    |
| 15      | 66   | 58   | 48   | 32   | 32   | 54   | 50   | 77  | 69   | 71   | 70   | 70    |
| 16      | 65   | 47   | 45   | --   | 33   | 51   | 46   | 62  | 70   | 74   | 71   | 68    |
| 17      | 65   | 44   | 48   | --   | 32   | 58   | 51   | 64  | 71   | 69   | 68   | 67    |
| 18      | 65   | 41   | 41   | --   | 40   | --   | 55   | 61  | 71   | 69   | 66   | 65    |
| 19      | 64   | 43   | 42   | --   | 39   | 41   | 60   | 63  | 70   | 71   | 68   | 70    |
| 20      | 64   | 40   | 45   | --   | 38   | --   | 64   | 59  | 67   | --   | 63   | 71    |
| 21      | 63   | 44   | 49   | 38   | 41   | 46   | 61   | 63  | --   | 72   | 65   | 70    |
| 22      | 62   | 35   | 48   | 45   | 43   | 41   | 61   | 64  | 70   | 74   | 66   | 69    |
| 23      | 64   | 31   | 49   | 35   | 43   | 52   | 65   | 65  | 72   | 69   | 65   | 65    |
| 24      | 58   | 32   | 43   | 33   | 50   | --   | 70   | 65  | 67   | 68   | 66   | 61    |
| 25      | 63   | 35   | 38   | 35   | 54   | 40   | 70   | 66  | 68   | 65   | 67   | 64    |
| 26      | 55   | 43   | 37   | 34   | 49   | 45   | 72   | 68  | 65   | 67   | 65   | 63    |
| 27      | 56   | --   | 32   | 32   | 32   | 42   | 73   | 60  | 68   | 68   | 65   | 58    |
| 28      | 59   | --   | 32   | 34   | 32   | 44   | 65   | 65  | 69   | 70   | 66   | 56    |
| 29      | 60   | 37   | 35   | 34   | --   | 47   | 70   | 70  | 64   | 72   | 69   | 58    |
| 30      | 62   | 35   | 37   | 33   | --   | 50   | 61   | 74  | 67   | 73   | 73   | 60    |
| 31      | 63   | --   | 36   | 36   | --   | --   | --   | 71  | --   | 73   | 69   | --    |
| Average | 62   | 46   | 42   | 34   | 39   | 46   | 55   | 66  | 66   | 70   | 68   | 66    |

LITTLE MIAMI RIVER BASIN  
LITTLE MIAMI RIVER BASIN--Continued

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MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 4.1                   | 8                        | 0.1          | 24                    | 30                       | sa 2         | 5.9                   | 8                        | 0.1          |
| 2.....  | 4.1                   | 8                        | .1           | 14                    | 11                       | .4           | 5.9                   | 11                       | b. 2         |
| 3.....  | 4.3                   | 7                        | .1           | 9.4                   | 9                        | .2           | 5.9                   | 15                       | b. 2         |
| 4.....  | 7.7                   | 11                       | .2           | 7.4                   | 8                        | .2           | 5.4                   | 19                       | .3           |
| 5.....  | 5.4                   | 9                        | .1           | 7.2                   | 6                        | .1           | 5.4                   | 20                       | .3           |
| 6.....  | 4.7                   | 8                        | .1           | 6.6                   | 4                        | .1           | 5.4                   | 11                       | .2           |
| 7.....  | 4.5                   | 9                        | .1           | 6.4                   | 3                        | .1           | 25                    | 46                       | s 3.6        |
| 8.....  | 4.3                   | 10                       | .1           | 6.4                   | 3                        | .1           | 43                    | 78                       | 9.0          |
| 9.....  | 4.1                   | 9                        | .1           | 6.1                   | 2                        | (t)          | 143                   | 180                      | sa 80        |
| 10..... | 3.9                   | 8                        | .1           | 5.6                   |                          |              | 124                   | 102                      | 34           |
| 11..... | 3.9                   | 7                        | .1           | 5.6                   | --                       | e. 1         | 85                    | 42                       | 9.6          |
| 12..... | 3.9                   | 7                        | .1           | 5.6                   |                          |              | 60                    | 26                       | 4.2          |
| 13..... | 3.9                   | 11                       | .1           | 5.6                   |                          |              | 43                    | 20                       | b 2          |
| 14..... | 3.9                   | 8                        | .1           | 5.6                   | 12                       | .2           | 37                    | 15                       | 1.5          |
| 15..... | 3.8                   | 7                        | .1           | 5.9                   | 18                       | .3           | 33                    | 8                        | .7           |
| 16..... | 3.8                   | 5                        | .1           | 6.1                   | 30                       | b. 5         | 30                    | 4                        | b. 3         |
| 17..... | 3.8                   | 7                        | .1           | 5.6                   | 39                       | .6           | 27                    | 3                        | .2           |
| 18..... | 3.8                   | 8                        | .1           | 5.6                   | 40                       | b. 6         | 23                    | 4                        | .2           |
| 19..... | 3.6                   | 5                        | (t)          | 5.6                   | 40                       | b. 6         | 21                    | 3                        | .2           |
| 20..... | 3.9                   | 4                        | (t)          | 6.9                   | 59                       | 1.1          | 23                    | 3                        | .2           |
| 21..... | 3.9                   | 7                        | .1           | 11                    | 73                       | 2.2          | 34                    | 17                       | 1.6          |
| 22..... | 4.1                   | 8                        | .1           | 12                    | 42                       | 1.4          | 37                    | 59                       | 5.9          |
| 23..... | 4.3                   | 6                        | .1           | 8.3                   | 13                       | .3           | 33                    | 33                       | 2.9          |
| 24..... | 4.3                   | 5                        | .1           | 7.4                   | 9                        | .2           | 31                    | 5                        | .4           |
| 25..... | 4.1                   | 5                        | .1           | 7.2                   | 10                       | .2           | 27                    | 3                        | b. 2         |
| 26..... | 4.5                   | 7                        | .1           | 7.2                   | 10                       | .2           | 25                    | 4                        | b. 3         |
| 27..... | 5.0                   | 7                        | .1           | 7.2                   | 8                        | b. 2         | 24                    | 5                        | b. 3         |
| 28..... | 4.5                   | 4                        | (t)          | 6.4                   | 7                        | b. 1         | 25                    | 5                        | .3           |
| 29..... | 4.3                   | 4                        | (t)          | 6.6                   | 5                        | .1           | 25                    | 4                        | .3           |
| 30..... | 4.1                   | 4                        | (t)          | 6.1                   | 6                        | .1           | 24                    | 4                        | .2           |
| 31..... | 4.1                   | 5                        | .1           | --                    | --                       | --           | 26                    | 5                        | .4           |
| Total.  | 132.6                 | --                       | 2.9          | 230.6                 | --                       | 12.5         | 1,061.9               | --                       | 159.8        |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 23                    | 4                        | 0.2          | 37                    | 4                        | 0.4          | 95                    | 22                       | 5.6          |
| 2.....  | 22                    | 4                        | .2           | 37                    | 5                        | .5           | 78                    | 19                       | 4.0          |
| 3.....  | 22                    | 4                        | .2           | 42                    | 9                        | 1.0          | 63                    | 15                       | 2.6          |
| 4.....  | 21                    | 5                        | .3           | 50                    | 15                       | 2.0          | 53                    | 13                       | 1.9          |
| 5.....  | 19                    | 4                        | .2           | 59                    | 19                       | 1.4          | 47                    | 13                       | 1.6          |
| 6.....  | 17                    | 3                        | b. 1         | 53                    | 10                       | 1.4          | 45                    | 15                       | 1.8          |
| 7.....  | 19                    | 2                        | .1           | 77                    | 18                       | 3.7          | 44                    | 13                       | 1.5          |
| 8.....  | 17                    | 20                       | .9           | 92                    | 20                       | 5.0          | 43                    | 9                        | 1.0          |
| 9.....  | 23                    | 37                       | 2.3          | 304                   | 312                      | s 328        | 39                    | 9                        | .9           |
| 10..... | 57                    | 34                       | 5.2          | 384                   | 186                      | s 205        | 35                    | 12                       | 1.1          |
| 11..... | 48                    | 34                       | 4.4          | 220                   | 63                       | 37           | 35                    | 15                       | b 1          |
| 12..... | 38                    | 35                       | b 4          | 156                   | 32                       | 13           | 42                    | 16                       | 1.8          |
| 13..... | 35                    | 35                       | b 3          | 124                   | 23                       | 7.7          | 38                    | 18                       | 1.8          |
| 14..... | 29                    | 60                       | 4.7          | 113                   | 18                       | 5.5          | 36                    | 15                       | 1.4          |
| 15..... | 25                    | 83                       | 5.6          | 92                    | 10                       | 2.5          | 35                    | 9                        | .8           |
| 16..... | 22                    |                          |              | 80                    | 9                        | 1.9          | 32                    | 7                        | .6           |
| 17..... | 19                    |                          |              | 69                    | 8                        | 1.5          | 30                    | 9                        | .7           |
| 18..... | 17                    | --                       | e. 8         | 60                    | 8                        | 1.3          | 32                    | 10                       | b. 9         |
| 19..... | 17                    |                          |              | 52                    | 7                        | 1.0          | 33                    | 8                        | .7           |
| 20..... | 17                    |                          |              | 44                    | 3                        | .4           | 30                    | 6                        | b. 5         |
| 21..... | 52                    | 40                       | s 6.7        | 40                    | 4                        | .4           | 28                    | 4                        | .3           |
| 22..... | 167                   | 250                      | sa 150       | 38                    | 6                        | .6           | 29                    | 4                        | .3           |
| 23..... | 285                   | 220                      | sa 190       | 36                    | 8                        | .8           | 27                    | 5                        | .4           |
| 24..... | 145                   | 45                       | 18           | 35                    | 13                       | 1.2          | 25                    | 5                        | b. 3         |
| 25..... | 107                   | 22                       | 6.4          | 35                    | 16                       | 1.5          | 27                    | 3                        | .2           |
| 26..... | 79                    | 13                       | 2.8          | 89                    | 95                       | sa 30        | 33                    | 2                        | .2           |
| 27..... | 61                    | 9                        | 1.5          | 161                   | 108                      | 47           | 38                    | 2                        | .2           |
| 28..... | 51                    | 7                        | 1.0          | 118                   | 29                       | 9.2          | 37                    | 2                        | .2           |
| 29..... | 48                    | 6                        | .8           | --                    | --                       | --           | 36                    | 2                        | .2           |
| 30..... | 38                    | 5                        | .5           | --                    | --                       | --           | 34                    | 2                        | .2           |
| 31..... | 37                    | 5                        | .5           | --                    | --                       | --           | 31                    | 4                        | b. 3         |
| Total.  | 1,577                 | --                       | 413.6        | 2,697                 | --                       | 712.5        | 1,230                 | --                       | 35.0         |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## LITTLE MIAMI RIVER BASIN--Continued

## MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                       | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                           | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                           |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                    | 57                   | --                       | e 15         | 42                   | 6                        | 0.7          | 73                   | 53                       | 10           |
| 2.....                                    | 205                  | 155                      | 86           | 39                   | 5                        | .5           | 117                  | 81                       | 26           |
| 3.....                                    | 313                  | --                       | e 500        | 36                   | 4                        | .4           | 85                   | 42                       | 9.6          |
| 4.....                                    | 1,840                | 691                      | 3,430        | 35                   | 3                        | .3           | 64                   | 24                       | 4.1          |
| 5.....                                    | 1,060                | 225                      | 644          | 33                   | 6                        | .5           | 53                   | 23                       | 3.3          |
| 6.....                                    | 517                  | 124                      | 173          | 30                   | 5                        | .4           | 47                   | 9                        | 1.1          |
| 7.....                                    | 268                  | 65                       | 47           | 28                   | 4                        | .3           | 78                   | 129                      | s 29         |
| 8.....                                    | 360                  | 146                      | s 168        | 27                   | 4                        | .3           | 80                   | 132                      | 28           |
| 9.....                                    | 369                  | 242                      | 241          | 27                   | 3                        | .2           | 58                   | 64                       | 10           |
| 10.....                                   | 239                  | 65                       | 42           | 26                   | 2                        | .1           | 50                   | 41                       | 5.5          |
| 11.....                                   | 182                  | 28                       | 14           | 26                   | 8                        | .6           | 47                   | 62                       | 7.9          |
| 12.....                                   | 146                  | 21                       | 8.3          | 24                   | 5                        | .3           | 43                   | 63                       | 7.3          |
| 13.....                                   | 122                  | 16                       | 5.3          | 23                   | 8                        | .5           | 37                   | 47                       | 4.7          |
| 14.....                                   | 105                  | 14                       | 4.0          | 30                   | 26                       | 2.1          | 33                   | 46                       | 4.1          |
| 15.....                                   | 90                   | 15                       | 3.6          | 37                   | 12                       | 1.2          | 30                   | 51                       | 4.1          |
| 16.....                                   | 81                   | 11                       | 2.4          | 31                   | 7                        | .6           | 27                   | 49                       | 3.6          |
| 17.....                                   | 85                   | 10                       | 2.3          | 27                   | 8                        | .6           | 24                   | 44                       | 2.8          |
| 18.....                                   | 136                  | 25                       | 9.2          | 28                   | 13                       | 1.0          | 24                   | 31                       | 2.0          |
| 19.....                                   | 142                  | 30                       | 12           | 40                   | 108                      | 12           | 48                   | 65                       | sa 9         |
| 20.....                                   | 112                  | 17                       | 5.1          | 57                   | 66                       | 10           | 42                   | 40                       | 4.5          |
| 21.....                                   | 95                   | 13                       | 3.3          | 56                   | 24                       | 3.6          | 32                   | 20                       | b 2          |
| 22.....                                   | 82                   | 9                        | 2.0          | 424                  | 289                      | s 380        | 27                   | 10                       | .7           |
| 23.....                                   | 74                   | 8                        | 1.6          | 364                  | 174                      | s 209        | 24                   | 10                       | .6           |
| 24.....                                   | 67                   | 8                        | 1.4          | 187                  | 53                       | 27           | 40                   | 35                       | sa 5         |
| 25.....                                   | 79                   | 16                       | 3.4          | 136                  | 49                       | 18           | 118                  | 113                      | 36           |
| 26.....                                   | 66                   | 8                        | 1.4          | 138                  | 76                       | 28           | 73                   | 73                       | 14           |
| 27.....                                   | 57                   | 5                        | .8           | 112                  | 57                       | 17           | 52                   | 50                       | 7.0          |
| 28.....                                   | 53                   | 4                        | .6           | 82                   | 30                       | 6.6          | 308                  | 308                      | 256          |
| 29.....                                   | 49                   | 4                        | .5           | 65                   | 26                       | 4.6          | 517                  | --                       | e 390        |
| 30.....                                   | 44                   | 7                        | .8           | 55                   | 21                       | 3.1          | 307                  | 107                      | 88           |
| 31.....                                   | --                   | --                       | --           | 55                   | 30                       | sa 5         | --                   | --                       | --           |
| Total.                                    | 7,095                | --                       | 5,428.0      | 2,340                | --                       | 734.5        | 2,558                | --                       | 975.9        |
| Day                                       | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                           | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                           |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                    | 167                  | 69                       | 31           | 11                   | 46                       | 1.4          | 3.0                  | 44                       | 0.4          |
| 2.....                                    | 114                  | 58                       | 18           | 30                   | --                       | e 25         | 2.8                  | 42                       | .3           |
| 3.....                                    | 85                   | 52                       | 12           | 34                   | --                       | e 14         | 3.0                  | 23                       | .2           |
| 4.....                                    | 83                   | 110                      | sa 30        | 17                   | 93                       | 4.3          | 3.0                  | 5                        | (t)          |
| 5.....                                    | 148                  | 158                      | 63           | 12                   | 86                       | 2.8          | 2.8                  | 3                        | (t)          |
| 6.....                                    | 102                  | 82                       | 22           | 10                   | 65                       | 1.8          | 2.8                  | 3                        | (t)          |
| 7.....                                    | 156                  | --                       | e 85         | 9.6                  | 51                       | 1.3          | 2.7                  | 3                        | (t)          |
| 8.....                                    | 114                  | 104                      | 32           | 8.5                  | 74                       | 1.7          | 3.0                  | 3                        | (t)          |
| 9.....                                    | 81                   | 81                       | 18           | 8.1                  | 83                       | 1.8          | 2.7                  | 2                        | (t)          |
| 10.....                                   | 60                   | 50                       | 8.1          | 7.8                  | 66                       | 1.4          | 8.8                  | 20                       | .5           |
| 11.....                                   | 50                   | 36                       | 4.9          | 7.4                  | 69                       | 1.4          | 5.3                  | 51                       | .7           |
| 12.....                                   | 42                   | 40                       | 4.5          | 7.4                  | 65                       | 1.3          | 5.1                  | 41                       | .6           |
| 13.....                                   | 37                   | 44                       | 4.4          | 6.2                  | 55                       | .9           | 12                   | 54                       | a 1.8        |
| 14.....                                   | 33                   | 46                       | 4.1          | 5.6                  | 29                       | .4           | 8.8                  | 57                       | 1.4          |
| 15.....                                   | 29                   | 41                       | 3.2          | 5.6                  | 8                        | .1           | 6.5                  | 30                       | .5           |
| 16.....                                   | 25                   | 33                       | 2.2          | 5.6                  | 10                       | .2           | 5.3                  | 39                       | .6           |
| 17.....                                   | 23                   | 31                       | 1.9          | 5.1                  | 10                       | .1           | 4.8                  | 35                       | .4           |
| 18.....                                   | 21                   | 29                       | 1.6          | 4.8                  | 11                       | .1           | 4.3                  | 23                       | .3           |
| 19.....                                   | 20                   | 30                       | 1.6          | 4.6                  | 8                        | .1           | 4.3                  | 17                       | .2           |
| 20.....                                   | 18                   | 30                       | b 1          | 4.3                  | 12                       | .1           | 8.4                  | --                       | e 2          |
| 21.....                                   | 17                   | 31                       | 1.4          | 4.1                  | 18                       | b 2          | 12                   | 86                       | 2.8          |
| 22.....                                   | 15                   | 25                       | 1.0          | 3.9                  | 30                       | b 3          | 8.8                  | 48                       | 1.1          |
| 23.....                                   | 54                   | 230                      | s 42         | 3.6                  | 44                       | .4           | 8.1                  | 30                       | .6           |
| 24.....                                   | 35                   | 61                       | 5.8          | 3.6                  | 62                       | .6           | 6.5                  | 18                       | .3           |
| 25.....                                   | 24                   | 38                       | 2.5          | 5.1                  | 87                       | 1.2          | 5.3                  | 10                       | .1           |
| 26.....                                   | 20                   | 23                       | 1.2          | 4.8                  | 111                      | 1.4          | 4.8                  | 7                        | .1           |
| 27.....                                   | 18                   | 20                       | 1.0          | 3.9                  | 63                       | .7           | 4.6                  | 7                        | .1           |
| 28.....                                   | 17                   | 11                       | .5           | 3.6                  | 47                       | .4           | 4.6                  | 5                        | .1           |
| 29.....                                   | 15                   | 8                        | .3           | 3.6                  | 75                       | .7           | 4.6                  | 5                        | .1           |
| 30.....                                   | 14                   | 6                        | .2           | 3.2                  | 67                       | .6           | 4.8                  | 38                       | .5           |
| 31.....                                   | 12                   | 51                       | 1.6          | 3.2                  | 64                       | .6           | --                   | --                       | --           |
| Total.                                    | 1,649                | --                       | 406.0        | 247.2                | --                       | 67.3         | 163.5                | --                       | 15.8         |
| Total discharge for year (cfs-days) ..... |                      |                          |              |                      |                          |              |                      |                          | 20,981.8     |
| Total load for year (tons) .....          |                      |                          |              |                      |                          |              |                      |                          | 8,963.8      |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection     | Time       | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |       |
|------------------------|------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|-------|
|                        |            |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |       |
|                        |            |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 | 0.500 |
| Feb. 9, 1957 . . . . . | 5:30 p. m. | 442             |                         | 530                           | 719                                        | 48                                                | 59    | 67    | 75    | 86    | 93    | 96    | 98    |                     | 100   | BSWCM |
| Feb. 9 . . . . .       | 5:30 p. m. | 442             |                         | 530                           | 702                                        | 25                                                | 35    | 49    | 72    | 86    | 93    | 96    | 98    |                     | 100   | BSNM  |
| Apr. 4 . . . . .       | 2:00 p. m. | 2,080           |                         | 473                           | 599                                        | 59                                                | 68    | 76    | 83    | 88    | 95    | 95    | 97    |                     | 100   | BSWCM |
| Apr. 4 . . . . .       | 2:00 p. m. | 2,080           |                         | 473                           | 497                                        | 30                                                | 45    | 63    | 77    | 85    | 92    | 94    | 96    |                     | 99    | BSNM  |
| June 28 . . . . .      | 9:00 a. m. | 242             |                         | 411                           | 583                                        | 34                                                | 47    | 58    | 73    | 85    | 92    | 96    | 99    |                     | 100   | BSWCM |
| July 23 . . . . .      | 9:20 a. m. | 93              |                         | 476                           | 689                                        | 57                                                | 67    | 77    | 87    | 93    | 96    | 99    | 100   |                     | --    | BSWCM |

## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROACHESTER, OHIO

LOCATION.--At gaging station at bridge on State Highway 123, 0.3 mile downstream from Lick Run, 1.6 miles southeast of Roacheater, Warren County, 2½ miles southeast of Morrow, and 4 miles upstream from mouth.

DRAINAGE AREA.--219 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1952 to September 1954.

Water temperatures: September 1952 to September 1957.

Sediment records: September 1952 to September 1957.

EXTREMES, 1952-57.--Water temperatures: Maximum, 88°F July 22,31; minimum, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 1,700 ppm May 22; minimum daily, 2 ppm Jan. 5-6, Mar. 29-30, Sept. 30.

Sediment loads: Maximum daily, 23,000 tons May 22; minimum daily, less than 0.05 ton

Aug. 31 to Sept. 2, Sept. 30.

EXTREMES, 1952-57.--Water temperatures: Maximum, 92°F July 31,1953, July 27, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 3,100 ppm June 10,1953; minimum daily, 1 ppm on many days during 1952 to 1954, and 1956.

Sediment loads: Maximum daily, 53,000 tons (estimated) July 21, 1954; minimum daily, less than 0.05 ton on many days during 1952 to 1955 and 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Some regulation by Cowan Lake on Cowan Creek.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 69   | 59   | 37   | 32   | 38   | 42   | 50   | 72  | 72   | 74   | 85   | 82    |
| 2       | 66   | 63   | 40   | 32   | 38   | 43   | 48   | 72  | 68   | 80   | 85   | --    |
| 3       | --   | 62   | 41   | --   | 40   | 42   | 43   | 64  | 71   | 78   | --   | 78    |
| 4       | 64   | 61   | 42   | 34   | 41   | 44   | 49   | 55  | 71   | 78   | 80   | --    |
| 5       | 63   | 62   | 46   | 33   | 38   | 45   | 50   | 58  | 74   | 80   | --   | --    |
| 6       | 66   | 60   | --   | 33   | 38   | 46   | 45   | --  | --   | 79   | 83   | --    |
| 7       | --   | --   | 54   | 32   | 40   | 40   | 50   | 66  | --   | --   | --   | --    |
| 8       | 58   | 48   | 50   | 33   | 41   | 39   | 41   | 70  | 68   | 80   | 80   | --    |
| 9       | 58   | 48   | 43   | 34   | 50   | 41   | 46   | 70  | 70   | 80   | 79   | --    |
| 10      | 56   | 56   | 40   | 33   | 46   | 42   | 50   | 74  | 74   | 80   | 80   | 69    |
| 11      | 57   | --   | 42   | 33   | 45   | 51   | 54   | --  | 74   | --   | 75   | --    |
| 12      | 60   | 48   | 44   | 36   | 37   | 54   | 49   | 76  | 75   | 85   | --   | 74    |
| 13      | --   | 51   | 42   | 32   | 40   | --   | 48   | 77  | 75   | 80   | 80   | --    |
| 14      | 62   | 52   | 42   | 32   | 40   | 58   | --   | 73  | --   | 85   | 82   | 68    |
| 15      | 65   | --   | --   | 32   | 38   | 54   | 56   | 75  | 85   | 85   | 83   | 70    |
| 16      | 70   | 48   | 46   | 32   | 39   | 53   | --   | 65  | 82   | 84   | 81   | 70    |
| 17      | 65   | --   | --   | --   | --   | 54   | --   | 68  | 82   | 81   | 83   | 67    |
| 18      | 65   | 41   | 42   | 32   | 40   | 50   | 55   | 69  | --   | 82   | 79   | --    |
| 19      | 64   | --   | 42   | 36   | 38   | 48   | 62   | 69  | 81   | 86   | 80   | --    |
| 20      | 66   | 45   | 44   | 36   | 36   | 46   | --   | 62  | 80   | --   | 77   | 72    |
| 21      | 65   | --   | 48   | 42   | 42   | 47   | 71   | 67  | 81   | --   | 77   | 72    |
| 22      | 63   | --   | 48   | 43   | 41   | --   | 68   | 67  | 79   | 88   | --   | 73    |
| 23      | 66   | --   | 49   | 33   | 43   | 53   | 67   | 69  | --   | 75   | 85   | 66    |
| 24      | --   | --   | 44   | 35   | 46   | 48   | 71   | 69  | 69   | 78   | 72   | 63    |
| 25      | 63   | --   | 39   | 36   | 51   | 44   | 70   | 71  | 75   | 78   | --   | 61    |
| 26      | 58   | 35   | 38   | --   | 51   | 47   | 75   | 73  | 73   | 78   | 76   | 62    |
| 27      | 57   | 33   | 40   | 33   | 42   | 46   | 76   | 66  | 79   | 82   | 81   | 58    |
| 28      | 58   | 37   | 31   | 35   | 39   | 45   | 69   | 67  | 69   | 85   | --   | 55    |
| 29      | 60   | 34   | 33   | 32   | --   | 50   | 71   | 69  | 75   | --   | --   | 60    |
| 30      | --   | 35   | --   | --   | --   | 49   | 74   | 73  | 75   | 87   | 84   | 61    |
| 31      | 62   | --   | 36   | 35   | --   | 52   | --   | 70  | --   | 88   | 81   | --    |
| Average | 61   | --   | 42   | 34   | 41   | 47   | 58   | 69  | 75   | 81   | --   | --    |

## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROACHESTER, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 2.8                   | 8                         | 0.1          | 4.8                   | 16                        | 0.2          | 9.6                   | 9                         | 0.2          |
| 2.....  | 2.8                   | 10                        | .1           | 66                    | 45                        | sb 8         | 8.9                   | 4                         | .1           |
| 3.....  | 2.8                   | 10                        | a.1          | 26                    | 26                        | 1.8          | 8.9                   | 5                         | .1           |
| 4.....  | 3.7                   | 8                         | .1           | 16                    | 21                        | .9           | 8.6                   | 5                         | .1           |
| 5.....  | 4.2                   | 10                        | .1           | 14                    | 18                        | .7           | 8.9                   | 6                         | .1           |
| 6.....  | 10                    | 20                        | .1           | 13                    | 15                        | .5           | 9                     | 35                        | a.8          |
| 7.....  | 6.3                   | 10                        | a.2          | 11                    | 15                        | a.4          | 118                   | 129                       | 41           |
| 8.....  | 4.8                   | 7                         | .1           | 9.3                   | 15                        | .4           | 387                   | 120                       | 125          |
| 9.....  | 4.4                   | 12                        | .1           | 7.6                   | 11                        | .2           | 1,940                 | 950                       | sb 5,400     |
| 10..... | 3.7                   | 12                        | .1           | 6.0                   | 10                        | .2           | 623                   | 163                       | s 326        |
| 11..... | 2.9                   | 12                        | .1           | 5.3                   | 11                        | a.2          | 327                   | 42                        | 37           |
| 12..... | 2.6                   | 15                        | .1           | 5.1                   | 11                        | .2           | 233                   | 24                        | 15           |
| 13..... | 2.3                   | 18                        | a.1          | 4.2                   | 15                        | .2           | 151                   | 19                        | 7.7          |
| 14..... | 2.4                   | 19                        | .1           | 3.9                   | 12                        | .1           | 148                   | 13                        | 5.2          |
| 15..... | 2.5                   | 14                        | .1           | 3.7                   | 10                        | a.1          | 145                   | 12                        | 4.7          |
| 16..... | 2.5                   | 11                        | .1           | 4.2                   | 11                        | .1           | 139                   | 17                        | 6.4          |
| 17..... | 2.5                   | 10                        | .1           | 3.9                   | 10                        | .1           | 128                   | 15                        | 5.2          |
| 18..... | 2.4                   | 8                         | .1           | 4.2                   | 10                        | .1           | 110                   | 10                        | 3.0          |
| 19..... | 1.9                   | 12                        | .1           | 4.2                   | 11                        | a.1          | 97                    | 6                         | 1.6          |
| 20..... | 2.0                   | 17                        | .1           | 4.2                   | 11                        | .1           | 99                    | 7                         | 1.9          |
| 21..... | 2.3                   | 13                        | .1           | 5.6                   | --                        | e 1          | 195                   | 33                        | 17           |
| 22..... | 2.5                   | 12                        | .1           | 14                    | --                        | e 1          | 186                   | 27                        | 14           |
| 23..... | 3.0                   | 14                        | .1           | 18                    | --                        | e 1          | 165                   | 26                        | 12           |
| 24..... | 2.8                   | 15                        | a.1          | 15                    | --                        | e 1          | 156                   | 21                        | 8.8          |
| 25..... | 2.3                   | 15                        | .1           | 12                    | --                        | e 1          | 134                   | 13                        | 4.7          |
| 26..... | 2.8                   | 17                        | .1           | 12                    | 16                        | .5           | 110                   | 9                         | 2.7          |
| 27..... | 3.0                   | 12                        | .1           | 11                    | 12                        | .4           | 104                   | 8                         | 2.2          |
| 28..... | 5.0                   | 13                        | .2           | 10                    | 13                        | .4           | 104                   | 7                         | 2.0          |
| 29..... | 5.1                   | 12                        | .2           | 8.9                   | 12                        | .3           | 113                   | 5                         | 1.5          |
| 30..... | 4.2                   | 15                        | a.2          | 10                    | 17                        | .4           | 104                   | 5                         | a 1          |
| 31..... | 3.9                   | 20                        | .2           | --                    | --                        | --           | 101                   | 5                         | 1.4          |
| Total.  | 106.4                 | --                        | 3.6          | 333.1                 | --                        | 17.1         | 6,170.9               | --                        | 6,048.4      |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| January |                       |                           | February     |                       |                           | March        |                       |                           |              |
| 1.....  | 108                   | 3                         | 0.9          | 223                   | 21                        | 13           | 331                   | 37                        | 33           |
| 2.....  | 89                    | 3                         | .7           | 299                   | 25                        | 20           | 251                   | 25                        | 17           |
| 3.....  | 92                    | 5                         | 1.2          | 255                   | 23                        | 16           | 192                   | 17                        | 8.8          |
| 4.....  | 79                    | 5                         | 1.1          | 311                   | 36                        | 30           | 162                   | 8                         | 3.5          |
| 5.....  | 76                    | 2                         | .4           | 359                   | 48                        | 46           | 142                   | 12                        | 4.6          |
| 6.....  | 60                    | 2                         | .3           | 773                   | 53                        | 111          | 137                   | 12                        | 4.4          |
| 7.....  | 66                    | 4                         | .7           | 376                   | 28                        | 28           | 148                   | 11                        | 4.4          |
| 8.....  | 57                    | 3                         | .5           | 265                   | 17                        | 12           | 145                   | 9                         | 3.5          |
| 9.....  | 94                    | 4                         | 1.0          | 1,610                 | 686                       | s 5,010      | 137                   | 6                         | 2.2          |
| 10..... | 1,630                 | 550                       | sb 2,900     | 1,980                 | 600                       | sb 3,600     | 137                   | 7                         | 2.6          |
| 11..... | 484                   | 81                        | s 117        | 718                   | 113                       | 219          | 131                   | 10                        | 3.5          |
| 12..... | 436                   | 48                        | 56           | 474                   | 48                        | 61           | 134                   | 11                        | 4.0          |
| 13..... | 682                   | 43                        | 79           | 502                   | 53                        | s 77         | 115                   | 11                        | a 3          |
| 14..... | 475                   | 30                        | 38           | 792                   | 52                        | 111          | 106                   | 11                        | 3.1          |
| 15..... | 200                   | 19                        | 10           | 682                   | 33                        | 61           | 101                   | 12                        | 3.3          |
| 16..... | 444                   | 8                         | 9.6          | 211                   | 22                        | 12           | 89                    | 11                        | 2.6          |
| 17..... | 1,150                 | 15                        | a 45         | 162                   | 8                         | 3.5          | 82                    | 10                        | 2.2          |
| 18..... | 1,420                 | 33                        | 126          | 139                   | 8                         | 3.0          | 79                    | 9                         | 1.9          |
| 19..... | 625                   | 28                        | 47           | 145                   | 9                         | 3.5          | 92                    | 12                        | 3.0          |
| 20..... | 92                    | 11                        | 2.7          | 263                   | 37                        | 26           | 92                    | 13                        | 3.2          |
| 21..... | 118                   | 8                         | 2.5          | 556                   | 29                        | 44           | 74                    | 10                        | 2.0          |
| 22..... | 1,200                 | 331                       | s 1,790      | 524                   | 19                        | 27           | 71                    | 8                         | a 2          |
| 23..... | 1,570                 | 329                       | s 1,700      | 147                   | 15                        | 6.0          | 71                    | 7                         | 1.3          |
| 24..... | 702                   | 64                        | s 134        | 94                    | 8                         | 2.0          | 57                    | 6                         | .9           |
| 25..... | 649                   | 28                        | 49           | 89                    | 11                        | 2.6          | 57                    | 6                         | .9           |
| 26..... | 180                   | 23                        | 11           | 878                   | 371                       | s 1,310      | 87                    | 4                         | .9           |
| 27..... | 145                   | 16                        | 6.3          | 1,540                 | 287                       | 1,190        | 123                   | 4                         | 1.3          |
| 28..... | 137                   | 13                        | 4.8          | 703                   | 86                        | s 176        | 110                   | 3                         | .9           |
| 29..... | 198                   | 17                        | 9.1          | --                    | --                        | --           | 104                   | 2                         | .6           |
| 30..... | 192                   | 19                        | 9.8          | --                    | --                        | --           | 97                    | 2                         | .5           |
| 31..... | 162                   | 18                        | 7.9          | --                    | --                        | --           | 84                    | 3                         | .7           |
| Total.  | 13,612                | --                        | 7,161.5      | 15,070                | --                        | 12,220.6     | 3,738                 | --                        | 125.8        |

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROACHESTER, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 273                  | --                       | e600         | 91                   | 7                        | 1.7          | 2,130                | --                       | e9,000       |
| 2.....  | 1,030                | --                       | e1,900       | 79                   | 6                        | 1.3          | 1,110                | --                       | e2,500       |
| 3.....  | 630                  | 135                      | sb380        | 74                   | 5                        | 1.0          | 368                  | 105                      | 104          |
| 4.....  | 7,160                | 1,020                    | 19,700       | 65                   | 5                        | .9           | 224                  | 40                       | 24           |
| 5.....  | 4,310                | 495                      | s6,200       | 57                   | 8                        | 1.2          | 167                  | 25                       | 11           |
| 6.....  | 1,420                | 252                      | s1,060       | 52                   | 8                        | a1           | 136                  | 20                       | a7           |
| 7.....  | 610                  | 110                      | 181          | 47                   | 5                        | .6           | 158                  | 120                      | sb160        |
| 8.....  | 2,380                | 452                      | s3,700       | 45                   | 6                        | .7           | 404                  | 990                      | sbl,200      |
| 9.....  | 1,760                | 196                      | s1,060       | 43                   | 10                       | 1.2          | 159                  | 334                      | 143          |
| 10..... | 688                  | 87                       | 162          | 42                   | 10                       | 1.1          | 126                  | 139                      | 47           |
| 11..... | 391                  | 52                       | 55           | 40                   | 7                        | a.8          | 154                  | 92                       | 38           |
| 12..... | 257                  | 42                       | 29           | 39                   | 6                        | .6           | 117                  | 84                       | 26           |
| 13..... | 188                  | 33                       | 17           | 38                   | 6                        | .6           | 93                   | 68                       | 17           |
| 14..... | 151                  | 24                       | 9.8          | 40                   | 7                        | .8           | 79                   | 45                       | a10          |
| 15..... | 126                  | 22                       | 7.5          | 54                   | 8                        | 1.2          | 75                   | 30                       | 6.1          |
| 16..... | 115                  | 18                       | 5.6          | 54                   | 8                        | 1.2          | 65                   | 47                       | 8.2          |
| 17..... | 233                  | 64                       | s182         | 49                   | 11                       | 1.4          | 52                   | 45                       | 6.3          |
| 18..... | 3,280                | 811                      | s8,680       | 53                   | --                       | e55          | 44                   | 30                       | a4           |
| 19..... | 970                  | 82                       | s236         | 207                  | 1,210                    | 676          | 65                   | 32                       | 5.6          |
| 20..... | 450                  | 43                       | 52           | 404                  | --                       | e470         | 47                   | 26                       | 3.3          |
| 21..... | 325                  | 108                      | 95           | 430                  | 160                      | 186          | 33                   | 23                       | 2.0          |
| 22..... | 231                  | 78                       | 49           | 3,740                | 1,700                    | sb23,000     | 27                   | 17                       | 1.2          |
| 23..... | 628                  | 271                      | 460          | 1,190                | 127                      | s463         | 26                   | 17                       | a1           |
| 24..... | 378                  | 84                       | 86           | 455                  | 47                       | 58           | 2,530                | 1,100                    | sb13,000     |
| 25..... | 249                  | 37                       | 25           | 257                  | 33                       | 23           | 910                  | 140                      | 344          |
| 26..... | 179                  | 25                       | 12           | 482                  | 230                      | sb320        | 342                  | 80                       | 74           |
| 27..... | 138                  | 24                       | 8.9          | 292                  | 89                       | 70           | 200                  | 25                       | 14           |
| 28..... | 124                  | 14                       | 4.7          | 185                  | 40                       | 20           | 916                  | --                       | e5,500       |
| 29..... | 121                  | 15                       | 4.9          | 143                  | 27                       | 10           | 1,670                | --                       | e3,800       |
| 30..... | 106                  | 12                       | 3.4          | 117                  | 20                       | 6.3          | 652                  | 125                      | 220          |
| 31..... | --                   | --                       | --           | 208                  | 95                       | s313         | --                   | --                       | --           |
| Total.  | 28,901               | --                       | 44,965.8     | 9,072                | --                       | 25,687.6     | 13,079               | --                       | 36,276.7     |
|         | July                 |                          |              | August               |                          |              | September            |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....  | 342                  | 62                       | s61          | 16                   | 27                       | 1.2          | 0.6                  | 21                       | (t)          |
| 2.....  | 210                  | 27                       | 15           | 14                   | 22                       | .8           | .6                   | 24                       | (t)          |
| 3.....  | 151                  | 48                       | 20           | 38                   | --                       | e10          | 1.0                  | 19                       | 0.1          |
| 4.....  | 119                  | 48                       | 15           | 24                   | 35                       | sb3          | 1.3                  | 16                       | e.1          |
| 5.....  | 138                  | 40                       | 15           | 12                   | 20                       | a.6          | 1.6                  | 15                       | e.1          |
| 6.....  | 112                  | 27                       | 8.2          | 9.6                  | 17                       | .4           | 1.7                  | 14                       | e.1          |
| 7.....  | 101                  | 25                       | a7           | 7.7                  | 15                       | a.3          | 1.8                  | 16                       | e.1          |
| 8.....  | 72                   | 31                       | 6.0          | 6.2                  | 13                       | .2           | 2.3                  | 15                       | e.1          |
| 9.....  | 56                   | 27                       | 4.1          | 5.2                  | 12                       | .2           | 1.9                  | 15                       | e.1          |
| 10..... | 46                   | 28                       | 3.5          | 4.5                  | 12                       | .1           | 5.0                  | 15                       | .2           |
| 11..... | 37                   | 30                       | a3           | 5.2                  | 13                       | .2           | 20                   | --                       | e4           |
| 12..... | 31                   | 31                       | 2.6          | 5.7                  | 17                       | a.3          | 12                   | 32                       | 1.0          |
| 13..... | 27                   | 27                       | 2.0          | 41                   | --                       | e11          | 84                   | 95                       | sb45         |
| 14..... | 25                   | 27                       | 1.8          | 13                   | 26                       | .9           | 131                  | 95                       | sb40         |
| 15..... | 23                   | 27                       | 1.7          | 6.5                  | 19                       | .3           | 46                   | 64                       | 7.9          |
| 16..... | 21                   | 25                       | 1.4          | 4.5                  | 17                       | .2           | 25                   | 49                       | 3.3          |
| 17..... | 19                   | 27                       | 1.4          | 3.8                  | 25                       | .2           | 16                   | 34                       | 1.5          |
| 18..... | 16                   | 21                       | .9           | 3.3                  | 25                       | .2           | 11                   | 20                       | a.6          |
| 19..... | 14                   | 15                       | .6           | 3.0                  | 22                       | .2           | 8.9                  | 16                       | a.4          |
| 20..... | 12                   | 13                       | a.4          | 2.4                  | 22                       | .1           | 6.8                  | 15                       | .3           |
| 21..... | 11                   | 17                       | .5           | 1.9                  | 21                       | .1           | 28                   | 25                       | sb3          |
| 22..... | 9.9                  | 16                       | .4           | 1.9                  | 20                       | a.1          | 40                   | 30                       | 3.2          |
| 23..... | 893                  | --                       | e2,300       | 1.6                  | 20                       | .1           | 24                   | 23                       | 1.5          |
| 24..... | 586                  | 225                      | s419         | 1.4                  | 25                       | .1           | 18                   | 21                       | 1.0          |
| 25..... | 185                  | 68                       | 34           | 1.4                  | 30                       | a.1          | 13                   | 18                       | .6           |
| 26..... | 93                   | 43                       | 11           | 1.3                  | 30                       | .1           | 9.6                  | 18                       | .5           |
| 27..... | 56                   | 44                       | 6.6          | 1.0                  | 27                       | .1           | 6.5                  | 18                       | .3           |
| 28..... | 38                   | 44                       | 4.5          | .8                   | 25                       | a.1          | 5.0                  | 14                       | .2           |
| 29..... | 32                   | 40                       | a3           | .8                   | 25                       | a.1          | 4.5                  | 10                       | .1           |
| 30..... | 24                   | 38                       | 2.5          | .8                   | 26                       | .1           | 4.0                  | 2                        | (t)          |
| 31..... | 19                   | 28                       | 1.4          | .6                   | 23                       | (t)          | --                   | --                       | --           |
| Total.  | 3,518.9              | --                       | 2,953.8      | 239.1                | --                       | 31.4         | 531.1                | --                       | 115.4        |

Total discharge for year (cfs-days)..... 94,371.5

Total load for year (tons)..... 135,607.7

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

b Computed from partly estimated concentration graph.

t Less than 0.05 ton.

## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROCHESTER, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipet; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Dec. 9, 1956.....  | 12:45 p.m. | 2,550           |                        | 998                           | 1,780                                      | 39                                                | 52    | 68    | 80    | 93    | 96    | 97    | 98    |       | 100   | --                  | SBWCM |
| Jan. 10, 1957..... | 2:30 p.m.  | 1,560           |                        | 581                           | 927                                        | 46                                                | 61    | 76    | 90    | 94    | 96    | 96    | 97    |       | 100   | --                  | SBWCM |
| Jan. 22.....       | 6:50 p.m.  | 2,650           |                        | 614                           | 1,100                                      | 38                                                | 50    | 61    | 78    | 86    | 92    | 93    | 96    |       | 100   | --                  | SBWCM |
| Jan. 23.....       | 2:30 p.m.  | 1,080           |                        | 238                           | 442                                        | 49                                                | 60    | 74    | 89    | 95    | 96    | 98    | 100   |       | --    | --                  | SBWCM |
| Feb. 9.....        | 4:50 p.m.  | 3,350           |                        | 2,480                         | 2,060                                      | 41                                                | 52    | 67    | 84    | 92    | 98    | 98    | 99    |       | 100   | --                  | SBWCM |
| Feb. 9.....        | 4:50 p.m.  | 3,350           |                        | 2,480                         | 2,130                                      | 21                                                | 31    | 47    | 75    | 90    | 96    | 97    | 98    |       | 99    | 100                 | SBNM  |
| Feb. 26.....       | 5:30 p.m.  | 1,860           |                        | 625                           | 925                                        | 41                                                | 52    | 65    | 78    | 88    | 96    | 98    | 99    |       | 100   | --                  | SBWCM |
| Apr. 4.....        | 5:30 p.m.  | 9,050           |                        | 1,110                         | 1,440                                      | 40                                                | 50    | 61    | 73    | 81    | 93    | 96    | 98    |       | 100   | --                  | SBWCM |
| Apr. 4.....        | 5:30 p.m.  | 9,050           |                        | 1,110                         | 1,220                                      | 25                                                | 39    | 58    | 74    | 85    | 92    | 95    | 98    |       | 100   | --                  | SBNM  |
| Apr. 5.....        | 4:20 p.m.  | 3,050           |                        | 338                           | 775                                        | 39                                                | 47    | 56    | 68    | 77    | 88    | 91    | 94    |       | 99    | 100                 | SBWCM |
| Apr. 8.....        | 5:20 p.m.  | 4,250           |                        | 818                           | 1,140                                      | 36                                                | 44    | 52    | 61    | 68    | 80    | 82    | 85    |       | 93    | 100                 | SBWCM |
| Apr. 18.....       | 2:45 a.m.  | 4,030           |                        | 1,560                         | 2,130                                      | 33                                                | 40    | 50    | 59    | 66    | 84    | 87    | 89    |       | 96    | 100                 | SBWCM |
| May 19.....        | 5:50 a.m.  | 224             |                        | 2,080                         | 1,660                                      | 48                                                | 62    | 80    | 93    | 97    | 99    | 100   | --    |       | --    | --                  | SBWCM |
| May 20.....        | 6:20 p.m.  | 610             |                        | 432                           | 446                                        | 58                                                | 74    | 85    | 94    | 96    | 98    | 99    | 100   |       | --    | --                  | SBWCM |
| May 22.....        | 5:15 a.m.  | 1,770           |                        | 2,320                         | 3,600                                      | 35                                                | 46    | 60    | 77    | 81    | 98    | 99    | 100   |       | --    | --                  | SBWCM |
| June 8.....        | 6:00 p.m.  | 227             |                        | 702                           | 1,060                                      | 62                                                | 80    | 93    | 98    | 99    | 99    | 100   | --    |       | --    | --                  | SBWCM |
| June 24.....       | 1:45 p.m.  | 4,360           |                        | 1,340                         | 1,190                                      | 37                                                | 50    | 65    | 85    | 92    | 96    | 97    | 98    |       | 99    | 100                 | SBWCM |
| June 28.....       | 6:50 p.m.  | 1,610           |                        | 1,320                         | 1,100                                      | 41                                                | 55    | 69    | 88    | 96    | 99    | 99    | 99    |       | 100   | --                  | SBWCM |
| July 23.....       | 4:15 p.m.  | 1,320           |                        | 1,100                         | 987                                        | 50                                                | 65    | 82    | 95    | 99    | 99    | 100   | --    |       | --    | --                  | SBWCM |



## LICKING RIVER BASIN

## LICKING RIVER AT FARMERS, KY.

LOCATION.--Temperature recorder at gaging station near bridge on U. S. Highway 60, 300 feet upstream from Chesapeake and Ohio Railway bridge, three-quarters of a mile west of Farmers, Rowan County, and 1.1 miles upstream from Triplett Creek.  
DRAINAGE AREA.--826 square miles.  
RECORDS AVAILABLE.--Chemical analyses: September 1949 to August 1950.

Water temperatures: October 1949 to September 1957. Average of twice-daily to September 1953; continuous recording thereafter.  
EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F on several days during August; minimum, 36°F Jan. 19-22.

EXTREMES, 1949-57.--Water temperatures: Maximum, 92°F July 19, 1951; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1.....       | 64      | 63  | 59       | 38  | 38       | 42  | 42      | 45  | 45       | 49  | 49    | 49  | 50    | 49  | 68  | 67  | 71   | 70  | 79   | 76  | 83     | 82  | 82        | 76 |
| 2.....       | 65      | 64  | 59       | 38  | 38       | 42  | 41      | 45  | 44       | 47  | 47    | 47  | 51    | 50  | 68  | 67  | 71   | 70  | 80   | 77  | 83     | 82  | 81        | 77 |
| 3.....       | 65      | 65  | 58       | 37  | 41       | 38  | 41      | 39  | 44       | 47  | 45    | 45  | 52    | 51  | 68  | 66  | 70   | 68  | 80   | 76  | 84     | 83  | 80        | 79 |
| 4.....       | 65      | 65  | 57       | 41  | 41       | 39  | 39      | 45  | 44       | 45  | 44    | 44  | 52    | 52  | 66  | 63  | 70   | 69  | 81   | 79  | 84     | 84  | 79        | 76 |
| 5.....       | 65      | 65  | 57       | 42  | 41       | 39  | 39      | 46  | 45       | 45  | 44    | 44  | 53    | 52  | 64  | 60  | 70   | 70  | 82   | 79  | 84     | 82  | 76        | 72 |
| 6.....       | 65      | 65  | 57       | 37  | 45       | 42  | 39      | 39  | 46       | 46  | 44    | 44  | 53    | 53  | 60  | 58  | 71   | 70  | 81   | 78  | 82     | 78  | 75        | 70 |
| 7.....       | 65      | 64  | 57       | 37  | 47       | 45  | 39      | 39  | 46       | 46  | 44    | 44  | 53    | 52  | 61  | 58  | 72   | 70  | 82   | 78  | 80     | 76  | 74        | 71 |
| 8.....       | 64      | 61  | 57       | 55  | 48       | 47  | 39      | 39  | 46       | 46  | 44    | 44  | 53    | 52  | 62  | 59  | 74   | 71  | 82   | 80  | 79     | 75  | 73        | 69 |
| 9.....       | 61      | 59  | 55       | 52  | 48       | 47  | 41      | 39  | 48       | 46  | 44    | 43  | 53    | 53  | 63  | 61  | 74   | 72  | 81   | 81  | 79     | 76  | 76        | 72 |
| 10.....      | 60      | 58  | 52       | 51  | 47       | 46  | 44      | 41  | 50       | 48  | 43    | 43  | 53    | 51  | 64  | 63  | 73   | 70  | 81   | 80  | 82     | 77  | 77        | 75 |
| 11.....      | 58      | 56  | 51       | 50  | 46       | 45  | 44      | 50  | 50       | 45  | 43    | 43  | 53    | 52  | 65  | 64  | 70   | 69  | 80   | 79  | 80     | 79  | 78        | 73 |
| 12.....      | 57      | 55  | 52       | 51  | 46       | 46  | 45      | 44  | 51       | 49  | 45    | 45  | 53    | 53  | 67  | 65  | 72   | 70  | 80   | 79  | 82     | 78  | 77        | 76 |
| 13.....      | 58      | 56  | 52       | 49  | 46       | 46  | 44      | 43  | 49       | 47  | 50    | 49  | 53    | 53  | 68  | 67  | 73   | 72  | 80   | 80  | 84     | 79  | 77        | 77 |
| 14.....      | 58      | 57  | 50       | 48  | 47       | 46  | 43      | 42  | 47       | 46  | 51    | 50  | 53    | 52  | 68  | 68  | 75   | 73  | 80   | 79  | 82     | 80  | 77        | 77 |
| 15.....      | 59      | 58  | 52       | 49  | 47       | 47  | 42      | 41  | 46       | 45  | 52    | 51  | 52    | 52  | 71  | 68  | 77   | 75  | 81   | 80  | 84     | 81  | 77        | 77 |
| 16.....      | 59      | 58  | 52       | 48  | 47       | 46  | 41      | 39  | 45       | 45  | 52    | 52  | 52    | 52  | 70  | 68  | 78   | 76  | 81   | 81  | 84     | 81  | 77        | 77 |
| 17.....      | 59      | 58  | 52       | 49  | 48       | 48  | 39      | 37  | 45       | 45  | 52    | 52  | 52    | 52  | 68  | 66  | 79   | 78  | 81   | 81  | 82     | 79  | 77        | 76 |
| 18.....      | 58      | 58  | 49       | 46  | 48       | 48  | 37      | 37  | 45       | 44  | 52    | 52  | 54    | 52  | 70  | 68  | 79   | 79  | 81   | 80  | 80     | 75  | 76        | 76 |
| 19.....      | 59      | 58  | 46       | 44  | 48       | 47  | 37      | 36  | 44       | 44  | 52    | 52  | 57    | 54  | 70  | 68  | 81   | 79  | 82   | 81  | 79     | 74  | 76        | 76 |
| 20.....      | 60      | 59  | 45       | 45  | 47       | 47  | 36      | 36  | 44       | 43  | 52    | 51  | 61    | 57  | 68  | 67  | 80   | 77  | 82   | 82  | 79     | 78  | 76        | 76 |
| 21.....      | 60      | 60  | 47       | 45  | 48       | 47  | 36      | 36  | 43       | 42  | 51    | 49  | 63    | 61  | 67  | 66  | 80   | 76  | 82   | 82  | 79     | 77  | 77        | 76 |
| 22.....      | 61      | 60  | 47       | 44  | 50       | 48  | 42      | 36  | 42       | 41  | 50    | 50  | 64    | 63  | 67  | 66  | 80   | 78  | 82   | 82  | 78     | 74  | 77        | 77 |
| 23.....      | 61      | 61  | 44       | 42  | 50       | 50  | 45      | 42  | 42       | 42  | 50    | 49  | 64    | 64  | 66  | 64  | 80   | 78  | 82   | 82  | 78     | 73  | 77        | 76 |
| 24.....      | 61      | 61  | 42       | 40  | 50       | 50  | 45      | 44  | 43       | 42  | 50    | 49  | 64    | 64  | 64  | 64  | 80   | 78  | 82   | 80  | 76     | 73  | 76        | 75 |
| 25.....      | 61      | 60  | 40       | 39  | 50       | 49  | 44      | 43  | 45       | 43  | 50    | 50  | 65    | 64  | 66  | 64  | 78   | 76  | 81   | 79  | 77     | 75  | 73        | 73 |
| 26.....      | 60      | 60  | 39       | 39  | 50       | 47  | 43      | 42  | 48       | 45  | 50    | 50  | 67    | 65  | 68  | 66  | 78   | 75  | 80   | 79  | 78     | 73  | 73        | 73 |
| 27.....      | 60      | 58  | 39       | 39  | 49       | 46  | 42      | 42  | 49       | 48  | 50    | 50  | 68    | 67  | 68  | 68  | 78   | 76  | 79   | 79  | 78     | 73  | 72        | 72 |
| 28.....      | 58      | 56  | 39       | 38  | 46       | 45  | 42      | 42  | 49       | 49  | 50    | 50  | 68    | 68  | 68  | 68  | 76   | 76  | 81   | 79  | 81     | 75  | 73        | 70 |
| 29.....      | 57      | 56  | 38       | 38  | 45       | 44  | 44      | 42  | --       | --  | 50    | 48  | 68    | 68  | 68  | 68  | 79   | 76  | 81   | 80  | 81     | 76  | 70        | 70 |
| 30.....      | 58      | 57  | 38       | 38  | 44       | 44  | 44      | 42  | --       | --  | 49    | 47  | 68    | 67  | 70  | 68  | 79   | 78  | 81   | 80  | 81     | 76  | 70        | 69 |
| 31.....      | 59      | 58  | --       | --  | 43       | 43  | 45      | 45  | --       | --  | 49    | 48  | --    | --  | 70  | 69  | --   | --  | 82   | 81  | 81     | 76  | --        | -- |
| Average..... | 61      | 60  | 49       | 48  | 46       | 45  | 42      | 40  | 46       | 45  | 49    | 48  | 56    | 56  | 65  | 65  | 76   | 74  | 81   | 80  | 81     | 77  | 76        | 74 |

LICKING RIVER BASIN--Continued  
LICKING RIVER AT MCKINNEYSBURG, KY.

LOCATION.--At gaging station at county highway bridge at McKinneysburg, Pendleton County, 6.5 miles southeast of Falmouth, 9.0 miles upstream from Blanket Creek, and 12.8 miles upstream from South Fork.

DRAINAGE AREA.--2,280 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1957.

Water temperatures: October 1952 to September 1957.

Sediment records: October 1952 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 198 ppm July 2-4; minimum, 72 ppm Jan. 31 to Feb. 6.

Hardness: Maximum, 152 ppm July 2-4; minimum, 49 ppm Dec. 17-20.

Specific conductance: Maximum daily, 353 micromhos Aug. 18; minimum daily, 103 micromhos Dec. 18.

Water temperatures: Maximum daily, 72° minimum, freezing point Jan. 19, 20.

Sediment concentrations: Maximum daily, 2,800 ppm June 24; minimum daily, 3 ppm Oct. 13.

Sediment loads: Maximum daily, 170,000 tons Feb. 10; minimum daily, 1 ton on several days during October, and August to September.

EXTREMES, 1952-57.--Dissolved solids: Maximum, 218 ppm Dec. 21-21, 1955; minimum, 57 ppm Apr. 16-17, 1953.

Hardness: Maximum, 170 ppm Nov. 17-30, 1955; minimum, 42 ppm Mar. 8-12, 1955.

Specific conductance: Maximum daily, 377 micromhos Nov. 25, 1955; minimum daily, 90 micromhos Mar. 9, 1953.

Water temperatures: Maximum daily, 71° minimum, freezing point, on many days during winter months.

Sediment concentrations: Maximum daily, 4,230 ppm Feb. 25, 1956; minimum daily, 1 ppm on many days during 1952 to 1956.

Sediment loads: Maximum daily, 223,000 tons Feb. 25, 1956; minimum daily, less than 0.5 ton on many days during 1952 to 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|---------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-26, 1956     | 104                  | --                         | --        | 42           | 8.5            | 5.1         |               | 143                             | 21                         | 8.0           | --           | 1.0                        | 169                                                | 140                           | 23            | 294                                       | 7.4 | 1     |
| Oct. 27-Nov. 5      | 440                  | --                         | --        | 44           | 7.3            | 9.9         |               | 150                             | 18                         | 14            | --           | .5                         | 191                                                | 140                           | 17            | 322                                       | 7.7 | 4     |
| Nov. 6-21           | 223                  | --                         | --        | 30           | 5.6            | 9.7         |               | 110                             | 19                         | 11            | --           | --                         | 146                                                | 98                            | 13            | 239                                       | 7.4 | 6     |
| Nov. 22-Dec. 10, 12 | 1,113                | --                         | --        | 36           | 6.8            | 7.8         |               | 115                             | 23                         | 11            | --           | 2.0                        | 162                                                | 118                           | 24            | 274                                       | 7.4 | 10    |
| Dec. 13-16          | 12,130               | --                         | --        | 31           | 4.3            | 3.2         |               | 94                              | 17                         | 3.0           | --           | 4.6                        | 140                                                | 95                            | 18            | 202                                       | 7.3 | 20    |
| Dec. 17-20          | 14,780               | 10                         | 0.19      | 14           | 3.4            | 1.7         | 2.1           | 42                              | 14                         | 2.9           | 0.3          | 2.3                        | 92                                                 | 49                            | 14            | 117                                       | 7.1 | 25    |
| Dec. 21-31          | 6,836                | --                         | --        | 25           | 5.1            | 4.8         |               | 81                              | 20                         | 3.2           | --           | 2.6                        | 123                                                | 84                            | 17            | 185                                       | 7.5 | 20    |
| Jan. 1-4, 11, 1957  | 3,741                | --                         | --        | 17           | 6.6            | 4.6         |               | 105                             | 22                         | 5.5           | --           | 3.2                        | 145                                                | 110                           | 24            | 234                                       | 7.5 | 12    |
| Jan. 12-14          | 10,150               | --                         | --        | 17           | 3.8            | 3.0         |               | 32                              | 16                         | 2.4           | --           | 2.4                        | 97                                                 | 58                            | 16            | 135                                       | 7.2 | 5     |
| Jan. 19-24          | 3,958                | --                         | --        | 32           | 3.4            | 3.7         |               | 100                             | 20                         | 3.0           | --           | 3.7                        | 140                                                | 102                           | 20            | 219                                       | 7.6 | 7     |
| Jan. 25-27, 29-30   | 10,460               | --                         | --        | 23           | 3.8            | 3.7         |               | 69                              | 17                         | 2.9           | --           | 3.4                        | 94                                                 | 73                            | 16            | 157                                       | 7.3 | 6     |
| Jan. 31-Feb. 6      | 15,260               | --                         | --        | 18           | 3.5            | 1.8         |               | 52                              | 16                         | 2.2           | --           | 2.1                        | 72                                                 | 60                            | 17            | 128                                       | 7.5 | 10    |
| Feb. 7-11           | 13,800               | --                         | --        | 26           | 3.7            | 3.2         |               | 80                              | 16                         | 2.2           | --           | 2.8                        | 104                                                | 80                            | 14            | 172                                       | 7.5 | 7     |
| Feb. 12-16          | 13,560               | --                         | --        | 38           | 3.8            | 2.1         |               | 54                              | 16                         | 2.3           | --           | 1.9                        | 79                                                 | 60                            | 16            | 134                                       | 7.1 | 9     |
| Feb. 17-Mar. 8      | 2,470                | --                         | --        | 30           | 6.4            | 2.8         |               | 96                              | 20                         | 4.1           | --           | 1.36                       | 126                                                | 102                           | 23            | 212                                       | 7.6 | 3     |
| Mar. 10-17, 19-29   | 3,067                | --                         | --        | 28           | 6.2            | 3.9         |               | 90                              | 22                         | 4.2           | --           | 1.4                        | 121                                                | 96                            | 22            | 207                                       | 7.7 | 4     |
| Mar. 30-Apr. 3      | 3,094                | --                         | --        | 29           | 6.7            | 4.8         |               | 95                              | 24                         | 4.6           | --           | 2.1                        | 133                                                | 100                           | 22            | 219                                       | 7.6 | 10    |
| Apr. 4-13           | 15,060               | --                         | --        | 23           | 3.7            | 3.0         |               | 70                              | 17                         | 1.9           | --           | 2.1                        | 102                                                | 72                            | 15            | 156                                       | 7.4 | 4     |

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Apr. 14-24, 1957.....        | 2,808                | --                         | --        | 26           | 5.8            | 4.4         |               | 84                              | 22                         | 4.0           | --           | 1.0                        | 115                                                | 89                            | 20            | 194                                       | 7.6 | 2     |
| Apr. 25-May 15.....          | 1,142                | --                         | --        | 25           | 5.9            | 6.0         |               | 84                              | 21                         | 5.5           | --           | --                         | 115                                                | 86                            | 18            | 186                                       | 7.4 | 5     |
| May 16-24.....               | 3,348                | --                         | --        | 34           | 6.1            | 4.1         |               | 109                             | 21                         | 4.0           | --           | 2.3                        | 144                                                | 110                           | 20            | 222                                       | 7.5 | 20    |
| May 25-June 7.....           | 1,392                | --                         | --        | 34           | 5.8            | 2.1         |               | 107                             | 20                         | 2.0           | --           | --                         | 140                                                | 109                           | 22            | 211                                       | 7.5 | 18    |
| June 8-23.....               | 635                  | 8.2                        | 0.02      | 34           | 5.8            | 6.1         | 2.2           | 107                             | 19                         | 10            | 0.1          | 2.0                        | 147                                                | 109                           | 22            | 249                                       | 7.8 | 9     |
| June 24-25.....              | 6,705                | --                         | --        | 26           | 2.2            | 5.1         |               | 80                              | 12                         | 3.5           | --           | 2.3                        | 112                                                | 74                            | 8             | 171                                       | 7.1 | --    |
| June 26-July 1.....          | 2,113                | --                         | --        | 41           | 4.2            | 3.7         |               | 124                             | 17                         | 2.5           | --           | 5.7                        | 160                                                | 119                           | 18            | 254                                       | 7.4 | 15    |
| July 2-4.....                | 462                  | --                         | --        | 51           | 6.0            | 3.9         |               | 160                             | 18                         | 4.5           | --           | 5.0                        | 198                                                | 152                           | 20            | 314                                       | 7.7 | 7     |
| July 5-8.....                | 2,871                | --                         | --        | 32           | 4.4            | 2.8         |               | 102                             | 13                         | 3.0           | --           | 4.0                        | 130                                                | 98                            | 14            | 212                                       | 7.1 | 23    |
| July 10-30.....              | 185                  | --                         | --        | 44           | 6.3            | 3.9         |               | 143                             | 19                         | 4.0           | --           | 2.7                        | 173                                                | 136                           | 19            | 284                                       | 7.5 | 11    |
| July 31-Aug. 18, 20-21.....  | 74.4                 | --                         | --        | 39           | 9.7            | 6.9         |               | 146                             | 20                         | 8.0           | --           | 1.0                        | 185                                                | 138                           | 18            | 285                                       | 7.1 | 7     |
| Aug. 22-Sept. 11.....        | 18.8                 | 4.0                        | .05       | 40           | 6.8            | 5.3         | 3.1           | 137                             | 17                         | 7.0           | --           | .1                         | 156                                                | 128                           | 16            | 267                                       | 7.2 | 6     |
| Sept. 12-30.....             | a 149                | --                         | --        | 29           | 9.5            | 6.0         |               | 109                             | 14                         | 14            | --           | 1.0                        | 140                                                | 112                           | 22            | 242                                       | 7.2 | 7     |
| Time-weighted average b..... | 2,999                | --                         | --        | 33           | 6.4            | 5.2         |               | 108                             | 19                         | 6.3           | --           | 1.8                        | 141                                                | 109                           | 20            | 233                                       | --  | 8     |

a Estimated.

b Represents 87 percent of days and 97 percent of runoff.

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 64   | 58   | 36   | 37   | 42   | 40   | 48   | 68  | 69   | 72   | 79   | 78    |
| 2       | 65   | 57   | 37   | --   | 41   | 43   | 49   | 67  | 66   | 73   | 81   | 79    |
| 3       | 65   | 57   | 38   | --   | 42   | 42   | 50   | 65  | 67   | 72   | 82   | 77    |
| 4       | 64   | 57   | 39   | 38   | 43   | 40   | 48   | 63  | 68   | 76   | 82   | 76    |
| 5       | 63   | 58   | 40   | 35   | 42   | 41   | 51   | 60  | 70   | 71   | 81   | 74    |
| 6       | 64   | 59   | 42   | 37   | 44   | 42   | 51   | 58  | 71   | 72   | 75   | 71    |
| 7       | 63   | 56   | 44   | 37   | 44   | 41   | 52   | 60  | 72   | 73   | 73   | 68    |
| 8       | 62   | 55   | 47   | 35   | 46   | 34   | 51   | 68  | 70   | 75   | 74   | 66    |
| 9       | 60   | 50   | 45   | 37   | 48   | --   | 50   | 69  | 68   | 76   | 75   | 70    |
| 10      | 60   | 49   | 44   | 39   | 48   | 40   | 48   | 65  | 72   | 78   | 76   | 71    |
| 11      | 56   | 50   | --   | 38   | 46   | 41   | 50   | 66  | 73   | 78   | 78   | 70    |
| 12      | 57   | 51   | 44   | 39   | 46   | 44   | 49   | 68  | 70   | 76   | 75   | 73    |
| 13      | 57   | 47   | --   | 40   | 45   | 45   | 48   | 69  | 71   | 78   | 76   | 73    |
| 14      | 58   | 46   | --   | 36   | 44   | 47   | 49   | 70  | 74   | 78   | 78   | 72    |
| 15      | 58   | 49   | --   | --   | 42   | 49   | 50   | 71  | 75   | 80   | 79   | 73    |
| 16      | 59   | 50   | --   | --   | 41   | 48   | 50   | 68  | 77   | 79   | 80   | 72    |
| 17      | 60   | 45   | 48   | --   | 40   | 51   | 51   | 65  | 79   | 82   | 77   | 68    |
| 18      | 60   | 47   | 47   | --   | 39   | --   | 52   | 69  | 80   | 80   | 74   | 70    |
| 19      | 61   | 45   | 46   | 32   | 40   | 52   | 54   | 70  | 80   | 82   | --   | 72    |
| 20      | 62   | 45   | 48   | 32   | 38   | 48   | 56   | 66  | 76   | 83   | 72   | 73    |
| 21      | 63   | 46   | 48   | 34   | 37   | 49   | 60   | 65  | 78   | 83   | 73   | 74    |
| 22      | 63   | 42   | 50   | 36   | 38   | 48   | 64   | 66  | 77   | 84   | 71   | 75    |
| 23      | 64   | 45   | 51   | 38   | 40   | 46   | 63   | 67  | 79   | 82   | 73   | 70    |
| 24      | 62   | 40   | 50   | 36   | 42   | 49   | 66   | 68  | 70   | 78   | 74   | 71    |
| 25      | 61   | 38   | 48   | 40   | 43   | 47   | 67   | 66  | 69   | 76   | 74   | 66    |
| 26      | 60   | 38   | 46   | 40   | 45   | 47   | 67   | 67  | 68   | 75   | 76   | 67    |
| 27      | 57   | 37   | 46   | 39   | 44   | 46   | 66   | 65  | 70   | 77   | 78   | 65    |
| 28      | 55   | 35   | 44   | --   | 42   | 45   | 68   | 63  | 73   | 78   | 76   | 62    |
| 29      | 54   | 36   | 40   | 40   | --   | 45   | 69   | 66  | 69   | 78   | 77   | 61    |
| 30      | 56   | 35   | 38   | 38   | --   | 47   | 68   | 67  | 71   | 79   | 76   | 63    |
| 31      | 59   | --   | 40   | 40   | --   | 50   | --   | 68  | --   | 80   | 78   | --    |
| Average | 60   | 47   | 44   | --   | 42   | 47   | 56   | 66  | 72   | 78   | 76   | 71    |

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                                                     |              | November              |                                                     |              | December              |                                                     |              |
|---------|-----------------------|-----------------------------------------------------|--------------|-----------------------|-----------------------------------------------------|--------------|-----------------------|-----------------------------------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day |
| 1.....  | 125                   | 24                                                  | 8            | 107                   | 10                                                  | 3            | 442                   | 13                                                  | 16           |
| 2.....  | 113                   | 22                                                  | 7            | 180                   | 13                                                  | 6            | 392                   | 13                                                  | 14           |
| 3.....  | 101                   | 23                                                  | 6            | 1,580                 | 197                                                 | s 936        | 348                   | 10                                                  | 9            |
| 4.....  | 122                   | 28                                                  | 9            | 1,310                 | 90                                                  | 318          | 315                   | 9                                                   | 8            |
| 5.....  | 240                   | 20                                                  | 13           | 828                   | 46                                                  | 103          | 288                   | 9                                                   | 7            |
| 6.....  | 188                   | 16                                                  | 8            | 594                   | 82                                                  | 132          | 260                   | 11                                                  | 8            |
| 7.....  | 144                   | 15                                                  | 6            | 447                   | 42                                                  | 51           | 245                   | 12                                                  | 8            |
| 8.....  | 128                   | 9                                                   | 3            | 354                   | 21                                                  | 20           | 332                   | --                                                  | e 40         |
| 9.....  | 125                   | 7                                                   | 2            | 288                   | 13                                                  | 10           | 3,530                 | 400                                                 | sa 5,200     |
| 10..... | 141                   | 5                                                   | 2            | 245                   | 17                                                  | 11           | 4,580                 | 387                                                 | 4,540        |
| 11..... | 134                   | 4                                                   | 1            | 206                   | 17                                                  | 9            | 4,140                 | 300                                                 | b 3,400      |
| 12..... | 119                   | 4                                                   | 1            | 180                   | 17                                                  | 8            | 3,060                 | 204                                                 | 1,680        |
| 13..... | 107                   | 3                                                   | 1            | 160                   | 18                                                  | 8            | 2,330                 | 160                                                 | b 1,000      |
| 14..... | 96                    | 5                                                   | 1            | 144                   | 18                                                  | 7            | 11,000                | 350                                                 | s 12,300     |
| 15..... | 88                    | 6                                                   | 1            | 134                   | 19                                                  | 7            | 17,200                | 385                                                 | 17,900       |
| 16..... | 86                    | 6                                                   | 1            | 125                   | 20                                                  | 7            | 18,000                | 400                                                 | 19,400       |
| 17..... | 81                    | 6                                                   | 1            | 122                   | 19                                                  | 6            | 17,700                | 292                                                 | 14,000       |
| 18..... | 76                    | 7                                                   | 1            | 113                   | 15                                                  | 4            | 16,200                | 242                                                 | 10,600       |
| 19..... | 74                    | 7                                                   | 1            | 107                   | 14                                                  | 4            | 14,400                | 165                                                 | 6,420        |
| 20..... | 63                    | 11                                                  | 2            | 107                   | 12                                                  | 3            | 10,800                | 113                                                 | 3,300        |
| 21..... | 57                    | 17                                                  | 3            | 244                   | --                                                  | e 35         | 8,970                 | 176                                                 | 4,260        |
| 22..... | 57                    | 17                                                  | 3            | 1,320                 | 130                                                 | 463          | 9,300                 | 218                                                 | 5,470        |
| 23..... | 59                    | 14                                                  | 2            | 1,470                 | 107                                                 | 424          | 9,360                 | 145                                                 | 3,670        |
| 24..... | 61                    | 13                                                  | 2            | 1,460                 | 67                                                  | 264          | 9,950                 | 105                                                 | 2,820        |
| 25..... | 59                    | 10                                                  | 2            | 1,020                 | 65                                                  | 179          | 10,200                | 82                                                  | 2,260        |
| 26..... | 61                    | 9                                                   | 1            | 810                   | 64                                                  | 140          | 8,650                 | 74                                                  | 1,730        |
| 27..... | 68                    | 10                                                  | 2            | 708                   | 42                                                  | 80           | 6,400                 | 70                                                  | 1,210        |
| 28..... | 70                    | 8                                                   | 2            | 624                   | 38                                                  | 64           | 4,400                 | 68                                                  | 808          |
| 29..... | 76                    | 7                                                   | 1            | 558                   | 37                                                  | 56           | 3,240                 | 42                                                  | 367          |
| 30..... | 88                    | 7                                                   | 2            | 504                   | 32                                                  | 44           | 2,560                 | 40                                                  | 276          |
| 31..... | 96                    | 11                                                  | 3            | --                    | --                                                  | --           | 2,150                 | 29                                                  | 168          |
| Total.  | 3,103                 | --                                                  | 98           | 16,049                | --                                                  | 3,402        | 200,762               | --                                                  | 122,889      |
| Day     | January               |                                                     |              | February              |                                                     |              | March                 |                                                     |              |
|         | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day | Mean dis-charge (cfs) | Suspended sediment<br>Mean concen-<br>tration (ppm) | Tons per day |
| 1.....  | 1,890                 | 20                                                  | 102          | 14,500                | 238                                                 | 9,320        | 2,890                 | 64                                                  | 499          |
| 2.....  | 1,670                 | 18                                                  | b 80         | 16,700                | 256                                                 | 11,500       | 2,810                 | 48                                                  | 364          |
| 3.....  | 1,460                 | 15                                                  | b 60         | 17,000                | 226                                                 | 10,400       | 2,940                 | 56                                                  | 444          |
| 4.....  | 1,330                 | 12                                                  | 43           | 16,400                | 156                                                 | 6,910        | 3,190                 | 54                                                  | 465          |
| 5.....  | 1,220                 | 9                                                   | 30           | 15,400                | 108                                                 | 4,490        | 3,030                 | 45                                                  | 368          |
| 6.....  | 1,180                 | 7                                                   | 22           | 14,100                | 98                                                  | 3,730        | 2,600                 | 37                                                  | 260          |
| 7.....  | 1,220                 | 6                                                   | 20           | 9,900                 | 63                                                  | 1,680        | 2,360                 | 40                                                  | 255          |
| 8.....  | 1,260                 | 10                                                  | 34           | 6,530                 | 64                                                  | 1,130        | 2,460                 | 29                                                  | 193          |
| 9.....  | 3,390                 | 88                                                  | s 1,110      | 9,860                 | --                                                  | e 32,000     | 3,370                 | 55                                                  | b 500        |
| 10..... | 9,980                 | 338                                                 | 9,110        | 22,700                | 2,780                                               | 170,000      | 4,830                 | 93                                                  | 1,210        |
| 11..... | 12,200                | 302                                                 | 9,950        | 20,000                | 927                                                 | 50,000       | 5,390                 | 97                                                  | 1,410        |
| 12..... | 12,000                | 243                                                 | 7,870        | 19,400                | 376                                                 | 19,700       | 5,800                 | 81                                                  | 1,270        |
| 13..... | 10,200                | 171                                                 | 4,710        | 17,000                | 165                                                 | 7,570        | 5,360                 | 69                                                  | 998          |
| 14..... | 8,160                 | 88                                                  | 1,940        | 14,500                | 96                                                  | 3,760        | 4,780                 | 65                                                  | 839          |
| 15..... | 5,820                 | --                                                  | e 850        | 11,000                | 81                                                  | 2,400        | 3,870                 | 64                                                  | 669          |
| 16..... | 3,420                 | --                                                  | e 340        | 5,910                 | 88                                                  | 1,400        | 3,130                 | 54                                                  | 456          |
| 17..... | 2,300                 | --                                                  | e 160        | 3,360                 | 100                                                 | 907          | 2,670                 | 44                                                  | 317          |
| 18..... | 1,800                 | --                                                  | e 85         | 2,660                 | 64                                                  | 460          | 2,280                 | 32                                                  | 197          |
| 19..... | 1,600                 | 9                                                   | 39           | 2,250                 | 52                                                  | 315          | 2,040                 | 28                                                  | 154          |
| 20..... | 1,460                 | 7                                                   | 28           | 2,000                 | 45                                                  | 243          | 1,910                 | 20                                                  | 103          |
| 21..... | 1,540                 | 6                                                   | 25           | 1,830                 | 44                                                  | 217          | 1,810                 | 18                                                  | 88           |
| 22..... | 5,150                 | --                                                  | e 7,000      | 1,730                 | 28                                                  | 131          | 1,790                 | 20                                                  | 97           |
| 23..... | 12,300                | 785                                                 | 26,100       | 1,670                 | 17                                                  | 77           | 1,850                 | 24                                                  | 120          |
| 24..... | 13,700                | 793                                                 | 29,300       | 1,660                 | 14                                                  | 63           | 1,810                 | 23                                                  | 112          |
| 25..... | 14,100                | 568                                                 | 21,600       | 1,660                 | 20                                                  | 90           | 1,780                 | 21                                                  | 101          |
| 26..... | 12,300                | 352                                                 | 11,700       | 2,230                 | 50                                                  | sa 350       | 1,750                 | 39                                                  | 184          |
| 27..... | 9,070                 | 173                                                 | 4,240        | 3,680                 | 87                                                  | 864          | 2,230                 | 38                                                  | 229          |
| 28..... | 6,950                 | --                                                  | e 2,600      | 3,380                 | 93                                                  | 849          | 2,610                 | 40                                                  | 282          |
| 29..... | 6,550                 | 210                                                 | 3,710        | --                    | --                                                  | --           | 2,860                 | 42                                                  | 324          |
| 30..... | 10,300                | 246                                                 | 6,840        | --                    | --                                                  | --           | 2,550                 | 38                                                  | 262          |
| 31..... | 12,900                | 256                                                 | 8,920        | --                    | --                                                  | --           | 2,210                 | 26                                                  | 155          |
| Total.  | 188,420               | --                                                  | 158,618      | 259,010               | --                                                  | 340,557      | 90,960                | --                                                  | 12,925       |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 2,480                | --                       | e 550        | 1,520                | 34                       | 140          | 648                  | 104                      | 182          |
| 2.....  | 3,580                | 179                      | 1,730        | 1,180                | 24                       | 76           | 510                  | 57                       | 78           |
| 3.....  | 4,650                | 126                      | 1,580        | 1,080                | 20                       | 58           | 436                  | 37                       | 44           |
| 4.....  | 21,300               | 1,480                    | s 91,300     | 972                  | 17                       | 45           | 392                  | 27                       | 28           |
| 5.....  | 24,200               | 965                      | 63,000       | 858                  | 12                       | 28           | 370                  | 22                       | 22           |
| 6.....  | 19,900               | 170                      | 9,130        | 768                  | 10                       | 21           | 332                  | 20                       | 18           |
| 7.....  | 12,900               | 156                      | 5,780        | 696                  | 10                       | 19           | 354                  | 25                       | sa 25        |
| 8.....  | 15,900               | 600                      | sa 30,000    | 642                  | 12                       | 21           | 648                  | 119                      | s 370        |
| 9.....  | 18,900               | 643                      | 32,800       | 582                  | 13                       | 20           | 326                  | 62                       | 54           |
| 10..... | 16,300               | 307                      | 13,500       | 540                  | 13                       | 19           | 255                  | 60                       | 41           |
| 11..... | 12,900               | 215                      | 7,490        | 492                  | 8                        | 11           | 468                  | --                       | e 170        |
| 12..... | 10,300               | 206                      | 5,730        | 452                  | 10                       | 12           | 1,210                | 142                      | 464          |
| 13..... | 8,190                | 122                      | 2,700        | 420                  | 13                       | 15           | 792                  | 51                       | 109          |
| 14..... | 5,590                | 86                       | 1,300        | 408                  | 11                       | 12           | 852                  | --                       | e 750        |
| 15..... | 3,270                | 86                       | 759          | 570                  | 13                       | 20           | 876                  | 286                      | s 229        |
| 16..... | 2,520                | 56                       | 381          | 624                  | 13                       | 22           | 534                  | 83                       | 120          |
| 17..... | 2,190                | 42                       | 248          | 528                  | 12                       | 17           | 534                  | 52                       | 75           |
| 18..... | 2,080                | 37                       | 208          | 480                  | 22                       | 28           | 570                  | 49                       | 75           |
| 19..... | 2,360                | 42                       | 268          | 2,110                | 360                      | sa 2,500     | 1,010                | 170                      | 395          |
| 20..... | 2,460                | 44                       | 292          | 1,870                | 375                      | 1,890        | 774                  | 273                      | 570          |
| 21..... | 2,120                | 35                       | 200          | 1,480                | 244                      | 962          | 528                  | 217                      | 309          |
| 22..... | 1,900                | 31                       | 159          | 10,400               | 1,410                    | s 50,200     | 418                  | 81                       | 91           |
| 23..... | 2,320                | 34                       | 213          | 7,420                | 860                      | 17,600       | 376                  | 38                       | 38           |
| 24..... | 4,080                | 175                      | 1,930        | 5,240                | 550                      | 7,760        | 8,160                | 2,800                    | sa 72,000    |
| 25..... | 3,390                | 178                      | 1,630        | 2,770                | 400                      | 2,990        | 5,250                | 1,150                    | s 19,400     |
| 26..... | 2,500                | 109                      | 736          | 5,590                | 1,180                    | s 19,600     | 1,180                | 380                      | s 1,290      |
| 27..... | 2,050                | 74                       | 410          | 2,990                | 1,320                    | 10,600       | 582                  | 130                      | 204          |
| 28..... | 1,760                | 62                       | 295          | 2,220                | 700                      | 4,200        | 3,730                | --                       | e 28,000     |
| 29..... | 1,580                | 38                       | 162          | 1,240                | 350                      | b 1,200      | 5,100                | 1,330                    | s 21,600     |
| 30..... | 1,520                | 30                       | 123          | 882                  | 192                      | 457          | 1,280                | 420                      | s 1,530      |
| 31..... | --                   | --                       | --           | 762                  | 140                      | 288          | --                   | --                       | --           |
| Total.  | 215,190              | --                       | 274,604      | 57,766               | --                       | 120,851      | 38,495               | --                       | 148,281      |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 804                  | 120                      | 260          | 85                   | 29                       | 7            | 15                   | 75                       | 3            |
| 2.....  | 564                  | 60                       | 91           | 197                  | 30                       | 16           | 15                   | 67                       | 3            |
| 3.....  | 436                  | 50                       | 59           | 150                  | 31                       | 12           | 13                   | 53                       | 2            |
| 4.....  | 386                  | 55                       | s 63         | 113                  | 39                       | 12           | 11                   | 42                       | 1            |
| 5.....  | 9,040                | 1,540                    | s 39,800     | 86                   | 46                       | 11           | 14                   | 36                       | 1            |
| 6.....  | 2,830                | 1,330                    | 10,200       | 68                   | 51                       | 9            | 15                   | 37                       | 1            |
| 7.....  | 1,200                | 730                      | 2,360        | 57                   | 51                       | 8            | 14                   | 43                       | 2            |
| 8.....  | 768                  | 308                      | 639          | 51                   | 53                       | 7            | 13                   | 30                       | 1            |
| 9.....  | 516                  | 162                      | 226          | 46                   | 47                       | 6            | 12                   | 32                       | 1            |
| 10..... | 381                  | 86                       | 88           | 41                   | 48                       | 5            | 20                   | 30                       | 2            |
| 11..... | 266                  | 58                       | 42           | 44                   | 41                       | 5            | 24                   | 26                       | 2            |
| 12..... | 188                  | 52                       | 26           | 40                   | 46                       | 5            | 20                   | 24                       | 1            |
| 13..... | 144                  | 43                       | 17           | 36                   | 34                       | 3            | 30                   | 23                       | 2            |
| 14..... | 122                  | 40                       | 13           | 54                   | 31                       | 4            | 36                   | 25                       | b 2          |
| 15..... | 110                  | 37                       | 11           | 88                   | 35                       | 8            | 90                   | 45                       | sa 17        |
| 16..... | 99                   | 32                       | 8            | 70                   | 40                       | 8            | 300                  | 103                      | 83           |
| 17..... | 104                  | 27                       | 8            | 110                  | 70                       | 21           | 160                  | 85                       | b 35         |
| 18..... | 113                  | 30                       | 9            | 96                   | 85                       | 22           | 90                   | 70                       | b 17         |
| 19..... | 96                   | 27                       | 7            | 63                   | 75                       | b 13         | 160                  | 63                       | 27           |
| 20..... | 101                  | 27                       | 7            | 44                   | 65                       | 8            | 300                  | 66                       | 53           |
| 21..... | 86                   | 33                       | 8            | 35                   | 51                       | 5            | 280                  | 47                       | 36           |
| 22..... | 74                   | 32                       | 6            | 30                   | 47                       | 4            | 240                  | 43                       | 28           |
| 23..... | 400                  | --                       | e 190        | 28                   | 40                       | 3            | 210                  | 46                       | 26           |
| 24..... | 816                  | --                       | e 330        | 26                   | 33                       | 2            | 180                  | 48                       | 23           |
| 25..... | 315                  | 83                       | 70           | 28                   | 35                       | 3            | 160                  | 43                       | 18           |
| 26..... | 150                  | 56                       | 23           | 24                   | 26                       | 2            | 135                  | 49                       | 18           |
| 27..... | 107                  | 50                       | 14           | 24                   | 28                       | 2            | 125                  | 50                       | 17           |
| 28..... | 83                   | 41                       | 9            | 20                   | 25                       | 1            | 119                  | 46                       | 15           |
| 29..... | 65                   | 43                       | 8            | 18                   | 30                       | b 1          | 113                  | 41                       | 12           |
| 30..... | 57                   | 40                       | 6            | 16                   | 46                       | 2            | 91                   | 36                       | 9            |
| 31..... | 52                   | 38                       | 5            | 16                   | 72                       | 3            | --                   | --                       | --           |
| Total.  | 20,473               | --                       | 54,603       | 1,804                | --                       | 218          | 3,005                | --                       | 458          |

Total discharge for year (cfs-days) ..... 1,095,037  
 Total load for year (tons) ..... 1,237,504

e Estimated.

a Computed from partly estimated concentration graph.

s Computed by subdividing day.

b Computed from estimated concentration graph.

LICKING RIVER BASIN--Continued  
LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |       |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|-------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |       |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 | 0.500 |
| Dec. 15, 1956...   | 8:30 a.m.  | 17,100          |                        | 740                           | 1,310                                      | 44                                                | 52    | 64    | 81    | 94    | 99    | 99    | 100   |                     |       | BSWCM |
| Dec. 21.....       | 12:15 a.m. | 9,600           |                        | 108                           | 636                                        | 68                                                | 76    | 83    | 91    | 98    | 99    | 100   |       |                     |       | BSWCM |
| Jan. 11, 1957...   | 8:30 a.m.  | 12,100          |                        | 317                           | 558                                        | 45                                                | 58    | 71    | 82    | 94    | 98    | 99    | 100   |                     |       | BSWCM |
| Jan. 23.....       | 7:45 a.m.  | 12,700          |                        | 755                           | 1,140                                      | 42                                                | 51    | 65    | 81    | 94    | 98    | 99    | 100   |                     |       | BSWCM |
| Jan. 23.....       | 7:45 a.m.  | 12,700          |                        | 755                           | 1,330                                      | 35                                                | 48    | 62    | 80    | 93    | 99    | 99    | 100   |                     |       | BSNM  |
| Jan. 25.....       | 9:00 a.m.  | 14,500          |                        | 600                           | 551                                        | 57                                                | 66    | 78    | 90    | 96    | 99    | 100   |       |                     |       | BSWCM |
| Jan. 30.....       | 1:30 p.m.  | 10,800          |                        | 256                           | 667                                        | 52                                                | 59    | 68    | 82    | 91    | 97    | 98    | 99    | 100                 |       | BSWCM |
| Feb. 1.....        | 7:30 p.m.  | 15,900          |                        | 239                           | 579                                        | 52                                                | 61    | 71    | 82    | 91    | 96    | 98    | 99    | 100                 |       | BSWCM |
| Feb. 2.....        | 2:15 p.m.  | 16,700          |                        | 256                           | 512                                        | 55                                                | 62    | 72    | 82    | 92    | 96    | 97    | 99    | 100                 |       | BSWCM |
| Feb. 10.....       | 8:30 a.m.  | 23,000          |                        | 2,920                         | 1,320                                      | 50                                                | 61    | 73    | 86    | 96    | 99    | 100   |       |                     |       | BSWCM |
| Feb. 10.....       | 8:30 a.m.  | 23,000          |                        | 2,920                         | 1,300                                      | 37                                                | 51    | 66    | 85    | 94    | 99    | 100   |       |                     |       | BSNM  |
| Feb. 11.....       | 1:15 p.m.  | 21,000          |                        | 774                           | 1,340                                      | 54                                                | 66    | 78    | 88    | 96    | 99    | 99    | 99    | 100                 |       | BSWCM |
| Apr. 4.....        | 8:20 a.m.  | 21,600          |                        | 2,120                         | 1,530                                      | 45                                                | 52    | 64    | 79    | 92    | 98    | 99    | 100   |                     |       | BSWCM |
| Apr. 4.....        | 11:50 p.m. | 26,000          |                        | 1,100                         | 1,350                                      | 50                                                | 57    | 71    | 85    | 94    | 99    | 100   |       |                     |       | BSWCM |
| Apr. 4.....        | 11:50 p.m. | 26,000          |                        | 1,100                         | 1,170                                      | 30                                                | 42    | 67    | 84    | 95    | 99    | 100   |       |                     |       | BSNM  |
| Apr. 5.....        | 6:15 p.m.  | 23,900          |                        | 732                           | 1,150                                      | 51                                                | 63    | 75    | 86    | 94    | 99    | 99    | 100   |                     |       | BSWCM |
| May 19.....        | 2:00 p.m.  | 2,310           |                        | 439                           | 1,667                                      | 56                                                | 68    | 78    | 90    | 95    | 98    | 100   |       |                     |       | BSWCM |
| May 22.....        | 4:40 p.m.  | 14,000          |                        | 1,740                         | 1,600                                      | 43                                                | 54    | 67    | 82    | 91    | 99    | 100   |       |                     |       | BSWCM |
| May 27.....        | 6:30 a.m.  | 3,570           |                        | 1,330                         | 1,330                                      | 53                                                | 66    | 77    | 92    | 98    | 99    | 100   |       |                     |       | BSWCM |
| June 24.....       | 7:15 a.m.  | 5,460           |                        | 2,900                         | 2,130                                      | 43                                                | 54    | 68    | 86    | 96    | 100   |       |       |                     |       | BSWCM |
| June 25.....       | 11:45 a.m. | 4,870           |                        | 997                           | 2,320                                      | 53                                                | 69    | 82    | 94    | 98    | 100   |       |       |                     |       | BSWCM |
| June 25.....       | 11:45 a.m. | 4,870           |                        | 997                           | 2,500                                      | 37                                                | 50    | 72    | 90    | 98    | 100   |       |       |                     |       | BSNM  |
| June 29.....       | 7:00 a.m.  | 6,780           |                        | 1,560                         | 1,400                                      | 48                                                | 58    | 72    | 86    | 95    | 99    | 100   |       |                     |       | BSWCM |
| July 5.....        | 7:00 a.m.  | 12,200          |                        | 1,850                         | 1,590                                      | 40                                                | 50    | 61    | 75    | 93    | 98    | 100   |       |                     |       | BSWCM |

a Average of individual analyses of samples from 4 verticals.

## LICKING RIVER BASIN--Continued

## SOUTH FORK LICKING RIVER AT CYNTHIANA, KY.

LOCATION.--At gaging station at bridge on State Highways 356 and 36, at Cynthiana, Harrison County, 0.4 mile downstream from Grays Run, and in pool formed by old mill dam 2.6 miles downstream.

DRAINAGE AREA.--615 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to August 1951.

Water temperatures: October 1949 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F on several days during June, July, and August; minimum, 33°F on several days during November and January.

EXTREMES, 1949-57.--Water temperatures: Maximum, 87°F June 30, 1952; July 14, 1954; minimum, freezing point on several days during December 1953.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Twice-daily measurements at approximately 6:30 a.m. and 6 p.m.

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 62      | 64   | 58       | 58   | 34       | 36   | 37      | 36   | 39       | 40   | 38    | 39   | 48    | 48   | 70   | 70   | 70   | 71   | 71   | 72   | 80     | 81   | 75        | 76   |
| 2.....       | 64      | 64   | 57       | 59   | 42       | 44   | 34      | 42   | 43       | 39   | 41    | 47   | 47    | 64   | 68   | 68   | 69   | 69   | 72   | 74   | 80     | 80   | 75        | 75   |
| 3.....       | 63      | 63   | 59       | 59   | 42       | 44   | 33      | 34   | 42       | 43   | 39    | 41   | 47    | 47   | 64   | 63   | 68   | 69   | 73   | 75   | 79     | 81   | 75        | 76   |
| 4.....       | 63      | 63   | 59       | 59   | 43       | 43   | 34      | 34   | 42       | 42   | 40    | 41   | 46    | 47   | 61   | 61   | 69   | 70   | 75   | 76   | 80     | 79   | 75        | 75   |
| 5.....       | --      | --   | 58       | 59   | 43       | 46   | 34      | 35   | 40       | 39   | 41    | 42   | 47    | 47   | 58   | 58   | 69   | 70   | 75   | 76   | 77     | 76   | 73        | 73   |
| 6.....       | 63      | 63   | 58       | 58   | 45       | 47   | 35      | 37   | 39       | 39   | 42    | 42   | 47    | 48   | 56   | 57   | 70   | 71   | 74   | 74   | 74     | 74   | 72        | 72   |
| 7.....       | 61      | 60   | 57       | 56   | 47       | 48   | 36      | 36   | 39       | 40   | 41    | 42   | 48    | 50   | 57   | 60   | 71   | 72   | 74   | 72   | 74     | 73   | 70        | 71   |
| 8.....       | 58      | 59   | 53       | 52   | 47       | 47   | 35      | 36   | 39       | 41   | 42    | 43   | 49    | 48   | 60   | 62   | 72   | 72   | 74   | 75   | 72     | 74   | 69        | 69   |
| 9.....       | 58      | 58   | 48       | 47   | 45       | 44   | 36      | 37   | 41       | 43   | 44    | 47   | 48    | 62   | 68   | 71   | 71   | 75   | 76   | 73   | 74     | 68   | 69        | 69   |
| 10.....      | 56      | 57   | 46       | 47   | 43       | 44   | 36      | 36   | 42       | 42   | 44    | 45   | 48    | 50   | 68   | 70   | 71   | 72   | 75   | 75   | 74     | 74   | 68        | 69   |
| 11.....      | 56      | 57   | 46       | 49   | 44       | 45   | 34      | 34   | 40       | 39   | 45    | 47   | 50    | 51   | 70   | 72   | 72   | 73   | 76   | 74   | 73     | 73   | 69        | 70   |
| 12.....      | 57      | 58   | 48       | 47   | 44       | 45   | 34      | 35   | 40       | 40   | 47    | 48   | 49    | 49   | 72   | 74   | 71   | 73   | 75   | 77   | 72     | 73   | 70        | 71   |
| 13.....      | 58      | 60   | 45       | 46   | 44       | 45   | 34      | 34   | 40       | 41   | 47    | 48   | 48    | 49   | 73   | 73   | 73   | 74   | 76   | 76   | 72     | 73   | 70        | 70   |
| 14.....      | 59      | 59   | 46       | 48   | 44       | 45   | 33      | 33   | 40       | 40   | 48    | 48   | 49    | 49   | 70   | 71   | 73   | 75   | 76   | 77   | 73     | 73   | 70        | 71   |
| 15.....      | 58      | 60   | 47       | 47   | 45       | 46   | 33      | 34   | 38       | 39   | 48    | 50   | 49    | 50   | 70   | 70   | 75   | 78   | 77   | 79   | 73     | 74   | 71        | 72   |
| 16.....      | 59      | 61   | 44       | 45   | 47       | 33   | 33      | 33   | 38       | 39   | 50    | 51   | 50    | 51   | 69   | 69   | 78   | 80   | 78   | 79   | 74     | 74   | 72        | 72   |
| 17.....      | 60      | 60   | 43       | 44   | 45       | 47   | 33      | 38   | 39       | 51   | 52    | 51   | 52    | 68   | 68   | 80   | 81   | 79   | 79   | 79   | 74     | 74   | 72        | 73   |
| 18.....      | 60      | 61   | 43       | 43   | 46       | 45   | 33      | 38   | 39       | 52   | 53    | 52   | 53    | 69   | 69   | 70   | 80   | 80   | 78   | 79   | 73     | 73   | 72        | 73   |
| 19.....      | 60      | 61   | 42       | 44   | 43       | 44   | 33      | 35   | 38       | 38   | 52    | 51   | 53    | 61   | 69   | 69   | 79   | 79   | 81   | 72   | 72     | 72   | 73        | 74   |
| 20.....      | 60      | 61   | 44       | 45   | 44       | 45   | 35      | 37   | 38       | 49   | 49    | 61   | 66    | 68   | 68   | 77   | 78   | 80   | 81   | 70   | 70     | 74   | 75        | 75   |
| 21.....      | 61      | 61   | 45       | 44   | 45       | 47   | 35      | 37   | 37       | 38   | 48    | 48   | 66    | 67   | 67   | 68   | 77   | 78   | 81   | 81   | 70     | 72   | 75        | 75   |
| 22.....      | 61      | 61   | 42       | 41   | 46       | 48   | 37      | 38   | 38       | 41   | 48    | 48   | 66    | 67   | 67   | 69   | 78   | 78   | 80   | 81   | 71     | 72   | 74        | 73   |
| 23.....      | 61      | 61   | 39       | 38   | 47       | 48   | 37      | 35   | 40       | 41   | 48    | 48   | 67    | 67   | 69   | 70   | 76   | 77   | 80   | 79   | 72     | 73   | 72        | 72   |
| 24.....      | 60      | 60   | 37       | 37   | 48       | 44   | 34      | 35   | 40       | 41   | 47    | 47   | 67    | 68   | 69   | 71   | 75   | 73   | 77   | 77   | 72     | 74   | 70        | 69   |
| 25.....      | 59      | 59   | 37       | 38   | 47       | 46   | 35      | 37   | 41       | 43   | 46    | 46   | 68    | 68   | 70   | 70   | 71   | 71   | 76   | 77   | 74     | 74   | 67        | 67   |
| 26.....      | 58      | 57   | 37       | 36   | 43       | 43   | 38      | 39   | 43       | 43   | 46    | 46   | 68    | 69   | 69   | 70   | 69   | 72   | 76   | 77   | 73     | 73   | 66        | 66   |
| 27.....      | 56      | 57   | 35       | 34   | 43       | 44   | 39      | 40   | 42       | 42   | 45    | 45   | 69    | 72   | 69   | 68   | 71   | 72   | 77   | 79   | 72     | 73   | 65        | 65   |
| 28.....      | 56      | 57   | 34       | 35   | 43       | 41   | 39      | 40   | 40       | 40   | 45    | 45   | 72    | 73   | 67   | 68   | 72   | 71   | 79   | 80   | 73     | 74   | 64        | 64   |
| 29.....      | 56      | 57   | 34       | 34   | 39       | 38   | 40      | 39   | --       | --   | 44    | 45   | 72    | 72   | 67   | 68   | 70   | 72   | 79   | 80   | 73     | 75   | 64        | 64   |
| 30.....      | 57      | 59   | 33       | 34   | 38       | 39   | 38      | 37   | --       | --   | 44    | 46   | 71    | 71   | 68   | 70   | 72   | 72   | 80   | 81   | 75     | 75   | 64        | 65   |
| 31.....      | 59      | 59   | --       | --   | 39       | 39   | 37      | 39   | --       | --   | 46    | 48   | --    | --   | 70   | 70   | --   | --   | 80   | 81   | 75     | 75   | --        | --   |
| Average..... | 59      | 60   | 46       | 46   | 44       | 44   | 35      | 36   | 40       | 40   | 45    | 46   | 56    | 57   | 67   | 68   | 73   | 74   | 76   | 78   | 74     | 74   | 70        | 71   |



MIAMI RIVER BASIN  
MIAMI RIVER AT ELIZABETHTOWN, OHIO

LOCATION.--At Lost Bridge on Lawrenceburg Road, 0.6 mile southeast of Elizabethtown, Hamilton County, 0.9 mile downstream from Whitewater River, and 5.4 miles upstream from mouth.

DRAINAGE AREA.--5,385 square miles (at mouth).

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 519 ppm Oct. 21-31; minimum, 247 ppm Apr. 1-10.

Hardness: Maximum, 372 ppm Oct. 21-31; minimum, 198 ppm Apr. 1-10.

Specific conductance: Maximum daily, 852 micromhos Oct. 25; minimum daily, 322 micromhos Apr. 5.

Water temperatures: Maximum, 85°F Aug. 15, 16, Sept. 2; minimum, freezing point Jan. 16, 17.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Phenols as C <sub>6</sub> H <sub>5</sub> OH | Dissolved solids (residue on evaporation at 100°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as H <sub>2</sub> SO <sub>4</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|---------------------------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------------|-------------------------------------------|-----|-------|
|                      |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                             |                                                    | Calcium                       | Non-carbonate |                                                 |                                           |     |       |
| Oct. 1-10, 1956...   |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                             |                                                    |                               |               |                                                 |                                           |     |       |
| Oct. 11-17, 19-20.   | 10                   | 18                         | 0.02      | 0.00           | 89           | 33             | 31          | 3.8           | 254                             | 129                        | 42            | 0.6          | 18                         | a0.008                                      | 496                                                | 358                           | 150           |                                                 | 768                                       | 7.6 | 7     |
| Oct. 21-31 .....     | 21                   | 21                         | .06       | .00            | 90           | 32             | 33          | 3.8           | 254                             | 137                        | 37            | .6           | 20                         | b.010                                       | 510                                                | 356                           | 148           |                                                 | 766                                       | 7.5 | 6     |
| Nov. 1-10 .....      | 8.2                  | 10                         | .02       | .07            | 83           | 40             | 34          | 4.2           | 276                             | 131                        | 42            | .6           | 20                         | c.010                                       | 519                                                | 372                           | 146           |                                                 | 796                                       | 7.7 | 6     |
| Nov. 11-20 .....     | 10                   | 8.7                        | .03       | .03            | 92           | 32             | 29          | 4.4           | 257                             | 116                        | 38            | .7           | 16                         | a.048                                       | 476                                                | 335                           | 124           |                                                 | 748                                       | 7.3 | 5     |
| Nov. 21-30 .....     |                      |                            | .15       | .05            | 88           | 33             | 29          | 4.5           | 259                             | 130                        | 38            | .9           | 25                         | b.007                                       | 494                                                | 361                           | 149           |                                                 | 796                                       | 7.3 | 5     |
| Dec. 1-10 .....      | 9.4                  | 8.4                        | .03       | .04            | 87           | 31             | 31          | 3.8           | 250                             | 119                        | 41            | .7           | 20                         | a.005                                       | 491                                                | 345                           | 140           |                                                 | 759                                       | 7.5 | 2     |
| Dec. 11-20 .....     | 7.7                  | 7.7                        | .09       | .03            | 83           | 30             | 23          | 3.5           | 256                             | 97                         | 30            | .5           | 19                         | b.035                                       | 442                                                | 331                           | 121           |                                                 | 698                                       | 7.6 | 2     |
| Dec. 21-31 .....     | 6.5                  | 6.5                        | .04       | .02            | 82           | 29             | 23          | 3.7           | 246                             | 112                        | 30            | .4           | 16                         | c.010                                       | 471                                                | 352                           | 133           |                                                 | 739                                       | 7.7 | 2     |
| Jan. 1-7, 9-10, 1957 | 6.8                  | 6.8                        | .20       | .01            | 85           | 32             | 28          | 3.4           | 261                             | 111                        | 42            | .4           | 27                         | --                                          | 432                                                | 324                           | 122           |                                                 | 698                                       | 7.5 | 7     |
| Jan. 12-20 .....     | 8.5                  | 8.5                        | .08       | .00            | 71           | 25             | 14          | 3.2           | 217                             | 85                         | 24            | .4           | 18                         | c.001                                       | 363                                                | 280                           | 102           |                                                 | 754                                       | 7.7 | 7     |
| Jan. 21-31 .....     |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                             |                                                    |                               |               |                                                 | 591                                       | 7.4 | 9     |
| Feb. 1-10 .....      | 8.1                  | 7.4                        | .04       | .00            | 84           | 29             | 16          | 2.6           | 256                             | 103                        | 24            | .4           | 21                         | a.001                                       | 420                                                | 329                           | 119           |                                                 | 681                                       | 7.7 | 6     |
| Feb. 11-20 .....     | 7.4                  | 7.4                        | .05       | .00            | 75           | 26             | 11          | 2.4           | 228                             | 82                         | 18            | .4           | 22                         | b.000                                       | 367                                                | 294                           | 107           |                                                 | 597                                       | 7.7 | 7     |
| Feb. 21-28 .....     | 6.7                  | 6.7                        | .02       | .02            | 82           | 27             | 15          | 2.1           | 251                             | 89                         | 20            | .4           | 18                         | c.020                                       | 404                                                | 316                           | 110           |                                                 | 643                                       | 7.8 | 2     |
| Mar. 1-10 .....      | 6.2                  | 6.2                        | .03       | .03            | 74           | 28             | 10          | 2.2           | 233                             | 75                         | 18            | .4           | 21                         | a.002                                       | 362                                                | 300                           | 109           |                                                 | 591                                       | 7.7 | 5     |
| Mar. 11-20 .....     | 5.7                  | 5.7                        | .07       | .00            | 81           | 32             | 16          | 2.4           | 263                             | 93                         | 22            | .4           | 19                         | b.000                                       | 418                                                | 334                           | 118           |                                                 | 661                                       | 7.7 | 3     |
| Mar. 21-31 .....     | 5.2                  | 5.2                        | .12       | .00            | 81           | 32             | 18          | 2.6           | 272                             | 95                         | 24            | .5           | 17                         | c.009                                       | 422                                                | 334                           | 111           |                                                 | 679                                       | 7.9 | 5     |

a Collected on 5th of month.

b Collected on 15th of month.

c Collected on 25th of month.

|                                 |     |      |      |    |    |     |     |     |     |     |     |     |       |     |     |     |     |     |     |
|---------------------------------|-----|------|------|----|----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| Apr. 1-10, 1957..               | 7.0 | 0.17 | 0.16 | 53 | 16 | 5.1 | 2.2 | 163 | 46  | 10  | 0.5 | 13  | a.003 | 247 | 198 | 64  | 398 | 7.7 | 30. |
| Apr. 11-20 .....                | 7.8 | .10  | .05  | 70 | 24 | 7.6 | 2.0 | 228 | 64  | 12  | .4  | 14  | b.066 | 336 | 273 | 86  | 538 | 7.8 | 20. |
| Apr. 21-30 .....                | 6.8 | .06  | .00  | 78 | 28 | 10  | 2.1 | 264 | 78  | 16  | .2  | 13  | --    | 387 | 310 | 93  | 599 | 7.6 | 5   |
| May 1-10 .....                  | 1.8 | .04  | .00  | 83 | 32 | 15  | 2.5 | 291 | 91  | 21  | .2  | 10  | --    | 417 | 339 | 100 | 660 | 7.8 | 4   |
| May 11-20 .....                 | 6.4 | .02  | .03  | 72 | 26 | 12  | 2.8 | 248 | 72  | 18  | .3  | 9.8 | --    | 362 | 287 | 84  | 546 | 7.5 | 7   |
| May 21-31 .....                 | 10  | .04  | .01  | 70 | 24 | 7.6 | 2.4 | 248 | 58  | 13  | .2  | 13  | --    | 273 | 273 | 70  | 514 | 7.5 | 9   |
| June 1-3, 6-10...               | 9.4 | .03  | .01  | 70 | 25 | 9.2 | 2.4 | 247 | 64  | 14  | .3  | 12  | --    | 354 | 278 | 75  | 527 | 7.5 | 10  |
| June 11-20 .....                | 11  | .04  | .00  | 62 | 23 | 8.6 | 2.6 | 213 | 56  | 12  | .3  | 15  | --    | 308 | 249 | 74  | 500 | 7.2 | 10  |
| June 21-30 .....                | 10  | .04  | .00  | 54 | 18 | 6.4 | 2.9 | 185 | 42  | 9.0 | .2  | 14  | --    | 263 | 209 | 57  | 424 | 7.3 | 15  |
| July 1-10 .....                 | 12  | .33  | .00  | 61 | 20 | 6.2 | 2.6 | 208 | 47  | 11  | .3  | 7.7 | a.002 | 299 | 234 | 64  | 465 | 7.6 | 7   |
| July 11-20 .....                | 6.9 | .08  | .00  | 80 | 30 | 14  | 2.2 | 288 | 80  | 21  | .5  | 6.0 | b.014 | 399 | 323 | 87  | 647 | 7.5 | 6   |
| July 21-31 .....                | 4.2 | .03  | .00  | 79 | 31 | 16  | 3.7 | 284 | 99  | 13  | .4  | 7.3 | c.006 | 401 | 325 | 92  | 648 | 7.6 | 6   |
| Aug. 1-10 .....                 | --  | --   | --   | -- | -- | --  | --  | --  | --  | --  | --  | --  | a.009 | --  | --  | --  | --  | --  | --  |
| Aug. 11-20 .....                | 18  | .00  | .03  | 78 | 28 | 19  | 3.8 | 272 | 88  | 23  | .5  | 12  | b.003 | 415 | 310 | 86  | 663 | 7.4 | 8   |
| Aug. 21-31 .....                | 17  | .00  | .02  | 82 | 31 | 25  | 4.0 | 284 | 105 | 29  | .5  | 12  | --    | 454 | 332 | 100 | 726 | 7.6 | 6   |
| Sept. 1-10 .....                | 26  | .00  | .00  | 77 | 32 | 25  | 3.8 | 276 | 101 | 27  | .4  | 9.2 | a.009 | 446 | 324 | 98  | 700 | 7.4 | 6   |
| Sept. 11-20 .....               | 9.5 | .00  | .00  | 77 | 28 | 23  | 3.8 | 258 | 94  | 27  | .4  | 13  | b.007 | 412 | 307 | 96  | 672 | 7.4 | 6   |
| Sept. 21-30 .....               | 9.0 | .00  | .00  | 77 | 29 | 21  | 3.2 | 262 | 95  | 24  | .4  | 9.9 | c.048 | 408 | 311 | 96  | 667 | 7.5 | 6   |
| Time-weighted<br>average d..... |     |      |      |    |    |     |     |     |     |     |     |     |       |     |     |     |     |     |     |
|                                 | 9.6 | 0.06 | 0.02 | 78 | 28 | 18  | 3.1 | 250 | 92  | 25  | 0.4 | 16  | --    | 409 | 310 | 105 | 647 | --  | 7   |

a Collected on 5th of month.

b Collected on 15th of month.

c Collected on 25th of month.

d Represents 96 percent of days.

## MIAMI RIVER BASIN--Continued

## MIAMI RIVER AT ELIZABETHTOWN, OHIO--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 12:30 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 79   | 60   | 47   | 42   | 42   | 48   | 52   | 69  | 73   | 78   | --   | 84    |
| 2       | 69   | 62   | 48   | 37   | 42   | 45   | 51   | 69  | 74   | 76   | --   | 85    |
| 3       | 63   | 61   | 51   | 37   | 42   | 43   | 49   | 67  | 75   | 76   | --   | 84    |
| 4       | 68   | 62   | 55   | 40   | 41   | 42   | 49   | 68  | --   | 77   | --   | 79    |
| 5       | 63   | 65   | 60   | 43   | 40   | 44   | 46   | 69  | --   | 78   | --   | 78    |
| 6       | 69   | 64   | 62   | 41   | 42   | 45   | 48   | 68  | 73   | 78   | --   | 77    |
| 7       | 68   | 62   | 67   | 38   | 40   | 45   | 46   | 69  | 72   | 77   | --   | 74    |
| 8       | 65   | 57   | 65   | --   | 41   | 43   | 45   | 71  | 72   | 77   | --   | 74    |
| 9       | 63   | 54   | 58   | 38   | 47   | 45   | 47   | 71  | 73   | 78   | --   | 74    |
| 10      | 62   | 54   | 52   | 40   | 43   | 47   | 48   | 70  | 74   | 78   | --   | 74    |
| 11      | 61   | 54   | 54   | 39   | 45   | 50   | 48   | 71  | 76   | 79   | 80   | 74    |
| 12      | 62   | 55   | 54   | 40   | 48   | 52   | 47   | 71  | 74   | 79   | 80   | 75    |
| 13      | 62   | 54   | 55   | 38   | 45   | 54   | 49   | 72  | 75   | 79   | 80   | 74    |
| 14      | 64   | 55   | 54   | 38   | 43   | 57   | 50   | 71  | 77   | 80   | 80   | 75    |
| 15      | 61   | 55   | 54   | 34   | 46   | 55   | 51   | 72  | 75   | 80   | 85   | 80    |
| 16      | 62   | 54   | 56   | 32   | 47   | 53   | 53   | 73  | 76   | 79   | 85   | 77    |
| 17      | 62   | 53   | 58   | 32   | 46   | 55   | 55   | 73  | 78   | 80   | 83   | 75    |
| 18      | --   | 52   | 58   | 35   | 44   | 54   | 60   | 75  | 78   | 80   | 80   | 74    |
| 19      | 61   | 49   | 56   | 38   | 43   | 55   | 63   | 67  | 79   | 80   | 83   | 76    |
| 20      | 65   | 50   | 59   | 42   | 41   | 53   | 65   | 69  | 78   | 81   | 82   | 76    |
| 21      | 63   | 51   | 62   | 42   | 43   | 52   | 65   | 69  | 77   | 81   | 79   | 77    |
| 22      | 63   | 40   | 63   | 47   | 45   | 52   | 68   | 70  | 78   | 81   | 80   | 77    |
| 23      | 63   | 48   | 62   | 43   | 47   | 58   | 68   | 71  | 79   | 82   | 79   | 76    |
| 24      | 62   | 42   | 60   | 37   | 48   | 53   | 69   | 72  | 78   | 82   | 78   | 70    |
| 25      | 65   | 41   | 42   | 37   | 52   | 50   | 70   | 71  | 78   | 82   | 78   | 74    |
| 26      | 63   | 44   | 54   | 38   | 55   | 50   | 69   | 70  | 79   | 82   | 79   | 73    |
| 27      | 61   | 45   | 53   | 38   | 52   | 50   | 70   | 71  | 79   | 81   | 79   | 70    |
| 28      | 60   | 45   | 50   | 39   | 48   | 49   | 70   | 71  | 78   | 82   | 80   | 64    |
| 29      | 62   | 44   | 52   | 39   | --   | 51   | 71   | 72  | 79   | 83   | 83   | 70    |
| 30      | 63   | 47   | 51   | 40   | --   | 53   | 70   | 73  | 78   | 82   | 84   | 70    |
| 31      | 65   | --   | 48   | 41   | --   | 52   | --   | 72  | --   | 83   | 84   | --    |
| Average | 64   | 53   | 55   | 39   | 45   | 50   | 57   | 70  | 76   | 80   | --   | 75    |

## OHIO RIVER MAIN STEM

## OHIO RIVER AT LOCK AND DAM 39, NEAR FLORENCE, IND.

LOCATION.--About 1,100 feet upstream from dam, lock and dam 39 (mile 531.7) near Florence, Switzerland County, 1,350 feet upstream from Stevens Creek, and 8,100 feet downstream from Craigs Creek.  
DRAINAGE AREA.--82,910 square miles.  
RECORDS AVAILABLE.--Chemical analyses.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 392 ppm Sept. 21-29; minimum, 114 ppm Feb. 1-2, 4-10.

Hardness: Maximum, 210 ppm Sept. 21-29; minimum, 70 ppm Feb. 1-2, 4-10.

Specific conductance: Maximum daily, 666 micromhos Sept. 27; minimum daily, 144 micromhos Feb. 4.

Water temperatures: Maximum 89°F Aug. 3, 5; minimum, 38°F Jan. 16-19, 22, 28, 31.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 411 ppm Nov. 1-10, 1955; minimum, 114 ppm Feb. 1-2, 4-10, 1957.

Hardness: Maximum, 228 ppm Nov. 1-10, 1955; minimum, 70 ppm Feb. 1-2, 4-10, 1957.

Specific conductance: Maximum daily, 708 micromhos Oct. 31, 1955; minimum daily, 144 micromhos Feb. 4, 1957.

Water temperatures: Maximum, 90°F Aug. 9, 10, 1955; minimum, freezing point Jan. 24, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Tem-perature (°F) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Man-ganese (Mn) | Cal-cium (Ca) | Mag-nesium (Mg) | So-dium (Na) | Po-tas-sium (K) | Bicar-bonate (HCO <sub>3</sub> ) | Sul-fate (SO <sub>4</sub> ) | Chlo-ride (Cl) | Fluo-ride (F) | Ni-trate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |                | Total acid-ity as H <sub>2</sub> SO <sub>4</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|-------------------|----------------------------|-----------|-----------------|---------------|-----------------|--------------|-----------------|----------------------------------|-----------------------------|----------------|---------------|-----------------------------|----------------------------------------------------|-------------------------------|----------------|--------------------------------------------------|-------------------------------------------|-----|-------|
|                    |                      |                   |                            |           |                 |               |                 |              |                 |                                  |                             |                |               |                             |                                                    | Calcium, mag-nesium           | Non-carbon-ate |                                                  |                                           |     |       |
| Oct. 1-10, 1956    | ...                  | 7.3               | 7.3                        | 0.00      | 0.00            | 36            | 12              | 22           | 2.9             | 47                               | 104                         | 27             | 0.3           | 6.0                         | 245                                                | 140                           | 101            |                                                  | 402                                       | 7.2 | 2     |
| Oct. 11-18, 20     | ...                  | 7.8               | 7.8                        | .01       | .00             | 39            | 9.4             | 22           | 2.8             | 56                               | 92                          | 26             | .2            | 5.5                         | 249                                                | 136                           | 90             |                                                  | 406                                       | 7.0 | 3     |
| Oct. 21-31         | ...                  | 7.7               | 7.7                        | .01       | .00             | 44            | 11              | 26           | 2.9             | 66                               | 103                         | 32             | .3            | 4.6                         | 277                                                | 155                           | 101            |                                                  | 455                                       | 7.2 | 3     |
| Nov. 1-10          | ...                  | 17                | 17                         | .00       | .00             | 45            | 11              | 30           | 3.2             | 68                               | 106                         | 38             | .3            | 5.0                         | 302                                                | 157                           | 102            |                                                  | 485                                       | 7.2 | 5     |
| Nov. 11-20         | ...                  | 12                | 12                         | .00       | .00             | 37            | 9.6             | 23           | 2.9             | 65                               | 80                          | 31             | .2            | 5.9                         | 243                                                | 132                           | 79             |                                                  | 402                                       | 7.0 | 2     |
| Nov. 21-25, 29     | ...                  | 14                | 14                         | .00       | .00             | 48            | 13              | 32           | 3.2             | 63                               | 119                         | 40             | .4            | 7.2                         | 317                                                | 174                           | 122            |                                                  | 510                                       | 7.1 | 5     |
| Dec. 2-10          | ...                  | 11                | 11                         | .00       | .00             | 60            | 12              | 42           | 3.5             | 49                               | 162                         | 58             | .4            | 5.9                         | 383                                                | 199                           | 159            |                                                  | 613                                       | 7.0 | 4     |
| Dec. 12-20         | ...                  | 7.0               | 7.0                        | .02       | .04             | 35            | 7.7             | 21           | 2.5             | 44                               | 84                          | 29             | .2            | 3.8                         | 221                                                | 119                           | 83             |                                                  | 362                                       | 6.8 | 6     |
| Dec. 21-23, 24-30  | ...                  | 7.4               | 7.4                        | .03       | .15             | 23            | 6.3             | 9.1          | 2.2             | 36                               | 55                          | 11             | .2            | 3.3                         | 141                                                | 84                            | 54             |                                                  | 226                                       | 6.7 | 6     |
| Jan. 1-10, 1957    | ...                  | 7.3               | 7.3                        | .17       | .04             | 29            | 7.4             | 12           | 1.5             | 46                               | 66                          | 16             | .2            | 4.4                         | 168                                                | 103                           | 66             |                                                  | 282                                       | 7.1 | 5     |
| Jan. 12-19         | ...                  | 6.7               | 6.7                        | .06       | .00             | 24            | 7.5             | 10           | 1.6             | 43                               | 52                          | 14             | .2            | 4.4                         | 144                                                | 91                            | 56             |                                                  | 240                                       | 6.7 | 6     |
| Jan. 21-25, 27-31  | ...                  | 6.8               | 6.8                        | .05       | .00             | 32            | 8.8             | 12           | 2.2             | 62                               | 65                          | 14             | .2            | 4.3                         | 182                                                | 116                           | 65             |                                                  | 296                                       | 6.9 | 6     |
| Feb. 1-2, 4-10     | ...                  | 6.7               | 6.7                        | .04       | .02             | 19            | 5.6             | 6.1          | 1.4             | 36                               | 40                          | 6.7            | .2            | 3.9                         | 114                                                | 70                            | 41             |                                                  | 186                                       | 7.2 | 5     |
| Feb. 11-20         | ...                  | 7.3               | 7.3                        | .04       | .06             | 23            | 7.1             | 7.0          | 1.0             | 46                               | 44                          | 8.0            | .2            | 3.8                         | 138                                                | 86                            | 47             |                                                  | 217                                       | 7.3 | 8     |
| Feb. 21-28         | ...                  | 7.0               | 7.0                        | .01       | .02             | 30            | 8.3             | 11           | 1.5             | 54                               | 64                          | 12             | .2            | 4.8                         | 170                                                | 109                           | 65             |                                                  | 281                                       | 7.4 | 2     |
| Mar. 1-10          | ...                  | 6.8               | 6.8                        | .04       | .06             | 31            | 9.0             | 11           | 1.4             | 57                               | 69                          | 13             | .2            | 4.3                         | 176                                                | 115                           | 68             |                                                  | 293                                       | 7.3 | 4     |
| Mar. 11-20         | ...                  | 7.0               | 7.0                        | .03       | .00             | 31            | 9.4             | 12           | 1.7             | 60                               | 73                          | 14             | .3            | 4.3                         | 160                                                | 116                           | 67             |                                                  | 299                                       | 7.3 | 1     |
| Mar. 21-31         | ...                  | 7.7               | 7.7                        | .04       | .00             | 34            | 9.7             | 14           | 1.9             | 64                               | 73                          | 16             | .3            | 4.9                         | 205                                                | 125                           | 72             |                                                  | 326                                       | 7.3 | 1     |

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 39, NEAR FLORENCE, IND.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                 | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as H <sub>2</sub> SO <sub>4</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------------|----------------------|------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------------|-------------------------------------------|-----|-------|
|                                    |                      |                  |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                                 |                                           |     |       |
| Apr. 1, 3-10, 1957                 |                      |                  | 7.0                        | 0.14      | 0.19           | 32           | 9.0            | 8.8         | 1.8           | 74                              | 52                         | 11            | 0.4          | 4.9                        | 176                                                | 167                           | 107           |                                                 | 287                                       | 7.5 | 20    |
| Apr. 11-20                         |                      |                  | 6.4                        | 0.13      | 0.14           | 28           | 8.8            | 6.6         | 1.4           | 59                              | 52                         | 10            | 4            | 4.6                        | 157                                                | 106                           | 58            |                                                 | 253                                       | 7.3 | 15    |
| Apr. 21-30                         |                      |                  | 7.9                        | 0.06      | 0.07           | 35           | 10             | 9.5         | 1.6           | 75                              | 64                         | 14            | 3            | 3.5                        | 189                                                | 129                           | 67            |                                                 | 296                                       | 7.1 | 13    |
| May 1-4, 6-10                      |                      |                  | 8.2                        | 0.01      | 0.00           | 35           | 9.5            | 11          | 1.8           | 74                              | 68                         | 16            | 3            | 3.2                        | 189                                                | 127                           | 66            |                                                 | 298                                       | 7.0 | 4     |
| May 11-13, 18-20                   |                      |                  | 6.5                        | 0.02      | 0.01           | 38           | 11             | 14          | 1.9           | 84                              | 71                         | 18            | 2            | 4.4                        | 231                                                | 140                           | 71            |                                                 | 338                                       | 7.0 | 4     |
| May 21-26, 28-31                   |                      |                  | 9.2                        | 0.02      | 0.03           | 49           | 12             | 14          | 2.4           | 116                             | 72                         | 22            | 3            | 5.5                        | 258                                                | 172                           | 76            |                                                 | 391                                       | 7.7 | 7     |
| June 2-4, 6-8, 10                  |                      |                  | 10                         | 0.00      | 0.05           | 51           | 12             | 16          | 2.2           | 117                             | 79                         | 21            | 3            | 5.3                        | 272                                                | 177                           | 80            |                                                 | 433                                       | 7.4 | 5     |
| June 11-20                         |                      |                  | 7.8                        | 0.01      | 0.05           | 48           | 13             | 18          | 2.3           | 112                             | 78                         | 24            | 3            | 5.0                        | 267                                                | 174                           | 82            |                                                 | 433                                       | 7.3 | 7     |
| June 21, 23-30                     |                      |                  | 6.2                        | 0.01      | 0.03           | 50           | 8              | 17          | 2.4           | 106                             | 70                         | 24            | 4            | 5.0                        | 244                                                | 161                           | 74            |                                                 | 410                                       | 7.1 | 7     |
| July 1-5, 7-10                     |                      |                  | 9.0                        | 0.02      | 0.02           | 48           | 14             | 20          | 2.9           | 106                             | 90                         | 26            | 4            | 4.6                        | 286                                                | 178                           | 90            |                                                 | 443                                       | 7.2 | 7     |
| July 11-18, 20                     |                      |                  | 8.9                        | 0.03      | 0.01           | 47           | 13             | 18          | 3.3           | 108                             | 85                         | 22            | 5            | 5.0                        | 264                                                | 171                           | 84            |                                                 | 430                                       | 7.2 | 6     |
| July 21-31                         |                      |                  | 5.8                        | 0.04      | 0.01           | 46           | 13             | 20          | 3.1           | 109                             | 78                         | 25            | 5            | 4.2                        | 260                                                | 169                           | 79            |                                                 | 428                                       | 7.3 | 6     |
| Aug. 1-7                           |                      |                  | 4.1                        | 0.04      | 0.05           | 47           | 13             | 21          | 2.6           | 107                             | 85                         | 26            | 3            | 4.7                        | 270                                                | 171                           | 83            |                                                 | 438                                       | 7.3 | 7     |
| Aug. 11-17, 19-20                  |                      |                  | 5.1                        | 0.06      | 0.00           | 48           | 12             | 23          | 3.6           | 112                             | 78                         | 32            | 3            | 4.7                        | 263                                                | 170                           | 78            |                                                 | 450                                       | 7.3 | 5     |
| Aug. 21-31                         |                      |                  | 5.2                        | 0.06      | 0.00           | 51           | 14             | 23          | 3.6           | 113                             | 93                         | 40            | 4            | 3.5                        | 309                                                | 185                           | 92            |                                                 | 513                                       | 7.4 | 6     |
| Sept. 1-10                         |                      |                  | 2.3                        | 0.03      | 0.02           | 51           | 15             | 32          | 3.8           | 109                             | 104                        | 44            | 5            | 2.7                        | 336                                                | 188                           | 89            |                                                 | 584                                       | 7.4 | 7     |
| Sept. 11-20                        |                      |                  | 2.3                        | 0.03      | 0.00           | 61           | 15             | 35          | 4.0           | 112                             | 104                        | 52            | 3            | 2.7                        | 337                                                | 188                           | 104           |                                                 | 564                                       | 7.3 | 6     |
| Sept. 21-29                        |                      |                  | 4.0                        | 0.02      | 0.00           | 61           | 14             | 46          | 4.2           | 88                              | 124                        | 76            | 4            | 5.9                        | 392                                                | 210                           | 138           |                                                 | 651                                       | 7.2 | 8     |
| Time-weighted average <sup>a</sup> |                      |                  | 7.5                        | 0.04      | 0.03           | 40           | 11             | 19          | 2.5           | 76                              | 80                         | 25            | 0.3          | 4.5                        | 237                                                | 145                           | 68            |                                                 | 385                                       | --  | 6     |

<sup>a</sup> Represents 99 percent of days.

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 39, NEAR FLORENCE, IND.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection   | Chromium (Cr) |       | Nickel (Ni) | Copper (Cu) | Lead (Pb) | Zinc (Zn) | Cobalt (Co) | Arsenic (As) | Cadmium (Cd) |
|----------------------|---------------|-------|-------------|-------------|-----------|-----------|-------------|--------------|--------------|
|                      | Hexavalent    | Total |             |             |           |           |             |              |              |
| Oct. 1-10, 1956      | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0.0          |
| Oct. 11-18, 20       | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Oct. 21-31           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Nov. 1-10            | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Nov. 11-20           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.39      | 0.00        | 0.00         | 0            |
| Nov. 21-22, 25-29    | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Dec. 2-10            | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.08      | 0.00        | 0.00         | 0            |
| Dec. 12-20           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Dec. 21-22, 24-30    | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| July 1-5, 7-10, 1957 | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| July 11-18, 20       | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.03        | 0.00         | 0            |
| July 21-31           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.01        | 0.00         | 0            |
| Aug. 1-7             | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Aug. 11-17, 19-20    | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.00        | 0.00         | 0            |
| Aug. 21-31           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.01      | 0.00        | 0.00         | 0            |
| Sept. 2-10           | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.01        | 0.00         | 0            |
| Sept. 11-20          | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.00      | 0.01        | 0.00         | 0            |
| Sept. 21-29          | 0.00          | 0.00  | 0.00        | 0.00        | 0.00      | 0.01      | 0.00        | 0.00         | 0            |

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection | Phenols as $C_6H_5OH$ | Cyanides as CN | Date of collection | Phenols as $C_6H_5OH$ | Cyanides as CN |
|--------------------|-----------------------|----------------|--------------------|-----------------------|----------------|
|                    |                       |                |                    |                       |                |
| Oct. 5, 1956       | 0.000                 | 0.00           | Mar. 5, 1957       | 0.000                 | --             |
| Oct. 15            | 0.000                 | 0.00           | Mar. 15            | 0.004                 | --             |
| Oct. 25            | 0.000                 | 0.00           | Mar. 25            | 0.000                 | --             |
| Nov. 5             | 0.020                 | --             | Apr. 5             | 0.033                 | --             |
| Nov. 15            | 0.000                 | 0.00           | July 5             | 0.001                 | .01            |
| Nov. 25            | 0.000                 | 0.00           | July 15            | 0.001                 | .00            |
| Dec. 5             | 0.000                 | 0.00           | July 25            | 0.000                 | .01            |
| Dec. 15            | 0.000                 | .01            | Aug. 5             | 0.000                 | .01            |
| Dec. 26            | 0.000                 | 0.00           | Aug. 15            | 0.001                 | .01            |
| Jan. 15, 1957      | 0.002                 | --             | Aug. 25            | 0.003                 | .02            |
| Jan. 25            | 0.000                 | --             | Sept. 5            | 0.006                 | .01            |
| Feb. 5             | 0.002                 | --             | Sept. 15           | 0.002                 | .01            |
| Feb. 15            | 0.002                 | --             | Sept. 25           | 0.011                 | --             |
| Feb. 25            | 0.004                 | --             |                    |                       |                |

Temperature ( $^{\circ}F$ ) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 73   | 62   | --   | 43   | 40   | 48   | 51   | 58  | 72   | 79   | 82   | --    |
| 2       | 73   | 65   | 43   | 42   | 44   | 48   | 57   | 58  | 72   | 79   | 82   | 80    |
| 3       | 73   | 65   | 45   | 42   | --   | 45   | 51   | 58  | 72   | 80   | 89   | 80    |
| 4       | 73   | 65   | 45   | 42   | 40   | 47   | 51   | 58  | 72   | 81   | 86   | 80    |
| 5       | 73   | 65   | 45   | 42   | 45   | 47   | 47   | --  | --   | 80   | 89   | 80    |
| 6       | 74   | 64   | 50   | 40   | 47   | 47   | 47   | 58  | 75   | --   | 85   | 79    |
| 7       | 73   | 61   | 50   | 40   | 46   | 46   | 52   | 59  | 76   | 80   | 85   | 78    |
| 8       | 71   | 60   | 50   | 40   | --   | 45   | 61   | 60  | 75   | 80   | --   | 78    |
| 9       | 71   | 60   | 48   | 40   | 47   | 45   | 62   | 62  | --   | --   | --   | 78    |
| 10      | 68   | 59   | 44   | 40   | 47   | 45   | 60   | 61  | 76   | --   | --   | 77    |
| 11      | 68   | 58   | --   | --   | 48   | 46   | 60   | 63  | 77   | 80   | 79   | 76    |
| 12      | 68   | 57   | 47   | 39   | 47   | 48   | 51   | --  | 78   | 82   | 84   | 76    |
| 13      | 65   | 57   | 47   | 39   | 47   | 48   | 50   | 69  | 76   | 82   | 84   | 76    |
| 14      | 64   | 58   | 46   | 39   | 48   | 48   | 50   | 69  | 77   | 83   | 84   | 76    |
| 15      | 65   | 58   | 46   | 39   | 48   | 50   | 50   | 70  | 78   | 84   | 84   | 76    |
| 16      | 64   | 56   | 48   | 38   | 46   | 52   | 50   | 70  | 78   | --   | 84   | 76    |
| 17      | 65   | 47   | 45   | 38   | 46   | 50   | 50   | 71  | 82   | 84   | 84   | 76    |
| 18      | 64   | 47   | 47   | 38   | 46   | 52   | 51   | 72  | 82   | 85   | --   | 76    |
| 19      | --   | 48   | 45   | 38   | 45   | 50   | 51   | --  | 82   | --   | 84   | 76    |
| 20      | 68   | 53   | 44   | --   | 42   | 50   | 52   | 70  | 82   | 86   | 85   | 76    |
| 21      | 68   | 48   | 44   | 39   | 43   | 50   | 52   | 70  | 82   | 86   | 84   | 76    |
| 22      | 67   | 48   | 44   | 38   | --   | 50   | 52   | 70  | --   | 86   | 84   | 76    |
| 23      | 68   | --   | --   | 40   | 43   | 51   | 52   | 71  | 84   | 86   | 84   | 76    |
| 24      | 66   | --   | 43   | 40   | 43   | 49   | 52   | 71  | 84   | 86   | 80   | 75    |
| 25      | 65   | 47   | 47   | 40   | 44   | 48   | 52   | 70  | 81   | 86   | 81   | 74    |
| 26      | 63   | 46   | 44   | --   | 46   | 48   | 54   | 72  | 82   | 86   | 80   | 74    |
| 27      | 64   | 44   | 47   | 40   | 47   | 51   | 56   | 72  | 82   | 80   | 80   | 70    |
| 28      | 62   | 44   | 48   | 38   | 47   | 50   | 56   | --  | --   | 82   | 81   | 72    |
| 29      | 62   | 44   | 48   | 42   | --   | 50   | 57   | 71  | --   | 82   | 80   | 65    |
| 30      | 62   | --   | 45   | 41   | --   | 51   | 57   | 71  | 80   | 82   | 80   | --    |
| 31      | 63   | --   | --   | 38   | --   | 50   | --   | 72  | --   | 82   | 80   | --    |
| Average | 67   | 55   | 46   | 40   | 45   | 48   | 53   | 66  | 78   | 83   | 83   | 76    |

## KENTUCKY RIVER BASIN

NORTH FORK KENTUCKY RIVER AT HAZARD, KY.

LOCATION --At gaging station at Woodland Park bridge at eastern limits of Hazard, Perry County, 150 feet upstream from city waterworks dam, and 4.0 miles upstream from Lott's Creek.

DRAINAGE AREA 166 square miles.

RECORDS AVAILABLE: Chemical analyses: November 1949 to August 1950.

Water temperatures: October 1949 to September 1957.

EXTREMES, 1954-57. --Water temperatures: Minimum, 33°F. Jan. 17-20.

EXTREMES, 1949-57. --Water temperatures: Maximum, 93°F. Aug. 1, 1953, minimum, freezing point Dec. 17, 1953, Jan. 29, 1955.

REMARKS. --Records of discharge for water year October 1956 to September 1957.

Temperature (°F) of water, water year October 1956 to September 1957

Twice-daily measurements at approximately 7 a.m. and 5 p.m.<sup>7</sup>

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 67      | 72   | 61       | 64   | 37       | 38   | 39      | 40   | 47       | 48   | 45    | 46   | 51    | 51   | 65   | 67   | 75   | 77   | 75   | 76   | 81     | --   | 79        | 81   |
| 2.....       | 72      | 72   | 60       | 63   | 38       | 40   | 35      | 36   | 47       | 47   | 44    | 45   | 54    | 54   | 68   | 68   | 77   | 79   | 76   | 79   | --     | --   | 80        | 81   |
| 3.....       | 71      | 72   | 60       | 62   | 40       | 42   | 34      | 34   | 45       | 46   | 43    | 45   | 55    | 55   | 66   | 64   | 76   | 78   | 78   | 80   | --     | --   | 79        | 82   |
| 4.....       | 70      | 71   | 61       | 63   | 41       | 44   | 35      | 36   | 50       | 52   | 41    | 43   | 59    | 62   | 60   | 76   | 78   | 79   | 82   | --   | --     | 80   | 81        |      |
| 5.....       | 69      | 69   | 60       | 63   | 42       | 45   | 36      | 37   | 51       | 51   | 42    | 45   | 51    | 51   | 60   | 60   | 76   | 74   | 81   | 80   | --     | --   | 79        | 82   |
| 6.....       | 68      | 70   | 59       | 60   | 44       | 46   | 36      | 37   | 49       | 49   | 43    | 44   | 54    | 56   | 57   | 58   | 73   | 75   | 77   | 79   | --     | --   | 80        | 78   |
| 7.....       | 67      | 68   | 60       | 61   | 46       | 50   | 37      | 40   | 49       | 50   | 44    | 45   | 48    | 48   | 58   | 60   | 73   | 76   | 76   | 78   | --     | --   | 81        | 79   |
| 8.....       | 64      | 66   | 60       | 58   | 51       | 53   | 38      | 40   | 50       | 51   | 43    | 41   | 50    | 52   | 61   | 62   | 74   | 77   | 78   | 78   | --     | --   | 79        | 80   |
| 9.....       | 63      | 65   | 53       | 53   | 51       | 51   | 40      | 41   | 51       | 52   | 39    | 42   | 49    | 49   | 65   | 68   | 77   | 76   | 80   | 81   | --     | --   | 78        | 79   |
| 10.....      | 61      | 63   | 51       | 52   | 49       | 48   | 44      | 45   | 51       | 51   | 40    | 44   | 49    | 49   | 65   | 67   | 75   | 78   | 77   | 77   | --     | --   | 78        | 78   |
| 11.....      | 59      | 61   | 48       | 53   | 45       | 46   | 43      | 43   | 48       | 47   | 42    | 49   | 50    | 51   | 68   | 69   | 75   | 77   | 76   | 78   | --     | --   | 76        | 78   |
| 12.....      | 60      | 62   | 51       | 55   | 46       | 46   | 42      | 44   | 44       | 45   | 50    | 53   | 53    | 54   | 69   | 70   | 76   | 74   | 78   | 79   | --     | --   | 76        | 77   |
| 13.....      | 60      | 63   | 48       | 51   | 49       | 50   | 42      | 43   | 43       | 45   | 50    | 53   | 50    | 50   | 72   | 74   | 80   | 82   | 78   | 80   | --     | --   | 74        | 76   |
| 14.....      | 61      | 64   | 48       | 51   | 49       | 50   | 41      | 42   | 43       | 45   | 50    | 54   | 46    | 44   | 74   | 76   | 80   | 83   | 76   | 78   | --     | --   | 75        | 75   |
| 15.....      | 62      | 65   | 48       | 51   | 51       | 52   | 39      | 38   | 42       | 44   | 52    | 55   | 49    | 50   | 74   | 75   | 80   | 84   | 77   | 79   | --     | --   | 74        | 76   |
| 16.....      | 62      | 65   | 50       | 52   | 51       | 53   | 36      | 36   | 42       | 44   | 51    | 54   | 52    | 51   | 75   | 76   | 82   | 84   | 80   | 82   | --     | --   | 73        | 75   |
| 17.....      | 61      | 64   | 48       | 49   | 51       | 52   | 33      | 34   | 40       | 43   | 50    | 53   | 51    | 52   | 73   | 74   | 78   | 80   | 79   | 82   | --     | --   | 74        | 76   |
| 18.....      | 63      | 63   | 46       | 48   | 51       | 51   | 33      | 34   | 39       | 42   | 50    | 51   | 50    | 52   | 76   | 77   | 82   | 84   | 81   | 83   | --     | --   | 75        | 76   |
| 19.....      | 61      | 64   | 44       | 46   | 48       | 49   | 33      | 35   | 41       | 40   | 51    | 54   | 58    | 60   | 76   | 74   | 78   | 82   | 80   | 82   | --     | --   | 73        | 75   |
| 20.....      | 63      | 64   | 44       | 45   | 49       | 49   | 33      | 34   | 38       | 39   | 49    | 51   | 66    | 68   | 74   | 72   | 81   | 83   | 81   | 83   | --     | --   | 73        | 76   |
| 21.....      | 63      | 63   | 46       | 47   | 50       | 52   | 34      | 35   | 36       | 36   | 49    | 52   | 65    | 67   | 68   | 68   | 76   | 80   | 80   | 82   | --     | --   | 74        | 75   |
| 22.....      | 63      | 65   | 45       | 45   | 52       | 53   | 38      | 39   | 35       | 40   | 47    | 48   | 67    | 69   | 70   | 68   | 80   | 83   | 80   | 83   | --     | --   | 74        | 75   |
| 23.....      | 64      | 64   | 44       | 41   | 53       | 53   | 45      | 45   | 41       | 44   | 48    | 50   | 68    | 70   | 67   | 69   | 80   | 80   | 81   | 82   | --     | --   | 74        | 75   |
| 24.....      | 63      | 64   | 37       | 37   | 52       | 52   | 42      | 42   | 43       | 46   | 48    | 52   | 68    | 68   | 72   | 74   | 78   | 80   | 76   | 80   | --     | --   | 73        | 73   |
| 25.....      | 62      | 65   | 37       | 38   | 46       | 46   | 41      | 43   | 46       | 48   | 50    | 53   | 68    | 70   | 72   | 74   | 74   | 76   | 76   | 80   | --     | --   | 72        | 74   |
| 26.....      | 61      | 63   | 38       | 38   | 44       | 44   | 42      | 43   | 50       | 53   | 51    | 52   | 66    | 68   | 77   | 78   | 74   | 76   | 78   | 82   | --     | --   | 72        | 73   |
| 27.....      | 60      | 60   | 38       | 38   | 42       | 43   | 43      | 43   | 53       | 53   | 50    | 50   | 68    | 70   | 76   | 78   | 75   | 77   | 78   | 80   | --     | --   | 71        | 72   |
| 28.....      | 58      | 62   | 37       | 39   | 42       | 43   | 43      | 44   | 50       | 49   | 47    | 49   | 69    | 70   | 73   | 74   | 78   | 79   | 78   | 81   | --     | --   | 70        | 71   |
| 29.....      | 58      | 61   | 37       | 38   | 41       | 40   | 48      | 48   | --       | --   | 44    | 46   | 70    | 67   | 73   | 75   | 78   | 79   | 83   | 77   | --     | --   | 80        | 70   |
| 30.....      | 59      | 61   | 39       | 38   | 39       | 40   | 48      | 48   | --       | --   | 44    | 47   | 65    | 68   | 74   | 76   | 76   | 76   | 81   | 83   | --     | --   | 81        | 68   |
| 31.....      | 60      | 63   | --       | --   | 39       | 42   | 47      | 48   | --       | --   | 45    | 47   | --    | --   | 73   | 75   | --   | --   | 80   | 84   | --     | --   | 78        | 80   |
| Average..... | 63      | 65   | 49       | 50   | 46       | 47   | 39      | 40   | 45       | 46   | 46    | 49   | 57    | 58   | 69   | 73   | 77   | 79   | 78   | 80   | --     | --   | 75        | 76   |

KENTUCKY RIVER BASIN--Continued  
KENTUCKY RIVER AT LOCK 14, AT HEIDELBERG, KY.

LOCATION.--At lock 14, 1,000 feet downstream from gaging station at Heidelberg, Lee County, and 0.4 mile upstream from Sturgeon Creek.  
DRAINAGE AREA.--2,657 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1950 to August 1951, October 1956 to September 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Discharge<br>(cfs) | Tem-<br>pera-<br>ture<br>(°F) | Silica<br>(SiO <sub>2</sub> ) | Alum-<br>inum<br>(Al) | Iron<br>(Fe) | Mang-<br>anese<br>(Mn) | Cal-<br>cium<br>(Ca) | Mag-<br>ne-<br>sium<br>(Mg) | Sod-<br>ium<br>(Na) | Pot-<br>as-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sul-<br>fate<br>(SO <sub>4</sub> ) | Chlo-<br>ride<br>(Cl) | Fluo-<br>ride<br>(F) | Ni-<br>trate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> | Total<br>acidity<br>(H <sup>+</sup> ) | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|---------------------|--------------------|-------------------------------|-------------------------------|-----------------------|--------------|------------------------|----------------------|-----------------------------|---------------------|----------------------------|-----------------------------------------|------------------------------------|-----------------------|----------------------|------------------------------------|---------------------------------------------------------------------|----------------------------------|---------------------------------------|-------------------------------------------------------------|-----|-------|
| Oct. 1, 1956 .....  | 72                 |                               | 4.2                           |                       | 0.00         | 0.00                   | 28                   | 10                          | 14                  | 3.4                        | 52                                      | 94                                 | 1.0                   | 0.3                  | 0.9                                | 194                                                                 | 111                              | 68                                    | 311                                                         | 7.0 | 2     |
| Dec. 18 .....       | 4,020              |                               | 6.8                           |                       | .02          |                        | 9.4                  | 3.6                         | 3.2                 | 1.8                        | 14                                      | 31                                 | 2.8                   | .2                   | 2.4                                | 73                                                                  | 38                               | 27                                    | 115                                                         | 6.5 | 9     |
| Jan. 15, 1957 ..... | 3,950              |                               | 6.9                           |                       | .07          |                        | 7.4                  | 3.5                         | 2.8                 | 1.0                        | 13                                      | 22                                 | 2.0                   | .1                   | 1.3                                | 67                                                                  | 33                               | 22                                    | 99                                                          | 6.7 | 6     |
| Mar. 19 .....       | 2,820              |                               | 6.3                           |                       | .01          |                        | 9.7                  | 4.7                         | 4.8                 | 1.2                        | 16                                      | 34                                 | 2.5                   | .1                   | .6                                 | 75                                                                  | 44                               | 30                                    | 121                                                         | 7.1 | 1     |
| May 6 .....         | 790                |                               | 7.1                           |                       | .19          |                        | 13                   | 5.0                         | 6.8                 | 1.8                        | 27                                      | 40                                 | 2.5                   | .3                   | .7                                 | 88                                                                  | 53                               | 31                                    | 158                                                         | 7.1 | 7     |
| June 10 .....       | 841                |                               | 5.4                           |                       | .08          |                        | 21                   | 8.0                         | 12                  | 2.6                        | 42                                      | 68                                 | 6.0                   | .1                   | .6                                 | 157                                                                 | 86                               | 51                                    | 249                                                         | 7.1 | 5     |
| July 29 .....       | 205                |                               | 5.2                           |                       | .02          |                        | 20                   | 8.2                         | 12                  | 2.4                        | 49                                      | 62                                 | 5.7                   | .1                   | .8                                 | 144                                                                 | 84                               | 44                                    | 239                                                         | 6.9 | 3     |
| Aug. 9 .....        | 65                 |                               | 4.8                           |                       | .07          | .00                    | 22                   | 8.2                         | 12                  | 3.0                        | 54                                      | 62                                 | 5.0                   | .2                   | .9                                 | 154                                                                 | 90                               | 46                                    | 256                                                         | 7.2 | 3     |
| Sept. 2 .....       | 20                 |                               | 4.3                           |                       | .06          | --                     | 22                   | 8.3                         | 12                  | 2.7                        | 55                                      | 60                                 | 6.0                   | .2                   | .6                                 | 152                                                                 | 90                               | 45                                    | 252                                                         | 7.1 | 1     |



## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.

LOCATION.--At gaging station at Broadway Street Bridge, at Frankfort, Franklin County, 300 feet upstream from Benson Creek, and 0.9 mile upstream from lock 4, and at mile 65.9.

DRAINAGE AREA.--5,412 square miles, including that of Benson Creek.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1957.

Water temperatures: October 1949 to September 1957.

Sediment records: October 1952 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 170 ppm Dec. 1-2, 4-10, 12-15, 17; minimum, 65 ppm Feb. 1-5.

Hardness: Maximum, 121 ppm July 1, 4-10; minimum, 46 ppm Feb. 1-5.

Specific conductance: Maximum daily, 353 micromhos Dec. 15; minimum daily, 96 micromhos Feb. 2.

Water temperatures: Maximum, 88° F July 22; minimum, 35° F Jan. 20-21, Mar. 1-2.

Sediment concentrations: Maximum daily, 1,760 ppm Dec. 15; minimum daily, 1 ppm Nov. 21-25.

Sediment loads: Maximum daily, 248,000 tons Feb. 2; minimum daily, 2 tons Nov. 16, 20, 23.

EXTREMES, 1949-57.--Dissolved solids: Maximum, 224 ppm Nov. 21-30, 1949; minimum, 65 ppm Feb. 1-5, 1957.

Hardness: Maximum, 154 ppm Jan. 16-25, 27-30, 1956; minimum, 42 ppm May 10-13, 1953; Mar. 3, 1955.

Specific conductance: Maximum daily, 555 micromhos Dec. 7, 1952; minimum daily, 80 micromhos Feb. 4, 1951.

Water temperatures: Maximum, 88° F July 22, 1957; minimum, 34° F Feb. 8, 1951.

Sediment concentrations (1952-57): Maximum daily, 2,420 ppm Jan. 31, 1956; minimum daily, 1 ppm on many days during 1952 to 1956.

Sediment loads (1952-57): Maximum daily, 248,000 tons Feb. 2, 1957; minimum daily, 1 ton, on many days during 1952 to 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge, including flow of Benson Creek, for water year October 1956 to September 1957 given in WSP 1505. Flow regulated by Harrington Lake and hydroelectric plant at lock 7.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection         | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-21, 1956            | 362                  | --                         | --        | 30           | 5.9            | 6.9         |               | 100                             | 20                         | 6.4           | --           | 2.2                        | 119                                                | 99                            | 17            | 225                                       | 7.2 | 1     |
| Oct. 22-Nov. 4             | 372                  | --                         | --        | 31           | 5.8            | 6.4         |               | 102                             | 20                         | 7.2           | --           | 1.2                        | 134                                                | 102                           | 18            | 231                                       | 7.3 | 2     |
| Nov. 10-14, 16, 26, 29, 30 | 744                  | 3.2                        | 0.01      | 32           | 7.1            | 6.6         | 2.2           | 106                             | 23                         | 7.6           | 0.2          | 2.2                        | 146                                                | 109                           | 22            | 246                                       | 7.4 | 3     |
| Dec. 1-2, 12, 13, 17       | 8,945                | --                         | --        | 36           | 7.0            | 9.4         |               | 108                             | 25                         | 16            | --           | 3.3                        | 170                                                | 119                           | 30            | 294                                       | 7.7 | 5     |
| Dec. 18-19, 22, 24, 26, 27 | 18,050               | --                         | --        | 17           | 3.6            | 8.0         |               | 47                              | 27                         | 4.5           | --           | 2.5                        | 96                                                 | 58                            | 19            | 143                                       | 7.3 | 20    |
| Jan. 1-12, 1957            | 10,930               | --                         | --        | 23           | 5.7            | 4.8         |               | 74                              | 27                         | 5.4           | --           | 3.2                        | 118                                                | 81                            | 20            | 187                                       | 7.3 | 11    |
| Jan. 13-17                 | 13,570               | --                         | --        | 15           | 3.6            | 3.7         |               | 44                              | 17                         | 3.6           | --           | 2.5                        | 89                                                 | 52                            | 17            | 128                                       | 7.3 | 15    |
| Jan. 18-25                 | 14,730               | --                         | --        | 25           | 4.5            | 4.6         |               | 75                              | 20                         | 4.0           | --           | 3.6                        | 116                                                | 81                            | 20            | 182                                       | 7.3 | 5     |
| Jan. 26-31                 | 32,360               | --                         | --        | 17           | 4.3            | 4.4         |               | 54                              | 18                         | 3.3           | --           | 3.0                        | 86                                                 | 60                            | 16            | 139                                       | 7.6 | 7     |
| Feb. 1-5                   | 74,620               | 6.0                        | .02       | 13           | 3.2            | 2.0         | 1.4           | 34                              | 18                         | 1.8           | .2           | 2.1                        | 65                                                 | 46                            | 16            | 106                                       | 7.3 | 6     |
| Feb. 6-11                  | 33,620               | --                         | --        | 24           | 5.0            | 3.2         |               | 68                              | 23                         | 3.5           | --           | 3.5                        | 100                                                | 80                            | 23            | 172                                       | 7.4 | 5     |
| Feb. 12-15                 | 36,200               | --                         | --        | 15           | 3.9            | 2.3         |               | 38                              | 21                         | 2.8           | --           | 2.0                        | 70                                                 | 54                            | 22            | 121                                       | 7.2 | 3     |
| Feb. 16-Mar. 8             | 8,484                | --                         | --        | 22           | 5.2            | 4.1         |               | 60                              | 26                         | 5.2           | --           | 2.6                        | 112                                                | 76                            | 28            | 186                                       | 7.5 | 2     |
| Mar. 9-29                  | 9,206                | --                         | --        | 23           | 5.7            | 4.1         |               | 70                              | 23                         | 5.0           | --           | 2.1                        | 104                                                | 81                            | 24            | 185                                       | 7.5 | 7     |
| Mar. 30-Apr. 10            | 23,460               | --                         | --        | 28           | 5.3            | 5.1         |               | 84                              | 24                         | 5.0           | --           | 2.4                        | 120                                                | 92                            | 23            | 202                                       | 7.4 | 2     |
| Apr. 13-24                 | 9,694                | --                         | --        | 23           | 4.9            | 3.0         |               | 72                              | 18                         | 3.2           | --           | 2.7                        | 107                                                | 78                            | 18            | 175                                       | 7.4 | 10    |
| Apr. 25-May 15             | 3,672                | --                         | --        | 30           | 6.4            | 3.7         |               | 93                              | 23                         | 5.3           | --           | 2.4                        | 141                                                | 102                           | 26            | 224                                       | 7.5 | 10    |

|                              |       |     |      |    |     |     |     |    |     |     |     |     |     |    |     |     |    |
|------------------------------|-------|-----|------|----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|----|
| May 16-31, 1957 .....        | 4,772 | --  | --   | 33 | 6.4 | 7.4 | 107 | 25 | 6.5 | --  | 3.3 | 152 | 109 | 22 | 247 | 7.1 | -- |
| June 1-10 .....              | 1,184 | --  | --   | 34 | 6.2 | 9.7 | 111 | 25 | 7.7 | --  | 4.2 | 156 | 111 | 20 | 256 | 7.2 | -- |
| June 11-20 .....             | 1,943 | 8.4 | 0.08 | 35 | 7.2 | 8.7 | 108 | 24 | 14  | 0.2 | 3.0 | 163 | 117 | 28 | 275 | 7.2 | 7  |
| June 21-30 .....             | 1,933 | --  | --   | 34 | 7.0 | 9.2 | 111 | 26 | 10  | --  | 2.3 | 165 | 114 | 23 | 265 | 7.2 | -- |
| July 1-4-10 .....            | a791  | --  | --   | 37 | 6.8 | 6.2 | 119 | 22 | 8.0 | --  | 3.0 | 162 | 121 | 23 | 265 | 7.3 | -- |
| July 11-20 .....             | a720  | --  | --   | 33 | 7.2 | 11  | 109 | 25 | 13  | --  | 1.9 | 163 | 112 | 22 | 269 | 7.2 | -- |
| July 21-28 .....             | a650  | --  | --   | 34 | 5.4 | 13  | 105 | 22 | 18  | --  | 1.2 | 168 | 107 | 21 | 278 | 7.2 | -- |
| July 29-30, Aug. 3-9 ..      | a548  | 3.5 | .00  | 33 | 6.3 | 6.9 | 106 | 22 | 11  | .1  | 2.0 | 142 | 109 | 22 | 250 | 7.0 | 6  |
| Aug. 11-14 .....             | a442  | --  | --   | 25 | 4.5 | 6.0 | 82  | 17 | 5.5 | --  | 1.6 | 122 | 81  | 14 | 190 | 7.2 | -- |
| Aug. 15-27, 29-31 .....      | a378  | --  | --   | 31 | 5.7 | 7.1 | 102 | 20 | 7.5 | --  | 1.7 | 135 | 101 | 18 | 229 | 7.4 | -- |
| Sept. 1-9 .....              | a324  | --  | --   | 32 | 6.1 | 7.8 | 103 | 22 | 9.5 | --  | 1.3 | 138 | 105 | 20 | 242 | 7.2 | -- |
| Sept. 10-11, 14, 25, 28, 30  | 1,165 | --  | --   | 35 | 6.7 | 8.5 | 112 | 25 | 10  | --  | 1.9 | 153 | 115 | 23 | 265 | 7.0 | -- |
| Time-weighted average 0..... | 7,653 | --- | --   | 29 | 5.9 | 6.5 | 90  | 22 | 7.4 | --  | 2.4 | 132 | 96  | 22 | 222 | --  | -- |

a Estimated  
b Represents 91 percent of days and 91 percent of runoff.

KENTUCKY RIVER BASIN--Continued  
 KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |     |
| 1.....       | 71      | 69  | 66       | 65  | 46       | 46  | 43      | 43  | 40       | 38  | 36    | 35  | 47    | 47  | 68  | 67  | 71   | 70  | 80   | 78  | 84     | 80  | 84        | 80  |
| 2.....       | 71      | 69  | 67       | 65  | 46       | 46  | 43      | 40  | 38       | 36  | 35    | 35  | 48    | 47  | 68  | 68  | 70   | 70  | 80   | 78  | 81     | 80  | 82        | 80  |
| 3.....       | 70      | 69  | 66       | 65  | 46       | 46  | 43      | 42  | 40       | 38  | 36    | 36  | 48    | 48  | 69  | 68  | 74   | 74  | 80   | 78  | 82     | 80  | 81        | 79  |
| 4.....       | 69      | 68  | 65       | 64  | 46       | 45  | 42      | 40  | 38       | 36  | 36    | 36  | 49    | 48  | 68  | 67  | 71   | 71  | 80   | 78  | 82     | 81  | 79        | 77  |
| 5.....       | 69      | 68  | 66       | 64  | 45       | 45  | 40      | 40  | 38       | 36  | 36    | 36  | 49    | 49  | 67  | 66  | 74   | 72  | 83   | 77  | 81     | 79  | 79        | 77  |
| 6.....       | 70      | 68  | 66       | 65  | 46       | 45  | 40      | 40  | 39       | 39  | 37    | 36  | 49    | 48  | 68  | 66  | 74   | 71  | 79   | 77  | 81     | 78  | 79        | 77  |
| 7.....       | 70      | 68  | 66       | 66  | 47       | 46  | 40      | 39  | 39       | 39  | 37    | 37  | 50    | 49  | 69  | 66  | 74   | 72  | 82   | 78  | 82     | 78  | 79        | 77  |
| 8.....       | 68      | 67  | 65       | 63  | 47       | 47  | 39      | 39  | 39       | 39  | 38    | 37  | 51    | 50  | 68  | 67  | 76   | 73  | 83   | 80  | 82     | 78  | 79        | 77  |
| 9.....       | 67      | 67  | 63       | 61  | 47       | 47  | 39      | 39  | 40       | 39  | 39    | 38  | 51    | 50  | 69  | 67  | 75   | 74  | 84   | 81  | 79     | 78  | 79        | 77  |
| 10.....      | 67      | 66  | 61       | 60  | 47       | 47  | 40      | 39  | 42       | 40  | 39    | 38  | 51    | 51  | 69  | 66  | 74   | 72  | 84   | 80  | 80     | 78  | 79        | 77  |
| 11.....      | 67      | 64  | 60       | 59  | 47       | 47  | 40      | 39  | 42       | 42  | 38    | 38  | 51    | 51  | 71  | 67  | 72   | 72  | 86   | 80  | 81     | 79  | 80        | 79  |
| 12.....      | 67      | 64  | 60       | 59  | 47       | 46  | 39      | 38  | 42       | 42  | 39    | 38  | 51    | 51  | 71  | 69  | 73   | 72  | 84   | 80  | 79     | 77  | 81        | 79  |
| 13.....      | 67      | 65  | 59       | 57  | 46       | 44  | 39      | 37  | 42       | 41  | 40    | 39  | 51    | 50  | 74  | 70  | 73   | 70  | 73   | 84  | 80     | 81  | 78        | 81  |
| 14.....      | 67      | 64  | 57       | 57  | 45       | 44  | 39      | 39  | 41       | 40  | 40    | 40  | 50    | 50  | 73  | 70  | 74   | 73  | 83   | 81  | 81     | 79  | 80        | 80  |
| 15.....      | 72      | 64  | 57       | 57  | 45       | 45  | 39      | 38  | 40       | 39  | 41    | 40  | 51    | 50  | 75  | 71  | 75   | 74  | 85   | 81  | 82     | 79  | 80        | 78  |
| 16.....      | 70      | 66  | 57       | 56  | 47       | 45  | 38      | 38  | 39       | 38  | 42    | 41  | 51    | 51  | 75  | 72  | 76   | 75  | 84   | 81  | 83     | 80  | 78        | 78  |
| 17.....      | 66      | 66  | 56       | 56  | 47       | 47  | 38      | 37  | 38       | 38  | 42    | 41  | 51    | 51  | 75  | 70  | 79   | 75  | 84   | 81  | 81     | 79  | 79        | 78  |
| 18.....      | 66      | 66  | 56       | 54  | 47       | 47  | 37      | 36  | 38       | 37  | 43    | 42  | 51    | 51  | 75  | 70  | 79   | 77  | 87   | 80  | 80     | 78  | 79        | 77  |
| 19.....      | 66      | 66  | 54       | 54  | 47       | 46  | 36      | 36  | 37       | 37  | 43    | 43  | 52    | 51  | 73  | 72  | 80   | 76  | 86   | 83  | 79     | 78  | 77        | 76  |
| 20.....      | 66      | 66  | 54       | 54  | 47       | 46  | 36      | 35  | 37       | 37  | 43    | 43  | 54    | 52  | 72  | 72  | 80   | 77  | 87   | 83  | 80     | 77  | 76        | 75  |
| 21.....      | 66      | 66  | 54       | 54  | 47       | 46  | 36      | 35  | 37       | 37  | 44    | 42  | 55    | 54  | 72  | 72  | 84   | 76  | 87   | 85  | 79     | 77  | 76        | 75  |
| 22.....      | 66      | 66  | 52       | 52  | 48       | 47  | 37      | 36  | 37       | 36  | 44    | 44  | 59    | 55  | 72  | 70  | 82   | 79  | 85   | 85  | 79     | 77  | 76        | 75  |
| 23.....      | 66      | 66  | 52       | 51  | 47       | 46  | 39      | 37  | 36       | 36  | 44    | 44  | 60    | 58  | 72  | 69  | 82   | 79  | 87   | 84  | 79     | 77  | 76        | 75  |
| 24.....      | 66      | 66  | 51       | 50  | 47       | 47  | 40      | 39  | 36       | 36  | 46    | 44  | 62    | 59  | 70  | 68  | 81   | 80  | 84   | 82  | 78     | 77  | 74        | 73  |
| 25.....      | 66      | 66  | 50       | 49  | 47       | 46  | 38      | 36  | 36       | 36  | 46    | 45  | 62    | 62  | 68  | 67  | 81   | 79  | 83   | 81  | 79     | 77  | 73        | 72  |
| 26.....      | 66      | 65  | 49       | 45  | 46       | 45  | 38      | 36  | 36       | 36  | 47    | 46  | 62    | 62  | 69  | 68  | 81   | 79  | 81   | 80  | 81     | 77  | 73        | 72  |
| 27.....      | 65      | 63  | 47       | 47  | 46       | 46  | 38      | 38  | 36       | 36  | 47    | 47  | 63    | 62  | 68  | 68  | 80   | 79  | 81   | 80  | 83     | 77  | 72        | 72  |
| 28.....      | 64      | 63  | 47       | 47  | 46       | 45  | 38      | 38  | 36       | 36  | 47    | 47  | 67    | 63  | 68  | 68  | 80   | 75  | 81   | 79  | 81     | 78  | 72        | 71  |
| 29.....      | 68      | 64  | 47       | 46  | 45       | 44  | 38      | 38  | ---      | --- | 47    | 46  | 67    | 65  | 68  | 68  | 78   | 81  | 80   | 83  | 78     | 82  | 71        | 71  |
| 30.....      | 69      | 64  | 46       | 46  | 44       | 44  | 38      | 38  | ---      | --- | 46    | 45  | 68    | 67  | 69  | 68  | 79   | 78  | 81   | 80  | 82     | 80  | 73        | 71  |
| 31.....      | 67      | 66  | ---      | --- | 44       | 44  | 43      | 38  | ---      | --- | 47    | 47  | ---   | --- | 72  | 69  | ---  | --- | 83   | 79  | 83     | 80  | 71        | --- |
| Average..... | 68      | 66  | 57       | 56  | 46       | 46  | 39      | 38  | 39       | 38  | 41    | 41  | 54    | 53  | 70  | 69  | 77   | 75  | 83   | 80  | 81     | 78  | 77        | 76  |

## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 239                   | 21                       | 14           | 324                   | 18                       | 16           | 783                   | 15                       | 32           |
| 2.....  | 211                   | 86                       | 49           | 308                   | 27                       | 22           | 688                   | 28                       | 52           |
| 3.....  | 292                   | 129                      | 102          | 625                   | 27                       | 46           | 688                   | 30                       | a55          |
| 4.....  | 650                   | 80                       | a140         | 1,150                 | 45                       | 140          | 596                   | 27                       | 43           |
| 5.....  | 669                   | 32                       | 58           | 945                   | --                       | e85          | 632                   | 27                       | 46           |
| 6.....  | 688                   | 22                       | 41           | 966                   | }                        | e35          | 669                   | 23                       | 42           |
| 7.....  | 392                   | 20                       | 21           | 945                   |                          |              | 614                   | 8                        | 13           |
| 8.....  | 379                   | 16                       | 16           | 726                   |                          |              | 802                   | 7                        | 15           |
| 9.....  | 316                   | 17                       | 14           | 764                   |                          |              | 1,610                 | 11                       | s45          |
| 10..... | 353                   | 19                       | 18           | 614                   | 10                       | 16           | 1,030                 | 269                      | 748          |
| 11..... | 405                   | 23                       | 25           | 524                   | 8                        | 11           | 1,500                 | --                       | e1,400       |
| 12..... | 366                   | 23                       | 23           | 431                   | 11                       | 13           | 1,730                 | 323                      | 1,510        |
| 13..... | 284                   | 20                       | a15          | 470                   | 20                       | 25           | 2,980                 | 330                      | 2,660        |
| 14..... | 260                   | 16                       | 11           | 470                   | 25                       | 32           | 19,900                | 1,070                    | s67,400      |
| 15..... | 268                   | 13                       | 9            | 431                   | 8                        | 9            | 44,200                | 1,760                    | 210,000      |
| 16..... | 276                   | 9                        | 7            | 405                   | 2                        | 2            | 48,700                | 1,400                    | a180,000     |
| 17..... | 300                   | 13                       | 10           | 379                   | 5                        | 5            | 49,000                | 1,000                    | 132,000      |
| 18..... | 400                   | 15                       | 16           | 366                   | 3                        | 3            | 26,700                | 835                      | 60,200       |
| 19..... | 450                   | 13                       | 16           | 392                   | 5                        | 5            | 9,070                 | 600                      | 14,700       |
| 20..... | 350                   | 18                       | 17           | 470                   | 2                        | 2            | 8,780                 | 234                      | s5,150       |
| 21..... | 350                   | 26                       | 24           | 1,080                 | 1                        | 3            | 16,800                | 182                      | 8,260        |
| 22..... | 300                   | 20                       | 16           | 1,280                 | 1                        | 3            | 12,300                | 143                      | 4,750        |
| 23..... | 350                   | 15                       | 14           | 903                   | 1                        | 2            | 16,900                | 124                      | 5,660        |
| 24..... | 300                   | 15                       | 12           | 1,010                 | 1                        | 3            | 26,700                | 170                      | 12,200       |
| 25..... | 250                   | 15                       | 10           | 1,100                 | 1                        | 3            | 27,700                | 200                      | a15,000      |
| 26..... | 204                   | 13                       | 7            | 1,180                 | 2                        | 6            | 22,700                | 160                      | 9,810        |
| 27..... | 284                   | 16                       | 12           | 1,280                 | 3                        | a10          | 15,500                | 133                      | 5,570        |
| 28..... | 418                   | 18                       | 20           | 1,080                 | 5                        | a14          | 10,500                | --                       | e3,100       |
| 29..... | 246                   | 15                       | 10           | 1,120                 | 6                        | 18           | 7,990                 | --                       | e2,000       |
| 30..... | 184                   | 17                       | 8            | 1,200                 | 5                        | 16           | 6,600                 | --                       | e1,400       |
| 31..... | 260                   | 19                       | 13           | --                    | --                       | --           | 5,550                 | --                       | e900         |
| Total.  | 10,694                | --                       | 768          | 22,938                | --                       | 650          | 389,912               | --                       | 744,761      |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 4,020                 | 45                       | 488          | 66,000                | 1,170                    | 208,000      | 7,620                 | 28                       | 576          |
| 2.....  | 3,430                 | 35                       | 324          | 79,100                | 1,160                    | 248,000      | 7,660                 | 31                       | 641          |
| 3.....  | 3,240                 | 35                       | 306          | 83,600                | 740                      | 187,000      | 8,450                 | 25                       | 570          |
| 4.....  | 2,440                 | 21                       | 138          | 78,800                | 390                      | 83,000       | 8,980                 | 19                       | 461          |
| 5.....  | 2,170                 | 23                       | 135          | 65,600                | 260                      | 46,000       | 8,310                 | 15                       | 336          |
| 6.....  | 2,170                 | 34                       | 199          | 36,000                | 252                      | 24,500       | 7,350                 | 10                       | 198          |
| 7.....  | 2,300                 | 29                       | 180          | 19,200                | 209                      | 10,800       | 6,860                 | 14                       | 259          |
| 8.....  | 2,650                 | 30                       | 215          | 18,600                | 152                      | 7,630        | 8,830                 | 17                       | 405          |
| 9.....  | 9,510                 | 47                       | 1,210        | 30,700                | 310                      | 25,700       | 11,900                | 16                       | 514          |
| 10..... | 29,700                | 162                      | 13,000       | 46,900                | 491                      | 62,200       | 15,400                | 39                       | 1,620        |
| 11..... | 34,600                | 240                      | 22,400       | 50,300                | 501                      | 68,000       | 19,800                | 58                       | 3,100        |
| 12..... | 34,900                | 266                      | 25,100       | 50,200                | 302                      | 40,900       | 20,300                | 58                       | 3,180        |
| 13..... | 27,500                | 200                      | 14,800       | 48,700                | 336                      | 44,200       | 19,000                | 47                       | 2,410        |
| 14..... | 15,500                | 177                      | 7,410        | 31,000                | 307                      | 25,700       | 15,200                | 71                       | 2,910        |
| 15..... | 10,500                | 133                      | 3,770        | 14,900                | 182                      | 7,320        | 12,300                | 60                       | 1,990        |
| 16..... | 7,940                 | 96                       | 2,060        | 11,000                | 112                      | 3,330        | 9,760                 | 46                       | 1,210        |
| 17..... | 6,420                 | 68                       | 1,180        | 9,120                 | 62                       | 1,530        | 7,620                 | 38                       | 782          |
| 18..... | 5,300                 | 48                       | 687          | 7,890                 | 56                       | 1,190        | 6,820                 | 31                       | 571          |
| 19..... | 4,060                 | 48                       | 526          | 6,860                 | 44                       | 815          | 6,560                 | 28                       | 496          |
| 20..... | 3,050                 | 36                       | 296          | 6,560                 | 38                       | 673          | 6,160                 | 23                       | 382          |
| 21..... | 2,830                 | 36                       | 275          | 6,780                 | 33                       | 604          | 5,640                 | 24                       | 365          |
| 22..... | 6,780                 | 46                       | 842          | 10,300                | 34                       | 945          | 5,170                 | 18                       | 251          |
| 23..... | 26,800                | 292                      | s24,400      | 11,200                | 38                       | 1,150        | 4,630                 | 20                       | 250          |
| 24..... | 33,200                | 913                      | 81,800       | 9,560                 | 30                       | 774          | 4,300                 | 20                       | 232          |
| 25..... | 35,800                | 749                      | 72,400       | 9,070                 | 24                       | 588          | 4,340                 | 19                       | 223          |
| 26..... | 29,400                | 670                      | 53,200       | 8,780                 | 24                       | 569          | 4,670                 | 20                       | 252          |
| 27..... | 15,700                | 365                      | 15,500       | 8,540                 | 20                       | 461          | 4,750                 | 20                       | 256          |
| 28..... | 13,000                | 292                      | 10,200       | 8,450                 | 17                       | 388          | 4,670                 | 17                       | 214          |
| 29..... | 30,600                | 336                      | 27,800       | --                    | --                       | --           | 4,340                 | 14                       | 164          |
| 30..... | 49,000                | 477                      | 63,100       | --                    | --                       | --           | 3,940                 | 15                       | 160          |
| 31..... | 56,600                | 479                      | 73,200       | --                    | --                       | --           | 3,700                 | 15                       | 150          |
| Total.  | 511,110               | --                       | 517,141      | 833,710               | --                       | 1,081,967    | 265,030               | --                       | 25,128       |

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                 |                          |              | May                   |                          |              | June                  |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 3,660                 | 15                       | 148          | 4,220                 | 198                      | 2,260        | 1,550                 | 32                       | 134          |
| 2.....  | 4,590                 | 22                       | 273          | 3,780                 | 187                      | 1,910        | 945                   | 39                       | 100          |
| 3.....  | 7,000                 | 22                       | 416          | 3,320                 | 173                      | 1,550        | 840                   | 32                       | 72           |
| 4.....  | 32,200                | 585                      | s54,400      | 2,720                 | 98                       | 720          | 802                   | 34                       | 74           |
| 5.....  | 45,900                | 942                      | 117,000      | 2,140                 | 104                      | 601          | 802                   | 35                       | 76           |
| 6.....  | 28,300                | 381                      | 29,100       | 1,790                 | 103                      | 498          | 882                   | 27                       | 64           |
| 7.....  | 25,300                | 240                      | 16,400       | 1,580                 | 78                       | 333          | 1,030                 | 27                       | 75           |
| 8.....  | 35,000                | 285                      | 26,900       | 1,550                 | 60                       | 251          | 1,100                 | 21                       | 62           |
| 9.....  | 47,700                | 465                      | 59,900       | 1,150                 | 52                       | 161          | 2,070                 | 17                       | 95           |
| 10..... | 44,200                | 288                      | 34,400       | 834                   | 42                       | 94           | 1,820                 | 23                       | 113          |
| 11..... | 44,500                | 409                      | 49,100       | 1,150                 | 23                       | 71           | 2,900                 | 22                       | 172          |
| 12..... | 34,900                | 303                      | 28,600       | 1,050                 | 21                       | 60           | 2,100                 | 28                       | 159          |
| 13..... | 17,600                | 212                      | 10,100       | 1,010                 | 23                       | 63           | 1,790                 | 17                       | 82           |
| 14..... | 11,900                | 196                      | 6,300        | 966                   | 15                       | 39           | 1,610                 | 18                       | 78           |
| 15..... | 9,360                 | 110                      | 2,780        | 966                   | 14                       | 36           | 1,880                 | 25                       | 127          |
| 16..... | 8,080                 | 78                       | 1,700        | 1,100                 | 20                       | 59           | 2,300                 | 32                       | 199          |
| 17..... | 7,220                 | 58                       | 1,130        | 945                   | 21                       | 54           | 2,200                 | 35                       | 208          |
| 18..... | 6,730                 | 46                       | 836          | 1,400                 | 482                      | s1,520       | 2,230                 | 209                      | 1,260        |
| 19..... | 6,420                 | 32                       | 555          | 2,370                 | 129                      | s950         | 1,300                 | 110                      | 386          |
| 20..... | 5,810                 | 22                       | 345          | 2,340                 | 28                       | 177          | 1,120                 | 55                       | 166          |
| 21..... | 4,840                 | 22                       | 287          | 2,340                 | 27                       | 170          | 1,100                 | 37                       | 110          |
| 22..... | 8,670                 | --                       | e9,400       | 11,100                | 92                       | s3,290       | 987                   | 26                       | 69           |
| 23..... | 16,200                | 466                      | 20,400       | 17,300                | 372                      | 17,400       | 882                   | 25                       | 60           |
| 24..... | 13,500                | 143                      | 5,210        | 11,900                | 318                      | 10,200       | 1,280                 | 35                       | 121          |
| 25..... | 13,200                | 116                      | 4,130        | 7,300                 | 164                      | 3,230        | 1,610                 | 42                       | 182          |
| 26..... | 9,360                 | 70                       | 1,770        | 5,510                 | 56                       | 833          | 1,790                 | 74                       | s372         |
| 27..... | 6,470                 | 82                       | 1,430        | 4,300                 | 31                       | 360          | 2,440                 | 177                      | 1,170        |
| 28..... | 5,590                 | 95                       | 1,430        | 2,860                 | 30                       | 232          | 4,710                 | 44                       | s459         |
| 29..... | 7,710                 | 93                       | 1,940        | 2,200                 | 34                       | 202          | 2,980                 | 15                       | 121          |
| 30..... | 6,560                 | 84                       | 1,490        | 1,880                 | 34                       | 172          | 1,550                 | 16                       | 67           |
| 31..... | --                    | --                       | --           | 1,500                 | 34                       | 138          | --                    | --                       | --           |
| Total.  | 518,470               | --                       | 487,870      | 104,571               | --                       | 47,634       | 50,600                | --                       | 6,433        |
|         | July                  |                          |              | August                |                          |              | September             |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| 1.....  | 1,280                 | 16                       | 55           | 850                   | 15                       | a35          | 350                   | 30                       | 28           |
| 2.....  | 1,100                 | 18                       | 53           | 950                   | 20                       | a50          | 400                   | 21                       | 23           |
| 3.....  | 1,000                 | 19                       | 51           | 650                   | 26                       | a6           | 460                   | 10                       | 12           |
| 4.....  | 850                   | 19                       | 44           | 550                   | 31                       | a6           | 360                   | 14                       | 14           |
| 5.....  | 750                   | 15                       | 30           | 350                   | 29                       | 27           | 270                   | 15                       | 11           |
| 6.....  | 650                   | 10                       | 18           | 330                   | 24                       | 21           | 250                   | 13                       | 9            |
| 7.....  | 550                   | 9                        | 13           | 350                   | 18                       | 17           | 230                   | 14                       | 9            |
| 8.....  | 700                   | 8                        | 15           | 400                   | 17                       | 18           | 250                   | 12                       | 8            |
| 9.....  | 800                   | 13                       | 28           | 500                   | 23                       | 31           | 350                   | 10                       | 9            |
| 10..... | 750                   | 14                       | 28           | 300                   | 25                       | a20          | 400                   | 13                       | 14           |
| 11..... | 750                   | 12                       | 24           | 370                   | 72                       | 72           | 320                   | 12                       | 10           |
| 12..... | 800                   | 12                       | 26           | 500                   | 201                      | 271          | 260                   | 11                       | a8           |
| 13..... | 600                   | 12                       | 19           | 450                   | 83                       | 101          | 280                   | 10                       | a8           |
| 14..... | 500                   | 13                       | 18           | 450                   | 53                       | 64           | 310                   | 9                        | 8            |
| 15..... | 700                   | 10                       | 19           | 400                   | 42                       | 45           | 1,600                 | 8                        | 34           |
| 16..... | 750                   | 10                       | 20           | 560                   | 36                       | 54           | 1,980                 | 13                       | 69           |
| 17..... | 850                   | 12                       | 28           | 370                   | 28                       | 28           | 2,070                 | 17                       | 95           |
| 18..... | 800                   | 15                       | 32           | 400                   | 30                       | a30          | 2,040                 | 12                       | 66           |
| 19..... | 750                   | 26                       | 53           | 350                   | 33                       | 31           | 1,760                 | 12                       | 57           |
| 20..... | 700                   | 21                       | 40           | 300                   | 38                       | 31           | 1,440                 | 14                       | 54           |
| 21..... | 500                   | 18                       | 24           | 280                   | 31                       | 23           | 1,220                 | 14                       | 46           |
| 22..... | 600                   | 14                       | 23           | 290                   | 22                       | 17           | 1,300                 | 8                        | 28           |
| 23..... | 750                   | 10                       | 20           | 290                   | 17                       | 13           | 1,280                 | 8                        | 28           |
| 24..... | 882                   | 12                       | 28           | 280                   | 19                       | 14           | 1,200                 | 10                       | 32           |
| 25..... | 506                   | 15                       | 20           | 280                   | 19                       | 14           | 924                   | 17                       | 42           |
| 26..... | 506                   | 21                       | 29           | 300                   | 18                       | 14           | 783                   | 52                       | 110          |
| 27..... | 506                   | 18                       | 24           | 340                   | 19                       | 17           | 821                   | 50                       | a110         |
| 28..... | 950                   | 17                       | 44           | 370                   | 11                       | 11           | 783                   | 31                       | 66           |
| 29..... | 920                   | 24                       | 60           | 450                   | 7                        | 8            | 650                   | 28                       | 49           |
| 30..... | 880                   | 10                       | 24           | 600                   | 8                        | 13           | 578                   | 20                       | 31           |
| 31..... | 850                   | 9                        | a20          | 550                   | 9                        | 13           | --                    | --                       | --           |
| Total.  | 23,480                | --                       | 930          | 13,410                | --                       | 1,195        | 24,919                | --                       | 1,088        |

Total discharge for year (cfs-days)

2,768,844

Total load for year (tons)

2,915,565

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

KENTUCKY RIVER BASIN--Continued  
 KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued  
 Particle size analyses of suspended sediment, water year October 1956 to September 1957  
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
 W, in distilled water; C, Chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |       |                     |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 | 1.000 |                     |
| Dec. 14, 1956..... | 4:00 p. m.  | 26, 100         |                        | 1,350                         | 1,890                                      | 36                                                | 44    | 57    | 72    | 84    | 95    | 99    | 100   |       | --    |       | SEWCM               |
| Dec. 15.....       | 10:00 a. m. | 44, 400         |                        | 1,790                         | 2,560                                      | 30                                                | 40    | 51    | 66    | 83    | 94    | 98    | 100   |       | --    |       | SEWCM               |
| Jan. 24, 1957..... | 2:15 p. m.  | 33, 400         |                        | 551                           | 749                                        | 42                                                | 49    | 65    | 80    | 94    | 98    | 99    | 100   |       | --    |       | SEWCM               |
| Jan. 30.....       | 11:45 a. m. | 49, 700         |                        | 506                           | 729                                        | 35                                                | 45    | 56    | 72    | 88    | 95    | 98    | 100   |       | --    |       | SEWCM               |
| Feb. 1.....        | 8:00 a. m.  | 54, 400         |                        | 1,200                         | 1,110                                      | 40                                                | 51    | 67    | 84    | 93    | 97    | 99    | 100   |       | --    |       | SEWCM               |
| Feb. 1.....        | 8:00 a. m.  | 54, 400         |                        | 1,200                         | 1,140                                      | 35                                                | 51    | 65    | 86    | 94    | 98    | 99    | 100   |       | --    |       | SEWCM               |
| Feb. 2.....        | 7:15 a. m.  | 77, 600         |                        | 1,180                         | 1,000                                      | 45                                                | 56    | 70    | 84    | 93    | 97    | 99    | 100   |       | --    |       | SEWCM               |
| Feb. 3.....        | 7:30 p. m.  | 83, 600         |                        | 410                           | 636                                        | 53                                                | 64    | 78    | 86    | 90    | 96    | 98    | 99    |       | 100   |       | SEWCM               |
| Feb. 10.....       | 3:30 p. m.  | 48, 900         |                        | 350                           | 642                                        | 35                                                | 44    | 57    | 72    | 88    | 95    | 98    | 100   |       | --    |       | SEWCM               |
| Apr. 4.....        | 8:00 p. m.  | 47, 100         |                        | 568                           | 800                                        | 39                                                | 46    | 57    | 73    | 89    | 96    | 98    | 100   |       | --    |       | SEWCM               |
| Apr. 5.....        | 8:30 p. m.  | 39, 800         |                        | 677                           | 806                                        | 49                                                | 59    | 70    | 82    | 94    | 98    | 99    | 100   |       | --    |       | SEWCM               |
| Apr. 5.....        | 8:30 p. m.  | 39, 800         |                        | 677                           | 804                                        | 37                                                | 48    | 63    | 82    | 94    | 98    | 99    | 100   |       | --    |       | SEWCM               |
| Apr. 9.....        | 9:15 a. m.  | 49, 200         |                        | 703                           | 820                                        | 39                                                | 50    | 64    | 80    | 92    | 97    | 99    | 100   |       | --    |       | SEWCM               |
| May 18.....        | 10:00 a. m. | 840             |                        | 1,510                         | 1,280                                      | 42                                                | 54    | 66    | 82    | 93    | 98    | 99    | 99    |       | 100   |       | SEWCM               |
| May 23.....        | 3:00 p. m.  | 16, 700         |                        | 367                           | 688                                        | 42                                                | 51    | 65    | 82    | 93    | 99    | 100   | --    |       | --    |       | SEWCM               |

## KENTUCKY RIVER BASIN--Continued

## EAGLE CREEK AT GLENCOF, KY.

LOCATION --At gaging station at bridge on State Highway 16 at Gallatin-Owen County line, half a mile south of Glencoe, Gallatin County, 5.9 miles downstream from Tennile Creek, and 22 miles upstream from mouth.

DRAINAGE AREA 438 square miles.

RECORDS AVAILABLE: October 1949 to September 1957.

EXTREMES, 1949-56.--Water temperatures: Maximum, 93°F Sept. 1, 2, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

/Twice-daily measurements at approximately 7 a.m. and 5 p.m.7

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 60      | 67   | 58       | 63   | 26       | 43   | 34      | 38   | 35       | 39   | 35    | 41   | 50    | 54   | 71   | 74   | 75   | 78   | 75   | 81   | 79     |      | --        | --   |
| 2.....       | 65      | 67   | 57       | 63   | 42       | 44   | 33      | 35   | 39       | 41   | 38    | 40   | 43    | 50   | 70   | 71   | 71   | 71   | 85   | 88   |        | --   | --        | --   |
| 3.....       | 61      | 63   | 56       | 64   | 41       | 53   | 33      | 37   | 41       | 44   | 33    | 41   | 48    | 48   | 67   | 63   | 70   | 75   | 86   | 89   |        | --   | --        | --   |
| 4.....       | 60      | 62   | 60       | 64   | 46       | 49   | 37      | 34   | 42       | 44   | 34    | 39   | 47    | 56   | 60   | 63   | 76   | 78   | 87   | 88   |        | --   | --        | --   |
| 5.....       | 62      | 69   | 60       | 64   | 50       | 56   | 34      | 36   | 43       | 44   | 34    | 40   | 52    | 54   | 60   | 63   | 77   | 79   | 80   |      |        | --   | --        | --   |
| 6.....       | 61      | 65   | 58       | 60   | 50       | 61   | 33      | 33   | 39       | 42   | 38    | 39   | 47    | 50   | 61   | 64   | 77   | 80   | 77   | 80   |        | --   | --        | --   |
| 7.....       | 60      | 63   | 57       | 61   | 50       | 54   | 33      | 36   | 40       | 43   | 37    | 39   | 50    | 57   | 62   | 68   | 77   | 79   | --   | --   |        | --   | --        | --   |
| 8.....       | 58      | 60   | 55       | 47   | 46       | 49   | 34      | 37   | 40       | 44   | 34    | 39   | 49    | 46   | 65   | 71   | 74   | 76   | 77   | 81   |        | --   | --        | --   |
| 9.....       | 57      | 60   | 43       | 51   | 42       | 43   | 34      | 38   | 42       | 50   | 37    | 39   | 49    | 52   | 70   | 75   | 74   | 79   | 77   | 83   |        | --   | --        | --   |
| 10.....      | 55      | 59   | 45       | 55   | 34       | 43   | 33      | 35   | 49       | 51   | 40    | 45   | 53    | 54   | 75   | 77   | 75   | --   | 80   | --   |        | --   | --        | --   |
| 11.....      | 56      | 61   | 48       | 56   | 37       | 42   | 34      | 39   | 44       | 40   | 43    | 50   | 56    | 59   | 74   | 77   | --   | --   | --   | --   |        | --   | --        | --   |
| 12.....      | 56      | 61   | 45       | 52   | 37       | 41   | 37      | 40   | 35       | 38   | 47    | 50   | 49    | 52   | 75   | 77   | --   | --   | --   | 81   |        | --   | --        | --   |
| 13.....      | 54      | 64   | 44       | 54   | 33       | 42   | 37      | 39   | 33       | 36   | 49    | 51   | 46    | 49   | 75   | 77   | 80   | 81   | --   | --   |        | --   | --        | --   |
| 14.....      | 57      | 65   | 49       | 57   | 40       | 45   | 33      | 34   | 35       | 39   | 50    | 55   | 50    | 51   | 74   | 74   | 77   | 83   | --   | --   |        | --   | --        | --   |
| 15.....      | 57      | 67   | 50       | 55   | 41       | 46   | 33      | 34   | 36       | 40   | 47    | 50   | 49    | 55   | 64   | 65   | 80   | 85   | --   | --   |        | --   | --        | --   |
| 16.....      | 56      | 69   | 44       | 48   | 40       | 45   | 33      | 33   | 36       | 39   | 49    | 56   | 50    | 51   | 60   | 67   | 79   | 84   | --   | --   |        | --   | --        | --   |
| 17.....      | 58      | 69   | 42       | 49   | 39       | 46   | --      | --   | 39       | 39   | 54    | 58   | 49    | 50   | 67   | 70   | 81   | 83   | --   | --   |        | --   | --        | --   |
| 18.....      | 59      | 62   | 42       | 49   | 39       | 46   | --      | --   | 36       | 39   | 55    | 59   | 54    | 61   | 69   | 70   | 80   | 79   | --   | --   |        | --   | --        | --   |
| 19.....      | 59      | 63   | 41       | 47   | 35       | 47   | 34      | 36   | 36       | 38   | 45    | 45   | 62    | 73   | 67   | 65   | 81   | 82   | --   | --   |        | 71   | 75        | --   |
| 20.....      | 59      | 61   | 42       | 45   | 40       | 46   | 34      | 35   | 35       | 37   | 44    | 49   | 71    | 74   | 64   | 66   | 82   | 83   | --   | --   |        | 74   | 83        | --   |
| 21.....      | 58      | 61   | 40       | 37   | 40       | 45   | 35      | 41   | 36       | 37   | 47    | 51   | 70    | 73   | 64   | 66   | 81   | 82   | --   | --   |        | 80   | 84        | --   |
| 22.....      | 57      | 65   | --       | 37   | 42       | 41   | 51      | 34   | 39       | 45   | 49    | 70   | 74    | 64   | 66   | 82   | 82   | --   | --   | --   | --     | 80   | 79        | --   |
| 23.....      | 60      | 70   | --       | 33   | 35       | 39   | 36      | 38   | 37       | 42   | 45    | 50   | 71    | 75   | 65   | 67   | 82   | 80   | --   | --   |        | 71   | 72        | --   |
| 24.....      | 58      | 60   | 33       | 34   | 34       | 35   | 34      | 39   | 38       | 41   | 47    | 50   | 70    | 74   | 65   | 68   | 80   | 78   | 76   | 79   |        | 67   | 70        | --   |
| 25.....      | 57      | 64   | 34       | 36   | --       | --   | 34      | 36   | 39       | 41   | 44    | 49   | 72    | 75   | 65   | 68   | 79   | 79   | 75   | 79   |        | 66   | 71        | --   |
| 26.....      | 60      | 67   | 34       | 35   | 33       | 39   | 34      | 37   | 41       | 47   | 50    | 73   | 75    | 65   | 66   | 80   | 81   | --   | --   | --   | --     | 65   | 68        | --   |
| 27.....      | 61      | 67   | 33       | 34   | 34       | 40   | 34      | 38   | 36       | 39   | 45    | 47   | 73    | 76   | 64   | 67   | 80   | 82   | 77   | 80   |        | 63   | 69        | --   |
| 28.....      | 61      | 68   | 33       | 35   | 35       | 39   | 35      | 37   | 35       | 37   | 43    | 49   | 71    | 75   | --   | --   | 79   | 75   | --   | --   |        | 62   | 66        | --   |
| 29.....      | 62      | 69   | 33       | 34   | 35       | 34   | 35      | 34   | --       | --   | 45    | 51   | 69    | 74   | --   | --   | 70   | 73   | --   | --   |        | 61   | 66        | --   |
| 30.....      | 60      | 67   | 33       | 37   | 33       | 36   | 34      | 35   | --       | --   | 48    | 53   | 70    | 73   | 73   | 79   | 74   | 79   | --   | --   |        | 60   | 65        | --   |
| 31.....      | 59      | 63   | --       | 34   | 38       | 34   | 39      | --   | --       | --   | 51    | 56   | --    | --   | --   | 74   | 78   | --   | --   | --   |        | --   | --        | --   |
| Average..... | 59      | 64   | 44       | 54   | 39       | 44   | 34      | 37   | 38       | 41   | 44    | 48   | 58    | 61   | 67   | 70   | 78   | 80   | --   | --   |        | --   | --        | --   |

a Includes estimated temperature, 32°F, on missing days.

## PLUM CREEK AT WATERFORD, KY.

LOCATION.--At gaging station 0.7 mile downstream from Little Plum Creek, 1.0 mile north of Waterford, Spencer County, and 3.2 miles upstream from mouth.

DRAINAGE AREA.--31.9 square miles.

RECORDS AVAILABLE.--water temperatures: October 1954 to September 1957.

Sediment records: October 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 92°F July 19; minimum, freezing point Nov. 23, Jan. 14.

Sediment concentrations: Maximum daily, 1,390 ppm Apr. 4; minimum daily, no flow on many days during October, and July to September.

Sediment loads: Maximum daily, 13,800 tons Apr. 4; minimum daily, 0 tons on many days during October, and July to September.

EXTREMES, 1954-57.--Water temperatures: Maximum, 92°F July 19, 1957; minimum, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 2,290 ppm July 16, 1955; minimum daily, no flow on many days during August to November 1955, June to October 1956, and July to September 1957.

Sediment loads: Maximum daily, 13,800 tons Apr. 4, 1957; minimum daily, 0 tons on many days during August to November 1955, June to October 1956, and July to September 1957.

REMARKS.--This station is operated as a part of a Soil Conservation Service Demonstration project. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 60   | 40   | 39   | 41   | 43   | 51   | 74  | 73   | 86   | 88   | 87    |
| 2       | 70   | 62   | 40   | 36   | 40   | 42   | 52   | 74  | 72   | 86   | 88   | --    |
| 3       | 66   | 60   | 45   | 34   | 43   | 44   | 52   | 70  | 75   | 88   | 86   | --    |
| 4       | 68   | 62   | 45   | --   | 42   | 45   | 52   | 64  | 75   | 88   | 86   | --    |
| 5       | 68   | 64   | 50   | 33   | 42   | 46   | 52   | 66  | 78   | 86   | 84   | 84    |
| 6       | 62   | 58   | --   | 34   | 41   | 46   | 50   | 68  | 79   | 82   | 84   | 84    |
| 7       | --   | 59   | 51   | 35   | 41   | 45   | 54   | 69  | 80   | 87   | 86   | 74    |
| 8       | 65   | 49   | 51   | 35   | 41   | 44   | 50   | 72  | 79   | 87   | 84   | 76    |
| 9       | 60   | 43   | 48   | 47   | 44   | 42   | 50   | 73  | 79   | 87   | --   | 76    |
| 10      | 61   | 40   | 46   | 38   | 42   | 44   | 51   | 72  | 78   | 88   | --   | 75    |
| 11      | 60   | 47   | 47   | 38   | 40   | 45   | 55   | 72  | 79   | 86   | 84   | 78    |
| 12      | 60   | --   | 47   | 36   | 43   | 48   | 55   | 73  | 80   | 87   | 80   | 78    |
| 13      | 59   | 50   | 47   | 38   | 44   | 50   | 47   | 74  | 78   | 82   | --   | 74    |
| 14      | 60   | 65   | 48   | 31   | 42   | 51   | 50   | 73  | 80   | 88   | 79   | 70    |
| 15      | 63   | 54   | 45   | 36   | 42   | 51   | 52   | 74  | 78   | 88   | 81   | 71    |
| 16      | 64   | 49   | 47   | 34   | 40   | 49   | 53   | 72  | 87   | 89   | 82   | 70    |
| 17      | 63   | 44   | 49   | 33   | 40   | 53   | 55   | 73  | 87   | 89   | 83   | 70    |
| 18      | 63   | 47   | 47   | 33   | 41   | 53   | 50   | 69  | 84   | 90   | 81   | 72    |
| 19      | 62   | 49   | 47   | 33   | 40   | 50   | 68   | 72  | 85   | 92   | 80   | 72    |
| 20      | 61   | 50   | --   | 37   | 40   | 50   | 65   | 72  | 86   | 84   | 80   | 73    |
| 21      | 61   | 45   | 50   | 42   | 41   | 51   | 66   | 73  | 87   | --   | 81   | 72    |
| 22      | 61   | 39   | 49   | 52   | 42   | 51   | 68   | 70  | 85   | 90   | 81   | 71    |
| 23      | 61   | 32   | 50   | 39   | 42   | 51   | --   | --  | 87   | 84   | 80   | 70    |
| 24      | --   | --   | 47   | 42   | 44   | 50   | 72   | 74  | 86   | 84   | 78   | 70    |
| 25      | 65   | 34   | 44   | 42   | 41   | 51   | 73   | 69  | 84   | 86   | 78   | 72    |
| 26      | 65   | 35   | 44   | 40   | 45   | 51   | 73   | 74  | 84   | 84   | 80   | 71    |
| 27      | 60   | 40   | 45   | 42   | 43   | 50   | 70   | --  | 83   | 80   | 81   | 70    |
| 28      | 60   | 41   | 44   | 42   | 43   | 50   | 73   | 73  | --   | 86   | 83   | 60    |
| 29      | 65   | 40   | 38   | 43   | --   | 49   | 73   | 74  | --   | 86   | 86   | 67    |
| 30      | 65   | 40   | 40   | 40   | --   | 49   | 74   | 75  | 84   | 84   | 87   | 64    |
| 31      | 65   | --   | 39   | 40   | --   | 50   | --   | 75  | --   | 86   | 78   | --    |
| Average | 63   | 49   | 46   | 38   | 48   | 42   | 59   | 72  | 81   | 86   | 82   | 73    |



## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 0                     | 16                        | 0            | 0.2                   | 11                        | (t)          | 0.8                   | 9                         | (t)          |
| 2.....  | 0                     | 18                        | 0            | .2                    | 7                         | (t)          | .7                    | 10                        | (t)          |
| 3.....  | 30                    | 193                       | s 45         | .2                    | 7                         | (t)          | .6                    | 7                         | (t)          |
| 4.....  | 96                    | --                        | e 95         | .2                    | 8                         | (t)          | .5                    | 5                         | (t)          |
| 5.....  | 9.0                   | 59                        | s 1.6        | .1                    | 10                        | (t)          | .5                    | 8                         | (t)          |
| 6.....  | 3.0                   | 38                        | .3           | .1                    | 9                         | (t)          | .5                    | 13                        | (t)          |
| 7.....  | 1.9                   | 30                        | a .2         | .1                    | 7                         | (t)          | 1.0                   | 15                        | (t)          |
| 8.....  | 1.3                   | 18                        | .1           | .1                    | 7                         | (t)          | 1.9                   | 22                        | 0.1          |
| 9.....  | 1.0                   | 13                        | (t)          | .1                    | 4                         | (t)          | 48                    | 135                       | s 25         |
| 10..... | .8                    | 14                        | (t)          | .1                    | 4                         | (t)          | 13                    | 40                        | 1.4          |
| 11..... | .7                    | 11                        | (t)          | .1                    | 5                         | (t)          | 9.0                   | 20                        | a .5         |
| 12..... | .5                    | 9                         | (t)          | .1                    | 5                         | (t)          | 9.0                   | 13                        | .3           |
| 13..... | .5                    | 9                         | (t)          | .1                    | 4                         | (t)          | 7.4                   | 11                        | a .2         |
| 14..... | .4                    | 11                        | (t)          | .1                    | 4                         | (t)          | 92                    | --                        | e 55         |
| 15..... | .4                    | 15                        | (t)          | .1                    | 7                         | (t)          | 27                    | 142                       | 10           |
| 16..... | .3                    | 15                        | (t)          | .1                    | 7                         | (t)          | 16                    | 37                        | 1.6          |
| 17..... | .2                    | 10                        | (t)          | .1                    | 12                        | (t)          | 11                    | 11                        | .3           |
| 18..... | .2                    | 10                        | (t)          | .1                    | 4                         | (t)          | 9.0                   | 5                         | .1           |
| 19..... | .2                    | 14                        | (t)          | .1                    | 3                         | (t)          | 7.0                   | 10                        | .2           |
| 20..... | .2                    | 15                        | (t)          | .4                    | 4                         | (t)          | 107                   | 140                       | s 71         |
| 21..... | .2                    | 13                        | (t)          | 30                    | 95                        | sb 13        | 67                    | 68                        | s 13         |
| 22..... | .2                    | 13                        | (t)          | 7.4                   | 67                        | 1.3          | 27                    | 27                        | 2.0          |
| 23..... | .2                    | 10                        | (t)          | 3.0                   | 50                        | .4           | 24                    | 21                        | 1.4          |
| 24..... | .2                    | 13                        | (t)          | 1.9                   | 44                        | .2           | 21                    | 25                        | 1.4          |
| 25..... | .2                    | 14                        | (t)          | 1.7                   | 32                        | .1           | 15                    | 31                        | 1.2          |
| 26..... | .4                    | 9                         | (t)          | 1.7                   | 24                        | .1           | 13                    | 35                        | 1.2          |
| 27..... | .3                    | 6                         | (t)          | 1.5                   | 16                        | .1           | 12                    | 29                        | .9           |
| 28..... | .3                    | 3                         | (t)          | 1.2                   | 15                        | (t)          | 11                    | 27                        | .8           |
| 29..... | .3                    | 3                         | (t)          | 1.2                   | 11                        | (t)          | 10                    | 24                        | .6           |
| 30..... | .2                    | 2                         | (t)          | .9                    | 9                         | (t)          | 8.0                   | 15                        | .3           |
| 31..... | .2                    | 7                         | (t)          | --                    | --                        | --           | 7.4                   | 17                        | .3           |
| Total.  | 149.3                 | --                        | 142.5        | 53.2                  | --                        | 15.4         | 577.3                 | --                        | 188.9        |
| January |                       |                           | February     |                       |                           | March        |                       |                           |              |
| 1.....  | 5.6                   | 13                        | 0.2          | 120                   | 151                       | s 79         | 33                    | 13                        | 1.2          |
| 2.....  | 4.0                   | 12                        | .1           | 70                    | 41                        | s 8.3        | 26                    | 8                         | .6           |
| 3.....  | 4.0                   | 17                        | .2           | 49                    | 18                        | 2.4          | 21                    | 8                         | .4           |
| 4.....  | 4.8                   | 14                        | .2           | 35                    | 16                        | 1.5          | 18                    | 7                         | .3           |
| 5.....  | 6.0                   | 10                        | .2           | 72                    | 50                        | s 13         | 16                    | 5                         | .2           |
| 6.....  | 5.2                   | 7                         | .1           | 72                    | 63                        | 12           | 63                    | 54                        | s 12         |
| 7.....  | 5.2                   | 8                         | .1           | 49                    | 35                        | 4.6          | 66                    | 29                        | s 6.0        |
| 8.....  | 8.2                   | 11                        | .2           | 66                    | --                        | e 16         | 157                   | 76                        | s 38         |
| 9.....  | 243                   | 250                       | sb 220       | 269                   | 180                       | sb 160       | 103                   | 42                        | 12           |
| 10..... | 109                   | 72                        | s 27         | 183                   | 120                       | sb 70        | 66                    | 21                        | 3.7          |
| 11..... | 38                    | 17                        | 1.7          | 66                    | 40                        | 7.1          | 52                    | --                        | e 4          |
| 12..... | 31                    | 5                         | .4           | 47                    | 25                        | 3.2          | 68                    | 130                       | sb 30        |
| 13..... | 22                    | 2                         | .1           | 37                    | 21                        | 2.1          | 41                    | 14                        | 1.5          |
| 14..... | 16                    | 2                         | .1           | 30                    | 15                        | 1.2          | 33                    | 7                         | .6           |
| 15..... | 13                    | 2                         | .1           | 23                    | 13                        | .8           | 26                    | 8                         | .6           |
| 16..... | 8.1                   | 3                         | .1           | 20                    | 8                         | .4           | 20                    | 6                         | .3           |
| 17..... | 7.4                   | 2                         | (t)          | 16                    | 7                         | .3           | 18                    | 6                         | .3           |
| 18..... | 7.0                   | 2                         | (t)          | 15                    | 6                         | .2           | 16                    | 8                         | .3           |
| 19..... | 6.5                   | 7                         | .1           | 13                    | 10                        | .4           | 17                    | 15                        | .7           |
| 20..... | 8.4                   | 4                         | .1           | 10                    | 6                         | .2           | 13                    | 14                        | .5           |
| 21..... | 12                    | 3                         | .1           | 10                    | 5                         | .1           | 12                    | 9                         | .3           |
| 22..... | 507                   | 745                       | s 2,040      | 10                    | 6                         | .2           | 13                    | 13                        | .4           |
| 23..... | 136                   | 89                        | s 38         | 9.6                   | 7                         | .2           | 11                    | 15                        | .4           |
| 24..... | 51                    | 34                        | 4.7          | 9.6                   | 3                         | .1           | 10                    | 11                        | .3           |
| 25..... | 38                    | 21                        | 2.2          | 10                    | 3                         | .1           | 10                    | 5                         | .1           |
| 26..... | 27                    | 17                        | 1.2          | 61                    | 55                        | s 12         | 11                    | 8                         | .2           |
| 27..... | 22                    | 13                        | .8           | 55                    | 26                        | 3.9          | 10                    | 3                         | .1           |
| 28..... | 49                    | 35                        | s 5.3        | 43                    | 15                        | 1.7          | 9.0                   | 2                         | (t)          |
| 29..... | 55                    | 27                        | 4.0          | --                    | --                        | --           | 9.0                   | 5                         | .1           |
| 30..... | 43                    | 16                        | 1.8          | --                    | --                        | --           | 8.4                   | 4                         | a .1         |
| 31..... | 40                    | 11                        | 1.2          | --                    | --                        | --           | 7.4                   | 2                         | (t)          |
| Total.  | 1,532.4               | --                        | 2,350.4      | 1,470.2               | --                        | 401.0        | 983.8                 | --                        | 115.3        |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April<br>Suspended sediment |                          |              | May<br>Suspended sediment |                          |              | June<br>Suspended sediment |                          |              |
|---------|-----------------------------|--------------------------|--------------|---------------------------|--------------------------|--------------|----------------------------|--------------------------|--------------|
|         | Mean discharge (cfs)        | Mean concentration (ppm) | Tons per day | Mean discharge (cfs)      | Mean concentration (ppm) | Tons per day | Mean discharge (cfs)       | Mean concentration (ppm) | Tons per day |
| 1.....  | 31                          | 27                       | s 3.7        | 6.0                       | 3                        | (t)          | 4.8                        | 2                        | (t)          |
| 2.....  | 29                          | 19                       | s 1.6        | 4.8                       | 3                        | (t)          | 4.8                        | 2                        | (t)          |
| 3.....  | 204                         | --                       | e 1,100      | 3.3                       | 4                        | (t)          | 3.6                        | 2                        | (t)          |
| 4.....  | 2,470                       | 1,390                    | s 13,800     | 2.4                       | 2                        | (t)          | 3.0                        | 3                        | (t)          |
| 5.....  | 152                         | 132                      | s 62         | 2.4                       | 2                        | (t)          | 2.2                        | 5                        | (t)          |
| 6.....  | 72                          | 74                       | 14           | 2.2                       | 2                        | (t)          | 1.7                        | 5                        | (t)          |
| 7.....  | 49                          | 58                       | 7.7          | 1.9                       | 2                        | (t)          | 1.3                        | 4                        | (t)          |
| 8.....  | 555                         | 406                      | s 1,340      | 1.5                       | 3                        | (t)          | 1.3                        | 5                        | (t)          |
| 9.....  | 85                          | 75                       | 17           | 1.3                       | 8                        | (t)          | 1.0                        | 5                        | (t)          |
| 10..... | 55                          | 45                       | 6.7          | 1.0                       | 6                        | (t)          | .8                         | 4                        | (t)          |
| 11..... | 41                          | 23                       | 2.5          | .9                        | 2                        | (t)          | 1.0                        | 3                        | (t)          |
| 12..... | 20                          | 16                       | 1.3          | .8                        | 3                        | (t)          | 3.0                        | 2                        | (t)          |
| 13..... | 23                          | 12                       | .7           | .6                        | 8                        | (t)          | 1.2                        | 4                        | (t)          |
| 14..... | 19                          | 11                       | .6           | 1.3                       | 6                        | (t)          | 1.2                        | 7                        | (t)          |
| 15..... | 16                          | 15                       | .6           | 1.5                       | 4                        | (t)          | 2.3                        | 5                        | (t)          |
| 16..... | 16                          | 9                        | .4           | 1.2                       | 3                        | (t)          | 1.7                        | 5                        | (t)          |
| 17..... | 20                          | 5                        | .3           | .9                        | 2                        | (t)          | .9                         | 5                        | (t)          |
| 18..... | 18                          | 3                        | .1           | 56                        | 277                      | s 226        | 53                         | 418                      | s 99         |
| 19..... | 15                          | 5                        | .2           | 85                        | 260                      | sb 85        | 30                         | --                       | e 12         |
| 20..... | 13                          | 7                        | .2           | 52                        | 170                      | sb 25        | 11                         | 28                       | .8           |
| 21..... | 95                          | 304                      | s 344        | 16                        | 22                       | 1.0          | 10                         | 40                       | 1.1          |
| 22..... | 39                          | 98                       | s 13         | 1,040                     | 600                      | sb 2,600     | 10                         | --                       | e 7          |
| 23..... | 21                          | 11                       | .6           | 216                       | 120                      | sb 100       | 3.3                        | 98                       | .9           |
| 24..... | 16                          | 3                        | .1           | 54                        | 22                       | 3.2          | 36                         | --                       | e 40         |
| 25..... | 13                          | 3                        | .1           | 33                        | 10                       | .9           | 13                         | 108                      | 3.8          |
| 26..... | 11                          | 2                        | .1           | 21                        | 7                        | .4           | 4.8                        | 58                       | .8           |
| 27..... | 9.0                         | 4                        | .1           | 13                        | 7                        | .2           | 2.7                        | 24                       | .2           |
| 28..... | 15                          | 64                       | s 5.9        | 10                        | 5                        | .1           | 798                        | 305                      | s 1,940      |
| 29..... | 11                          | 7                        | .2           | 8.0                       | 5                        | .1           | 79                         | 58                       | s 16         |
| 30..... | 8.0                         | 6                        | .1           | 5.6                       | 3                        | (t)          | 27                         | 18                       | 1.3          |
| 31..... | --                          | --                       | --           | 4.8                       | 2                        | (t)          | --                         | --                       | --           |
| Total.  | 4,151.0                     | --                       | 16,723.8     | 1,648.4                   | --                       | 3,042.3      | 1,113.6                    | --                       | 2,123.2      |
| Day     | July                        |                          |              | August                    |                          |              | September                  |                          |              |
|         | Mean discharge (cfs)        | Mean concentration (ppm) | Tons per day | Mean discharge (cfs)      | Mean concentration (ppm) | Tons per day | Mean discharge (cfs)       | Mean concentration (ppm) | Tons per day |
| 1.....  | 15                          | 12                       | 0.5          | 0                         | --                       | (t)          | 0                          | --                       | 0            |
| 2.....  | 9.6                         | 7                        | .2           | .1                        | 15                       | (t)          | 0                          | --                       | 0            |
| 3.....  | 6.5                         | 8                        | .1           | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 4.....  | 3.6                         | 9                        | .1           | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 5.....  | 2.4                         | 6                        | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 6.....  | 1.5                         | 4                        | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 7.....  | 1.0                         | 3                        | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 8.....  | .7                          | 4                        | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 9.....  | .6                          | 6                        | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 10..... | .4                          | 3                        | (t)          | 0                         | --                       | 0            | 8.5                        | 78                       | s 2.8        |
| 11..... | .4                          | 3                        | (t)          | 0                         | --                       | 0            | .6                         | 37                       | .1           |
| 12..... | .3                          | 6                        | (t)          | 0                         | --                       | 0            | .4                         | 13                       | (t)          |
| 13..... | .2                          | 4                        | (t)          | 0                         | --                       | 0            | 1.0                        | 20                       | .1           |
| 14..... | .1                          | 2                        | (t)          | .1                        | 15                       | (t)          | 1.0                        | 17                       | (t)          |
| 15..... | .1                          | 7                        | (t)          | 0                         | --                       | 0            | .5                         | 9                        | (t)          |
| 16..... | .1                          | 5                        | (t)          | 0                         | --                       | 0            | .3                         | 7                        | (t)          |
| 17..... | .1                          | 5                        | (t)          | 0                         | --                       | 0            | .2                         | 5                        | (t)          |
| 18..... | .1                          | 7                        | (t)          | 0                         | --                       | 0            | .1                         | 5                        | (t)          |
| 19..... | 0                           | --                       | 0            | 0                         | --                       | 0            | .1                         | 6                        | (t)          |
| 20..... | 0                           | --                       | 0            | 0                         | --                       | 0            | .1                         | 8                        | (t)          |
| 21..... | 0                           | --                       | 0            | 0                         | --                       | 0            | .1                         | 14                       | (t)          |
| 22..... | 0                           | --                       | 0            | 0                         | --                       | 0            | .4                         | 25                       | (t)          |
| 23..... | 3.7                         | 21                       | .2           | 0                         | --                       | 0            | .4                         | 11                       | (t)          |
| 24..... | 4.8                         | 20                       | .2           | 0                         | --                       | 0            | .2                         | 7                        | (t)          |
| 25..... | .8                          | 16                       | (t)          | 0                         | --                       | 0            | .1                         | 17                       | (t)          |
| 26..... | .5                          | 13                       | (t)          | 0                         | --                       | 0            | .1                         | 19                       | (t)          |
| 27..... | .4                          | 21                       | (t)          | 0                         | --                       | 0            | .1                         | 12                       | (t)          |
| 28..... | .3                          | 10                       | (t)          | 0                         | --                       | 0            | 0                          | --                       | 0            |
| 29..... | .2                          | 8                        | (t)          | 0                         | --                       | 0            | .1                         | 7                        | (t)          |
| 30..... | .3                          | 9                        | (t)          | 0                         | --                       | 0            | .1                         | 7                        | (t)          |
| 31..... | .2                          | 7                        | (t)          | 0                         | --                       | 0            | --                         | --                       | --           |
| Total.  | 53.9                        | --                       | 1.5          | 0.2                       | --                       | (t)          | 14.4                       | --                       | 3.0          |

Total discharge for year (cfs-days) ..... 11,747.7

Total load for year (tons) ..... 25,107.3

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

b Computed from partly estimated concentration graph.

## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 |
| Oct. 3, 1956       | 7:00 p. m.  | 132             |                         | 747                           | 1,190                                      | 63                                                | 76    | 85    | 93    | 97    | 99    | 100   | --    | SBWCM               |       |
| Dec. 9             | 8:30 a. m.  | 129             |                         | 131                           | 532                                        | 51                                                | 62    | 72    | 88    | 95    | 98    | 99    | --    | SBWCM               |       |
| Jan. 9, 1957       | 8:00 a. m.  | 391             |                         | 478                           | 795                                        | 46                                                | 59    | 71    | 82    | 92    | 98    | 99    | 100   | SBWCM               |       |
| Jan. 9             | 1:00 p. m.  | 485             |                         | 493                           | 931                                        | 46                                                | 59    | 72    | 84    | 96    | 98    | 99    | 100   | SBWCM               |       |
| Jan. 22            | 11:30 a. m. | 1,420           |                         | 2,460                         | 2,100                                      | 39                                                | 47    | 65    | 79    | 94    | 99    | 100   | --    | SBWCM               |       |
| Jan. 22            | 4:00 p. m.  | 1,070           |                         | 1,440                         | 1,340                                      | 51                                                | 62    | 75    | 89    | 98    | 100   | --    | --    | SBWCM               |       |
| Apr. 4             | 5:20 a. m.  | 4,260           |                         | 1,700                         | 1,170                                      | 36                                                | 48    | 61    | 77    | 91    | 99    | 99    | 100   | SBWCM               |       |
| Apr. 4             | 8:20 a. m.  | 6,640           |                         | 3,280                         | 2,390                                      | 44                                                | 57    | 74    | 92    | 99    | --    | 100   | --    | SBWCM               |       |
| Apr. 4             | 12:45 p. m. | 1,380           |                         | 1,340                         | 1,100                                      | 44                                                | 57    | 67    | 81    | 95    | 98    | 99    | 100   | SBWCM               |       |
| Apr. 8             | 5:30 a. m.  | 1,430           |                         | 1,420                         | 1,120                                      | 52                                                | 60    | 73    | 86    | 95    | 99    | 99    | 100   | SBWCM               |       |
| Apr. 8             | 7:10 a. m.  | 2,160           |                         | 1,490                         | 1,090                                      | 41                                                | 49    | 63    | 79    | 88    | 99    | 100   | --    | SBWCM               |       |
| Apr. 21            | 5:15 p. m.  | 919             |                         | 2,230                         | 1,670                                      | 45                                                | 55    | 69    | 82    | 91    | 99    | 100   | --    | SBWCM               |       |
| Apr. 21            | 7:15 p. m.  | 200             |                         | 804                           | 549                                        | 30                                                | 47    | 65    | 83    | 93    | 99    | 100   | --    | SBWCM               |       |
| Apr. 21            | 7:15 p. m.  | 200             |                         | 804                           | 543                                        | 36                                                | 56    | 78    | 93    | 98    | 99    | 100   | --    | SBWCM               |       |
| Apr. 28            | 6:00 p. m.  | 40              |                         | 336                           | 551                                        | 71                                                | 83    | 92    | 97    | 98    | 98    | 99    | 100   | SBWCM               |       |
| May 18             | 5:20 p. m.  | 698             |                         | 2,640                         | 2,050                                      | 43                                                | 55    | 67    | 82    | 94    | 99    | 100   | --    | SBWCM               |       |
| May 22             | 5:00 a. m.  | 2,870           |                         | 1,370                         | 2,020                                      | 46                                                | 56    | 69    | 83    | 95    | 99    | 100   | --    | SBWCM               |       |
| June 18            | 5:00 a. m.  | 66              |                         | 942                           | 872                                        | 67                                                | 85    | 95    | 98    | 99    | 99    | 99    | 100   | SBWCM               |       |
| June 28            | 2:00 p. m.  | 4,420           |                         | 975                           | 1,650                                      | 39                                                | 49    | 62    | 76    | 87    | 99    | 100   | --    | SBWCM               |       |

## SALT RIVER BASIN--Continued

## SALT RIVER AT SHEPHERDSVILLE, KY.

LOCATION.--At gaging station at bridge on State Highway 61, at Shepherdsville, Bullitt County, 500 feet downstream from Louisville and Nashville Railroad bridge, and 2.5 miles downstream from Floyds Fork.

DRAINAGE AREA.--1,230 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1957.

Water temperatures: October 1952 to September 1957.

SEDIMENT RECORDS: October 1952 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 294 ppm Jan. 1-9; minimum, 116 ppm Apr. 4-6.

Hardness: Maximum, 247 ppm Jan. 1-9; minimum, 94 ppm Oct. 5-7.

Specific conductance: Maximum daily, 500 micromhos Sept. 4; minimum daily, 158 micromhos Apr. 6.

Water temperatures: Maximum, 89°F Aug. 13, 15; minimum, freezing point on several days during January.

Sediment concentrations: Maximum daily, 2,260 ppm May 22; minimum daily, 3 ppm Jan. 5, 7.

Sediment loads: Maximum daily, 98,700 tons Apr. 4; minimum daily, less than 0.5 ton on many days during October to November, and August to September.

EXTREMES, 1952-57.--Dissolved solids: Maximum, 304 ppm Dec. 17-31, 1955; minimum, 87 ppm Sept. 20-21, 1954.

Hardness: Maximum, 269 ppm Dec. 17-31, 1955; minimum, 87 ppm Sept. 20-21, 1954.

Specific conductance: Maximum daily, 529 micromhos Dec. 23, 1952; minimum, daily, 146 micromhos Mar. 5, 1953.

Water temperatures: Maximum, 92°F June 27, 1954; minimum, freezing point on several days during January 1957.

Sediment concentrations: Maximum daily, 2,460 ppm May 14, 1955; minimum daily, no flow on many days during September to November 1953 and September 1954.

Sediment loads: Maximum daily, 103,000 tons Mar. 4, 1953; minimum daily, 0 tons on many days during September to November 1953 and September 1954.

REMARKS.--Records of specific conductance of daily samples from October 1952 to September 1957 available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1508.

REVISION.--WSP 1450, 1956: Particle-size; the discharge measurement for Feb. 3, 1956, 1:45 a.m. should be 21,900 cfs instead of 95,800 cfs.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-4, 1956.....    | 787                  | --                         | --        | 43           | 6.3            | 4.4         | 4.4           | 142                             | 17                         | 4.5           | --           | 2.6                        | 164                                                | 133                           | 16            | 281                                       | 7.1 | 2     |
| Oct. 5-7.....          | 769                  | --                         | --        | 31           | 3.9            | 4.1         | 4.1           | 98                              | 15                         | 2.2           | --           | 4.2                        | 134                                                | 94                            | 13            | 204                                       | 6.9 | 2     |
| Oct. 8-13, 15-21.....  | 39.4                 | --                         | --        | 44           | 5.8            | 3.7         | 3.7           | 142                             | 18                         | 3.3           | --           | 3.2                        | 165                                                | 134                           | 18            | 281                                       | 7.0 | 1     |
| Oct. 22-Nov. 9.....    | 9.0                  | --                         | --        | 54           | 6.6            | 6.2         | 6.2           | 180                             | 18                         | 5.1           | --           | 2.5                        | 206                                                | 162                           | 14            | 338                                       | 7.4 | 10    |
| Nov. 10-18, 20-22..... | 159                  | 10                         | 0.03      | 58           | 9.8            | 4.6         | 4.3           | 209                             | 18                         | 7.5           | 0.4          | 2.2                        | 231                                                | 185                           | 14            | 386                                       | 7.4 | 10    |
| Nov. 23-28.....        | 283                  | --                         | --        | 46           | 6.8            | 4.1         | 4.1           | 144                             | 24                         | 4.3           | --           | 3.4                        | 188                                                | 143                           | 25            | 296                                       | 7.3 | 21    |
| Nov. 29-Dec. 10.....   | 190                  | --                         | --        | 62           | 9.6            | 3.9         | 3.9           | 198                             | 29                         | 5.8           | --           | 3.2                        | 238                                                | 194                           | 32            | 390                                       | 7.2 | 15    |
| Dec. 11-25.....        | 2,008                | --                         | --        | 54           | 7.8            | 3.9         | 3.9           | 165                             | 29                         | 3.9           | --           | 5.7                        | 207                                                | 167                           | 32            | 334                                       | 7.4 | 25    |
| Dec. 26-31.....        | 722                  | --                         | --        | 71           | 10             | 4.8         | 4.8           | 224                             | 32                         | 4.2           | --           | 6.7                        | 259                                                | 218                           | 34            | 422                                       | 7.8 | 8     |
| Jan. 1-9, 1957.....    | 450                  | 9.8                        | --        | 79           | 12             | 3.2         | 3.2           | 256                             | 29                         | 5.9           | --           | 6.0                        | 294                                                | 247                           | 36            | 470                                       | 7.9 | 2     |
| Jan. 10-14.....        | 3,158                | 7.3                        | --        | 52           | 9.0            | 2.8         | 2.8           | 162                             | 26                         | 4.5           | --           | 7.2                        | 213                                                | 167                           | 34            | 323                                       | 7.8 | 15    |
| Jan. 15-22.....        | 754                  | 6.8                        | --        | 75           | 13             | 1.2         | 1.2           | 241                             | 31                         | 4.9           | --           | 8.2                        | 274                                                | 241                           | 43            | 445                                       | 8.0 | 6     |
| Jan. 25-Feb. 5.....    | 2,870                | --                         | --        | 58           | 8.0            | 3.7         | 3.7           | 176                             | 28                         | 3.8           | --           | 9.0                        | 210                                                | 178                           | 34            | 353                                       | 7.8 | 20    |
| Feb. 6-9.....          | 3,512                | --                         | --        | 63           | 11             | 3.4         | 3.4           | 203                             | 30                         | 4.1           | --           | 7.7                        | 234                                                | 202                           | 36            | 395                                       | 7.9 | 10    |
| Feb. 10-12.....        | 10,940               | --                         | --        | 41           | 6.1            | 3.7         | 3.7           | 128                             | 20                         | 2.9           | --           | 6.3                        | 147                                                | 137                           | 22            | 252                                       | 7.7 | 11    |
| Feb. 13-18.....        | 1,401                | --                         | --        | 65           | 11             | 3.7         | .9            | 229                             | 25                         | 4.0           | --           | 9.6                        | 232                                                | 207                           | 20            | 396                                       | 7.9 | 1     |

SALT RIVER BASIN--Continued  
SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                 | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./l.               | Non-carbonate |                                           |     |       |
| Feb. 19-Mar. 8, 1957.              | 981                  | --                         | --        | 71           | 13             |             | 2.8           | 236                             | 31                         | 4.5           | --           | 5.8                        | 258                                                | 231                           | 37            | 433                                       | 8.1 | 2     |
| Mar. 9-23                          | 1,383                | --                         | --        | 64           | 12             |             | 3.9           | 213                             | 31                         | 4.8           | --           | 4.8                        | 240                                                | 269                           | 34            | 404                                       | 7.9 | 5     |
| Mar. 24-30, Apr. 1-3.              | 551                  | --                         | --        | 69           | 15             |             | 4.1           | 232                             | 35                         | 5.4           | --           | 2.0                        | 255                                                | 234                           | 44            | 439                                       | 8.0 | 4     |
| Apr. 4-6                           | 21,230               | --                         | --        | 30           | 5.0            |             | 3.0           | 98                              | 15                         | 2.0           | --           | 3.5                        | 116                                                | 96                            | 15            | 197                                       | 7.0 | 10    |
| Apr. 7-12                          | 7,002                | --                         | --        | 45           | 7.3            |             | 2.5           | 144                             | 21                         | 3.0           | --           | 4.3                        | 172                                                | 142                           | 24            | 283                                       | 7.4 | 6     |
| Apr. 13-21                         | 1,256                | --                         | --        | 69           | 12             |             | 3.0           | 226                             | 32                         | 4.0           | --           | 5.2                        | 256                                                | 222                           | 36            | 424                                       | 7.6 | 1     |
| Apr. 22-27                         | 1,675                | --                         | --        | 54           | 10             |             | 1.4           | 176                             | 26                         | 3.2           | --           | 3.6                        | 208                                                | 176                           | 32            | 341                                       | 7.6 | 7     |
| Apr. 28-May 11, 13-15, 17          | 298                  | --                         | --        | 71           | 13             |             | .5            | 236                             | 30                         | 4.0           | --           | 2.0                        | 261                                                | 231                           | 37            | 437                                       | 7.8 | 5     |
| May 18-24                          | 6,429                | --                         | --        | 42           | 9.4            |             | 3.4           | 150                             | 19                         | 3.0           | --           | 4.9                        | 183                                                | 144                           | 20            | 296                                       | 7.4 | --    |
| May 25-June 6                      | 931                  | 9.9                        | 0.02      | 60           | 12             |             | 3.5           | 208                             | 26                         | 5.0           | 0.2          | 6.0                        | 240                                                | 199                           | 28            | 392                                       | 7.6 | 7     |
| June 7-10                          | 338                  | --                         | --        | 42           | 10             |             | 4.4           | 155                             | 20                         | 3.0           | --           | 4.2                        | 175                                                | 146                           | 19            | 303                                       | 7.3 | --    |
| June 12-18                         | 437                  | --                         | --        | 64           | 15             |             | 3.0           | 235                             | 24                         | 6.0           | --           | 2.0                        | 247                                                | 221                           | 28            | 429                                       | 7.7 | 5     |
| June 19-28                         | 1,101                | --                         | --        | 44           | 8.1            |             | 2.5           | 152                             | 17                         | 3.0           | --           | 3.9                        | 181                                                | 144                           | 19            | 293                                       | 7.3 | 13    |
| June 29-30                         | 9,630                | --                         | --        | 33           | 5.0            |             | 4.1           | 115                             | 11                         | 2.0           | --           | 4.4                        | 142                                                | 103                           | 9             | 224                                       | 7.3 | 38    |
| July 1-18                          | 251                  | --                         | --        | 64           | 12             |             | 5.5           | 228                             | 24                         | 4.0           | --           | 4.6                        | 252                                                | 209                           | 22            | 403                                       | 7.5 | 5     |
| July 19-25                         | 69.0                 | --                         | --        | 59           | 16             |             | 21            | 232                             | 56                         | 6.5           | --           | 2.1                        | 248                                                | 213                           | 23            | 422                                       | 7.7 | --    |
| July 26-29, Aug. 1-19              | 24.6                 | --                         | --        | 53           | 12             |             | 14            | 195                             | 41                         | 5.5           | --           | 1.9                        | 213                                                | 182                           | 22            | 366                                       | 7.8 | --    |
| Aug. 20-Sept. 12                   | 12.1                 | 7.7                        | .00       | 65           | 13             |             | 6.6           | 233                             | 24                         | 9.0           | .2           | 3.3                        | 251                                                | 216                           | 24            | 432                                       | 7.8 | 4     |
| Sept. 13-30                        | 59.7                 | --                         | --        | 54           | 8.9            |             | 7.1           | 182                             | 26                         | 6.5           | --           | 1.7                        | 207                                                | 171                           | 22            | 356                                       | 7.9 | --    |
| Time-weighted average <sup>a</sup> | 1,232                | --                         | --        | 59           | 11             |             | 5.2           | 199                             | 27                         | 4.9           | --           | 4.1                        | 225                                                | 192                           | 29            | 375                                       | --  | 8     |

<sup>a</sup> Represents 97 percent of days and 96 percent of runoff.

## SALT RIVER BASIN--Continued

SALT RIVER AT SHEPHERDSVILLE, KY. --Continued

Temperature ( $^{\circ}\text{F}$ ) of water, water year October 1956 to September 1957

er with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day     | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|---------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|         | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1.....  | 72      | 63  | 57       | 37  | 36       | 36  | 36      | 36  | 40       | 40  | 46    | 44  | 50    | 49  | 74  | 73  | 75   | 74  | 74   | 73  | 86     | 81  | 88        | 74 |
| 2.....  | 71      | 66  | 65       | 55  | 37       | 36  | 36      | 34  | 40       | 40  | 45    | 44  | 53    | 50  | 74  | 73  | 75   | 74  | 75   | 74  | 88     | 82  | 83        | 76 |
| 3.....  | 67      | 64  | 65       | 55  | 38       | 34  | 32      | 34  | 42       | 40  | 45    | 44  | 53    | 53  | 74  | 71  | 75   | 74  | 77   | 75  | 86     | 82  | 83        | 74 |
| 4.....  | 64      | 63  | 65       | 56  | 39       | 37  | 32      | 32  | 42       | 42  | 44    | 43  | 53    | 52  | --  | --  | 73   | 73  | 78   | 76  | 84     | 83  | 80        | 71 |
| 5.....  | 63      | 63  | 63       | 58  | 39       | 37  | 33      | 33  | 43       | 43  | 43    | 43  | 53    | 52  | --  | --  | 75   | 73  | 79   | 77  | 83     | 78  | 81        | 68 |
| 6.....  | 64      | 63  | 59       | 56  | 42       | 39  | 33      | 33  | 45       | 44  | 43    | 43  | 53    | 53  | --  | --  | 75   | 73  | 80   | 78  | 84     | 75  | 81        | 66 |
| 7.....  | 64      | 63  | 62       | 56  | 43       | 41  | 33      | 33  | 44       | 44  | 44    | 43  | 53    | 52  | 66  | 65  | 75   | 73  | 80   | 79  | 86     | 74  | 76        | 68 |
| 8.....  | 63      | 62  | 56       | 51  | 43       | 43  | 33      | 33  | 45       | 44  | 43    | 41  | 54    | 52  | 67  | 65  | 76   | 74  | 80   | 79  | 84     | 74  | 77        | 66 |
| 9.....  | 64      | 61  | 56       | 50  | 44       | 43  | 37      | 33  | 48       | 45  | 42    | 42  | 55    | 53  | 69  | 67  | 76   | 75  | 81   | 79  | 86     | 74  | 75        | 68 |
| 10..... | 63      | 60  | 55       | 50  | 45       | 44  | 39      | 37  | 52       | 48  | 44    | 42  | 53    | 51  | 70  | 69  | 76   | 75  | 83   | 79  | 88     | 74  | 77        | 71 |
| 11..... | 63      | 58  | 57       | 49  | 44       | 42  | 39      | 38  | 52       | 51  | 47    | 44  | --    | --  | 72  | 69  | 77   | 76  | 83   | 78  | 86     | 76  | 74        | 74 |
| 12..... | 61      | 58  | 55       | 51  | 42       | 42  | 38      | 37  | 51       | 47  | 51    | 47  | --    | --  | 74  | 72  | 77   | 75  | 83   | 78  | 80     | 75  | 74        | 73 |
| 13..... | 63      | 58  | 54       | 47  | 42       | 42  | 37      | 37  | 47       | 45  | 52    | 51  | --    | --  | 76  | 73  | 78   | 77  | 81   | 79  | 89     | 75  | 74        | 73 |
| 14..... | 63      | 57  | 56       | 50  | 42       | 42  | 37      | 36  | 45       | 44  | 53    | 52  | --    | --  | 76  | 74  | 79   | 77  | 82   | 79  | 81     | 76  | 75        | 72 |
| 15..... | 65      | 57  | 53       | 51  | 43       | 42  | 36      | 34  | 44       | 44  | 54    | 53  | --    | --  | 77  | 75  | 81   | 78  | 85   | 80  | 89     | 76  | 74        | 72 |
| 16..... | 67      | 57  | 54       | 48  | 45       | 43  | 34      | 33  | 44       | 43  | 54    | 54  | --    | --  | 78  | 75  | 82   | 79  | 82   | 79  | 88     | 79  | 74        | 72 |
| 17..... | 58      | 58  | 52       | 46  | 46       | 45  | 33      | 33  | 43       | 42  | 54    | 53  | 54    | 53  | 76  | 75  | 83   | 81  | 81   | 79  | 86     | 78  | 73        | 72 |
| 18..... | 69      | 58  | 52       | 45  | 45       | 44  | 33      | 33  | 42       | 41  | 53    | 53  | 56    | 54  | 77  | 75  | 83   | 78  | 82   | 79  | 84     | 76  | 74        | 72 |
| 19..... | 67      | 59  | 52       | 45  | 44       | 42  | 33      | 32  | 42       | 42  | 53    | 53  | 60    | 56  | 75  | 70  | 78   | 78  | 82   | 79  | 83     | 76  | 73        | 72 |
| 20..... | 67      | 61  | 50       | 49  | 46       | 42  | 32      | 32  | 42       | 42  | 53    | 52  | 65    | 60  | 70  | 69  | 78   | 76  | 84   | 80  | 84     | 75  | 74        | 72 |
| 21..... | 67      | 62  | 52       | 47  | 48       | 46  | 33      | 32  | 42       | 40  | 52    | 50  | 69    | 65  | 69  | 68  | 76   | 76  | 87   | 81  | 82     | 74  | 76        | 73 |
| 22..... | 64      | 62  | 48       | 46  | 49       | 48  | 45      | 33  | 41       | 40  | 50    | 49  |       |     |     |     |      |     |      |     |        |     |           |    |

## SALT RIVER BASIN--Continued

## SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Suspended sediment, water year October 1956 to September 1957 |                       |                           |              |                       |                           |              |                       |                           |              |
|---------------------------------------------------------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
| Day                                                           | October               |                           |              | November              |                           |              | December              |                           |              |
|                                                               | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....                                                        | 11                    | 29                        | 1            | 9.6                   | 11                        | (t)          | 70                    | 20                        | 4            |
| 2.....                                                        | 8.8                   | 21                        | (t)          | 12                    | 11                        | (t)          | 63                    | 25                        | 4            |
| 3.....                                                        | 239                   | --                        | e 410        | 18                    | 11                        | 1            | 58                    | 18                        | 3            |
| 4.....                                                        | 2,890                 | --                        | e 9,800      | 15                    | 11                        | (t)          | 53                    | 15                        | 2            |
| 5.....                                                        | 1,620                 | 755                       | s 4,010      | 13                    | 11                        | (t)          | 52                    | 15                        | 2            |
| 6.....                                                        | 464                   | 167                       | 210          | 12                    | 10                        | (t)          | 48                    | 14                        | 2            |
| 7.....                                                        | 223                   | 93                        | 56           | 13                    | 11                        | (t)          | 50                    | 17                        | 2            |
| 8.....                                                        | 130                   | 91                        | 32           | 13                    | 12                        | (t)          | 56                    | 20                        | 3            |
| 9.....                                                        | 88                    | 95                        | 22           | 13                    | 13                        | (t)          | 231                   | 53                        | s 45         |
| 10.....                                                       | 65                    | 75                        | 13           | 13                    | 12                        | (t)          | 1,430                 | 127                       | 490          |
| 11.....                                                       | 52                    | 65                        | 9            | 13                    | 15                        | 1            | 927                   | 112                       | 280          |
| 12.....                                                       | 41                    | 64                        | 7            | 13                    | 19                        | 1            | 610                   | 77                        | 127          |
| 13.....                                                       | 35                    | 63                        | 6            | 12                    | 24                        | 1            | 563                   | 45                        | 68           |
| 14.....                                                       | 30                    | 58                        | 5            | 11                    | 25                        | a 1          | 1,160                 | 304                       | s 1,430      |
| 15.....                                                       | 24                    | 34                        | 2            | 11                    | 30                        | a 1          | 3,110                 | 1,150                     | 9,660        |
| 16.....                                                       | 21                    | 22                        | 1            | 11                    | 28                        | 1            | 2,050                 | 297                       | s 1,780      |
| 17.....                                                       | 14                    | 28                        | 1            | 11                    | 10                        | (t)          | 1,080                 | 105                       | 306          |
| 18.....                                                       | 13                    | 27                        | 1            | 11                    | 10                        | (t)          | 770                   | 68                        | 141          |
| 19.....                                                       | 11                    | 25                        | 1            | 11                    | 12                        | (t)          | 569                   | 42                        | 64           |
| 20.....                                                       | 9.6                   | 20                        | 1            | 13                    | 15                        | 1            | 1,220                 | 159                       | s 932        |
| 21.....                                                       | 8.8                   | 13                        | (t)          | 378                   | 122                       | s 186        | 7,600                 | 965                       | 19,800       |
| 22.....                                                       | 5.6                   | 12                        | (t)          | 1,410                 | 220                       | 838          | 5,570                 | 267                       | s 4,510      |
| 23.....                                                       | 4.9                   | 14                        | (t)          | 738                   | 173                       | 345          | 1,700                 | 130                       | 597          |
| 24.....                                                       | 4.2                   | 28                        | (t)          | 345                   | 85                        | 79           | 1,650                 | 93                        | 414          |
| 25.....                                                       | 2.5                   | 43                        | (t)          | 219                   | 64                        | 38           | 1,540                 | 64                        | 266          |
| 26.....                                                       | 2.5                   | 48                        | (t)          | 162                   | 48                        | 21           | 1,110                 | 35                        | 105          |
| 27.....                                                       | 2.5                   | 43                        | (t)          | 127                   | 38                        | 13           | 862                   | 22                        | 51           |
| 28.....                                                       | 4.2                   | 32                        | (t)          | 105                   | 31                        | 9            | 723                   | 15                        | 29           |
| 29.....                                                       | 7.2                   | 24                        | (t)          | 91                    | 24                        | 6            | 622                   | 19                        | 32           |
| 30.....                                                       | 8.8                   | 13                        | (t)          | 78                    | 16                        | 3            | 538                   | 18                        | 26           |
| 31.....                                                       | 9.6                   | 11                        | (t)          | --                    | --                        | --           | 474                   | 8                         | 10           |
| Total.                                                        | 6,050.2               | --                        | 14,592       | 3,901.6               | --                        | 1,550        | 36,559                | --                        | 41,185       |
|                                                               |                       |                           |              |                       |                           |              |                       |                           |              |
| January                                                       |                       |                           | February     |                       |                           | March        |                       |                           |              |
| 1.....                                                        | 410                   | 9                         | 10           | 4,110                 | 98                        | 1,090        | 1,330                 | 50                        | 180          |
| 2.....                                                        | 345                   | 7                         | 6            | 6,030                 | 187                       | 3,040        | 1,100                 | 38                        | 113          |
| 3.....                                                        | 268                   | 7                         | 5            | 3,600                 | 140                       | 1,360        | 956                   | 17                        | 44           |
| 4.....                                                        | 247                   | 5                         | 3            | 2,400                 | 68                        | 441          | 824                   | 12                        | 27           |
| 5.....                                                        | 282                   | 3                         | 2            | 1,990                 | 32                        | 172          | 724                   | 10                        | 20           |
| 6.....                                                        | 278                   | 8                         | 6            | 2,570                 | 37                        | 257          | 935                   | 25                        | 63           |
| 7.....                                                        | 264                   | 3                         | 2            | 2,350                 | 51                        | 324          | 1,410                 | 51                        | 194          |
| 8.....                                                        | 268                   | 5                         | 4            | 2,560                 | 34                        | 235          | 2,270                 | 145                       | 889          |
| 9.....                                                        | 1,690                 | 183                       | s 1,480      | 6,570                 | 832                       | s 16,100     | 2,950                 | 191                       | 1,520        |
| 10.....                                                       | 6,800                 | 667                       | 12,200       | 13,800                | 1,490                     | 55,500       | 2,510                 | 110                       | 745          |
| 11.....                                                       | 4,770                 | --                        | e 4,400      | 13,200                | 1,180                     | 42,000       | 2,140                 | 68                        | 393          |
| 12.....                                                       | 1,820                 | 140                       | 688          | 5,820                 | 230                       | 3,610        | 2,110                 | 68                        | 387          |
| 13.....                                                       | 1,320                 | 88                        | 314          | 2,090                 | 96                        | 542          | 1,910                 | 78                        | 402          |
| 14.....                                                       | 1,080                 | 48                        | 140          | 1,720                 | 38                        | 176          | 1,510                 | 51                        | 208          |
| 15.....                                                       | 863                   | 28                        | 65           | 1,470                 | 20                        | 79           | 1,290                 | 27                        | 94           |
| 16.....                                                       | 690                   | 14                        | 26           | 1,120                 | 13                        | 39           | 1,120                 | 17                        | 51           |
| 17.....                                                       | 566                   | 12                        | 18           | 728                   | 13                        | 26           | 960                   | 25                        | 65           |
| 18.....                                                       | 524                   | 9                         | 13           | 1,280                 | 21                        | 72           | 862                   | 23                        | 54           |
| 19.....                                                       | 425                   | 8                         | 9            | 850                   | 19                        | 44           | 808                   | 25                        | 54           |
| 20.....                                                       | 400                   | 13                        | 14           | 730                   | 10                        | 20           | 747                   | 20                        | 40           |
| 21.....                                                       | 415                   | 8                         | 9            | 629                   | 6                         | 10           | 653                   | 16                        | 28           |
| 22.....                                                       | 2,150                 | 387                       | s 4,420      | 559                   | 4                         | 6            | 601                   | 14                        | 23           |
| 23.....                                                       | 10,800                | 1,110                     | 32,400       | 492                   | 8                         | 11           | 580                   | 15                        | 23           |
| 24.....                                                       | 8,330                 | 420                       | 9,450        | 456                   | 11                        | 14           | 531                   | 24                        | 34           |
| 25.....                                                       | 2,860                 | 257                       | 1,980        | 440                   | 18                        | 21           | 474                   | 29                        | 37           |
| 26.....                                                       | 1,560                 | 138                       | 581          | 706                   | 34                        | s 71         | 445                   | 28                        | 34           |
| 27.....                                                       | 1,240                 | 55                        | 184          | 1,540                 | 88                        | 366          | 420                   | 22                        | 25           |
| 28.....                                                       | 1,160                 | 45                        | s 152        | 1,700                 | 95                        | 436          | 400                   | 22                        | 24           |
| 29.....                                                       | 2,700                 | 232                       | s 1,850      | --                    | --                        | --           | 380                   | 15                        | 15           |
| 30.....                                                       | 3,580                 | 30                        | 322          | --                    | --                        | --           | 385                   | 15                        | 16           |
| 31.....                                                       | 2,810                 | 163                       | 1,240        | --                    | --                        | --           | 345                   | 15                        | 14           |
| Total.                                                        | 61,315                | --                        | 71,993       | 81,510                | --                        | 126,062      | 33,680                | --                        | 5,816        |

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

## SALT RIVER BASIN--Continued

## SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Suspended sediment, water year October 1955 to September 1956--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 407                  | 20                       | 22           | 552                  | 54                       | 80           | 430                  | 51                       | 59           |
| 2.....  | 939                  | 40                       | 101          | 420                  | 42                       | 48           | 468                  | 74                       | 94           |
| 3.....  | 1,130                | 39                       | s 138        | 320                  | 50                       | 43           | 385                  | 52                       | 54           |
| 4.....  | 17,500               | 1,800                    | s 98,700     | 247                  | 57                       | 38           | 315                  | 45                       | 38           |
| 5.....  | 26,900               | 1,030                    | 74,800       | 219                  | 51                       | 30           | 372                  | 76                       | s 130        |
| 6.....  | 19,300               | 410                      | 21,400       | 207                  | 34                       | 19           | 500                  | 181                      | s 277        |
| 7.....  | 9,600                | 158                      | 4,100        | 184                  | 30                       | 15           | 488                  | 156                      | s 339        |
| 8.....  | 9,880                | 304                      | 8,110        | 169                  | 28                       | 13           | 632                  | 313                      | s 569        |
| 9.....  | 11,900               | 870                      | 28,000       | 158                  | 28                       | 12           | 264                  | 148                      | 105          |
| 10..... | 6,910                | 238                      | 4,440        | 147                  | 28                       | 11           | 207                  | 65                       | 36           |
| 11..... | 1,790                | 92                       | 445          | 137                  | 29                       | 11           | 203                  | 42                       | 23           |
| 12..... | 1,930                | 42                       | 219          | 121                  | 29                       | 9            | 273                  | 48                       | 35           |
| 13..... | 1,630                | 24                       | 106          | 108                  | 28                       | 8            | 282                  | 40                       | 30           |
| 14..... | 1,210                | 20                       | 65           | 124                  | 16                       | 5            | 264                  | 52                       | 37           |
| 15..... | 1,540                | 18                       | 75           | 121                  | 20                       | 6            | 260                  | 48                       | 34           |
| 16..... | 1,210                | 20                       | 65           | 105                  | 28                       | 8            | 273                  | 36                       | 26           |
| 17..... | 1,960                | 31                       | 164          | 78                   | 26                       | 5            | 305                  | 45                       | 37           |
| 18..... | 1,220                | 46                       | 152          | 746                  | 56                       | s 244        | 1,400                | 283                      | s 1,540      |
| 19..... | 885                  | 40                       | 96           | 2,960                | 340                      | 2,720        | 2,340                | 528                      | 3,340        |
| 20..... | 739                  | 24                       | 48           | 2,280                | 310                      | a 1,900      | 1,120                | 280                      | 847          |
| 21..... | 914                  | 333                      | s 1,530      | 1,220                | 224                      | 738          | 573                  | 168                      | 260          |
| 22..... | 2,590                | 1,500                    | s 11,400     | 11,600               | 2,260                    | s 79,400     | 365                  | 111                      | 109          |
| 23..... | 1,950                | 450                      | 2,370        | 16,100               | 950                      | 41,300       | 268                  | 86                       | 62           |
| 24..... | 2,200                | 470                      | 2,790        | 10,100               | 270                      | 7,360        | 671                  | 141                      | s 307        |
| 25..... | 1,430                | 130                      | 502          | 3,320                | 150                      | 1,340        | 1,380                | 198                      | 738          |
| 26..... | 1,070                | 67                       | 194          | 1,680                | 123                      | 558          | 730                  | 183                      | 361          |
| 27..... | 808                  | 68                       | 148          | 1,740                | 143                      | 672          | 440                  | 158                      | 188          |
| 28..... | 714                  | 55                       | 106          | 1,050                | 70                       | 198          | 3,120                | 284                      | s 4,800      |
| 29..... | 842                  | 62                       | 141          | 794                  | 52                       | 111          | 13,000               | 714                      | 25,100       |
| 30..... | 615                  | 61                       | 101          | 587                  | 52                       | 82           | 6,260                | 250                      | s 5,020      |
| 31..... | --                   | --                       | --           | 462                  | 50                       | 62           | --                   | --                       | --           |
| Total.  | 131,713              | --                       | 260,528      | 58,056               | --                       | 137,046      | 37,588               | --                       | 44,595       |
|         | July                 |                          |              | August               |                          |              | September            |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
|         |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....  | 1,250                | 107                      | 361          | 29                   | 38                       | 3            | 1.2                  | 9                        | (t)          |
| 2.....  | 834                  | 89                       | 200          | 24                   | 40                       | 2            | 1.2                  |                          |              |
| 3.....  | 559                  | 61                       | 92           | 28                   | 38                       | 3            | .8                   |                          |              |
| 4.....  | 400                  | 58                       | 63           | 47                   | 27                       | 3            | .7                   |                          |              |
| 5.....  | 305                  | 47                       | 39           | 34                   | 38                       | 3            | .5                   |                          |              |
| 6.....  | 231                  | 42                       | 26           | 22                   | 25                       | 1            | .5                   | --                       | (et)         |
| 7.....  | 180                  | 36                       | 17           | 14                   | 18                       | 1            | .4                   |                          |              |
| 8.....  | 137                  | 30                       | 11           | 11                   | 17                       | 1            | .4                   |                          |              |
| 9.....  | 105                  | 28                       | 8            | 7.2                  | 28                       | 1            | .7                   |                          |              |
| 10..... | 80                   | 21                       | 4            | 5.6                  | 36                       | 1            | 37                   | --                       | e 4          |
| 11..... | 61                   | 22                       | 4            | 4.2                  | 42                       | (t)          | 127                  | 48                       | 16           |
| 12..... | 53                   | 12                       | 2            | 4.2                  | 16                       | (t)          | 53                   | 26                       | 4            |
| 13..... | 46                   | 13                       | 2            | 3.6                  | 19                       | (t)          | 32                   | 23                       | 2            |
| 14..... | 36                   | 13                       | 1            | 4.2                  | 21                       | (t)          | 30                   | 31                       | 2            |
| 15..... | 32                   | 20                       | a 2          | 5.6                  | 11                       | (t)          | 22                   | 35                       | a 2          |
| 16..... | 56                   | 37                       | 6            | 18                   | 24                       | 1            | 119                  | 66                       | s 31         |
| 17..... | 12                   | 12                       | 2            | 11                   | 29                       | 1            | 291                  | 98                       | s 84         |
| 18..... | 102                  | 27                       | 7            | 23                   | 29                       | 2            | 130                  | 43                       | 15           |
| 19..... | 61                   | 22                       | 4            | 22                   | 25                       | 1            | 70                   | 28                       | 5            |
| 20..... | 38                   | 17                       | 2            | 16                   | 24                       | 1            | 50                   | 23                       | 3            |
| 21..... | 27                   | 28                       | 2            | 12                   | 23                       | 1            | 36                   | 23                       | 2            |
| 22..... | 23                   | 20                       | 1            | 8.0                  | 20                       | (t)          | 30                   | 20                       | a 2          |
| 23..... | 25                   | 25                       | 2            | 5.6                  | 19                       | (t)          | 29                   | 21                       | 2            |
| 24..... | 144                  | 74                       | s 32         | 4.9                  | 18                       | (t)          | 27                   | 20                       | 1            |
| 25..... | 165                  | 50                       | 22           | 4.9                  | 15                       | (t)          | 24                   | 22                       | 1            |
| 26..... | 91                   | 38                       | 9            | 4.2                  | 14                       | (t)          | 46                   | 66                       | 8            |
| 27..... | 56                   | 36                       | 5            | 3.6                  | 13                       | (t)          | 46                   | 35                       | 4            |
| 28..... | 54                   | 43                       | 6            | 2.5                  | 16                       | (t)          | 36                   | 25                       | 2            |
| 29..... | 47                   | 35                       | 4            | 2.0                  | 22                       | (t)          | 30                   | 25                       | a 2          |
| 30..... | 38                   | 33                       | 3            | 1.5                  | 27                       | (t)          | 27                   | 27                       | 2            |
| 31..... | 34                   | 35                       | 3            | 1.5                  | 19                       | (t)          | --                   | --                       | --           |
| Total.  | 5,328                | --                       | 942          | 384.3                | --                       | 29           | 1,298.4              | --                       | 194          |

Total discharge for year (cfs-days) ..... 457,383.5

Total load for year (tons) ..... 704,532

e Estimated.

t Less than 0.5 ton.

s Computed by subdividing day.

a Computed from estimated concentration graph.



SALT RIVER BASIN--Continued  
SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Particle size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection  | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|---------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                     |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                     |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Dec. 15, 1956 . . . | 7:00 a. m. | 3,150           |                        | 1,410                         | 2,500                                      | 46                                                | 58    | 69    | 84    | 93    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Dec. 21 . . .       | 7:00 a. m. | 7,280           |                        | 1,040                         | 1,040                                      | 46                                                | 59    | 71    | 86    | 95    | 98    | 99    | 100   |       | --    |                     | SBWCM |
| Jan. 10, 1957 . . . | 7:00 a. m. | 6,900           |                        | 716                           | 993                                        | 43                                                | 56    | 67    | 81    | 91    | 98    | 99    | 99    |       | 100   |                     | SBWCM |
| Jan. 23 . . .       | 12:00 m.   | 11,900          |                        | 1,180                         | 1,120                                      | 46                                                | 58    | 69    | 83    | 93    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Feb. 11 . . .       | 7:00 a. m. | 14,200          |                        | 1,450                         | 1,250                                      | 52                                                | 65    | 77    | 89    | 98    | 100   | --    | --    |       | --    |                     | SBWCM |
| Apr. 4 . . .        | 9:00 a. m. | 16,600          |                        | 2,020                         | 1,860                                      | 38                                                | 48    | 61    | 77    | 93    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Apr. 5 . . .        | 4:10 p. m. | 26,500          |                        | 909                           | 1,430                                      | 58                                                | 70    | 84    | 93    | 98    | 100   | --    | --    |       | --    |                     | SBWCM |
| Apr. 6 . . .        | 4:10 p. m. | 26,500          |                        | 909                           | 1,370                                      | 25                                                | 37    | 62    | 84    | 94    | 100   | --    | --    |       | --    |                     | SBWCM |
| Apr. 6 . . .        | 9:15 a. m. | 20,600          |                        | 422                           | 1,902                                      | 50                                                | 63    | 81    | 90    | 96    | 100   | --    | --    |       | --    |                     | SBWCM |
| Apr. 9 . . .        | 7:00 a. m. | 12,600          |                        | 928                           | 1,780                                      | 50                                                | 62    | 73    | 87    | 95    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Apr. 22 . . .       | 7:00 a. m. | 3,660           |                        | 1,880                         | 2,730                                      | 44                                                | 50    | 67    | 85    | 96    | 99    | 100   | --    |       | --    |                     | SBWCM |
| May 19 . . .        | 9:00 a. m. | 3,520           |                        | 354                           | 537                                        | 56                                                | 67    | 79    | 90    | 95    | 97    | 98    | 99    |       | 100   |                     | SBWCM |
| June 19 . . .       | 6:45 a. m. | 2,680           |                        | 580                           | 919                                        | 37                                                | 49    | 70    | 87    | 95    | 99    | 100   | --    |       | --    |                     | SBWCM |
| June 25 . . .       | 5:30 a. m. | 1,680           |                        | 204                           | 964                                        | 57                                                | 70    | 85    | 96    | 98    | 99    | 100   | --    |       | --    |                     | SBWCM |
| June 29 . . .       | 5:55 a. m. | 13,400          |                        | 678                           | 904                                        | 46                                                | 57    | 70    | 87    | 98    | 100   | --    | --    |       | --    |                     | SBWCM |

SALT RIVER BASIN--Continued  
ROLLING FORK NEAR BOSTON, KY.

LOCATION.--At gaging station at bridge on U.S. Highway 62 and State Highway 61, 0.4 mile downstream from Beech Fork, and 2.3 miles southwest of Boston, Nelson County.

DRAINAGE AREA.--1,290 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1952.

Water temperatures: October 1949 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 83°F Aug. 4; minimum, freezing point on several days during January.

EXTREMES, 1949-57.--Water temperatures: Maximum, 87°F July 4, 1950, June 22, 25, 28, 1954; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957  
Twice-daily measurements at approximately 7 a.m. and 5 p.m.

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 61      | 66   | 55       | 57   | 35       | 38   | 39      | 40   | 40       | 41   | 44    | 46   | 51    | 56   | 69   | 72   | 69   | 73   | 69   | 78   | 72     | 82   | 70        | 75   |
| 2.....       | 62      | 68   | 54       | 59   | 41       | 32   | 34      | 40   | 43       | 43   | 44    | 44   | 50    | 53   | 70   | 73   | 70   | 73   | 70   | 78   | 73     | 81   | 71        | 80   |
| 3.....       | 63      | 62   | 54       | 57   | 38       | 43   | 31      | 36   | 43       | 45   | 42    | 43   | 51    | 54   | 65   | 70   | 69   | 71   | 70   | 78   | 76     | 82   | 72        | 78   |
| 4.....       | 61      | 63   | 54       | 56   | 40       | 44   | 33      | 36   | 46       | 45   | 39    | 43   | 50    | 53   | 61   | 59   | 70   | 75   | 79   | 71   | 83     | 77   | 83        | 77   |
| 5.....       | 60      | 63   | 53       | 58   | 41       | 43   | 34      | 37   | 42       | 42   | 38    | 43   | 50    | 52   | 58   | 59   | 68   | 72   | 76   | 77   | 82     | 80   | 72        | 77   |
| 6.....       | 66      | 67   | 56       | 57   | 40       | 42   | 35      | 34   | 41       | 45   | 40    | 45   | 48    | 53   | 57   | 65   | 68   | 73   | 73   | 80   | 72     | 79   | 70        | 74   |
| 7.....       | 66      | 64   | 56       | 56   | 39       | 40   | 32      | 35   | 42       | 47   | 39    | 43   | 51    | 56   | 60   | 68   | 70   | 73   | 71   | 78   | 70     | 79   | 69        | 72   |
| 8.....       | 60      | 62   | 57       | 52   | 47       | 50   | 33      | 36   | 43       | 47   | 40    | 38   | 51    | 49   | 61   | 68   | 69   | 72   | 72   | 79   | 68     | 81   | 66        | 68   |
| 9.....       | 59      | 61   | 49       | 47   | 49       | 48   | 37      | 41   | 42       | 46   | 39    | 40   | 49    | 50   | 64   | 69   | 74   | 71   | 74   | 78   | 72     | 82   | 65        | 67   |
| 10.....      | 58      | 59   | 50       | 48   | 46       | 47   | 37      | 36   | 43       | 45   | 40    | 42   | 50    | 55   | 61   | 68   | 74   | 70   | 75   | 79   | 73     | 79   | 66        | 71   |
| 11.....      | 56      | 58   | 54       | 50   | 44       | 46   | 34      | 40   | 43       | 44   | 44    | 46   | 51    | 56   | 67   | 69   | 75   | 77   | 70   | 80   | 73     | 79   | 68        | 70   |
| 12.....      | 55      | 58   | 47       | 46   | 44       | 45   | 37      | 40   | 41       | 46   | 44    | 47   | 50    | 53   | 66   | 72   | 69   | 72   | 72   | 80   | 71     | 75   | 67        | 75   |
| 13.....      | 56      | 58   | 44       | 48   | 43       | 44   | 41      | 43   | 43       | 47   | 42    | 48   | 51    | 53   | 65   | 68   | 68   | 77   | 71   | 80   | 76     | 75   | 68        | 74   |
| 14.....      | 56      | 58   | 46       | 51   | 45       | 44   | 39      | 40   | 42       | 46   | 52    | 55   | 50    | 52   | 66   | 73   | 70   | 75   | 79   | 81   | 77     | 74   | 67        | 75   |
| 15.....      | 57      | 60   | 48       | 52   | 46       | 47   | 39      | 40   | 43       | 45   | 50    | 48   | 50    | 53   | 69   | 74   | 71   | 77   | 77   | 81   | 75     | 78   | 66        | 73   |
| 16.....      | 58      | 62   | 49       | 48   | 45       | 47   | 37      | 39   | 43       | 43   | 47    | 53   | 51    | 56   | 65   | 69   | 72   | 76   | 76   | 78   | 75     | 77   | 65        | 72   |
| 17.....      | 59      | 61   | 47       | 48   | 41       | 47   | 31      | 32   | 40       | 44   | 49    | 54   | 51    | 57   | 63   | 71   | 70   | 75   | 74   | 79   | 75     | 76   | 66        | 71   |
| 18.....      | 58      | 59   | 49       | 47   | 43       | 46   | 31      | 33   | 40       | 43   | 51    | 53   | 52    | 58   | 68   | 73   | 70   | 77   | 71   | 80   | 74     | 75   | 65        | 74   |
| 19.....      | 57      | 59   | 48       | 45   | 42       | 46   | 32      | 35   | 40       | 42   | 50    | 52   | 54    | 58   | 69   | 70   | 69   | 74   | 71   | 79   | 73     | 75   | 69        | 74   |
| 20.....      | 60      | 67   | 50       | 46   | 43       | 46   | 32      | 33   | 40       | 41   | 48    | 52   | 55    | 58   | 67   | 69   | 75   | 74   | 79   | 72   | 76     | 70   | 75        | 75   |
| 21.....      | 60      | 62   | 47       | 45   | 41       | 44   | 35      | 40   | 40       | 43   | 50    | 54   | 57    | 58   | 68   | 71   | 76   | 70   | 79   | 71   | 74     | 71   | 76        | 71   |
| 22.....      | 59      | 63   | 46       | 42   | 40       | 43   | 42      | 44   | 40       | 45   | 51    | 55   | 55    | 59   | 70   | 72   | 70   | 79   | 74   | 79   | 70     | 75   | 70        | 74   |
| 23.....      | 60      | 64   | 40       | 48   | 54       | 40   | 39      | 41   | 45       | 50   | 55    | 57   | 67    | 70   | 69   | 70   | 71   | 78   | 73   | 79   | 71     | 74   | 69        | 72   |
| 24.....      | 61      | 62   | 36       | 39   | 46       | 49   | 38      | 36   | 40       | 42   | 51    | 54   | 68    | 72   | 71   | 70   | 74   | 76   | 72   | 78   | 70     | 74   | 65        | 70   |
| 25.....      | 58      | 65   | 34       | 35   | 47       | 49   | 35      | 40   | --       | 46   | 51    | 55   | 63    | 64   | 68   | 68   | 69   | 75   | 71   | 78   | 70     | 74   | 64        | 70   |
| 26.....      | 59      | --   | 34       | 39   | 46       | 47   | 41      | 38   | 47       | 45   | 52    | 51   | 69    | 72   | 69   | 67   | 70   | 77   | 70   | 78   | 69     | 73   | 63        | 71   |
| 27.....      | 54      | 57   | 37       | 34   | 43       | 45   | 41      | 41   | 45       | 46   | 50    | 49   | 68    | 71   | 68   | 66   | 71   | 77   | 72   | 77   | 70     | 74   | 64        | 67   |
| 28.....      | 56      | 58   | 35       | 40   | 42       | 44   | 40      | 42   | 44       | --   | 50    | 52   | 67    | 72   | 65   | 66   | 71   | 73   | 71   | 80   | 69     | 75   | 63        | 65   |
| 29.....      | 55      | 57   | 38       | 35   | 37       | 39   | 41      | 42   | --       | --   | 54    | 59   | 70    | 76   | 64   | 69   | 70   | 76   | 71   | 79   | 71     | 76   | 62        | 63   |
| 30.....      | 53      | 59   | 36       | 38   | 42       | 40   | 41      | --   | --       | --   | 60    | 56   | 70    | 73   | 70   | 72   | 71   | 75   | 72   | 80   | 70     | 76   | 69        | 66   |
| 31.....      | 56      | 58   | --       | --   | 40       | 41   | 39      | 41   | --       | --   | 59    | 58   | --    | --   | 67   | 74   | --   | --   | 71   | 80   | 70     | 77   | --        | --   |
| Average..... | 59      | 61   | 47       | 47   | 43       | 45   | 36      | 38   | 42       | 44   | 47    | 49   | 56    | 59   | 66   | 69   | 70   | 74   | 72   | 79   | 72     | 77   | 67        | 72   |

## GREEN RIVER BASIN

## GREEN RIVER AT GREENSBURG, KY.

LOCATION --At gaging station at bridge on U. S. Highway 68, 300 feet upstream from Clover Lick Creek, a quarter of a mile south of Greensburg, Green County, and 2.6 miles upstream from Russell Creek.

DRAINAGE AREA 742 square miles.

RECORDS AVAILABLE --Water temperatures; October 1949 to September 1957.

EXTREMES, 1956-57. --Water temperatures: Maximum, 87° F July 17-22; minimum, 33° F Nov. 29, Jan. 17, 18.

REMARKS --Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Twice-daily measurements at approximately 2 a.m. and 5 p.m.

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 64      | 68   | 58       | 60   | 36       | 37   | 38      | 39   | 43       | 43   | 45    | 46   | 50    | 52   | 71   | 72   | 74   | 75   | 79   | 80   | --     | --   | 78        | 78   |
| 2.....       | 67      | 70   | 56       | 60   | 38       | 40   | 36      | 37   | 42       | 43   | 44    | 44   | 54    | 52   | 74   | 71   | 73   | 73   | 80   | 81   | --     | --   | 78        | 78   |
| 3.....       | 67      | 71   | 55       | 61   | 41       | 43   | 34      | 36   | 44       | 44   | 43    | 43   | 54    | 56   | 69   | 69   | 73   | 74   | 80   | 81   | --     | --   | 78        | 78   |
| 4.....       | 66      | 68   | 55       | 60   | 43       | 45   | 36      | 38   | 44       | 44   | 42    | 43   | 56    | 58   | 64   | 64   | 74   | 74   | 81   | 82   | --     | --   | 77        | 77   |
| 5.....       | 66      | 69   | 55       | 61   | 42       | 45   | 39      | 34   | 43       | 46   | 42    | 44   | 56    | 56   | 63   | 64   | 74   | 75   | 82   | 83   | --     | --   | 77        | 77   |
| 6.....       | 67      | 69   | 56       | 60   | 46       | 47   | 38      | 38   | 45       | 47   | 45    | 45   | 54    | 55   | 64   | 66   | 74   | 75   | 83   | 83   | --     | --   | 76        | 77   |
| 7.....       | 64      | 65   | 55       | 59   | 49       | 49   | 37      | 39   | 46       | 47   | 45    | 44   | 50    | 51   | 65   | 66   | 75   | 76   | 83   | 83   | --     | --   | 77        | 78   |
| 8.....       | 60      | 63   | 54       | 53   | 51       | 51   | 38      | 40   | 46       | 47   | 42    | 42   | 51    | 49   | 66   | 68   | 75   | 76   | 83   | 83   | 79     | 80   | 77        | 78   |
| 9.....       | 60      | 62   | 48       | 50   | 48       | 48   | 40      | 40   | 47       | 48   | 42    | 42   | 51    | 54   | 68   | 68   | 75   | 76   | 83   | 83   | 80     | 80   | 76        | 75   |
| 10.....      | 60      | 60   | 46       | 49   | 46       | 47   | 38      | 38   | 47       | 48   | 42    | 42   | 52    | 54   | 69   | 70   | 75   | 75   | 83   | 84   | 75     | 80   | 75        | 76   |
| 11.....      | 57      | 59   | 46       | 53   | 46       | 47   | 37      | 37   | 46       | 46   | 44    | 45   | 52    | 55   | 71   | 72   | 74   | 75   | 83   | 84   | 79     | 80   | 76        | 77   |
| 12.....      | 57      | 60   | 44       | 52   | 46       | 48   | 36      | 39   | 45       | 48   | 48    | 50   | 52    | 54   | 72   | 74   | 75   | 76   | 83   | 84   | 78     | 78   | 76        | 77   |
| 13.....      | 57      | 60   | 44       | 48   | 47       | 47   | 39      | 39   | 46       | 47   | 50    | 53   | 52    | 55   | 74   | 75   | 76   | 78   | 83   | 83   | 76     | 78   | 75        | 75   |
| 14.....      | 57      | 59   | 47       | 49   | 47       | 49   | 38      | 38   | 46       | 46   | 53    | 55   | 52    | 55   | 75   | 76   | 78   | 79   | 85   | 86   | 78     | 76   | 75        | --   |
| 15.....      | 55      | 61   | 52       | 52   | 49       | 51   | 37      | 37   | 44       | 46   | 50    | 52   | 54    | 56   | 76   | 77   | 79   | 79   | 86   | 86   | 76     | 78   | 74        | 74   |
| 16.....      | 57      | 60   | 48       | 50   | 50       | 51   | 34      | 34   | 45       | 45   | 51    | 53   | 56    | 56   | 75   | 76   | 80   | 81   | 86   | 86   | 76     | 78   | 73        | 74   |
| 17.....      | 57      | 61   | 42       | 44   | 48       | 50   | 33      | 33   | 43       | 44   | 53    | 55   | 55    | 55   | 75   | 76   | 81   | 82   | 86   | 87   | 76     | 77   | 74        | 74   |
| 18.....      | 59      | 60   | 41       | 46   | 46       | 49   | 33      | 34   | 43       | 44   | 53    | 54   | 54    | 56   | 75   | 76   | 81   | 82   | 86   | 87   | 77     | 78   | 74        | 74   |
| 19.....      | 59      | 61   | 41       | 46   | 45       | 48   | 34      | 34   | 42       | 42   | 53    | 59   | 62    | 75   | 76   | 80   | 80   | 86   | 87   | 87   | 77     | 77   | 74        | 74   |
| 20.....      | 61      | 64   | 44       | 47   | 48       | 49   | 34      | 36   | 41       | 41   | 52    | 53   | 63    | 68   | 75   | 75   | 78   | 78   | 86   | 87   | 75     | 76   | 74        | 74   |
| 21.....      | 62      | 62   | 45       | 45   | 50       | 52   | 37      | 40   | 40       | 42   | 50    | 49   | 68    | 69   | 74   | 75   | 78   | 79   | 86   | 87   | 75     | 76   | 74        | 74   |
| 22.....      | 62      | 63   | 43       | 43   | 52       | 53   | 41      | 42   | 42       | 43   | 48    | 49   | 69    | 72   | 74   | 74   | 79   | 79   | 87   | 84   | 74     | 75   | 74        | 75   |
| 23.....      | 62      | 62   | 43       | 43   | 52       | 51   | 38      | 40   | 42       | 43   | 48    | 50   | 72    | 72   | 73   | 74   | 78   | 79   | 82   | 82   | 79     | 75   | 73        | 74   |
| 24.....      | 61      | 63   | 38       | 41   | 48       | 49   | 42      | 43   | 43       | 43   | 50    | 51   | 71    | 72   | 74   | 74   | 79   | 80   | 82   | 82   | 74     | 74   | 70        | 70   |
| 25.....      | 62      | 63   | 38       | 40   | 47       | 48   | 42      | 42   | 44       | 46   | 51    | 52   | 72    | 72   | 74   | 75   | 80   | 80   | 82   | 83   | 74     | 74   | 69        | 69   |
| 26.....      | 62      | 62   | 38       | 46   | 46       | 46   | 40      | 41   | 48       | 50   | 48    | 50   | 72    | 72   | 72   | 72   | 78   | 78   | 82   | 83   | 73     | 74   | 67        | 67   |
| 27.....      | 56      | 58   | 37       | 38   | 44       | 45   | 40      | 40   | 48       | 48   | 47    | 49   | 72    | 72   | 69   | 71   | 78   | 79   | 82   | 81   | 73     | 74   | 65        | 65   |
| 28.....      | 54      | 58   | 35       | 37   | 44       | 44   | 41      | 42   | 46       | 46   | 48    | 50   | 72    | 72   | 72   | 73   | 75   | 75   | --   | --   | 73     | 74   | 65        | 65   |
| 29.....      | 54      | 59   | 33       | 37   | 40       | 41   | 42      | 42   | --       | --   | 48    | 50   | 70    | 72   | 72   | 73   | 77   | 78   | --   | --   | 74     | 75   | 64        | 64   |
| 30.....      | 55      | 59   | 36       | 37   | 40       | 41   | 43      | 43   | --       | --   | 47    | 49   | 71    | 72   | 73   | 74   | --   | --   | --   | --   | 75     | 77   | 63        | 64   |
| 31.....      | 55      | 60   | --       | --   | 40       | 40   | 43      | 43   | --       | --   | 49    | 51   | --    | --   | 74   | 75   | --   | --   | --   | --   | 78     | 79   | --        | --   |
| Average..... | 60      | 63   | 46       | 49   | 46       | 47   | 38      | 39   | 44       | 45   | 48    | 49   | 60    | 61   | 71   | 72   | 77   | 77   | 83   | 84   | --     | --   | 73        | 73   |

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUMFORDVILLE, KY.

LOCATION --At gaging station at bridge on U. S. Highway 31W, at Mumfordsville, Hart County.

DRAINAGE AREA --1,790 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1957.

Water temperatures: October 1950 to September 1957.

Sediment records: April 1951 to September 1957.

EXTREMES 1956-57 --Dissolved solids: Maximum, 254 ppm Nov. 28 to Dec. 1; minimum, 80 ppm Jan. 30 to Feb. 2.

Hardness: Maximum, 166 ppm Nov. 28 to Dec. 1; minimum, 44 ppm Jan. 30 to Feb. 2.

Specific conductance: Maximum daily, 523 micromhos Nov. 29; minimum daily, 99 micromhos Feb. 1.

Water temperatures: Maximum, 82°F July 20; minimum, freezing point Jan. 21.

Sediment concentrations: Maximum daily, 1,280 ppm Jan. 23; minimum daily, 1 ppm Oct. 27-30, Nov. 19-25, Dec. 6-9.

Sediment loads: Maximum daily, 39,600 tons Jan. 23-Apr. 5; minimum daily, less than 0.5 ton Oct. 27-30, Nov. 19, Dec. 6-9.

EXTREMES 1950-56 --Dissolved solids: Maximum, 254 ppm Nov. 28 to Dec. 1, 1956; minimum, 73 ppm Feb. 19-21, 1956.

Hardness: Maximum, 166 ppm Nov. 28 to Dec. 1, 1956; minimum, 44 ppm Jan. 30 to Feb. 2, 1957.

Specific conductance: Maximum daily, 523 micromhos Nov. 29, 1956; minimum daily, 59 micromhos Mar. 25, 1952.

Water temperatures: Maximum, 82°F July 20, 1957; minimum, freezing point Jan. 21, 1957.

Sediment concentrations (1951-57): Maximum daily, 3,180 ppm June 14, 1952; minimum daily, 1 ppm on many days during 1952 to 1957.

Sediment loads (1951-57): Maximum daily, 153,000 tons Mar. 23-24, 1952; minimum daily, less than 0.5 ton on many days during 1953 to 1956.

REMARKS --Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year

October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                       |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Oct. 1-15, 1956 ..... | 112                  | --                         | --        | 48           | 7.2            | 7.2         | 9.0           | 168                             | 10                         | 14            | --           | 1.8                        | 192                                                | 150                           | 12            | 336                                       | 7.7 | 2     |
| Oct. 16-31 .....      | 104                  | --                         | --        | 51           | 7.6            | 11          | --            | 181                             | 10                         | 16            | --           | 1.6                        | 207                                                | 158                           | 10            | 359                                       | 7.6 | 2     |
| Nov. 1-14 .....       | 125                  | --                         | --        | 51           | 8.8            | 14          | --            | 186                             | 13                         | 19            | --           | 1.0                        | 214                                                | 163                           | 10            | 371                                       | 7.7 | 3     |
| Nov. 15-27 .....      | 196                  | 9.4                        | 0.01      | 52           | 8.2            | 13          | 1.9           | 181                             | 12                         | 22            | 0.2          | .9                         | 208                                                | 163                           | 14            | 375                                       | 7.8 | 2     |
| Nov. 28-Dec. 1 .....  | 137                  | --                         | --        | 51           | 9.4            | 37          | --            | 174                             | 39                         | 45            | --           | .8                         | 254                                                | 166                           | 23            | 441                                       | 8.0 | 5     |
| Dec. 2-15 .....       | 965                  | --                         | --        | 46           | 7.9            | 14          | --            | 155                             | 17                         | 23            | --           | 1.0                        | 195                                                | 148                           | 20            | 344                                       | 7.9 | 5     |
| Dec. 16-17 .....      | 8,545                | --                         | --        | 16           | 3.2            | 1.8         | --            | 49                              | 10                         | 2.5           | --           | 3.4                        | 117                                                | 53                            | 13            | 125                                       | 7.0 | 20    |
| Dec. 18-31 .....      | 3,524                | --                         | --        | 26           | 6.2            | 4.6         | --            | 90                              | 15                         | 5.2           | --           | 4.1                        | 94                                                 | 90                            | 16            | 195                                       | 7.5 | 20    |
| Jan. 1-10, 1957 ..... | 1,267                | --                         | --        | 34           | 6.3            | 7.1         | --            | 17                              | 13                         | 9.0           | --           | 3.8                        | 139                                                | 111                           | 18            | 238                                       | 7.6 | 5     |
| Jan. 11-15 .....      | 5,286                | --                         | --        | 24           | 4.6            | 5.1         | --            | 80                              | 13                         | 5.5           | --           | 4.0                        | 98                                                 | 79                            | 14            | 176                                       | 7.4 | 6     |
| Jan. 18-23 .....      | 2,987                | --                         | --        | 33           | 5.6            | 4.8         | --            | 108                             | 13                         | 7.5           | --           | 4.1                        | 137                                                | 106                           | 17            | 225                                       | 7.4 | 5     |
| Jan. 24-26 .....      | 16,670               | --                         | --        | 18           | 3.5            | 2.5         | --            | 59                              | 9.8                        | 2.6           | --           | 3.6                        | 86                                                 | 60                            | 11            | 130                                       | 7.2 | 17    |
| Jan. 27-29 .....      | 8,357                | --                         | --        | 27           | 4.7            | 6.9         | --            | 97                              | 11                         | 5.0           | --           | 4.8                        | 122                                                | 87                            | 8             | 136                                       | 7.5 | 13    |
| Jan. 30-Feb. 2 .....  | 27,820               | --                         | --        | 16           | 1.1            | 6.2         | --            | 54                              | 8.0                        | 2.2           | --           | 3.2                        | 80                                                 | 44                            | 1             | 115                                       | 7.1 | 8     |
| Feb. 3-11 .....       | 11,970               | --                         | --        | 24           | 2.2            | 6.7         | --            | 80                              | 9.6                        | 3.6           | --           | 3.9                        | 104                                                | 69                            | 44            | 164                                       | 7.4 | 7     |

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September--Continued

| Date of collection           | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180° C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25° C) | pH  | Color |
|------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------------------------------------------------|-------------------------------|---------------|--------------------------------------------|-----|-------|
|                              |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                     | Calcium, mg./l.               | Non-carbonate |                                            |     |       |
| Feb. 12-13, 1957.....        | 13,550               | --                         | --        | 16           | 1.4            |             | 6.7           | 57                              | 8.4                        | 1.8           | --           | 2.9                        | 88                                                  | 46                            | 0             | 121                                        | 7.3 | 10    |
| Feb. 14-26.....              | 3,553                | --                         | --        | 28           | 4.6            |             | 4.1           | 94                              | 11                         | 4.4           | --           | 4.1                        | 112                                                 | 89                            | 12            | 189                                        | 7.6 | 6     |
| Feb. 27-Mar. 10.....         | 3,718                | --                         | --        | 30           | 4.8            |             | 4.1           | 100                             | 12                         | 4.6           | --           | 3.6                        | 121                                                 | 95                            | 13            | 206                                        | 7.8 | 2     |
| Mar. 11-31.....              | 3,209                | --                         | --        | 29           | 5.3            |             | 1.8           | 97                              | 11                         | 4.0           | --           | 2.6                        | 108                                                 | 94                            | 15            | 195                                        | 7.8 | 4     |
| Apr. 1-4.....                | 3,060                | --                         | --        | 30           | 5.6            |             | 3.7           | 104                             | 12                         | 5.0           | --           | 1.8                        | 117                                                 | 98                            | 13            | 205                                        | 7.7 | 6     |
| Apr. 5-11.....               | 16,500               | --                         | --        | 20           | 3.9            |             | 1.4           | 66                              | 10                         | 1.7           | --           | 2.7                        | 85                                                  | 66                            | 12            | 140                                        | 7.6 | 4     |
| Apr. 12-29.....              | 2,492                | --                         | --        | 31           | 5.3            |             | 6.2           | 114                             | 12                         | 3.7           | --           | 2.4                        | 126                                                 | 100                           | 6             | 208                                        | 8.0 | 5     |
| Apr. 30-May 20.....          | 6,645                | --                         | --        | 38           | 6.7            |             | 4.6           | 135                             | 12                         | 6.0           | --           | 1.5                        | 147                                                 | 123                           | 12            | 242                                        | 7.7 | 3     |
| May 21-28.....               | 4,547                | --                         | --        | 32           | 4.7            |             | 6.9           | 110                             | 14                         | 5.7           | --           | 2.3                        | 133                                                 | 100                           | 10            | 208                                        | 7.1 | 7     |
| May 24-26.....               | 9,253                | --                         | --        | 23           | 4.1            |             | 5.1           | 78                              | 13                         | 3.8           | --           | 3.0                        | 108                                                 | 74                            | 10            | 153                                        | 7.0 | 15    |
| May 27-June 15.....          | 1,587                | 9.9                        | 0.02      | 33           | 6.8            | 3.6         |               | 116                             | 12                         | 5.0           | 0.1          | 2.9                        | 134                                                 | 111                           | 16            | 221                                        | 7.5 | 5     |
| June 16-30.....              | 1,454                | --                         | --        | 31           | 5.8            |             | 4.1           | 106                             | 14                         | 4.8           | --           | 2.7                        | 132                                                 | 102                           | 14            | 199                                        | 7.5 | 10    |
| July 1-15.....               | 1,515                | --                         | --        | 38           | 7.2            |             | 7.8           | 142                             | 12                         | 8.0           | --           | 2.1                        | 159                                                 | 125                           | 8             | 271                                        | 7.5 | 3     |
| July 16-31.....              | 414                  | --                         | --        | 39           | 6.0            |             | 6.4           | 134                             | 13                         | 7.5           | --           | 2.3                        | 158                                                 | 122                           | 12            | 261                                        | 7.5 | 5     |
| Aug. 1-19.....               | 207                  | --                         | --        | 43           | 6.4            |             | 8.7           | 152                             | 12                         | 10            | --           | 1.8                        | 170                                                 | 134                           | 9             | 291                                        | 7.5 | --    |
| Aug. 20-Sept. 13.....        | 163                  | 12                         | .00       | 49           | 7.4            | 9.3         |               | 171                             | 13                         | 15            | .1           | 1.8                        | 195                                                 | 153                           | 12            | 341                                        | 7.5 | 7     |
| Sept. 14-20.....             | 1,673                | --                         | --        | 29           | 4.7            |             | 7.6           | 97                              | 13                         | 10            | --           | 1.8                        | 134                                                 | 102                           | 12            | 214                                        | 7.3 | --    |
| Sept. 21-30.....             | 615                  | --                         | --        | 36           | 5.7            |             | 6.9           | 121                             | 15                         | 9.0           | --           | 1.8                        | 154                                                 | 114                           | 14            | 254                                        | 7.5 | --    |
| Time-weighted average a..... | 2,606                | --                         | --        | 37           | 6.2            |             | 7.3           | 128                             | 13                         | 9.4           | --           | 2.4                        | 151                                                 | 118                           | 13            | 255                                        | --  | 6     |

a Represents 99 percent of days and 100 percent of discharge.

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 Once-daily measurement at approximately 7 a. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 61   | 57   | 37   | 40   | 45   | 47   | 51   | 68  | 70   | 72   | 76   | --    |
| 2       | 64   | 55   | 37   | 38   | 45   | 46   | 52   | 68  | 69   | 74   | 75   | 72    |
| 3       | 65   | 55   | 40   | 36   | 46   | 44   | 54   | 66  | 68   | 74   | 76   | 73    |
| 4       | 64   | 56   | 40   | 39   | 47   | 44   | 54   | 62  | 69   | 74   | 77   | 71    |
| 5       | 63   | 56   | 44   | 39   | 48   | --   | 58   | 60  | 68   | 75   | 74   | 70    |
| 6       | 63   | 57   | 48   | 37   | 48   | 45   | 55   | 59  | 70   | 74   | 70   | 67    |
| 7       | 61   | 47   | 50   | 38   | 48   | 45   | 55   | 59  | 69   | 74   | 69   | 67    |
| 8       | 58   | 55   | 50   | 37   | 48   | 45   | 56   | 60  | 70   | 75   | 69   | 66    |
| 9       | 58   | 49   | 48   | 40   | 51   | 44   | 54   | 63  | 71   | 76   | 71   | 66    |
| 10      | 57   | 48   | 45   | 43   | 51   | 44   | 54   | 65  | 72   | 74   | 71   | 60    |
| 11      | 56   | 48   | 45   | 44   | 51   | 46   | 54   | 65  | 71   | 73   | 72   | 67    |
| 12      | 56   | 48   | 48   | 43   | 50   | 49   | 54   | 67  | 70   | 74   | 73   | 69    |
| 13      | 57   | 46   | 48   | 42   | 48   | 50   | 51   | 68  | 72   | 75   | 73   | 72    |
| 14      | 57   | 48   | 46   | 40   | 47   | 53   | 50   | 69  | 71   | 76   | 74   | 71    |
| 15      | 57   | 51   | 48   | 39   | 45   | 53   | 50   | 69  | 73   | 75   | 74   | 71    |
| 16      | 57   | 49   | 48   | --   | 45   | 52   | 53   | 69  | 74   | 76   | 74   | 70    |
| 17      | 58   | 45   | 47   | --   | 43   | 52   | 54   | 69  | 76   | 76   | 74   | 69    |
| 18      | 58   | 44   | 47   | 33   | 43   | 53   | 54   | 69  | 76   | 76   | 72   | 70    |
| 19      | 57   | 44   | 46   | 34   | 44   | 53   | 57   | 70  | 76   | 77   | 71   | 71    |
| 20      | 59   | 48   | 48   | 34   | 41   | 51   | 62   | 68  | 74   | 82   | 71   | 71    |
| 21      | 60   | 50   | 50   | 31   | 39   | 49   | 65   | 67  | 74   | 77   | 70   | 71    |
| 22      | 60   | 44   | 54   | 40   | 40   | 49   | 67   | 69  | 76   | 77   | 69   | 72    |
| 23      | 60   | 41   | 55   | 49   | 42   | 49   | 68   | 65  | 75   | 78   | 69   | 69    |
| 24      | 59   | 38   | 50   | 42   | 44   | 50   | 68   | 66  | 75   | 74   | 69   | 67    |
| 25      | 59   | 40   | 47   | 45   | 46   | 50   | 70   | 67  | 73   | 73   | 69   | 66    |
| 26      | 60   | 40   | 47   | 44   | 49   | 51   | 69   | 68  | 72   | 74   | 68   | 66    |
| 27      | 57   | 40   | 44   | 43   | 49   | 51   | 69   | 67  | 78   | 75   | 68   | 65    |
| 28      | 55   | 38   | 44   | 42   | 48   | 49   | 69   | 67  | 73   | 75   | 69   | 64    |
| 29      | 55   | 39   | 42   | 45   | --   | --   | 68   | 67  | 72   | 75   | 69   | 64    |
| 30      | 55   | 37   | 39   | 45   | --   | 50   | 68   | 68  | 73   | 75   | 70   | 63    |
| 31      | 58   | --   | 43   | 45   | --   | 49   | --   | 69  | --   | 75   | 71   | --    |
| Average | 59   | 47   | 46   | 40   | 46   | 49   | 59   | 67  | 73   | 75   | 72   | 68    |

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Suspended sediment    |                           |              | Suspended sediment    |                           |              | Suspended sediment    |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 106                   | 10                        | 3            | 126                   | 7                         | 2            | 171                   | 4                         | 2            |
| 2.....  | 101                   | 8                         | 2            | 126                   | 7                         | 2            | 166                   | 4                         | 2            |
| 3.....  | 126                   | 12                        | 4            | 126                   | 7                         | 2            | 161                   | 5                         | 2            |
| 4.....  | 156                   | 32                        | 13           | 126                   | 8                         | 3            | 156                   | 4                         | 2            |
| 5.....  | 136                   | 21                        | 8            | 126                   | 9                         | 3            | 156                   | 2                         | 1            |
| 6.....  | 121                   | 7                         | 2            | 121                   | 7                         | 2            | 156                   | 1                         | (t)          |
| 7.....  | 116                   | 5                         | 2            | 126                   | 8                         | 3            | 156                   | 1                         | (t)          |
| 8.....  | 111                   | 6                         | 2            | 121                   | 9                         | 3            | 161                   | 1                         | (t)          |
| 9.....  | 106                   | 7                         | 2            | 121                   | 6                         | 2            | 176                   | 1                         | (t)          |
| 10..... | 101                   | 7                         | 2            | 126                   | 5                         | 2            | 186                   | 2                         | 1            |
| 11..... | 101                   | 5                         | 1            | 126                   | 7                         | 2            | 196                   | 3                         | 2            |
| 12..... | 106                   | 5                         | 1            | 126                   | 2                         | 1            | 227                   | 2                         | 1            |
| 13..... | 101                   | 5                         | 1            | 126                   | 4                         | 1            | 478                   | 11                        | s 18         |
| 14..... | 101                   | 5                         | 1            | 126                   | 2                         | 1            | 2,780                 | 550                       | sa 5,200     |
| 15..... | 96                    | 5                         | 1            | 131                   | 2                         | 1            | 8,360                 | 792                       | 17,900       |
| 16..... | 96                    | 5                         | 1            | 136                   | 2                         | 1            | 9,510                 | 395                       | 10,100       |
| 17..... | 96                    | 5                         | 1            | 141                   | 3                         | 1            | 7,580                 | 203                       | 4,150        |
| 18..... | 96                    | 6                         | 2            | 151                   | 2                         | 1            | 2,730                 | 82                        | s 649        |
| 19..... | 91                    | 6                         | 1            | 161                   | 1                         | (t)          | 1,660                 | 46                        | 206          |
| 20..... | 96                    | 6                         | 2            | 196                   | 1                         | 1            | 1,580                 | 65                        | s 294        |
| 21..... | 96                    | 4                         | 1            | 206                   | 1                         | 1            | 4,660                 | 230                       | 2,890        |
| 22..... | 106                   | 3                         | 1            | 222                   | 1                         | 1            | 6,270                 | 162                       | 2,740        |
| 23..... | 106                   | 3                         | 1            | 232                   | 1                         | 1            | 7,150                 | 116                       | 2,240        |
| 24..... | 101                   | 3                         | 1            | 248                   | 1                         | 1            | 6,870                 | 78                        | 1,450        |
| 25..... | 96                    | 3                         | 1            | 258                   | 1                         | 1            | 5,520                 | 55                        | 820          |
| 26..... | 106                   | 3                         | 1            | 242                   | 2                         | 1            | 3,890                 | 40                        | 420          |
| 27..... | 111                   | 1                         | (t)          | 222                   | 4                         | 2            | 2,720                 | 29                        | 213          |
| 28..... | 111                   | 1                         | (t)          | 206                   | 6                         | 3            | 2,070                 | 23                        | 128          |
| 29..... | 111                   | 1                         | (t)          | 191                   | 6                         | 3            | 1,680                 | 20                        | 91           |
| 30..... | 116                   | 1                         | (t)          | 181                   | 5                         | 2            | 1,380                 | 16                        | 60           |
| 31..... | 121                   | 2                         | 1            | --                    | --                        | --           | 1,160                 | 12                        | 38           |
| Total.  | 3,341                 | --                        | 60           | 4,873                 | --                        | 50           | 80,116                | --                        | 49,622       |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Suspended sediment    |                           |              | Suspended sediment    |                           |              | Suspended sediment    |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1,000                 | 8                         | 22           | 31,300                | 186                       | 15,700       | 4,140                 | 20                        | 224          |
| 2.....  | 868                   | 5                         | 12           | 27,000                | 76                        | 5,540        | 3,950                 | 19                        | 203          |
| 3.....  | 749                   | 4                         | 8            | 22,200                | 72                        | 4,320        | 3,470                 | 11                        | 103          |
| 4.....  | 683                   | 3                         | 6            | 15,300                | 70                        | 2,890        | 2,990                 | 20                        | 162          |
| 5.....  | 731                   | 3                         | 6            | 8,700                 | 60                        | 1,410        | 2,590                 | 20                        | 140          |
| 6.....  | 1,320                 | 14                        | 50           | 7,650                 | 112                       | 2,310        | 2,330                 | 7                         | 44           |
| 7.....  | 1,260                 | 16                        | 54           | 8,340                 | 74                        | 1,670        | 2,450                 | 20                        | 132          |
| 8.....  | 1,140                 | 10                        | 31           | 8,060                 | 54                        | 1,180        | 3,600                 | 30                        | 292          |
| 9.....  | 1,160                 | 16                        | s 54         | 9,580                 | 91                        | 2,350        | 5,780                 | 31                        | 484          |
| 10..... | 3,760                 | 174                       | s 2,090      | 12,400                | 142                       | 4,750        | 6,720                 | 35                        | 635          |
| 11..... | 7,760                 | 286                       | 5,990        | 15,500                | 228                       | 9,540        | 6,990                 | 33                        | 623          |
| 12..... | 8,250                 | 166                       | 3,700        | 15,600                | 130                       | 5,460        | 7,140                 | 48                        | 925          |
| 13..... | 4,920                 | 52                        | 691          | 11,500                | 70                        | 2,170        | 6,920                 | 33                        | 616          |
| 14..... | 3,110                 | 28                        | 235          | 5,620                 | 39                        | 592          | 5,940                 | 30                        | 481          |
| 15..... | 2,390                 | 22                        | 142          | 3,830                 | 38                        | 393          | 4,560                 | 18                        | 222          |
| 16..... | 1,900                 | 21                        | 108          | 3,120                 | 26                        | 219          | 3,830                 | 21                        | 217          |
| 17..... | 1,540                 | 13                        | b 55         | 2,620                 | 18                        | 127          | 3,310                 | 21                        | 188          |
| 18..... | 1,220                 | 9                         | 30           | 2,240                 | 17                        | 103          | 2,890                 | 17                        | 133          |
| 19..... | 996                   | 8                         | 22           | 2,160                 | 18                        | 105          | 2,570                 | 14                        | 97           |
| 20..... | 976                   | 6                         | 16           | 4,700                 | 147                       | s 1,960      | 2,300                 | 17                        | 106          |
| 21..... | 930                   | 3                         | 8            | 5,170                 | 76                        | 1,060        | 2,020                 | 11                        | 60           |
| 22..... | 1,700                 | 182                       | s 1,720      | 4,280                 | 38                        | 439          | 1,850                 | 17                        | 85           |
| 23..... | 12,100                | 1,280                     | s 39,600     | 3,540                 | 26                        | 248          | 1,860                 | 11                        | 55           |
| 24..... | 17,700                | 580                       | 27,700       | 3,170                 | 15                        | 128          | 1,870                 | 12                        | 60           |
| 25..... | 18,200                | 423                       | 20,800       | 2,930                 | 22                        | 174          | 1,780                 | 12                        | 58           |
| 26..... | 14,100                | 310                       | 11,800       | 2,810                 | 22                        | 187          | 1,780                 | 11                        | 53           |
| 27..... | 5,420                 | 80                        | s 1,300      | 2,970                 | 19                        | 152          | 1,830                 | 10                        | 49           |
| 28..... | 5,050                 | 137                       | s 2,070      | 3,630                 | 22                        | 216          | 1,990                 | 10                        | 54           |
| 29..... | 14,600                | 375                       | 14,800       | --                    | --                        | --           | 2,140                 | 11                        | 64           |
| 30..... | 23,500                | 345                       | 21,900       | --                    | --                        | --           | 2,010                 | 9                         | 49           |
| 31..... | 29,500                | 228                       | 18,200       | --                    | --                        | --           | 1,810                 | 8                         | 39           |
| Total.  | 188,531               | --                        | 173,220      | 245,920               | --                        | 65,393       | 105,410               | --                        | 6,653        |

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                 |                           |              | May                   |                           |              | June                  |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1,660                 | 7                         | 31           | 1,060                 | 19                        | 54           | 924                   | 68                        | 170          |
| 2.....  | 1,710                 | 7                         | 32           | 937                   | 15                        | 38           | 898                   | 86                        | 208          |
| 3.....  | 2,100                 | 18                        | 102          | 820                   | 12                        | 26           | 944                   | 35                        | 89           |
| 4.....  | 6,770                 | 1,000                     | s 20,200     | 743                   | 10                        | 20           | 781                   | 21                        | 44           |
| 5.....  | 16,500                | 890                       | 39,600       | 683                   | 8                         | 15           | 1,150                 | 134                       | 416          |
| 6.....  | 20,300                | 460                       | 25,200       | 623                   | 6                         | 10           | 3,680                 | 438                       | 4,350        |
| 7.....  | 21,800                | 175                       | 10,300       | 587                   | 3                         | 5            | 2,830                 | 338                       | 2,580        |
| 8.....  | 17,000                | 157                       | s 6,850      | 563                   | 2                         | 3            | 1,960                 | 144                       | 762          |
| 9.....  | 14,600                | 620                       | 24,400       | 539                   | 2                         | 3            | 1,420                 | 95                        | 364          |
| 10..... | 13,800                | 442                       | 16,500       | 515                   | 5                         | 7            | 1,050                 | 80                        | 227          |
| 11..... | 11,500                | 200                       | 6,210        | 497                   | 7                         | 9            | 872                   | 44                        | 104          |
| 12..... | 6,270                 | 78                        | 1,320        | 485                   | 3                         | 4            | 807                   | 38                        | 83           |
| 13..... | 4,040                 | 56                        | 611          | 467                   | 4                         | 5            | 833                   | 45                        | 101          |
| 14..... | 3,220                 | 47                        | 409          | 455                   | 4                         | 5            | 2,000                 | 443                       | s 2,600      |
| 15..... | 2,680                 | 39                        | 282          | 467                   | 3                         | 4            | 3,460                 | 520                       | 4,860        |
| 16..... | 2,330                 | 30                        | 189          | 461                   | 3                         | 4            | 2,800                 | 246                       | 1,860        |
| 17..... | 2,160                 | 22                        | 128          | 455                   | 4                         | 5            | 1,740                 | 107                       | 503          |
| 18..... | 2,170                 | 18                        | 105          | 485                   | 4                         | 5            | 1,350                 | 75                        | 273          |
| 19..... | 2,090                 | 18                        | 102          | 587                   | 10                        | 16           | 1,700                 | 171                       | 785          |
| 20..... | 1,960                 | 22                        | 116          | 924                   | 15                        | 37           | 1,580                 | 242                       | 1,030        |
| 21..... | 1,760                 | 15                        | 71           | 1,590                 | 66                        | 283          | 1,390                 | 112                       | 420          |
| 22..... | 1,960                 | 48                        | 254          | 2,850                 | 550                       | sa 4,800     | 950                   | 52                        | 133          |
| 23..... | 2,280                 | 77                        | 474          | 9,200                 | 1,010                     | s 23,700     | 788                   | 58                        | 123          |
| 24..... | 2,280                 | 77                        | 474          | 12,400                | 400                       | 13,400       | 1,090                 | 65                        | 191          |
| 25..... | 2,660                 | 72                        | 517          | 10,800                | 160                       | 4,660        | 1,810                 | 142                       | 694          |
| 26..... | 2,100                 | 55                        | 312          | 4,560                 | 70                        | b 900        | 2,060                 | 178                       | 990          |
| 27..... | 1,850                 | 31                        | 155          | 2,550                 | 60                        | 413          | 1,450                 | 195                       | 763          |
| 28..... | 1,600                 | 62                        | 268          | 1,890                 | 45                        | 230          | 1,070                 | 113                       | 326          |
| 29..... | 1,440                 | 90                        | 350          | 1,480                 | 33                        | 132          | 1,030                 | 65                        | 181          |
| 30..... | 1,190                 | 29                        | 93           | 1,200                 | 22                        | 71           | 1,010                 | 49                        | 134          |
| 31..... | --                    | --                        | --           | 1,010                 | 19                        | 52           | --                    | --                        | --           |
| Total.  | 173,780               | --                        | 155,655      | 61,883                | --                        | 48,916       | 45,427                | --                        | 25,364       |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
|         | July                  |                           |              | August                |                           |              | September             |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| 1.....  | 911                   | 45                        | 111          | 328                   | 19                        | 17           | 111                   | 6                         | 2            |
| 2.....  | 761                   | 39                        | 80           | 290                   | 28                        | 22           | 111                   | 7                         | 2            |
| 3.....  | 659                   | 31                        | 55           | 258                   | 31                        | 22           | 106                   | 10                        | 3            |
| 4.....  | 569                   | 22                        | 34           | 222                   | 21                        | 12           | 101                   | 13                        | 4            |
| 5.....  | 497                   | 18                        | 24           | 201                   | 15                        | 8            | 91                    | 14                        | 3            |
| 6.....  | 438                   | 14                        | 16           | 181                   | 13                        | 6            | 82                    | 13                        | 3            |
| 7.....  | 400                   | 13                        | 14           | 171                   | 13                        | 6            | 82                    | 12                        | 3            |
| 8.....  | 367                   | 12                        | 12           | 161                   | 10                        | 4            | 82                    | 12                        | 3            |
| 9.....  | 334                   | 10                        | 9            | 156                   | 10                        | 4            | 86                    | 14                        | 3            |
| 10..... | 312                   | 10                        | 8            | 151                   | 10                        | 4            | 101                   | 11                        | 3            |
| 11..... | 362                   | 11                        | 11           | 146                   | 7                         | 3            | 121                   | 13                        | 4            |
| 12..... | 422                   | 15                        | 17           | 222                   | 11                        | 6            | 126                   | 14                        | 5            |
| 13..... | 497                   | 16                        | 21           | 264                   | 10                        | 7            | 1,420                 | --                        | e 2,400      |
| 14..... | 438                   | 12                        | 14           | 212                   | 10                        | 6            | 1,390                 | 440                       | sa 1,900     |
| 15..... | 755                   | --                        | e 130        | 212                   | 12                        | 7            | 1,960                 | --                        | e 3,100      |
| 16..... | 539                   | 28                        | 41           | 196                   | 12                        | 6            | 2,480                 | 417                       | 2,790        |
| 17..... | 467                   | 38                        | 48           | 186                   | 8                         | 4            | 2,110                 | 247                       | 1,410        |
| 18..... | 527                   | 47                        | 67           | 201                   | 8                         | 4            | 1,830                 | 134                       | 662          |
| 19..... | 461                   | 45                        | 56           | 176                   | 4                         | 2            | 1,160                 | 81                        | 254          |
| 20..... | 394                   | 27                        | 29           | 146                   | 7                         | 3            | 781                   | 60                        | 126          |
| 21..... | 334                   | 14                        | 13           | 131                   | 8                         | 3            | 593                   | 42                        | 67           |
| 22..... | 296                   | 12                        | 10           | 126                   | 8                         | 3            | 611                   | 53                        | 87           |
| 23..... | 285                   | 15                        | 12           | 116                   | 7                         | 2            | 814                   | 63                        | 138          |
| 24..... | 384                   | 28                        | 29           | 111                   | 9                         | 3            | 885                   | 55                        | 131          |
| 25..... | 461                   | 23                        | 29           | 111                   | 5                         | 1            | 761                   | 33                        | 68           |
| 26..... | 479                   | 21                        | 27           | 110                   | 5                         | 1            | 707                   | 35                        | 67           |
| 27..... | 372                   | 17                        | 17           | 131                   | 5                         | 2            | 581                   | 28                        | 44           |
| 28..... | 345                   | 15                        | 14           | 121                   | 5                         | 2            | 461                   | 23                        | 29           |
| 29..... | 356                   | 35                        | s 40         | 116                   | 6                         | 2            | 394                   | 22                        | 23           |
| 30..... | 400                   | 124                       | 134          | 116                   | 6                         | 2            | 340                   | 20                        | 18           |
| 31..... | 527                   | 41                        | s 62         | 116                   | 8                         | 2            | --                    | --                        | --           |
| Total.  | 14,349                | --                        | 1,184        | 5,385                 | --                        | 176          | 20,478                | --                        | 13,352       |

Total discharge for year (cfs-days) ..... 949,493

Total load for year (tons) ..... 539,645

e Estimated.

b Computed from estimated concentration graph.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.



GREEN RIVER BASIN--Continued  
GREEN RIVER AT MURFORDVILLE, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 15, 1956      | 11:00 a.m. | 8,590           |                        | 772                           | 596                                        | 48                                                | 59    | 75    | 90    | 97    | 98    | 99    | 100   |       | --    | BSWCM               |
| Dec. 15            | 1:30 a.m.  | 8,590           |                        | 772                           | 645                                        | 33                                                | 51    | 71    | 89    | 97    | 99    | 99    | 100   |       | --    | BSNM                |
| Jan. 23, 1957      | 7:00 a.m.  | 10,300          |                        | 1,680                         | 1,230                                      | 34                                                | 41    | 56    | 75    | 94    | 98    | 99    | 100   |       | --    | BSWCM               |
| Jan. 25            | 7:00 a.m.  | 18,300          |                        | 458                           | 755                                        | 53                                                | 64    | 79    | 90    | 97    | 98    | 99    | 100   |       | --    | BSWCM               |
| Jan. 30            | 7:00 a.m.  | 22,100          |                        | 368                           | 488                                        | 38                                                | 46    | 61    | 80    | 89    | 97    | 99    | 100   |       | --    | BSWCM               |
| Apr. 4             | 7:00 a.m.  | 4,040           |                        | 1,380                         | 1,010                                      | 36                                                | 42    | 54    | 71    | 95    | 98    | 100   | --    |       | --    | BSWCM               |
| Apr. 5             | 7:00 a.m.  | 15,700          |                        | 1,160                         | 1,000                                      | 46                                                | 59    | 70    | 86    | 96    | 99    | 100   | --    |       | --    | BSWCM               |
| Apr. 5             | 6:25 p.m.  | 18,000          |                        | 560                           | 873                                        | 49                                                | 62    | 74    | 86    | 93    | 98    | 99    | 99    | 100   |       | BSWCM               |
| Apr. 6             | 2:25 p.m.  | 20,700          |                        | 400                           | 841                                        | 57                                                | 68    | 80    | 89    | 94    | 97    | 99    | 100   |       | --    | BSWCM               |
| Apr. 9             | 1:00 p.m.  | 14,700          |                        | 772                           | 1,230                                      | 42                                                | 56    | 72    | 93    | 99    | 99    | 100   | --    |       | --    | BSWCM               |
| May 23             | 7:00 a.m.  | 8,370           |                        | 1,520                         | 1,030                                      | 33                                                | 41    | 56    | 76    | 91    | 95    | 96    | 98    | 100   |       | BSWCM               |
| May 23             | 7:00 a.m.  | 8,370           |                        | 1,520                         | 1,080                                      | 23                                                | 32    | 52    | 75    | 91    | 96    | 97    | 99    | 100   |       | BSNM                |
| June 6             | 5:00 p.m.  | 3,980           |                        | 579                           | 696                                        | 45                                                | 58    | 73    | 83    | 94    | 97    | 99    | 99    | 100   |       | BSWCM               |
| June 15            | 7:00 a.m.  | 3,550           |                        | 561                           | 774                                        | 51                                                | 66    | 79    | 91    | 96    | 98    | 99    | 99    | 100   |       | BSWCM               |
| Sept. 14           | 7:00 a.m.  | 1,590           |                        | 662                           | 1,000                                      | 57                                                | 72    | 84    | 94    | 98    | 99    | 100   | --    |       | --    | BSWCM               |

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.

LOCATION.-- At bridge on U.S. Highways 31W and 68, 600 feet upstream from gaging station and old bridge, at Bowling Green, Warren County, 6 miles downstream from Drakes Creek, and 9.0 miles upstream from Jennings Creek.

DRAINAGE AREA.--1,848 square miles (revised), of which about 490 square miles does not contribute directly to surface runoff.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.

Water temperatures: October 1949 to September 1957.

Sediment records: November 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F on several days during July and August; minimum, 43°F on several days during December and January.

Sediment concentrations: Maximum daily, 912 ppm Jan. 23; minimum daily, 1 ppm Oct. 1-2, Nov. 29, Dec. 3, 5.

Sediment loads: Maximum daily, 107,000 tons Jan. 30; minimum daily, less than 0.5 ton Oct. 1-2, Dec. 3, 5.

EXTREMES, 1949-57.--Water temperatures: Maximum, 87°F July 1-2, 22, 29, 1952; minimum, freezing point Feb. 2-3, 1951.

Sediment concentrations (1952-57): Maximum daily, 1,880 ppm June 17, 1953; minimum daily, 1 ppm on several days during November, December 1952, October, November 1953.

Sediment loads (1952-57): Maximum daily, 107,000 tons Jan. 30, 1957; minimum daily, less than 0.5 ton on several days during October, November 1953, September, October, December 1956.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph

| Day     | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|---------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|         | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....  | 67      | 65  | 60       | 60  | 44       | 43      | 48       | 48    | 55    | 72  | 73   | 76   | 81     | 80        |
| 2.....  | 67      | 66  | 60       | 60  | 43       | 43      | 48       | 48    | 56    | 72  | 73   | 76   | 81     | 80        |
| 3.....  | 68      | 67  | 60       | 60  | 44       | 43      | 47       | 48    | 57    | 73  | 72   | 76   | 81     | 80        |
| 4.....  | 68      | 68  | 60       | 60  | 44       | 44      | 45       | 48    | 59    | 73  | 73   | 77   | 81     | 81        |
| 5.....  | 68      | 68  | 60       | 60  | 44       | 44      | 45       | 50    | 61    | 73  | 72   | 77   | 81     | 81        |
| 6.....  | 69      | 68  | 60       | 60  | 47       | 45      | 44       | 46    | 62    | 71  | 73   | 78   | 81     | 80        |
| 7.....  | 68      | 66  | 60       | 60  | 49       | 47      | 44       | 46    | 61    | 70  | 73   | 78   | 80     | 79        |
| 8.....  | 66      | 64  | 60       | 59  | 50       | 49      | 44       | 46    | 61    | 70  | 73   | 78   | 79     | 78        |
| 9.....  | 64      | 63  | 59       | 57  | 50       | 50      | 44       | 45    | 61    | 70  | 73   | 79   | 78     | 75        |
| 10..... | 63      | 63  | 57       | 55  | 50       | 47      | 45       | 45    | 62    | 70  | 73   | 79   | 78     | 75        |
| 11..... | 63      | 62  | 55       | 55  | 47       | 47      | 45       | 45    | 61    | 70  | 73   | 79   | 78     | 75        |
| 12..... | 62      | 62  | 55       | 55  | 47       | 47      | 46       | 45    | 61    | 70  | 73   | 79   | 78     | 75        |
| 13..... | 62      | 62  | 55       | 55  | 48       | 47      | 46       | 46    | 61    | 71  | 74   | 79   | 79     | 77        |
| 14..... | 62      | 62  | 55       | 55  | 48       | 47      | 46       | 46    | 60    | 72  | 74   | 79   | 79     | 76        |
| 15..... | 62      | 62  | 55       | 55  | 50       | 47      | 46       | 48    | 61    | 73  | 74   | 79   | 80     | 76        |
| 16..... | 62      | 62  | 56       | 55  | 50       | 50      | 46       | 48    | 60    | 73  | 75   | 79   | 80     | 76        |
| 17..... | 62      | 62  | 56       | 54  | 50       | 50      | 45       | 48    | 60    | 74  | 75   | 79   | 80     | 76        |
| 18..... | 63      | 62  | 54       | 51  | 50       | 50      | 44       | 47    | 60    | 74  | 76   | 80   | 79     | 76        |
| 19..... | 63      | 63  | 51       | 50  | 50       | 50      | 44       | 46    | 63    | 74  | 76   | 80   | 79     | 75        |
| 20..... | 63      | 63  | 51       | 51  | 50       | 50      | 43       | 46    | 63    | 74  | 77   | 80   | 80     | 75        |
| 21..... | 64      | 63  | 52       | 51  | 50       | 50      | 43       | 45    | 65    | 74  | 77   | 81   | 78     | 75        |
| 22..... | 64      | 63  | 50       | 50  | 50       | 50      | 44       | 44    | 63    | 73  | 77   | 81   | 77     | 75        |
| 23..... | 64      | 64  | 50       | 48  | 54       | 50      | 43       | 45    | 68    | 73  | 77   | 81   | 77     | 75        |
| 24..... | 64      | 64  | 48       | 47  | 54       | 54      | 45       | 51    | 69    | 72  | 77   | 81   | 77     | 75        |
| 25..... | 64      | 64  | 47       | 46  | 54       | 53      | 49       | 51    | 70    | 72  | 77   | 81   | 77     | 75        |

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957--Continued  
 / Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 26.....      | 64      | 46  | 64       | 46  | 53       | 52  | 49      | 48  | 47       | 46  | 52    | 51  | 71    | 70  | 72  | 72  | 76   | 76  | 81   | 81  | 77     | 76  | 76        | 75  |
| 27.....      | 64      | 46  | 62       | 46  | 52       | 50  | 48      | 48  | 46       | 47  | 52    | 52  | 71    | 71  | 72  | 72  | 76   | 76  | 81   | 81  | 76     | 76  | 75        | 74  |
| 28.....      | 62      | 61  | 46       | 44  | 50       | 50  | 48      | 47  | 49       | 46  | 52    | 52  | 71    | 71  | 72  | 72  | 76   | 76  | 81   | 81  | 76     | 76  | 74        | 74  |
| 29.....      | 61      | 60  | 44       | 44  | 50       | 49  | 48      | 47  | --       | --  | 53    | 52  | 72    | 71  | 73  | 72  | 76   | 76  | 81   | 81  | 76     | 76  | 74        | 73  |
| 30.....      | 60      | 60  | 44       | 44  | 49       | 48  | 48      | 47  | --       | --  | 53    | 53  | 72    | 72  | 73  | 73  | 76   | 76  | 81   | 81  | 77     | 76  | 73        | 72  |
| 31.....      | 60      | 60  | --       | --  | 48       | 48  | 48      | 48  | --       | --  | 54    | 53  | --    | --  | 73  | 73  | --   | --  | 81   | 80  | 77     | 76  | --        | --  |
| Average..... | 64      | 63  | 54       | 53  | 49       | 48  | 46      | 45  | 48       | 48  | 50    | 49  | 63    | 63  | 72  | 72  | 75   | 74  | 79   | 79  | 79     | 78  | 76        | 75  |

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Suspended sediment    |                           |              | Suspended sediment    |                           |              | Suspended sediment    |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 91                    | 1                         | (t)          | 99                    | 10                        | 3            | 180                   | 4                         | 2            |
| 2.....  | 88                    | 1                         | (t)          | 97                    | 10                        | 3            | 169                   | 8                         | 4            |
| 3.....  | 88                    | 8                         | 2            | 95                    | 9                         | 2            | 162                   | 1                         | (t)          |
| 4.....  | 93                    | 11                        | 3            | 97                    | 7                         | 2            | 155                   | 2                         | 1            |
| 5.....  | 323                   | 17                        | 15           | 102                   | 7                         | 2            | 152                   | 1                         | (t)          |
| 6.....  | 316                   | 20                        | 17           | 104                   | 8                         | 2            | 150                   | 2                         | 1            |
| 7.....  | 250                   | 16                        | 11           | 104                   | 10                        | 3            | 150                   | 5                         | 2            |
| 8.....  | 239                   | 18                        | 12           | 106                   | 8                         | 2            | 150                   | 8                         | 3            |
| 9.....  | 214                   | 18                        | 10           | 106                   | 5                         | 1            | 152                   | 8                         | 3            |
| 10..... | 176                   | 16                        | 8            | 108                   | 7                         | 2            | 158                   | 5                         | 2            |
| 11..... | 145                   | 16                        | 6            | 111                   | 10                        | 3            | 176                   | 10                        | 5            |
| 12..... | 128                   | 15                        | 5            | 116                   | 6                         | 2            | 214                   | 11                        | 6            |
| 13..... | 116                   | 14                        | 4            | 111                   | 5                         | 1            | 270                   | 7                         | 5            |
| 14..... | 104                   | 14                        | 4            | 106                   | 5                         | 1            | 1,880                 | 100                       | sa850        |
| 15..... | 99                    | 12                        | 3            | 106                   | 4                         | 1            | 6,420                 | 470                       | 8,150        |
| 16..... | 95                    | 11                        | 3            | 108                   | 2                         | 1            | 6,620                 | 330                       | 5,900        |
| 17..... | 93                    | 15                        | 4            | 111                   | 6                         | 2            | 3,240                 | 94                        | s944         |
| 18..... | 88                    | 11                        | 3            | 118                   | 3                         | 1            | 1,730                 | 38                        | 177          |
| 19..... | 84                    | 10                        | 2            | 140                   | 4                         | 2            | 1,320                 | 29                        | 103          |
| 20..... | 80                    | 11                        | 2            | 200                   | 2                         | 1            | 1,200                 | 24                        | 78           |
| 21..... | 80                    | 16                        | 3            | 236                   | 2                         | 1            | 1,450                 | 29                        | 114          |
| 22..... | 80                    | 15                        | 3            | 295                   | 8                         | 6            | 2,580                 | 55                        | 383          |
| 23..... | 80                    | 11                        | 2            | 239                   | 3                         | 2            | 4,860                 | 107                       | 1,400        |
| 24..... | 82                    | 8                         | 2            | 253                   | 2                         | 1            | 5,290                 | 120                       | 1,710        |
| 25..... | 84                    | 8                         | 2            | 278                   | 3                         | 2            | 3,840                 | 40                        | 415          |
| 26..... | 88                    | 10                        | 2            | 278                   | 4                         | 3            | 2,860                 | 27                        | 208          |
| 27..... | 93                    | 11                        | 3            | 256                   | 2                         | 1            | 2,110                 | 17                        | 97           |
| 28..... | 95                    | 15                        | 4            | 223                   | 2                         | 1            | 1,730                 | 14                        | 65           |
| 29..... | 97                    | 10                        | 3            | 208                   | 1                         | 1            | 1,470                 | 13                        | 52           |
| 30..... | 102                   | 10                        | 3            | 194                   | 2                         | 1            | 1,290                 | 6                         | 21           |
| 31..... | 102                   | 8                         | 2            | --                    | --                        | --           | 1,140                 | 8                         | 25           |
| Total.  | 3,893                 | --                        | 143          | 4,710                 | --                        | 56           | 53,268                | --                        | 20,727       |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Suspended sediment    |                           |              | Suspended sediment    |                           |              | Suspended sediment    |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1,020                 | 12                        | 33           | 33,000                | 156                       | 13,900       | 4,850                 | 22                        | 288          |
| 2.....  | 916                   | 10                        | 25           | 23,400                | 100                       | 6,320        | 4,510                 | 15                        | 183          |
| 3.....  | 838                   | 5                         | 11           | 19,200                | 103                       | 5,340        | 4,140                 | 12                        | 134          |
| 4.....  | 770                   | 2                         | 4            | 13,400                | 72                        | 2,600        | 3,810                 | 9                         | 92           |
| 5.....  | 765                   | 2                         | 4            | 7,680                 | 83                        | 1,720        | 3,530                 | 7                         | 67           |
| 6.....  | 1,410                 | 11                        | 42           | 7,250                 | 126                       | 2,470        | 3,270                 | 7                         | 62           |
| 7.....  | 1,950                 | 10                        | 53           | 6,930                 | 70                        | 1,310        | 3,670                 | 5                         | 50           |
| 8.....  | 1,620                 | 10                        | 44           | 6,110                 | 47                        | 775          | 5,160                 | 20                        | 279          |
| 9.....  | 1,430                 | 11                        | 42           | 7,410                 | 68                        | 1,360        | 7,040                 | 40                        | 760          |
| 10..... | 1,410                 | 11                        | 42           | 9,600                 | 126                       | 3,260        | 6,710                 | 26                        | 471          |
| 11..... | 3,230                 | 58                        | s564         | 12,700                | 178                       | 6,100        | 5,730                 | 15                        | 232          |
| 12..... | 3,530                 | 120                       | 1,140        | 10,200                | 60                        | 1,650        | 5,500                 | 15                        | 223          |
| 13..... | 2,760                 | 60                        | 447          | 6,780                 | 40                        | 732          | 5,550                 | 25                        | 375          |
| 14..... | 2,210                 | 35                        | 209          | 5,060                 | 37                        | 505          | 4,950                 | 19                        | 254          |
| 15..... | 1,820                 | 15                        | 74           | 4,120                 | 26                        | 289          | 4,330                 | 11                        | 129          |
| 16..... | 1,530                 | 10                        | 41           | 3,790                 | 21                        | 215          | 3,840                 | 10                        | 104          |
| 17..... | 1,310                 | 12                        | 42           | 3,660                 | 18                        | 178          | 3,320                 | 9                         | 81           |
| 18..... | 1,130                 | 10                        | 30           | 3,370                 | 17                        | 155          | 2,950                 | 6                         | 48           |
| 19..... | 994                   | 12                        | 32           | 3,580                 | 46                        | s507         | 2,730                 | 3                         | 22           |
| 20..... | 916                   | 10                        | 25           | 9,310                 | 244                       | 6,130        | 2,490                 | 6                         | 40           |
| 21..... | 874                   | 8                         | 19           | 10,600                | 120                       | 3,430        | 2,180                 | 2                         | 12           |
| 22..... | 1,180                 | 52                        | s233         | 7,590                 | 41                        | 840          | 2,000                 | 2                         | 11           |
| 23..... | 11,700                | 912                       | s32,300      | 5,270                 | 27                        | 384          | 2,010                 | 3                         | 16           |
| 24..... | 21,800                | 695                       | 40,900       | 4,240                 | 21                        | 240          | 2,040                 | 7                         | 38           |
| 25..... | 21,500                | 470                       | 27,300       | 3,860                 | 22                        | 229          | 2,000                 | 12                        | 65           |
| 26..... | 13,700                | 96                        | s3,830       | 3,800                 | 20                        | 205          | 2,770                 | 19                        | 142          |
| 27..... | 4,880                 | 60                        | 790          | 5,040                 | 44                        | 599          | 2,840                 | 25                        | 192          |
| 28..... | 5,760                 | 96                        | s1,720       | 5,330                 | 39                        | 561          | 2,670                 | 14                        | 101          |
| 29..... | 18,300                | 402                       | 19,900       | --                    | --                        | --           | 2,440                 | 11                        | 72           |
| 30..... | 50,800                | 778                       | 107,000      | --                    | --                        | --           | 2,220                 | 11                        | 66           |
| 31..... | 56,600                | 658                       | 100,000      | --                    | --                        | --           | 2,050                 | 17                        | 94           |
| Total.  | 238,653               | --                        | 336,896      | 242,280               | --                        | 62,004       | 113,300               | --                        | 4,703        |

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from partly estimated concentration graph.

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,920                | 20                       | 104          | 1,400                | 11                       | 42           | 1,630                | 20                       | 88           |
| 2.....  | 2,150                | 8                        | 46           | 1,360                | 12                       | 44           | 1,550                | 32                       | 134          |
| 3.....  | 2,480                | 13                       | 87           | 1,320                | 12                       | 43           | 1,350                | 15                       | 55           |
| 4.....  | 8,260                | 480                      | sl4,100      | 1,150                | 12                       | 37           | 1,200                | 17                       | 55           |
| 5.....  | 18,400               | 380                      | 18,800       | 1,030                | 13                       | 36           | 1,350                | 27                       | 98           |
| 6.....  | 16,700               | 192                      | 8,660        | 934                  | 12                       | 30           | 4,940                | 278                      | sa4,800      |
| 7.....  | 10,600               | 58                       | 1,660        | 868                  | 10                       | 23           | 5,810                | 560                      | sa9,340      |
| 8.....  | 6,180                | 72                       | 1,200        | 815                  | 11                       | 24           | 3,020                | 172                      | 1,400        |
| 9.....  | 8,620                | 150                      | 3,490        | 780                  | 9                        | 19           | 2,610                | 102                      | 719          |
| 10..... | 9,960                | 238                      | 6,400        | 745                  | 10                       | 20           | 3,270                | 289                      | 2,550        |
| 11..... | 6,860                | 68                       | sl,350       | 720                  | 13                       | 25           | 2,270                | 255                      | 1,560        |
| 12..... | 4,680                | 30                       | 379          | 700                  | 12                       | 23           | 1,760                | 94                       | 447          |
| 13..... | 3,760                | 20                       | 203          | 680                  | 10                       | 18           | 1,610                | 64                       | 278          |
| 14..... | 3,060                | 17                       | 140          | 690                  | 15                       | 28           | 1,630                | 54                       | 238          |
| 15..... | 2,660                | 16                       | 115          | 695                  | 21                       | 39           | 1,610                | 65                       | 282          |
| 16..... | 2,390                | 15                       | 97           | 690                  | 20                       | 37           | 1,260                | 64                       | 218          |
| 17..... | 2,440                | 15                       | 99           | 670                  | 13                       | 24           | 1,030                | 55                       | 153          |
| 18..... | 2,530                | 13                       | 89           | 606                  | 12                       | 20           | 1,020                | 35                       | 96           |
| 19..... | 2,300                | 13                       | 81           | 680                  | 15                       | 28           | 1,710                | 70                       | 323          |
| 20..... | 2,120                | 15                       | 86           | 3,090                | 128                      | sl,290       | 1,320                | 135                      | 481          |
| 21..... | 1,940                | 10                       | 52           | 3,520                | 102                      | 969          | 1,100                | 91                       | 270          |
| 22..... | 1,820                | 8                        | 39           | 3,380                | 220                      | sa2,700      | 910                  | 72                       | 177          |
| 23..... | 2,210                | 7                        | 42           | 15,300               | 860                      | 35,500       | 1,050                | 120                      | 340          |
| 24..... | 4,260                | 55                       | sa728        | 17,800               | 470                      | 22,600       | 1,010                | 46                       | 125          |
| 25..... | 4,160                | 123                      | 1,380        | 12,300               | 121                      | sa4,400      | 1,190                | 42                       | 135          |
| 26..... | 2,830                | 23                       | 176          | 5,010                | 61                       | 825          | 1,290                | 53                       | 184          |
| 27..... | 2,240                | 18                       | 109          | 4,620                | 98                       | 1,220        | 958                  | 63                       | 163          |
| 28..... | 1,930                | 7                        | 36           | 4,370                | 133                      | 1,570        | 820                  | 60                       | 133          |
| 29..... | 1,740                | 7                        | 33           | 2,910                | 65                       | 511          | 805                  | 48                       | 104          |
| 30..... | 1,550                | 13                       | 54           | 2,220                | 40                       | 240          | 904                  | 44                       | 107          |
| 31..... | --                   | --                       | --           | 1,860                | 21                       | 105          | --                   | --                       | --           |
| Total.  | 142,750              | --                       | 59,835       | 92,913               | --                       | 72,490       | 51,987               | --                       | 25,053       |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 874                  | 32                       | 76           | 616                  | 29                       | 48           | 102                  | 10                       | 3            |
| 2.....  | 730                  | 36                       | 71           | 437                  | 128                      | 151          | 97                   | 9                        | 2            |
| 3.....  | 640                  | 32                       | 55           | 365                  | 130                      | 128          | 93                   | 9                        | 2            |
| 4.....  | 575                  | 38                       | 59           | 320                  | 38                       | 33           | 88                   | 11                       | 3            |
| 5.....  | 534                  | 50                       | 72           | 284                  | 50                       | 38           | 82                   | 15                       | 3            |
| 6.....  | 494                  | 27                       | 36           | 250                  | 44                       | 30           | 78                   | 13                       | 3            |
| 7.....  | 461                  | 41                       | 51           | 225                  | 34                       | 21           | 74                   | 13                       | 2            |
| 8.....  | 433                  | 40                       | 47           | 208                  | 37                       | 21           | 69                   | 23                       | 4            |
| 9.....  | 405                  | 30                       | 33           | 190                  | 18                       | 9            | 67                   | 19                       | 3            |
| 10..... | 503                  | 28                       | 38           | 180                  | 26                       | 13           | 67                   | 26                       | 5            |
| 11..... | 710                  | 34                       | 65           | 169                  | 13                       | 6            | 67                   | 12                       | 2            |
| 12..... | 508                  | 40                       | 55           | 162                  | 12                       | 5            | 78                   | 23                       | 5            |
| 13..... | 437                  | 32                       | 38           | 169                  | 15                       | 7            | 534                  | 43                       | 62           |
| 14..... | 397                  | 32                       | 34           | 236                  | 15                       | 10           | 1,460                | 45                       | 177          |
| 15..... | 373                  | 33                       | 33           | 278                  | 17                       | 13           | 1,570                | 219                      | sa981        |
| 16..... | 358                  | 32                       | 31           | 284                  | 17                       | 13           | 2,740                | 177                      | 1,310        |
| 17..... | 512                  | 38                       | 52           | 228                  | 18                       | 11           | 2,640                | 136                      | 969          |
| 18..... | 469                  | 29                       | 37           | 218                  | 18                       | 10           | 1,570                | 116                      | 492          |
| 19..... | 421                  | 24                       | 27           | 228                  | 18                       | 11           | 958                  | 55                       | 142          |
| 20..... | 490                  | 25                       | 33           | 218                  | 15                       | 9            | 690                  | 45                       | 84           |
| 21..... | 405                  | 28                       | 31           | 190                  | 15                       | 8            | 552                  | 42                       | 62           |
| 22..... | 358                  | 30                       | 29           | 169                  | 15                       | 7            | 552                  | 36                       | 54           |
| 23..... | 337                  | 19                       | 17           | 155                  | 16                       | 7            | 1,460                | 38                       | 150          |
| 24..... | 421                  | 23                       | 26           | 142                  | 16                       | 6            | 1,590                | 48                       | 206          |
| 25..... | 856                  | 21                       | 48           | 132                  | 23                       | 8            | 1,070                | 42                       | 121          |
| 26..... | 593                  | 22                       | 35           | 125                  | 20                       | 7            | 725                  | 43                       | 84           |
| 27..... | 417                  | 27                       | 30           | 118                  | 11                       | 4            | 566                  | 40                       | 61           |
| 28..... | 354                  | 35                       | 33           | 116                  | 11                       | 3            | 465                  | 35                       | 44           |
| 29..... | 326                  | 52                       | 46           | 111                  | 11                       | 3            | 401                  | 35                       | 38           |
| 30..... | 320                  | 38                       | 33           | 108                  | 7                        | 2            | 358                  | 34                       | 33           |
| 31..... | 881                  | 30                       | 71           | 106                  | 7                        | 2            | --                   | --                       | --           |
| Total.  | 15,592               | --                       | 1,342        | 6,737                | --                       | 644          | 20,863               | --                       | 5,107        |

Total discharge for year (cfs-days)..... 986,946

Total load for year (tons)..... 589,000

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

GREEN RIVER BASIN--Continued

BARREN RIVER AT BOWLING GREEN, KY.--Continued

Particle size analyses of suspended sediment, water year October 1956 to September 1957  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature per-<br>suaure (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|----------------------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Jan. 24, 1957      | ...         | 22, 200         |                                        | 661                           | 571                                        | 58                                                | 74    | 84    | 94    | 99    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Jan. 29            | 1:00 p. m.  | 18, 500         |                                        | 434                           | 781                                        | 42                                                | 55    | 66    | 80    | 95    | 99    | 100   | --    |       | --    |                     | SBWCM |
| Jan. 31            | 12:30 p. m. | 18, 500         |                                        | 752                           | 62, 300                                    | 42                                                | 52    | 66    | 93    | 98    | 99    | 99    | 100   |       | --    |                     | SBWCM |
| Feb. 11            | 6:30 a. m.  | 12, 800         |                                        | 232                           | 456                                        | 45                                                | 57    | 70    | 90    | 99    | 100   | --    | --    |       | --    |                     | SBWCM |
| Feb. 20            | 5:00 p. m.  | 9, 500          |                                        | 207                           | 392                                        | 42                                                | 52    | 64    | 87    | 96    | 98    | 99    | 100   |       | --    |                     | SBWCM |
| Apr. 4             | 5:00 p. m.  | 11, 200         |                                        | 914                           | 866                                        | 34                                                | 42    | 55    | 80    | 95    | 98    | 99    | 100   |       | --    |                     | SBWCM |
| Apr. 5             | 5:00 p. m.  | 19, 000         |                                        | 308                           | 593                                        | 52                                                | 65    | 79    | 90    | 98    | 99    | 99    | 99    |       | 100   |                     | SBWCM |
| Apr. 6             | 5:00 p. m.  | 16, 800         |                                        | 211                           | 547                                        | 35                                                | 67    | 80    | 92    | 97    | 98    | 99    | 99    |       | 100   |                     | SBWCM |
| Apr. 6             | 11:15 a. m. | 16, 800         |                                        | 211                           | 603                                        | 36                                                | 51    | 75    | 93    | 99    | 99    | 99    | 99    |       | 100   |                     | SBWCM |
| May 23             | 12:30 p. m. | 17, 000         |                                        | 981                           | 970                                        | 41                                                | 54    | 69    | 88    | 97    | 99    | 100   | --    |       | --    |                     | SBWCM |
| May 23             | 12:30 p. m. | 17, 000         |                                        | 981                           | 945                                        | 21                                                | 39    | 61    | 88    | 97    | 99    | 100   | --    |       | --    |                     | SBWCM |
| June 7             | 6:30 a. m.  | 6, 800          |                                        | 788                           | 748                                        | 49                                                | 64    | 79    | 93    | 97    | 99    | 99    | 100   |       | --    |                     | SBWCM |
| June 11            | 6:30 a. m.  | 2, 440          |                                        | 423                           | 659                                        | 62                                                | 77    | 90    | 97    | 98    | 99    | 100   | --    |       | --    |                     | SBWCM |

## GREEN RIVER BASIN--Continued

ROUGH RIVER AT DUNDEE, KY.

LOCATION.--At auxiliary gaging station at bridge on State Highway 69 at Dundee, Ohio County, and 7.1 miles downstream from Caney Creek.

DRAINAGE AREA.--775 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 79°F July 23; minimum, freezing point Jan. 16-20.

EXTREMES, 1949-57.--Water temperatures: Maximum, 89°F Aug. 3, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Discharge records for gaging station near Dundee for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Twice daily measurements at approximately 7 a.m. and 5 p.m.

| Day          | October |      | November |      | December | January | February | March | April | May  | June | July | August | September |
|--------------|---------|------|----------|------|----------|---------|----------|-------|-------|------|------|------|--------|-----------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m.    | a.m.     | p.m.  | a.m.  | p.m. | a.m. | p.m. | a.m.   | p.m.      |
| 1.....       | 61      | 62   | 57       | 58   | 35       | 37      | 39       | 40    | 41    | 42   | 41   | 66   | 71     | 73        |
| 2.....       | 63      | 65   | 56       | 57   | 37       | 38      | 39       | 40    | 41    | 42   | 51   | 53   | 68     | 74        |
| 3.....       | 65      | 65   | 57       | 58   | 37       | 38      | 39       | 40    | 41    | 42   | 52   | 53   | 67     | 76        |
| 4.....       | 64      | 65   | 57       | 58   | 37       | 39      | 35       | 42    | 43    | 41   | 45   | 54   | 55     | 75        |
| 5.....       | 63      | 65   | 56       | 59   | 41       | 43      | 34       | 35    | 44    | 45   | 43   | 67   | 69     | 74        |
| 6.....       | 63      | 65   | 57       | 58   | 45       | 47      | 34       | 35    | 45    | 45   | 43   | 68   | 72     | 73        |
| 7.....       | 63      | 64   | 57       | 58   | 49       | 50      | 36       | 35    | 47    | 46   | 44   | 67   | 69     | 71        |
| 8.....       | 61      | 62   | 57       | 55   | 49       | 49      | 34       | 35    | 47    | 48   | 39   | 70   | 72     | 70        |
| 9.....       | 59      | 60   | 50       | 48   | 47       | 37      | 39       | 49    | 50    | 41   | 42   | 71   | 72     | 69        |
| 10.....      | 58      | 59   | 49       | 50   | 45       | 46      | 41       | 40    | 49    | 48   | 40   | 73   | 74     | 68        |
| 11.....      | 57      | 59   | 48       | 50   | 45       | 44      | 38       | 37    | 49    | 49   | 43   | 70   | 75     | 74        |
| 12.....      | 57      | 59   | 49       | 49   | 43       | 44      | 39       | 40    | 49    | 50   | 47   | 72   | 74     | 68        |
| 13.....      | 56      | 58   | 47       | 49   | 45       | 44      | 41       | 40    | 48    | 49   | 48   | 72   | 75     | 70        |
| 14.....      | 57      | 58   | 48       | 50   | 45       | 46      | 38       | 35    | 47    | 48   | 52   | 73   | 74     | 70        |
| 15.....      | 56      | 57   | 51       | 52   | 47       | 48      | 34       | 33    | 46    | 47   | 51   | 74   | 75     | 73        |
| 16.....      | 57      | 63   | 49       | 48   | 47       | 48      | 32       | 31    | 44    | 45   | 50   | 72   | 74     | 72        |
| 17.....      | 58      | 60   | 45       | 46   | 45       | 46      | 31       | 32    | 43    | 42   | 52   | 77   | 75     | 70        |
| 18.....      | 58      | 59   | 45       | 46   | 44       | 45      | 31       | 32    | 42    | 44   | 52   | 76   | 73     | 70        |
| 19.....      | 58      | 60   | 44       | 47   | 44       | 46      | --       | 41    | 52    | 51   | 57   | 77   | 73     | 70        |
| 20.....      | 60      | 61   | 47       | 48   | 46       | 47      | --       | 32    | 36    | 39   | 50   | 77   | 72     | 71        |
| 21.....      | 60      | 61   | 46       | 47   | 48       | 49      | 35       | 37    | 49    | 50   | 61   | 72   | 76     | 73        |
| 22.....      | 61      | 62   | 45       | 44   | 49       | 50      | 39       | 40    | 44    | 49   | 50   | 72   | 70     | 72        |
| 23.....      | 61      | 61   | 41       | 42   | 51       | 51      | 44       | 43    | 43    | 45   | 49   | 73   | 77     | 71        |
| 24.....      | 60      | 62   | 41       | 41   | 52       | 50      | 39       | 40    | 44    | 46   | 52   | 72   | 75     | 72        |
| 25.....      | 60      | 63   | 40       | 42   | 48       | 47      | 41       | 42    | 45    | 47   | 50   | 71   | 72     | 68        |
| 26.....      | 62      | 62   | 41       | 42   | 46       | 44      | 43       | 42    | 48    | 49   | 50   | 73   | 74     | 67        |
| 27.....      | 56      | 60   | 40       | 41   | 45       | 46      | 41       | 40    | 46    | 49   | 48   | 72   | 75     | 69        |
| 28.....      | 59      | 60   | 38       | 40   | 44       | 45      | 39       | 38    | 45    | 44   | 47   | 75   | 69     | 71        |
| 29.....      | 58      | 61   | 39       | 40   | 42       | 41      | 40       | 41    | --    | 47   | 48   | 74   | 71     | 66        |
| 30.....      | 57      | 58   | 37       | 38   | 43       | 42      | 35       | 36    | --    | 48   | 49   | 72   | 74     | 67        |
| 31.....      | 58      | 59   | --       | --   | 41       | 41      | 35       | 34    | --    | 48   | 49   | 73   | 75     | --        |
| Average..... | 60      | 61   | 48       | 49   | 45       | 45      | 37       | 37    | 44    | 45   | 47   | 71   | 73     | 70        |

GREEN RIVER BASIN--Continued  
POND RIVER NEAR SACRAMENTO, KY.

LOCATION --At bridge on State Highway 85, 12 miles upstream from mouth, 3.0 miles southwest of Sacramento, McClean County, 3.9 miles downstream from Log Creek, and 45.5 miles downstream from gaging station near Apex, Christian County.  
DRAINAGE AREA -- 523 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1955 to August 1957.

REMARKS --Stream receives drainage from strip mine area. No discharge records available for this station.

Chemical analyses, in parts per million, October 1956 to August 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micromhos at 25°C) | pH   | Color |
|--------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|----------------------------------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|------------------------------------------|------|-------|
|                    |                      |                            |               |           |                |              |                |             |               |                                                    |               |              |                            |                                                    | Calcium, mg./nesium           | Non-carbonate | Immediate                 | Potential free |                                          |      |       |
| Oct. 15, 1956      | 33                   | 29                         | 14            | 12        | 176            | 96           | 57             | 6.7         | 0             | 1,120                                              | 8.4           | 1.4          | 0.7                        | 1,620                                              | 834                           | 834           | 4.7                       | 4.6            | 2,020                                    | 3.05 | 3     |
| Nov. 13            | 12                   | 30                         | 6.9           | 15        | 175            | 88           | 58             | 4.7         | 0             | 1,050                                              | 16            | 2.8          | .6                         | 1,560                                              | 799                           | 799           | 3.8                       | 3.7            | 2,010                                    | 3.10 | 2     |
| Jan. 2, 1957       | 12                   | 8.4                        | 3.0           | 4.2       | 82             | 36           | 29             | 3.1         | 0             | 430                                                | 17            | .8           | .4                         | 668                                                | 353                           | 353           | 1.2                       | 1.2            | 956                                      | 3.50 | 4     |
| Jan. 28            | 6.0                  | .1                         | .95           | .59       | 16             | 4.6          | 4.3            | 3.0         | 7             | 53                                                 | 12            | .2           | 1.2                        | 111                                                | 59                            | 54            | .1                        | .0             | 155                                      | 6.2  | 12    |
| Mar. 4             | 6.9                  | 2                          | .61           | .12       | 20             | 5.2          | 4.5            | 1.3         | 21            | 57                                                 | 2.2           | .3           | .4                         | 121                                                | 72                            | 54            | .1                        | .0             | 188                                      | 6.6  | 9     |
| Apr. 10            | 5.4                  | .2                         | .84           | .04       | 13             | 3.4          | 3.0            | 1.6         | 20            | 32                                                 | 3.8           | .3           | .3                         | 78                                                 | 46                            | 30            | .1                        | .0             | 120                                      | 6.4  | 10    |
| May 13             | 8.1                  | .1                         | .31           | 3.7       | 75             | 29           | 18             | 2.3         | 17            | 316                                                | 9.2           | .3           | 1.4                        | 490                                                | 306                           | 292           | .1                        | .0             | 667                                      | 6.5  | 2     |
| June 18            | 12                   | 2.5                        | .37           | 4.2       | 67             | 30           | 18             | 3.1         | 0             | 328                                                | 7.5           | .6           | 1.5                        | 499                                                | 291                           | 291           | .5                        | .4             | 643                                      | 4.30 | 2     |
| Aug. 7             | 20                   | 19                         | 8.9           | 11        | 151            | 95           | 44             | 4.8         | 0             | 972                                                | 10            | 2.3          | .9                         | 1,460                                              | 768                           | 768           | 4.1                       | 4.1            | 1,880                                    | 3.00 | 3     |
| Aug. 26            | 13                   | 6.4                        | .59           | 4.6       | 105            | 43           | 26             | 4.3         | 0             | 570                                                | 8.0           | .8           | .2                         | 844                                                | 439                           | 439           | 3.3                       | 3.4            | 1,150                                    | 3.30 | 3     |



GREEN RIVER BASIN--Continued  
GREEN RIVER AT LOCK AND DAM 1, AT SPOTTSVILLE, KY.

LOCATION --At lock and dam 1, at Spottsville, Henderson County, 9.1 miles upstream from mouth.

DRAINAGE AREA --9,180 square miles approximately.

RECORDS AVAILABLE --Chemical analyses: October 1956 to September 1957.

WATER TEMPERATURES: October 1956 to September 1957.

EXTREMES, 1956-57. --Dissolved solids: Maximum, 235 ppm Sept. 11-20; minimum, 96 ppm Feb. 1-10.

Hardness: Maximum, 160 ppm Sept. 1-20; minimum, 62 ppm Apr. 11-20.

Specific conductance: Maximum daily, 454 micromhos Dec. 17; minimum daily, 114 micromhos May 30.

Water temperatures: Maximum, 82°F on several days during July and August; minimum, 40°F Dec. 21, Jan. 16-20.

REMARKS --Records of specific conductance of daily samples available at district office in Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub><br>Calcium, magnesium | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-----------------------------------------------------|------------------------------------|-------------------------------------------|-----|-------|
| Oct. 1-10, 1956... |                      | 9.6                        | 0.02      | 0.00           | 34           | 8.5            | 6.5         | 2.3           | 116                             | 20                         | 7.0           | 0.1          | 2.3                        | 164                                                | 120                                                 | 25                                 | 270                                       | 7.6 | 4     |
| Oct. 11-20 .....   |                      | 11                         | .01       | .02            | 40           | 7.3            | 6.8         | 2.0           | 134                             | 24                         | 8.5           | .1           | 2.4                        | 181                                                | 130                                                 | 20                                 | 292                                       | 7.7 | 3     |
| Oct. 21-31 .....   |                      | 13                         | .05       | .08            | 40           | 7.2            | 7.0         | 1.8           | 136                             | 22                         | 8.2           | .1           | 2.2                        | 176                                                | 130                                                 | 16                                 | 283                                       | 7.3 | 4     |
| Nov. 1-10 .....    |                      | 11                         | .00       | .00            | 39           | 7.3            | 10          | 1.9           | 129                             | 27                         | 13            | .2           | 1.9                        | 176                                                | 128                                                 | 22                                 | 297                                       | 7.4 | 5     |
| Nov. 11-20 .....   |                      | 10                         | .00       | .00            | 38           | 7.6            | 14          | 2.2           | 120                             | 35                         | 16            | .2           | 1.6                        | 189                                                | 129                                                 | 30                                 | 315                                       | 7.4 | 4     |
| Nov. 21-30 .....   |                      | 8.0                        | .01       | .00            | 38           | 8.0            | 11          | 2.6           | 119                             | 32                         | 16            | .2           | 1.8                        | 176                                                | 128                                                 | 30                                 | 299                                       | 7.4 | 4     |
| Dec. 1-10 .....    |                      | 8.6                        | .01       | .04            | 41           | 7.3            | 13          | 2.3           | 128                             | 31                         | 16            | .2           | 1.9                        | 190                                                | 132                                                 | 27                                 | 316                                       | 7.7 | 2     |
| Dec. 11-20 .....   |                      | 6.9                        | .01       | .06            | 45           | 8.1            | 19          | 2.4           | 129                             | 49                         | 25            | .2           | 1.5                        | 230                                                | 150                                                 | 44                                 | 386                                       | 7.5 | 3     |
| Dec. 21-31 .....   |                      | 7.5                        | .06       | .08            | 36           | 6.9            | 7.7         | 2.0           | 89                              | 38                         | 10            | .2           | 2.5                        | 170                                                | 119                                                 | 38                                 | 277                                       | 7.4 | 10    |
| Jan. 1-10, 1957... |                      | 9.5                        | .08       | .00            | 32           | 6.2            | 6.7         | 1.7           | 86                              | 33                         | 7.8           | .2           | 3.4                        | 155                                                | 108                                                 | 35                                 | 244                                       | 7.4 | 17    |
| Jan. 11-20 .....   |                      | 8.5                        | .06       | .00            | 35           | 7.8            | 4.2         | 1.1           | 101                             | 31                         | 7.4           | .2           | 3.8                        | 157                                                | 120                                                 | 36                                 | 259                                       | 7.3 | 5     |
| Jan. 21-31 .....   |                      | 6.6                        | .06       | .06            | 26           | 5.4            | 4.2         | 1.3           | 73                              | 27                         | 5.2           | .4           | 3.5                        | 121                                                | 87                                                  | 27                                 | 199                                       | 7.3 | 12    |
| Feb. 1-10 .....    |                      | 6.7                        | .12       | .15            | 20           | 3.7            | 2.1         | 1.3           | 64                              | 10                         | 2.5           | .3           | 3.9                        | 96                                                 | 65                                                  | 12                                 | 143                                       | 7.4 | 5     |
| Feb. 11-20 .....   |                      | 7.7                        | .06       | .15            | 23           | 4.1            | 2.4         | 1.2           | 70                              | 15                         | 3.0           | .3           | 2.9                        | 103                                                | 74                                                  | 11                                 | 166                                       | 7.4 | 10    |
| Feb. 21-28 .....   |                      | 7.7                        | .04       | .04            | 25           | 5.6            | 5.8         | 1.4           | 63                              | 35                         | 6.5           | .2           | 2.3                        | 133                                                | 86                                                  | 34                                 | 209                                       | 7.3 | 10    |
| Mar. 1-10 .....    |                      | 7.5                        | .08       | .00            | 28           | 5.8            | 5.1         | 1.2           | 71                              | 33                         | 6.8           | .1           | 3.0                        | 132                                                | 94                                                  | 36                                 | 215                                       | 7.4 | 4     |
| Mar. 11-20 .....   |                      | 7.9                        | .01       | .00            | 31           | 5.6            | 5.2         | 1.1           | 90                              | 26                         | 7.8           | .1           | 3.3                        | 138                                                | 101                                                 | 26                                 | 223                                       | 7.6 | 2     |
| Mar. 21-31 .....   |                      | 6.9                        | .02       | .00            | 31           | 6.5            | 6.3         | .5            | 86                              | 32                         | 7.3           | .1           | 3.0                        | 140                                                | 104                                                 | 34                                 | 236                                       | 7.0 | 4     |
| Apr. 1-10 .....    |                      | 6.3                        | .05       | .04            | 24           | 5.2            | 5.4         | 1.0           | 70                              | 26                         | 6.2           | .1           | 2.3                        | 120                                                | 82                                                  | 24                                 | 192                                       | 7.0 | 5     |
| Apr. 11-20 .....   |                      | 7.4                        | .12       | .20            | 19           | 3.6            | 2.0         | 1.2           | 64                              | 12                         | 2.5           | .4           | 2.1                        | 97                                                 | 62                                                  | 10                                 | 140                                       | 7.3 | 12    |
| Apr. 21-30 .....   |                      | 8.3                        | .03       | .11            | 27           | 6.1            | 5.5         | 1.2           | 68                              | 38                         | 5.0           | .2           | 1.4                        | 140                                                | 92                                                  | 37                                 | 222                                       | 7.2 | 10    |
| May 1-10 .....     |                      | 9.3                        | .00       | .00            | 38           | 7.0            | 5.9         | 1.0           | 98                              | 42                         | 6.0           | .2           | 2.7                        | 170                                                | 124                                                 | 44                                 | 262                                       | 7.4 | 3     |
| May 11-20 .....    |                      | 10                         | .00       | .00            | 35           | 7.6            | 6.5         | 1.1           | 106                             | 31                         | 10            | .2           | 2.4                        | 168                                                | 119                                                 | 32                                 | 254                                       | 7.4 | 3     |
| May 21-31 .....    |                      | 6.9                        | .04       | .08            | 21           | 4.0            | 3.7         | 1.3           | 58                              | 20                         | 5.5           | .1           | 2.5                        | 104                                                | 69                                                  | 22                                 | 159                                       | 6.9 | 13    |

|                                 |     |      |      |    |     |     |     |     |    |     |     |     |     |     |    |     |     |    |
|---------------------------------|-----|------|------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|----|
| June 1-10, 1957.....            | 10  | 0.09 | 0.10 | 24 | 5.4 | 4.1 | 1.6 | 63  | 31 | 6.0 | 0.1 | 1.8 | 128 | 82  | 30 | 185 | 7.0 | 12 |
| June 11-20 .....                | 9.7 | .16  | .00  | 31 | 6.4 | 6.6 | 1.6 | 88  | 30 | 9.5 | .1  | 2.4 | 152 | 104 | 32 | 240 | 7.1 | 9  |
| June 21-30 .....                | 9.4 | .06  | .00  | 31 | 6.4 | 5.3 | 1.9 | 95  | 27 | 6.5 | .1  | 2.5 | 151 | 104 | 26 | 239 | 7.0 | 10 |
| July 1-10 .....                 | 12  | .14  | .00  | 29 | 6.7 | 6.3 | 1.9 | 80  | 36 | 6.0 | .2  | 2.7 | 151 | 100 | 34 | 237 | 7.2 | 6  |
| July 11-20 .....                | 14  | .08  | .00  | 33 | 6.9 | 6.5 | 1.6 | 94  | 34 | 6.6 | .2  | 2.8 | 161 | 111 | 34 | 254 | 7.2 | 3  |
| July 21-31 .....                | 12  | .03  | .00  | 38 | 7.4 | 8.4 | 2.8 | 117 | 28 | 12  | .4  | 2.5 | 172 | 126 | 30 | 289 | 7.3 | 4  |
| Aug. 1-10 .....                 | 14  | .09  | .00  | 41 | 7.5 | 11  | 1.9 | 127 | 33 | 15  | .2  | 2.9 | 192 | 133 | 29 | 313 | 7.4 | 6  |
| Aug. 11-20 .....                | 16  | .00  | .00  | 45 | 7.2 | 8.1 | 1.7 | 132 | 39 | 11  | .2  | 2.4 | 196 | 142 | 34 | 325 | 7.4 | 5  |
| Aug. 21-31 .....                | 12  | .00  | .00  | 45 | 9.1 | 8.9 | 1.6 | 136 | 41 | 10  | .2  | 2.4 | 202 | 150 | 38 | 334 | 7.4 | 5  |
| Sept. 1-10 .....                | 10  | .00  | .00  | 44 | 12  | 8.8 | 1.6 | 130 | 52 | 9.0 | .1  | 2.0 | 213 | 160 | 53 | 336 | 7.2 | 4  |
| Sept. 11-20 .....               | 17  | .01  | .02  | 44 | 12  | 12  | 2.1 | 120 | 69 | 11  | .1  | 1.7 | 235 | 160 | 61 | 360 | 7.3 | 2  |
| Sept. 21-30 .....               | 12  | 1.3  | .00  | 40 | 9.2 | 7.4 | 2.1 | 138 | 28 | 6.0 | .1  | 1.4 | 182 | 136 | 25 | 299 | 7.4 | 2  |
| Time-weighted<br>averaged ..... |     |      |      |    |     |     |     |     |    |     |     |     |     |     |    |     | --  | 6  |
|                                 | 13  | 0.08 | 0.03 | 34 | 6.9 | 7.2 | 1.7 | 100 | 32 | 8.8 | 0.2 | 2.4 | 158 | 114 | 32 | 258 | --  | 6  |

a Represents 100 percent of days.

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT LOCK AND DAM 1, AT SPOTTSVILLE, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 8 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 63   | 49   | 49   | 45   | 48   | 56   | 69  | 70   | 78   | 81   | 80    |
| 2       | 70   | 62   | 49   | 46   | 43   | 48   | 55   | 70  | 70   | 78   | 82   | 80    |
| 3       | 72   | 63   | 49   | 49   | 47   | 46   | 55   | 69  | 70   | 78   | 82   | 79    |
| 4       | 70   | 63   | 49   | 49   | 48   | 50   | 59   | 67  | 70   | 78   | 82   | 77    |
| 5       | 68   | 63   | 50   | 49   | 45   | 50   | 58   | 65  | 70   | 76   | 80   | 76    |
| 6       | 68   | 63   | 52   | 46   | 47   | 50   | 58   | 67  | 71   | 76   | 80   | 78    |
| 7       | 66   | 62   | 53   | 47   | 48   | 50   | 55   | 68  | 72   | 78   | 80   | 76    |
| 8       | 62   | 61   | 52   | 46   | 50   | 48   | 58   | 68  | 73   | 78   | 80   | 72    |
| 9       | 64   | 58   | 50   | 46   | 50   | 49   | 56   | 68  | 74   | 78   | 80   | 72    |
| 10      | 66   | 58   | 50   | 46   | 50   | 47   | 56   | 70  | 74   | 78   | 80   | 73    |
| 11      | 66   | 58   | 50   | 45   | 50   | 47   | 57   | 69  | 73   | 78   | 82   | 73    |
| 12      | 62   | 60   | 50   | 46   | 50   | 50   | 56   | 70  | 72   | 77   | 82   | 73    |
| 13      | 66   | 59   | 50   | 45   | 50   | 48   | 55   | 70  | 75   | 79   | 82   | 72    |
| 14      | 65   | 58   | 50   | 42   | 49   | 50   | 55   | 70  | 73   | 80   | 81   | 71    |
| 15      | 65   | 59   | 50   | 44   | 49   | 49   | 54   | 72  | 75   | 80   | 81   | 74    |
| 16      | 65   | 59   | 50   | 40   | 49   | 50   | 51   | 70  | 73   | 80   | 82   | 73    |
| 17      | 65   | 59   | 49   | 40   | 48   | 50   | 55   | 70  | 76   | 80   | 82   | 71    |
| 18      | 65   | 59   | 50   | 40   | 48   | 52   | 56   | 74  | 74   | 80   | 80   | 70    |
| 19      | 67   | 59   | 50   | 40   | 47   | 52   | 58   | 72  | 76   | 81   | 80   | 71    |
| 20      | 67   | 58   | 49   | 40   | 45   | 53   | 60   | 70  | 75   | 82   | 80   | 71    |
| 21      | 66   | 56   | 40   | 42   | 45   | 55   | 61   | 70  | 78   | 81   | 80   | 70    |
| 22      | 66   | 55   | 49   | 44   | 46   | 54   | 61   | 70  | 78   | 81   | 80   | 71    |
| 23      | 66   | 53   | 50   | 44   | 45   | 54   | 65   | 70  | 78   | 82   | 80   | 69    |
| 24      | 55   | 53   | 50   | 44   | 46   | 56   | 61   | 66  | 79   | 80   | 80   | 69    |
| 25      | 66   | 53   | 49   | 44   | 46   | 55   | 62   | 68  | 76   | 80   | 80   | 69    |
| 26      | 65   | 53   | 52   | 41   | 48   | 55   | 68   | 68  | 76   | 80   | 80   | 69    |
| 27      | 65   | 52   | 52   | 43   | 46   | 53   | 68   | 68  | 76   | 80   | 80   | 68    |
| 28      | 63   | 52   | 50   | 47   | 48   | 55   | 70   | 68  | 76   | 80   | 80   | 65    |
| 29      | 63   | 52   | 50   | 47   | --   | 52   | 70   | 68  | 75   | 81   | 80   | 64    |
| 30      | 63   | 49   | 49   | 45   | --   | 52   | 69   | 68  | 76   | 81   | 80   | 65    |
| 31      | 64   | --   | 50   | 45   | --   | 52   | --   | 70  | --   | 81   | 80   | --    |
| Average | 66   | 58   | 50   | 44   | 47   | 51   | 59   | 69  | 74   | 79   | 81   | 72    |

WABASH RIVER BASIN  
WABASH RIVER AT LAFAYETTE, IND.

LOCATION.--Temperature recorder at gaging station, 20 feet downstream from Brown Street Bridge in Lafayette, Tippecanoe County, and 5.1 miles downstream from Wildcat Creek.  
DRAINAGE AREA.--7,247 square miles.  
RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1957.  
EXTREMES, 1956-57.--Water temperatures: Maximum, 78°F July 2-4.  
EXTREMES, 1954-57.--Water temperatures: Maximum, 90°F July 30-31, 1954; minimum, freezing point many days during winter months.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Some regulation at low flow caused by power-plants above station.

| Day          | Temperature (°F) of water, water year October 1956 to September 1957 |          |          |         |          |        |        |        |        |        |        |           |
|--------------|----------------------------------------------------------------------|----------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-----------|
|              | October                                                              | November | December | January | February | March  | April  | May    | June   | July   | August | September |
| 1.....       | max 65                                                               | min 60   | max 39   | min 38  | max 36   | min 36 | max 48 | min 51 | max 65 | min 55 | max 76 | min 74    |
| 2.....       | max 66                                                               | min 60   | max 40   | min 38  | max 36   | min 36 | max 48 | min 51 | max 65 | min 55 | max 76 | min 74    |
| 3.....       | max 66                                                               | min 60   | max 41   | min 40  | max 36   | min 35 | max 48 | min 52 | max 64 | min 55 | max 78 | min 75    |
| 4.....       | max 66                                                               | min 60   | max 41   | min 40  | max 35   | min 35 | max 48 | min 52 | max 62 | min 57 | max 78 | min 75    |
| 5.....       | max 66                                                               | min 60   | max 41   | min 41  | max 35   | min 35 | max 47 | min 50 | max 59 | min 57 | max 77 | min 74    |
| 6.....       | max 65                                                               | min 60   | max 46   | min 44  | max 36   | min 36 | max 47 | min 40 | max 60 | min 58 | max 77 | min 73    |
| 7.....       | max 65                                                               | min 60   | max 46   | min 44  | max 36   | min 36 | max 47 | min 40 | max 60 | min 58 | max 77 | min 73    |
| 8.....       | max 64                                                               | min 63   | max 57   | min 55  | max 44   | min 44 | max 47 | min 40 | max 62 | min 61 | max 76 | min 73    |
| 9.....       | max 64                                                               | min 63   | max 55   | min 52  | max 42   | min 42 | max 47 | min 40 | max 62 | min 60 | max 76 | min 73    |
| 10.....      | max 63                                                               | min 62   | max 51   | min 40  | max 38   | min 38 | max 47 | min 40 | max 64 | min 60 | max 77 | min 74    |
| 11.....      | max 62                                                               | min 52   | max 50   | min 38  | max 38   | min 38 | max 47 | min 41 | max 64 | min 62 | max 77 | min 76    |
| 12.....      | max 62                                                               | min 52   | max 50   | min 38  | max 38   | min 38 | max 47 | min 41 | max 62 | min 62 | max 77 | min 76    |
| 13.....      | max 63                                                               | min 52   | max 50   | min 37  | max 37   | min 37 | max 44 | min 44 | max 62 | min 62 | max 76 | min 75    |
| 14.....      | max 63                                                               | min 52   | max 50   | min 37  | max 37   | min 37 | max 44 | min 44 | max 62 | min 62 | max 76 | min 75    |
| 15.....      | max 63                                                               | min 54   | max 52   | min 37  | max 37   | min 37 | max 44 | min 44 | max 62 | min 61 | max 77 | min 76    |
| 16.....      | max 64                                                               | min 54   | max 51   | min 38  | max 37   | min 37 | max 44 | min 43 | max 61 | min 71 | max 77 | min 77    |
| 17.....      | max 64                                                               | min 51   | max 48   | min 38  | max 37   | min 37 | max 43 | min 43 | max 61 | min 71 | max 77 | min 77    |
| 18.....      | max 64                                                               | min 48   | max 48   | min 38  | max 36   | min 36 | max 43 | min 43 | max 59 | min 73 | max 77 | min 77    |
| 19.....      | max 63                                                               | min 46   | max 38   | min 36  | max 36   | min 36 | max 43 | min 43 | max 57 | min 74 | max 77 | min 76    |
| 20.....      | max 63                                                               | min 47   | max 38   | min 36  | max 36   | min 36 | max 44 | min 43 | max 56 | min 74 | max 76 | min 75    |
| 21.....      | max 63                                                               | min 48   | max 47   | min 40  | max 38   | min 38 | max 44 | min 44 | max 57 | min 74 | max 75 | min 75    |
| 22.....      | max 63                                                               | min 47   | max 44   | min 41  | max 40   | min 40 | max 44 | min 44 | max 57 | min 74 | max 75 | min 75    |
| 23.....      | max 63                                                               | min 44   | max 42   | min 41  | max 40   | min 40 | max 44 | min 44 | max 57 | min 73 | max 75 | min 75    |
| 24.....      | max 63                                                               | min 42   | max 40   | min 41  | max 40   | min 40 | max 46 | min 44 | max 57 | min 73 | max 75 | min 74    |
| 25.....      | max 62                                                               | min 40   | max 40   | min 40  | max 40   | min 40 | max 46 | min 46 | max 57 | min 72 | max 75 | min 74    |
| 26.....      | max 62                                                               | min 40   | max 39   | min 40  | max 39   | min 39 | max 50 | min 48 | max 57 | min 72 | max 74 | min 73    |
| 27.....      | max 62                                                               | min 39   | max 39   | min 38  | max 38   | min 38 | max 50 | min 49 | max 57 | min 72 | max 73 | min 73    |
| 28.....      | max 59                                                               | min 39   | max 38   | min 38  | max 38   | min 38 | max 50 | min 49 | max 57 | min 72 | max 72 | min 72    |
| 29.....      | max 59                                                               | min 39   | max 38   | min 37  | max 37   | min 37 | max 50 | min 49 | max 56 | min 75 | max 73 | min 73    |
| 30.....      | max 60                                                               | min 59   | max 39   | min 38  | max 37   | min 36 | max 50 | min 50 | max 56 | min 76 | max 73 | min 73    |
| 31.....      | max 60                                                               | min 59   | max 36   | min 36  | max 36   | min 36 | max 51 | min 50 | max 56 | min 75 | max 74 | min 74    |
| Average..... | max 63                                                               | min 62   | max 49   | min 40  | max 39   | min 39 | max 49 | min 51 | max 60 | min 59 | max 76 | min 75    |

## WABASH RIVER BASIN--Continued

## VERMILION RIVER NEAR CATLIN, ILL.

LOCATION.--Temperature recorder at gaging station, 75 feet upstream from Butler Branch bridge, 150 feet upstream from Butler Branch, 0.1 mile downstream from Salt Fork and 2½ miles northwest of Catlin, Vermillion County.

DRAINAGE AREA--959 Square miles.

RECORDS AVAILABLE.--Water temperatures: December 1952 to September 1957.

EXTREMES, 1952-57.--Water temperatures: Maximum, 87°F Aug. 15; minimum, 33°F on several days during January.

EXTREMES, 1952-57.--Water temperatures: Maximum, 85°F July 14, 1954; minimum, freezing point Jan. 13, 1953, Feb. 6-10, 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer<sup>7</sup>

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       | 66      | 58  | 58       | 55  | 34       | 34      | 35       | 35    | 42    | 51  | 65   | 64   | 85     | 80        |
| 2.....       | 70      | 63  | 58       | 54  | 34       | 34      | 35       | 43    | 42    | 51  | 62   | 72   | 85     | 76        |
| 3.....       | 65      | 62  | 58       | 55  | 35       | 34      | 34       | 43    | 42    | 51  | 64   | 62   | 80     | 76        |
| 4.....       | 66      | 60  | 57       | 55  | 37       | 35      | 34       | 42    | 40    | 49  | 62   | 72   | 83     | 78        |
| 5.....       | 64      | 59  | 58       | 55  | 42       | 37      | 34       | 42    | 41    | 53  | 67   | 73   | 80     | 77        |
| 6.....       | 64      | 58  | 57       | 54  | 43       | 42      | 34       | 44    | 45    | 55  | 71   | 66   | 77     | 67        |
| 7.....       | 60      | 55  | 54       | 50  | 43       | 41      | 34       | 44    | 42    | 58  | 74   | 75   | 76     | 71        |
| 8.....       | 60      | 54  | 50       | 45  | 41       | 38      | 34       | 44    | 45    | 62  | 73   | 78   | 78     | 64        |
| 9.....       | 59      | 54  | 45       | 43  | 38       | 35      | 34       | 42    | 41    | 62  | 70   | 68   | 76     | 63        |
| 10.....      | 57      | 52  | 44       | 42  | 35       | 35      | 34       | 41    | 48    | 64  | 74   | 78   | 84     | 65        |
| 11.....      | 57      | 52  | 46       | 42  | 36       | 35      | 34       | 40    | 48    | 62  | 78   | 80   | 82     | 75        |
| 12.....      | 59      | 52  | 46       | 42  | 36       | 35      | 34       | 40    | 47    | 62  | 75   | 73   | 78     | 69        |
| 13.....      | 62      | 56  | 43       | 41  | 35       | 34      | 34       | 51    | 47    | 62  | 74   | 72   | 85     | 72        |
| 14.....      | 63      | 56  | 49       | 42  | 35       | 34      | 39       | 52    | 47    | 63  | 72   | 69   | 85     | 80        |
| 15.....      | 64      | 58  | 52       | 47  | 36       | 35      | 34       | 50    | 48    | 64  | 69   | 74   | 87     | 80        |
| 16.....      | 64      | 59  | 47       | 41  | 36       | 36      | 34       | 47    | 45    | 59  | 73   | 68   | 74     | 67        |
| 17.....      | 63      | 58  | 41       | 39  | 37       | 36      | 34       | 47    | 48    | 58  | 77   | 73   | 83     | 78        |
| 18.....      | 64      | 58  | 39       | 38  | 37       | 36      | 34       | 48    | 44    | 50  | 77   | 73   | 83     | 76        |
| 19.....      | 64      | 60  | 40       | 38  | 36       | 34      | 33       | 48    | 55    | 60  | 73   | 71   | 80     | 75        |
| 20.....      | 64      | 61  | 45       | 40  | 36       | 36      | 33       | 48    | 60    | 59  | 71   | 69   | 79     | 70        |
| 21.....      | 64      | 61  | 45       | 40  | 38       | 36      | 33       | 46    | 61    | 58  | 74   | 82   | 72     | 71        |
| 22.....      | 64      | 61  | 40       | 37  | 41       | 38      | 33       | 48    | 61    | 58  | 75   | 72   | 83     | 79        |
| 23.....      | 62      | 57  | 37       | 35  | 42       | 40      | 33       | 50    | 61    | 62  | 76   | 82   | 79     | 71        |
| 24.....      | 60      | 56  | 35       | 35  | 42       | 38      | 33       | 46    | 67    | 62  | 76   | 73   | 73     | 68        |
| 25.....      | 61      | 57  | 35       | 34  | 38       | 37      | 33       | 49    | 64    | 62  | 75   | 71   | 77     | 70        |
| 26.....      | 59      | 55  | 35       | 34  | 37       | 36      | 33       | 50    | 65    | 62  | 74   | 71   | 73     | 66        |
| 27.....      | 55      | 53  | 35       | 34  | 36       | 36      | 33       | 46    | 65    | 61  | 73   | 72   | 78     | 63        |
| 28.....      | 55      | 52  | 34       | 36  | 35       | 35      | 33       | 43    | 62    | 60  | 72   | 69   | 74     | 61        |
| 29.....      | 55      | 52  | 34       | 34  | 35       | 35      | 33       | 48    | 58    | 64  | 69   | 67   | 80     | 78        |
| 30.....      | 57      | 53  | 34       | 35  | 35       | 35      | 34       | 50    | 60    | 63  | 70   | 68   | 82     | 75        |
| 31.....      | 58      | 55  | --       | --  | 35       | 34      | --       | 51    | --    | 66  | --   | 84   | 79     | --        |
| Average..... | 61      | 57  | 45       | 42  | 37       | 36      | 34       | 46    | 53    | 60  | 72   | 69   | 81     | 65        |

## WABASH RIVER BASIN--Continued

## WABASH RIVER AT RIVERTON, IND.

LOCATION.--Temperature recorder at gaging station at downstream side of Illinois Central Railroad bridge at Riverton, Sullivan County, and 0.6 mile downstream from Turtle Creek.

DRAINAGE AREA.--13,100 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: July 1954, to September 1957.

EXTREMES, 1956-57.--Water temperatures: Data not complete enough to determine.

EXTREMES, 1954-57.--Water temperatures: Maximum, 91°F July 20 and Aug. 29 1954; minimum, 33°F Feb. 12-15, 1955.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, December 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph.

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       |         |     |          |     |          |     | 45      | 44  | 38       | 38  | 45    | 45  | 49    | 66  | 67  | 66  | 67   | 65  |      |     | 78     | 78  | 80        | 79  |
| 2.....       |         |     |          |     |          |     | 44      | 44  | 38       | 38  | 45    | 44  | 50    | 49  | 66  | 67  | 67   | 67  |      |     | 79     | 79  | 79        | 79  |
| 3.....       |         |     |          |     |          |     | 44      | 42  | 39       | 38  | 43    | 43  | 50    | 48  | 65  | 65  | 67   | 67  |      |     | 79     | 79  | 79        | 78  |
| 4.....       |         |     |          |     |          |     | --      | --  | --       | --  | 48    | 47  | 48    | 47  | 65  | 63  | 67   | 66  |      |     | 79     | 79  | 78        | 76  |
| 5.....       |         |     |          |     |          |     | --      | --  | --       | --  | 39    | 42  | 47    | 47  | 63  | 62  | 66   | 68  |      |     | 79     | 78  | 76        | 75  |
| 6.....       |         |     |          |     |          |     | --      | --  | 40       | 39  | 42    | 42  | 47    | 46  | 62  | 61  | 68   | 66  |      |     | 78     | 77  | 75        | 74  |
| 7.....       |         |     |          |     |          |     | 42      | 42  | 40       | 40  | 42    | 42  | 46    | 46  | 61  | 61  | 68   | 68  |      |     | 77     | 77  | 74        | 72  |
| 8.....       |         |     |          |     |          |     | 53      | 51  | 42       | 42  | 41    | 40  | 42    | 46  | 62  | 61  | 68   | 68  |      |     | 77     | 77  | 72        | 70  |
| 9.....       |         |     |          |     |          |     | 51      | 50  | 43       | 42  | 43    | 41  | 42    | 46  | 63  | 62  | 68   | 68  |      |     | 78     | 77  | 71        | 70  |
| 10.....      |         |     |          |     |          |     | 50      | 47  | 43       | 43  | 43    | 42  | 46    | 45  | 63  | 63  | 68   | 68  |      |     | 77     | 77  | 71        | 71  |
| 11.....      |         |     |          |     |          |     | 47      | 46  | 43       | 43  | 43    | 42  | 48    | 46  | 64  | 63  | 68   | 68  |      |     | 78     | 77  | 71        | 70  |
| 12.....      |         |     |          |     |          |     | 46      | 46  | 43       | 43  | 43    | 44  | 42    | 48  | 64  | 63  | 68   | 68  |      |     | 78     | 78  | 72        | 71  |
| 13.....      |         |     |          |     |          |     | 46      | 45  | 43       | 43  | 43    | 46  | 44    | 47  | 65  | 64  | 68   | 68  |      |     | 79     | 79  | 72        | 72  |
| 14.....      |         |     |          |     |          |     | 45      | 45  | 43       | 42  | 43    | 48  | 46    | 46  | 64  | 64  | 70   | 70  |      |     | 79     | 79  | 72        | 72  |
| 15.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 43    | 48  | 46    | 46  | 65  | 64  | 70   | 70  |      |     | 81     | 79  | 72        | 72  |
| 16.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 43    | 48  | 48    | 46  | 65  | 65  | 71   | 70  |      |     | 81     | 81  | 72        | 72  |
| 17.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 43    | 42  | 48    | 46  | 65  | 65  | 72   | 71  |      |     | 81     | 80  | 72        | 71  |
| 18.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 42    | 41  | 49    | 49  | 65  | 65  | 73   | 72  |      |     | 80     | 79  | 72        | 71  |
| 19.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 41    | 49  | 49    | 52  | 65  | 65  | 74   | 73  |      |     | 79     | 78  | 72        | 72  |
| 20.....      |         |     |          |     |          |     | 45      | 44  | --       | --  | 41    | 49  | 49    | 54  | 65  | 64  | 74   | 74  |      |     | 79     | 78  | 72        | 72  |
| 21.....      |         |     |          |     |          |     | 45      | 44  | --       | --  | 41    | 49  | 49    | 56  | 64  | 63  | 74   | 74  |      |     | 78     | 77  | 73        | 72  |
| 22.....      |         |     |          |     |          |     | 45      | 45  | --       | --  | 41    | 49  | 48    | 58  | 63  | 63  | 74   | 74  |      |     | 77     | 77  | 73        | 72  |
| 23.....      |         |     |          |     |          |     | 46      | 45  | 45       | 45  | 41    | 49  | 49    | 60  | 64  | 63  | 74   | 74  |      |     | 77     | 77  | 72        | 72  |
| 24.....      |         |     |          |     |          |     | 47      | 46  | 43       | 42  | 41    | 50  | 49    | 62  | 64  | 64  | 74   | 74  |      |     | 77     | 76  | 72        | 69  |
| 25.....      |         |     |          |     |          |     | 47      | 47  | 43       | 42  | 44    | 50  | 48    | 63  | 64  | 64  | 74   | 74  |      |     | 76     | 75  | 69        | 69  |
| 26.....      |         |     |          |     |          |     | 47      | 47  | 42       | 41  | 45    | 44  | 48    | 48  | 64  | 64  | 74   | 74  |      |     | 77     | 75  | 69        | 68  |
| 27.....      |         |     |          |     |          |     | 47      | 46  | 41       | 40  | 45    | 45  | 47    | 65  | 66  | 66  | 74   | 73  |      |     | 77     | 77  | 68        | 67  |
| 28.....      |         |     |          |     |          |     | 46      | 46  | 40       | 38  | 45    | 45  | 47    | 66  | 66  | 65  | 73   | 70  |      |     | 78     | 77  | 67        | 65  |
| 29.....      |         |     |          |     |          |     | 46      | 45  | 38       | 38  | --    | --  | 47    | 66  | 66  | 65  | 70   | 69  |      |     | 79     | 78  | 65        | 64  |
| 30.....      |         |     |          |     |          |     | 45      | 45  | 38       | 38  | --    | --  | 48    | 66  | 66  | 66  | 71   | 69  |      |     | 79     | 79  | 64        | 64  |
| 31.....      |         |     |          |     |          |     | 45      | 45  | 38       | 38  | --    | --  | 48    | 66  | 66  | 66  | --   | --  |      |     | 79     | 79  | --        | --  |
| Average..... |         |     |          |     |          |     | --      | --  | --       | 42  | 41    | 46  | 46    | 53  | 65  | 64  | 71   | 70  |      |     | 78     | 78  | 72        | 71  |

WABASH RIVER BASIN--Continued  
WHITE RIVER NEAR NOBLESVILLE, IND.

LOCATION.--Temperature recorder at gaging station on highway bridge, 1 mile west of Strawtown, 7 miles northeast of Noblesville, Hamilton County, and 9.5 miles upstream from Cicero Creek.

DRAINAGE AREA.--814 square miles.

RECORDS AVAILABLE.--Water temperatures:

RECORDS 1956-57.--Water temperatures:

EXTREMES 1956-57.--Water temperatures:

EXTREMES 1953-57.--Water temperatures:

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

October 1953 to July 1957.  
Minimum, freezing point on many days during January and February.

Maximum, 88°F July 14, 1954; minimum, freezing point many days during winter months.

Temperature (°F) of water, October 1956 to July 1957.

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 63      | 61  | 60       | 59  | 39       | 38  | 34      | 33  | 34       | 32  | 38    | 36  | 46    | 46  | 65  | 61  | 66   | 65  | 73   | 71  |        |     |           |     |
| 2.....       | 66      | 63  | 61       | 59  | 40       | 39  | 33      | 32  | 35       | 32  | 38    | 37  | 46    | 46  | 64  | 61  | 66   | 64  |      |     |        |     |           |     |
| 3.....       | 65      | 62  | 61       | 59  | 42       | 40  | 32      | 32  | 35       | 32  | 37    | 35  | 46    | 38  | 61  | 58  | 66   | 63  |      |     |        |     |           |     |
| 4.....       | 64      | 61  | 61       | 60  | 42       | 38  | 32      | 32  | 36       | 33  | 37    | 35  | 41    | 39  | 58  | 54  | 67   | 64  |      |     |        |     |           |     |
| 5.....       | 64      | 61  | 61       | 60  | 42       | 40  | 32      | 32  | 36       | 36  | 38    | 36  | 44    | 41  | 57  | 52  | 70   | 65  |      |     |        |     |           |     |
| 6.....       | 61      | 62  | 61       | 59  | 46       | 42  | 32      | 32  | 36       | 36  | 38    | 38  | 44    | 42  | 59  | 53  | 71   | 67  |      |     |        |     |           |     |
| 7.....       | 62      | 60  | 59       | 55  | 47       | 46  | 33      | 32  | 36       | 36  | 38    | 37  | 42    | 42  | 62  | 56  | 70   | 68  |      |     |        |     |           |     |
| 8.....       | 60      | 57  | 55       | 50  | 47       | 44  | 33      | 32  | 37       | 36  | 38    | 37  | 42    | 38  | 64  | 58  | 68   | 65  |      |     |        |     |           |     |
| 9.....       | 59      | 57  | 50       | 48  | 44       | 41  | 33      | 32  | 39       | 37  | 39    | 37  | 40    | 36  | 66  | 61  | 66   | 64  |      |     |        |     |           |     |
| 10.....      | 57      | 55  | 48       | 47  | 41       | 39  | 33      | 33  | 40       | 39  | 39    | 38  | 42    | 40  | 67  | 62  | 68   | 65  |      |     |        |     |           |     |
| 11.....      | 56      | 54  | 49       | 47  | 39       | 37  | 33      | 32  | 40       | 39  | 41    | 39  | 44    | 42  | 64  | 60  | 72   | 67  |      |     |        |     |           |     |
| 12.....      | 58      | 55  | 50       | 48  | 38       | 37  | 33      | 32  | 39       | 38  | 43    | 41  | 44    | 43  | 63  | 61  | 72   | 70  |      |     |        |     |           |     |
| 13.....      | 60      | 57  | 48       | 46  | 38       | 37  | 33      | 32  | 37       | 36  | 43    | 43  | 44    | 42  | 63  | 62  | 72   | 70  |      |     |        |     |           |     |
| 14.....      | 61      | 59  | 50       | 46  | 37       | 37  | 33      | 32  | 37       | 36  | 47    | 43  | 44    | 42  | 65  | 63  | 70   | 69  |      |     |        |     |           |     |
| 15.....      | 62      | 60  | 52       | 50  | 39       | 37  | 32      | 32  | 36       | 36  | 47    | 46  | 47    | 43  | 66  | 63  | 70   | 70  |      |     |        |     |           |     |
| 16.....      | 62      | 60  | 52       | 47  | 39       | 39  | 32      | 32  | 35       | 34  | 46    | 44  | 47    | 46  | 64  | 61  | 72   | 70  |      |     |        |     |           |     |
| 17.....      | 62      | 60  | 47       | 45  | 40       | 39  | 32      | 32  | 35       | 34  | 46    | 45  | 46    | 46  | 61  | 59  | 74   | 72  |      |     |        |     |           |     |
| 18.....      | 62      | 60  | 45       | 43  | 40       | 39  | 32      | 32  | 35       | 34  | 46    | 45  | 46    | 46  | 60  | 59  | 74   | 73  |      |     |        |     |           |     |
| 19.....      | 62      | 60  | 45       | 43  | 39       | 38  | 32      | 32  | 34       | 34  | 45    | 45  | 56    | 51  | 60  | 60  | 73   | 71  |      |     |        |     |           |     |
| 20.....      | 62      | 61  | 47       | 45  | 40       | 38  | 32      | 32  | 34       | 32  | 45    | 45  | 58    | 56  | 66  | 56  | 72   | 69  |      |     |        |     |           |     |
| 21.....      | 63      | 61  | 48       | 46  | 41       | 40  | 32      | 32  | 35       | 33  | 44    | 43  | 60    | 56  | 58  | 56  | 73   | 70  |      |     |        |     |           |     |
| 22.....      | 64      | 62  | 46       | 42  | 42       | 41  | 35      | 32  | 37       | 35  | 44    | 44  | 60    | 58  | 61  | 58  | 74   | 71  |      |     |        |     |           |     |
| 23.....      | 63      | 61  | 42       | 40  | 42       | 42  | 35      | 34  | 38       | 37  | 47    | 44  | 61    | 59  | 62  | 61  | 77   | 73  |      |     |        |     |           |     |
| 24.....      | 62      | 60  | 40       | 39  | 42       | 40  | 34      | 32  | 41       | 38  | 47    | 47  | 63    | 60  | 62  | 60  | 75   | 71  |      |     |        |     |           |     |
| 25.....      | 61      | 59  | 39       | 38  | 40       | 37  | 32      | 32  | 46       | 41  | 47    | 44  | 64    | 62  | 62  | 61  | 72   | 69  |      |     |        |     |           |     |
| 26.....      | 61      | 58  | 38       | 37  | 37       | 32  | 32      | 32  | 46       | 42  | 44    | 43  | 66    | 62  | 63  | 61  | 72   | 69  |      |     |        |     |           |     |
| 27.....      | 58      | 55  | 38       | 37  | 36       | 32  | 32      | 32  | 42       | 38  | 43    | 43  | 64    | 60  | 63  | 60  | 71   | 70  |      |     |        |     |           |     |
| 28.....      | 57      | 55  | 38       | 36  | 36       | 32  | 32      | 32  | 36       | 36  | 43    | 43  | 62    | 60  | 62  | 58  | 70   | 66  |      |     |        |     |           |     |
| 29.....      | 56      | 56  | 38       | 36  | 35       | 32  | 32      | 32  | 36       | 36  | 45    | 43  | 61    | 58  | 66  | 60  | 70   | 66  |      |     |        |     |           |     |
| 30.....      | 59      | 57  | 39       | 38  | 35       | 34  | 32      | 32  | 36       | 36  | 46    | 44  | 63    | 56  | 67  | 64  | 73   | 69  |      |     |        |     |           |     |
| 31.....      | 60      | 59  | --       | --  | 34       | 34  | 32      | 32  | --       | --  | 46    | 45  | --    | --  | 66  | 65  | --   | --  |      |     |        |     |           |     |
| Average..... | 61      | 59  | 49       | 47  | 40       | 39  | 33      | 32  | 37       | 36  | 43    | 41  | 51    | 49  | 63  | 60  | 71   | 68  |      |     |        |     |           |     |

WABASH RIVER BASIN --Continued  
WHITE RIVER AT NOBLESVILLE, IND.

LOCATION. --Temperature recorder at gaging station at Logan Street Bridge in Noblesville, Hamilton County, 1½ miles upstream from Cicero Creek and 3½ miles downstream from dam at Clare.  
DRAINAGE AREA. --837 square miles.

RECORDS AVAILABLE. --Water temperatures: November 1952 to September 1957.

EXTREMES, 1936-57. --Water temperatures: Maximum, 85°F July 22; minimum, freezing point on several days during January.

EXTREMES, 1952-57. --Water temperatures: Maximum, 94°F Aug. 1, 1953; minimum, freezing point many days during winter months.

REMARKS. --Records of discharge for water year October 1956 to September 1957 given in WSP 1505. Flow regulated by power plant above station.

Temperature (°F) of water, water year October 1956 to September 1957

//Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 68      | 63  | 68       | 65  | 44       | 39  | 34      | 32  | 36       | 34  | 40    | 38  | 49    | 47  | 65  | 62  | 66   | 65  | 73   | 71  | 84     | 78  | 79        | 75  |
| 2.....       | 67      | 60  | 67       | 60  | 45       | 41  | 32      | 32  | 37       | 35  | 41    | 40  | 49    | 46  | 65  | 63  | 66   | 64  | 73   | 71  | 84     | 79  | 89        | 78  |
| 3.....       | 70      | 68  | 69       | 67  | 44       | 41  | 32      | 32  | 37       | 36  | 40    | 38  | 46    | 40  | 64  | 60  | 66   | 63  | 72   | 71  | 82     | 79  | 80        | 77  |
| 4.....       | 74      | 68  | 67       | 64  | 46       | 42  | 35      | 34  | 40       | 37  | 41    | 39  | 50    | 47  | 64  | 56  | 67   | 64  | 72   | 70  | 80     | 77  | 79        | 75  |
| 5.....       | 72      | 70  | 65       | 64  | 47       | 46  | 36      | 35  | 39       | 37  | 41    | 38  | 43    | 41  | 56  | 54  | 70   | 66  | 70   | 69  | 77     | 74  | 75        | 71  |
| 6.....       | 73      | 69  | 67       | 64  | 50       | 47  | 35      | 33  | 39       | 36  | 41    | 40  | 43    | 42  | 60  | 55  | 72   | 69  | 70   | 70  | 78     | 72  | 74        | 69  |
| 7.....       | 69      | 66  | 64       | 61  | 52       | 50  | 35      | 33  | 40       | 38  | 42    | 40  | 42    | 42  | 63  | 58  | 72   | 70  | 72   | 70  | 78     | 71  | 72        | 69  |
| 8.....       | 68      | 65  | 61       | 56  | 52       | 46  | 36      | 33  | 40       | 38  | 43    | 39  | 42    | 38  | 66  | 61  | 70   | 66  | 73   | 72  | 79     | 73  | 70        | 66  |
| 9.....       | 67      | 65  | 58       | 55  | 46       | 42  | 37      | 35  | 42       | 39  | 43    | 40  | 38    | 37  | 68  | 63  | 66   | 65  | 75   | 72  | 81     | 75  | 69        | 65  |
| 10.....      | 65      | 63  | 56       | 53  | 42       | 39  | 36      | 35  | 42       | 41  | 42    | 40  | 41    | 38  | 70  | 66  | 69   | 66  | 74   | 72  | 81     | 76  | 69        | 68  |
| 11.....      | 65      | 64  | 53       | 50  | 42       | 38  | 36      | 34  | 42       | 41  | 46    | 41  | 43    | 41  | --  | --  | 73   | 68  | 75   | 72  | 79     | 77  | 71        | 68  |
| 12.....      | 66      | 63  | 51       | 48  | 42       | 38  | 36      | 34  | 41       | 39  | 50    | 44  | 43    | 42  | 64  | 63  | 73   | 69  | 76   | 74  | 81     | 75  | 72        | 68  |
| 13.....      | 65      | 63  | 49       | 48  | 41       | 38  | 34      | 33  | 39       | 37  | 53    | 46  | 43    | 42  | --  | --  | 72   | 70  | 76   | 73  | 81     | 76  | 72        | 70  |
| 14.....      | 64      | 60  | 54       | 48  | 41       | 37  | 33      | 33  | 39       | 37  | 56    | 49  | 43    | 42  | --  | --  | 73   | 69  | 76   | 73  | 82     | 76  | 72        | 68  |
| 15.....      | 64      | 61  | 55       | 53  | 43       | 39  | 34      | 33  | 38       | 37  | 54    | 50  | 46    | 42  | --  | --  | 70   | 70  | 79   | 75  | 84     | 77  | 72        | 70  |
| 16.....      | 69      | 64  | 53       | 49  | 44       | 40  | 34      | 33  | 37       | 36  | 51    | 48  | 46    | 46  | 66  | 63  | 72   | 70  | 79   | 76  | 80     | 77  | 72        | 70  |
| 17.....      | 70      | 68  | 50       | 47  | 45       | 40  | 33      | 32  | 36       | 35  | 51    | 47  | 48    | 48  | 63  | 61  | 74   | 72  | 75   | 77  | 75     | 72  | 69        | 68  |
| 18.....      | 70      | 68  | 47       | 44  | 45       | 42  | 32      | 32  | 37       | 36  | 50    | 47  | 55    | 48  | 62  | 61  | 75   | 73  | 78   | 72  | 77     | 74  | 72        | 68  |
| 19.....      | 69      | 68  | 46       | 42  | 44       | 40  | 33      | 32  | 37       | 35  | 50    | 47  | 55    | 50  | 62  | 61  | 74   | 71  | 81   | 75  | 73     | 72  | 68        | 68  |
| 20.....      | 71      | 68  | 51       | 46  | 45       | 41  | 35      | 33  | 38       | 34  | 47    | 45  | 57    | 55  | 61  | 59  | 73   | 70  | 83   | 77  | 78     | 72  | 73        | 70  |
| 21.....      | 68      | 65  | 52       | 47  | 45       | 43  | 36      | 33  | 39       | 34  | 47    | 44  | 59    | 57  | 59  | 58  | 74   | 70  | 82   | 79  | 77     | 72  | 71        | 70  |
| 22.....      | 65      | 64  | 51       | 42  | 45       | 43  | 36      | 33  | 40       | 37  | 47    | 44  | 60    | 58  | 61  | 58  | 75   | 72  | 85   | 79  | 77     | 72  | 71        | 68  |
| 23.....      | 69      | 66  | 43       | 40  | 44       | 43  | 35      | 35  | 41       | 39  | 48    | 44  | 61    | 59  | 62  | 61  | 76   | 73  | 81   | 74  | 76     | 72  | 68        | 65  |
| 24.....      | 68      | 67  | 43       | 38  | 44       | 41  | 35      | 34  | 43       | 41  | 47    | 46  | 62    | 60  | 62  | 61  | 75   | 72  | 74   | 73  | 76     | 72  | 65        | 65  |
| 25.....      | 68      | 67  | 38       | 37  | 41       | 38  | 34      | 33  | --       | --  | 46    | 43  | 64    | 62  | 62  | 62  | 74   | 70  | 73   | 72  | 72     | 68  | 66        | 62  |
| 26.....      | 67      | 63  | 37       | 36  | 41       | 38  | 34      | 33  | --       | --  | 45    | 42  | 65    | 62  | 64  | 62  | 74   | 71  | 73   | 72  | 72     | 68  | 66        | 63  |
| 27.....      | 63      | 61  | 42       | 37  | 42       | 39  | 33      | 32  | --       | --  | 44    | 42  | 65    | 62  | 64  | 62  | 73   | 71  | 75   | 72  | 74     | 70  | 64        | 61  |
| 28.....      | 61      | 43  | 38       | 43  | 38       | 33  | 33      | 32  | 42       | 39  | 45    | 42  | 62    | 60  | 63  | 60  | 72   | 66  | 77   | 74  | 74     | 71  | 62        | 59  |
| 29.....      | 62      | 58  | 45       | 41  | 41       | 36  | 34      | 33  | --       | --  | 47    | 44  | 61    | 58  | 65  | 61  | 69   | 66  | 80   | 75  | 77     | 72  | 61        | 57  |
| 30.....      | 66      | 62  | 42       | 39  | 36       | 34  | 32      | --  | --       | 49  | 45    | 63  | 59    | 66  | 64  | 72  | 69   | 82  | 76   | 79  | 73     | 63  | 58        | --  |
| 31.....      | 69      | 66  | --       | --  | 34       | 33  | 35      | 33  | --       | --  | 48    | 47  | --    | --  | 66  | 65  | --   | --  | 83   | 78  | 78     | 75  | --        | --  |
| Average..... | 68      | 65  | 53       | 50  | 44       | 40  | 34      | 33  | 39       | 37  | 46    | 43  | 51    | 49  | 63  | 61  | 72   | 69  | 76   | 73  | 78     | 74  | 71        | 67  |



## WABASH RIVER BASIN--Continued

## WHITE RIVER NEAR NORA, IND.

LOCATION.--Temperature recorder at gaging station on State Highway 100, 2 miles east of Nora Marion County, and 14 miles upstream from Fall Creek.

DRAINAGE AREA.--1,200 square miles.

RECORDS AVAILABLE.--Water temperatures: June 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81° F July 20-22; minimum, freezing point Jan. 4, 18-22.

EXTREMES, 1954-57.--Water temperatures: Maximum, 89° F July 14, 1954; minimum, freezing point Feb. 2, 1955, Jan. 4, 18-22, 1957.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (° F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 66      | 60  | 62       | 61  | 40       | 39  | 35      | 33  | 34       | 34  | 39    | 38  | 46    | 45  | 64  | 62  | 65   | 65  | 71   | 69  | 80     | 76  | 75        | 73  |
| 2.....       | 68      | 64  | 63       | 60  | 40       | 39  | 40      | 34  | 35       | 34  | 38    | 38  | 46    | 46  | 64  | 62  | 65   | 65  | 71   | 80  | 80     | 78  | 75        | 73  |
| 3.....       | 64      | 62  | 63       | 60  | 41       | 40  | 33      | 33  | 36       | 35  | 38    | 38  | 46    | 41  | 63  | 58  | 65   | 65  | 71   | 71  | 78     | 77  | 74        | 73  |
| 4.....       | 67      | 62  | 63       | 61  | 42       | 41  | 33      | 32  | 36       | 36  | 38    | 38  | 41    | 40  | 58  | 54  | 67   | 65  | 71   | 70  | 78     | 77  | 73        | 69  |
| 5.....       | 67      | 61  | 63       | 61  | 43       | 42  | 33      | 33  | 36       | 36  | 38    | 38  | 42    | 41  | 56  | 53  | 69   | 67  | 70   | 69  | 77     | 73  | 69        | 66  |
| 6.....       | 66      | 62  | 62       | 60  | 47       | 43  | 33      | 33  | 36       | 36  | 38    | 38  | 42    | 42  | 57  | 54  | 71   | 69  | 70   | 69  | 73     | 70  | 67        | 65  |
| 7.....       | 64      | 60  | 60       | 56  | 47       | 46  | 34      | 33  | 36       | 36  | 38    | 38  | 42    | 42  | 60  | 57  | 71   | 70  | 72   | 70  | 73     | 70  | 67        | 65  |
| 8.....       | 62      | 58  | 56       | 50  | 46       | 45  | 34      | 33  | 36       | 36  | 39    | 38  | 42    | 40  | 62  | 59  | 71   | 67  | 72   | 71  | 73     | 71  | 67        | 64  |
| 9.....       | 62      | 57  | 51       | 47  | 45       | 42  | 33      | 33  | 36       | 36  | 39    | 39  | 40    | 39  | 63  | 62  | 67   | 66  | 73   | 71  | 76     | 73  | 67        | 65  |
| 10.....      | 61      | 55  | 50       | 48  | 42       | 39  | 34      | 33  | 38       | 37  | 39    | 39  | 41    | 39  | 65  | 63  | 68   | 66  | 73   | 72  | 76     | 75  | 65        | 64  |
| 11.....      | 60      | 54  | 51       | 48  | 39       | 39  | 34      | 34  | 37       | 37  | 41    | 39  | 43    | 41  | 65  | 63  | 70   | 67  | 74   | 72  | 76     | 75  | 67        | 63  |
| 12.....      | 55      | 51  | 49       | 39  | 39       | 39  | 34      | 33  | 37       | 37  | 44    | 41  | 43    | 43  | 63  | 63  | 70   | 74  | 73   | 76  | 74     | 68  | 67        | 63  |
| 13.....      | 62      | 58  | 49       | 47  | 39       | 39  | 34      | 34  | 37       | 37  | 45    | 44  | 43    | 43  | 63  | 63  | 70   | 74  | 73   | 76  | 74     | 68  | 68        | 68  |
| 14.....      | 63      | 59  | 49       | 48  | 39       | 38  | 35      | 34  | 37       | 37  | 47    | 45  | 43    | 43  | 63  | 63  | --   | --  | 74   | 72  | 76     | 75  | 68        | 67  |
| 15.....      | 64      | 59  | 51       | 49  | 38       | 38  | 34      | 33  | --       | --  | 47    | 47  | 45    | 43  | 64  | 63  | --   | --  | 76   | 74  | 78     | 75  | 70        | 68  |
| 16.....      | 65      | 59  | 50       | 47  | 39       | 38  | 33      | 33  | --       | --  | 47    | 46  | 45    | 45  | 64  | 63  | 71   | 69  | 76   | 75  | 78     | 76  | 70        | 68  |
| 17.....      | 64      | 59  | 47       | 47  | 40       | 39  | 33      | 33  | --       | --  | 46    | 46  | 46    | 45  | 63  | 60  | 72   | 71  | 76   | 74  | 77     | 75  | 68        | 65  |
| 18.....      | 64      | 60  | 47       | 45  | 40       | 39  | 33      | 32  | --       | --  | 46    | 46  | 49    | 46  | 61  | 60  | 73   | 72  | 76   | 73  | 75     | 73  | 68        | 65  |
| 19.....      | 63      | 61  | 45       | 45  | 39       | 39  | 32      | 32  | 36       | 36  | 46    | 46  | 51    | 49  | 61  | 61  | 73   | 72  | 78   | 75  | 73     | 71  | 68        | 67  |
| 20.....      | 64      | 62  | 46       | 45  | 40       | 39  | 32      | 32  | 36       | 36  | 46    | 44  | 54    | 51  | 61  | 59  | 72   | 71  | 81   | 77  | 73     | 71  | 69        | 68  |
| 21.....      | 64      | 62  | 47       | 45  | 41       | 40  | 32      | 32  | 36       | 36  | 44    | 44  | 55    | 54  | 59  | 58  | --   | --  | 81   | 79  | 73     | 70  | 69        | 69  |
| 22.....      | 64      | 63  | 45       | 42  | 43       | 41  | 36      | 32  | 37       | 36  | 44    | 44  | 56    | 55  | 59  | 58  | --   | --  | 81   | 78  | 72     | 70  | 69        | 68  |
| 23.....      | 65      | 62  | 42       | 41  | 43       | 43  | 35      | 35  | 39       | 37  | 44    | 44  | 58    | 56  | 60  | 59  | --   | --  | 79   | 77  | 71     | 69  | 68        | 66  |
| 24.....      | 65      | 60  | 42       | 39  | 43       | 40  | 35      | 35  | 40       | 39  | 44    | 44  | 60    | 58  | 60  | 60  | --   | --  | 77   | 73  | 71     | 68  | 66        | 64  |
| 25.....      | 63      | 60  | 39       | 40  | 38       | 35  | 35      | 35  | 42       | 40  | 44    | 43  | 61    | 60  | 60  | 60  | 72   | 70  | 74   | 73  | 68     | 66  | 64        | 62  |
| 26.....      | 62      | 60  | 39       | 39  | 38       | 38  | 35      | 35  | 44       | 42  | 43    | 42  | 63    | 61  | 62  | 60  | 72   | 70  | 74   | 72  | 68     | 67  | 64        | 63  |
| 27.....      | 61      | 57  | 41       | 39  | 38       | 37  | 35      | 34  | 44       | 41  | 42    | 42  | 63    | 62  | 62  | 61  | 72   | 71  | 74   | 73  | 69     | 67  | 64        | 61  |
| 28.....      | 60      | 56  | 39       | 38  | 37       | 37  | 34      | 34  | 41       | 39  | 42    | 42  | 62    | 61  | 61  | 59  | 71   | 66  | 75   | 74  | 69     | 68  | 61        | 59  |
| 29.....      | 61      | 57  | 40       | 38  | 37       | 36  | 34      | 34  | --       | --  | 43    | 42  | 61    | 60  | 62  | 61  | 67   | 66  | 73   | 71  | 68     | 60  | 58        | 56  |
| 30.....      | 61      | 58  | 40       | 38  | 36       | 35  | 34      | 34  | --       | --  | 45    | 43  | 62    | 60  | 64  | 62  | 69   | 67  | 76   | 74  | 73     | 70  | 59        | 58  |
| 31.....      | 62      | 60  | --       | --  | 35       | 34  | 34      | 34  | --       | --  | 45    | 45  | --    | --  | 65  | 64  | --   | --  | 78   | 75  | 74     | 71  | --        | --  |
| Average..... | 63      | 59  | 50       | 48  | 41       | 39  | 34      | 33  | 38       | 37  | 43    | 42  | 50    | 48  | 62  | 60  | 70   | 68  | 75   | 73  | 74     | 72  | 68        | 66  |

## WABASH RIVER BASIN--Continued

## EAST FORK WHITE RIVER AT SEYMOUR, IND.

LOCATION.--Temperature recorder at gaging station, 1,700 feet downstream from highway bridge, 1 mile north of Seymour, and 9.6 miles downstream from Sand Creek.

DRAINAGE AREA.--2,333 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1957.

EXTREMES, 1954-57.--Water temperatures: Maximum, 79°F Sept. 2, 3; minimum, freezing point on several days during January.

EXTREMES, 1954-57.--Water temperatures: Maximum, 84°F Aug. 2-7, 1955; minimum, freezing point many days during winter months.

REMARKS.--Some regulation by Seymour Water Company at dam upstream from the recorder. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 66      | 64  | 62       | 60  | 42       | 39  | 40      | 38  | 35       | 32  | 41    | 49  | 49    | 48  | 67  | 66  | 67   | 66  | 73   | 70  | 77     | 75  | 78        | 77  |
| 2.....       | 65      | 64  | 63       | 60  | 40       | 42  | 40      | 38  | 36       | 36  | 42    | 41  | 49    | 48  | 67  | 65  | 67   | 66  | 74   | 72  | 77     | 76  | 79        | 78  |
| 3.....       | 64      | 63  | 62       | 60  | 44       | 42  | 36      | 35  | 38       | 36  | 42    | 41  | 48    | 43  | 65  | 62  | 66   | 66  | 72   | 72  | 77     | 76  | 79        | 78  |
| 4.....       | 63      | 62  | 62       | 60  | 45       | 44  | 35      | 34  | 38       | 38  | 41    | 40  | 43    | 40  | 62  | 56  | 66   | 66  | 72   | 72  | 76     | 76  | 78        | 74  |
| 5.....       | 64      | 62  | 61       | 60  | 47       | 45  | 35      | 34  | 38       | 38  | 42    | 40  | 44    | 41  | 57  | 54  | 67   | 66  | 72   | 70  | 76     | 73  | 74        | 72  |
| 6.....       | 66      | 63  | 61       | 59  | 52       | 47  | 35      | 35  | 38       | 38  | 42    | 42  | 45    | 44  | 58  | 55  | 67   | 66  | 73   | 70  | 73     | 71  | 72        | 70  |
| 7.....       | 65      | 62  | 59       | 56  | 55       | 52  | 36      | 35  | 39       | 38  | 42    | 42  | 46    | 44  | 60  | 56  | 68   | 67  | 74   | 72  | 72     | 70  | 70        | 68  |
| 8.....       | 63      | 60  | 56       | 52  | 55       | 52  | 36      | 36  | 39       | 39  | 42    | 41  | 46    | 43  | 62  | 58  | 68   | 67  | 74   | 72  | 72     | 70  | 68        | 67  |
| 9.....       | 62      | 59  | 52       | 50  | 52       | 48  | 36      | 36  | 42       | 39  | 42    | 41  | 43    | 42  | 64  | 61  | 67   | 66  | 72   | 72  | 74     | 72  | 68        | 68  |
| 10.....      | 61      | 58  | 51       | 49  | 48       | 45  | 36      | 34  | 45       | 42  | 42    | 42  | 44    | 41  | 65  | 63  | 67   | 66  | 72   | 71  | 74     | 73  | 68        | 68  |
| 11.....      | 60      | 56  | 51       | 49  | 45       | 44  | 34      | 33  | 45       | 43  | 44    | 42  | 48    | 44  | 68  | 64  | 68   | 66  | 72   | 70  | 75     | 74  | 69        | 68  |
| 12.....      | 59      | 57  | 52       | 49  | 44       | 44  | 33      | 33  | 43       | 41  | 47    | 44  | 48    | 46  | 68  | 66  | 70   | 67  | 73   | 71  | 75     | 74  | 71        | 69  |
| 13.....      | 61      | 57  | 50       | 48  | 44       | 44  | 33      | 33  | 41       | 40  | 49    | 46  | 48    | 47  | 68  | 67  | 71   | 70  | 72   | 72  | 75     | 74  | 71        | 70  |
| 14.....      | 63      | 58  | 50       | 48  | 44       | 44  | 33      | 33  | 40       | 51  | 49    | 48  | 47    | 68  | 67  | 72  | 71   | 72  | 70   | 76  | 75     | 70  | 70        | 70  |
| 15.....      | 64      | 59  | 52       | 45  | 44       | 44  | 33      | 32  | 40       | 39  | 51    | 50  | 48    | 47  | 68  | 66  | 74   | 72  | 74   | 72  | 77     | 77  | 71        | 70  |
| 16.....      | 64      | 60  | 52       | 49  | 45       | 45  | 32      | 32  | 39       | 38  | 51    | 49  | 48    | 48  | 68  | 66  | 74   | 73  | 74   | 72  | 78     | 77  | 71        | 70  |
| 17.....      | 64      | 60  | 47       | 46  | 45       | 42  | 32      | 32  | 38       | 38  | 50    | 48  | 48    | 48  | 66  | 65  | 74   | 73  | 74   | 73  | 77     | 76  | 70        | 68  |
| 18.....      | 64      | 59  | 47       | 46  | 46       | 45  | 32      | 32  | 38       | 38  | 50    | 50  | 51    | 48  | 65  | 64  | 74   | 73  | 74   | 72  | 76     | 74  | 69        | 68  |
| 19.....      | 62      | 60  | 46       | 45  | 46       | 45  | 32      | 32  | 39       | 39  | 50    | 48  | 56    | 51  | 65  | 64  | 74   | 73  | 75   | 72  | 75     | 74  | 70        | 69  |
| 20.....      | 65      | 61  | 47       | 46  | 46       | 45  | 32      | 32  | 39       | 38  | 47    | 60  | 56    | 64  | 63  | 64  | 72   | 76  | 74   | 73  | 73     | 71  | 70        | 70  |
| 21.....      | 65      | 62  | 49       | 47  | 47       | 46  | 35      | 32  | 39       | 37  | 48    | 46  | 63    | 60  | 63  | 61  | 72   | 72  | 77   | 75  | 74     | 73  | 73        | 71  |
| 22.....      | 63      | 62  | 48       | 43  | 43       | 47  | 33      | 35  | 39       | 38  | 46    | 46  | 65    | 63  | 65  | 63  | 72   | 77  | 76   | 73  | 73     | 71  | 73        | 70  |
| 23.....      | 64      | 61  | 43       | 41  | 48       | 48  | 40      | 38  | 40       | 39  | 48    | 66  | 65    | 66  | 64  | 72  | 72   | 77  | 74   | 73  | 71     | 70  | 68        | 67  |
| 24.....      | 64      | 61  | 41       | 40  | 48       | 46  | 39      | 36  | 43       | 40  | 47    | 66  | 66    | 67  | 65  | 72  | 70   | 74  | 72   | 73  | 71     | 69  | 67        | 67  |
| 25.....      | 63      | 60  | 40       | 39  | 46       | 44  | 36      | 35  | 46       | 43  | 47    | 46  | 67    | 66  | 67  | 66  | 71   | 69  | 74   | 72  | 71     | 70  | 68        | 66  |
| 26.....      | 62      | 60  | 39       | 39  | 44       | 42  | 35      | 34  | 47       | 46  | 46    | 46  | 67    | 66  | 67  | 66  | 71   | 68  | 74   | 72  | 72     | 70  | 68        | 67  |
| 27.....      | 61      | 58  | 40       | 39  | 42       | 42  | 34      | 34  | 47       | 44  | 46    | 45  | 67    | 66  | 67  | 64  | 70   | 69  | 72   | 72  | 73     | 71  | 67        | 64  |
| 28.....      | 59      | 56  | 39       | 39  | 42       | 41  | 34      | 34  | 44       | 42  | 45    | 44  | 68    | 67  | 64  | 63  | 69   | 68  | 74   | 72  | 74     | 73  | 64        | 63  |
| 29.....      | 60      | 57  | 40       | 39  | 41       | 40  | 35      | 34  | --       | --  | 46    | 44  | 68    | 67  | 63  | 63  | 70   | 68  | 74   | 74  | 77     | 74  | 63        | 62  |
| 30.....      | 60      | 58  | 40       | 39  | 40       | 39  | 35      | 35  | --       | --  | 48    | 45  | 67    | 66  | 66  | 63  | 72   | 69  | 75   | 74  | 77     | 76  | 63        | 62  |
| 31.....      | 60      | 59  | --       | --  | 40       | 39  | 35      | 35  | --       | --  | 47    | --  | --    | --  | 66  | 66  | --   | --  | 76   | 75  | 78     | 77  | --        | --  |
| Average..... | 63      | 60  | 50       | 48  | 46       | 44  | 35      | 34  | 41       | 39  | 46    | 45  | 54    | 52  | 65  | 63  | 70   | 69  | 74   | 72  | 75     | 73  | 70        | 69  |

## WABASH RIVER BASIN--Continued

## WABASH RIVER NEAR NEW HAVEN, ILL.

LOCATION:--At bridge connecting Illinois State Highway 141 and Indiana State Highway 762, 5.2 miles northeast of New Haven, Gallatin County, 2.1 miles upstream from Mackeys Ferry, and 9.2 miles upstream from Little Wabash River.

DRAINAGE AREA.--29,500 square miles (approximately).

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum, 455 ppm Nov. 21-27, 29, 30; minimum, 179 ppm July 1, 3-10.

Hardness: Maximum, 318 ppm Nov. 21-27, 29, 30; minimum, 126 ppm July 1, 3-10.

Specific conductance: Maximum daily, 797 micromhos Nov. 26; minimum daily, 228 micromhos July 3-4.

Water temperatures: Maximum, 86°F Aug. 2, 9; minimum, freezing point Jan. 18, 29.

REMARKS:--Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year: October 1956 to September 1957

| Date of collection    | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 25°C) | Hardness as CaCO <sub>3</sub> |                         | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-----------------------|----------------------|------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|---------------------------------------------------|-------------------------------|-------------------------|------------------------------------|-------------------------------------------|-----|-------|
|                       |                      |                  |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                   | Calcium                       | Non-magnesium carbonate |                                    |                                           |     |       |
| Oct. 1-10, 1956 ...   |                      |                  | 8.3                        | 0.00      | 0.00           | 60           | 27             | 20          | 2.8           | 223                             | 82                         | 22            | 0.2          | 1.8                        | 346                                               | 261                           | 78                      |                                    | 554                                       | 7.5 | 8     |
| Oct. 11-20 .....      |                      |                  | 4.6                        | .01       | .04            | 60           | 25             | 20          | 2.7           | 234                             | 64                         | 24            | .2           | 2.3                        | 324                                               | 253                           | 61                      |                                    | 561                                       | 7.4 | 1     |
| Oct. 21-31 .....      |                      |                  | 12                         | .02       | .00            | 65           | 26             | 25          | 2.6           | 256                             | 66                         | 26            | .2           | 2.0                        | 356                                               | 269                           | 59                      |                                    | 601                                       | 7.6 | 1     |
| Nov. 1-10 .....       |                      |                  | 12                         | .05       | .00            | 67           | 30             | 29          | 2.8           | 264                             | 83                         | 31            | .3           | 2.3                        | 408                                               | 291                           | 74                      |                                    | 637                                       | 7.6 | 5     |
| Nov. 11-12, 18, 20    |                      |                  | 5.3                        | .05       | .00            | 68           | 29             | 28          | 2.8           | 263                             | 82                         | 32            | .4           | 2.2                        | 402                                               | 289                           | 73                      |                                    | 639                                       | 7.6 | 5     |
| Nov. 21-27, 29, 30    |                      |                  | 4.4                        | .07       | .00            | 73           | 33             | 36          | 2.9           | 265                             | 102                        | 45            | .3           | 2.9                        | 455                                               | 318                           | 101                     |                                    | 715                                       | 7.4 | 5     |
| Dec. 1-4, 6-10 .....  |                      |                  | 6.7                        | .01       | .03            | 74           | 26             | 32          | 2.8           | 260                             | 84                         | 37            | .3           | 5.4                        | 429                                               | 292                           | 78                      |                                    | 680                                       | 7.7 | 3     |
| Dec. 11-20 .....      |                      |                  | 9.0                        | .04       | .12            | 55           | 15             | 17          | 3.2           | 163                             | 66                         | 20            | .2           | 3.8                        | 278                                               | 199                           | 65                      |                                    | 452                                       | 7.3 | 20    |
| Dec. 21-31 .....      |                      |                  | 10                         | .01       | .00            | 70           | 25             | 21          | 2.5           | 224                             | 85                         | 26            | .2           | 6.2                        | 367                                               | 278                           | 94                      |                                    | 588                                       | 7.4 | 9     |
| Jan. 1-6, 9, 10, 1957 |                      |                  | 9.6                        | .02       | .01            | 73           | 26             | 18          | 2.1           | 241                             | 82                         | 24            | .3           | 8.2                        | 372                                               | 289                           | 92                      |                                    | 600                                       | 7.8 | 5     |
| Jan. 11-15, 18, 20.   |                      |                  | 9.4                        | .01       | .00            | 76           | 24             | 21          | 2.3           | 249                             | 88                         | 25            | .2           | 8.1                        | 394                                               | 288                           | 84                      |                                    | 627                                       | 8.0 | 4     |
| Jan. 21-31 .....      |                      |                  | 6.9                        | .04       | .00            | 50           | 15             | 15          | 2.5           | 152                             | 59                         | 20            | .2           | 7.5                        | 270                                               | 187                           | 62                      |                                    | 438                                       | 7.7 | 10    |
| Feb. 1-10 .....       |                      |                  | 9.4                        | .02       | .00            | 64           | 14             | 16          | 2.3           | 163                             | 69                         | 22            | .2           | 12                         | 300                                               | 217                           | 84                      |                                    | 492                                       | 7.7 | 7     |
| Feb. 11-20 .....      |                      |                  | 9.6                        | .04       | .08            | 53           | 17             | 11          | 1.8           | 157                             | 60                         | 15            | .3           | 11                         | 274                                               | 202                           | 74                      |                                    | 441                                       | 7.6 | 10    |
| Feb. 21-28 .....      |                      |                  | 10                         | .02       | .03            | 62           | 21             | 13          | 1.8           | 192                             | 70                         | 16            | .2           | 12                         | 320                                               | 241                           | 84                      |                                    | 511                                       | 7.8 | 10    |
| Mar. 1-10 .....       |                      |                  | 8.9                        | .06       | .08            | 57           | 18             | 12          | 1.9           | 172                             | 64                         | 17            | .3           | 13                         | 299                                               | 216                           | 75                      |                                    | 476                                       | 7.9 | 6     |
| Mar. 11-20 .....      |                      |                  | 8.3                        | .03       | .04            | 69           | 22             | 16          | 1.7           | 212                             | 76                         | 22            | .2           | 11                         | 348                                               | 263                           | 89                      |                                    | 568                                       | 8.0 | 5     |
| Mar. 21-31 .....      |                      |                  | 7.2                        | .04       | .02            | 64           | 22             | 18          | 1.6           | 198                             | 80                         | 24            | .2           | 6.5                        | 336                                               | 250                           | 88                      |                                    | 537                                       | 7.5 | 6     |
| Apr. 1-3-10 .....     |                      |                  | 6.4                        | .02       | .08            | 40           | 12             | 9.2         | 2.0           | 116                             | 46                         | 12            | .2           | 5.4                        | 205                                               | 150                           | 54                      |                                    | 336                                       | 7.5 | 8     |
| Apr. 11-20 .....      |                      |                  | 10                         | .06       | .00            | 39           | 11             | 5.0         | 2.1           | 112                             | 39                         | 7.5           | .6           | 12                         | 195                                               | 143                           | 50                      |                                    | 293                                       | 7.7 | 10    |
| Apr. 21-30 .....      |                      |                  | 12                         | .10       | .00            | 54           | 16             | 7.0         | 2.0           | 157                             | 64                         | 11            | .4           | 12                         | 262                                               | 201                           | 72                      |                                    | 388                                       | 7.5 | 10    |
| May 1-10 .....        |                      |                  | 11                         | .01       | .00            | 60           | 16             | 7.1         | 2.1           | 192                             | 58                         | 10            | .4           | 11                         | 282                                               | 216                           | 58                      |                                    | 434                                       | 7.7 | 10    |
| May 11-20 .....       |                      |                  | 10                         | .17       | .00            | 60           | 19             | 8.6         | 2.0           | 196                             | 58                         | 14            | .1           | 8.8                        | 292                                               | 228                           | 67                      |                                    | 443                                       | 7.7 | 5     |
| May 21-22, 24-31 ..   |                      |                  | 11                         | .05       | .00            | 42           | 14             | 7.4         | 2.0           | 137                             | 44                         | 11            | .2           | 6.8                        | 224                                               | 163                           | 50                      |                                    | 334                                       | 7.5 | 5     |

|                                          |     |      |      |    |     |     |     |     |    |     |     |     |     |     |    |     |     |    |
|------------------------------------------|-----|------|------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|----|
| June 1-10, 1957.....                     | 15  | 0.15 | 0.00 | 50 | 16  | 8.4 | 2.0 | 171 | 44 | 10  | 0.1 | 5.2 | 245 | 191 | 51 | 396 | 7.2 | 10 |
| June 11-20.....                          | 13  | .04  | .01  | 50 | 16  | 8.7 | 2.2 | 171 | 46 | 11  | .2  | 4.2 | 260 | 191 | 51 | 409 | 7.4 | 10 |
| June 21-30.....                          | 16  | .03  | .00  | 57 | 18  | 8.8 | 2.4 | 194 | 48 | 12  | .2  | 5.4 | 282 | 216 | 57 | 449 | 7.4 | 11 |
| July 1-3-10.....                         | 11  | .80  | .03  | 36 | 8.8 | 4.0 | 1.6 | 120 | 27 | 6.2 | .3  | 6.4 | 179 | 126 | 28 | 279 | 7.5 | 8  |
| July 11-20.....                          | 16  | .07  | .01  | 50 | 14  | 6.6 | 2.4 | 168 | 38 | 9.3 | .3  | 7.1 | 249 | 183 | 45 | 381 | 7.6 | 6  |
| July 21-31.....                          | 13  | .04  | .00  | 55 | 17  | 8.7 | 2.5 | 191 | 47 | 11  | .3  | 6.5 | 268 | 207 | 50 | 436 | 7.6 | 6  |
| Aug. 1-10.....                           | 13  | .00  | .00  | 69 | 22  | 12  | 2.3 | 243 | 65 | 15  | .7  | 5.6 | 328 | 263 | 64 | 534 | 7.8 | 6  |
| Aug. 11-20.....                          | 17  | .03  | .02  | 67 | 23  | 14  | 2.2 | 248 | 68 | 18  | .2  | 2.1 | 341 | 262 | 58 | 548 | 7.3 | 5  |
| Aug. 21-31.....                          | 10  | .02  | .01  | 60 | 23  | 16  | 2.6 | 224 | 65 | 19  | .2  | 1.8 | 312 | 244 | 60 | 515 | 7.3 | 5  |
| Sept. 1-10.....                          | 9.6 | .00  | .00  | 60 | 24  | 17  | 2.5 | 224 | 67 | 20  | .3  | 1.9 | 322 | 248 | 64 | 535 | 7.3 | 6  |
| Sept. 11-20.....                         | 8.0 | .19  | .00  | 64 | 27  | 18  | 1.8 | 245 | 71 | 22  | .3  | 2.2 | 347 | 271 | 70 | 578 | 7.4 | 5  |
| Sept. 21-30.....                         | 8.8 | .00  | .00  | 62 | 26  | 19  | 2.6 | 227 | 75 | 24  | .4  | 3.2 | 344 | 262 | 76 | 571 | 7.2 | 6  |
| Time-weighted average <sup>a</sup> ..... |     |      |      |    |     |     |     |     |    |     |     |     |     |     |    |     |     |    |
|                                          | 10  | 0.06 | 0.02 | 59 | 20  | 15  | 2.3 | 199 | 64 | 19  | 0.3 | 6.3 | 309 | 229 | 66 | 496 | --  | 7  |

<sup>a</sup> Represents 96 percent of days.

## WABASH RIVER BASIN--Continued

## WABASH RIVER NEAR NEW HAVEN, ILL--Continued

Temperature (°F) of water, water year October 1956 to September 1957

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 60   | --   | 44   | 35   | 43   | 53   | 72  | 69   | 79   | 85   | --    |
| 2       | 70   | 64   | 40   | 40   | 38   | 47   | --   | 73  | 73   | --   | 86   | --    |
| 3       | 70   | 62   | 38   | 40   | 39   | 45   | 52   | 70  | 71   | 79   | 83   | 80    |
| 4       | 71   | 65   | 41   | 37   | 40   | 45   | 53   | 69  | 71   | 79   | 84   | 80    |
| 5       | 69   | 65   | --   | --   | 40   | 45   | --   | 64  | 72   | 79   | 80   | 72    |
| 6       | 69   | 63   | 53   | 40   | 38   | 45   | 52   | 60  | 72   | 78   | 81   | 74    |
| 7       | 67   | 60   | 52   | --   | 40   | 45   | 53   | 62  | 72   | 79   | 83   | 72    |
| 8       | 67   | 60   | 45   | --   | 41   | 43   | 52   | 63  | 72   | 80   | 84   | 73    |
| 9       | 62   | 58   | 50   | --   | 45   | 43   | 54   | 70  | 71   | 80   | 86   | 70    |
| 10      | 62   | --   | 47   | --   | 46   | 43   | 55   | 68  | 73   | 79   | 80   | 71    |
| 11      | 62   | 55   | 45   | 40   | 41   | 43   | 55   | --  | 74   | 80   | 82   | 71    |
| 12      | 62   | --   | 45   | 42   | 42   | 47   | 48   | 70  | 76   | 81   | 82   | 73    |
| 13      | 63   | --   | 44   | 38   | --   | 50   | 50   | 70  | 77   | 80   | 83   | 73    |
| 14      | 64   | --   | 44   | 34   | 45   | 53   | 50   | 68  | 74   | 80   | 84   | 72    |
| 15      | 66   | --   | 45   | 33   | 44   | 43   | 48   | 68  | 75   | 79   | 83   | --    |
| 16      | 66   | --   | 45   | --   | 43   | 50   | 50   | 70  | 77   | 80   | 83   | 70    |
| 17      | 67   | --   | 45   | --   | 43   | 55   | 50   | 70  | 79   | 82   | 82   | 70    |
| 18      | 63   | 49   | 43   | 32   | 45   | 50   | 54   | 70  | 80   | 80   | 81   | 72    |
| 19      | 61   | --   | 50   | 35   | 45   | 53   | 56   | 71  | 77   | 82   | 81   | 75    |
| 20      | 68   | 50   | 50   | 35   | 45   | 51   | 60   | 73  | 76   | 80   | 80   | 73    |
| 21      | 65   | 50   | 50   | 40   | 46   | 52   | 58   | 71  | 75   | 84   | 80   | 73    |
| 22      | 68   | 46   | 50   | 43   | 46   | 50   | 60   | 70  | 79   | 85   | 79   | 73    |
| 23      | 67   | 46   | 48   | 35   | 48   | 52   | 67   | --  | 79   | 80   | 79   | 70    |
| 24      | 65   | 40   | 44   | 38   | 49   | 52   | 68   | 68  | 78   | 78   | 78   | 73    |
| 25      | 67   | 40   | 48   | 44   | 50   | 52   | 68   | 70  | 78   | 80   | 78   | 68    |
| 26      | 62   | 39   | 45   | 39   | 48   | 53   | 70   | 69  | 77   | 80   | 78   | 70    |
| 27      | 64   | 36   | 44   | 42   | 45   | 52   | 70   | 68  | 76   | 81   | 80   | 70    |
| 28      | 65   | --   | 43   | --   | 45   | 50   | 73   | 67  | 75   | 79   | 79   | 65    |
| 29      | 65   | 37   | 45   | 31   | --   | 50   | 69   | 68  | 76   | 80   | 80   | 65    |
| 30      | 64   | 39   | 46   | 36   | --   | 51   | 72   | 69  | 76   | 80   | --   | 65    |
| 31      | 60   | --   | 45   | 40   | --   | 52   | --   | 70  | --   | 82   | --   | --    |
| Average | 66   | --   | 46   | --   | 43   | 52   | 58   | 69  | 75   | 80   | 82   | 72    |

TRADEWATER RIVER BASIN  
TRADEWATER RIVER AT OLNEY, KY.

LOCATION --At gaging station at highway bridge at Olney, Hopkins County, 1.1 miles upstream from Cave Creek, 5.1 miles downstream from Flynn Creek, and 9.1 miles northeast of Princeton.

DRAINAGE AREA --255 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to August 1950, October 1951 to September 1957.

Water temperatures: October 1951 to September 1957.

Sediment records: October 1951 to September 1957.

EXTREMES, 1958-57 --Dissolved solids: Maximum, 977 ppm Sept. 5-30; minimum, 83 ppm May 20-26.

Hardness: Maximum, 595 ppm Sept. 5-30; minimum, 42 ppm Jan. 24-25, May 20-26.

Specific conductance: Maximum daily, 1,320 micromhos Dec. 23; minimum daily, 83 micromhos May 24.

Water temperatures: Maximum, 81 F Aug. 3; minimum, freezing point Jan. 13-18, 20.

Sediment concentrations: Maximum daily, 305 ppm July 20; minimum daily, 0 tons on many days during October and November.

Sediment loads: Maximum daily, 1,440 tons May 23; minimum daily, 0 tons on many days during October to November.

EXTREMES, 1951-57 --Dissolved solids: Maximum, 1,278 ppm Dec. 23-26, 1955; minimum, 54 ppm Sept. 21-30, 1954.

Hardness: Maximum, 746 ppm Dec. 23-26, 1955; minimum, 31 ppm Sept. 21-30, 1954.

Specific conductance: Maximum daily, 1,390 micromhos Dec. 23, 25-26, 1955; minimum daily, 51.4 micromhos Mar. 23, 1952.

Water temperatures: Maximum, 87 F July 26, 29, 1952; minimum, freezing point on several days during winter months.

Sediment concentrations (1952-57): Maximum daily, 764 ppm June 5, 1954; minimum daily, no flow on many days during 1952 to 1956.

Sediment loads (1952-57): Maximum daily, 1,440 tons May 23, 1957; minimum daily, 0 tons on many days during 1952 to 1956.

REMARKS --Acidity determined to pH 7.0. Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1505.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Alum-<br>inum<br>(Al) | Iron<br>(Fe) | Man-<br>gan-<br>ese<br>(Mn) | Cal-<br>cium<br>(Ca) | Mag-<br>ne-<br>sium<br>(Mg) | So-<br>dium<br>(Na) | Po-<br>tas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sul-<br>fate<br>(SO <sub>4</sub> ) | Chlo-<br>ride<br>(Cl) | Fluo-<br>ride<br>(F) | Ni-<br>trate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Acidity<br>(H <sup>+</sup> ) |                        | Specific<br>conduct-<br>ance<br>(microm-<br>hos<br>at 25°C) | pH   | Color |
|----------------------|----------------------|----------------------------|-----------------------|--------------|-----------------------------|----------------------|-----------------------------|---------------------|----------------------------|-----------------------------------------|------------------------------------|-----------------------|----------------------|------------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|------------------------------|------------------------|-------------------------------------------------------------|------|-------|
|                      |                      |                            |                       |              |                             |                      |                             |                     |                            |                                         |                                    |                       |                      |                                    |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate | Im-<br>med-<br>iate          | Poten-<br>tial<br>free |                                                             |      |       |
| Oct. 1-23, 1956....  | 0.00                 | --                         | 9.0                   | 0.39         | 13                          | 86                   | 49                          | 12                  | 3.8                        | 0                                       | 486                                | 5                     | 1.1                  | 0.6                                | 729                                                                 | 416                              | 416                    | 1.1                          | 0.8                    | 900                                                         | 4.30 | 1     |
| Oct. 24, Nov. 14.... | .00                  | --                         | 8.0                   | .73          | 12                          | 85                   | 45                          | 12                  | 3.8                        | 0                                       | 456                                | 7.0                   | 1.0                  | .1                                 | 710                                                                 | 397                              | 397                    | .7                           | .7                     | 864                                                         | 4.40 | 1     |
| Nov. 15-20.....      | .00                  | --                         | 5.0                   | .48          | 11                          | 85                   | 45                          | 11                  | 4.4                        | 0                                       | 446                                | 4.0                   | .8                   | .5                                 | 690                                                                 | 397                              | 397                    | .6                           | .6                     | 865                                                         | 4.40 | 1     |
| Nov. 21-Dec. 9....   | 1.05                 | 12                         | 4.3                   | .30          | 15                          | 83                   | 46                          | 13                  | 4.8                        | 0                                       | 423                                | 7.9                   | .8                   | .7                                 | 652                                                                 | 396                              | 396                    | .5                           | .4                     | 817                                                         | 4.5  | 1     |
| Dec. 10-14.....      | 12.2                 | 14                         | 5.9                   | .19          | 19                          | 88                   | 49                          | 17                  | 4.8                        | 0                                       | 500                                | 8.0                   | .8                   | .8                                 | 784                                                                 | 421                              | 421                    | .1                           | .7                     | 934                                                         | 4.5  | 2     |
| Dec. 15-21.....      | 24.0                 | 9.2                        | 12.8                  | .25          | 11                          | 84                   | 34                          | 18                  | 5.5                        | 2                                       | 338                                | 11                    | .3                   | .6                                 | 538                                                                 | 300                              | 300                    | .1                           | .1                     | 706                                                         | 5.1  | 2     |
| Dec. 22-24.....      | 148                  | 14                         | 12                    | .96          | 19                          | 87                   | 63                          | 17                  | 3.8                        | 0                                       | 558                                | 5.5                   | .8                   | 1.0                                | 875                                                                 | 476                              | 476                    | 1.3                          | 1.2                    | 1,000                                                       | 4.10 | 2     |
| Dec. 25-26, 28-31.   | 196.8                | --                         | 3.9                   | .19          | .56                         | 86                   | 39                          | 9.3                 | 3.4                        | 0                                       | 313                                | 6.9                   | .5                   | .3                                 | 487                                                                 | 300                              | 300                    | .6                           | .8                     | 653                                                         | 4.5  | 3     |
| Jan. 1-15, 1957....  | 22.3                 | --                         | 8.8                   | .14          | .76                         | 73                   | 54                          | 11                  | 3.5                        | 0                                       | 440                                | 5.1                   | .9                   | .8                                 | 697                                                                 | 404                              | 404                    | 1.2                          | 1.2                    | 852                                                         | 4.5  | 2     |
| Jan. 14-19.....      | 32.5                 | --                         | 6.6                   | .43          | 15                          | 85                   | 62                          | 14                  | 2.3                        | 0                                       | 509                                | 4.0                   | .7                   | .3                                 | 726                                                                 | 467                              | 467                    | 1.5                          | 1.4                    | 976                                                         | 4.30 | 1     |
| Jan. 20-23.....      | 424                  | --                         | 4.6                   | .26          | 8.5                         | 52                   | 38                          | 9.0                 | 2.2                        | 0                                       | 309                                | 3.4                   | .6                   | .3                                 | 447                                                                 | 286                              | 286                    | .7                           | .6                     | 638                                                         | 4.5  | 2     |
| Jan. 24-25.....      | 1,395                | 5.5                        | .3                    | .79          | .11                         | 9.8                  | 4.3                         | 2.2                 | 2.8                        | 11                                      | 38                                 | 1.5                   | --                   | .9                                 | 98                                                                  | 42                               | 33                     | .0                           | .0                     | 121                                                         | 6.6  | 25    |
| Jan. 26-29.....      | 1,360                | --                         | .3                    | .39          | 1.2                         | 20                   | 13                          | 3.7                 | 2.4                        | 6                                       | 100                                | 2.2                   | .3                   | 1.0                                | 165                                                                 | 104                              | 98                     | .1                           | .0                     | 242                                                         | 5.6  | 5     |
| Jan. 30-Feb. 1....   | 1,463                | --                         | .4                    | .27          | .00                         | 11                   | 4.4                         | 2.4                 | 1.6                        | 12                                      | 39                                 | 2.0                   | .3                   | 1.2                                | 91                                                                  | 46                               | 36                     | .0                           | .0                     | 120                                                         | 6.6  | 35    |
| Feb. 2-6.....        | 1,441                | --                         | .2                    | .28          | 1.4                         | 18                   | 9.3                         | 3.6                 | 1.2                        | 5                                       | 80                                 | 6.5                   | .2                   | 1.5                                | 123                                                                 | 63                               | 79                     | .0                           | .0                     | 212                                                         | 6.2  | 4     |
| Feb. 7-10.....       | 1,310                | --                         | .3                    | .13          | 1.5                         | 17                   | 3.3                         | 5.3                 | 1.2                        | 15                                      | 49                                 | 6.5                   | .3                   | 1.1                                | 96                                                                  | 56                               | 44                     | .0                           | .0                     | 166                                                         | 6.7  | 3     |
| Feb. 11-15.....      | 764                  | --                         | .2                    | .27          | 1.4                         | 24                   | 11                          | 4.4                 | 1.4                        | 3                                       | 100                                | 5.0                   | .2                   | 1.9                                | 168                                                                 | 105                              | 103                    | .1                           | .0                     | 255                                                         | 5.3  | 2     |

## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection          | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micromhos at 25°C) | pH  | Color |
|-----------------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|------------------------------------------|-----|-------|
|                             |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./nesium           | Non-carbonate | Immediate                 | Potential free |                                          |     |       |
| Feb. 16-26, 1957            | 289                  | --                         | 0.1           | 0.38      | 2.6            | 27           | 15             | 5.3         | 1.4           | 6                               | 128                        | 7.0           | 0.2          | 1.2                        | 207                                                | 129                           | 124           | 0.1                       | 0.0            | 309                                      | 6.3 | 1     |
| Feb. 27-Mar. 5...           | 900                  | 8.5                        | .1            | .27       | 3.8            | 18           | 10             | 3.7         | .9            | 8                               | 78                         | 2.2           | .2           | 1.1                        | 146                                                | 86                            | 80            | .0                        | .0             | 219                                      | 6.8 | 2     |
| Mar. 6-19 .....             | 218                  | 9.3                        | .1            | .10       | 3.3            | 29           | 17             | 5.4         | 1.0           | 6                               | 136                        | 2.8           | .2           | .6                         | 225                                                | 143                           | 138           | .0                        | .0             | 332                                      | 6.3 | 3     |
| Mar. 20-25 .....            | 287                  | --                         | .0            | .14       | 3.3            | 29           | 15             | 5.8         | 1.1           | 10                              | 131                        | 3.4           | .2           | .4                         | 220                                                | 134                           | 126           | .0                        | .0             | 321                                      | 6.7 | 2     |
| Mar. 26-28 .....            | 1,170                | --                         | .2            | .34       | .99            | 14           | 5.0            | 2.6         | 1.4           | 13                              | 44                         | 2.6           | .2           | .9                         | 101                                                | 56                            | 45            | .0                        | .0             | 144                                      | 6.9 | 2     |
| Mar. 29-Apr. 4...           | 623                  | --                         | .1            | .23       | 2.5            | 22           | 12             | 4.5         | 1.2           | 10                              | 97                         | 3.0           | .2           | .6                         | 169                                                | 105                           | 96            | .0                        | .0             | 251                                      | 6.8 | 2     |
| Apr. 5-10 .....             | 2,162                | --                         | .2            | .85       | .26            | 12           | 4.4            | 2.2         | 1.0           | 12                              | 39                         | 1.2           | .1           | .8                         | 88                                                 | 48                            | 38            | .0                        | .0             | 122                                      | 7.0 | 15    |
| Apr. 11-25 .....            | 624                  | --                         | .2            | .04       | 2.1            | 23           | 12             | 3.8         | .8            | 9                               | 98                         | 2.0           | .1           | .2                         | 177                                                | 107                           | 100           | .0                        | .1             | 255                                      | 6.5 | 3     |
| Apr. 26-May 2...            | 110                  | --                         | .1            | .19       | 2.7            | 30           | 18             | 5.7         | 1.2           | 7                               | 144                        | 2.8           | .2           | .4                         | 241                                                | 149                           | 144           | .0                        | .0             | 341                                      | 6.7 | 1     |
| May 3-16 .....              | 61.4                 | 12                         | 1.5           | .15       | 5.2            | 45           | 26             | 7.3         | 1.8           | 2                               | 231                        | 3.2           | .3           | .5                         | 366                                                | 219                           | 218           | .2                        | .2             | 491                                      | 4.7 | 1     |
| May 17-19 .....             | 254                  | --                         | 1.3           | .20       | 5.1            | 42           | 21             | 6.5         | 1.7           | 2                               | 206                        | 3.0           | .5           | .5                         | 322                                                | 192                           | 190           | .2                        | .2             | 448                                      | 4.7 | 1     |
| May 20-26 .....             | 3,687                | 7.5                        | .3            | .54       | .56            | 10           | 4.0            | 1.1         | 1.5           | 10                              | 35                         | .6            | .1           | 1.1                        | 83                                                 | 42                            | 34            | .0                        | .0             | 106                                      | 6.6 | 4     |
| May 27-31 .....             | 1,962                | 10                         | .1            | .15       | 2.2            | 20           | 11             | 2.7         | 1.6           | 5                               | 94                         | 1.4           | .2           | .6                         | 174                                                | 95                            | 91            | .0                        | .0             | 224                                      | 6.3 | 1     |
| June 1-11 .....             | 180                  | 13                         | 1.2           | .29       | 5.3            | 36           | 24             | 5.2         | 1.6           | 1                               | 201                        | 2.0           | .2           | .6                         | 320                                                | 189                           | 188           | .3                        | .3             | 417                                      | 4.6 | 1     |
| June 12-15 .....            | 58.0                 | 8.1                        | .1            | .56       | 2.0            | 20           | 10             | 3.1         | 2.4           | 14                              | 80                         | 1.5           | .1           | 1.7                        | 136                                                | 91                            | 80            | .0                        | .0             | 206                                      | 7.1 | 1     |
| June 16-26 .....            | 18.9                 | 10                         | .0            | .23       | 5.1            | 34           | 22             | 4.9         | 2.6           | 9                               | 170                        | 2.5           | .5           | .5                         | 255                                                | 176                           | 168           | .0                        | .0             | 373                                      | 6.6 | 1     |
| June 27-Aug. 1...           | 70.5                 | 14                         | 1.8           | .17       | 9.8            | 53           | 41             | 8.6         | 4.1           | 0                               | 324                        | 2.8           | .3           | .5                         | 468                                                | 301                           | 301           | .4                        | .2             | 625                                      | 4.5 | 3     |
| June 29-July 2...           | 386                  | 7.8                        | 1.6           | .05       | 3.9            | 28           | 18             | 6.3         | 2.0           | 0                               | 151                        | 3.0           | .4           | 1.2                        | 236                                                | 144                           | 144           | .3                        | .3             | 344                                      | 4.5 | 2     |
| July 3-18 .....             | 25.4                 | 10                         | 1.2           | .00       | 5.5            | 40           | 24             | 6.3         | 2.0           | 2                               | 216                        | 3.0           | .4           | .2                         | 326                                                | 199                           | 197           | .2                        | .2             | 462                                      | 4.8 | 2     |
| July 19-24 .....            | 31.5                 | 6.1                        | .3            | .26       | .21            | 19           | 5.2            | 3.4         | 2.7           | 42                              | 36                         | 1.0           | .2           | 3.0                        | 118                                                | 69                            | 34            | .0                        | .0             | 167                                      | 7.2 | 8     |
| July 25-Aug. 2...           | 33.8                 | 7.3                        | .2            | .66       | .65            | 21           | 6.8            | 3.4         | 2.6           | 38                              | 52                         | 1.0           | .2           | 2.6                        | 132                                                | 80                            | 50            | .0                        | .0             | 194                                      | 7.4 | 15    |
| Aug. 3-13 .....             | 7.01                 | 9.6                        | .1            | .28       | 3.1            | 36           | 19             | 5.7         | 2.5           | 32                              | 142                        | 2.0           | .4           | 1.6                        | 264                                                | 168                           | 142           | .0                        | .0             | 373                                      | 7.1 | 7     |
| Aug. 14-23 .....            | 13.2                 | --                         | .1            | .01       | .03            | 41           | 24             | 7.5         | 2.4           | 29                              | 187                        | 4.0           | .5           | 2.0                        | 304                                                | 201                           | 177           | .0                        | .0             | 441                                      | 7.0 | 7     |
| Aug. 24-Sept. 4...          | 2.80                 | --                         | 3.5           | .02       | 19             | 97           | 82             | 16          | 3.6           | 2                               | 610                        | 7.0           | .9           | 1.5                        | 892                                                | 580                           | 578           | .5                        | .4             | 1,080                                    | 4.6 | 1     |
| Sept. 5-30 .....            | .30                  | 12                         | 4.2           | .22       | 22             | 108          | 79             | 16          | 4.3           | 0                               | 664                        | 7.0           | 1.0          | 1.4                        | 977                                                | 595                           | 595           | .6                        | .6             | 1,160                                    | 4.5 | 1     |
| Time-weighted average ..... | 328                  | --                         | 2.8           | 0.28      | 7.3            | 52           | 32             | 8.9         | 2.7           | 6                               | 282                        | 4.4           | 0.5          | 0.9                        | 439                                                | 261                           | 256           | 0.4                       | 0.3            | 565                                      | --  | 3     |

## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957.  
(Twice-daily measurements at approximately 8 a.m. and 5 p.m.)

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 62      | 64   | 57       | 59   | 37       | 40   | 39      | 39   | 38       | 37   | 44    | 45   | 52    | 54   | 68   | 70   | 67   | 69   | 71   | 74   | 75     | 77   | 75        | 77   |
| 2.....       | 65      | 66   | 59       | 39   | 41       | 36   | 36      | 37   | 39       | 44   | 44    | 44   | 54    | 56   | 69   | 69   | 67   | 67   | 72   | 75   | 76     | 79   | 76        | 77   |
| 3.....       | 66      | 67   | 57       | 59   | 41       | 44   | 35      | 36   | 41       | 42   | 43    | 43   | 56    | 57   | 67   | 68   | 67   | 68   | 74   | 77   | 78     | 81   | 76        | 77   |
| 4.....       | 66      | 67   | 57       | 59   | 41       | 44   | 36      | 37   | 43       | 43   | 41    | 41   | 57    | 59   | 61   | 63   | 68   | 68   | 75   | 78   | 78     | 79   | 76        | 77   |
| 5.....       | 64      | 66   | 57       | 59   | 44       | 50   | 36      | 37   | 43       | 44   | 41    | 43   | 58    | 57   | 60   | 61   | 68   | 68   | 75   | 78   | 75     | 77   | 71        | 74   |
| 6.....       | 64      | 66   | 58       | 59   | 47       | 50   | 36      | 37   | 44       | 44   | 43    | 44   | 53    | 57   | 58   | 61   | 68   | 70   | 75   | 78   | 72     | 77   | 71        | 73   |
| 7.....       | 63      | 65   | 57       | 57   | 49       | 47   | 37      | 37   | 44       | 45   | 43    | 43   | 57    | 58   | 59   | 62   | 70   | 72   | 76   | 79   | 72     | 76   | 71        | 71   |
| 8.....       | 60      | 65   | 54       | 54   | 46       | 45   | 36      | 37   | 45       | 47   | 41    | 42   | 57    | 53   | 59   | 62   | 71   | 73   | 76   | 79   | 74     | 77   | 68        | 69   |
| 9.....       | 59      | 61   | 50       | 52   | 44       | 44   | 38      | 41   | 48       | 51   | 41    | 42   | 51    | 54   | 62   | 64   | 71   | 72   | 77   | 78   | 73     | 76   | 68        | 69   |
| 10.....      | 57      | 60   | 50       | 51   | 42       | 43   | 38      | 37   | 50       | 51   | 40    | 43   | 53    | 57   | 64   | 66   | 71   | 72   | 76   | 77   | 73     | 78   | 68        | 70   |
| 11.....      | 57      | 60   | 50       | 52   | 42       | 44   | 36      | 37   | 50       | 50   | 46    | 47   | 55    | 58   | 65   | 67   | 72   | 75   | 74   | 77   | 76     | 79   | 69        | 72   |
| 12.....      | 58      | 61   | 51       | 51   | 44       | 44   | 36      | 38   | 48       | 48   | 46    | 49   | 54    | 54   | 67   | 69   | 73   | 76   | 75   | 78   | 77     | 78   | 71        | 75   |
| 13.....      | 59      | 61   | 48       | 50   | 42       | 43   | 37      | 37   | 46       | 47   | 46    | 51   | 49    | 51   | 68   | 69   | 74   | 75   | 76   | 78   | 77     | 79   | 71        | 72   |
| 14.....      | 58      | 64   | 50       | 54   | 42       | 43   | 33      | 33   | 45       | 46   | 50    | 54   | 50    | 52   | 68   | 69   | 75   | 77   | 76   | 77   | 77     | 79   | 71        | 73   |
| 15.....      | 58      | 64   | 54       | 54   | 44       | 45   | 32      | 32   | 43       | 44   | 51    | 53   | 49    | 52   | 68   | 69   | 76   | 78   | 76   | 78   | 77     | 79   | 72        | 75   |
| 16.....      | 58      | 64   | 49       | 50   | 45       | 46   | 32      | 32   | 42       | 43   | 50    | 52   | 52    | 53   | 67   | 69   | 77   | 80   | 76   | 79   | 78     | 78   | 71        | 72   |
| 17.....      | 58      | 63   | 46       | 48   | 43       | 45   | 32      | 31   | 41       | 42   | 51    | 53   | 53    | 55   | 68   | 69   | 78   | 80   | 77   | 79   | 77     | 78   | 69        | 71   |
| 18.....      | 57      | 60   | 46       | 48   | 43       | 44   | 32      | 33   | 41       | 42   | 52    | 53   | 55    | 57   | 69   | 71   | 78   | 80   | 78   | 79   | 75     | 77   | 71        | 72   |
| 19.....      | 58      | 61   | 45       | 48   | 42       | 43   | --      | 34   | 40       | 41   | 52    | 51   | 59    | 62   | 68   | 67   | 76   | 78   | 76   | 77   | 74     | 76   | 71        | 72   |
| 20.....      | 60      | 61   | 48       | 48   | 44       | 47   | 34      | 32   | 38       | 40   | 49    | 51   | 63    | 67   | 64   | 65   | 79   | 76   | 78   | 76   | 72     | 74   | 71        | 72   |
| 21.....      | 61      | 61   | 47       | 48   | 46       | 46   | 36      | 35   | 37       | 41   | 49    | 49   | 67    | 68   | 66   | 68   | 76   | 79   | 77   | 79   | 70     | 73   | 72        | 74   |
| 22.....      | 61      | 62   | 44       | 45   | 48       | 46   | 38      | 48   | 39       | --   | 48    | 49   | 68    | 68   | 68   | 67   | 77   | 78   | 77   | 78   | 70     | 73   | 72        | 71   |
| 23.....      | 61      | 62   | 42       | 43   | 48       | 49   | 45      | 46   | 42       | 44   | 48    | 49   | 67    | 68   | 68   | 67   | 77   | 78   | 78   | 78   | 70     | 74   | 68        | 70   |
| 24.....      | 60      | 62   | 39       | 41   | 46       | 48   | 41      | 42   | 43       | 45   | 49    | 50   | 66    | 68   | 67   | 68   | 76   | 77   | 78   | 77   | 71     | 71   | 67        | 69   |
| 25.....      | 61      | 63   | 41       | 42   | 45       | 46   | 42      | 42   | 47       | 48   | 49    | 50   | 65    | 67   | 68   | 69   | 75   | 77   | 74   | 76   | 71     | 73   | 67        | 69   |
| 26.....      | 61      | 61   | 40       | 40   | 42       | 44   | 41      | 40   | 49       | 51   | 49    | 50   | 66    | 68   | 68   | 70   | 74   | 75   | 75   | 77   | 70     | 73   | 67        | 69   |
| 27.....      | 58      | 59   | 39       | 40   | 43       | 44   | 39      | 39   | 50       | --   | 48    | 48   | 66    | 71   | 68   | 70   | 72   | 74   | 76   | 78   | 71     | 74   | 66        | 68   |
| 28.....      | 57      | 58   | 39       | 41   | 42       | 42   | 38      | 39   | 48       | 47   | 47    | 48   | 70    | 71   | 68   | 70   | 72   | 74   | 76   | 78   | 72     | 75   | 65        | 67   |
| 29.....      | 56      | 60   | 39       | 40   | 41       | 42   | 39      | 38   | --       | --   | 48    | 49   | 69    | 71   | 67   | 68   | 71   | 72   | 75   | 76   | 73     | 75   | 64        | 66   |
| 30.....      | 57      | 59   | 38       | 40   | 41       | 42   | 38      | 38   | --       | --   | 49    | 51   | 68    | 70   | 68   | 68   | 72   | 72   | 75   | 76   | 74     | 77   | 64        | 66   |
| 31.....      | 57      | 59   | --       | --   | 41       | 42   | 38      | 38   | --       | --   | 50    | 52   | --    | --   | 67   | 68   | --   | --   | 74   | 75   | 75     | 77   | --        | --   |
| Average..... | 60      | 62   | 48       | 50   | 43       | 45   | 37      | 37   | 44       | 45   | 47    | 48   | 59    | 60   | 66   | 67   | 73   | 74   | 75   | 77   | 74     | 76   | 70        | 72   |



## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  |                       |                          |              | 0                     | --                       | 0            | 1.0                   | 2                        | (t)          |
| 2.....  |                       |                          |              | 0                     | --                       | 0            | 1.1                   | 2                        | (t)          |
| 3.....  |                       |                          |              | 0                     | --                       | 0            | 1.3                   | 3                        | (t)          |
| 4.....  |                       |                          |              | 0                     | --                       | 0            | 1.4                   | 12                       | (t)          |
| 5.....  |                       |                          |              | 0                     | --                       | 0            | 1.6                   | 4                        | (t)          |
| 6.....  |                       |                          |              | 0                     | --                       | 0            | 1.6                   | 2                        | (t)          |
| 7.....  |                       |                          |              | 0                     | --                       | 0            | 2.3                   | 2                        | (t)          |
| 8.....  |                       |                          |              | 0                     | --                       | 0            | 2.7                   | 2                        | (t)          |
| 9.....  |                       |                          |              | 0                     | --                       | 0            | 3.2                   | 4                        | (t)          |
| 10..... |                       |                          |              | 0                     | --                       | 0            | 9.2                   | 3                        | 0.1          |
| 11..... |                       |                          |              | 0                     | --                       | 0            | 14                    | 2                        | .1           |
| 12..... |                       |                          |              | 0                     | --                       | 0            | 14                    | 2                        | .1           |
| 13..... |                       |                          |              | 0                     | --                       | 0            | 12                    | 2                        | .1           |
| 14..... |                       |                          |              | 0                     | --                       | 0            | 12                    | 3                        | .1           |
| 15..... |                       |                          |              | 0                     | --                       | 0            | 12                    | 5                        | .2           |
| 16..... |                       |                          |              | 0                     | --                       | 0            | 10                    | 7                        | .2           |
| 17..... |                       |                          |              | 0                     | --                       | 0            | 9.2                   | 8                        | .2           |
| 18..... |                       |                          |              | 0                     | --                       | 0            | 8.0                   | 5                        | .1           |
| 19..... |                       |                          |              | 0                     | --                       | 0            | 7.2                   | 5                        | .1           |
| 20..... |                       |                          |              | 0                     | --                       | 0            | 21                    | 15                       | .8           |
| 21..... |                       |                          |              | .2                    | 6                        | (t)          | 101                   | 5                        | 1.4          |
| 22..... |                       |                          |              | .2                    | 5                        | (t)          | 202                   | 7                        | 3.8          |
| 23..... |                       |                          |              | .2                    | 5                        | (t)          | 156                   | 3                        | 1.3          |
| 24..... |                       |                          |              | .2                    | 2                        | (t)          | 86                    | 1                        | .2           |
| 25..... |                       |                          |              | .2                    | 4                        | (t)          | 62                    | 2                        | .3           |
| 26..... |                       |                          |              | .3                    | 6                        | (t)          | 52                    | 5                        | .7           |
| 27..... |                       |                          |              | .4                    | 8                        | (t)          | 43                    | 7                        | .8           |
| 28..... |                       |                          |              | .5                    | 3                        | (t)          | 34                    | 9                        | .8           |
| 29..... |                       |                          |              | .7                    | 2                        | (t)          | 28                    | 3                        | .2           |
| 30..... |                       |                          |              | .8                    | 2                        | (t)          | 24                    | 2                        | .1           |
| 31..... |                       |                          |              | --                    | --                       | --           | 21                    | 2                        | .1           |
| Total.  | 0                     | --                       | 0            | 3.7                   | --                       | (t)          | 953.8                 | --                       | 12.0         |
|         | January               |                          |              | February              |                          |              | March                 |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| 1.....  | 18                    | 2                        | 0.1          | 1,570                 | 26                       | 110          | 1,210                 | 28                       | 91           |
| 2.....  | 15                    | 2                        | .1           | 1,850                 | 17                       | 85           | 1,130                 | 12                       | 37           |
| 3.....  | 13                    | 2                        | .1           | 1,840                 | 20                       | 99           | 767                   | 9                        | 19           |
| 4.....  | 12                    | 2                        | .1           | 1,650                 | 12                       | 53           | 531                   | 3                        | 4.3          |
| 5.....  | 10                    | 1                        | (t)          | 1,480                 | 8                        | 32           | 274                   | 1                        | .7           |
| 6.....  | 10                    | 1                        | (t)          | 1,200                 | 14                       | 45           | 184                   | 1                        | .5           |
| 7.....  | 14                    | 2                        | .1           | 1,040                 | 19                       | 53           | 161                   | 1                        | .4           |
| 8.....  | 18                    | 2                        | .1           | 1,030                 | 23                       | 64           | 153                   | 2                        | .8           |
| 9.....  | 18                    | 1                        | (t)          | 1,330                 | 49                       | 176          | 144                   | 2                        | .8           |
| 10..... | 20                    | 1                        | .1           | 1,290                 | 40                       | 139          | 130                   | 2                        | .7           |
| 11..... | 33                    | 2                        | .2           | 1,260                 | 22                       | 75           | 116                   | 2                        | .6           |
| 12..... | 52                    | 2                        | .3           | 1,060                 | 30                       | 86           | 174                   | 3                        | 1.4          |
| 13..... | 57                    | 2                        | .3           | 728                   | 11                       | 22           | 416                   | 10                       | 11           |
| 14..... | 51                    | 2                        | .3           | 500                   | 8                        | 11           | 400                   | 7                        | 7.6          |
| 15..... | 43                    | 1                        | .1           | 274                   | 5                        | 3.7          | 304                   | 5                        | 4.1          |
| 16..... | 35                    | 1                        | .1           | 201                   | 8                        | 4.3          | 274                   | 3                        | 2.2          |
| 17..... | 27                    | 2                        | .1           | 201                   | 10                       | 5.4          | 243                   | 1                        | .6           |
| 18..... | 22                    | 4                        | .2           | 190                   | 12                       | 6.2          | 194                   | 2                        | 1.0          |
| 19..... | 17                    | 7                        | .3           | 174                   | 9                        | 4.2          | 166                   | 3                        | 1.3          |
| 20..... | 14                    | 2                        | .1           | 321                   | 10                       | 8.7          | 147                   | 6                        | 2.4          |
| 21..... | 13                    | 1                        | (t)          | 528                   | 25                       | 36           | 124                   | 8                        | 2.7          |
| 22..... | 257                   | 199                      | s327         | 404                   | 8                        | 8.7          | 112                   | 9                        | 2.7          |
| 23..... | 1,410                 | 225                      | 856          | 250                   | 5                        | 3.4          | 138                   | 8                        | 3.0          |
| 24..... | 1,390                 | 145                      | 544          | 185                   | 4                        | 2.0          | 212                   | 13                       | 7.4          |
| 25..... | 1,400                 | 122                      | 461          | 159                   | 4                        | 1.7          | 628                   | 83                       | s193         |
| 26..... | 1,470                 | 49                       | 194          | 562                   | 24                       | s52          | 1,150                 | 148                      | 460          |
| 27..... | 1,420                 | 28                       | 107          | 1,210                 | 59                       | 193          | 1,150                 | 122                      | 379          |
| 28..... | 1,170                 | 25                       | 79           | 1,180                 | 57                       | 182          | 1,210                 | 46                       | 150          |
| 29..... | 1,380                 | 57                       | 212          | --                    | --                       | --           | 1,090                 | 24                       | 71           |
| 30..... | 1,390                 | 51                       | 191          | --                    | --                       | --           | 704                   | 19                       | 36           |
| 31..... | 1,430                 | 48                       | 185          | --                    | --                       | --           | 464                   | 13                       | 16           |
| Total.  | 13,229                | --                       | 3,158.8      | 23,667                | --                       | 1,561.3      | 14,100                | --                       | 1,508.2      |

s Computed by subdividing day.

t Less than 0.05 ton.

## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                 | April                |                          |              | May                  |                          |              | June                 |                          |              |
|-------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                     | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                     |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                              | 248                  | 9                        | 6.0          | 95                   | 5                        | 1.3          | 213                  | 5                        | 2.9          |
| 2.....                              | 226                  | 8                        | 4.9          | 72                   | 7                        | 1.4          | 185                  | 5                        | 2.5          |
| 3.....                              | 262                  | 10                       | 7.1          | 61                   | 8                        | 1.3          | 404                  | 8                        | 8.7          |
| 4.....                              | 1,370                | 111                      | s456         | 55                   | 6                        | .9           | 237                  | 5                        | 3.2          |
| 5.....                              | 1,660                | 110                      | 493          | 49                   | 3                        | .4           | 142                  | 4                        | 1.5          |
| 6.....                              | 1,790                | 68                       | 329          | 41                   | 5                        | .6           | 126                  | 4                        | 1.4          |
| 7.....                              | 1,910                | 49                       | 253          | 35                   | 4                        | .4           | 171                  | 3                        | 1.4          |
| 8.....                              | 2,520                | 63                       | 429          | 30                   | 6                        | .5           | 107                  | 3                        | .9           |
| 9.....                              | 2,830                | 75                       | 573          | 27                   | 4                        | .3           | 66                   | 2                        | .4           |
| 10.....                             | 2,260                | 38                       | 232          | 25                   | 5                        | .3           | 172                  | 3                        | 1.4          |
| 11.....                             | 1,760                | 12                       | 57           | 24                   | 5                        | .3           | 155                  | 4                        | 1.7          |
| 12.....                             | 1,250                | 11                       | 37           | 28                   | 5                        | .4           | 70                   | 10                       | 1.9          |
| 13.....                             | 759                  | 6                        | 12           | 28                   | 7                        | .5           | 62                   | 44                       | s7.9         |
| 14.....                             | 501                  | 5                        | 6.8          | 40                   | 30                       | 3.2          | 55                   | 21                       | 3.1          |
| 15.....                             | 236                  | 5                        | 3.2          | 184                  | 46                       | s25          | 45                   | 14                       | 1.7          |
| 16.....                             | 233                  | 15                       | 9.4          | 232                  | 12                       | s8.1         | 37                   | 14                       | 1.4          |
| 17.....                             | 546                  | 22                       | 32           | 130                  | 10                       | 3.5          | 29                   | 6                        | .5           |
| 18.....                             | 792                  | 34                       | 73           | 66                   | 7                        | 1.2          | 22                   | 7                        | .4           |
| 19.....                             | 671                  | 22                       | 40           | 565                  | 83                       | s239         | 18                   | 3                        | .1           |
| 20.....                             | 492                  | 12                       | 16           | 1,330                | 158                      | 567          | 14                   | 2                        | .1           |
| 21.....                             | 396                  | 30                       | 32           | 1,290                | 102                      | 355          | 11                   | 2                        | .1           |
| 22.....                             | 432                  | 38                       | 44           | 1,530                | 64                       | 264          | 10                   | 2                        | .1           |
| 23.....                             | 589                  | 16                       | 25           | 4,720                | 113                      | 1,440        | 8.0                  | 2                        | (t)          |
| 24.....                             | 436                  | 5                        | 5.9          | 5,960                | 88                       | 1,420        | 7.6                  | 1                        | (t)          |
| 25.....                             | 264                  | 3                        | 2.1          | 5,890                | 62                       | 986          | 7.2                  | 2                        | (t)          |
| 26.....                             | 178                  | 3                        | 1.4          | 5,090                | 30                       | 412          | 44                   | 3                        | .4           |
| 27.....                             | 130                  | 2                        | .7           | 4,020                | 12                       | 130          | 45                   | 2                        | .2           |
| 28.....                             | 102                  | 2                        | .6           | 2,740                | 5                        | 37           | 96                   | --                       | e45          |
| 29.....                             | 90                   | 4                        | 1.0          | 1,700                | 8                        | 37           | 634                  | 200                      | s328         |
| 30.....                             | 105                  | 4                        | 1.1          | 819                  | 8                        | 18           | 564                  | 16                       | s32          |
| 31.....                             | --                   | --                       | --           | 529                  | 3                        | 4.3          | --                   | --                       | --           |
| Total.                              | 25,038               | --                       | 3,183.2      | 37,405               | --                       | 5,958.9      | 3,756.8              | --                       | 449.0        |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
|                                     | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....                              | 248                  | 4                        | 2.7          | 48                   | 58                       | 7.5          | 2.1                  | 3                        | (t)          |
| 2.....                              | 96                   | 2                        | .5           | 30                   | 40                       | 3.2          | 1.6                  | 5                        | (t)          |
| 3.....                              | 66                   | 1                        | .2           | 21                   | 29                       | 1.6          | 1.4                  | 5                        | (t)          |
| 4.....                              | 45                   | 2                        | .2           | 14                   | 23                       | .9           | 1.0                  | 9                        | (t)          |
| 5.....                              | 41                   | 2                        | .2           | 10                   | 17                       | .4           | .7                   | 10                       | (t)          |
| 6.....                              | 36                   | 2                        | .2           | 7.6                  | 17                       | .3           | .5                   | 12                       | (t)          |
| 7.....                              | 31                   | 2                        | .2           | 5.7                  | 13                       | .2           | .4                   | 13                       | (t)          |
| 8.....                              | 26                   | 3                        | .2           | 4.1                  | 10                       | .1           | .4                   | 9                        | (t)          |
| 9.....                              | 20                   | 4                        | .2           | 3.5                  | 7                        | .1           | .3                   | 8                        | (t)          |
| 10.....                             | 16                   | 2                        | .1           | 2.7                  | 10                       | .1           | .3                   | 10                       | (t)          |
| 11.....                             | 12                   | 2                        | .1           | 2.3                  | 17                       | .1           | .3                   | 7                        | (t)          |
| 12.....                             | 10                   | 2                        | .1           | 2.1                  | 7                        | (t)          | .3                   | 12                       | (t)          |
| 13.....                             | 8.8                  | 2                        | (t)          | 4.1                  | 6                        | .1           | .3                   | 4                        | (t)          |
| 14.....                             | 8.8                  | 1                        | (t)          | 10                   | 7                        | .2           | .3                   | 6                        | (t)          |
| 15.....                             | 8.8                  | 1                        | (t)          | 6.8                  | 7                        | .1           | .3                   | 5                        | (t)          |
| 16.....                             | 12                   | 1                        | (t)          | 4.1                  | 8                        | .1           | .3                   | 3                        | (t)          |
| 17.....                             | 18                   | 2                        | .1           | 4.4                  | 8                        | .1           | .3                   | 3                        | (t)          |
| 18.....                             | 47                   | 7                        | .9           | 8.0                  | 8                        | .2           | .2                   | 3                        | (t)          |
| 19.....                             | 53                   | 229                      | s29          | 17                   | 8                        | .4           | .2                   | 6                        | (t)          |
| 20.....                             | 21                   | 305                      | 17           | 34                   | 7                        | .6           | .2                   | 7                        | (t)          |
| 21.....                             | 12                   | 192                      | 6.2          | 24                   | 6                        | .4           | .2                   | 6                        | (t)          |
| 22.....                             | 9.2                  | 126                      | 3.1          | 14                   | 5                        | .2           | .3                   | 5                        | (t)          |
| 23.....                             | 12                   | 86                       | 2.8          | 9.6                  | 5                        | .1           | .3                   | 4                        | (t)          |
| 24.....                             | 82                   | 170                      | s36          | 6.4                  | 10                       | .2           | .3                   | 4                        | (t)          |
| 25.....                             | 38                   | 271                      | 28           | 4.8                  | 8                        | .1           | .3                   | 2                        | (t)          |
| 26.....                             | 19                   | 98                       | 5.0          | 3.2                  | 6                        | .1           | .2                   | 2                        | (t)          |
| 27.....                             | 10                   | 82                       | 2.2          | 2.9                  | 8                        | .1           | .2                   | 5                        | (t)          |
| 28.....                             | 8.4                  | 57                       | 1.3          | 2.7                  | 8                        | .1           | .2                   | 7                        | (t)          |
| 29.....                             | 6.4                  | 38                       | .6           | 2.7                  | 4                        | (t)          | .2                   | 4                        | (t)          |
| 30.....                             | 31                   | 39                       | s4.6         | 2.5                  | 4                        | (t)          | .2                   | 5                        | (t)          |
| 31.....                             | 113                  | 85                       | 26           | 2.3                  | 3                        |              | --                   | --                       | --           |
| Total.                              | 1,165.4              | --                       | 167.8        | 314.5                | --                       | 17.8         | 13.8                 | --                       | 0.2          |
|                                     |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days) |                      |                          |              |                      |                          |              |                      | 119,647.0                |              |
| Total load for year (tons)          |                      |                          |              |                      |                          |              |                      | 16,017.2                 |              |

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

TRADEWATER RIVER BASIN--Continued  
TRADEWATER RIVER AT OLNEY, KY.--Continued

Particle size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time       | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |            |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Jan. 22, 1957      | 5:15 p. m. | 414             |                         | 522                           | 898                                        | 56                                                | 70    | 85    | 95    | 99    | 100   | --    | --    |       |       | BSWCM               |
| Jan. 20            | 7:35 a. m. | 1,340           |                         | 113                           | 179                                        | 31                                                | 56    | 73    | 85    | 91    | 96    | 96    | 100   |       |       | BSWCM               |
| June 29            | 8:10 a. m. | 678             |                         | 291                           | 296                                        | 54                                                | 67    | 83    | 93    | 96    | 99    | 100   | --    |       |       | BSWCM               |
| July 19            | 8:20 a. m. | 62              |                         | 176                           | 308                                        | 90                                                | 94    | 95    | 95    | 97    | 97    | 98    | 100   |       |       | BSWCM               |
| July 25            | 8:20 a. m. | 41              |                         | 329                           | 650                                        | 88                                                | 97    | 98    | 98    | 99    | 99    | 100   | --    |       |       | BSWCM               |

LOCATION.--About 950 feet upstream from dam, lock and dam 51 ( mile 903.1), at Golconda, Pope County, 3,150 feet upstream from Long Branch, and 6,000 feet downstream from Loves Branch.

DRAINAGE AREA.--143,900 square miles , approximately (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES, 1956-57.--Dissolved solids: Maximum, 315 ppm Nov. 21-30; minimum, 132 ppm Feb. 1-10.

Hardness: Maximum, 210 ppm Aug. 11-20; minimum, 88 ppm Feb. 1-10.

Specific conductance: Maximum daily, 564 micromhos Dec. 18; minimum daily, 130 micromhos Jan. 22.

Water temperatures: Maximum, 84°F Aug. 3, 16; minimum, 34°F Jan. 18, 19.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 343 ppm Oct. 1-10, 1955; minimum, 132 ppm Feb. 1-10, 1957.

Hardness: Maximum, 210 ppm Oct. 1-10, Nov. 11-20, 1955, Aug. 11-20, 1957; minimum, 88 ppm Feb. 1-10, 1957.

Specific conductance: Maximum daily, 615 micromhos Nov. 19, 1955; minimum daily, 130 micromhos Jan. 22, 1957.

Water temperatures: Maximum 89°F July 31 to Aug. 3, Aug. 5, 1955; minimum, freezing point Jan. 28, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1505. No discharge was recorded when it was less than 100,000 cfs.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                    |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-magnesium |                                    |                                           |     |       |
| Oct. 1-10, 1956 .. | --                   | 7.3                        |               | 0.00      | 0.00           | 42           | 10             | 18          | 2.9           | 88                              | 89                         | 25            | 0.3          | 3.3                        | 226                                                | 146                           | 74            |                                    | 377                                       | 7.5 | 3     |
| Oct. 1-20 .....    | --                   | 7.4                        |               | 0.00      | 0.00           | 42           | 11             | 20          | 2.8           | 86                              | 79                         | 26            | .3           | 3.6                        | 243                                                | 150                           | 80            |                                    | 398                                       | 7.5 | 2     |
| Oct. 21-31 .....   | --                   | 3.4                        |               | 0.00      | 0.00           | 46           | 12             | 21          | 2.6           | 96                              | 86                         | 29            | .3           | 3.8                        | 260                                                | 165                           | 86            |                                    | 431                                       | 7.5 | 2     |
| Nov. 1-10 .....    | --                   | 3.7                        |               | 0.00      | 0.00           | 46           | 12             | 24          | 3.0           | 84                              | 93                         | 32            | .4           | 4.5                        | 267                                                | 165                           | 96            |                                    | 445                                       | 7.4 | 2     |
| Nov. 11-20 .....   | --                   | 3.7                        |               | 0.00      | 0.00           | 48           | 13             | 25          | 3.4           | 96                              | 96                         | 32            | .3           | 4.5                        | 286                                                | 174                           | 95            |                                    | 465                                       | 7.4 | 3     |
| Nov. 21-30 .....   | --                   | 8.8                        |               | 0.00      | 0.00           | 52           | 14             | 30          | 3.1           | 98                              | 109                        | 38            | .3           | 5.4                        | 315                                                | 187                           | 107           |                                    | 517                                       | 7.5 | 3     |
| Dec. 1-10 .....    | a54,600              | 5.3                        |               | .02       | 0.00           | 47           | 13             | 26          | 2.8           | 96                              | 87                         | 38            | .3           | 6.5                        | 285                                                | 171                           | 92            |                                    | 464                                       | 7.3 | 2     |
| Dec. 11-20 .....   | 152,300              | 7.2                        |               | .02       | 0.00           | 51           | 12             | 31          | 3.2           | 79                              | 108                        | 41            | .3           | 7.2                        | 314                                                | 177                           | 112           |                                    | 506                                       | 7.1 | 6     |
| Dec. 21-31 .....   | 250,500              | 7.5                        |               | .07       | 0.00           | 31           | 7.4            | 12          | 2.3           | 57                              | 61                         | 16            | .2           | 4.8                        | 177                                                | 108                           | 62            |                                    | 290                                       | 6.8 | 5     |
| Jan. 1-10, 1957 .. | 130,500              | 6.8                        |               | .07       | 0.06           | 30           | 7.6            | 8.4         | 1.8           | 58                              | 54                         | 12            | .3           | 4.1                        | 165                                                | 106                           | 58            |                                    | 273                                       | 7.1 | 7     |
| Jan. 11-20 .....   | 182,900              | 7.2                        |               | .10       | 0.03           | 29           | 7.8            | 11          | 1.9           | 66                              | 57                         | 14            | .3           | 5.2                        | 177                                                | 112                           | 58            |                                    | 297                                       | 7.2 | 10    |
| Jan. 21-31 .....   | 217,800              | 6.6                        |               | .06       | 0.03           | 29           | 7.4            | 8.7         | 1.8           | 63                              | 53                         | 12            | .4           | 4.3                        | 157                                                | 103                           | 52            |                                    | 261                                       | 7.0 | 15    |
| Feb. 1-10 .....    | 432,400              | 6.7                        |               | .06       | 0.00           | 25           | 6.1            | 8.3         | 2.0           | 51                              | 45                         | 11            | .3           | 3.9                        | 132                                                | 88                            | 46            |                                    | 229                                       | 7.1 | 7     |
| Feb. 11-20 .....   | 525,300              | 7.2                        |               | .06       | 0.00           | 26           | 8.6            | 7.4         | 1.8           | 60                              | 45                         | 12            | .2           | 4.3                        | 140                                                | 101                           | 52            |                                    | 237                                       | 6.9 | 8     |
| Feb. 21-28 .....   | 317,600              | 7.5                        |               | .02       | 0.00           | 30           | 8.1            | 7.6         | 2.1           | 68                              | 48                         | 10            | .2           | 5.8                        | 159                                                | 109                           | 53            |                                    | 261                                       | 7.1 | 4     |
| Mar. 1-10 .....    | 225,600              | 7.3                        |               | .01       | 0.00           | 32           | 13             | 10          | 1.9           | 90                              | 53                         | 15            | .2           | 6.4                        | 200                                                | 134                           | 60            |                                    | 325                                       | 7.5 | 3     |
| Mar. 11-20 .....   | 214,100              | 7.2                        |               | .04       | 0.00           | 35           | 9.7            | 11          | 1.6           | 80                              | 56                         | 15            | .2           | 4.8                        | 188                                                | 128                           | 62            |                                    | 316                                       | 7.4 | 5     |
| Mar. 21-31 .....   | 138,000              | 7.0                        |               | .07       | 0.00           | 37           | 10             | 12          | 1.6           | 89                              | 58                         | 17            | .2           | 5.9                        | 202                                                | 134                           | 60            |                                    | 336                                       | 7.5 | 4     |
| Apr. 1-10 .....    | 298,800              | 6.4                        |               | .02       | 0.01           | 32           | 8.8            | 10          | 1.9           | 76                              | 50                         | 14            | .2           | 4.2                        | 174                                                | 116                           | 54            |                                    | 288                                       | 7.4 | 4     |
| Apr. 11-20 .....   | 636,100              | 8.6                        |               | .06       | 0.04           | 30           | 8.8            | 6.1         | 1.9           | 79                              | 39                         | 8.5           | .3           | 5.0                        | 161                                                | 111                           | 46            |                                    | 258                                       | 7.5 | 10    |
| Apr. 21-30 .....   | 446,200              | 9.2                        |               | .08       | 0.14           | 36           | 9.0            | 7.1         | 1.7           | 88                              | 48                         | 9.0           | .2           | 5.2                        | 180                                                | 127                           | 55            |                                    | 290                                       | 7.5 | 10    |
| May 1-10 .....     | 323,300              | 8.2                        |               | .02       | 0.00           | 42           | 12             | 8.6         | 1.8           | 108                             | 59                         | 13            | .2           | 4.6                        | 218                                                | 155                           | 66            |                                    | 330                                       | 7.4 | 5     |

a Estimated.

OHIO RIVER MAIN STEM--Continued  
OHIO RIVER AT LOCK AND DAM 51, AT GOLCONDA, ILL.--Continued  
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection             | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                                |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| May 11-20, 1957 ...            | a98,400              | 8.0                        |               | 0.03      | 0.00           | 45           | 14             | 11          | 1.8           | 120                             | 67                         | 15            | 0.3          | 4.5                        | 237                                                | 170                           | 71            |                                    | 358                                       | 7.3 | 4     |
| May 21-31 .....                | 331,100              | 9.0                        |               | .04       | .00            | 38           | 6.2            | 8.3         | 1.8           | 92                              | 43                         | 12            | .2           | 4.7                        | 185                                                | 121                           | 45            |                                    | 273                                       | 7.5 | 10    |
| June 1-10 .....                | 218,200              | 12                         |               | .05       | .04            | 39           | 12             | 8.2         | 1.9           | 122                             | 41                         | 12            | .3           | 3.4                        | 204                                                | 147                           | 47            |                                    | 328                                       | 7.4 | 8     |
| June 11-20 .....               | 131,600              | 11                         |               | .03       | .06            | 45           | 13             | 11          | 2.1           | 134                             | 54                         | 16            | .3           | 4.1                        | 240                                                | 166                           | 56            |                                    | 385                                       | 7.4 | 6     |
| June 21-30 .....               | 126,500              | 9.0                        |               | .05       | .00            | 45           | 13             | 11          | 2.7           | 134                             | 51                         | 14            | .2           | 6.1                        | 227                                                | 166                           | 56            |                                    | 378                                       | 7.0 | 10    |
| July 1-10 .....                | 214,100              | 8.4                        |               | .03       | .03            | 40           | 11             | 9.9         | 1.8           | 115                             | 47                         | 14            | .3           | 5.8                        | 214                                                | 145                           | 51            |                                    | 334                                       | 7.2 | 7     |
| July 11-20 .....               | 135,100              | 12                         |               | .01       | .00            | 47           | 13             | 10          | 2.8           | 141                             | 52                         | 14            | .3           | 6.6                        | 248                                                | 171                           | 55            |                                    | 379                                       | 7.4 | 7     |
| July 21-31 .....               | a74,040              | 11                         |               | .03       | .03            | 50           | 16             | 11          | 2.7           | 150                             | 59                         | 16            | .3           | 6.5                        | 264                                                | 191                           | 68            |                                    | 415                                       | 7.4 | 7     |
| Aug. 1-9 .....                 | --                   | 8.1                        |               | .01       | .00            | 56           | 16             | 13          | 2.7           | 170                             | 71                         | 18            | .6           | 5.5                        | 275                                                | 206                           | 66            |                                    | 454                                       | 7.6 | 6     |
| Aug. 11-20 .....               | --                   | 5.8                        |               | .01       | .00            | 56           | 17             | 15          | 2.4           | 170                             | 72                         | 20            | .6           | 3.8                        | 284                                                | 210                           | 70            |                                    | 470                                       | 7.6 | 4     |
| Aug. 21-27, 29-31 ..           | --                   | 7.6                        |               | .02       | .01            | 46           | 18             | 16          | 2.8           | 150                             | 73                         | 21            | .3           | 1.8                        | 264                                                | 189                           | 66            |                                    | 446                                       | 7.4 | 4     |
| Sept. 1-10 .....               | --                   | 5.0                        |               | .02       | .02            | 48           | 18             | 17          | 3.1           | 156                             | 73                         | 24            | .4           | 1.0                        | 272                                                | 194                           | 66            |                                    | 457                                       | 7.2 | 5     |
| Sept. 11-20 .....              | --                   | 4.6                        |               | .00       | .01            | 50           | 18             | 18          | 3.0           | 158                             | 69                         | 26            | .4           | 1.7                        | 274                                                | 199                           | 70            |                                    | 462                                       | 7.2 | 7     |
| Sept. 21-30 .....              | --                   | 6.0                        |               | .00       | .01            | 54           | 16             | 22          | 3.3           | 144                             | 76                         | 36            | .4           | 2.4                        | 296                                                | 201                           | 82            |                                    | 492                                       | 7.3 | 5     |
| Time-weighted average b, ..... | --                   | 7.4                        |               | 0.03      | 0.01           | 41           | 12             | 14          | 2.4           | 103                             | 64                         | 19            | 0.3          | 4.6                        | 225                                                | 152                           | 67            |                                    | 387                                       | --  | 6     |

a. Estimated.  
b. Represents 99 percent of days.

## OHIO RIVER MAIN STEM--Continued

OHIO RIVER AT LOCK AND DAM 51, AT GOLCONDA, ILL.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 7 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 63   | 42   | 45   | 40   | 47   | 52   | 65  | 71   | 78   | 81   | 78    |
| 2       | 71   | 55   | 42   | 40   | 40   | 46   | 53   | 67  | 70   | 79   | 82   | 80    |
| 3       | 68   | 62   | 42   | 40   | 41   | 45   | 53   | 64  | 70   | 79   | 84   | 81    |
| 4       | 71   | 62   | 43   | 44   | 41   | 45   | 51   | 64  | 71   | 79   | 80   | 78    |
| 5       | 68   | 62   | 49   | 44   | 41   | 46   | 51   | 65  | 71   | 78   | 80   | 79    |
| 6       | 68   | 65   | 48   | 40   | 41   | 45   | 51   | 63  | 72   | 79   | 80   | 79    |
| 7       | 70   | 65   | 48   | 40   | 41   | 45   | 54   | 63  | 71   | 79   | 78   | 79    |
| 8       | 68   | 64   | 47   | 41   | 45   | 45   | 52   | 61  | 74   | 80   | 79   | 75    |
| 9       | 66   | 60   | 48   | 45   | 45   | 45   | 50   | 65  | 74   | 80   | 81   | 78    |
| 10      | 65   | 54   | 47   | 40   | 45   | 47   | 50   | 66  | 74   | 80   | --   | 75    |
| 11      | 64   | 56   | 48   | 39   | 46   | 47   | 51   | 68  | 74   | 80   | 82   | 75    |
| 12      | 66   | 57   | 42   | 41   | 45   | 48   | 52   | 70  | 76   | 80   | 81   | 78    |
| 13      | 65   | 55   | 44   | 40   | 45   | 47   | 52   | 69  | 76   | 80   | 78   | 75    |
| 14      | 65   | 56   | 45   | 40   | 46   | 48   | 50   | 71  | 75   | 80   | 82   | 75    |
| 15      | 65   | 58   | 45   | 41   | 45   | 49   | 49   | 69  | 75   | 79   | 82   | 74    |
| 16      | 63   | 46   | 46   | 36   | 46   | 48   | 51   | 68  | 78   | 80   | 84   | 76    |
| 17      | 67   | 53   | 46   | 35   | 46   | 49   | 53   | 72  | 79   | 80   | 83   | 77    |
| 18      | 65   | 54   | 44   | 34   | 46   | 50   | 52   | 70  | 79   | 80   | 82   | --    |
| 19      | 64   | 52   | 45   | 34   | 47   | 50   | 54   | 70  | 79   | 81   | 82   | 77    |
| 20      | 66   | 53   | 46   | 45   | 45   | 50   | 52   | 69  | 79   | 82   | 80   | 77    |
| 21      | 68   | 52   | 49   | 47   | 45   | 51   | 58   | 70  | 78   | 81   | 80   | 76    |
| 22      | 66   | 50   | 49   | 45   | 47   | 49   | 59   | 70  | 79   | 82   | 80   | 76    |
| 23      | 66   | 48   | 49   | 41   | 47   | 50   | 60   | 66  | 79   | 83   | 81   | 75    |
| 24      | 65   | 46   | 48   | 40   | 46   | 50   | 62   | 68  | 78   | 82   | 80   | 74    |
| 25      | 66   | 45   | 47   | 40   | 46   | 50   | 62   | 68  | 78   | 81   | 78   | 74    |
| 26      | 62   | 44   | 46   | 36   | 48   | 50   | 65   | 70  | 78   | 81   | 76   | 75    |
| 27      | 60   | 43   | 45   | 40   | 48   | 49   | 65   | 70  | 78   | 81   | 76   | 76    |
| 28      | 62   | 43   | 47   | 40   | 46   | 50   | 65   | 68  | 78   | 80   | 78   | 69    |
| 29      | 64   | 42   | 45   | 42   | --   | 50   | 65   | 69  | 80   | 80   | 70   | 72    |
| 30      | 63   | 44   | 45   | 41   | --   | 50   | 65   | 70  | 79   | 80   | 80   | 71    |
| 31      | 64   | --   | 45   | 40   | --   | 51   | --   | 70  | --   | 80   | 81   | --    |
| Average | 66   | 54   | 46   | 40   | 45   | 48   | 55   | 68  | 76   | 80   | 80   | 76    |

OHIO RIVER MAIN STEN--Continued  
OHIO RIVER AT METROPOLIS, ILL.

LOCATION.--Temperature recorder at gaging station at Paducah and Illinois Railroad bridge at Metropolis, Massac County, 9½ miles downstream from Tennessee River, and 37 miles upstream from mouth.  
DRAINAGE AREA.--203,000 square miles (approximately).  
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.  
Water temperatures: March 1954 to September 1957.  
EXTREMES, 1956-57.--Water temperatures: Maximum, 84°F July 22-26; minimum, 37°F Jan. 19-22.  
EXTREMES, 1954-57.--Water temperatures: Maximum, 88°F Aug. 3-6, 1955; minimum, 33°F Dec. 17-23, 1955.  
REMARKS.--Records of water discharge for water year October 1956 to September 1957 given in WSP 1505.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 71      | 71  | 65       | 65  | 45       | 45  | 45      | 45  | 39       | 39  | 45    | 45  | 52    | 50  | 68  | 67  | 73   | 72  | 81   | 77  | 81     | 81  | 81        | 80  |
| 2.....       | 71      | 71  | 65       | 65  | 45       | 45  | 45      | 45  | 39       | 39  | 45    | 45  | 54    | 52  | 68  | 68  | 73   | 73  | 77   | 77  | 82     | 81  | 82        | 80  |
| 3.....       | 71      | 71  | 65       | 65  | 45       | 45  | 45      | 45  | 39       | 39  | 45    | 45  | 54    | 54  | 68  | 67  | 73   | 72  | 77   | 77  | 83     | 82  | 82        | 81  |
| 4.....       | 71      | 70  | 65       | 64  | 45       | 45  | 45      | 45  | 39       | 39  | 45    | 45  | 55    | 54  | 68  | 68  | 72   | 72  | 77   | 77  | 83     | 83  | 81        | 81  |
| 5.....       | 70      | 70  | 64       | 64  | 45       | 45  | 44      | 44  | 39       | 39  | 45    | 45  | 55    | 55  | 68  | 67  | 72   | 72  | 77   | 77  | 83     | 82  | 81        | 81  |
| 6.....       | 70      | 70  | 64       | 64  | 47       | 45  | 44      | 44  | 39       | 39  | 45    | 45  | 55    | 55  | 68  | 68  | 73   | 72  | 77   | 77  | 82     | 81  | 81        | 80  |
| 7.....       | 70      | 70  | 64       | 64  | 47       | 47  | 44      | 42  | 42       | 39  | 45    | 45  | 55    | 54  | 68  | 68  | 75   | 73  | 77   | 77  | 81     | 81  | 80        | 79  |
| 8.....       | 70      | 70  | 64       | 64  | 47       | 47  | 42      | 41  | 43       | 42  | 45    | 45  | 54    | 54  | 68  | 68  | 75   | 75  | 77   | 77  | 82     | 81  | 79        | 77  |
| 9.....       | 70      | 70  | 64       | 62  | 47       | 47  | 41      | 41  | 43       | 43  | 45    | 45  | 54    | 53  | 68  | 68  | 75   | 75  | 77   | 77  | 82     | 82  | 77        | 76  |
| 10.....      | 70      | 69  | 62       | 61  | 47       | 47  | 41      | 41  | 44       | 43  | 45    | 45  | 54    | 53  | 69  | 68  | 75   | 75  | 77   | 77  | 82     | 82  | 76        | 76  |
| 11.....      | 69      | 68  | 61       | 59  | 47       | 46  | 41      | 41  | 44       | 44  | 45    | 45  | 53    | 53  | 70  | 69  | 76   | 76  | 78   | 77  | 82     | 82  | 76        | 76  |
| 12.....      | 68      | 68  | 59       | 59  | 47       | 46  | 41      | 40  | 44       | 44  | 45    | 45  | 53    | 53  | 70  | 70  | 77   | 76  | 78   | 77  | 82     | 82  | 76        | 76  |
| 13.....      | 68      | 68  | 58       | 58  | 46       | 45  | 40      | 40  | 44       | 44  | 46    | 45  | 53    | 53  | 70  | 70  | 77   | 77  | 78   | 78  | 82     | 82  | 76        | 76  |
| 14.....      | 68      | 67  | 58       | 57  | 45       | 45  | 40      | 40  | 44       | 44  | 47    | 46  | 53    | 53  | 71  | 70  | 78   | 78  | 78   | 78  | 82     | 82  | 76        | 76  |
| 15.....      | 67      | 67  | 57       | 57  | 45       | 45  | 40      | 40  | 44       | 44  | 48    | 47  | 53    | 53  | 73  | 71  | 79   | 77  | 78   | 77  | 82     | 82  | 76        | 76  |
| 16.....      | 67      | 67  | 57       | 57  | 46       | 45  | 40      | 40  | 44       | 44  | 48    | 48  | 53    | 53  | 74  | 72  | 80   | 79  | 79   | 79  | 82     | 82  | 76        | 76  |
| 17.....      | 68      | 68  | 57       | 56  | 46       | 46  | 40      | 39  | 45       | 44  | 48    | 48  | 53    | 53  | 75  | 74  | 80   | 79  | 79   | 79  | 82     | 82  | 76        | 75  |
| 18.....      | 68      | 67  | 56       | 55  | 46       | 46  | 39      | 38  | 45       | 45  | 48    | 48  | 53    | 53  | 74  | 73  | 80   | 80  | 79   | 79  | 82     | 82  | 73        | 73  |
| 19.....      | 67      | 67  | 55       | 55  | 46       | 46  | 37      | 37  | 45       | 45  | 48    | 48  | 54    | 53  | 73  | 73  | 81   | 80  | 81   | 79  | 82     | 82  | 73        | 73  |
| 20.....      | 67      | 67  | 55       | 54  | 46       | 46  | 37      | 37  | 45       | 45  | 49    | 48  | 56    | 54  | 73  | 72  | 81   | 81  | 81   | 81  | 82     | 81  | 75        | 75  |
| 21.....      | 67      | 67  | 54       | 54  | 46       | 46  | 37      | 37  | 45       | 44  | 49    | 49  | 58    | 56  | 73  | 73  | 81   | 81  | 82   | 81  | 81     | 81  | 75        | 75  |
| 22.....      | 67      | 67  | 54       | 54  | 46       | 46  | 38      | 37  | 44       | 44  | 49    | 49  | 59    | 58  | 73  | 72  | 81   | 81  | 84   | 82  | 81     | 81  | 75        | 75  |
| 23.....      | 67      | 67  | 54       | 53  | 47       | 46  | 39      | 38  | 44       | 44  | 49    | 49  | 61    | 59  | 72  | 71  | 81   | 81  | 84   | 84  | 81     | 81  | 75        | 75  |
| 24.....      | 67      | 67  | 53       | 52  | 47       | 47  | 39      | 39  | 44       | 44  | 49    | 49  | 62    | 61  | 71  | 71  | 81   | 81  | 84   | 84  | 81     | 80  | 75        | 75  |
| 25.....      | 67      | 66  | 52       | 50  | 47       | 47  | 39      | 39  | 44       | 44  | 49    | 49  | 63    | 62  | 72  | 71  | 81   | 81  | 84   | 84  | 81     | 80  | 75        | 74  |
| 26.....      | 67      | 66  | 50       | 49  | 47       | 47  | 39      | 39  | 44       | 44  | 49    | 49  | 64    | 63  | 72  | 72  | 81   | 81  | 84   | 83  | 80     | 80  | 74        | 74  |
| 27.....      | 67      | 66  | 49       | 46  | 47       | 46  | 39      | 39  | 45       | 44  | 49    | 49  | 65    | 64  | 72  | 72  | 81   | 81  | 83   | 83  | 81     | 80  | 74        | 74  |
| 28.....      | 66      | 66  | 47       | 46  | 46       | 46  | 39      | 39  | 45       | 45  | 49    | 49  | 66    | 65  | 72  | 72  | 81   | 81  | 83   | 82  | 81     | 80  | 74        | 72  |
| 29.....      | 66      | 66  | 47       | 46  | 46       | 46  | 39      | 39  | --       | --  | 49    | 49  | 66    | 66  | 72  | 72  | 81   | 81  | 82   | 82  | 82     | 81  | 72        | 72  |
| 30.....      | 66      | 65  | 46       | 45  | 46       | 45  | 39      | 39  | --       | --  | 50    | 49  | 67    | 66  | 72  | 72  | 81   | 81  | 82   | 81  | 82     | 81  | 72        | 71  |
| 31.....      | 65      | 65  | --       | --  | 45       | 45  | 39      | 39  | --       | --  | 50    | 50  | --    | --  | 72  | 72  | --   | --  | 81   | 81  | 82     | 81  | --        | --  |
| Average..... | 68      | 68  | 57       | 57  | 46       | 46  | 41      | 40  | 43       | 43  | 47    | 47  | 57    | 57  | 71  | 70  | 78   | 77  | 80   | 79  | 82     | 81  | 77        | 76  |

## OHIO RIVER MAIN STEM

## OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.

LOCATION --About 1,500 feet upstream from dam, lock and dam 53 (mile 962.6) near Grand Chain, Pulaski County, 7,300 feet downstream from Bledsoe Creek, and 29.7 miles downstream from Tennessee River.

DRAINAGE AREA --203,100 square miles. October 1954 to September 1957.

RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1957.

Water temperatures: October 1954 to September 1957.

EXTREMES 1956-57.--Dissolved solids: Maximum, 266 ppm Dec. 11-20; minimum, 129 ppm Feb. 1-10.

Solids: Maximum, 160 ppm July 11-12; 14-20; minimum, 84 ppm Feb. 11-20.

Water temperatures: Maximum daily, 57.7 micromhos 55-59; minimum daily, 170 micromhos Feb. 9.

Hardness: Maximum, 85°F Aug. 12; minimum, 35°F Jan. 17.

EXTREMES, 1954-57.--Dissolved solids: Maximum, 266 ppm Dec. 11-20, 1956; minimum, 128 ppm Mar. 11-20, 1955.

Hardness: Maximum, 160 ppm July 11-12; 14-20, 1957; minimum, 84 ppm Mar. 11-20, 1955; Feb. 11-20, 1957.

Specific conductance: Maximum daily, 577 micromhos Dec. 19, 1956; minimum daily, 170 micromhos Feb. 9, 1957.

Water temperatures: Maximum, 87°F Aug. 3, 1955; minimum, 34°F Feb. 11, 13, 16, 1955; Jan. 24, 26, 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as H <sub>2</sub> SO <sub>4</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------|----------------------|------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------------|-------------------------------------------|-----|-------|
|                      |                      |                  |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                                 |                                           |     |       |
| Oct. 1-10, 1956....  |                      |                  | 6.2                        | 0.02      | 0.00           | 34           | 7.4            | 14          | 2.1           | 82                              | 48                         | 20            | 0.3          | 2.1                        | 176                                                | 116                           | 48            |                                                 | 304                                       | 7.4 | 2     |
| Oct. 11-20 .....     |                      |                  | 4.8                        | 0.00      | 0.00           | 32           | 7.5            | 12          | 2.1           | 80                              | 43                         | 17            | .3           | 2.1                        | 161                                                | 111                           | 46            |                                                 | 284                                       | 7.5 | 2     |
| Oct. 21-31 .....     |                      |                  | 3.5                        | 0.00      | 0.00           | 32           | 7.5            | 13          | 2.0           | 82                              | 42                         | 19            | .3           | 1.9                        | 169                                                | 111                           | 44            |                                                 | 292                                       | 7.5 | 2     |
| Nov. 1-10 .....      |                      |                  | 3.9                        | 0.00      | 0.00           | 37           | 8.7            | 17          | 2.2           | 81                              | 62                         | 24            | .3           | 3.1                        | 205                                                | 129                           | 62            |                                                 | 373                                       | 7.3 | 2     |
| Nov. 11-16, 18-20 .. |                      |                  | 3.0                        | 0.00      | 0.00           | 34           | 7.6            | 14          | 1.9           | 80                              | 50                         | 20            | .3           | 2.4                        | 182                                                | 116                           | 50            |                                                 | 324                                       | 7.2 | 3     |
| Nov. 21-30 .....     |                      |                  | 3.1                        | 0.00      | 0.00           | 36           | 8.4            | 17          | 1.9           | 80                              | 58                         | 24            | .3           | 2.8                        | 199                                                | 125                           | 59            |                                                 | 342                                       | 7.1 | 4     |
| Dec. 1-10 .....      |                      |                  | 4.1                        | .02       | .00            | 37           | 8.5            | 18          | 1.8           | 83                              | 52                         | 27            | .2           | 3.9                        | 197                                                | 128                           | 60            |                                                 | 345                                       | 7.3 | 2     |
| Dec. 11-20 .....     |                      |                  | 7.0                        | .02       | .00            | 45           | 11             | 26          | 2.8           | 81                              | 91                         | 34            | .3           | 5.7                        | 266                                                | 157                           | 90            |                                                 | 439                                       | 7.1 | 2     |
| Dec. 21-31 .....     |                      |                  | 8.5                        | .08       | .00            | 33           | 6.9            | 13          | 2.2           | 64                              | 55                         | 17            | .2           | 5.0                        | 189                                                | 111                           | 58            |                                                 | 294                                       | 7.2 | 10    |
| Jan. 1-10, 1957 ..   |                      |                  | 9.1                        | .07       | .02            | 30           | 6.5            | 10          | 1.5           | 61                              | 49                         | 12            | .2           | 4.1                        | 158                                                | 102                           | 52            |                                                 | 282                                       | 7.4 | 6     |
| Jan. 11-19 .....     |                      |                  | 7.5                        | .07       | .02            | 32           | 8.0            | 10          | 1.4           | 70                              | 56                         | 14            | .3           | 4.8                        | 175                                                | 113                           | 56            |                                                 | 290                                       | 7.4 | 7     |
| Jan. 21-31 .....     |                      |                  | 6.4                        | .10       | .00            | 27           | 7.2            | 8.5         | 1.9           | 66                              | 48                         | 10            | .4           | 3.8                        | 152                                                | 97                            | 43            |                                                 | 247                                       | 7.3 | 12    |
| Feb. 1-10 .....      |                      |                  | 6.4                        | .08       | .00            | 23           | 7.0            | 7.8         | 1.9           | 53                              | 37                         | 12            | .2           | 3.7                        | 129                                                | 86                            | 43            |                                                 | 223                                       | 7.1 | 8     |
| Feb. 11-20 .....     |                      |                  | 8.0                        | .14       | .00            | 25           | 5.4            | 6.3         | 1.7           | 59                              | 47                         | 9.0           | .2           | 3.4                        | 130                                                | 84                            | 36            |                                                 | 209                                       | 7.3 | 18    |
| Feb. 21-28 .....     |                      |                  | 7.0                        | .03       | .00            | 28           | 8.4            | 8.7         | 1.6           | 68                              | 42                         | 10            | .2           | 4.7                        | 148                                                | 105                           | 49            |                                                 | 242                                       | 7.2 | 5     |
| Mar. 1-10 .....      |                      |                  | 7.0                        | .01       | .00            | 34           | 8.5            | 8.7         | 1.8           | 82                              | 49                         | 12            | .2           | 5.2                        | 176                                                | 120                           | 53            |                                                 | 288                                       | 7.5 | 4     |
| Mar. 11-20 .....     |                      |                  | 6.9                        | .06       | .00            | 33           | 9.5            | 10          | 1.4           | 76                              | 56                         | 13            | .2           | 4.7                        | 180                                                | 122                           | 60            |                                                 | 298                                       | 7.4 | 4     |
| Mar. 21-31 .....     |                      |                  | 7.0                        | .08       | .00            | 35           | 9.1            | 11          | 1.5           | 82                              | 54                         | 15            | .2           | 3.7                        | 184                                                | 125                           | 58            |                                                 | 308                                       | 7.5 | 6     |
| Apr. 1-10 .....      |                      |                  | 7.2                        | .13       | .15            | 30           | 8.0            | 9.2         | 1.8           | 74                              | 47                         | 12            | .4           | 3.0                        | 170                                                | 108                           | 48            |                                                 | 271                                       | 7.4 | 10    |
| Apr. 11-20 .....     |                      |                  | 10                         | .06       | .05            | 30           | 7.4            | 5.9         | 1.7           | 76                              | 39                         | 7.5           | .4           | 4.9                        | 157                                                | 106                           | 44            |                                                 | 247                                       | 7.4 | 8     |



OHIO RIVER MAIN STEM--Continued  
OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                       | Mean discharge (cfs) | Temperature (°F) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub><br>Calcium, magnesium | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------------------------|----------------------|------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-----------------------------------------------------|------------------------------------|-------------------------------------------|-----|-------|
| Apr. 21-30, 1957.....                    |                      |                  | 8.4                        | 0.05      | 0.00           | 34           | 9.4            | 6.4         | 1.8           | 84                              | 50                         | 10            | 0.3          | 4.7                        | 174                                                | 124                                                 |                                    | 265                                       | 7.0 | 6     |
| May 1-10.....                            |                      |                  | 9.8                        | .02       | .00            | 42           | 11             | 8.7         | 1.8           | 104                             | 62                         | 13            | .2           | 4.1                        | 223                                                | 150                                                 | 65                                 | 324                                       | 7.0 | 5     |
| May 11, 13-20.....                       |                      |                  | 11                         | .01       | .03            | 41           | 12             | 9.6         | 1.7           | 114                             | 55                         | 13            | .2           | 4.4                        | 228                                                | 152                                                 | 58                                 | 328                                       | 7.7 | 5     |
| May 21-31.....                           |                      |                  | 9.4                        | .08       | .07            | 33           | 8.4            | 7.7         | 2.0           | 89                              | 40                         | 10            | .2           | 4.1                        | 179                                                | 117                                                 | 44                                 | 262                                       | 7.6 | 7     |
| June 1, 3-10.....                        |                      |                  | 13                         | .05       | .02            | 37           | 10             | 8.1         | 2.0           | 112                             | 43                         | 10            | .2           | 3.5                        | 191                                                | 134                                                 | 42                                 | 310                                       | 7.2 | 9     |
| June 11-20.....                          |                      |                  | 9.3                        | .05       | .01            | 38           | 9.9            | 8.7         | 2.0           | 115                             | 42                         | 12            | .2           | 3.2                        | 192                                                | 136                                                 | 42                                 | 312                                       | 7.3 | 7     |
| June 21, 23-30.....                      |                      |                  | 13                         | .04       | .01            | 39           | 10             | 9.7         | 2.0           | 119                             | 43                         | 12            | .2           | 3.2                        | 194                                                | 139                                                 | 41                                 | 321                                       | 7.5 | 6     |
| July 1-3, 5-10.....                      |                      |                  | 9.8                        | .00       | .27            | 41           | 9.7            | 10          | 2.1           | 115                             | 43                         | 14            | .2           | 5.2                        | 208                                                | 142                                                 | 48                                 | 331                                       | 7.2 | 7     |
| July 11-12, 14-20.....                   |                      |                  | 12                         | .01       | .32            | 46           | 11             | 9.7         | 2.2           | 133                             | 49                         | 13            | .2           | 5.8                        | 222                                                | 160                                                 | 51                                 | 360                                       | 7.3 | 7     |
| July 21-31.....                          |                      |                  | 12                         | .12       | .20            | 41           | 11             | 9.8         | 2.0           | 126                             | 45                         | 11            | .2           | 4.7                        | 219                                                | 147                                                 | 44                                 | 334                                       | 7.4 | 7     |
| Aug. 1-10.....                           |                      |                  | 7.1                        | .02       | .00            | 36           | 9.6            | 8.2         | 2.0           | 114                             | 39                         | 12            | .5           | 3.4                        | 177                                                | 130                                                 | 36                                 | 301                                       | 7.6 | 6     |
| Aug. 11-20.....                          |                      |                  | 6.9                        | .00       | .00            | 35           | 9.2            | 8.6         | 1.8           | 113                             | 37                         | 11            | .5           | 2.2                        | 168                                                | 126                                                 | 33                                 | 291                                       | 7.6 | 6     |
| Aug. 21-31.....                          |                      |                  | 5.1                        | .02       | .01            | 31           | 9.2            | 8.6         | 2.1           | 100                             | 27                         | 11            | .2           | 1.6                        | 159                                                | 116                                                 | 34                                 | 272                                       | 7.2 | 4     |
| Sept. 1-10.....                          |                      |                  | 3.9                        | .03       | .01            | 30           | 8.6            | 9.3         | 1.8           | 98                              | 35                         | 12            | .2           | .8                         | 152                                                | 111                                                 | 30                                 | 266                                       | 7.3 | 4     |
| Sept. 11-20.....                         |                      |                  | 4.6                        | .00       | .01            | 29           | 8.7            | 9.5         | 1.9           | 98                              | 31                         | 13            | .2           | .8                         | 151                                                | 109                                                 | 28                                 | 262                                       | 7.2 | 4     |
| Sept. 21-30.....                         |                      |                  | 5.4                        | .01       | .01            | 35           | 9.4            | 12          | 2.2           | 104                             | 43                         | 18            | .2           | 1.2                        | 184                                                | 126                                                 | 41                                 | 312                                       | 7.1 | 4     |
| Time-weighted average <sup>a</sup> ..... |                      |                  | 7.4                        | 0.04      | 0.03           | 34           | 8.7            | 11          | 1.9           | 89                              | 47                         | 14            | 0.3          | 3.5                        | 181                                                | 121                                                 | 48                                 | 298                                       | --  | 6     |

<sup>a</sup> Represents 98 percent of days.

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/ Once-daily measurement at approximately 7 a.m. /

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 70   | 63   | 42   | 44   | 40   | 45   | 51   | 64  | 71   | 79   | 82   | 80    |
| 2       | 70   | 64   | 45   | 43   | 40   | 46   | 52   | 66  | --   | 78   | 81   | 80    |
| 3       | 71   | 64   | 45   | 42   | 40   | 46   | 52   | 65  | 71   | 78   | 81   | 80    |
| 4       | 72   | 64   | 45   | 43   | 41   | 45   | 52   | 65  | 72   | 80   | 81   | 80    |
| 5       | 70   | 64   | 52   | 42   | 42   | 45   | 45   | 64  | 73   | 80   | 80   | 80    |
| 6       | 71   | 64   | 52   | 43   | 42   | 46   | 52   | 65  | 72   | 79   | 79   | 79    |
| 7       | 70   | 63   | 48   | 41   | 41   | 46   | 52   | 65  | 74   | 79   | 79   | 78    |
| 8       | 69   | 63   | 47   | 41   | 44   | 43   | 53   | --  | 74   | 79   | 80   | 78    |
| 9       | 69   | 58   | 42   | 42   | 44   | 45   | 49   | --  | 75   | 79   | 81   | 78    |
| 10      | 67   | 57   | 42   | 41   | 44   | 45   | 49   | 67  | 75   | 80   | 80   | 78    |
| 11      | 66   | 59   | 40   | 40   | 44   | --   | 50   | 67  | 75   | 80   | 81   | 76    |
| 12      | 67   | 59   | 47   | 40   | 44   | 46   | 50   | 67  | 75   | 80   | 85   | 77    |
| 13      | 67   | 56   | 44   | 40   | 45   | 48   | 50   | 66  | 76   | --   | 81   | 76    |
| 14      | 66   | 57   | 46   | 39   | 45   | 46   | 50   | 67  | 76   | 80   | 82   | 76    |
| 15      | 66   | 57   | 44   | 36   | 44   | 48   | 49   | 70  | 76   | 79   | 82   | 76    |
| 16      | 66   | 57   | 44   | 36   | 44   | 48   | 51   | 70  | 79   | 79   | 82   | 77    |
| 17      | 66   | --   | 42   | 35   | 44   | 48   | 51   | 71  | 79   | 80   | 81   | 77    |
| 18      | 67   | 55   | 48   | 37   | 46   | 48   | 52   | 71  | 79   | 80   | 82   | 78    |
| 19      | 73   | 54   | 42   | 37   | 45   | 49   | 54   | 70  | 79   | 81   | 82   | 76    |
| 20      | 67   | 54   | 47   | --   | 43   | 49   | 54   | 69  | 79   | 81   | 81   | 77    |
| 21      | 66   | 54   | 48   | 36   | 43   | 49   | 54   | 71  | 79   | 80   | 81   | 72    |
| 22      | 67   | 53   | 48   | 36   | 45   | 48   | 54   | 71  | --   | 81   | 82   | 77    |
| 23      | 67   | 50   | 47   | 36   | 45   | 48   | 56   | 71  | 79   | 81   | 78   | 72    |
| 24      | 67   | 46   | 45   | 36   | 45   | 48   | 59   | 71  | 79   | 81   | 78   | 72    |
| 25      | 67   | 47   | 45   | 42   | 48   | 50   | 60   | 71  | 79   | 81   | 80   | 72    |
| 26      | 66   | 46   | 47   | 41   | 46   | 50   | 62   | 72  | 78   | 80   | 80   | 75    |
| 27      | 64   | 45   | 47   | 40   | 45   | 50   | 63   | 70  | 79   | 80   | 80   | 74    |
| 28      | 64   | 43   | 46   | 40   | 45   | 50   | 60   | 69  | 78   | 80   | 80   | 70    |
| 29      | 64   | 43   | 45   | 41   | --   | 51   | 60   | 69  | 78   | 81   | 80   | 74    |
| 30      | 64   | 42   | 45   | 40   | --   | 51   | 65   | 70  | 79   | 81   | 81   | 71    |
| 31      | 56   | --   | 45   | 40   | --   | 51   | --   | 71  | --   | 82   | 80   | --    |
| Average | 65   | 54   | 46   | 40   | 44   | 48   | 54   | 68  | 76   | 80   | 81   | 76    |

## PART 3 B. CUMBERLAND AND TENNESSEE RIVER BASINS

## CUMBERLAND RIVER BASIN

## CUMBERLAND RIVER AT BARBOURVILLE, KY.

LOCATION.--At gaging station at bridge on State Highway 11, at Barbourville, Knox County, and 0.4 mile upstream from Richland Creek.  
 DRAINAGE AREA.--960 square miles.  
 RECORDS AVAILABLE.--Chemical analyses: October 1949 to August 1950.

Water temperatures: October 1949 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 87°F July 22; minimum, 33°F Jan. 19.

EXTREMES, 1949-57.--Water temperatures: Maximum, 91°F June 26, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957.

Temperature (°F) of water, water year October 1956 to September 1957

Twice-daily measurements at approximately 8 a. m. and 5 p. m.

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | --      | 63   | 37       | 41   | 41       | 48   | 49      | 49   | 51       | 50   | 51    | 51   | 51    | 51   | 69   | 74   | 74   | 78   | 74   | 78   | 82     | 85   | 77        | 81   |
| 2.....       | --      | 60   | 67       | 40   | 37       | 37   | 45      | 49   | 49       | 48   | 53    | 54   | 53    | 54   | 71   | 74   | 76   | 77   | 75   | 77   | 82     | 84   | 77        | 82   |
| 3.....       | 70      | 60   | 65       | 38   | 42       | 36   | 35      | 48   | 46       | 46   | 51    | 55   | 55    | 55   | 70   | 70   | 76   | 75   | 76   | 79   | 83     | 86   | 78        | 79   |
| 4.....       | 69      | 68   | 59       | 61   | 41       | 44   | 39      | 37   | 50       | 51   | 44    | 46   | 53    | 57   | 66   | 67   | 75   | 76   | 78   | 80   | 82     | 85   | 76        | 79   |
| 5.....       | 68      | 69   | 60       | 61   | 41       | 43   | 41      | 39   | 52       | 52   | 44    | 46   | 55    | 55   | 64   | 65   | 75   | 74   | 80   | 82   | 81     | 84   | 75        | 79   |
| 6.....       | 69      | 71   | 59       | 60   | 41       | 47   | 39      | 41   | 51       | 52   | 45    | 47   | 52    | 54   | 61   | 65   | 74   | 73   | 78   | 81   | 78     | 80   | 73        | 77   |
| 7.....       | 67      | 68   | 60       | 62   | 50       | 49   | 41      | 43   | 52       | 55   | 48    | 47   | 51    | 53   | 82   | 67   | 72   | 77   | 78   | 82   | 77     | 80   | 73        | 77   |
| 8.....       | 65      | 66   | 58       | 58   | 53       | 50   | 41      | 45   | 53       | 55   | 44    | 43   | 54    | 56   | 64   | 67   | 74   | 78   | 80   | 83   | 76     | 80   | 72        | 74   |
| 9.....       | 61      | 65   | 52       | 53   | 51       | 50   | 41      | 44   | 53       | 54   | 42    | 44   | 51    | 52   | 82   | 65   | 75   | 77   | 80   | 81   | 76     | 82   | 72        | 75   |
| 10.....      | 67      | 64   | 51       | 53   | 48       | 49   | 45      | 46   | 53       | 53   | 43    | 46   | 50    | 51   | 69   | 68   | 76   | 75   | 80   | 82   | 78     | 81   | 73        | 77   |
| 11.....      | 60      | 63   | 49       | 53   | 46       | 48   | 45      | 45   | 52       | 51   | 45    | 49   | 51    | 53   | 69   | 72   | 76   | 77   | 78   | 81   | 79     | 84   | 74        | 77   |
| 12.....      | 60      | 64   | 50       | 52   | 49       | 50   | 44      | 46   | 49       | 48   | 51    | 50   | 52    | 53   | 70   | 74   | 76   | 78   | 80   | 81   | 82     | 85   | 78        | 78   |
| 13.....      | 60      | 63   | 49       | 51   | 54       | 51   | 44      | 46   | 46       | 47   | 49    | 52   | 51    | 54   | 72   | 76   | 78   | 80   | 79   | 83   | 80     | 84   | 75        | 76   |
| 14.....      | 60      | 65   | 47       | 50   | 52       | 52   | 44      | 44   | 45       | 46   | 52    | 54   | 52    | 54   | 75   | 77   | 78   | 81   | 80   | 82   | 82     | 85   | 75        | 76   |
| 15.....      | 61      | 64   | 52       | 53   | 53       | 54   | 42      | 43   | 44       | 46   | 54    | 56   | 53    | 55   | 75   | 77   | 80   | 83   | 80   | 82   | 81     | 82   | 75        | 76   |
| 16.....      | 60      | 63   | 52       | 53   | 54       | 51   | 40      | 39   | 45       | 46   | 52    | 55   | 54    | 55   | 74   | 72   | 81   | 84   | 79   | 84   | 76     | 77   | 74        | 74   |
| 17.....      | 61      | 62   | 46       | 48   | 51       | 54   | 34      | 37   | 43       | 45   | 51    | 56   | 53    | 57   | 74   | 77   | 82   | 85   | 80   | 83   | 76     | 76   | 69        | 68   |
| 18.....      | 63      | 64   | 46       | 47   | 52       | 54   | 35      | 39   | 43       | 43   | 51    | 55   | 55    | 60   | 75   | 77   | 82   | 85   | 81   | 84   | 75     | 78   | 69        | 68   |
| 19.....      | 62      | 63   | 45       | 47   | 51       | 50   | 33      | 35   | 43       | 43   | 52    | 53   | 55    | 61   | 75   | 75   | 82   | 81   | 81   | 84   | 75     | 78   | 70        | 71   |
| 20.....      | 64      | 65   | 43       | 42   | 50       | 53   | 34      | 36   | 41       | 43   | 50    | 50   | 61    | 66   | 72   | 73   | 79   | 82   | 81   | 85   | 75     | 78   | 70        | 72   |
| 21.....      | 64      | 65   | 43       | 48   | 52       | 56   | 35      | 40   | 41       | 44   | 47    | 49   | 63    | 69   | 71   | 74   | 79   | 82   | 82   | 86   | 74     | 76   | 71        | 74   |
| 22.....      | 65      | 66   | 45       | 44   | 52       | 53   | 40      | 45   | 41       | 44   | 47    | 49   | 67    | 68   | 72   | 70   | 80   | 82   | 83   | 87   | 75     | 76   | 73        | 73   |
| 23.....      | 65      | 65   | 41       | 42   | 53       | 54   | 46      | 41   | 44       | 45   | 48    | 50   | 63    | 64   | 69   | 72   | 81   | 82   | 84   | 83   | 73     | 78   | 71        | 73   |
| 24.....      | 62      | 65   | 41       | 42   | 54       | 53   | 43      | 45   | 43       | 46   | 49    | 51   | 65    | 64   | 70   | 73   | 81   | 80   | 81   | 83   | 74     | 77   | 68        | 69   |
| 25.....      | 63      | 65   | 39       | 40   | 51       | 49   | 43      | 44   | 48       | 49   | 50    | 55   | 64    | 67   | 72   | 75   | 77   | 74   | 82   | 81   | 74     | 75   | 67        | 69   |
| 26.....      | 62      | 63   | 39       | 41   | 45       | 48   | 43      | 44   | 51       | 52   | 50    | 54   | 64    | 68   | 74   | 75   | 72   | 78   | 79   | 82   | 72     | 76   | 67        | 70   |
| 27.....      | 61      | 60   | 38       | 44   | 45       | 43   | 44      | --   | --       | --   | 51    | 50   | 67    | 70   | 73   | 74   | 73   | 78   | 80   | 81   | 72     | 77   | 68        | 68   |
| 28.....      | 58      | 62   | 36       | 38   | 43       | 44   | 45      | 48   | 53       | 52   | 49    | 51   | 69    | 74   | 72   | 74   | 77   | 75   | 81   | 83   | 73     | 77   | 66        | 66   |
| 29.....      | 58      | 62   | 38       | 39   | 42       | 43   | 44      | 47   | --       | --   | 46    | 50   | 68    | 70   | 72   | 75   | 74   | 77   | 79   | 83   | 74     | 79   | 64        | 64   |
| 30.....      | 60      | 62   | 39       | 38   | 41       | 44   | 45      | --   | --       | --   | 48    | 50   | 69    | 74   | 74   | 76   | 74   | 76   | 81   | 83   | 74     | 79   | 63        | 65   |
| 31.....      | 60      | 61   | --       | --   | 42       | 44   | --      | --   | --       | --   | 45    | 53   | --    | --   | 74   | 77   | --   | --   | 80   | 84   | 76     | 81   | --        | --   |
| Average..... | 63      | 65   | 49       | 50   | 47       | 48   | 41      | 42   | 47       | 49   | 48    | 50   | 57    | 60   | 70   | 72   | 77   | 79   | 80   | 82   | 77     | 80   | 72        | 74   |

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.

LOCATION.--At gaging station at bridge on U. S. Highway 25W and State Highway 92 at Williamsburg, Whitley County, and 2.1 miles downstream from Clear Fork. DRAINAGE AREA.--1,607 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1957.

Sediment records: October 1953 to September 1957.

Water temperatures: October 1951 to September 1957.  
 EXTREMES, 1956-57.--Dissolved solids: Maximum, 264 ppm Aug. 17-21; minimum, 61 ppm Jan. 26 to Feb. 5, Apr. 5-12.

Hardness: Maximum, 96 ppm Oct. 28 to Nov. 6; minimum, 26 ppm Jan. 26 to Feb. 5.

Specific conductance: Maximum daily, 511 microhmhos Aug. 19; minimum daily, 62 microhmhos Jan. 31.

Water temperatures: Maximum, 89°F Aug. 3, Sept. 2; minimum, 33°F Jan. 19.

Sediment concentrations: Maximum daily, 914 ppm Sept. 18; minimum daily, 1 ppm on several days during October, November, January, and July.

Sediment loads: Maximum daily, 82,000 tons Jan. 31; minimum daily, less than 0.5 ton on several days during October, July, and September.

EXTREMES, 1951-57.--Dissolved solids: Maximum, 409 ppm Dec. 9-14, 1953; minimum, 55 ppm Jan. 1-2, 1955.

Hardness: Maximum, 126 ppm Dec. 9-14, 1953; minimum, 26 ppm Jan. 26 to Feb. 5, 1957.

Specific conductance: Maximum daily, 754 microhmhos Dec. 11, 1953; minimum daily, 60 microhmhos Mar. 24, 25, 1952.

Water temperatures: Maximum, 91°F on several days during June and July 1952; minimum, 33°F on several days during winter months.

Sediment concentrations (1953-57): Maximum daily, 914 ppm Sept. 18, 1957; minimum daily, 1 ppm on many days during 1953 to 1957.

Sediment loads (1953-57): Maximum daily, 82,000 tons Jan. 31, 1957; minimum daily, less than 0.5 ton on many days during 1953 to 1957.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (microhmhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| Oct. 1-11, 1956    | 164                  | --                         | --        | 17           | 7.1            | 30          | 30            | 84                              | 55                         | 7.0           | 0.2          | 0.4                        | 169                                                | 72                            | 2             | 286                                       | 7.4 | 3     |
| Oct. 12-27         | 109                  | --                         | --        | 19           | 9.4            | 38          | 38            | 104                             | 69                         | 8.0           | --           | .2                         | 208                                                | 86                            | 1             | 352                                       | 7.4 | 2     |
| Oct. 28-Nov. 6     | 378                  | --                         | --        | 22           | 10             | 50          | 50            | 112                             | 93                         | 10            | --           | .5                         | 253                                                | 96                            | 4             | 395                                       | 7.4 | 4     |
| Nov. 7-18          | 252                  | --                         | --        | 18           | 8.4            | 42          | 42            | 107                             | 68                         | 8.5           | .2           | .9                         | 212                                                | 80                            | 0             | 342                                       | 7.6 | 6     |
| Nov. 19-30         | 366                  | --                         | --        | 17           | 7.3            | 31          | 31            | 61                              | 60                         | 7.0           | --           | .4                         | 151                                                | 72                            | 0             | 288                                       | 7.2 | 6     |
| Dec. 1-14          | 16,450               | --                         | --        | 15           | 6.6            | 27          | 27            | 72                              | 53                         | 6.0           | --           | .7                         | 132                                                | 64                            | 6             | 258                                       | 7.6 | 7     |
| Dec. 15-18         | 13,840               | --                         | --        | 8.6          | 3.0            | 5.1         | 5.1           | 21                              | 23                         | 1.9           | --           | 2.0                        | 71                                                 | 34                            | 17            | 98                                        | 8.9 | 10    |
| Dec. 19-23         | 5,350                | --                         | --        | 8.9          | 4.1            | 9.2         | 9.2           | 28                              | 30                         | 2.4           | --           | 2.0                        | 83                                                 | 39                            | 16            | 127                                       | 7.1 | 8     |
| Dec. 24-27         | 9,710                | 9.9                        | 0.15      | 7.0          | 3.4            | 5.2         | 1.3           | 23                              | 22                         | 1.5           | .2           | 1.4                        | 67                                                 | 32                            | 13            | 95                                        | 7.1 | 10    |
| Dec. 28-31         | 2,282                | --                         | --        | 9.4          | 4.0            | 9.4         | 9.4           | 28                              | 32                         | 1.7           | --           | 1.8                        | 81                                                 | 40                            | 17            | 130                                       | 7.1 | 10    |
| Jan. 1-10, 1957    | 2,499                | --                         | --        | 11           | 5.0            | 14          | 14            | 36                              | 40                         | 3.9           | --           | 2.0                        | 101                                                | 48                            | 18            | 161                                       | 7.3 | 7     |
| Jan. 11-14         | 9,495                | --                         | --        | 6.4          | 3.4            | 7.1         | 7.1           | 21                              | 22                         | 2.8           | --           | 1.7                        | 68                                                 | 30                            | 13            | 97                                        | 7.0 | 6     |
| Jan. 15-25         | 3,068                | --                         | --        | 11           | 4.1            | 13          | 13            | 33                              | 37                         | 3.4           | --           | 1.9                        | 94                                                 | 44                            | 18            | 150                                       | 7.1 | 7     |
| Jan. 26-Feb. 5     | 26,920               | --                         | --        | 5.9          | 2.9            | 4.8         | 4.8           | 17                              | 18                         | 2.0           | --           | 1.6                        | 61                                                 | 26                            | 12            | 84                                        | 7.0 | 8     |
| Feb. 6-10          | 9,136                | --                         | --        | 10           | 4.7            | 9.0         | 9.0           | 26                              | 36                         | 2.4           | --           | 1.8                        | 90                                                 | 44                            | 23            | 142                                       | 7.0 | 7     |
| Feb. 11-14         | 12,250               | --                         | --        | 8.4          | 3.8            | 5.3         | 5.3           | 21                              | 26                         | 2.1           | --           | 1.2                        | 73                                                 | 36                            | 20            | 110                                       | 7.0 | 7     |
| Feb. 15-20         | 4,126                | --                         | --        | 11           | 6.8            | 13          | 13            | 34                              | 47                         | 4.0           | --           | 1.9                        | 108                                                | 56                            | 28            | 174                                       | 6.9 | 6     |

CUMBERLAND RIVER BASIN--Continued  
CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| Feb. 21-25, 1957       | 6,020                | --                         | --        | 8.1          | 4.3            | 12          | 7.8           | 28                              | 27                         | 1.8           | --           | 1.4                        | 83                                                 | 38                            | 14            | 131                                       | 7.2 | 10    |
| Feb. 26-Mar. 10        | 3,732                | 6.1                        | 0.15      | 10           | 5.4            | 12          | 1.2           | 36                              | 36                         | 2.0           | 0.2          | 3.4                        | 101                                                | 47                            | 18            | 160                                       | 7.2 | 7     |
| Mar. 11-16             | 4,080                | --                         | --        | 7.8          | 4.1            | 12          | 7.6           | 28                              | 26                         | 1.5           | --           | 1.1                        | 75                                                 | 36                            | 14            | 123                                       | 7.2 | 5     |
| Mar. 17-23             | 1,807                | --                         | --        | 11           | 4.8            | 15          | 1.5           | 40                              | 41                         | 2.5           | --           | .9                         | 104                                                | 48                            | 14            | 169                                       | 7.3 | 5     |
| Mar. 24-Apr. 4         | 1,620                | --                         | --        | 12           | 5.9            | 16          | 4.6           | 49                              | 43                         | 3.0           | --           | .8                         | 120                                                | 54                            | 14            | 202                                       | 7.4 | 5     |
| Apr. 5-12              | 13,100               | --                         | --        | 6.0          | 3.7            | 10          | 4.6           | 20                              | 21                         | .5            | --           | 1.3                        | 61                                                 | 30                            | 14            | 94                                        | 7.3 | 4     |
| Apr. 13-16             | 3,188                | --                         | --        | 9.5          | 4.9            | 13          | 8.5           | 32                              | 32                         | 1.1           | --           | 1.4                        | 86                                                 | 44                            | 18            | 144                                       | 7.5 | 4     |
| Apr. 17-23             | 2,153                | --                         | --        | 12           | 5.9            | 16          | 1.6           | 45                              | 45                         | 3.3           | --           | 1.4                        | 113                                                | 54                            | 17            | 192                                       | 7.7 | 5     |
| Apr. 24-May 1          | 3,524                | --                         | --        | 10           | 4.7            | 13          | 1.3           | 39                              | 34                         | 3.0           | --           | .9                         | 90                                                 | 44                            | 12            | 140                                       | 7.5 | 10    |
| May 2-9                | 970                  | --                         | --        | 12           | 6.2            | 18          | 1.8           | 54                              | 44                         | 3.5           | --           | .4                         | 119                                                | 56                            | 12            | 193                                       | 7.4 | 5     |
| May 10-20              | 443                  | --                         | --        | 16           | 8.1            | 27          | 2.7           | 76                              | 61                         | 4.5           | --           | .2                         | 165                                                | 74                            | 12            | 262                                       | 7.6 | 5     |
| May 21-24              | 1,384                | --                         | --        | 16           | 9.1            | 30          | 3.0           | 82                              | 64                         | 5.5           | --           | .9                         | 176                                                | 78                            | 10            | 282                                       | 7.0 | 7     |
| May 25-June 7          | 888                  | 8.8                        | .32       | 16           | 6.4            | 22          | 2.0           | 70                              | 48                         | 5.5           | .1           | 1.5                        | 146                                                | 66                            | 9             | 229                                       | 7.3 | 5     |
| May 8-22               | 680                  | --                         | --        | 16           | 5.4            | 20          | 2.0           | 64                              | 44                         | 4.5           | --           | 1.2                        | 134                                                | 62                            | 10            | 208                                       | 7.2 | 7     |
| June 23-30             | 1,497                | --                         | --        | 11           | 5.0            | 15          | 1.5           | 46                              | 35                         | 3.5           | --           | 1.6                        | 108                                                | 48                            | 10            | 172                                       | 7.1 | 10    |
| July 1-21              | 369                  | --                         | --        | 15           | 5.8            | 18          | 1.8           | 61                              | 43                         | 4.0           | --           | 1.0                        | 128                                                | 62                            | 12            | 214                                       | 7.2 | 7     |
| July 23-31             | 147                  | --                         | --        | 18           | 7.6            | 29          | 2.9           | 80                              | 61                         | 7.0           | --           | .4                         | 166                                                | 76                            | 10            | 264                                       | 7.6 | --    |
| Aug. 1-16              | 109                  | --                         | --        | 21           | 10.6           | 44          | 4.4           | 101                             | 88                         | 10            | --           | .5                         | 224                                                | 94                            | 10            | 378                                       | 7.2 | --    |
| Aug. 17-21             | 392                  | 6.1                        | .02       | 20           | 10             | 57          | 6.7           | 122                             | 98                         | 13            | .2           | 1.0                        | 264                                                | 91                            | 0             | 445                                       | 7.4 | 9     |
| Aug. 22-Sept. 6        | 64.5                 | --                         | --        | 15           | 7.2            | 30          | 3.0           | 65                              | 63                         | 8.5           | --           | 1.6                        | 164                                                | 87                            | 14            | 274                                       | 7.3 | --    |
| Sept. 7-18             | 804                  | --                         | --        | 16           | 7.4            | 44          | 4.4           | 93                              | 74                         | 9.0           | --           | .8                         | 203                                                | 70                            | 0             | 339                                       | 7.4 | --    |
| Sept. 19-30            | 725                  | --                         | --        | 13           | 5.7            | 18          | 1.8           | 50                              | 46                         | 4.0           | --           | 1.8                        | 129                                                | 56                            | 15            | 200                                       | 7.3 | --    |
| Time-weighted averaged | 2,921                | --                         | --        | 14           | 6.3            | 22          | 2.2           | 61                              | 50                         | 5.1           | --           | 1.2                        | 139                                                | 61                            | 11            | 227                                       | --  | 6     |

a Represents 99 percent of days and 100 percent of runoff.

## CUMBERLAND RIVER BASIN--Continued

CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
/Twice-daily measurements at approximately 7:30 a. m. and 5:30 p. m./

| Day          | October |       | November |       | December |       | January |       | February |       | March |       | April |       | May   |       | June  |       | July  |       | August |       | September |       |
|--------------|---------|-------|----------|-------|----------|-------|---------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-----------|-------|
|              | a. m.   | p. m. | a. m.    | p. m. | a. m.    | p. m. | a. m.   | p. m. | a. m.    | p. m. | a. m. | p. m. | a. m. | p. m. | a. m. | p. m. | a. m. | p. m. | a. m. | p. m. | a. m.  | p. m. | a. m.     | p. m. |
| 1.....       | 67      | 71    | 60       | 62    | 38       | 41    | 41      | 42    | 49       | 50    | 49    | 50    | 50    | 52    | 69    | 75    | 74    | 78    | 75    | 79    | 81     | 87    | 78        | 88    |
| 2.....       | 70      | 73    | 59       | 62    | 38       | 42    | 39      | 41    | 48       | 50    | 49    | 50    | 52    | 55    | 71    | 75    | 75    | 77    | 75    | 79    | 83     | 88    | 78        | 89    |
| 3.....       | 70      | 71    | 59       | 62    | 40       | 44    | 37      | 39    | 49       | 50    | 46    | 49    | 57    | 57    | 70    | 73    | 75    | 77    | 75    | 80    | 83     | 89    | 79        | 80    |
| 4.....       | 69      | 69    | 59       | 62    | 41       | 44    | 38      | 39    | 50       | 50    | 45    | 47    | 57    | 57    | 66    | 70    | 74    | 78    | 77    | 83    | 84     | 87    | 77        | 81    |
| 5.....       | 68      | 69    | 59       | 61    | 42       | 45    | 38      | 39    | 50       | 51    | 45    | 46    | 56    | 57    | 63    | 66    | 75    | 77    | 80    | 83    | 82     | 84    | 75        | 81    |
| 6.....       | 68      | 70    | 59       | 61    | 45       | 48    | 39      | 40    | 50       | 51    | 46    | 47    | 54    | 56    | 62    | 66    | 74    | 76    | 77    | 80    | 83     | 78    | 83        | 83    |
| 7.....       | 68      | 69    | 59       | 62    | 47       | 50    | 40      | 42    | 51       | 52    | 46    | 47    | 53    | 53    | 66    | 68    | 73    | 76    | 78    | 84    | 76     | 83    | 74        | 80    |
| 8.....       | 63      | 68    | 58       | 57    | 30       | 32    | 40      | 42    | 52       | 53    | 43    | 45    | 54    | 55    | 63    | 70    | 73    | 77    | 79    | 83    | 76     | 83    | 73        | 76    |
| 9.....       | 63      | 67    | 53       | --    | 31       | 30    | 42      | 44    | 53       | 54    | 43    | 45    | 54    | 55    | 66    | 71    | 75    | 78    | 81    | 82    | 77     | 83    | 73        | 76    |
| 10.....      | 63      | 65    | 51       | 53    | 46       | 48    | 45      | 47    | 53       | 55    | 43    | 45    | 52    | 53    | 67    | 69    | 75    | 77    | 79    | 82    | 78     | 83    | 73        | 80    |
| 11.....      | 61      | 65    | 50       | 52    | 46       | 47    | 46      | 48    | 53       | 53    | 45    | 48    | 52    | 54    | 68    | 72    | 74    | 77    | 79    | 84    | 78     | 85    | 74        | 79    |
| 12.....      | 61      | 66    | 52       | 55    | 48       | 50    | 45      | 45    | 50       | 51    | 48    | 51    | 53    | 54    | 69    | 75    | 75    | 79    | 79    | 84    | 79     | 83    | 75        | 81    |
| 13.....      | 61      | 67    | 49       | 51    | 51       | 51    | 44      | 45    | 48       | 48    | 50    | 53    | 52    | 54    | 71    | 77    | 77    | 80    | 81    | 85    | 79     | 87    | 76        | 78    |
| 14.....      | 61      | 66    | 49       | 53    | 51       | 53    | 44      | 45    | 46       | 47    | 52    | 55    | 52    | 54    | 73    | 76    | 77    | 82    | 81    | 85    | 81     | 87    | 75        | 78    |
| 15.....      | 61      | 67    | 50       | 54    | 52       | 54    | 43      | 44    | 45       | 46    | 53    | 56    | 51    | 56    | 73    | 78    | 78    | 83    | 82    | 84    | 80     | --    | 75        | 78    |
| 16.....      | 61      | 66    | 53       | 54    | 53       | 54    | 41      | 41    | 45       | 47    | 53    | 56    | 53    | 54    | 74    | 78    | 79    | 86    | 80    | 83    | 78     | 81    | 75        | 77    |
| 17.....      | 61      | 66    | 49       | 51    | 53       | 54    | 37      | 39    | 43       | 46    | 53    | 56    | 53    | 55    | 73    | 77    | 81    | 85    | 80    | 84    | 78     | 80    | 73        | 73    |
| 18.....      | 63      | 66    | 46       | 48    | 53       | 53    | 35      | 37    | 43       | 46    | 53    | 54    | 54    | 57    | 74    | 78    | 81    | 84    | 82    | 86    | 77     | 79    | 70        | 70    |
| 19.....      | 63      | 67    | 45       | 49    | 50       | 53    | 33      | 37    | 44       | 44    | 53    | 54    | 56    | 62    | 75    | 76    | 80    | 82    | 83    | 86    | 76     | 80    | 70        | 71    |
| 20.....      | 64      | 67    | 48       | 50    | 51       | 52    | 34      | 36    | 42       | 43    | 52    | 53    | 60    | 65    | 72    | 74    | 77    | 83    | 82    | 86    | 75     | 79    | --        | 73    |
| 21.....      | 64      | 66    | 49       | 50    | 51       | 52    | 36      | 40    | 41       | 44    | 49    | 52    | 63    | 66    | 72    | 77    | 76    | 82    | 83    | 87    | 75     | 80    | 72        | 75    |
| 22.....      | 64      | 68    | 45       | 44    | 52       | 53    | 40      | 42    | 43       | 44    | 50    | 50    | 64    | 67    | 73    | 76    | 78    | 82    | 82    | 86    | 74     | 78    | 73        | 76    |
| 23.....      | 64      | 65    | 41       | 43    | 54       | 54    | 43      | 45    | 43       | 45    | 49    | 52    | 64    | 66    | 69    | 63    | 78    | 82    | 84    | 87    | 74     | 79    | 72        | 73    |
| 24.....      | 63      | 65    | 41       | 43    | 54       | 54    | 44      | 46    | 44       | 46    | 50    | 51    | 65    | 68    | 70    | 72    | 78    | 77    | 81    | 85    | 74     | 79    | 69        | 73    |
| 25.....      | 63      | 64    | 39       | 41    | 52       | 52    | 44      | 44    | 46       | 49    | 50    | 54    | 64    | 66    | 70    | 75    | 74    | 78    | 80    | 84    | 74     | 78    | 68        | 72    |
| 26.....      | 62      | 62    | 40       | 41    | 49       | --    | 43      | 44    | 52       | 52    | 53    | 64    | 68    | 73    | 75    | 75    | 75    | 80    | 80    | 85    | 73     | 78    | 68        | 71    |
| 27.....      | 60      | 62    | 39       | 40    | 45       | --    | 43      | 43    | 51       | 52    | 51    | 51    | 66    | 69    | 72    | 76    | 73    | 77    | 80    | 85    | 73     | 81    | 69        | 69    |
| 28.....      | 59      | 62    | 37       | 40    | 44       | --    | 44      | 46    | 51       | 51    | 50    | 53    | 68    | 70    | 72    | 76    | 75    | 75    | 82    | 86    | 74     | 83    | 67        | 67    |
| 29.....      | 59      | 62    | 39       | 40    | 42       | --    | 49      | 49    | --       | --    | 49    | 52    | 69    | --    | 72    | 75    | 74    | 79    | 81    | 86    | 75     | 84    | 65        | 65    |
| 30.....      | 60      | 63    | 37       | 40    | 42       | --    | 49      | 50    | --       | --    | 49    | 50    | 69    | 74    | 73    | 77    | 75    | 78    | 81    | 84    | 75     | 86    | 64        | --    |
| 31.....      | 61      | 62    | --       | 42    | --       | --    | 49      | 50    | --       | --    | 48    | 51    | --    | --    | 73    | 78    | --    | --    | 81    | 85    | 76     | 87    | --        | --    |
| Average..... | 63      | 66    | 49       | 51    | 48       | 50    | 41      | 43    | 48       | 49    | 49    | 51    | 58    | 58    | 71    | 74    | 76    | 80    | 80    | 84    | 77     | 83    | 73        | 76    |

## CUMBERLAND AND TENNESSEE RIVER BASINS

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 130                   | 2                        | 1            | 258                   | 16                       | 11           | 301                   | 8                        | 6            |
| 2.....  | 128                   | 2                        | 1            | 552                   | 32                       | 48           | 285                   | 7                        | 5            |
| 3.....  | 133                   | 2                        | 1            | 720                   | 23                       | 45           | 265                   | 8                        | 6            |
| 4.....  | 142                   | 2                        | 1            | 732                   | 13                       | 26           | 254                   | 9                        | 6            |
| 5.....  | 148                   | 2                        | 1            | 520                   | 8                        | 11           | 244                   | 6                        | 4            |
| 6.....  | 273                   | 4                        | 3            | 395                   | 6                        | 6            | 234                   | 5                        | 3            |
| 7.....  | 230                   | 4                        | 2            | 325                   | 5                        | 4            | 230                   | 5                        | 3            |
| 8.....  | 188                   | 3                        | 2            | 293                   | 4                        | 3            | 223                   | 7                        | 4            |
| 9.....  | 160                   | 1                        | (t)          | 285                   | 3                        | 2            | 220                   | 5                        | 3            |
| 10..... | 145                   | 1                        | (t)          | 297                   | 4                        | 3            | 216                   | 5                        | 3            |
| 11..... | 128                   | 1                        | (t)          | 273                   | 1                        | 1            | 220                   | 6                        | 4            |
| 12..... | 118                   | 1                        | (t)          | 258                   | 4                        | 3            | 254                   | 10                       | 7            |
| 13..... | 108                   | 2                        | 1            | 240                   | 1                        | 1            | 3,690                 | 320                      | sa 4,400     |
| 14..... | 100                   | 3                        | 1            | 220                   | 1                        | 1            | 16,400                | 475                      | 21,000       |
| 15..... | 92                    | 3                        | 1            | 206                   | 2                        | 1            | 21,500                | 330                      | 19,200       |
| 16..... | 88                    | 2                        | (t)          | 206                   | 2                        | 1            | 18,000                | 123                      | 5,980        |
| 17..... | 85                    | 2                        | (t)          | 202                   | 2                        | 1            | 11,400                | 46                       | 1,420        |
| 18..... | 82                    | 2                        | (t)          | 230                   | 3                        | 2            | 4,460                 | 26                       | 313          |
| 19..... | 80                    | 2                        | (t)          | 293                   | 4                        | 3            | 2,830                 | 22                       | 168          |
| 20..... | 78                    | 1                        | (t)          | 333                   | 5                        | 4            | 2,240                 | 14                       | 85           |
| 21..... | 88                    | 1                        | (t)          | 345                   | 4                        | 4            | 2,020                 | 6                        | 33           |
| 22..... | 90                    | 1                        | (t)          | 337                   | 7                        | 6            | 5,840                 | 174                      | s 3,390      |
| 23..... | 98                    | 3                        | 1            | 368                   | 6                        | 6            | 13,800                | 244                      | s 8,860      |
| 24..... | 139                   | 4                        | 2            | 420                   | 5                        | 6            | 15,300                | 42                       | 1,740        |
| 25..... | 170                   | 4                        | 2            | 430                   | 4                        | 5            | 12,400                | 50                       | 1,670        |
| 26..... | 174                   | 4                        | 2            | 415                   | 5                        | 6            | 7,100                 | 32                       | 613          |
| 27..... | 154                   | 3                        | 1            | 390                   | 5                        | 5            | 4,040                 | 25                       | 273          |
| 28..... | 145                   | 2                        | 1            | 376                   | 2                        | 2            | 3,000                 | 16                       | 130          |
| 29..... | 145                   | 2                        | 1            | 354                   | 3                        | 3            | 2,410                 | 11                       | 72           |
| 30..... | 151                   | 4                        | 2            | 325                   | 7                        | 6            | 2,020                 | 6                        | 33           |
| 31..... | 167                   | 4                        | 2            | --                    | --                       | --           | 1,700                 | 3                        | 14           |
| Total.  | 4,157                 | --                       | 33           | 10,598                | --                       | 226          | 153,096               | --                       | 69,448       |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,430                 | 3                        | 12           | 47,600                | 312                      | 40,100       | 2,820                 | 14                       | 106          |
| 2.....  | 1,240                 | 5                        | 17           | 40,800                | 168                      | 18,500       | 3,150                 | 22                       | 187          |
| 3.....  | 1,060                 | 4                        | 11           | 32,800                | 145                      | 12,800       | 3,346                 | 28                       | 252          |
| 4.....  | 954                   | 3                        | 8            | 25,400                | 108                      | 7,410        | 3,110                 | 27                       | 227          |
| 5.....  | 1,640                 | 14                       | s 73         | 18,800                | 65                       | 3,300        | 2,600                 | 19                       | 144          |
| 6.....  | 2,790                 | 40                       | 301          | 9,880                 | 52                       | 1,390        | 2,520                 | 12                       | 82           |
| 7.....  | 2,760                 | 15                       | 112          | 5,500                 | 73                       | 1,080        | 2,380                 | 10                       | 64           |
| 8.....  | 2,600                 | 15                       | 105          | 7,420                 | 98                       | 1,960        | 4,430                 | 59                       | s 752        |
| 9.....  | 2,990                 | 31                       | s 280        | 9,780                 | 120                      | 3,170        | 7,880                 | 82                       | 1,740        |
| 10..... | 7,530                 | 175                      | 3,560        | 13,100                | 233                      | 8,240        | 7,370                 | 43                       | 856          |
| 11..... | 12,500                | 344                      | 11,600       | 16,700                | 335                      | 15,100       | 5,970                 | 29                       | 467          |
| 12..... | 13,100                | 246                      | 8,700        | 15,700                | 162                      | 6,870        | 5,020                 | 16                       | 217          |
| 13..... | 8,010                 | 38                       | s 983        | 10,800                | 50                       | 1,460        | 4,200                 | 12                       | 136          |
| 14..... | 4,370                 | 27                       | 318          | 5,810                 | 48                       | 753          | 3,540                 | 7                        | 67           |
| 15..... | 3,140                 | 27                       | 246          | 4,060                 | 33                       | 362          | 3,080                 | 7                        | 58           |
| 16..... | 2,500                 | 9                        | 61           | 3,300                 | 26                       | 232          | 2,670                 | 5                        | 36           |
| 17..... | 2,060                 | 7                        | 39           | 2,830                 | 21                       | 160          | 2,290                 | 3                        | 18           |
| 18..... | 1,650                 | 5                        | 22           | 2,460                 | 15                       | 100          | 2,030                 | 3                        | 16           |
| 19..... | 1,380                 | 2                        | 7            | 3,480                 | 81                       | s 296        | 1,900                 | 10                       | 51           |
| 20..... | 1,240                 | 2                        | 7            | 8,630                 | 262                      | 6,100        | 1,780                 | 8                        | 38           |
| 21..... | 1,260                 | 1                        | 3            | 10,300                | 218                      | 6,060        | 1,600                 | 7                        | 30           |
| 22..... | 1,480                 | 20                       | s 84         | 7,470                 | 98                       | 1,980        | 1,490                 | 9                        | 36           |
| 23..... | 4,020                 | 199                      | s 2,420      | 5,150                 | 36                       | 500          | 1,560                 | 7                        | 29           |
| 24..... | 7,300                 | 300                      | 5,910        | 3,910                 | 22                       | 232          | 1,550                 | 5                        | 21           |
| 25..... | 7,720                 | 120                      | 2,500        | 3,270                 | 17                       | 150          | 1,470                 | 8                        | 32           |
| 26..... | 5,180                 | 62                       | 867          | 3,010                 | 15                       | 122          | 1,500                 | 8                        | 32           |
| 27..... | 3,940                 | 35                       | 372          | 2,920                 | 14                       | 110          | 1,520                 | 7                        | 29           |
| 28..... | 8,500                 | 502                      | s 18,000     | 2,780                 | 13                       | 98           | 1,470                 | 6                        | 24           |
| 29..... | 28,800                | 807                      | s 60,500     | --                    | --                       | --           | 1,380                 | 3                        | 11           |
| 30..... | 37,600                | 580                      | 58,900       | --                    | --                       | --           | 1,340                 | 3                        | 11           |
| 31..... | 46,700                | 650                      | 82,000       | --                    | --                       | --           | 1,310                 | 3                        | 11           |
| Total.  | 227,444               | --                       | 257,918      | 323,660               | --                       | 138,635      | 88,470                | --                       | 5,780        |

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from partly estimated concentration graph.

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                |                          |              | May                  |                          |              | June                 |                          |              |
|---------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,280                | 4                        | 14           | 1,510                | 13                       | 53           | 435                  | 7                        | 8            |
| 2.....  | 1,400                | 4                        | 15           | 1,340                | 9                        | 32           | 363                  | 7                        | 7            |
| 3.....  | 2,040                | 9                        | 50           | 1,310                | 7                        | 25           | 341                  | 5                        | 5            |
| 4.....  | 3,180                | 53                       | s 597        | 1,140                | 7                        | 22           | 430                  | 10                       | 12           |
| 5.....  | 11,300               | 664                      | s 17,200     | 972                  | 13                       | 34           | 612                  | 22                       | 36           |
| 6.....  | 16,400               | 326                      | 14,400       | 864                  | 8                        | 19           | 1,750                | 41                       | 194          |
| 7.....  | 14,700               | 170                      | 6,750        | 780                  | 5                        | 10           | 1,970                | 121                      | 644          |
| 8.....  | 10,400               | 169                      | 4,740        | 708                  | 5                        | 10           | 1,440                | 131                      | 509          |
| 9.....  | 15,300               | 566                      | 23,400       | 642                  | 4                        | 7            | 1,050                | 48                       | 136          |
| 10..... | 16,800               | 280                      | 12,700       | 582                  | 5                        | 8            | 828                  | 19                       | 42           |
| 11..... | 12,800               | 88                       | 3,040        | 535                  | 3                        | 4            | 660                  | 13                       | 23           |
| 12..... | 7,100                | 37                       | 709          | 510                  | 3                        | 4            | 546                  | 13                       | 19           |
| 13..... | 4,330                | 37                       | 432          | 480                  | 3                        | 4            | 525                  | 13                       | 18           |
| 14..... | 3,370                | 20                       | 182          | 450                  | 2                        | 2            | 530                  | 12                       | 17           |
| 15..... | 2,740                | 21                       | 155          | 430                  | 2                        | 2            | 520                  | 14                       | 20           |
| 16..... | 2,310                | 17                       | 106          | 400                  | 2                        | 2            | 400                  | 26                       | 28           |
| 17..... | 2,160                | 12                       | 70           | 368                  | 3                        | 3            | 333                  | 7                        | 6            |
| 18..... | 1,980                | 10                       | 53           | 341                  | 4                        | 4            | 470                  | 16                       | 20           |
| 19..... | 1,780                | 10                       | 48           | 350                  | 3                        | 3            | 505                  | 17                       | 23           |
| 20..... | 1,620                | 9                        | 39           | 430                  | 5                        | 6            | 948                  | 30                       | 77           |
| 21..... | 1,490                | 8                        | 32           | 654                  | 4                        | 7            | 726                  | 28                       | 55           |
| 22..... | 1,930                | 155                      | s 1,020      | 912                  | 86                       | s 283        | 415                  | 16                       | 18           |
| 23..... | 4,110                | 452                      | 5,020        | 2,110                | 340                      | 1,940        | 329                  | 15                       | 13           |
| 24..... | 6,620                | 312                      | 5,380        | 1,860                | 159                      | s 828        | 876                  | 90                       | sa 250       |
| 25..... | 6,600                | 53                       | 944          | 1,220                | 55                       | 181          | 1,940                | 280                      | sa 1,600     |
| 26..... | 4,180                | 93                       | 1,050        | 1,170                | 25                       | 79           | 3,240                | 211                      | 1,840        |
| 27..... | 3,130                | 47                       | 397          | 936                  | 16                       | 40           | 1,920                | 113                      | 586          |
| 28..... | 2,440                | 22                       | 145          | 936                  | 14                       | 35           | 1,140                | 38                       | 117          |
| 29..... | 2,040                | 17                       | 94           | 846                  | 17                       | 39           | 942                  | 32                       | 81           |
| 30..... | 1,750                | 12                       | 57           | 648                  | 17                       | 30           | 1,590                | 47                       | 202          |
| 31..... | --                   | --                       | --           | 500                  | 11                       | 15           | --                   | --                       | --           |
| Total.  | 167,280              | --                       | 99,039       | 25,934               | --                       | 3,731        | 27,774               | --                       | 6,606        |
| Day     | July                 |                          |              | August               |                          |              | September            |                          |              |
|         | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|         |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....  | 1,700                | 50                       | 230          | 102                  | 8                        | 2            | 44                   | 12                       | 1            |
| 2.....  | 1,170                | 47                       | 148          | 90                   | 7                        | 2            | 45                   | 10                       | 1            |
| 3.....  | 816                  | 27                       | 59           | 78                   | 7                        | 1            | 45                   | 8                        | 1            |
| 4.....  | 594                  | 21                       | 34           | 70                   | 6                        | 1            | 36                   | 5                        | (t)          |
| 5.....  | 460                  | 14                       | 17           | 68                   | 5                        | 1            | 29                   | 4                        | (t)          |
| 6.....  | 358                  | 13                       | 12           | 66                   | 6                        | 1            | 23                   | 4                        | (t)          |
| 7.....  | 305                  | 13                       | 11           | 60                   | 7                        | 1            | 22                   | 3                        | (t)          |
| 8.....  | 262                  | 8                        | 6            | 57                   | 7                        | 1            | 24                   | 3                        | (t)          |
| 9.....  | 230                  | 7                        | 4            | 56                   | 7                        | 1            | 26                   | 3                        | (t)          |
| 10..... | 202                  | 6                        | 3            | 52                   | 7                        | 1            | 35                   | 9                        | 1            |
| 11..... | 178                  | 3                        | 1            | 51                   | 7                        | 1            | 36                   | 11                       | 1            |
| 12..... | 160                  | 4                        | 2            | 50                   | 5                        | 1            | 44                   | 12                       | 1            |
| 13..... | 145                  | 2                        | 1            | 48                   | 5                        | 1            | 106                  | 20                       | 6            |
| 14..... | 133                  | 2                        | 1            | 45                   | 8                        | 1            | 297                  | 36                       | 29           |
| 15..... | 130                  | 3                        | 1            | 196                  | 34                       | s 30         | 648                  | 37                       | 65           |
| 16..... | 178                  | 5                        | 2            | 666                  | 140                      | sa 280       | 978                  | 67                       | s 186        |
| 17..... | 181                  | 2                        | 1            | 804                  | 38                       | s 89         | 3,160                | 622                      | s 5,680      |
| 18..... | 139                  | 3                        | 1            | 500                  | 10                       | 14           | 4,660                | 914                      | 11,500       |
| 19..... | 145                  | 2                        | 1            | 285                  | 10                       | 8            | 2,140                | 401                      | s 2,460      |
| 20..... | 139                  | 1                        | (t)          | 209                  | 38                       | 21           | 1,090                | 200                      | 589          |
| 21..... | 122                  | 1                        | (t)          | 160                  | 140                      | 60           | 750                  | 97                       | 196          |
| 22..... | 133                  | 6                        | 2            | 133                  | 158                      | 57           | 588                  | 43                       | 68           |
| 23..... | 157                  | 7                        | 3            | 112                  | 82                       | 25           | 684                  | 55                       | 102          |
| 24..... | 170                  | 11                       | 5            | 100                  | 38                       | 10           | 900                  | 108                      | 262          |
| 25..... | 157                  | 5                        | 2            | 90                   | 28                       | 7            | 768                  | 42                       | 87           |
| 26..... | 157                  | 3                        | 1            | 74                   | 21                       | 4            | 546                  | 22                       | 32           |
| 27..... | 151                  | 3                        | 1            | 66                   | 18                       | 3            | 381                  | 22                       | 23           |
| 28..... | 157                  | 4                        | 2            | 60                   | 15                       | 2            | 329                  | 20                       | 18           |
| 29..... | 139                  | 2                        | 1            | 56                   | 17                       | 2            | 293                  | 17                       | 13           |
| 30..... | 122                  | 5                        | 2            | 52                   | 18                       | 2            | 297                  | 15                       | 12           |
| 31..... | 115                  | 8                        | 2            | 47                   | 16                       | 2            | --                   | --                       | --           |
| Total.  | 9,205                | --                       | 557          | 4,503                | --                       | 632          | 19,024               | --                       | 21,336       |

Total discharge for year (cfs-days) ..... 1,061,145

Total load for year (tons) ..... 603,941

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

t Less than 0.5 ton.



## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Particle size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;

W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of Collection | Time        | Discharge (cfs) | Water temperature (° F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|-------------|-----------------|-------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |             |                 |                         | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |             |                 |                         |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Dec. 14, 1956...   | 7:30 a. m.  | 15,200          |                         | 497                           | 791                                        | 43                                                | 55    | 70    | 86    | 95    | 98    | 99    | 99    |       | 100   | BSWCM               |
| Dec. 23.....       | 7:30 a. m.  | 13,100          |                         | 322                           | 516                                        | 53                                                | 66    | 80    | 90    | 97    | 98    | 99    | 100   |       | --    | BSWCM               |
| Jan. 12, 1957...   | 7:30 a. m.  | 13,800          |                         | 307                           | 487                                        | 44                                                | 57    | 74    | 89    | 95    | 97    | 98    | 99    |       | 100   | BSWCM               |
| Jan. 28.....       | 7:30 a. m.  | 23,900          |                         | 899                           | 704                                        | 45                                                | 59    | 75    | 91    | 97    | 99    | 100   | --    |       | --    | BSWCM               |
| Jan. 30.....       | 8:10 p. m.  | 39,600          |                         | 520                           | 1,100                                      | 51                                                | 65    | 81    | 92    | 97    | 99    | 100   | --    |       | --    | BSWCM               |
| Jan. 31.....       | 11:40 a. m. | 47,300          |                         | 686                           | 1,100                                      | 46                                                | 61    | 81    | 93    | 96    | 98    | 99    | 99    |       | 100   | BSWCM               |
| Jan. 31.....       | 11:40 a. m. | 47,300          |                         | 686                           | 1,420                                      | 35                                                | 52    | 80    | 94    | 97    | 99    | 99    | 100   |       | --    | BSNM                |
| Feb. 1.....        | 7:30 a. m.  | 48,700          |                         | 340                           | 755                                        | 58                                                | 74    | 87    | 93    | 96    | 98    | 99    | 100   |       | --    | BSWCM               |
| Feb. 11.....       | 7:30 a. m.  | 16,700          |                         | 363                           | 589                                        | 41                                                | 54    | 71    | 87    | 95    | 98    | 99    | 100   |       | --    | BSWCM               |
| Feb. 21.....       | 7:30 a. m.  | 10,800          |                         | 244                           | 387                                        | 47                                                | 64    | 80    | 94    | 98    | 100   | --    | --    |       | --    | BSWCM               |
| Apr. 5.....        | 7:30 a. m.  | 9,700           |                         | 768                           | 1,160                                      | 45                                                | 55    | 73    | 88    | 95    | 98    | 99    | 100   |       | --    | BSWCM               |
| Apr. 9.....        | 7:40 a. m.  | 14,500          |                         | 609                           | 1,090                                      | 45                                                | 56    | 73    | 87    | 94    | 98    | 100   | --    |       | --    | BSWCM               |
| Apr. 24.....       | 7:30 a. m.  | 6,480           |                         | 393                           | 604                                        | 53                                                | 61    | 77    | 90    | 95    | 98    | 99    | 100   |       | --    | BSWCM               |
| May 23.....        | 7:30 a. m.  | 2,180           |                         | 370                           | 475                                        | 58                                                | 72    | 84    | 95    | 97    | 99    | 100   | --    |       | --    | BSWCM               |
| June 25.....       | 7:30 a. m.  | 1,240           |                         | 284                           | 490                                        | 67                                                | 82    | 92    | 96    | 98    | 98    | 99    | 100   |       | --    | BSWCM               |
| Sept. 18.....      | 7:30 a. m.  | 5,260           |                         | 1,030                         | 1,630                                      | 50                                                | 67    | 82    | 95    | 99    | 100   | --    | --    |       | --    | BSWCM               |

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER NEAR BURKESVILLE, KY.

LOCATION.--At Neelys Ferry on State Highway 61, half a mile downstream from Raft Creek, 3½ miles south of Burkesville, Cumberland County, and about 37 miles downstream from gaging station at Rowena.

DRAINAGE AREA.--6,050 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1952 to September 1954.

Water temperatures: October 1949 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 80°F. June 16, 17; minimum, 43°F. Mar. 3.

EXTREMES, 1949-57.--Water temperatures: Maximum, 84°F. July 30, 1956; minimum, 34°F. Feb. 2-4, 1951, Jan. 22, 1956.

REMARKS.--No discharge records available for this station.

Temperature (°F) of water, water year October 1956 to September 1957  
/Twice-daily measurements at approximately 7 a.m. and 3 p.m./

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 58      | 63   | 56       | 57   | 49       | 50   | 49      | 49   | 45       | 45   | 46    | 46   | 47    | 48   | 50   | 51   | 58   | 60   | 54   | 57   | 52     | 53   | 58        | 60   |
| 2.....       | 56      | 57   | 56       | 57   | 50       | 50   | 50      | 47   | 45       | 45   | 46    | 48   | 48    | 48   | 51   | 52   | 60   | 60   | 51   | 52   | 52     | 53   | 60        | 61   |
| 3.....       | 56      | 57   | 55       | 56   | 50       | 50   | 47      | 48   | 45       | 46   | 43    | 44   | 48    | 48   | 52   | 52   | 60   | 65   | 51   | 52   | 52     | 53   | 62        | 63   |
| 4.....       | 56      | 57   | 56       | 58   | 50       | 50   | 48      | 48   | 46       | 44   | 45    | 48   | 49    | 51   | 52   | 54   | 54   | 51   | 52   | 54   | 52     | 54   | 62        | 64   |
| 5.....       | 56      | 56   | 56       | 58   | 50       | 51   | 48      | 48   | 46       | 46   | 45    | 46   | 49    | 49   | 50   | 53   | 53   | 54   | 57   | 54   | 55     | 55   | 56        | 55   |
| 6.....       | 56      | 57   | 56       | 57   | 51       | 52   | 47      | 47   | 46       | 46   | 46    | 46   | 48    | 48   | 50   | 51   | 52   | 53   | 51   | 52   | 52     | 53   | 55        | 55   |
| 7.....       | 57      | 58   | 57       | 58   | 52       | 52   | 47      | 47   | 46       | 46   | 45    | 45   | 47    | 48   | 51   | 52   | 54   | 59   | 52   | 53   | 52     | 53   | 55        | 57   |
| 8.....       | 57      | 58   | 57       | 58   | 52       | 53   | 47      | 48   | 46       | 46   | 45    | 45   | 47    | 47   | 52   | 53   | 55   | 55   | 52   | 53   | 52     | 53   | 58        | 60   |
| 9.....       | 55      | 56   | 54       | 54   | 52       | 51   | 48      | 49   | 46       | 47   | 45    | 45   | 46    | 47   | 52   | 53   | 54   | 54   | 52   | 53   | 52     | 53   | 60        | 64   |
| 10.....      | 55      | 56   | 54       | 55   | 49       | 49   | 49      | 49   | 46       | 46   | 44    | 45   | 46    | 47   | 53   | 54   | 54   | 56   | 52   | 53   | 52     | 54   | 61        | 60   |
| 11.....      | 56      | 57   | 54       | 55   | 49       | 50   | 47      | 47   | 45       | 45   | 45    | 46   | 47    | 47   | 52   | 53   | 54   | 54   | 51   | 52   | 52     | 54   | 55        | 57   |
| 12.....      | 57      | 58   | 54       | 54   | 51       | 51   | 47      | 47   | 45       | 45   | 46    | 47   | 46    | 47   | 53   | 57   | 54   | 56   | 51   | 52   | 54     | 55   | 58        | 60   |
| 13.....      | 57      | 58   | 52       | 52   | 51       | 51   | 47      | 47   | 45       | 45   | 46    | 46   | 47    | 47   | 57   | 62   | 58   | 61   | 51   | 52   | 54     | 55   | 60        | 62   |
| 14.....      | 57      | 59   | 53       | 54   | 51       | 51   | 46      | 47   | 45       | 45   | 47    | 48   | 47    | 47   | 57   | 57   | 61   | 67   | 51   | 52   | 54     | 55   | 59        | 59   |
| 15.....      | 58      | 60   | 54       | 55   | 51       | 51   | 47      | 47   | 45       | 45   | 46    | 47   | 47    | 47   | 55   | 55   | 68   | 72   | 52   | 53   | 55     | 56   | 58        | 61   |
| 16.....      | 56      | 57   | 54       | 55   | 51       | 51   | 46      | 46   | 45       | 45   | 46    | 47   | 47    | 48   | 54   | 55   | 72   | 80   | 53   | 54   | 55     | 56   | 64        | 65   |
| 17.....      | 56      | 57   | 53       | 53   | 50       | 51   | 45      | 45   | 44       | 44   | 46    | 47   | 48    | 48   | 54   | 56   | 75   | 83   | 53   | 53   | 55     | 55   | 63        | 63   |
| 18.....      | 57      | 57   | 52       | 53   | 51       | 51   | 45      | 45   | 44       | 44   | 46    | 47   | 48    | 49   | 56   | 56   | 77   | 72   | 52   | 53   | 55     | 57   | 61        | 62   |
| 19.....      | 56      | 57   | 52       | 52   | 50       | 50   | 45      | 45   | 44       | 44   | 47    | 47   | 49    | 50   | 56   | 57   | 59   | 60   | 52   | 53   | 56     | 60   | 56        | 56   |
| 20.....      | 57      | 58   | 53       | 54   | 50       | 52   | 45      | 45   | 44       | 44   | 46    | 46   | 50    | 51   | 57   | 59   | 56   | 57   | 52   | 53   | 59     | 58   | 55        | 55   |
| 21.....      | 58      | 59   | 53       | 53   | 52       | 52   | 45      | 45   | 44       | 44   | 45    | 46   | 51    | 53   | 54   | 54   | 57   | 57   | 52   | 53   | 56     | 56   | 55        | 55   |
| 22.....      | 59      | 60   | 52       | 53   | 51       | 52   | 45      | 45   | 44       | 44   | 46    | 46   | 53    | 56   | 53   | 54   | 56   | 56   | 53   | 53   | 55     | 56   | 55        | 55   |
| 23.....      | 60      | 61   | 49       | 50   | 52       | 52   | 45      | 45   | 45       | 45   | 46    | 47   | 53    | 53   | 54   | 56   | 59   | 60   | 52   | 53   | 58     | 58   | 55        | 58   |
| 24.....      | 58      | 58   | 50       | 50   | 51       | 51   | 45      | 45   | 44       | 44   | 46    | 47   | 52    | 53   | 54   | 54   | 57   | 59   | 52   | 53   | 57     | 59   | 54        | 55   |
| 25.....      | 57      | 58   | 51       | 51   | 50       | 50   | 45      | 45   | 45       | 45   | 47    | 47   | 52    | 53   | 51   | 53   | 57   | 57   | 51   | 52   | 59     | 61   | 54        | 55   |
| 26.....      | 58      | 58   | 51       | 51   | 49       | 49   | 45      | 45   | 46       | 46   | 47    | 46   | 52    | 52   | 53   | 53   | 55   | 55   | 51   | 52   | 59     | 60   | 55        | 55   |
| 27.....      | 56      | 57   | 51       | 51   | 49       | 50   | 45      | 45   | 46       | 46   | 45    | 46   | 51    | 52   | 53   | 55   | 54   | 55   | 52   | 53   | 59     | 60   | 55        | 55   |
| 28.....      | 55      | 57   | 50       | 51   | 50       | 50   | 45      | 46   | 45       | 45   | 46    | 50   | 51    | 53   | 54   | 54   | 54   | 54   | 52   | 53   | 59     | 60   | 55        | 55   |
| 29.....      | 56      | 56   | 50       | 50   | 49       | 49   | 46      | 46   | --       | --   | 46    | 48   | 51    | 51   | 53   | 55   | 53   | 54   | 53   | 53   | 59     | 60   | 55        | 55   |
| 30.....      | 56      | 57   | 50       | 50   | 49       | 50   | 46      | 46   | --       | --   | 46    | 48   | 50    | 51   | 56   | 58   | 54   | 55   | 52   | 53   | 59     | 60   | 55        | 56   |
| 31.....      | 56      | 57   | --       | --   | 49       | 50   | 45      | 45   | --       | --   | 46    | 47   | --    | --   | 56   | 58   | --   | --   | 52   | 53   | 58     | 58   | --        | --   |
| Average..... | 57      | 58   | 53       | 54   | 50       | 51   | 46      | 46   | 45       | 45   | 46    | 46   | 49    | 50   | 53   | 55   | 58   | 60   | 52   | 53   | 55     | 56   | 57        | 58   |

CUMBERLAND RIVER BASIN--Continued  
CANE BRANCH NEAR PARKERS LAKE, KY.

LOCATION.--At gaging station, 2,100 feet upstream from confluence with West Fork, 2.5 miles northeast of Parkers Lake, and 2.6 miles east of Greenwood, DRAKESBERRY, Kentucky, 67 square miles.

RECORDS AVAILABLE.--Chemical analysis: January 1956 to September 1957.

Water temperatures: January to September 1956 unpublished, October 1956 to September 1957.

Sediment records: January 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 75°F July 29; minimum, freezing point Jan. 18.

Sediment concentrations: Maximum daily, 3,390 ppm May 19.

Sediment Loads: Minimum, less than 0.005 ton on many days.

REMARKS.--Published and unpublished records on file in the district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1506. Flow affected by ice Jan. 29.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Alum-<br>inum<br>(Al) | Iron<br>(Fe) | Man-<br>gan-<br>ese<br>(Mn) | Cal-<br>cium<br>(Ca) | Mag-<br>ne-<br>sium<br>(Mg) | So-<br>dium<br>(Na) | Po-<br>tas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sul-<br>fate<br>(SO <sub>4</sub> ) | Chlo-<br>ride<br>(Cl) | Fluo-<br>ride<br>(F) | Ni-<br>trate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                                | Acidity<br>(H <sup>+</sup> ) |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH   | Color |
|--------------------|--------------------|-------------------------------|-----------------------|--------------|-----------------------------|----------------------|-----------------------------|---------------------|----------------------------|-----------------------------------------|------------------------------------|-----------------------|----------------------|------------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------------------|------------------------------|------------------------|-------------------------------------------------------------|------|-------|
|                    |                    |                               |                       |              |                             |                      |                             |                     |                            |                                         |                                    |                       |                      |                                    |                                                                     | Calcium                          | Non-<br>mag-<br>carbon-<br>ate | Imme-<br>diate               | Poten-<br>tial<br>free |                                                             |      |       |
| Oct. 2, 1956       | 0.037              | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 172                                | --                    | --                   | --                                 | --                                                                  | 90                               | --                             | 1.0                          | 1.0                    | 483                                                         | 3.30 | --    |
| Oct. 9             | .026               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 259                                | --                    | --                   | --                                 | --                                                                  | 101                              | --                             | 2.0                          | 2.0                    | 597                                                         | 3.20 | --    |
| Oct. 16            | .037               | --                            | --                    | --           | --                          | 21                   | --                          | --                  | --                         | 0                                       | 137                                | --                    | --                   | --                                 | --                                                                  | 69                               | --                             | .9                           | .9                     | 404                                                         | 3.50 | --    |
| Oct. 22            | .15                | 10                            | 7.6                   | 2.3          | 12                          | --                   | 11                          | 0.8                 | 2.5                        | 0                                       | 167                                | 4.5                   | 0.3                  | 0.2                                | 268                                                                 | 98                               | 98                             | 1.2                          | 1.0                    | 419                                                         | 3.60 | 9     |
| Oct. 23            | .09                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 182                                | --                    | --                   | --                                 | --                                                                  | 110                              | --                             | .8                           | .7                     | 503                                                         | 3.60 | --    |
| Oct. 30            | .050               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 340                                | --                    | --                   | --                                 | --                                                                  | 177                              | --                             | 2.6                          | 3.5                    | 827                                                         | 3.10 | --    |
| Nov. 6             | .037               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 265                                | --                    | --                   | --                                 | --                                                                  | 96                               | --                             | 2.4                          | 2.4                    | 738                                                         | 3.10 | --    |
| Nov. 13            | .037               | 12                            | 9.7                   | 1.6          | 8.7                         | 25                   | 15                          | 1.1                 | 2.4                        | 0                                       | 312                                | 2.0                   | .1                   | .2                                 | 318                                                                 | 124                              | 124                            | 1.6                          | 1.6                    | 572                                                         | 3.25 | 1     |
| Nov. 20            | .026               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 312                                | --                    | --                   | --                                 | --                                                                  | 86                               | --                             | 3.4                          | 3.1                    | 853                                                         | 3.00 | --    |
| Nov. 27            | .043               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 258                                | --                    | --                   | --                                 | --                                                                  | 86                               | --                             | 2.4                          | 2.2                    | 721                                                         | 3.10 | --    |
| Dec. 4             | .037               | 10                            | 7.4                   | 2.4          | 12                          | 23                   | 15                          | 1.2                 | 1.4                        | 0                                       | 199                                | 1.8                   | .6                   | .1                                 | 293                                                                 | 119                              | 119                            | 1.5                          | 1.5                    | 555                                                         | 3.15 | 2     |
| Dec. 11            | .037               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 236                                | --                    | --                   | --                                 | --                                                                  | 90                               | --                             | 1.8                          | 1.9                    | 664                                                         | 3.30 | --    |
| Dec. 18            | .49                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 412                                | --                    | --                   | --                                 | --                                                                  | 144                              | --                             | 4.4                          | 4.2                    | 1,110                                                       | 2.85 | --    |
| Dec. 25            | 1.46               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 167                                | --                    | --                   | --                                 | --                                                                  | 62                               | --                             | 1.5                          | 1.5                    | 478                                                         | 3.30 | --    |
| Dec. 27            | .64                | 8.6                           | 10                    | 4.7          | 12                          | 24                   | 13                          | .9                  | 1.8                        | 0                                       | 210                                | 1.2                   | .6                   | .6                                 | 308                                                                 | 114                              | 114                            | 1.8                          | 1.8                    | 560                                                         | 3.20 | 2     |
| Jan. 1, 1957       | .26                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 301                                | --                    | --                   | --                                 | --                                                                  | 163                              | 163                            | 2.9                          | 2.7                    | 793                                                         | 3.15 | --    |
| Jan. 8             | .68                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 163                                | --                    | --                   | --                                 | --                                                                  | 108                              | 108                            | 1.4                          | 1.3                    | 467                                                         | 3.40 | --    |
| Jan. 10            | 6.6                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 95                                 | --                    | --                   | --                                 | --                                                                  | 60                               | 60                             | .9                           | .8                     | 284                                                         | 2.65 | --    |
| Jan. 15            | .78                | 7.8                           | 7.6                   | .53          | 8.2                         | 20                   | 16                          | .5                  | 1.4                        | 0                                       | 167                                | .0                    | .6                   | .4                                 | 254                                                                 | 116                              | 116                            | 1.5                          | 1.3                    | 467                                                         | 3.35 | 3     |
| Jan. 22            | .78                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 186                                | --                    | --                   | --                                 | --                                                                  | 102                              | --                             | 1.5                          | 1.5                    | 486                                                         | 3.35 | --    |
| Jan. 28            | 24.5               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 92                                 | --                    | --                   | --                                 | --                                                                  | 60                               | --                             | .9                           | .7                     | 264                                                         | 3.65 | --    |
| Jan. 29            | 157                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 53                                 | --                    | --                   | --                                 | --                                                                  | 30                               | --                             | .5                           | .4                     | 174                                                         | 3.80 | --    |
| Feb. 5             | 4.1                | 5.9                           | 8.6                   | 5.1          | .80                         | 14                   | 10                          | .6                  | .8                         | 0                                       | 135                                | 1.8                   | .4                   | .4                                 | 187                                                                 | 76                               | 76                             | 1.3                          | 1.3                    | 367                                                         | 2.45 | 2     |
| Feb. 12            | 1.81               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 87                                 | --                    | --                   | --                                 | --                                                                  | 59                               | --                             | .7                           | .6                     | 258                                                         | 3.65 | --    |
| Feb. 19            | a <sub>3</sub>     | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 151                                | --                    | --                   | --                                 | --                                                                  | 75                               | --                             | 1.4                          | 1.4                    | 410                                                         | 3.30 | --    |

a Estimated.

| Feb. 20, 1957.... | 2.8  | 5.9 | 3.0 | 0.08 | 2.0 | 8.6 | 5.5 | 0.9 | 0.7 | 0  | 61    | 0.5 | 0.2 | 0.2 | 99    | 44  | 44  | 0.5 | 0.4 | 193   | 3.75 | 0  |
|-------------------|------|-----|-----|------|-----|-----|-----|-----|-----|----|-------|-----|-----|-----|-------|-----|-----|-----|-----|-------|------|----|
| Feb. 21.....      | 2.3  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 71    | --  | --  | --  | --    | 55  | 55  | .6  | 0.4 | 212   | 3.80 | -- |
| Feb. 25.....      | 1.32 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 122   | --  | --  | --  | --    | 79  | 79  | 1.2 | 1.1 | 366   | 3.45 | -- |
| Feb. 26.....      | 1.60 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 138   | --  | --  | --  | --    | --  | --  | --  | --  | 366   | 3.50 | -- |
| Feb. 26.....      | 1.39 | 6.8 | 4.2 | 2.7  | 1.3 | 11  | 8.9 | .8  | .9  | 0  | 95    | 1.8 | .3  | .2  | 135   | 64  | 64  | .8  | .7  | 290   | 3.50 | 0  |
| Mar. 5.....       | 1.00 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 94    | --  | --  | --  | --    | 71  | 71  | --  | --  | 300   | 3.70 | -- |
| Mar. 12.....      | 2.04 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 62    | --  | --  | --  | --    | 45  | 45  | .5  | .4  | 201   | 3.70 | -- |
| Mar. 19.....      | .73  | 7.6 | 4.7 | 2.6  | 1.4 | 14  | 9.7 | 1.1 | 1.2 | 0  | 115   | .7  | .4  | .2  | 176   | 75  | 75  | .9  | .8  | 334   | 3.50 | 0  |
| Mar. 19.....      | .73  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 116   | --  | --  | --  | --    | 87  | 87  | 1.0 | .9  | 352   | 3.45 | -- |
| Mar. 26.....      | .56  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 121   | --  | --  | --  | --    | 92  | 92  | .9  | .9  | 364   | 3.55 | -- |
| Apr. 2.....       | 1.25 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 100   | --  | --  | --  | --    | 68  | 68  | .8  | .8  | 324   | 3.60 | -- |
| Apr. 9.....       | 4.8  | --  | --  | --   | --  | --  | --  | --  | --  | -- | 46    | --  | --  | --  | --    | 34  | 34  | .4  | .4  | 151   | 3.65 | 0  |
| Apr. 9.....       | 3.9  | 6.2 | 1.8 | 1.9  | .07 | 6.4 | 4.4 | .6  | .9  | -- | 46    | .6  | .2  | .2  | 76    | 34  | 34  | .4  | .4  | 151   | 3.60 | 0  |
| Apr. 16.....      | 1.00 | --  | --  | --   | --  | --  | --  | --  | --  | -- | 100   | --  | --  | --  | --    | 37  | 37  | .7  | .7  | 281   | 3.60 | -- |
| Apr. 23.....      | .68  | --  | --  | --   | --  | --  | --  | --  | --  | -- | 94    | --  | --  | --  | --    | --  | --  | .7  | .7  | 300   | 3.50 | -- |
| Apr. 30.....      | .31  | 8.1 | 4.0 | 1.5  | 4.0 | 16  | 8.6 | 1.1 | 1.4 | 0  | 118   | .2  | .4  | .3  | 165   | 76  | 76  | .8  | .8  | 343   | 3.40 | 0  |
| May 7.....        | .12  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 170   | --  | --  | --  | --    | 130 | 130 | 1.2 | 1.1 | 482   | 3.40 | -- |
| May 14.....       | .09  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 186   | --  | --  | --  | --    | 132 | 132 | 1.3 | 1.2 | 500   | 3.30 | -- |
| May 21.....       | .18  | 11  | 5.3 | 4.3  | 9.1 | 19  | 12  | 1.1 | 1.7 | 0  | 169   | .5  | .4  | .5  | 253   | 97  | 97  | 1.5 | 1.4 | 466   | 3.20 | 0  |
| May 21.....       | .16  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 177   | --  | --  | --  | --    | 70  | 70  | 1.3 | 1.2 | 493   | 3.30 | -- |
| May 27.....       | a. 1 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 197   | --  | --  | --  | --    | 94  | 94  | 1.4 | 1.3 | 538   | 3.23 | -- |
| May 29.....       | a. 1 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 209   | --  | --  | --  | --    | 90  | 90  | 1.3 | 1.2 | 536   | 3.35 | -- |
| June 4.....       | .10  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 281   | --  | --  | --  | --    | 100 | 100 | 2.1 | 2.1 | 790   | 3.10 | -- |
| June 5.....       | .64  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 356   | --  | --  | --  | --    | 92  | 92  | 3.6 | 3.6 | 936   | 2.90 | -- |
| June 11.....      | .39  | 11  | 4.6 | 9.9  | 11  | 18  | 11  | .5  | 1.8 | 0  | 165   | 2.5 | .2  | .2  | 237   | 90  | 90  | 1.4 | 1.3 | 493   | 3.20 | 2  |
| June 11.....      | .36  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 166   | --  | --  | --  | --    | 112 | 112 | 1.4 | 1.4 | 532   | 3.13 | -- |
| June 18.....      | .12  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 285   | --  | --  | --  | --    | 146 | 146 | 2.7 | 2.6 | 833   | 2.90 | -- |
| June 28.....      | .22  | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 254   | --  | --  | --  | --    | 126 | 126 | 2.6 | 2.6 | 767   | 2.95 | -- |
| July 2.....       | .12  | 14  | 5.4 | 3.3  | 13  | 25  | 20  | .5  | 2.2 | 0  | 214   | 2.0 | .4  | 1.1 | 315   | 145 | 145 | 1.6 | 1.6 | 665   | 3.05 | 3  |
| July 9.....       | .065 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 226   | --  | --  | --  | --    | 275 | 275 | 1.6 | 1.6 | 664   | 3.20 | -- |
| July 16.....      | .065 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 1,070 | --  | --  | --  | --    | 222 | 222 | 15  | 15  | 2,040 | 2.55 | -- |
| July 18.....      | .057 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 1,050 | --  | --  | --  | --    | 240 | 240 | 14  | 14  | 2,000 | 2.65 | -- |
| July 18.....      | .065 | .9  | 85  | --   | --  | 51  | 28  | 1.0 | 3.0 | 0  | 1,050 | .0  | .4  | .4  | 1,420 | 242 | 242 | 14  | 14  | 2,010 | 2.55 | 17 |
| July 17.....      | .057 | --  | --  | --   | --  | --  | --  | --  | --  | 0  | 690   | --  | --  | --  | --    | 136 | 136 | 9.0 | 8.8 | 1,600 | 2.75 | -- |

a Estimated

## CUMBERLAND RIVER BASIN--Continued

## CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Chemical analyses in parts per million, water year October 1956 to September 1957.--Continued

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Alum-<br>inum<br>(Al) | Iron<br>(Fe) | Man-<br>ga-<br>nese<br>(Mn) | Cal-<br>cium<br>(Ca) | Mag-<br>ne-<br>sium<br>(Mg) | So-<br>dium<br>(Na) | Po-<br>tas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sul-<br>fate<br>(SO <sub>4</sub> ) | Chlo-<br>ride<br>(Cl) | Fluo-<br>ride<br>(F) | Ni-<br>trate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) |                        | Hardness<br>as CaCO <sub>3</sub> |                        | Acidity<br>(H <sup>+</sup> ) |     | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH   | Color |
|--------------------|--------------------|-------------------------------|-----------------------|--------------|-----------------------------|----------------------|-----------------------------|---------------------|----------------------------|-----------------------------------------|------------------------------------|-----------------------|----------------------|------------------------------------|---------------------------------------------------------------------|------------------------|----------------------------------|------------------------|------------------------------|-----|-------------------------------------------------------------|------|-------|
|                    |                    |                               |                       |              |                             |                      |                             |                     |                            |                                         |                                    |                       |                      |                                    | Calcium,<br>mag-<br>nesium                                          | Non-<br>carbon-<br>ate | Imme-<br>diate                   | Poten-<br>tial<br>free |                              |     |                                                             |      |       |
| July 18.....       | 0.050              | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 404                                | --                    | --                   | --                                 | --                                                                  | --                     | 114                              | 114                    | 4.4                          | 4.3 | 1,130                                                       | 2.90 | --    |
| July 18.....       | .043               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 376                                | --                    | --                   | --                                 | --                                                                  | --                     | 114                              | 114                    | 3.8                          | 3.8 | 1,080                                                       | 2.90 | --    |
| July 23.....       | .043               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 360                                | --                    | --                   | --                                 | --                                                                  | --                     | 99                               | --                     | 3.8                          | 3.8 | 982                                                         | 2.90 | --    |
| July 30.....       | .043               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 284                                | --                    | --                   | --                                 | --                                                                  | --                     | 185                              | 185                    | 2.9                          | 2.8 | 868                                                         | 2.95 | --    |
| Aug. 1.....        | .031               | 17                            | 7.7                   | 4.8          | 15                          | 27                   | 22                          | 1.8                 | 2.3                        | 0                                       | 254                                | 10                    | 0.2                  | 0.5                                | 385                                                                 | 158                    | 158                              | 2.4                    | 2.3                          | 755 | 3.00                                                        | 2    |       |
| Aug. 6.....        | .026               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 303                                | --                    | --                   | --                                 | --                                                                  | --                     | 200                              | 200                    | 2.6                          | 2.5 | 851                                                         | 3.00 | --    |
| Aug. 13.....       | .043               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 184                                | --                    | --                   | --                                 | --                                                                  | --                     | 130                              | 130                    | 2.1                          | 1.9 | 623                                                         | 3.10 | --    |
| Aug. 15.....       | .065               | 11                            | 5.4                   | 1.4          | 7.7                         | 17                   | 14                          | .7                  | 1.3                        | 0                                       | 175                                | 1.0                   | .4                   | .3                                 | 298                                                                 | 100                    | 100                              | 1.8                    | 1.6                          | 534 | 3.25                                                        | 1    |       |
| Aug. 20.....       | .021               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 281                                | --                    | --                   | --                                 | --                                                                  | --                     | 126                              | 126                    | 3.0                          | 2.9 | 816                                                         | 2.95 | --    |
| Aug. 21.....       | .021               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 267                                | --                    | --                   | --                                 | --                                                                  | --                     | 50                               | 50                     | 2.8                          | 2.8 | 740                                                         | 3.00 | --    |
| Aug. 26.....       | .017               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 151                                | --                    | --                   | --                                 | --                                                                  | --                     | 55                               | 55                     | 1.4                          | 1.4 | 506                                                         | 3.15 | --    |
| Aug. 27.....       | .013               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 138                                | --                    | --                   | --                                 | --                                                                  | --                     | 77                               | 77                     | 1.4                          | 1.3 | 482                                                         | 3.10 | --    |
| Sept. 2.....       | .013               | --                            | --                    | 1.0          | 2.7                         | --                   | --                          | --                  | --                         | 0                                       | 114                                | --                    | --                   | --                                 | --                                                                  | --                     | 58                               | 58                     | 1.0                          | 1.0 | 398                                                         | 3.30 | --    |
| Sept. 3.....       | .010               | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | 0                                       | 114                                | --                    | --                   | --                                 | --                                                                  | --                     | 59                               | 59                     | 1.0                          | 1.0 | 399                                                         | 3.30 | --    |
| Sept. 9.....       | .013               | 8.9                           | 2.1                   | 1.2          | 1.8                         | 9.8                  | 6.6                         | .9                  | 1.8                        | 0                                       | 83                                 | 2.0                   | .2                   | .6                                 | 126                                                                 | 52                     | 52                               | .8                     | .8                           | 302 | 3.40                                                        | 1    |       |
| Sept. 17.....      | .22                | --                            | --                    | --           | --                          | --                   | --                          | --                  | --                         | --                                      | 546                                | --                    | --                   | --                                 | --                                                                  | --                     | 180                              | 180                    | 10                           | 10  | 1,300                                                       | 2.70 | --    |
| Sept. 24.....      | .077               | --                            | --                    | 20           | 20                          | --                   | --                          | --                  | --                         | 0                                       | 454                                | --                    | --                   | --                                 | --                                                                  | --                     | 206                              | 206                    | 4.2                          | 4.0 | 1,050                                                       | 2.95 | --    |

## CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

[illegible]

## CUMBERLAND AND TENNESSEE RIVER BASINS

## CUMBERLAND RIVER BASIN--Continued

## CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                          |              | November              |                          |              | December              |                          |              |
|---------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|-----------------------|--------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 0.037                 | --                       | (t)          | 0.15                  | --                       | e 0.05       | 0.037                 | --                       |              |
| 2.....  | .037                  | 1                        | (t)          | .050                  | 1                        |              | .037                  | --                       |              |
| 3.....  | .09                   | --                       | e 0.01       | .050                  | --                       |              | .037                  | --                       |              |
| 4.....  | .11                   | 36                       | .01          | .043                  | --                       |              | .037                  | 2                        |              |
| 5.....  | .043                  | 1                        |              | .037                  | --                       |              | .037                  | --                       |              |
| 6.....  | .043                  | --                       |              | .043                  | 1                        |              | .037                  | --                       | (t)          |
| 7.....  | .037                  | --                       |              | .050                  | --                       |              | .037                  | 2                        |              |
| 8.....  | .031                  | --                       |              | .050                  | --                       | (t)          | .060                  | --                       |              |
| 9.....  | .026                  | 3                        |              | .050                  | 1                        |              | .050                  | --                       |              |
| 10..... | .031                  | --                       |              | .050                  | --                       |              | .043                  | --                       |              |
| 11..... | .037                  | --                       |              | .043                  | --                       |              | .050                  | 1                        |              |
| 12..... | .037                  | --                       |              | .043                  | --                       |              | 1.33                  | --                       | e 6          |
| 13..... | .037                  | --                       | (t)          | .037                  | 1                        |              | 7.3                   | 345                      | s 7.34       |
| 14..... | .037                  | --                       |              | .031                  | --                       |              | 6.6                   | 329                      | s 8.10       |
| 15..... | .037                  | --                       |              | .039                  | --                       |              | 1.59                  | --                       |              |
| 16..... | .037                  | 2                        |              | .19                   | --                       | e. 02        | .68                   | --                       |              |
| 17..... | .037                  | --                       |              | .043                  | --                       |              | .42                   | --                       | a. 02        |
| 18..... | .057                  | --                       |              | .037                  | --                       | (t)          | .43                   | 13                       |              |
| 19..... | .050                  | 2                        |              | .031                  | --                       |              | .31                   | 5                        |              |
| 20..... | .050                  | --                       |              | .031                  | 4                        |              | .38                   | 7                        |              |
| 21..... | .050                  | --                       |              | .21                   | 44                       | e. 03        | 4.9                   | --                       | e 33         |
| 22..... | .19                   | 80                       | .04          | .057                  | --                       |              | 11.9                  | --                       | e 30         |
| 23..... | .09                   | 2                        |              | .043                  | 9                        |              | 5.1                   | --                       | e. 6         |
| 24..... | .077                  | --                       | (t)          | .037                  | --                       |              | 2.5                   | --                       | e. 02        |
| 25..... | .09                   | --                       |              | .037                  | --                       | (t)          | 1.42                  | 2                        |              |
| 26..... | .19                   | 31                       | .02          | .043                  | --                       |              | .94                   | 2                        |              |
| 27..... | .065                  | --                       |              | .043                  | 6                        |              | .68                   | --                       | (t)          |
| 28..... | .057                  | --                       |              | .037                  | --                       |              | .56                   | 3                        |              |
| 29..... | .057                  | --                       | (t)          | .037                  | --                       |              | .49                   | --                       |              |
| 30..... | .050                  | 1                        |              | .037                  | 5                        |              | .36                   | --                       |              |
| 31..... | .44                   | --                       | e. 2         | --                    | --                       |              | .31                   | --                       |              |
| Total.  | 2.257                 | --                       | 0.28         | 1.679                 | --                       | 0.11         | 48.662                | --                       | 85.23        |
|         |                       |                          |              |                       |                          |              |                       |                          |              |
| Day     | January               |                          |              | February              |                          |              | March                 |                          |              |
|         | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              | Mean dis-charge (cfs) | Suspended sediment       |              |
|         |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |                       | Mean concentration (ppm) | Tons per day |
| 1.....  | 0.26                  | 7                        |              | 8.3                   | 189                      | s 5.17       | 1.81                  | 18                       | 0.09         |
| 2.....  | .20                   | 3                        | (t)          | 4.9                   | --                       |              | 1.60                  | --                       |              |
| 3.....  | .18                   | --                       |              | 2.8                   | --                       | a. 09        | 1.32                  | --                       |              |
| 4.....  | .82                   | --                       | e 2.2        | 1.89                  | --                       |              | 1.06                  | --                       | a. 01        |
| 5.....  | 1.68                  | 292                      | s 1.42       | 2.8                   | 1,020                    | s 9.53       | .94                   | 5                        |              |
| 6.....  | 1.19                  | --                       |              | 2.7                   | 547                      | 3.99         | 1.03                  | 26                       | .07          |
| 7.....  | .94                   | --                       | a. 02        | 2.5                   | 54                       | .36          | 3.1                   | 124                      | s 1.44       |
| 8.....  | .78                   | 4                        |              | 2.5                   | --                       | e 1          | 4.0                   | --                       | e. 15        |
| 9.....  | 5.5                   | 1,080                    | s 18.4       | 2.7                   | --                       | e. 3         | 2.7                   | --                       |              |
| 10..... | 6.5                   | --                       | e 6.6        | 3.7                   | --                       | e 4.5        | 2.6                   | --                       |              |
| 11..... | 2.6                   | 14                       | .10          | 2.4                   | --                       |              | 2.5                   | --                       |              |
| 12..... | 1.74                  | --                       |              | 1.89                  | 11                       |              | 2.04                  | 6                        | a. 04        |
| 13..... | 1.25                  | --                       |              | 1.46                  | --                       |              | 1.60                  | --                       |              |
| 14..... | .88                   | --                       |              | 1.12                  | --                       |              | 1.32                  | --                       |              |
| 15..... | .78                   | 8                        |              | .88                   | 12                       | a. 04        | 1.19                  | 8                        |              |
| 16..... | .60                   | --                       | a. 02        | .83                   | --                       |              | .94                   | --                       |              |
| 17..... | .49                   | --                       |              | .68                   | --                       |              | .83                   | --                       |              |
| 18..... | .42                   | 10                       |              | .64                   | --                       |              | .78                   | --                       |              |
| 19..... | .39                   | --                       |              | 3                     | 178                      | 1.44         | .68                   | 5                        |              |
| 20..... | .48                   | --                       |              | 3.5                   | --                       | 3.3          | .60                   | --                       |              |
| 21..... | .94                   | --                       | e. 1         | 2.4                   | 6                        |              | .56                   | 5                        |              |
| 22..... | 10.6                  | --                       | e 30         | 2.04                  | 8                        |              | .72                   | 10                       |              |
| 23..... | 8.5                   | --                       | e 2          | 1.74                  | --                       | a. 04        | .56                   | --                       | a. 01        |
| 24..... | 2.9                   | --                       |              | 1.46                  | --                       |              | .49                   | --                       |              |
| 25..... | 1.89                  | --                       | a. 1         | 1.25                  | --                       |              | .66                   | 18                       |              |
| 26..... | 1.32                  | --                       |              | 1.43                  | 50                       | s. 22        | .56                   | 10                       |              |
| 27..... | 2.2                   | 109                      | s. 73        | 2.12                  | --                       | a. 2         | .56                   | --                       |              |
| 28..... | 12.2                  | 330                      | s 14.2       | 1.73                  | 101                      | s. 55        | .49                   | 9                        |              |
| 29..... | 84                    | --                       | e 200        | --                    | --                       |              | .49                   | 8                        |              |
| 30..... | 8.1                   | --                       | e 1          | --                    | --                       |              | .49                   | --                       |              |
| 31..... | 3.7                   | 149                      | s 1.75       | --                    | --                       |              | .45                   | --                       |              |
| Total.  | 162.03                | --                       | 279.05       | 65.36                 | --                       | 28.35        | 38.67                 | --                       | 2.26         |

e Estimated.

s Computed by subdividing day.

t Less than 0.005 ton.

a Computed from estimated concentration graph.

## CUMBERLAND RIVER BASIN--Continued

## CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day                                      | April                |                          |              | May                  |                          |              | June                 |                          |              |
|------------------------------------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|----------------------|--------------------------|--------------|
|                                          | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              | Mean discharge (cfs) | Suspended sediment       |              |
|                                          |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |                      | Mean concentration (ppm) | Tons per day |
| 1.....                                   | 0.75                 | --                       | e 0.2        | 0.24                 | --                       |              | 0.065                | --                       |              |
| 2.....                                   | 1.13                 | 20                       | .06          | .20                  | --                       |              | .12                  | --                       | (t)          |
| 3.....                                   | 1.12                 | --                       | a .03        | .16                  | 3                        |              | .13                  | --                       |              |
| 4.....                                   | 3.4                  | 254                      | s 3.83       | .15                  | --                       |              | .10                  | 2                        |              |
| 5.....                                   | 3.5                  | 172                      | s 1.91       | .13                  | --                       |              | .44                  | --                       | b 1.6        |
| 6.....                                   | 2.7                  | --                       | a .07        | .12                  | --                       |              | .24                  | --                       | (t)          |
| 7.....                                   | 1.81                 | --                       | a .05        | .10                  | 3                        | (t)          | .12                  | 1                        | (t)          |
| 8.....                                   | 10.3                 | 560                      | s 25.6       | .09                  | --                       |              | .29                  | --                       | e 1          |
| 9.....                                   | 4.5                  | 20                       | .24          | .09                  | --                       |              | .85                  | --                       | e 10         |
| 10.....                                  | 2.5                  | --                       |              | .09                  | 3                        |              | .55                  | 59                       | .09          |
| 11.....                                  | 1.74                 | --                       |              | .16                  | --                       |              | .33                  | 17                       |              |
| 12.....                                  | 1.25                 | 4                        | a .02        | .09                  | --                       |              | .26                  | --                       |              |
| 13.....                                  | .94                  | --                       |              | .065                 | --                       |              | .23                  | --                       | a .02        |
| 14.....                                  | .78                  | --                       |              | .37                  | 279                      | s 1.03       | .18                  | 23                       |              |
| 15.....                                  | .64                  | --                       |              | .16                  | --                       |              | .15                  | --                       |              |
| 16.....                                  | .88                  | 48                       | s .15        | .09                  | --                       | a .01        | .13                  | --                       |              |
| 17.....                                  | .64                  | --                       |              | .077                 | 5                        |              | .13                  | --                       |              |
| 18.....                                  | .52                  | --                       |              | .36                  | --                       | e 8          | .10                  | 8                        |              |
| 19.....                                  | .45                  | 3                        | a .01        | .82                  | 3,390                    | s 21.7       | .10                  | --                       | (t)          |
| 20.....                                  | .42                  | --                       |              | .30                  | --                       | a .01        | .09                  | --                       |              |
| 21.....                                  | .55                  | --                       | e .1         | .16                  | --                       | (t)          | .077                 | 7                        |              |
| 22.....                                  | .81                  | --                       | e .2         | 1.84                 | 2,980                    | s 25.3       | .065                 | --                       |              |
| 23.....                                  | .68                  | 4                        |              | .83                  | --                       | a .02        | .66                  | 1,080                    | s 8.20       |
| 24.....                                  | .68                  | --                       |              | .4                   | 10                       | .01          | .75                  | --                       | e .8         |
| 25.....                                  | .56                  | --                       |              | .24                  | --                       |              | .79                  | 18                       |              |
| 26.....                                  | .49                  | 3                        | a .01        | .15                  | --                       |              | .28                  | --                       |              |
| 27.....                                  | .42                  | --                       |              | .1                   | 2                        | (t)          | .31                  | --                       | e .03        |
| 28.....                                  | .48                  | --                       |              | .1                   | --                       |              | .48                  | 44                       |              |
| 29.....                                  | .36                  | --                       |              | .1                   | --                       |              | .32                  | --                       |              |
| 30.....                                  | .28                  | 5                        |              | .09                  | --                       |              | .18                  | --                       |              |
| 31.....                                  | --                   | --                       | --           | .09                  | 5                        |              | --                   | --                       | --           |
| Total.                                   | 45.28                | --                       | 32.68        | 7.962                | --                       | 56.12        | 8.517                | --                       | 21.98        |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
|                                          | July                 |                          |              | August               |                          |              | September            |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| 1.....                                   | 0.12                 | --                       |              | 0.031                | --                       |              | 0.010                | --                       |              |
| 2.....                                   | .10                  | 10                       |              | .031                 | 2                        | (t)          | .010                 | --                       |              |
| 3.....                                   | .077                 | --                       |              | .031                 | --                       |              | .010                 | 2                        |              |
| 4.....                                   | .065                 | --                       |              | .080                 | --                       | e 0.01       | .010                 | --                       |              |
| 5.....                                   | .065                 | 7                        |              | .037                 | --                       |              | .010                 | --                       | (t)          |
| 6.....                                   | .050                 | --                       |              | .026                 | 5                        |              | .010                 | 7                        |              |
| 7.....                                   | .050                 | --                       |              | .026                 | --                       |              | .010                 | --                       |              |
| 8.....                                   | .050                 | --                       | (t)          | .026                 | --                       |              | .010                 | --                       |              |
| 9.....                                   | .083                 | 15                       |              | .026                 | 5                        | (t)          | .019                 | 18                       |              |
| 10.....                                  | .065                 | --                       |              | .026                 | --                       |              | .38                  | 512                      | s 3.48       |
| 11.....                                  | .050                 | --                       |              | .026                 | --                       |              | .026                 | --                       | (t)          |
| 12.....                                  | .050                 | 8                        |              | .026                 | --                       |              | .050                 | --                       | (t)          |
| 13.....                                  | .050                 | --                       |              | .026                 | 5                        |              | 1.15                 | 2,560                    | s 27.0       |
| 14.....                                  | .065                 | --                       |              | .032                 | --                       |              | 1.89                 | 1,370                    | s 22.9       |
| 15.....                                  | .13                  | 40                       | 0.01         | .072                 | --                       | e .01        | .42                  | --                       | e .1         |
| 16.....                                  | .057                 | 10                       | (t)          | .031                 | 5                        |              | .34                  | 28                       | .02          |
| 17.....                                  | .050                 | --                       | (t)          | .026                 | --                       |              | .22                  | 5                        |              |
| 18.....                                  | .16                  | --                       | e .02        | .026                 | --                       |              | .16                  | 3                        |              |
| 19.....                                  | .065                 | --                       |              | .026                 | --                       |              | .13                  | --                       |              |
| 20.....                                  | .043                 | 8                        |              | .021                 | 2                        |              | .15                  | 3                        | (t)          |
| 21.....                                  | .043                 | --                       | (t)          | .017                 | --                       |              | .12                  | --                       |              |
| 22.....                                  | .037                 | --                       |              | .010                 | --                       |              | .17                  | 78                       | .04          |
| 23.....                                  | .37                  | --                       | e 3          | .010                 | 5                        | (t)          | .10                  | --                       |              |
| 24.....                                  | .077                 | --                       |              | .010                 | --                       |              | .09                  | 10                       |              |
| 25.....                                  | .043                 | --                       |              | .018                 | --                       |              | .077                 | --                       | (t)          |
| 26.....                                  | .043                 | 3                        |              | .021                 | 3                        |              | .077                 | --                       |              |
| 27.....                                  | .043                 | --                       | (t)          | .013                 | 2                        |              | .077                 | 7                        |              |
| 28.....                                  | .043                 | --                       |              | .013                 | 2                        |              | .09                  | --                       |              |
| 29.....                                  | .037                 | 2                        |              | .013                 | --                       |              | .29                  | 35                       | .03          |
| 30.....                                  | .037                 | 2                        |              | .013                 | 2                        |              | .12                  | --                       | (t)          |
| 31.....                                  | .037                 | --                       |              | .010                 | --                       |              | --                   | --                       | --           |
| Total.                                   | 2.255                | --                       | 3.06         | 0.800                | --                       | 0.03         | 6.226                | --                       | 53.59        |
|                                          |                      |                          |              |                      |                          |              |                      |                          |              |
| Total discharge for year (cfs-days)..... |                      |                          |              |                      |                          |              |                      |                          | 389,698      |
| Total load for year (tons).....          |                      |                          |              |                      |                          |              |                      |                          | 562.74       |

e Estimated.

s Computed by subdividing day.

t Less than 0.005 ton.

a Computed from estimated concentration graph.

b Partly estimated.



## CUMBERLAND RIVER BASIN--Continued

## CANE BRANCH AT PARKERS LAKE, KY.--Continued

Particle-size analyses of suspended sediment, water year October, 1956 to September 1957  
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |                     |       |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 |                     | 0.350 |
| Dec. 14, 1956..... | 8:25 a.m.  | 12.4            |                        | 1,200                         | 1,180                                      | 54                                                | 67    | 81    | 92    | 98    | 99    | 100   | --    | BSWCM               |       |
| Dec. 14.....       | 8:25 a.m.  | 12.4            |                        | 1,200                         | 1,170                                      | 2                                                 | 5     | 11    | 32    | 89    | 99    | 100   | --    | BSNM                |       |
| Jan. 9, 1957.....  | 10:00 a.m. | 8.3             |                        | 2,970                         | 2,540                                      | 57                                                | 73    | 86    | 97    | 100   | --    | --    | --    | BSWCM               |       |
| Jan. 27.....       | 1:00 p.m.  | 2.8             |                        | 185                           | 346                                        | 65                                                | 77    | 90    | 94    | 97    | 97    | 98    | 100   | BSWCM               |       |
| Feb. 1.....        | 3:00 p.m.  | 13.0            |                        | 863                           | 1,600                                      | 52                                                | 63    | 78    | 90    | 97    | 99    | 100   | --    | BSWCM               |       |
| Feb. 5.....        | 10:15 a.m. | 4.8             |                        | 2,230                         | 2,250                                      | 58                                                | 68    | 84    | 95    | 99    | 99    | 99    | 100   | BSWCM               |       |
| Feb. 19.....       | 10:30 a.m. | 24.5            |                        | 636                           | 1,270                                      | 64                                                | 75    | 87    | 96    | 99    | 99    | 99    | 100   | BSWCM               |       |
| Apr. 4.....        | 10:00 a.m. | 6.2             |                        | 1,560                         | 1,500                                      | 60                                                | 72    | 86    | 96    | 99    | 99    | 100   | --    | BSWCM               |       |
| Apr. 5.....        | 1:40 p.m.  | 4.5             |                        | 878                           | 918                                        | 59                                                | 70    | 81    | 94    | 98    | 99    | 100   | --    | BSWCM               |       |
| Apr. 8.....        | 10:30 a.m. | 7.8             |                        | 4,000                         | 3,310                                      | 57                                                | 68    | 84    | 96    | 99    | 100   | --    | --    | BSWCM               |       |
| May 14.....        | 3:00 p.m.  | 3.0             |                        | 2,110                         | 2,190                                      | 63                                                | 75    | 90    | 97    | 99    | 100   | --    | --    | BSWCM               |       |
| May 14.....        | 3:00 p.m.  | 3.0             |                        | 2,110                         | 2,130                                      | 2                                                 | 2     | 5     | 34    | 99    | 100   | --    | --    | BSNM                |       |
| May 19.....        | 10:30 a.m. | 3.0             |                        | 17,600                        | 3,590                                      | 53                                                | 65    | 80    | 94    | 99    | 100   | --    | --    | BSWCM               |       |
| May 22.....        | 10:00 a.m. | 4.7             |                        | 10,200                        | 2,330                                      | 55                                                | 65    | 79    | 94    | 99    | 100   | --    | --    | BSWCM               |       |
| May 22.....        | 10:00 a.m. | 4.7             |                        | 10,200                        | 2,260                                      | 1                                                 | 2     | 4     | 30    | 99    | 100   | --    | --    | BSNM                |       |
| June 23.....       | 7:00 p.m.  | 6.8             |                        | 1,250                         | 2,680                                      | 43                                                | 53    | 66    | 84    | 92    | 99    | 100   | --    | BSWCM               |       |
| June 23.....       | 7:30 p.m.  | 4.5             |                        | 10,100                        | 4,490                                      | 53                                                | 64    | 81    | 96    | 99    | 100   | --    | --    | BSWCM               |       |
| June 23.....       | 7:30 p.m.  | 4.5             |                        | 10,100                        | 4,200                                      | 1                                                 | 1     | 3     | 16    | 100   | --    | --    | --    | BNM                 |       |
| Sept. 10.....      | 5:15 a.m.  | 1.32            |                        | 3,170                         | 3,340                                      | 60                                                | 78    | 88    | 97    | 99    | 100   | --    | --    | BSWCM               |       |
| Sept. 14.....      | 3:30 p.m.  | 13.6            |                        | 5,980                         | 1,670                                      | 40                                                | 51    | 65    | 84    | 94    | 99    | 100   | --    | BSWCM               |       |
| Sept. 14.....      | 3:30 p.m.  | 13.6            |                        | 5,980                         | 1,650                                      | 4                                                 | 6     | 9     | 50    | 85    | 98    | 99    | 100   | BSNM                |       |

CUMBERLAND RIVER BASIN--Continued  
WEST FORK CANE BRANCH NEAR PARKERS LAKE, KY.

LOCATION --At gaging station, 2,900 feet upstream from mouth and 2.2 miles northeast of Parkers Lake, McCreary County.  
DRAINAGE AREA --0.26 square miles, approximately.  
RECORDS AVAILABLE --Chemical analyses: March 1956 to September 1957.  
REMARKS --No discharge records available for this station.

Chemical analyses, in parts per million, March 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micromhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|------------------------------------------|-----|-------|
|                    |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate | Immediate                 | Potential free |                                          |     |       |
| Mar. 12, 1956      | .....                | 4.1                        | 0.0           | 0.08      | 0.00           | 0.7          | 0.7            | 0.6         | 0.8           | 3                               | 5.4                        | 0.4           | 0.1          | 0.1                        | 18                                                 | 5                             | 2             | 0.0                       | 0.0            | 21                                       | 5.9 | 8     |
| Apr. 16            | .....                | 5.5                        | .0            | .12       | .15            | .6           | .6             | .4          | .3            | 3                               | 4.4                        | .8            | .1           | .1                         | a18                                                | 4                             | 2             | .1                        | .1             | 16                                       | 5.9 | 4     |
| May 9              | .....                | 6.8                        | 0.0           | .32       | .00            | 1.6          | .9             | .7          | .8            | 6                               | 4.4                        | 1.1           | .1           | .0                         | 21                                                 | 8                             | 1             | .0                        | .0             | 30                                       | 6.7 | 2     |
| May 16             | .....                | --                         | --            | --        | --             | --           | --             | --          | --            | 5                               | 6.9                        | --            | --           | --                         | --                                                 | 9                             | 5             | .1                        | .1             | 27                                       | 6.0 | --    |
| July 19            | .....                | 6.1                        | .2            | .29       | .11            | 1.1          | 1.0            | .6          | 1.0           | 5                               | 5.2                        | .5            | .1           | .8                         | b28                                                | 7                             | 3             | .2                        | .1             | 26                                       | 5.8 | 15    |
| Aug. 21            | .....                | 6.3                        | 0.0           | .22       | .65            | 1.6          | 1.0            | .7          | 1.3           | 4                               | 6.3                        | 1.0           | .1           | .3                         | 29                                                 | 8                             | 5             | .1                        | .0             | 26                                       | 5.7 | 4     |
| Aug. 24            | .....                | 5.0                        | .0            | .55       | .55            | 2.5          | .5             | .5          | 1.2           | 1                               | 5.2                        | .5            | .1           | .2                         | 26                                                 | 9                             | 6             | .1                        | .1             | 25                                       | 5.9 | 16    |
| Dec. 26            | .....                | 4.9                        | .1            | .04       | .00            | .7           | .7             | .3          | .9            | 3                               | 4.8                        | .6            | .1           | .2                         | 19                                                 | 5                             | 2             | .1                        | .0             | 19                                       | 5.8 | 7     |
| Jan. 10, 1957      | .....                | 4.3                        | .1            | .10       | .08            | .8           | .7             | .7          | .9            | 3                               | 5.6                        | 1.0           | .1           | .2                         | 21                                                 | 5                             | 2             | .1                        | .0             | 19                                       | 5.5 | 10    |
| Jan. 15            | .....                | 4.7                        | .1            | .04       | .04            | .8           | .6             | .7          | .8            | 2                               | 4.6                        | 1.6           | .1           | .0                         | 17                                                 | 4                             | 3             | .1                        | .0             | 18                                       | 5.7 | 8     |
| Feb. 5             | .....                | 4.9                        | .2            | .00       | .00            | .9           | .9             | .2          | .2            | 3                               | 5.4                        | .7            | .1           | .1                         | 17                                                 | 6                             | 4             | .0                        | .0             | 20                                       | 5.8 | 16    |
| Feb. 26            | .....                | 5.4                        | .1            | .09       | .01            | .6           | .8             | .6          | .5            | 3                               | 5.0                        | 1.0           | .1           | .0                         | 20                                                 | 5                             | 2             | .0                        | .0             | 24                                       | 5.9 | 6     |
| Mar. 19            | .....                | 5.5                        | .1            | .14       | .12            | .8           | .7             | .4          | .3            | 3                               | 5.4                        | .9            | .2           | .1                         | 21                                                 | 5                             | 2             | .1                        | .0             | 20                                       | 6.0 | 5     |
| Mar. 21            | .....                | 5.5                        | .0            | .09       | .00            | .7           | .6             | .3          | .4            | 3                               | 4.8                        | .8            | .1           | .2                         | 19                                                 | 4                             | 2             | .0                        | .0             | 19                                       | 6.0 | 2     |
| Apr. 8             | .....                | 4.5                        | .0            | .38       | .00            | .9           | .7             | .4          | .6            | 3                               | 5.4                        | .3            | .2           | .3                         | 13                                                 | 5                             | 2             | .1                        | .0             | 18                                       | 5.7 | 6     |
| Apr. 30            | .....                | 6.4                        | .1            | .13       | .04            | .3           | .9             | .4          | .7            | 3                               | 5.8                        | .4            | .1           | .0                         | 18                                                 | 4                             | 2             | .1                        | .0             | 20                                       | 6.0 | 2     |
| May 21             | .....                | 6.9                        | .2            | .15       | .05            | .8           | .8             | .3          | .9            | 5                               | 5.2                        | .6            | .1           | .1                         | 21                                                 | 6                             | 2             | .1                        | .1             | 21                                       | 6.2 | 6     |
| May 29             | .....                | 6.7                        | .1            | .42       | .14            | .9           | .8             | .1          | .7            | 6                               | 3.5                        | 1.6           | .1           | .0                         | 29                                                 | 6                             | 1             | .0                        | .0             | 19                                       | 6.1 | 5     |
| June 6             | .....                | --                         | --            | --        | --             | --           | --             | --          | --            | 8                               | 5.4                        | --            | --           | --                         | --                                                 | 10                            | --            | --                        | --             | 33                                       | 7.0 | --    |
| June 11            | .....                | 7.4                        | .1            | .16       | .20            | 1.0          | .7             | .0          | .8            | 5                               | 4.5                        | 1.4           | .1           | .3                         | 28                                                 | 6                             | 2             | .0                        | .0             | 20                                       | 6.2 | 4     |

a Includes 0.02 parts per million of phosphate (PO<sub>4</sub>).  
b Includes 0.08 parts per million of phosphate (PO<sub>4</sub>).

a Includes 0.02 parts per million of phosphate (PO<sub>4</sub>)  
b Includes 0.08 parts per million of phosphate (PO<sub>4</sub>)

CUMBERLAND RIVER BASIN--Continued  
 HELTON BRANCH AT GREENWOOD, KY.

LOCATION.--At gaging station, 250 feet upstream from Little Hurricane Fork, and 1 mile northeast of Greenwood, McCreary County.  
 DRAINAGE AREA.--0.85 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1956 to September 1957.

Water temperatures: January to September 1956 unpublished, October 1956 to September 1957.

Sediment records: January 1956 to September 1957 unpublished.

REMARKS.--Published and unpublished records on file in district office at Columbus, Ohio. Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|-------------------------------------------|-----|-------|
|                    |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate | Immediate                 | Potential free |                                           |     |       |
| Oct. 2, 1956       | 0.05                 | --                         | --            | --        | --             | --           | --             | --          | --            | 19                              | 0.4                        | --            | --           | --                         | --                                                 | 8                             | --            | 0.0                       | 0.0            | 34                                        | 6.6 | --    |
| Oct. 3             | .05                  | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | .8                         | --            | --           | --                         | --                                                 | 12                            | --            | .0                        | .0             | 35                                        | 6.8 | --    |
| Oct. 4             | .0                   | --                         | --            | --        | --             | --           | --             | --          | --            | 14                              | 1.0                        | --            | --           | --                         | --                                                 | 10                            | --            | .0                        | .0             | 32                                        | 6.8 | --    |
| Oct. 12            | .08                  | --                         | --            | --        | --             | --           | --             | --          | --            | 13                              | .2                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 23                                        | 6.7 | --    |
| Oct. 13            | .08                  | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | .2                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 23                                        | 6.7 | --    |
| Oct. 18            | .11                  | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | .2                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 21                                        | 6.8 | --    |
| Oct. 23            | .15                  | 7.5                        | 0.2           | 0.37      | 0.13           | 2.1          | 0.7            | 0.5         | 0.0           | 12                              | .8                         | 1.8           | --           | 0.2                        | 27                                                 | 8                             | --            | .1                        | .0             | 34                                        | 6.5 | 25    |
| Oct. 23            | a.15                 | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | .4                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 28                                        | 6.7 | --    |
| Oct. 25            | a.1                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | .8                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 28                                        | 6.6 | --    |
| Oct. 30            | .21                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | .8                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 26                                        | 6.6 | --    |
| Nov. 1             | .21                  | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | 1.6                        | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 28                                        | 6.6 | --    |
| Nov. 4             | .14                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | .2                         | --            | --           | --                         | --                                                 | 7                             | --            | .0                        | .0             | 20                                        | 6.6 | --    |
| Nov. 9             | .14                  | --                         | --            | --        | --             | --           | --             | --          | --            | 13                              | .2                         | --            | --           | --                         | --                                                 | 8                             | --            | .0                        | .0             | 24                                        | 6.8 | --    |
| Nov. 13            | .14                  | 7.9                        | .2            | .13       | .23            | 1.7          | .5             | .5          | .0            | 10                              | .6                         | .8            | .1           | .1                         | 21                                                 | 6                             | 0             | .0                        | .0             | 17                                        | 6.8 | 6     |
| Nov. 17            | .14                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 2.0                        | --            | --           | --                         | --                                                 | 9                             | --            | .0                        | .0             | 22                                        | 6.8 | --    |
| Nov. 30            | a.14                 | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 1.0                        | --            | --           | --                         | --                                                 | 6                             | --            | .0                        | .0             | 21                                        | 6.5 | --    |
| Dec. 4             | a.14                 | 7.5                        | .0            | .08       | .04            | 1.8          | .4             | .3          | .4            | 7                               | .0                         | .5            | --           | .0                         | 19                                                 | 6                             | 0             | .0                        | .0             | 24                                        | 6.7 | 10    |
| Dec. 11            | .17                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 7.2                        | --            | --           | --                         | --                                                 | 9                             | --            | .0                        | .0             | 24                                        | 6.0 | --    |
| Dec. 16            | .94                  | --                         | --            | --        | --             | --           | --             | --          | --            | 17                              | 14                         | --            | --           | --                         | --                                                 | 31                            | --            | .0                        | .0             | 75                                        | 6.5 | --    |

a Estimated.

|               |      |     |     |      |     |     |     |     |     |    |     |     |     |     |    |    |    |    |     |    |     |    |
|---------------|------|-----|-----|------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|----|----|----|-----|----|-----|----|
| Dec. 25, 1956 | 1.6  | 5.5 | 0.0 | 0.23 | 2.3 | 5.6 | 1.0 | 1.2 | 1.1 | 16 | 6.0 | 2.0 | 0.1 | 0.0 | -- | 18 | -- | 32 | 0.0 | 45 | 6.4 | -- |
| Dec. 27       | .85  |     |     |      |     |     |     |     |     | 12 | 9.4 |     |     |     |    | 18 |    |    |     | 51 | 6.8 | 4  |
| Jan. 1, 1957  | .39  |     |     |      |     |     |     |     |     | 16 | 10  |     |     |     |    | 21 |    |    |     | 53 | 6.7 | -- |
| Jan. 8        | .65  |     |     |      |     |     |     |     |     | 16 | 13  |     |     |     |    | 19 |    |    |     | 58 | 6.7 | -- |
| Jan. 15       | .85  |     |     |      |     |     |     |     |     | 12 | 8.0 | .4  | .1  | .5  | 29 | 16 |    |    |     | 45 | 6.5 | 5  |
| Jan. 22       | 4.1  |     |     |      |     |     |     |     |     | 12 | 9.0 |     |     |     |    | 16 |    |    |     | 45 | 6.4 | -- |
| Jan. 29       |      |     |     |      |     |     |     |     |     | 6  | 7.4 |     |     |     |    | 8  |    |    |     | 33 | 6.3 | -- |
| Jan. 30       | 38   |     |     |      |     |     |     |     |     | 3  | 7.8 |     |     |     |    | 7  |    |    |     | 25 | 6.0 | -- |
| Jan. 31       | 11.2 |     |     |      |     |     |     |     |     | 24 | 10  |     |     |     |    | 28 |    |    |     | 70 | 6.6 | -- |
| Feb. 1        | 6.5  |     |     |      |     |     |     |     |     | 11 | 7.6 |     |     |     |    | 11 |    |    |     | 43 | 6.0 | -- |
| Feb. 2        | 8.3  |     |     |      |     |     |     |     |     | 7  | 7.6 |     |     |     |    | 10 |    |    |     | 30 | 6.4 | -- |
| Feb. 9.4      |      |     |     |      |     |     |     |     |     |    |     |     |     |     |    |    |    |    |     |    |     | -- |
| Feb. 6        | 3.4  |     |     |      |     |     |     |     |     | 9  | 7.8 |     |     |     |    | 12 |    |    |     | 41 | 6.5 | -- |
| Feb. 13       | 1.7  |     |     |      |     |     |     |     |     | 9  | 11  |     |     |     |    | 13 |    |    |     | 37 | 6.6 | -- |
| Feb. 19       | 4.5  |     |     |      |     |     |     |     |     | 8  | 8.2 |     |     |     |    | 11 |    |    |     | 32 | 6.6 | -- |
| Mar. 5        | 1.03 |     |     |      |     |     |     |     |     | 10 | 6.2 |     |     |     |    | 14 |    |    |     | 40 | 6.9 | -- |
| Mar. 13       | 1.90 |     |     |      |     |     |     |     |     | 7  | 6.6 |     |     |     |    | 12 |    |    |     | 34 | 6.7 | -- |
| Mar. 18       | .81  |     |     |      |     |     |     |     |     | 10 | 6.8 |     |     |     |    | 13 |    |    |     | 37 | 6.7 | -- |
| Mar. 19       | .73  | 4.5 | 0.0 | 0.12 | 0.2 | 3.8 | .7  | .7  | .4  | 9  | 7.2 | 1.1 | .1  | .2  | 28 | 12 |    |    |     | 36 | 6.7 | 2  |
| Mar. 26       | .85  |     |     |      |     |     |     |     |     | 11 | 6.0 |     |     |     |    | 13 |    |    |     | 36 | 6.9 | -- |
| Apr. 2        | 1.13 |     |     |      |     |     |     |     |     | 11 | 7.0 |     |     |     |    | 14 |    |    |     | 37 | 7.0 | -- |
| Apr. 8        | 18.6 |     |     |      |     |     |     |     |     | 6  | 6.0 |     |     |     |    | 9  |    |    |     | 32 | 6.6 | -- |
| Apr. 9        | 5.5  | 4.7 | .0  | .06  | 2.0 | 3.0 | .8  | .6  | .8  | 7  | 6.2 | 1.0 | .2  | .3  | 26 | 11 |    |    |     | 34 | 6.7 | 1  |
| Apr. 16       | 1.08 |     |     |      |     |     |     |     |     | 11 | 9.0 |     |     |     |    | 13 |    |    |     | 34 | 6.9 | -- |
| Apr. 23       | .85  |     |     |      |     |     |     |     |     | 11 | 6.0 |     |     |     |    | 14 |    |    |     | 34 | 6.8 | -- |
| Apr. 29       | .44  | 5.2 | .1  | .12  | .00 | 3.5 | .9  | .2  | .7  | 11 | 7.0 | 1.0 | .1  | .1  | 27 | 12 |    |    |     | 35 | 6.7 | 2  |
| Apr. 30       | .44  |     |     |      |     |     |     |     |     | 12 | 6.8 |     |     |     |    | 13 |    |    |     | 34 | 7.1 | -- |
| May 7         | .34  |     |     |      |     |     |     |     |     | 10 | 5.4 |     |     |     |    | 10 |    |    |     | 26 | 6.9 | -- |
| May 14        | .31  |     |     |      |     |     |     |     |     | 10 | 3.6 |     |     |     |    | 9  |    |    |     | 23 | 6.9 | -- |
| May 21        | .34  |     |     |      |     |     |     |     |     | 14 | 3.8 |     |     |     |    | 12 |    |    |     | 34 | 6.9 | -- |
| May 21        | .34  | 6.2 | .2  | .36  | .00 | 3.5 | .8  | .4  | .8  | 13 | 4.4 | .3  | .1  | .1  | 26 | 12 |    |    |     | 32 | 6.9 | 4  |
| May 28        | a.25 |     |     |      |     |     |     |     |     | 14 | 1.6 |     |     |     |    | 11 |    |    |     | 33 | 6.9 | -- |

a Estimated.

## CUMBERLAND RIVER BASIN--Continued

## HELTON BRANCH AT GREENWOOD, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Acidity (H <sup>+</sup> ) |                | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|---------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|---------------------------|----------------|-------------------------------------------|-----|-------|
|                    |                      |                            |               |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate | Immediate                 | Potential free |                                           |     |       |
| June 4, 1957.....  | 0.25                 | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | 3.2                        | --            | --           | --                         | --                                                 | 8                             | --            | 0.0                       | 0.0            | 32                                        | 7.0 | --    |
| June 5.....        | .36                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 3.2                        | --            | --           | --                         | --                                                 | 9                             | --            | 0.0                       | 0.0            | 32                                        | 7.1 | --    |
| June 11.....       | .29                  | 6.5                        | 0.1           | 1.0       | 0.23           | 3.2          | 0.5            | 0.0         | 1.0           | 13                              | 2.5                        | 1.4           | 0.1          | 0.0                        | 30                                                 | 10                            | 0             | 0.0                       | 0.0            | 26                                        | 6.7 | 6     |
| June 11.....       | .29                  | --                         | --            | --        | --             | --           | --             | --          | --            | 12                              | 4.8                        | --            | --           | --                         | --                                                 | 11                            | 1             | 0.0                       | 0.0            | 37                                        | 6.9 | --    |
| June 18.....       | .25                  | --                         | --            | --        | --             | --           | --             | --          | --            | 16                              | 5.2                        | --            | --           | --                         | --                                                 | 14                            | 1             | 0.0                       | 0.0            | 34                                        | 7.2 | --    |
| June 25.....       | .61                  | --                         | --            | --        | --             | --           | --             | --          | --            | 22                              | 9.6                        | --            | --           | --                         | --                                                 | 24                            | 6             | 0.0                       | 0.0            | 57                                        | 7.3 | --    |
| July 2.....        | .25                  | 6.8                        | .1            | .15       | .00            | 8.4          | 1.3            | .6          | 1.2           | 26                              | 6.0                        | 1.0           | .1           | .3                         | 46                                                 | 26                            | 5             | --                        | --             | 64                                        | 7.2 | 10    |
| July 5.....        | .19                  | --                         | --            | --        | --             | --           | --             | --          | --            | 20                              | 7.6                        | --            | --           | --                         | --                                                 | 18                            | --            | --                        | --             | 49                                        | 7.3 | --    |
| July 12.....       | .19                  | --                         | --            | --        | --             | --           | --             | --          | --            | 14                              | 2.8                        | --            | --           | --                         | --                                                 | 10                            | --            | --                        | --             | 35                                        | 7.0 | --    |
| July 19.....       | .31                  | --                         | --            | --        | --             | --           | --             | --          | --            | 24                              | 11                         | --            | --           | --                         | --                                                 | 31                            | --            | --                        | --             | 71                                        | 6.8 | --    |
| July 26.....       | .17                  | --                         | --            | --        | --             | --           | --             | --          | --            | 24                              | 6.2                        | --            | --           | --                         | --                                                 | 20                            | --            | --                        | --             | 52                                        | 7.2 | --    |
| Aug. 2.....        | .14                  | 8.0                        | .1            | .24       | .08            | 3.0          | .6             | 1.0         | .9            | 14                              | 3.0                        | .5            | .0           | .2                         | 24                                                 | 10                            | 0             | 0.0                       | 0.0            | 28                                        | 6.8 | 10    |
| Aug. 9.....        | .14                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 1.4                        | --            | --           | --                         | --                                                 | 8                             | 0             | 0.0                       | 0.0            | 22                                        | 6.5 | --    |
| Aug. 10.....       | .15                  | 7.3                        | .1            | .00       | .00            | 2.1          | .7             | .6          | .8            | 12                              | 2.4                        | 1.0           | .1           | .2                         | 22                                                 | 8                             | 0             | 0.0                       | 0.0            | 25                                        | 6.5 | 7     |
| Aug. 20.....       | .12                  | --                         | --            | --        | --             | --           | --             | --          | --            | 9.0                             | 3.2                        | --            | --           | --                         | --                                                 | 7                             | 0             | 0.0                       | 0.0            | 20                                        | 6.2 | --    |
| Aug. 27.....       | .11                  | --                         | --            | --        | --             | --           | --             | --          | --            | 11                              | 2.8                        | --            | --           | --                         | --                                                 | 7                             | 0             | .1                        | .0             | 22                                        | 6.3 | --    |
| Sept. 3.....       | .12                  | --                         | --            | --        | --             | --           | --             | --          | --            | 10                              | 2.6                        | --            | --           | --                         | --                                                 | 7                             | 0             | 0.0                       | 0.0            | 20                                        | 6.8 | --    |
| Sept. 10.....      | .31                  | 6.1                        | .1            | .19       | .09            | 1.6          | .6             | .5          | 1.2           | 6                               | 3.6                        | .5            | .1           | .4                         | 24                                                 | 6                             | 0             | 0.0                       | 0.0            | 22                                        | 5.7 | 12    |
| Sept. 17.....      | .44                  | --                         | --            | --        | --             | --           | --             | --          | --            | 26                              | 15                         | --            | --           | --                         | --                                                 | 33                            | 12            | 0.0                       | 0.0            | 86                                        | 6.9 | --    |
| Sept. 24.....      | .19                  | --                         | --            | --        | --             | --           | --             | --          | --            | 18                              | 7.4                        | --            | --           | --                         | --                                                 | 18                            | 3             | 0.0                       | 0.0            | 49                                        | 6.8 | --    |

## Temperature (°F) of water, water year October 1956 to September 1957

[illegible]

CUMBERLAND RIVER BASIN--Continued  
CUMBERLAND RIVER AT SMITHLAND, KY.

LOCATION.--At gaging station at bridge on U. S. Highway 60 at Smithland, Livingston County, 1 mile downstream from McCormick Creek, and 2.8 miles upstream from mouth.

DRAINAGE AREA.--18 080 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1957.

Water temperatures: October 1949 to September 1957.

EXTREMES 1956-57--Dissolved solids: Maximum, 133 ppm June 21-30; minimum, 90 ppm Oct. 21-31.

Hardness: Maximum, 103 ppm June 21-30; minimum, 60 ppm Oct. 1-31.

Specific conductance: Maximum, 411, 240 micromhos June 23; minimum daily, 115 micromhos May 24.

Water temperatures: Maximum, 84 F July 20, 21; minimum, 39 F Jan. 19, 1950; minimum, 77 ppm Feb. 11-20, 1950.

EXTREMES, 1949-50, 1956-57.--Dissolved solids: Maximum, 164 ppm Sept. 21-30, 1950; minimum, 77 ppm Feb. 11-20, 1950.

Hardness: Maximum, 132 ppm Sept. 21-30, 1950; minimum, 53 ppm Feb. 11-20, 1950.

Specific conductance: Maximum daily, 276 micromhos Sept. 25, 1950; minimum daily, 112 micromhos Feb. 13, 1950.

Water temperatures (1949-57): Maximum, 90 F Aug. 3, 1955; minimum, 34 F Feb. 3-5, 7, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year

October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection  | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH | Color |    |
|---------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|----------------------------------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|----|-------|----|
|                     |                      |                            |           |                |              |                |             |               |                                                    |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |    |       |    |
| Oct. 1-10, 1956...  | 10,240               | 7.3                        | 0.04      | 0.00           | 18           | 3.6            | 5.1         | 1.8           | 59                                                 | 19            | 3.0          | 0.1                        | 2.2                                                | 92                            | 60            | 12                                 | 151                                       |    | 7.1   | 5  |
| Oct. 11-20 .....    | 7,163                | 6.9                        | .00       | .00            | 20           | 2.6            | 5.0         | 1.3           | 60                                                 | 18            | 3.0          | .1                         | 2.1                                                | 96                            | 60            | 12                                 | 151                                       |    | 7.2   | 4  |
| Oct. 21-31 .....    | 3,334                | 7.9                        | .02       | .04            | 18           | 3.7            | 4.6         | 1.3           | 59                                                 | 18            | 2.5          | .1                         | 1.6                                                | 90                            | 60            | 12                                 | 148                                       |    | 7.3   | 5  |
| Nov. 1-10 .....     | 3,706                | 7.0                        | .04       | .00            | 21           | 3.9            | 7.3         | 1.2           | 68                                                 | 23            | 3.0          | .1                         | 1.5                                                | 104                           | 68            | 13                                 | 172                                       |    | 7.2   | 7  |
| Nov. 11-20 .....    | 10,620               | 8.7                        | .04       | .00            | 21           | 3.9            | 9.3         | 1.4           | 71                                                 | 24            | 3.2          | .2                         | 1.6                                                | 112                           | 70            | 10                                 | 182                                       |    | 7.3   | 7  |
| Nov. 21-30 .....    | 12,270               | 7.1                        | .02       | .00            | 20           | 4.2            | 8.6         | 1.8           | 65                                                 | 28            | 3.0          | .2                         | 1.2                                                | 110                           | 67            | 14                                 | 174                                       |    | 7.2   | 5  |
| Dec. 1-10 .....     | 9,473                | 5.5                        | .00       | .14            | 19           | 4.1            | 5.4         | 1.6           | 63                                                 | 20            | 3.5          | .1                         | 1.4                                                | 95                            | 64            | 13                                 | 157                                       |    | 7.1   | 4  |
| Dec. 11-20 .....    | 33,760               | 4.6                        | .05       | .00            | 22           | 3.0            | 4.3         | 1.2           | 69                                                 | 17            | 2.1          | .2                         | 2.3                                                | 95                            | 68            | 11                                 | 162                                       |    | 7.2   | 10 |
| Dec. 21-31 .....    | 41,230               | 6.4                        | .06       | .12            | 28           | 4.2            | 3.1         | 1.3           | 89                                                 | 14            | 2.4          | .2                         | 3.6                                                | 111                           | 87            | 14                                 | 184                                       |    | 7.5   | 16 |
| Jan. 1-10, 1957 ..  | 27,590               | 7.2                        | .02       | .00            | 27           | 3.5            | 4.4         | .9            | 84                                                 | 16            | 2.8          | .2                         | 2.4                                                | 108                           | 82            | 13                                 | 179                                       |    | 7.5   | 2  |
| Jan. 11-20 .....    | 31,630               | 6.5                        | .02       | .00            | 25           | 4.2            | 4.0         | .7            | 83                                                 | 18            | 2.2          | .1                         | 2.1                                                | 107                           | 80            | 22                                 | 180                                       |    | 7.5   | 5  |
| Jan. 21-31 .....    | 72,830               | 6.2                        | .06       | .04            | 24           | 3.8            | 3.5         | .9            | 73                                                 | 20            | 2.5          | .2                         | 2.5                                                | 104                           | 76            | 16                                 | 169                                       |    | 6.8   | 12 |
| Feb. 1-3, 5-10 .... | 130,800              | 6.8                        | .09       | .15            | 25           | 3.0            | 2.0         | .8            | 77                                                 | 11            | 2.0          | .3                         | 1.2                                                | 103                           | 75            | 12                                 | 167                                       |    | 7.5   | 7  |
| Feb. 11-20 .....    | 96,800               | 7.2                        | .02       | .06            | 26           | 3.7            | 3.0         | .7            | 82                                                 | 14            | 1.9          | .2                         | 1.0                                                | 107                           | 80            | 13                                 | 171                                       |    | 7.6   | 10 |
| Feb. 21-28 .....    | 89,020               | 6.6                        | .04       | .08            | 24           | 3.7            | 2.2         | .7            | 76                                                 | 14            | 1.8          | .2                         | 2.4                                                | 104                           | 75            | 13                                 | 162                                       |    | 7.5   | 10 |
| Mar. 1-10 .....     | 57,450               | 6.8                        | .03       | .00            | 24           | 3.4            | 2.8         | .8            | 76                                                 | 14            | 3.0          | .2                         | 2.7                                                | 97                            | 74            | 12                                 | 164                                       |    | 7.5   | 3  |
| Mar. 11-20 .....    | 53,430               | 5.8                        | .03       | .04            | 23           | 3.7            | 2.5         | 1.0           | 77                                                 | 14            | 3.0          | .2                         | 2.3                                                | 98                            | 75            | 12                                 | 161                                       |    | 7.6   | 4  |
| Mar. 21-31 .....    | 37,720               | 7.1                        | .04       | .05            | 23           | 3.6            | 3.3         | .9            | 72                                                 | 16            | 2.5          | .2                         | 2.2                                                | 98                            | 72            | 14                                 | 159                                       |    | 7.1   | 6  |
| Apr. 1-10 .....     | a 55,510             | 6.6                        | .04       | .00            | 24           | 3.2            | 2.9         | .9            | 74                                                 | 14            | 2.2          | .2                         | 2.2                                                | 95                            | 73            | 12                                 | 156                                       |    | 6.9   | 6  |
| Apr. 11-20 .....    | 52,660               | 6.8                        | .06       | .18            | 28           | 3.8            | 1.6         | .8            | 90                                                 | 14            | 1.5          | .3                         | 2.3                                                | 112                           | 86            | 12                                 | 182                                       |    | 7.6   | 7  |

a Estimated.

|                              |        |     |      |      |    |     |     |     |     |    |     |     |     |     |     |    |     |     |    |
|------------------------------|--------|-----|------|------|----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|----|
| Apr. 21-30, 1957 ..          | 38,980 | 8.7 | 0.01 | 0.00 | 24 | 4.2 | 2.7 | 0.9 | 77  | 15 | 2.0 | 0.3 | 2.3 | 103 | 77  | 14 | 163 | 7.3 | 5  |
| May 1-10 .....               | 22,570 | 8.2 | .06  | .00  | 25 | 4.1 | 3.0 | .8  | 82  | 15 | 1.8 | .2  | 2.1 | 106 | 80  | 12 | 187 | 7.2 | 5  |
| May 11-20 .....              | 12,840 | 7.9 | .00  | .00  | 21 | 4.6 | 3.9 | .9  | 103 | 13 | 3.0 | .2  | 1.8 | 120 | 98  | 12 | 195 | 7.4 | 4  |
| May 21-31 .....              | 40,100 | 7.3 | .03  | .00  | 25 | 3.3 | 2.9 | 1.2 | 81  | 11 | 3.0 | .2  | 2.6 | 107 | 76  | 10 | 160 | 7.3 | 13 |
| June 1-10 .....              | 27,290 | 8.2 | .00  | .00  | 32 | 4.7 | 3.9 | .9  | 107 | 12 | 3.0 | .2  | 2.8 | 124 | 100 | 12 | 198 | 7.6 | 7  |
| June 11-20 .....             | 14,320 | 10  | .05  | .00  | 34 | 3.8 | 3.7 | 1.3 | 108 | 14 | 2.5 | .1  | 1.9 | 129 | 101 | 12 | 216 | 7.3 | 5  |
| June 21-30 .....             | 12,320 | 9.9 | .07  | .00  | 34 | 4.4 | 4.6 | 1.4 | 113 | 13 | 2.5 | .1  | 1.9 | 133 | 103 | 10 | 222 | 7.4 | 5  |
| July 1-10 .....              | 13,460 | 10  | .03  | .00  | 32 | 4.3 | 4.6 | 1.2 | 108 | 14 | 3.1 | .2  | 2.5 | 129 | 98  | 9  | 214 | 7.2 | 2  |
| July 11-20 .....             | 20,190 | 9.6 | .10  | .00  | 26 | 4.3 | 4.4 | 1.6 | 90  | 16 | 2.6 | .2  | 1.6 | 112 | 82  | 8  | 169 | 7.4 | 2  |
| July 21-31 .....             | 18,500 | 10  | .03  | .03  | 22 | 3.7 | 4.1 | 1.3 | 74  | 16 | 3.5 | .4  | 1.4 | 102 | 70  | 10 | 167 | 7.2 | 4  |
| Aug. 1-10 .....              | 17,350 | 10  | .04  | .00  | 21 | 3.5 | 4.6 | 1.7 | 68  | 18 | 1.0 | .1  | 1.8 | 99  | 67  | 12 | 160 | 7.3 | 3  |
| Aug. 11-20 .....             | 13,070 | 5.6 | .00  | .02  | 21 | 3.6 | 4.9 | 1.4 | 64  | 20 | 4.5 | .2  | 2.9 | 97  | 68  | 15 | 165 | 7.1 | 6  |
| Aug. 21-31 .....             | 6,209  | 14  | .03  | .03  | 24 | 3.8 | 6.1 | 1.1 | 79  | 19 | 3.5 | .2  | 2.7 | 123 | 76  | 11 | 182 | 7.3 | 6  |
| Sept. 1-10 .....             | 5,668  | 11  | .01  | .03  | 24 | 5.4 | 6.4 | 1.3 | 83  | 22 | 4.0 | .1  | 1.6 | 117 | 82  | 14 | 191 | 7.2 | 3  |
| Sept. 11-20 .....            | 12,080 | 10  | .02  | .04  | 23 | 4.9 | 6.9 | 1.1 | 76  | 24 | 3.0 | .1  | 1.4 | 113 | 78  | 16 | 185 | 7.1 | 2  |
| Sept. 21-30 .....            | 12,800 | 6.6 | .01  | .01  | 24 | 4.4 | 5.9 | 1.2 | 78  | 24 | 3.0 | .1  | 2.0 | 115 | 78  | 14 | 187 | 7.1 | 4  |
| Time-weighted average b..... | 30,730 | 7.8 | 0.03 | 0.03 | 24 | 3.9 | 4.4 | 1.2 | 79  | 17 | 2.7 | 0.2 | 2.1 | 107 | 76  | 16 | 175 | --  | 6  |

b Represents 100 percent of days and 99 percent of discharge.



## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT SMITHLAND, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Twice-daily measurements at approximately 8 a.m. and 5 p.m./

| Day          | October |      | November |      | December |      | January |      | February |      | March |      | April |      | May  |      | June |      | July |      | August |      | September |      |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m. | a.m.    | p.m. | a.m.     | p.m. | a.m.  | p.m. | a.m.  | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m.   | p.m. | a.m.      | p.m. |
| 1.....       | 69      | 71   | 62       | 64   | 45       | 47   | 48      | 47   | 46       | 46   | 48    | 50   | 52    | 54   | 67   | 68   | 70   | 72   | 78   | 79   | 76     | 78   | 79        | 81   |
| 2.....       | 69      | 71   | 61       | 64   | 46       | 48   | 43      | 46   | 45       | 47   | 49    | 49   | 53    | 54   | 68   | 69   | 71   | 71   | 78   | 80   | 77     | 79   | 80        | 80   |
| 3.....       | 70      | 70   | 62       | 65   | 46       | 48   | 44      | 46   | 47       | 48   | 48    | 48   | 53    | 55   | 67   | 68   | 71   | 72   | 78   | 80   | 77     | 80   | 79        | 81   |
| 4.....       | 69      | 70   | 62       | 65   | 46       | 48   | 46      | 45   | 48       | 48   | 47    | 49   | 56    | 58   | 65   | 66   | 72   | 73   | 79   | 81   | 78     | 79   | 79        | 80   |
| 5.....       | 68      | 71   | 62       | 65   | 48       | 49   | 44      | 45   | 48       | 48   | 47    | 48   | 56    | 57   | 65   | 67   | 74   | 74   | 79   | 81   | 77     | 78   | 78        | 80   |
| 6.....       | 68      | 70   | 63       | 65   | 49       | 50   | 44      | 44   | 48       | 49   | 48    | 48   | 56    | 54   | 64   | 67   | 72   | 75   | 79   | 81   | 75     | 77   | 77        | 80   |
| 7.....       | 68      | 69   | 61       | 63   | 50       | 49   | 44      | 45   | 48       | 49   | 47    | 47   | 57    | 58   | 65   | 68   | 74   | 75   | 79   | 82   | 75     | 79   | 77        | 77   |
| 8.....       | 66      | 68   | 60       | 60   | 47       | 48   | 44      | 45   | 49       | 50   | 46    | 47   | 56    | 56   | 66   | 68   | 73   | 76   | 80   | 82   | 77     | 79   | 76        | 76   |
| 9.....       | 66      | 67   | 58       | 60   | 47       | 47   | 45      | 47   | 50       | 51   | 46    | 46   | 55    | 57   | 67   | 69   | 75   | 76   | 81   | 82   | 77     | 80   | 74        | 75   |
| 10.....      | 65      | 66   | 58       | 60   | 46       | 47   | 43      | 43   | 50       | 51   | 46    | 47   | 56    | 58   | 68   | 69   | 74   | 76   | 80   | 81   | 76     | 80   | 75        | 77   |
| 11.....      | 64      | 67   | 58       | 60   | 47       | 47   | 43      | 44   | 49       | 49   | 47    | 46   | 56    | 58   | 68   | 71   | 75   | 76   | 79   | 82   | 77     | 80   | 75        | 77   |
| 12.....      | 65      | 67   | 58       | 58   | 46       | 47   | 43      | 45   | 49       | 51   | 46    | 48   | 55    | 56   | 70   | 72   | 74   | 77   | 80   | 82   | 77     | 79   | 75        | 77   |
| 13.....      | 65      | 66   | 55       | 55   | 45       | 46   | 44      | 43   | 49       | 51   | 47    | 50   | 54    | 56   | 71   | 71   | 75   | 75   | 80   | 82   | 77     | 78   | 75        | 77   |
| 14.....      | 65      | 67   | 58       | 58   | 46       | 47   | 40      | 42   | 49       | 50   | 49    | 51   | 55    | 56   | 70   | 72   | 76   | 77   | 80   | 80   | 76     | 77   | 76        | 78   |
| 15.....      | 64      | 67   | 58       | 58   | 49       | 48   | 42      | 42   | 48       | 48   | 49    | 51   | 55    | 57   | 71   | 73   | 77   | 79   | 79   | 80   | 76     | 79   | 76        | 78   |
| 16.....      | 64      | 67   | 55       | 55   | 50       | 51   | 40      | 40   | 47       | 48   | 49    | 52   | 56    | 56   | 71   | 73   | 78   | 80   | 79   | 82   | 77     | 78   | 75        | 76   |
| 17.....      | 64      | 67   | 52       | 55   | 51       | 52   | 40      | 40   | 47       | 48   | 50    | 52   | 56    | 58   | 72   | 74   | 78   | 79   | 80   | 82   | 77     | 78   | 73        | 76   |
| 18.....      | 64      | 67   | 54       | 56   | 50       | 50   | 40      | 42   | 47       | 48   | 51    | 52   | 56    | 58   | 72   | 74   | 78   | 79   | 80   | 82   | 76     | 78   | 74        | 76   |
| 19.....      | 65      | 66   | 53       | 56   | 50       | 51   | 39      | 43   | 46       | 46   | 51    | 51   | 57    | 58   | 72   | 72   | 78   | 81   | 80   | 83   | 76     | 78   | 74        | 75   |
| 20.....      | 65      | 66   | 55       | 55   | 51       | 52   | 42      | 42   | 45       | 46   | 50    | 52   | 58    | 60   | 70   | 72   | 78   | 81   | 81   | 84   | 76     | 78   | 74        | 76   |
| 21.....      | 65      | 65   | 54       | 54   | 52       | 52   | 44      | 44   | 44       | 47   | 50    | 51   | 59    | 60   | 70   | 72   | 79   | 81   | 81   | 84   | 76     | 78   | 75        | 75   |
| 22.....      | 65      | 66   | 50       | 51   | 51       | 52   | 45      | 45   | 45       | 47   | 50    | 51   | 59    | 61   | 69   | 69   | 80   | 80   | 82   | 83   | 75     | 78   | 75        | 74   |
| 23.....      | 64      | 67   | 50       | 50   | 52       | 53   | 42      | 43   | 46       | 47   | 51    | 52   | 61    | 63   | 68   | 69   | 80   | 82   | 81   | 82   | 75     | 79   | 72        | 74   |
| 24.....      | 64      | 67   | 48       | 48   | 51       | 52   | 42      | 41   | 46       | 47   | 51    | 52   | 62    | 63   | 67   | 69   | 79   | 80   | 79   | 81   | 76     | 76   | 72        | 75   |
| 25.....      | 65      | 66   | 49       | 49   | 50       | 51   | 41      | 46   | 47       | 48   | 51    | 51   | 62    | 63   | 68   | 69   | 78   | 81   | 78   | 80   | 75     | 78   | 72        | 75   |
| 26.....      | 64      | 66   | 48       | 47   | 50       | 52   | 44      | 44   | 48       | 48   | 50    | 50   | 63    | 64   | 68   | 69   | 78   | 80   | 78   | 80   | 75     | 78   | 72        | 75   |
| 27.....      | 62      | 65   | 46       | 48   | 51       | 52   | 44      | 43   | 48       | 47   | 50    | 50   | 65    | 67   | 68   | 69   | 79   | 80   | 78   | 80   | 76     | 79   | 72        | 73   |
| 28.....      | 63      | 65   | 47       | 49   | 51       | 50   | 44      | 45   | 48       | 48   | 49    | 52   | 65    | 67   | 68   | 69   | 79   | 78   | 79   | 76   | 79     | 70   | 72        | 75   |
| 29.....      | 63      | 65   | 45       | 46   | 49       | 49   | 45      | 45   | --       | --   | 50    | 52   | 66    | 68   | 68   | 70   | 78   | 79   | 77   | 78   | 77     | 80   | 70        | 72   |
| 30.....      | 63      | 64   | 44       | 47   | 49       | 50   | 44      | 44   | --       | --   | 51    | 52   | 67    | 69   | 69   | 71   | 77   | 76   | 75   | 76   | 77     | 80   | 70        | 72   |
| 31.....      | 63      | 64   | --       | --   | 49       | 50   | 45      | 46   | --       | --   | 51    | 52   | --    | --   | 70   | 72   | --   | --   | --   | --   | 78     | 80   | 70        | --   |
| Average..... | 65      | 67   | 52       | 54   | 49       | 50   | 43      | 44   | 47       | 48   | 49    | 50   | 55    | 57   | 68   | 70   | 73   | 75   | 79   | 81   | 76     | 79   | 72        | 74   |

TENNESSEE RIVER BASIN

LITTLE RIVER NEAR CEDAR MOUNTAIN, N. C.

LOCATION.--Approximately 5.0 miles northeast of Cedar Mountain, Transylvania County, and 200 yards downstream from Grassy Creek about halfway between High Falls and Triple Falls on Little River.  
DRAINAGE AREA.--33.0 square miles.

RECORDS AVAILABLE.--Chemical analyses: February 1957 to September 1957.

REMARKS.--Records of semimonthly samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, February 1957 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium magnesium             | Non-carbonate |                                           |     |       |
| Feb. 12, 1957..... |                      | 6.2                        | 0.02      | 0.8          | 0.5            | 1.0         | 0.0           | 5                               | 1.2                        | 1.0           | 0.0          | 0.1                        | 14                                                 | 4                             | 0             | 12.3                                      | 6.5 | 5     |
| Mar. 1.....        |                      | 5.9                        | .04       | .4           | .2             | 2.0         | .3            | 5                               | 1.5                        | .8            | .0           | .3                         | 20                                                 | 2                             | 0             | 12.1                                      | 6.5 | 10    |
| Mar. 15.....       |                      | 7.7                        | .08       | .4           | .3             | 1.1         | .2            | 6                               | .4                         | .8            | .0           | .2                         | 17                                                 | 2                             | 0             | 12.5                                      | 6.6 | 5     |
| Apr. 1.....        |                      | 7.5                        | .02       | .4           | .2             | 1.1         | .3            | 2                               | 1.3                        | .4            | .0           | .2                         | 17                                                 | 2                             | 0             | 11.5                                      | 6.9 | 5     |
| Apr. 15.....       |                      | 7.5                        | .02       | .4           | .0             | .6          | .0            | 2                               | .2                         | .2            | .0           | .0                         | 13                                                 | 1                             | 0             | 9.3                                       | 6.3 | 3     |
| May 1.....         |                      | 8.0                        | .04       | .8           | .2             | .7          | .0            | 6                               | .0                         | .4            | .0           | .0                         | 13                                                 | 3                             | 0             | 13.0                                      | 6.1 | 5     |
| May 15.....        |                      | 8.6                        | .09       | .8           | .4             | .7          | .2            | 7                               | .0                         | .2            | .0           | .0                         | 14.1                                               | 4                             | 0             | 14.1                                      | 6.3 | 15    |
| June 1.....        |                      | 9.3                        | .07       | 1.2          | .2             | .8          | .0            | 7                               | .6                         | 2.0           | .1           | .3                         | 22                                                 | 4                             | 0             | 14.9                                      | 6.4 | 8     |
| June 15.....       |                      | 9.2                        | .05       | .2           | .2             | 1.0         | .0            | 5                               | .7                         | 2.0           | .1           | .3                         | 21                                                 | 3                             | 0             | 14.8                                      | 6.9 | 20    |
| July 1.....        |                      | 7.7                        | .08       | .8           | .2             | .8          | .0            | 6                               | .4                         | 2.0           | .1           | .3                         | 17                                                 | 3                             | 0             | 12.8                                      | 6.1 | 10    |
| July 15.....       |                      | 9.5                        | .11       | .8           | .2             | 1.0         | .0            | 8                               | .8                         | 2.0           | .1           | .3                         | 20                                                 | 3                             | 0             | 14.9                                      | 6.3 | 15    |
| Aug. 1.....        |                      | 9.8                        | .05       | 1.3          | .4             | 1.1         | .2            | 10                              | .1                         | .9            | .2           | .2                         | 24                                                 | 5                             | 0             | 15.2                                      | 6.8 | 6     |
| Aug. 15.....       |                      | 9.9                        | .07       | 1.3          | .6             | 1.3         | .2            | 10                              | .0                         | .8            | .1           | .2                         | 20                                                 | 6                             | 0             | 16.0                                      | 6.7 | 7     |
| Sept. 2.....       |                      | 9.4                        | .14       | 1.1          | .6             | 1.3         | .2            | 10                              | .0                         | .6            | .1           | .2                         | 21                                                 | 5                             | 0             | 16.0                                      | 6.7 | 18    |
| Sept. 14.....      |                      | 8.0                        | .06       | 1.3          | .7             | 1.1         | .2            | 9                               | .7                         | .6            | .0           | .3                         | 20                                                 | 6                             | 0             | 17.3                                      | 6.3 | 15    |

a Calculated from determined constituents.

## TENNESSEE RIVER BASIN--Continued

## FRENCH BROAD RIVER AT ASHEVILLE, N. C.

LOCATION.--At gaging station at Pearson Bridge at Asheville, Buncombe County, 2.3 miles downstream from Southern Railway station, 3.1 miles downstream from Swannanoa River.

DRAINAGE AREA.--945 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1956 to September 1957.

Water temperatures: October 1950 to September 1951.

EXTREMES, 1950-51.--Dissolved solids: Maximum, 157 ppm Sept. 12, 1951; minimum, 42 ppm Apr. 1-10, 1951.

Hardness: Maximum 32 ppm Sept. 6, 1951; minimum, 10 ppm Mar. 21-31, Apr. 1-10, 1951.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

## Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, mg./l.               | Non-carbonate |                                           |     |       |
| Oct. 17, 1956....  | 489                  | 12                         | 0.06      | 6.4          | 1.7            | 47          | 2.8           | 46                              | 79                         | 10            | 0.0          | 0.8                        | 189                                                | 23                            | 0             | 291                                       | 6.4 | 18    |
| Nov. 19.....       | 868                  | 11                         | .07       | 4.2          | .8             | 24          | 1.4           | 28                              | 39                         | 6.2           | .1           | .7                         | 102                                                | 14                            | 0             | 163                                       | 6.2 | 35    |
| Dec. 17.....       | 2,070                | 9.2                        | .04       | 3.8          | .3             | 9.3         | 1.2           | 16                              | 17                         | 3.5           | .1           | .5                         | 62                                                 | 11                            | 0             | 86.7                                      | 6.2 | 10    |
| Jan. 25, 1957....  | 2,420                | 8.0                        | .04       | 2.9          | .4             | 10          | .8            | 16                              | 15                         | 2.8           | .0           | 1.3                        | 449                                                | 9                             | 0             | 77.3                                      | 6.3 | 8     |
| Feb. 20.....       | 2,080                | 9.6                        | .01       | 2.8          | .5             | 15          | 1.6           | 26                              | 19                         | 3.9           | .0           | .4                         | 69                                                 | 9                             | 0             | 105                                       | 6.5 | 12    |
| Mar. 13.....       | 2,890                | 9.8                        | .01       | 2.8          | .2             | 18          | 1.4           | 32                              | 19                         | 4.8           | .0           | .2                         | 76                                                 | 8                             | 0             | 120                                       | 6.6 | 13    |
| Apr. 19.....       | 2,670                | 9.2                        | .01       | 2.4          | .7             | 11          | 1.4           | 18                              | 13                         | 3.5           | .1           | 2.5                        | 54                                                 | 8                             | 0             | 79.1                                      | 6.1 | 8     |
| May 15.....        | 1,680                | 9.9                        | .05       | 3.6          | .7             | 17          | 1.2           | 39                              | 17                         | 3.3           | .2           | .2                         | 473                                                | 12                            | 0             | 119                                       | 6.3 | 10    |
| June 25.....       | 3,260                | 8.6                        | .01       | 2.2          | 1.1            | 7.8         | 1.2           | 14                              | 9.2                        | 3.0           | .1           | 2.0                        | 54                                                 | 10                            | 0             | 65.0                                      | 6.1 | 10    |
| July 17.....       | 1,160                | 10                         | .01       | 4.0          | .7             | 17          | 1.7           | 29                              | 22                         | 5.2           | .1           | .7                         | 83                                                 | 13                            | 0             | 122                                       | 6.4 | 8     |
| Aug. 13.....       | 616                  | 9.1                        | .71       | 4.4          | 1.9            | 26          | 1.5           | 33                              | 37                         | 7.9           | .2           | 1.4                        | 108                                                | 19                            | 0             | 183                                       | 6.4 | 60    |
| Sept. 13.....      | 802                  | 9.1                        | .55       | 5.2          | .8             | 27          | 1.8           | 42                              | 31                         | 10            | .1           | .5                         | 114                                                | 16                            | 0             | 180                                       | 6.5 | 55    |

a Calculated from determined constituents.

TENNESSEE RIVER BASIN--Continued  
FRENCH BROAD RIVER AT MARSHALL, N. C.

LOCATION.--At gaging station on right bank, 0.4 mile upstream from Hayes Creek, 1.0 miles downstream from Ivy River, 1.5 miles southeast of Marshall, Madison County, 332 square miles.  
DRAINAGE AREA.--332 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.  
REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180 C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25 C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium-magnesium             | Non-carbonate |                                           |     |       |
| Oct. 16, 1956...   | 566                  | 11                         | 0.14      | 6.4          | 1.5            | 32          | 1.7           | 22                              | 58                         | 7.5           | 0.0          | 2.7                        | 141                                                | 22                            | 4             | 221                                       | 6.4 | 25    |
| Nov. 19.....       | 1,170                | 12                         | .07       | 4.4          | 1.0            | 17          | 1.4           | 20                              | 30                         | 4.9           | .0           | 2.2                        | 88                                                 | 15                            | 0             | 131                                       | 6.3 | 25    |
| Dec. 17.....       | 2,600                | 10                         | .05       | 3.2          | 1.0            | 6.3         | 1.2           | 14                              | 13                         | 2.2           | .1           | 1.6                        | 53                                                 | 12                            | 1             | 69.1                                      | 6.3 | 17    |
| Jan. 30, 1957...   | 2,650                | 12                         | .07       | 4.0          | 1.0            | 7.4         | 1.2           | 16                              | 14                         | 3.0           | .1           | 2.3                        | 53                                                 | 14                            | 1             | 79.0                                      | 6.6 | 13    |
| Feb. 14.....       | 2,650                | 9.7                        | .02       | 3.0          | .4             | 14          | 1.3           | 18                              | 20                         | 4.0           | .1           | 2.1                        | 66                                                 | 9                             | 0             | 97.7                                      | 6.3 | 10    |
| Mar. 12.....       | 2,350                | 13                         | .01       | 4.0          | .3             | 7.7         | 1.7           | 16                              | 11                         | 2.6           | .1           | 2.7                        | 52                                                 | 11                            | 0             | 72.2                                      | 6.4 | 12    |
| Apr. 19.....       | 3,100                | 11                         | .02       | 2.4          | .2             | 7.5         | 1.6           | 17                              | 4.2                        | 3.2           | .1           | 2.3                        | 77                                                 | 17                            | 0             | 66.9                                      | 6.5 | 7     |
| May 21.....        | 1,730                | 11                         | .01       | 4.0          | 1.0            | 9.7         | 1.0           | 18                              | 13                         | 2.4           | .3           | .7                         | 57                                                 | 14                            | 0             | 87.1                                      | 6.1 | 7     |
| June 19.....       | 2,650                | 8.9                        | .01       | 3.8          | 1.4            | 6.7         | 1.8           | 21                              | 7.4                        | 2.5           | .2           | 2.2                        | 54                                                 | 15                            | 0             | 70.5                                      | 6.5 | 12    |
| July 17.....       | 1,370                | 11                         | .01       | 3.6          | 1.0            | 14          | 1.3           | 25                              | 18                         | 3.0           | .2           | 1.0                        | 70                                                 | 13                            | 0             | 100                                       | 6.7 | 10    |
| Aug. 9.....        | 834                  | 10                         | .03       | 4.0          | 1.2            | 26          | 1.4           | 29                              | 39                         | 6.5           | .2           | 1.8                        | 112                                                | 15                            | 0             | 169                                       | 6.4 | 30    |
| Sept. 11.....      | 1,560                | 9.3                        | .08       | 3.6          | 1.5            | 18          | 1.5           | 14                              | 31                         | 4.3           | .1           | 2.1                        | 83                                                 | 15                            | 4             | 129                                       | 5.6 | 25    |

a Calculated from determined constituents.



TENNESSEE RIVER BASIN

DOE RIVER AT ELIZABETHTON, TENN.

LOCATION. --Temperature recorder at gaging station, 1,500 feet upstream from bridge on State Highway 91 at Elizabethton, Carter County, and 1 mile upstream from mouth.

DRAINAGE AREA. --137 square miles.

RECORDS AVAILABLE. --Water temperatures: February 1954 to September 1957.

EXTREMES. 1954-57. --Water temperatures: Maximum, 78°F July 22; minimum, 33°F Jan. 3, 4, 18-20.

EXTREMES. 1954-57. --Water temperatures: Maximum, 82°F July 14, 1954; minimum, freezing, point Dec. 8, 1954.

REMARKS. --Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 66      | 60  | 58       | 41  | 38       | 31  | 38      | 35  | 52       | 51  | 50    | 46  | 52    | 50  | 69  | 62  | 69   | 62  | 70   | 65  | 75     | 69  | 74        |  |
| 2.....       | 65      | 62  | 59       | 54  | 41       | 37  | 39      | 35  | 51       | 48  | 47    | 44  | 56    | 52  | 67  | 62  | 69   | 63  | 68   | 64  | 77     | 69  | 74        |  |
| 3.....       | 64      | 62  | 58       | 54  | 45       | 39  | 36      | 33  | 52       | 48  | 47    | 44  | 58    | 51  | 63  | 61  | 69   | 64  | 71   | 64  | 77     | 70  | 72        |  |
| 4.....       | 66      | 63  | 58       | 54  | 46       | 42  | 36      | 33  | 54       | 52  | 46    | 42  | 56    | 52  | 61  | 57  | 69   | 64  | 72   | 66  | 76     | 71  | 71        |  |
| 5.....       | 66      | 64  | 57       | 52  | 48       | 44  | 40      | 36  | 53       | 52  | 47    | 45  | 56    | 50  | 60  | 54  | 67   | 63  | 73   | 67  | 74     | 69  | 71        |  |
| 6.....       | 66      | 63  | 55       | 52  | 51       | 47  | 40      | 39  | 52       | 51  | 47    | 45  | 52    | 46  | 60  | 52  | 63   | 61  | 72   | 64  | 72     | 65  | 72        |  |
| 7.....       | 65      | 61  | 57       | 54  | 52       | 48  | 42      | 40  | 53       | 51  | 46    | 45  | 54    | 46  | 62  | 52  | 66   | 59  | 73   | 64  | 72     | 64  | 72        |  |
| 8.....       | 61      | 55  | 57       | 52  | 54       | 52  | 40      | 38  | 53       | 52  | 46    | 39  | 54    | 50  | 64  | 54  | 68   | 61  | 74   | 66  | 72     | 65  | 70        |  |
| 9.....       | 60      | 54  | 52       | 45  | 54       | 50  | 43      | 40  | 54       | 51  | 41    | 38  | 51    | 45  | 67  | 58  | 67   | 63  | 74   | 68  | 73     | 66  | 71        |  |
| 10.....      | 59      | 54  | 46       | 43  | 50       | 46  | 47      | 42  | 54       | 50  | 45    | 39  | 52    | 45  | 66  | 60  | 65   | 62  | 75   | 69  | 73     | 67  | 70        |  |
| 11.....      | 58      | 53  | 48       | 43  | 46       | 44  | 42      | 40  | 50       | 46  | 49    | 41  | 52    | 46  | 68  | 62  | 65   | 63  | 73   | 66  | 74     | 67  | 71        |  |
| 12.....      | 58      | 53  | 51       | 46  | 48       | 45  | 42      | 40  | 48       | 44  | 52    | 48  | 56    | 49  | 70  | 62  | 69   | 64  | 74   | 65  | 75     | 68  | 72        |  |
| 13.....      | 58      | 53  | 49       | 43  | 51       | 48  | 44      | 42  | 47       | 45  | 50    | 46  | 54    | 46  | 71  | 63  | 69   | 65  | 74   | 67  | 77     | 70  | 71        |  |
| 14.....      | 59      | 53  | 47       | 42  | 53       | 51  | 43      | 40  | 45       | 43  | 54    | 48  | 51    | 44  | 68  | 65  | 69   | 63  | 74   | 69  | 76     | 72  | 72        |  |
| 15.....      | 59      | 54  | 50       | 44  | 53       | 53  | 40      | 38  | 44       | 40  | 55    | 51  | 52    | 44  | 68  | 63  | 70   | 64  | 75   | 69  | 74     | 70  | 67        |  |
| 16.....      | 59      | 53  | 50       | 49  | 54       | 52  | 39      | 36  | 46       | 44  | 52    | 46  | 49    | 47  | 71  | 62  | 71   | 66  | 75   | 67  | 74     | 68  | 70        |  |
| 17.....      | 58      | 54  | 49       | 48  | 52       | 49  | 36      | 34  | 44       | 41  | 52    | 44  | 56    | 48  | 71  | 63  | 69   | 66  | 75   | 69  | 70     | 67  | 68        |  |
| 18.....      | 58      | 55  | 48       | 45  | 51       | 48  | 35      | 33  | 44       | 40  | 50    | 47  | 58    | 53  | 72  | 64  | 68   | 64  | 72   | 69  | 70     | 68  | 67        |  |
| 19.....      | 60      | 57  | 45       | 42  | 48       | 46  | 37      | 33  | 46       | 44  | 51    | 48  | 64    | 55  | 70  | 64  | 67   | 65  | 74   | 67  | 70     | 66  | 67        |  |
| 20.....      | 61      | 57  | 46       | 42  | 51       | 48  | 37      | 33  | 45       | 42  | 50    | 45  | 66    | 58  | 66  | 62  | 70   | 64  | 75   | 67  | 72     | 66  | 71        |  |
| 21.....      | 60      | 58  | 59       | 45  | 54       | 51  | 41      | 36  | 45       | 41  | 48    | 41  | 68    | 60  | 69  | 59  | 70   | 63  | 76   | 69  | 69     | 64  | 73        |  |
| 22.....      | 61      | 58  | 48       | 41  | 53       | 52  | 47      | 38  | 48       | 42  | 48    | 47  | 65    | 61  | 68  | 64  | 71   | 66  | 78   | 71  | 63     | 72  | 67        |  |
| 23.....      | 61      | 58  | 41       | 37  | 53       | 52  | 48      | 42  | 47       | 43  | 50    | 47  | 66    | 60  | 69  | 62  | 70   | 67  | 76   | 72  | 69     | 63  | 70        |  |
| 24.....      | 62      | 58  | 39       | 38  | 53       | 48  | 42      | 39  | 51       | 45  | 51    | 47  | 67    | 59  | 69  | 64  | 69   | 66  | 73   | 70  | 69     | 63  | 65        |  |
| 25.....      | 62      | 58  | 40       | 36  | 48       | 42  | 41      | 40  | 52       | 50  | 56    | 50  | 69    | 61  | 68  | 62  | 69   | 66  | 75   | 67  | 68     | 63  | 59        |  |
| 26.....      | 58      | 55  | 40       | 39  | 42       | 41  | 44      | 41  | 56       | 52  | 53    | 49  | 69    | 61  | 67  | 64  | 70   | 65  | 74   | 67  | 68     | 63  | 59        |  |
| 27.....      | 58      | 56  | 40       | 39  | 42       | 40  | 45      | 44  | 57       | 53  | 49    | 46  | 70    | 61  | 66  | 61  | 70   | 65  | 72   | 68  | 70     | 62  | 66        |  |
| 28.....      | 59      | 54  | 40       | 36  | 43       | 41  | 51      | 45  | 54       | 50  | 47    | 44  | 70    | 62  | 62  | 57  | 70   | 67  | 75   | 67  | 71     | 62  | 64        |  |
| 29.....      | 57      | 53  | 40       | 37  | 43       | 38  | 53      | 51  | --       | --  | 50    | 42  | 70    | 63  | 64  | 58  | 70   | 65  | 73   | 68  | 72     | 66  | 57        |  |
| 30.....      | 59      | 56  | 41       | 39  | 38       | 36  | 52      | 50  | --       | --  | 48    | 43  | 69    | 63  | 67  | 60  | 68   | 67  | 72   | 68  | 74     | 67  | 61        |  |
| 31.....      | 61      | 57  | --       | --  | 41       | 36  | 52      | 49  | --       | --  | 54    | 45  | --    | --  | 67  | 59  | --   | --  | 75   | 66  | 73     | 67  | --        |  |
| Average..... | 61      | 57  | 49       | 45  | 48       | 45  | 42      | 39  | 50       | 47  | 49    | 45  | 59    | 53  | 67  | 60  | 69   | 64  | 74   | 67  | 72     | 67  | 69        |  |

TENNESSEE RIVER BASIN--Continued  
CONNELLY CREEK AT WHITTIER, N. C.

LOCATION --At Southern Railway bridge at mouth at Whittier, Swain County.

DRAINAGE AREA --13.5 square miles.

RECORDS AVAILABLE --Chemical analyses: November 1956 to September 1957.

REMARKS --Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, November 1956 to September 1957

| Date of collection  | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |               | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|---------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|---------------|-------------------------------------------------------------|-----|-------|
|                     |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                                     | Calcium,<br>magnesium            | Non-carbonate |                                                             |     |       |
| Nov. 1, 1956.....   | 10.1               | 12                            | 0.00         | 1.6             | 0.2               | 1.8            | 0.8              | 11                                 | 1.0                           | 0.9              | 0.1             | 0.6                           | 26                                                                  | 5                                | 0             | 26.2                                                        | 6.5 | 10    |
| Dec. 28, 1956.....  | 14.5               | 10                            | .02          | 1.0             | .3                | 1.6            | .7               | 10                                 | .5                            | .8               | .0              | .6                            | 24                                                                  | 4                                | 0             | 18.7                                                        | 6.2 | 3     |
| Jan. 3, 1957.....   |                    | 11                            | .01          | 1.0             | .2                | 1.6            | .6               | 9                                  | .7                            | .8               | .0              | .7                            | 23                                                                  | 3                                | 0             | 19.7                                                        | 6.8 | 3     |
| Feb. 15, 1957.....  | 56.1               | 9.8                           | .00          | 1.2             | .2                | 1.0            | .7               | 8                                  | .3                            | .6               | .0              | .9                            | a19                                                                 | 4                                | 0             | 19.8                                                        | 6.8 | 3     |
| Mar. 21, 1957.....  | 32.4               | 9.4                           | .00          | 1.6             | .2                | 1.2            | .6               | 7                                  | .9                            | .6               | .0              | .5                            | a18                                                                 | 5                                | 0             | 17.6                                                        | 6.6 | 3     |
| May 24, 1957.....   | 21.4               | 11                            | .00          | 1.0             | .6                | 1.4            | 1.1              | 11                                 | .7                            | .4               | .0              | .5                            | a22                                                                 | 5                                | 0             | 23.6                                                        | 6.5 | 5     |
| July 17, 1957.....  | 12.9               | 11                            | .01          | 1.4             | .6                | 1.6            | .6               | 10                                 | 1.4                           | .7               | .1              | 1.0                           | 24                                                                  | 6                                | 0             | 22.5                                                        | 6.2 | 7     |
| Aug. 29, 1957.....  | 7.46               | 11                            | .04          | 1.4             | .3                | 2.0            | 1.0              | 11                                 | 1.2                           | 1.1              | .1              | .4                            | 26                                                                  | 5                                | 0             | 29.8                                                        | 6.3 | 10    |
| Sept. 24, 1957..... | 8.36               | 11                            | .04          | 1.8             | .4                | 1.9            | .6               | 13                                 | 1.5                           | .5               | .1              | .3                            | 24                                                                  | 6                                | 0             | 24.1                                                        | 6.4 | 12    |

a Calculated from determined constituents.

## TENNESSEE RIVER BASIN--Continued

## TENNESSEE RIVER AT KENTUCKY DAM, NEAR PADUCAH, KY.

LOCATION.--At tailrace of powerplant at Kentucky Dam at Gilbertsville, Marshall County, 3,500 feet upstream from gaging station, 3.0 miles upstream from Shadie Creek, and 16 miles east of Paducah, McCracken County.

DRAINAGE AREA.--40,200 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to August 1950, October 1951 to September 1954, October 1956 to September 1957.

Water temperatures: October 1952 to September 1954, October 1956 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum 127 ppm Dec. 11-20; minimum, 77 ppm June 11-12, 14-20.

Hardness: Maximum, 82 ppm Oct. 11-31; minimum, 51 ppm Feb. 11-20.

Specific conductance: Maximum daily, 228 micromhos Dec. 16; minimum daily, 120 micromhos Feb. 18.

Water temperatures: Maximum, 85°F on several days during July and August; minimum, 40°F Jan. 6, 8, 17-20.

EXTREMES: 1952-54: 1956-57.--Dissolved solids: Maximum 127 ppm Dec. 11-20, 1956; minimum, 63 ppm May 21-31, 1953.

Hardness: Maximum, 86 ppm Jan. 1-10, 1954; minimum 48 ppm Mar. 11-20, Apr. 2-10, 1953.

Specific conductance: Maximum daily, 228 micromhos Dec. 16, 1956; minimum daily, 107 micromhos Apr. 9-10, 1953.

Water temperatures: Maximum, 86°F Aug. 2, 1952; minimum, 36°F Jan. 13, 1954.

REMARKS.--Chemical quality samples prior to 1952 were collected at auxiliary gaging station 17.0 miles downstream. Records of specific conductance of daily samples from October 1952 to September 1954, and from October 1956 to September 1957, available in district office at Columbus, Ohio.

Records of discharge for water year October 1956 to September 1957 given in WSP 1506.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                    |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                    |                                           |     |       |
| Oct. 1-10, 1956 .. | 35,500               | 7.9                        | 0.08      | 0.00           | 24           | 5.0            | 7.5         | 1.3           | 80                              | 15                         | 13            | 0.2          | 0.8                        | 113                                                | 80                            | 15            |                                    | 190                                       | 7.3 | 2     |
| Oct. 11-20 .....   | 27,850               | 9.0                        | .02       | .00            | 25           | 4.9            | 7.9         | 1.2           | 78                              | 16                         | 14            | .2           | .7                         | 114                                                | 82                            | 18            |                                    | 186                                       | 7.2 | 2     |
| Oct. 21-31 .....   | 31,340               | 8.8                        | .02       | .00            | 25           | 4.9            | 7.7         | 1.3           | 79                              | 15                         | 15            | .2           | .7                         | 113                                                | 82                            | 18            |                                    | 186                                       | 7.3 | 2     |
| Nov. 1-10 .....    | 36,300               | 5.0                        | .03       | .00            | 25           | 4.4            | 8.7         | 1.7           | 79                              | 14                         | 14            | .2           | .6                         | 114                                                | 80                            | 16            |                                    | 195                                       | 6.7 | 2     |
| Nov. 11-20 .....   | 32,470               | 4.1                        | .02       | .04            | 24           | 4.7            | 8.3         | 1.0           | 76                              | 14                         | 14            | .2           | .6                         | 115                                                | 80                            | 17            |                                    | 195                                       | 6.7 | 2     |
| Nov. 21-30 .....   | 41,820               | 4.4                        | .01       | .00            | 24           | 4.9            | 9.6         | 1.0           | 78                              | 14                         | 15            | .2           | 1.0                        | 116                                                | 80                            | 16            |                                    | 198                                       | 7.4 | 1     |
| Dec. 1-10 .....    | 34,290               | 7.6                        | .02       | .00            | 25           | 4.3            | 8.9         | 1.0           | 74                              | 15                         | 16            | .1           | 1.0                        | 118                                                | 80                            | 20            |                                    | 208                                       | 7.3 | 2     |
| Dec. 11-20 .....   | 127,300              | 4.5                        | .01       | .00            | 25           | 4.4            | 10          | 1.0           | 72                              | 15                         | 20            | .1           | 1.2                        | 127                                                | 80                            | 22            |                                    | 220                                       | 7.1 | 2     |
| Dec. 21-31 .....   | 67,130               | 5.3                        | .03       | .00            | 24           | 4.0            | 10          | 1.2           | 70                              | 15                         | 19            | .2           | 1.5                        | 120                                                | 76                            | 19            |                                    | 209                                       | 7.1 | 2     |
| Jan. 1-10, 1957 .. | 67,340               | 8.5                        | .04       | .04            | 24           | 3.9            | 9.0         | 1.1           | 70                              | 14                         | 17            | .2           | 1.7                        | 118                                                | 76                            | 18            |                                    | 206                                       | 7.5 | 5     |
| Jan. 11-20 .....   | 51,250               | 7.3                        | .05       | .04            | 24           | 3.7            | 8.8         | 1.1           | 66                              | 18                         | 17            | .2           | 1.9                        | 121                                                | 75                            | 21            |                                    | 202                                       | 7.9 | 8     |
| Jan. 21-31 .....   | 139,000              | 6.4                        | .05       | .00            | 23           | 3.8            | 7.7         | 1.0           | 64                              | 16                         | 14            | .2           | 1.5                        | 112                                                | 73                            | 20            |                                    | 188                                       | 7.4 | 7     |
| Feb. 1-10 .....    | 381,400              | 8.2                        | .10       | .00            | 18           | 2.7            | 7.4         | 1.2           | 52                              | 12                         | 12            | .2           | 4.2                        | 96                                                 | 56                            | 14            |                                    | 147                                       | 6.9 | 7     |
| Feb. 11-20 .....   | 279,400              | 6.9                        | .14       | .00            | 16           | 2.5            | 5.5         | 1.1           | 47                              | 9.2                        | 10            | .2           | 3.9                        | 78                                                 | 51                            | 12            |                                    | 126                                       | 7.2 | 7     |
| Feb. 21-28 .....   | 147,500              | 9.0                        | .08       | .00            | 17           | 3.8            | 3.6         | .9            | 54                              | 9.2                        | 6.6           | .1           | 2.4                        | 90                                                 | 58                            | 14            |                                    | 135                                       | 7.4 | 8     |
| Mar. 1-10 .....    | 108,500              | 13                         | .07       | .01            | 18           | 3.7            | 4.7         | 1.1           | 65                              | 9.6                        | 5.6           | .1           | 2.5                        | 101                                                | 60                            | 7             |                                    | 148                                       | 7.6 | 12    |
| Mar. 11-20 .....   | 80,370               | 9.6                        | .02       | .00            | 20           | 3.5            | 4.3         | .9            | 66                              | 9.4                        | 5.8           | .1           | 2.9                        | 94                                                 | 64                            | 10            |                                    | 150                                       | 7.1 | 5     |
| Mar. 21-31 .....   | 41,640               | 7.5                        | .05       | .00            | 20           | 3.2            | 3.3         | .8            | 64                              | 8.8                        | 5.2           | .1           | 2.5                        | 91                                                 | 63                            | 10            |                                    | 145                                       | 7.1 | 3     |

a Estimated.



## TENNESSEE RIVER BASIN--Continued

## TENNESSEE RIVER AT KENTUCKY DAM, NEAR PADUCAH, KY.--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection            | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Total acidity as (H <sup>+</sup> ) | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|-------------------------------|----------------------|----------------------------|-----------|----------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|------------------------------------|-------------------------------------------|-----|-------|
|                               |                      |                            |           |                |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                    |                                           |     |       |
| Apr. 1-10, 1957..             | 95,570               | 8.1                        | 0.02      | 0.00           | 20           | 3.7            | 3.4         | 0.8           | 62                              | 12                         | 5.0           | 0.1          | 2.1                        | 89                                                 | 65                            | 14            |                                    | 149                                       | 7.3 | 4     |
| Apr. 11-20 .....              | a 68,180             | 7.3                        | .06       | .00            | 17           | 3.6            | 3.1         | .8            | 57                              | 9.2                        | 4.0           | .1           | 1.6                        | 78                                                 | 58                            | 11            |                                    | 125                                       | 7.3 | 7     |
| Apr. 21-30 .....              | a 44,140             | 4.5                        | .01       | .00            | 18           | 3.1            | 2.4         | .9            | 60                              | 8.0                        | 4.0           | .3           | 1.7                        | 80                                                 | 58                            | 9             |                                    | 128                                       | 7.2 | 5     |
| May 1-10 .....                | a 37,830             | 3.7                        | .01       | .00            | 19           | 3.0            | 2.0         | .9            | 64                              | 8.8                        | 3.5           | .2           | 1.5                        | 82                                                 | 60                            | 8             |                                    | 130                                       | 7.2 | 5     |
| May 11-20 .....               | 38,580               | 3.0                        | .08       | .00            | 19           | 3.1            | 2.3         | .9            | 64                              | 9.6                        | 3.5           | .2           | 1.2                        | 81                                                 | 60                            | 8             |                                    | 129                                       | 7.4 | 7     |
| May 21-31 .....               | a 59,840             | 4.2                        | .03       | .00            | 18           | 3.3            | 2.6         | 1.0           | 62                              | 9.2                        | 3.8           | .1           | .9                         | 82                                                 | 58                            | 8             |                                    | 127                                       | 7.1 | 3     |
| June 1-10 .....               | 49,530               | 7.3                        | .02       | .00            | 20           | 4.1            | 3.1         | 1.2           | 71                              | 12                         | 4.0           | .1           | 1.2                        | 91                                                 | 67                            | 9             |                                    | 146                                       | 7.1 | 3     |
| June 11-12, 14-20             | 57,140               | 4.3                        | .02       | .00            | 18           | 2.9            | 3.8         | 1.1           | 62                              | 8.0                        | 4.0           | .3           | 1.2                        | 77                                                 | 57                            | 6             |                                    | 134                                       | 7.1 | 5     |
| June 21-30 .....              | 44,820               | 6.0                        | .02       | .00            | 18           | 3.4            | 4.4         | 1.0           | 62                              | 7.8                        | 4.0           | .3           | 1.1                        | 80                                                 | 59                            | 8             |                                    | 136                                       | 7.0 | 4     |
| July 1-10 .....               | 45,420               | 5.5                        | .11       | .01            | 18           | 3.2            | 4.7         | 1.2           | 64                              | 8.0                        | 4.0           | .3           | .9                         | 80                                                 | 58                            | 6             |                                    | 136                                       | 7.0 | 4     |
| July 11-19 .....              | a 31,530             | 7.5                        | .01       | .00            | 18           | 3.4            | 4.3         | 1.1           | 66                              | 7.8                        | 4.0           | .3           | .6                         | 93                                                 | 59                            | 5             |                                    | 139                                       | 7.0 | 3     |
| July 21-22, 25-31..           | 35,660               | 5.7                        | .04       | .01            | 18           | 3.1            | 4.4         | 1.2           | 64                              | 8.0                        | 4.0           | .3           | .7                         | 80                                                 | 58                            | 6             |                                    | 136                                       | 7.0 | 3     |
| Aug. 1-10 .....               | 32,200               | 4.5                        | .03       | .06            | 18           | 3.6            | 3.8         | 1.4           | 64                              | 13                         | 5.0           | .1           | .6                         | 82                                                 | 60                            | 8             |                                    | 146                                       | 7.1 | 7     |
| Aug. 11-20 .....              | 36,490               | 5.2                        | .01       | .00            | 20           | 3.4            | 4.3         | .8            | 68                              | 10                         | 6.0           | .2           | 1.6                        | 87                                                 | 64                            | 8             |                                    | 154                                       | 7.1 | 4     |
| Aug. 21-31 .....              | 32,770               | 4.4                        | .02       | .00            | 20           | 3.6            | 4.0         | .9            | 67                              | 12                         | 6.5           | .2           | 1.2                        | 87                                                 | 65                            | 10            |                                    | 152                                       | 7.0 | 4     |
| Sept. 1-10 .....              | 32,970               | 5.7                        | .01       | .00            | 20           | 3.6            | 4.8         | .9            | 68                              | 11                         | 8.0           | .2           | .6                         | 92                                                 | 65                            | 10            |                                    | 159                                       | 7.0 | 4     |
| Sept. 11-14, 16-20            | 41,060               | 4.7                        | .17       | .00            | 20           | 3.8            | 4.8         | 1.3           | 68                              | 11                         | 9.0           | .2           | .6                         | 90                                                 | 66                            | 10            |                                    | 160                                       | 7.1 | 4     |
| Sept. 21-30 .....             | 42,350               | 5.2                        | .02       | .00            | 20           | 3.7            | 5.1         | 1.4           | 66                              | 11                         | 8.5           | .2           | .6                         | 83                                                 | 65                            | 11            |                                    | 160                                       | 7.1 | 5     |
| Time-weighted average b ..... | 70,780               | 6.3                        | 0.04      | 0.01           | 21           | 3.7            | 5.6         | 1.1           | 66                              | 12                         | 9.1           | 0.2          | 1.6                        | 96                                                 | 68                            | 14            |                                    | 162                                       | --  | 4     |

a Estimated.

b Represents 99 percent of days and 99 percent of runoff.

## TENNESSEE RIVER BASIN--Continued

## TENNESSEE RIVER AT KENTUCKY DAM, NEAR PADUCAH, KY.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

Once-daily measurement at approximately 4 p. m. <sup>7</sup>

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 74   | 66   | 46   | 45   | 44   | 50   | 54   | 63  | 74   | 82   | 84   | 82    |
| 2       | 73   | 66   | 48   | 46   | 44   | 50   | 54   | 69  | 74   | 82   | 84   | 80    |
| 3       | 72   | 66   | 46   | 44   | 45   | 51   | 55   | 68  | 74   | 82   | 85   | 80    |
| 4       | 72   | 67   | 46   | 42   | 48   | 49   | 56   | 68  | 74   | 80   | 82   | 79    |
| 5       | 72   | 67   | 46   | 42   | 49   | 49   | 56   | 67  | 75   | 81   | 85   | 80    |
| 6       | 72   | 66   | 50   | 40   | --   | 50   | 51   | 68  | 76   | 81   | 82   | 80    |
| 7       | 71   | 66   | 50   | 41   | 51   | 50   | 50   | --  | 77   | 83   | 82   | 80    |
| 8       | 71   | 60   | 49   | 40   | 51   | 49   | 56   | 66  | 77   | 83   | 83   | 80    |
| 9       | 70   | 60   | 47   | 41   | 50   | 50   | 56   | 70  | 77   | 84   | 83   | 80    |
| 10      | 70   | 60   | 47   | 44   | 57   | 48   | 58   | 70  | 77   | 84   | 82   | --    |
| 11      | 70   | 60   | 46   | 43   | 48   | 47   | 58   | 70  | 79   | 83   | 85   | --    |
| 12      | 69   | 59   | 46   | 45   | 55   | 50   | 59   | 72  | 80   | 84   | 85   | 78    |
| 13      | 69   | 59   | 47   | 45   | 56   | 50   | 58   | 70  | --   | 84   | 83   | 78    |
| 14      | 68   | 59   | 47   | 44   | 52   | 51   | 58   | 70  | 80   | 82   | 83   | 78    |
| 15      | 68   | 59   | 47   | 44   | 53   | 52   | 58   | 70  | 80   | 83   | 85   | --    |
| 16      | 68   | 56   | 47   | 42   | 53   | 53   | 58   | 72  | 81   | 83   | 84   | 78    |
| 17      | 69   | 56   | 52   | 40   | 54   | 54   | 58   | 72  | 81   | 83   | 84   | 77    |
| 18      | 69   | 57   | 51   | 40   | 54   | 54   | 60   | 72  | 81   | 82   | 83   | 77    |
| 19      | 68   | 57   | 50   | 40   | 51   | 53   | 60   | 71  | 81   | 83   | 82   | 77    |
| 20      | 68   | 56   | 50   | 40   | 52   | 53   | 60   | 71  | 82   | --   | 83   | 77    |
| 21      | 66   | 54   | 50   | 43   | 49   | 54   | 60   | 73  | 82   | 85   | 82   | 76    |
| 22      | 67   | 53   | 50   | 43   | 50   | 53   | 60   | 73  | 80   | 85   | 82   | 76    |
| 23      | 69   | 53   | 51   | 42   | 50   | 54   | 61   | 72  | 80   | --   | 82   | 75    |
| 24      | 69   | 52   | 51   | 42   | 50   | 53   | 61   | 72  | 81   | --   | 80   | 75    |
| 25      | 68   | 50   | 50   | 42   | 52   | 53   | 61   | 73  | 82   | 85   | 80   | --    |
| 26      | 68   | 50   | 50   | 42   | 52   | 51   | 67   | 73  | 82   | 84   | 81   | 75    |
| 27      | 67   | 48   | --   | 42   | 50   | 51   | 68   | 74  | 81   | 84   | 80   | 75    |
| 28      | 72   | 48   | 50   | 42   | 58   | 53   | 67   | 73  | 82   | 84   | 80   | 75    |
| 29      | 67   | 47   | 48   | 43   | --   | 52   | 68   | 73  | 82   | 83   | 82   | 74    |
| 30      | 66   | 46   | 48   | 42   | --   | 54   | 62   | 72  | 81   | 83   | 82   | 72    |
| 31      | 66   | --   | 48   | 44   | --   | 54   | --   | 73  | --   | 84   | 82   | --    |
| Average | 69   | 57   | 48   | 42   | 51   | 51   | 59   | 71  | 79   | 83   | 83   | 78    |

TENNESSEE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN TENNESSEE RIVER BASIN IN NORTH CAROLINA AND GEORGIA

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                                  | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                    | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|-----------------------------------------------------|--------------------|-------------------------------|--------------|----------------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|--------------------|-------------------------------------------------------------|-----|-------|
|                                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium                          | Non-carbon-<br>ate |                                                             |     |       |
|                                                     |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| FRENCH BROAD RIVER AT ROSMAN, N. C.                 |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 5, 1956.....                                   | 113                | 8.4                           | 0.01         | 0.9                  | 0.2                    | 1.4            | 0.4                   | 7                                       | 0.3                           | 1.0              | 0.0             | 0.4                           | a16                                                                 | 3                                | 0                  | 15.7                                                        | 6.5 | 3     |
| Apr. 2, 1957.....                                   | 849                | 4.5                           | .01          | 1.2                  | .5                     | .7             | .4                    | 5                                       | 1.6                           | 1.0              | .0              | .4                            | a12                                                                 | 5                                | 1                  | 13.4                                                        | 5.6 | 0     |
| DAVIDSON RIVER NEAR BREVARD, N. C.                  |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 5, 1956.....                                   | 62.1               | 8.2                           | 0.00         | 1.1                  | 0.5                    | 1.2            | 0.2                   | 8                                       | 0.8                           | 0.5              | 0.0             | 0.4                           | a17                                                                 | 5                                | 0                  | 15.0                                                        | 6.4 | 6     |
| Apr. 2, 1957.....                                   | 40                 | 5.0                           | .01          | 1.2                  | .5                     | .5             | .3                    | 4                                       | 1.0                           | 1.0              | .1              | .0                            | a12                                                                 | 5                                | 2                  | 11.2                                                        | 5.6 | 0     |
| FRENCH BROAD RIVER AT BLANTYRE, N. C.               |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 5, 1956.....                                   | 466                | 9.7                           | 0.13         | 5.5                  | 1.0                    | 25             | 1.7                   | 25                                      | 38                            | 5.6              | 0.1             | 0.9                           | a100                                                                | 18                               | 0                  | 159                                                         | 6.1 | 48    |
| Apr. 12, 1957.....                                  | b1,890             | 8.5                           | .02          | 2.4                  | .3                     | 5.6            | .4                    | 8                                       | 7.3                           | 3.0              | .0              | .9                            | a32                                                                 | 7                                | 0                  | 45.4                                                        | 6.0 | 5     |
| MILLS RIVER NEAR MILLS RIVER, N. C.                 |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 6, 1956.....                                   | 101                | 7.9                           | 0.01         | 1.0                  | 0.2                    | 0.9            | 0.2                   | 6                                       | 0.5                           | 0.6              | 0.0             | 0.4                           | a15                                                                 | 4                                | 0                  | 14.2                                                        | 6.3 | 5     |
| Apr. 2, 1957.....                                   | 486                | 5.7                           | .00          | 1.2                  | .7                     | .8             | .3                    | 5                                       | .7                            | 1.0              | .0              | .5                            | a13                                                                 | 6                                | 2                  | 12.2                                                        | 5.6 | 10    |
| CANE CREEK AT FLETCHER, N. C.                       |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 5, 1956.....                                   | 38.8               | 15                            | 0.07         | 4.0                  | 0.8                    | 3.1            | 1.0                   | 23                                      | 1.6                           | 1.8              | 0.0             | 0.7                           | a39                                                                 | 13                               | 0                  | 46.6                                                        | 6.8 | 8     |
| Apr. 3, 1957.....                                   | 117                | 12                            | .02          | 3.2                  | 1.2                    | 1.7            | .8                    | 14                                      | 3.5                           | 2.0              | .2              | .9                            | a33                                                                 | 13                               | 0                  | 38.1                                                        | 6.2 | 0     |
| FRENCH BROAD RIVER AT BENT CREEK, N. C.             |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 17, 1956.....                                  | 400                | 8.3                           | 0.07         | 2.5                  | 0.7                    | 5.4            | 0.7                   | 14                                      | 5.6                           | 1.2              | 0.2             | 0.4                           | a32                                                                 | 9                                | 0                  | 45.8                                                        | 6.4 | 15    |
| Apr. 19, 1957.....                                  | b2,190             | 8.2                           | .03          | 1.6                  | .7                     | 2.0            | .6                    | 9                                       | 2.9                           | 1.0              | .1              | .3                            | a21                                                                 | 7                                | 0                  | 23.1                                                        | 6.0 | 0     |
| HOMINY CREEK AT CANDLER, N. C.                      |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Oct. 11, 1956.....                                  | 32.7               | 13                            | 0.10         | 3.8                  | 1.2                    | 2.4            | 1.3                   | 21                                      | 1.5                           | 1.3              | 0.0             | 0.9                           | a36                                                                 | 14                               | 0                  | 44.6                                                        | 6.6 | 8     |
| Apr. 11, 1957.....                                  | 237                | 12                            | .01          | 2.8                  | 1.5                    | 1.7            | .8                    | 12                                      | 2.6                           | 2.5              | .2              | 1.6                           | a32                                                                 | 13                               | 3                  | 39.1                                                        | 6.5 | 5     |
| NORTH FORK SWANNOA RIVER NEAR BLACK MOUNTAIN, N. C. |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 2, 1956.....                                   | 83.6               | 5.8                           | 0.00         | 1.2                  | 0.2                    | 0.9            | 0.3                   | 7                                       | 0.8                           | 0.8              | 0.0             | 0.3                           | a13                                                                 | 4                                | 0                  | 17.7                                                        | 6.2 | 3     |
| Apr. 10, 1957.....                                  | 156                | 4.9                           | .00          | 1.2                  | .2                     | .7             | .3                    | 5                                       | .9                            | 1.0              | .0              | 1.0                           | a12                                                                 | 4                                | 0                  | 14.2                                                        | 5.7 | 0     |
| BETREE CREEK NEAR SWANNOA, N. C.                    |                    |                               |              |                      |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                    |                                                             |     |       |
| Nov. 2, 1956.....                                   | 8.59               | 7.5                           | 0.00         | 1.2                  | 0.2                    | 1.0            | 0.2                   | 5                                       | 3.0                           | 1.2              | 0.0             | 0.2                           | a16                                                                 | 4                                | 0                  | 18.7                                                        | 6.4 | 5     |
| Apr. 10, 1957.....                                  | 31.5               | 7.7                           | .00          | 1.2                  | 1.0                    | .7             | .4                    | 5                                       | 1.8                           | 1.0              | .0              | .0                            | a16                                                                 | 7                                | 3                  | 16.0                                                        | 6.0 | 0     |

## SWANANOA RIVER AT BILTMORE, N. C.

|                   |      |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |    |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|----|
| Nov. 6, 1956..... | 79.0 | 9.9 | 0.03 | 3.2 | 0.6 | 5.0 | 0.5 | 16 | 5.3 | 2.7 | 0.0 | 0.4 | a36 | 10 | 0 | 46.0 | 6.7 | 14 |
| Apr. 3, 1957..... | 342  | 8.4 | .01  | 2.0 | 1.0 | 1.7 | .8  | 10 | 3.0 | 2.0 | .1  | 1.6 | a28 | 9  | 1 | 32.1 | 6.1 | 0  |

## IVY RIVER NEAR MARSHALL, N. C.

|                    |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|--------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Oct. 15, 1956..... | 28.4 | 14 | 0.13 | 5.8 | 2.3 | 3.8 | 1.9 | 36 | 3.6 | 1.4 | 0.0 | 0.3 | a51 | 24 | 0 | 68.9 | 7.0 | 7 |
| Apr. 18, 1957..... | 174  | 16 | .01  | 3.2 | 1.7 | 2.2 | .6  | 20 | 2.0 | 1.7 | .0  | 1.3 | a39 | 15 | 0 | 49.0 | 6.9 | 5 |

## BIG LAUREL CREEK NEAR STACKHOUSE, N. C.

|                    |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|--------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Oct. 15, 1956..... | 33.9 | 12 | 0.04 | 4.6 | 1.4 | 2.8 | 0.9 | 26 | 1.1 | 0.7 | 0.2 | 0.3 | a37 | 17 | 0 | 47.6 | 7.0 | 6 |
| Apr. 18, 1957..... | 197  | 12 | .00  | 2.8 | 1.0 | 1.7 | .9  | 14 | 2.4 | 1.5 | .0  | .8  | a30 | 11 | 0 | 34.6 | 6.8 | 5 |

## WEST FORK PIGEON RIVER ABOVE LAKE LOGAN NEAR HAZELWOOD, N. C.

|                   |      |     |      |     |     |     |     |   |     |     |     |     |     |   |   |      |     |   |
|-------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 9, 1956..... | 18.9 | 5.9 | 0.01 | 1.4 | 0.4 | 0.6 | 0.3 | 6 | 1.3 | 0.3 | 0.0 | 0.3 | a14 | 5 | 0 | 13.2 | 6.4 | 7 |
| Apr. 3, 1957..... | 196  | 5.7 | .00  | 1.2 | .7  | .4  | .3  | 4 | .1  | 1.0 | .0  | .5  | a12 | 6 | 3 | 11.2 | 6.4 | 5 |

## WEST FORK PIGEON RIVER BELOW LAKE LOGAN NEAR WAYNESVILLE, N. C.

|                    |      |     |      |     |     |     |     |   |     |     |     |     |     |   |   |      |     |   |
|--------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 11, 1956..... | 29.5 | 6.5 | 0.06 | 1.3 | 0.6 | 0.9 | 0.4 | 9 | 0.6 | 0.4 | 0.0 | 0.7 | a15 | 6 | 0 | 17.3 | 6.6 | 6 |
| Apr. 3, 1957.....  | 323  | 4.9 | .09  | 1.2 | .2  | .5  | .5  | 3 | 1.7 | .5  | .1  | .7  | a11 | 4 | 2 | 12.6 | 5.7 | 0 |

## EAST FORK PIGEON RIVER NEAR CANTON, N. C.

|                    |      |     |      |     |     |     |     |   |     |     |     |     |     |   |   |      |     |   |
|--------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 9, 1956.....  | 34.0 | 7.0 | 0.01 | 1.7 | 0.5 | 1.3 | 0.5 | 9 | 2.1 | 0.4 | 0.0 | 0.4 | a18 | 6 | 0 | 19.3 | 6.6 | 3 |
| Apr. 10, 1957..... | 439  | 5.9 | .00  | .8  | .5  | .7  | .5  | 5 | .9  | 1.0 | .0  | .7  | a13 | 4 | 0 | 16.1 | 5.9 | 0 |

## PIGEON RIVER AT CANTON, N. C.

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |   |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 11, 1956..... | 63.6 | 7.6 | 0.02 | 1.8 | 0.7 | 1.4 | 0.6 | 10 | 3.2 | 0.4 | 0.0 | 0.4 | a21 | 7 | 0 | 22.5 | 6.5 | 3 |
| Apr. 11, 1957..... | 896  | 6.2 | .00  | 1.2 | .5  | .7  | .5  | 7  | 1.3 | 1.0 | .0  | .4  | a15 | 5 | 0 | 17.5 | 6.2 | 0 |

## ALLEN CREEK NEAR HAZELWOOD, N. C.

|                    |      |     |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |   |
|--------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 10, 1956..... | 9.52 | 8.8 | 0.01 | 1.3 | 0.7 | 1.2 | 0.4 | 10 | 0.6 | 0.4 | 0.0 | 0.2 | a19 | 6 | 0 | 18.0 | 6.7 | 4 |
| May 2, 1957.....   | 56   | 7.5 | .01  | 1.6 | .7  | .8  | .4  | 7  | .0  | .5  | .0  | .0  | a15 | 7 | 1 | 14.9 | 6.3 | 5 |

## JONATHAN CREEK NEAR COVE CREEK, N. C.

|                   |      |    |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|-------------------|------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Oct. 8, 1956..... | 42.2 | 11 | 0.04 | 2.3 | 0.8 | 1.9 | 0.9 | 14 | 1.8 | 0.7 | 0.0 | 0.7 | a27 | 9  | 0 | 29.7 | 6.7 | 6 |
| May 2, 1957.....  | 211  | 11 | .01  | 2.0 | 1.2 | 1.4 | .9  | 10 | .5  | 1.3 | .0  | 1.8 | a25 | 10 | 2 | 26.9 | 6.2 | 5 |

a Calculated from determined constituents.

h Daily mean discharge.

TENNESSEE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN TENNESSEE RIVER BASIN IN NORTH CAROLINA AND GEORGIA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                          | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved solids<br>(residue on evaporation at 180°C) |           | Hardness<br>as CaCO <sub>3</sub> |               | Specific conductance<br>(micro-mhos at 25°C) | pH  | Color |
|---------------------------------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|-------------------------------------------------------|-----------|----------------------------------|---------------|----------------------------------------------|-----|-------|
|                                             |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               | Calcium                                               | Magnesium | Calcium                          | Non-carbonate |                                              |     |       |
|                                             |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| PIGEON RIVER NEAR HEPCO, N. C.              |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 8, 1956.....                           | 179                | 13                            | 0.14         | 61              | 1.9               | 59             | 2.9              | 122                                | 5.6                           | 130              | 0.1             | 3.9                           | a338                                                  | 161       | 61                               | 634           | 6.7                                          | 240 |       |
| May 2, 1957.....                            | 1,090              | 11                            | .02          | 9.2             | 1.5               | 18             | 1.2              | 26                                 | 8.7                           | 25               | .1              | 1.3                           | a89                                                   | 29        | 8                                | 152           | 6.4                                          | 60  |       |
| NORTH TOE RIVER AT ALTA PASS, N. C.         |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 23, 1956.....                          | 235                | 8.0                           | 0.06         | 2.8             | 1.2               | 1.6            | 1.2              | 11                                 | 4.1                           | 1.6              | 0.0             | 2.4                           | a28                                                   | 12        | 3                                | 36.3          | 6.7                                          | 23  |       |
| Apr. 16, 1957.....                          | 326                | 9.8                           | .00          | 2.8             | .7                | 1.0            | .6               | 7                                  | 2.4                           | 2.0              | .0              | 1.5                           | a24                                                   | 10        | 4                                | 27.5          | 6.4                                          | 5   |       |
| CANE RIVER NEAR SIOUX, N. C.                |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 24, 1956.....                          | 173                | 8.1                           | 0.04         | 2.4             | 1.0               | 1.6            | 0.8              | 12                                 | 2.8                           | 0.2              | 0.1             | 0.7                           | a24                                                   | 10        | 0                                | 28.4          | 6.8                                          | 9   |       |
| Apr. 16, 1957.....                          | 355                | 12                            | .01          | 2.4             | 1.7               | 1.1            | .6               | 12                                 | 1.7                           | 1.5              | .0              | 1.5                           | a29                                                   | 13        | 3                                | 31.1          | 6.6                                          | 5   |       |
| WATAUGA RIVER NEAR SUGAR GROVE, N. C.       |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 24, 1956.....                          | 146                | 10                            | 0.04         | 4.6             | 1.3               | 2.1            | 1.0              | 19                                 | 2.4                           | 1.2              | 0.2             | 2.0                           | a34                                                   | 17        | 1                                | 41.9          | 6.8                                          | 6   |       |
| Apr. 15, 1957.....                          | 217                | 11                            | .00          | 4.0             | 1.7               | 1.6            | .9               | 15                                 | 2.9                           | 2.0              | .0              | 2.7                           | a34                                                   | 17        | 5                                | 47.8          | 6.7                                          | 0   |       |
| LITTLE TENNESSEE RIVER NEAR PRENTISS, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Nov. 5, 1956.....                           | 142                | 9.6                           | 0.09         | 2.1             | 0.5               | 1.5            | 0.5              | 11                                 | 1.7                           | 0.8              | 0.0             | 0.4                           | a22                                                   | 7         | 0                                | 22.4          | 6.6                                          | 10  |       |
| May 1, 1957.....                            | 485                | 8.0                           | .04          | 1.2             | 1.2               | 1.0            | .6               | 8                                  | .3                            | 1.5              | .0              | .7                            | a19                                                   | 8         | 1                                | 19.0          | 5.8                                          | 15  |       |
| CULLASAJA RIVER AT HIGHLANDS, N. C.         |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Nov. 5, 1956.....                           | 47.2               | 3.7                           | 0.13         | 1.4             | 0.6               | 0.8            | 0.5              | 6                                  | 1.5                           | 0.5              | 0.1             | 1.1                           | a13                                                   | 6         | 1                                | 15.8          | 6.0                                          | 42  |       |
| May 1, 1957.....                            | 59.9               | 5.1                           | .05          | .8              | .7                | .8             | .4               | 4                                  | .0                            | 1.5              | .0              | .5                            | a12                                                   | 5         | 2                                | 12.5          | 5.7                                          | 3   |       |
| CULLASAJA RIVER AT CULLASAJA, N. C.         |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Nov. 5, 1956.....                           | 80.5               | 7.9                           | 0.07         | 1.4             | 0.3               | 1.0            | 0.4              | 8                                  | 0.6                           | 0.5              | 0.0             | 0.5                           | a17                                                   | 5         | 0                                | 20.1          | 6.3                                          | 25  |       |
| May 1, 1957.....                            | 326                | 8.6                           | .01          | 1.6             | .5                | .8             | .5               | 11                                 | .4                            | .5               | .0              | .3                            | a18                                                   | 6         | 0                                | 18.9          | 6.2                                          | 5   |       |
| LITTLE TENNESSEE RIVER AT NEEDMORE, N. C.   |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 25, 1956.....                          | 489                | 9.9                           | 0.09         | 1.8             | 0.7               | 1.4            | 0.8              | 12                                 | 0.9                           | 0.7              | 0.0             | 0.5                           | a23                                                   | 8         | 0                                | 24.7          | 6.8                                          | 28  |       |
| Apr. 11, 1957.....                          | b2,580             | 7.5                           | .02          | 1.2             | 1.2               | 1.0            | .4               | 7                                  | 1.0                           | 1.5              | .1              | .5                            | a17                                                   | 8         | 2                                | 16.8          | 6.0                                          | 0   |       |
| NANTAHALA RIVER NEAR RAINBOW SPRINGS, N. C. |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |                                                       |           |                                  |               |                                              |     |       |
| Oct. 11, 1956.....                          | 52.0               | 8.1                           | 0.04         | 1.7             | 0.7               | 1.0            | 0.3              | 11                                 | 0.5                           | 0.1              | 0.2             | 0.3                           | a18                                                   | 7         | 0                                | 18.3          | 6.5                                          | 7   |       |
| Apr. 19, 1957.....                          | 277                | 7.6                           | .00          | 1.6             | .7                | .5             | .3               | 7                                  | .6                            | 2.0              | .0              | .1                            | a16                                                   | 7         | 1                                | 12.5          | 6.4                                          | 5   |       |

## NANTAHALA RIVER AT NANTAHALA, N. C.

|                   |      |     |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |   |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 19, 1956.... | 47.9 | 6.5 | 0.03 | 2.2 | 0.7 | 1.0 | 0.4 | 12 | 1.9 | 0.3 | 0.0 | 0.3 | a19 | 8 | 0 | 22.5 | 6.7 | 7 |
| Apr. 30, 1957.... | 786  | 5.6 | .01  | 1.2 | 1.2 | .6  | .4  | 7  | .8  | 1.0 | .0  | .1  | a14 | 8 | 2 | 13.7 | 5.9 | 0 |

## TUCKASGEE RIVER AT TUCKASGEE, N. C.

|                   |       |     |      |     |     |     |     |   |     |     |     |     |     |   |   |      |     |   |
|-------------------|-------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Nov. 1, 1956....  | 243   | 5.4 | 0.01 | 1.3 | 0.4 | 1.2 | 0.4 | 8 | 2.3 | 0.3 | 0.1 | 0.3 | a16 | 5 | 0 | 15.6 | 6.5 | 3 |
| Apr. 12, 1957.... | 1,020 | 6.7 | .02  | 1.2 | .2  | .3  | .3  | 6 | .2  | 1.5 | .0  | .4  | a14 | 4 | 0 | 14.5 | 6.4 | 5 |

## SCOTT CREEK ABOVE SYLVA, N. C.

|                   |       |    |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |    |
|-------------------|-------|----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|----|
| Nov. 1, 1956....  | b68.2 | 11 | 0.02 | 2.2 | 0.4 | 1.6 | 0.8 | 13 | 2.5 | 1.1 | 0.0 | 0.5 | a26 | 7 | 0 | 27.3 | 6.5 | 5  |
| Apr. 12, 1957.... | 285   | 10 | .05  | 1.6 | .2  | .7  | .8  | 9  | 1.3 | 1.5 | .0  | .8  | a21 | 5 | 0 | 20.6 | 6.2 | 10 |

## TUCKASGEE RIVER AT DILLSBORO, N. C.

|                   |        |     |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |    |
|-------------------|--------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|----|
| Nov. 1, 1956....  | 490    | 7.0 | 0.04 | 2.2 | 0.8 | 7.3 | 1.7 | 17 | 9.5 | 0.6 | 0.0 | 1.0 | a38 | 9 | 0 | 51.5 | 6.4 | 33 |
| Apr. 12, 1957.... | b1,930 | 6.9 | .01  | 1.2 | .7  | 1.2 | .3  | 8  | 1.3 | 1.0 | .0  | .3  | a17 | 6 | 0 | 18.2 | 6.1 | 0  |

## OCONALUFTEE RIVER AT BIRDTOWN, N. C.

|                   |       |     |      |     |     |     |     |   |     |     |     |     |     |    |   |      |     |   |
|-------------------|-------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Nov. 6, 1956....  | b172  | 8.2 | 0.00 | 0.9 | 0.4 | 1.2 | 0.5 | 8 | 1.7 | 0.7 | 0.0 | 0.3 | a18 | 44 | 0 | 17.4 | 6.5 | 4 |
| Apr. 11, 1957.... | 1,140 | 6.7 | .01  | 1.2 | .5  | .9  | .3  | 5 | 1.0 | 1.0 | .0  | .4  | a14 | 5  | 1 | 13.2 | 6.1 | 0 |

## TUCKASGEE RIVER AT BRYSON CITY, N. C.

|                   |       |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |     |
|-------------------|-------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|-----|
| Oct. 19, 1956.... | 1,340 | 7.9 | 0.76 | 2.3 | 0.9 | 10  | 0.9 | 25 | 12  | 0.5 | 0.0 | 2.1 | a49 | 10 | 0 | 68.2 | 6.1 | 110 |
| Apr. 11, 1957.... | 3,820 | 8.3 | .01  | 1.6 | .7  | 3.5 | .5  | 9  | 5.2 | 1.5 | .0  | .5  | a26 | 7  | 0 | 32.9 | 5.8 | 10  |

## NOLAND CREEK NEAR BRYSON CITY, N. C.

|                   |      |     |      |     |     |     |     |   |     |     |     |     |     |   |   |      |     |   |
|-------------------|------|-----|------|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Nov. 6, 1956....  | 9.66 | 6.6 | 0.00 | 0.7 | 0.1 | 0.8 | 0.2 | 4 | 0.8 | 0.4 | 0.0 | 0.2 | a12 | 2 | 0 | 11.8 | 6.6 | 5 |
| Apr. 29, 1957.... | 36.3 | 5.0 | .00  | .8  | .2  | .3  | .2  | 4 | .0  | 1.0 | .0  | .1  | a10 | 3 | 0 | 9.5  | 6.0 | 0 |

## HIWASSEE RIVER AT PRESLEY, GA.

|                   |      |     |      |     |     |     |     |    |     |     |     |     |     |   |   |      |     |   |
|-------------------|------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|---|---|------|-----|---|
| Oct. 11, 1956.... | 35.0 | 8.8 | 0.04 | 1.4 | 0.4 | 1.4 | 0.4 | 10 | 2.0 | 0.3 | 0.0 | 0.3 | a20 | 5 | 0 | 16.1 | 6.9 | 6 |
| Apr. 19, 1957.... | 195  | 8.6 | .00  | 1.6 | .2  | .8  | .4  | 7  | 1.3 | 1.5 | .0  | .4  | a18 | 5 | 0 | 12.9 | 6.4 | 5 |

## HIWASSEE RIVER BELOW CHATUGE DAM NEAR HAYESVILLE, N. C.

|                   |       |     |      |     |     |     |     |    |     |     |     |     |     |    |   |      |     |   |
|-------------------|-------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----|---|------|-----|---|
| Oct. 11, 1956.... | 7.45  | 5.7 | 0.01 | 2.1 | 1.0 | 1.0 | 0.6 | 12 | 1.0 | 0.7 | 0.0 | 0.9 | a19 | 9  | 0 | 24.2 | 6.3 | 4 |
| Apr. 19, 1957.... | 1,200 | 7.7 | .00  | 2.0 | 1.2 | .9  | .8  | 9  | 1.0 | 1.0 | .0  | .6  | a19 | 10 | 3 | 19.9 | 6.8 | 5 |

a Calculated from determined constituents.

b Daily mean discharge.

TENNESSEE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN TENNESSEE RIVER BASIN IN NORTH CAROLINA AND GEORGIA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                           | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Mag-<br>nesium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Dissolved<br>solids<br>(residue<br>on evap-<br>oration<br>at 180°C) | Hardness<br>as CaCO <sub>3</sub> |                        | Specific<br>conduct-<br>ance<br>(micro-<br>mhos at<br>25°C) | pH  | Color |
|----------------------------------------------|--------------------|-------------------------------|--------------|-----------------|------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|---------------------------------------------------------------------|----------------------------------|------------------------|-------------------------------------------------------------|-----|-------|
|                                              |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     | Calcium,<br>mag-<br>nesium       | Non-<br>carbon-<br>ate |                                                             |     |       |
|                                              |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| HIWASSEE RIVER ABOVE MURPHY, N. C.           |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 11, 1956....                            | 167                | 8.7                           | 0.06         | 2.8             | 0.7                    | 1.5            | 0.7                   | 15                                      | 1.5                           | 0.4              | 0.0             | 0.4                           | a24                                                                 | 10                               | 0                      | 23.2                                                        | 6.6 | 8     |
| Apr. 20, 1957....                            | 588                | 8.1                           | .01          | 1.6             | .7                     | .8             | .5                    | 8                                       | 2.5                           | 2.0              | .0              | .3                            | a21                                                                 | 7                                | 0                      | 20.9                                                        | 6.9 | 5     |
| VALLEY RIVER AT TOMOTLA, N. C.               |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 10, 1956....                            | 38.5               | 6.8                           | 0.05         | 6.6             | 1.1                    | 1.5            | 0.5                   | 28                                      | 1.7                           | 0.7              | 0.0             | 0.3                           | a33                                                                 | 21                               | 0                      | 50.3                                                        | 6.8 | 6     |
| Apr. 20, 1957....                            | 261                | 6.6                           | .01          | 2.8             | 1.2                    | .7             | .3                    | 14                                      | 1.3                           | 1.0              | .0              | 0.4                           | a21                                                                 | 12                               | 1                      | 27.9                                                        | 6.4 | 0     |
| NOTLEY RIVER NEAR BLAIRSVILLE, GA.           |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 10, 1956....                            | 40.8               | 10                            | 0.05         | 2.1             | 0.8                    | 1.4            | 0.6                   | 13                                      | 1.2                           | 0.6              | 0.0             | 0.3                           | a23                                                                 | 9                                | 0                      | 23.8                                                        | 6.8 | 7     |
| Apr. 19, 1957....                            | 237                | 9.7                           | .01          | 1.2             | .5                     | .8             | .3                    | 8                                       | .9                            | 2.0              | .0              | .0                            | a19                                                                 | 5                                | 0                      | 17.0                                                        | 6.3 | 5     |
| NOTLEY RIVER AT NOTLEY DAM, NEAR IVYLOG, GA. |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |
| Oct. 10, 1956....                            | 8.04               | 8.2                           | 0.06         | 2.0             | 0.9                    | 1.5            | 0.8                   | 11                                      | 3.3                           | 0.4              | 0.0             | 0.9                           | a23                                                                 | 9                                | 0                      | 26.6                                                        | 6.2 | 9     |
| Apr. 20, 1957....                            | 13.6               | 8.2                           | .06          | 2.0             | 1.2                    | 1.5            | 1.3                   | 9                                       | 5.0                           | 1.5              | .1              | .9                            | a26                                                                 | 10                               | 3                      | 26.2                                                        | 6.4 | 20    |
| a Calculated from determined constituents.   |                    |                               |              |                 |                        |                |                       |                                         |                               |                  |                 |                               |                                                                     |                                  |                        |                                                             |     |       |

<sup>a</sup> Calculated from determined constituents.

PART 4. ST. LAWRENCE RIVER BASIN  
STREAMS TRIBUTARY TO LAKE SUPERIOR  
SECOND CREEK NEAR AUROHA, MINN.

LOCATION ---At bridge at mouth, 0.4 mile downstream from gaging station, 0.5 mile downstream from First Creek, and 2.1 miles east of Aurora, St. Louis County.  
DRAINAGE AREA ---26.3 square miles.

RECORDS AVAILABLE ---Chemical analyses: April 1956 to September 1957.

Water temperatures: April 1956 to September 1957.  
Freezing point on many days during November to March.

EXTREMES, 1956-57 ---Water temperatures: Maximum, 80°F June 10, 1956; minimum, freezing point on many days during winter months.

EXTREMES, April 1956 to September 1957 ---Water temperatures: Maximum, 80°F June 10, 1956; minimum, freezing point on many days during winter months.  
REMARKS ---Records of specific conductance of daily samples available in district office at Lincoln, Nebr. Records of discharge for water year October, 1956 to September 1957 given in WSP 1507.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date<br>of<br>collection | Mean<br>dis-<br>charge | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Cal-<br>cium<br>(Ca) | Mag-<br>ne-<br>sium<br>(Mg) | Sodium<br>(Na) | Potas-<br>sium<br>(K) | Bicar-<br>bonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chlo-<br>ride<br>(Cl) | Fluo-<br>ride<br>(F) | Ni-<br>trate<br>(NO <sub>3</sub> ) | Bo-<br>ron<br>(B) | Dissolved solids<br>(residue at 180° C) |                              | Hardness<br>as CaCO <sub>3</sub> |                            | Per-<br>cent<br>so-<br>dium | So-<br>dium<br>adsorp-<br>tion<br>ratio | Specific<br>conduct-<br>ance (micro-<br>mhos at<br>25° C) | pH  | Col-<br>or<br>or | Turbidity<br>as SiO <sub>2</sub><br>(daily) |                        |
|--------------------------|------------------------|-------------------------------|--------------|----------------------|-----------------------------|----------------|-----------------------|-----------------------------------------|-------------------------------|-----------------------|----------------------|------------------------------------|-------------------|-----------------------------------------|------------------------------|----------------------------------|----------------------------|-----------------------------|-----------------------------------------|-----------------------------------------------------------|-----|------------------|---------------------------------------------|------------------------|
|                          |                        |                               |              |                      |                             |                |                       |                                         |                               |                       |                      |                                    |                   | Parts<br>per<br>mil-<br>lion            | Tons<br>per<br>acre-<br>foot | Tons<br>per<br>day               | Calcium,<br>mag-<br>nesium |                             |                                         |                                                           |     |                  |                                             | Non-<br>carbon-<br>ate |
|                          |                        |                               |              |                      |                             |                |                       |                                         |                               |                       |                      |                                    |                   |                                         |                              |                                  |                            |                             |                                         |                                                           |     |                  |                                             |                        |
| Oct. 1-18, 1956          | 9.02                   | 14                            | 0.01         | 17                   | 8.2                         | 6.1            | 2.0                   | 82                                      | 14                            | 4.0                   | 0.5                  | 0.7                                | 0.17              | 121                                     | 0.16                         | 2.95                             | 76                         | 9                           | 14                                      | 0.3                                                       | 179 | 7.3              | 30                                          | 6 1                    |
| Oct. 19-21               | 11.0                   | 15                            | .06          | 14                   | 2.7                         | 2.7            | 1.0                   | 52                                      | 10                            | 5.4                   | .6                   | .8                                 | .08               | 16                                      | .16                          | 2.26                             | 46                         | 3                           | 11                                      | .2                                                        | 104 | 7.4              | 19                                          | --                     |
| Oct. 22-Nov. 12          | 18.7                   | 14                            | .08          | 18                   | 6.1                         | 5.3            | 2.0                   | 66                                      | 19                            | 5.5                   | .2                   | 1.4                                | .12               | 120                                     | .16                          | 6.06                             | 70                         | 16                          | 14                                      | .3                                                        | 167 | 7.1              | 45                                          | 15 2                   |
| Nov. 13-16               | 15.0                   | 14                            | .07          | 12                   | 3.9                         | 2.7            | 1.1                   | 47                                      | 11                            | 2.5                   | .1                   | .6                                 | .09               | 83                                      | .11                          | 3.36                             | 46                         | 7                           | 11                                      | .2                                                        | 108 | 7.0              | 44                                          | --                     |
| Nov. 17-30               | 12.6                   | 17                            | .08          | 15                   | 6.0                         | 3.9            | 1.7                   | 64                                      | 15                            | 3.5                   | .2                   | .9                                 | .12               | 111                                     | .15                          | 3.78                             | 62                         | 10                          | 12                                      | .2                                                        | 147 | 7.0              | 41                                          | 20 3                   |
| Dec. 1-15                | 9.47                   | 19                            | .11          | 17                   | 8.4                         | 5.8            | 2.5                   | 85                                      | 14                            | 5.5                   | .2                   | 1.9                                | .14               | 127                                     | .17                          | 3.25                             | 77                         | 7                           | 14                                      | .3                                                        | 183 | 7.1              | 32                                          | 10                     |
| Jan. 9, 1957             | 6.5                    | 20                            | .37          | 19                   | 9.9                         | 6.8            | 2.4                   | 96                                      | 16                            | 6.0                   | .4                   | 2.8                                | .12               | 131                                     | .18                          | 2.30                             | 88                         | 9                           | 14                                      | .3                                                        | 204 | 7.4              | 24                                          | 1                      |
| Feb. 15                  | 6.3                    | 21                            | .04          | 22                   | 12                          | 9.3            | 2.6                   | 107                                     | 23                            | 9.0                   | .3                   | 4.1                                | .08               | 164                                     | .22                          | 2.79                             | 105                        | 17                          | 16                                      | .4                                                        | 250 | 7.3              | 15                                          | 5                      |
| Mar. 23                  | 12                     | 16                            | .06          | 24                   | 12                          | 7.8            | 3.0                   | 81                                      | 32                            | 19                    | .3                   | 5.3                                | .10               | 183                                     | .25                          | 5.93                             | 110                        | 44                          | 13                                      | .3                                                        | 273 | 6.8              | 20                                          | 10                     |
| Apr. 16                  | 35                     | 13                            | .16          | 15                   | 6.0                         | 3.6            | 1.6                   | 48                                      | 21                            | 6.0                   | .2                   | 1.6                                | .07               | 114                                     | .16                          | 10.8                             | 62                         | 23                          | 11                                      | .2                                                        | 147 | 6.9              | 40                                          | 5                      |
| Apr. 26-May 31           | 29.2                   | 9.9                           | .06          | 16                   | 6.8                         | 5.2            | 2.0                   | 60                                      | 24                            | 6.0                   | .3                   | .6                                 | .09               | 111                                     | .15                          | 8.75                             | 68                         | 19                          | 14                                      | .3                                                        | 159 | 7.0              | 48                                          | 10                     |
| June 1-16                | 13.0                   | 11                            | .04          | 19                   | 8.4                         | 5.4            | 1.8                   | 80                                      | 15                            | 6.8                   | .3                   | 1.3                                | --                | 122                                     | .17                          | 4.28                             | 82                         | 16                          | 12                                      | .3                                                        | 188 | 7.3              | 35                                          | 1                      |
| June 17-July 24          | 39.2                   | 14                            | .07          | 20                   | 8.0                         | 5.0            | 1.4                   | 70                                      | 21                            | 7.3                   | .3                   | 1.0                                | --                | 136                                     | .18                          | 14.4                             | 83                         | 26                          | 11                                      | 2                                                         | 186 | 7.2              | 80                                          | 2                      |
| July 25-Aug. 28          | 12.5                   | 15                            | .10          | 26                   | 13                          | 7.8            | 2.2                   | 117                                     | 28                            | 7.8                   | .3                   | .5                                 | .06               | 177                                     | .24                          | 5.97                             | 120                        | 24                          | 12                                      | .3                                                        | 265 | 7.1              | 55                                          | 3                      |
| Aug. 29-Sept. 20         | 8.45                   | 15                            | .02          | 29                   | 13                          | 6.7            | 2.7                   | 130                                     | 22                            | 6.2                   | .4                   | .2                                 | .07               | 165                                     | .22                          | 3.76                             | 125                        | 18                          | 10                                      | .3                                                        | 271 | 7.3              | 25                                          | 3                      |
| Sept. 21-30              | 19.8                   | 17                            | .03          | 23                   | 9.9                         | 6.7            | 2.5                   | 87                                      | 26                            | 8.3                   | .4                   | .3                                 | .08               | 147                                     | .20                          | 7.86                             | 98                         | 27                          | 13                                      | .3                                                        | 225 | 7.0              | 35                                          | 3                      |
| Sept. 25                 | 25                     | 16                            | b. 10        | 21                   | 11                          | 6.6            | 2.8                   | 79                                      | 33                            | 8.0                   | .3                   | .3                                 | .06               | 162                                     | .22                          | 10.9                             | 96                         | 31                          | 13                                      | .3                                                        | 228 | 7.5              | 43                                          | 10                     |

a In solution when analyzed.

b In solution at time of collection, iron (Fe) 0.69 ppm.



## ST. LAWRENCE RIVER BASIN

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## SECOND CREEK NEAR AURORA, MINN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement between 1 p. m. and 5 p. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 1       | a 48 | 49   |      |      |      |      | --   | 59   | 68   | 66   | 73   | 68    |
| 2       | a 49 | 49   |      |      |      |      | --   | 56   | b 54 | 71   | 76   | 68    |
| 3       | 55   | 51   |      |      |      |      | --   | 54   | 68   | a 68 | 74   | 63    |
| 4       | 56   | 55   |      |      |      |      | --   | 59   | 60   | --   | 73   | 60    |
| 5       | 54   | 53   |      |      |      |      | --   | 60   | 66   | b 68 | 73   | b 59  |
| 6       | 53   | 48   |      |      |      |      | --   | 65   | 64   | a 63 | 72   | 59    |
| 7       | 50   | a 42 |      |      |      |      | --   | 63   | 67   | 70   | 70   | 59    |
| 8       | 48   | 38   |      |      |      |      | --   | 67   | a 60 | 64   | 71   | 59    |
| 9       | 46   | 37   |      |      |      |      | --   | 62   | b 64 | b 73 | 72   | b 58  |
| 10      | 48   | 38   |      |      |      |      | --   | 63   | 65   | a 67 | 75   | b 63  |
| 11      | a 43 | 38   |      |      |      |      | --   | 62   | 65   | 74   | 71   | 63    |
| 12      | 53   | 37   |      |      |      |      | --   | 65   | b 68 | 77   | 66   | b 58  |
| 13      | 58   | 38   |      |      |      |      | --   | 62   | b 67 | 72   | 64   | 58    |
| 14      | 55   | 39   |      |      |      |      | --   | a 55 | b 68 | 71   | 65   | 54    |
| 15      | a 47 | a 38 |      |      | 32   |      | --   | 54   | b 67 | 69   | 69   | 56    |
| 16      | a 48 | a 37 |      |      |      |      | --   | 58   | b 66 | a 69 | 67   | 56    |
| 17      | a 47 | 36   |      |      |      |      | --   | a 53 | 65   | a 70 | a 63 | 56    |
| 18      | a 48 | 35   |      |      |      |      | --   | b 52 | 67   | 74   | a 68 | 54    |
| 19      | a 47 | 33   |      |      |      |      | --   | b 58 | 68   | 75   | b 67 | 52    |
| 20      | 52   | 33   |      |      |      |      | --   | b 60 | b 70 | --   | 67   | 52    |
| 21      | b 53 | 33   |      |      |      |      | --   | 53   | 70   | 70   | 67   | 50    |
| 22      | a 46 | 32   |      |      |      |      | --   | 52   | a 65 | 73   | 69   | 52    |
| 23      | a 45 | 33   |      |      |      |      | --   | 53   | b 65 | a 69 | 70   | a 49  |
| 24      | a 43 | 32   |      |      |      |      | --   | 55   | 65   | 68   | 68   | a 47  |
| 25      | a 45 | 33   |      |      |      |      | --   | 56   | 64   | 68   | 68   | --    |
| 26      | a 46 | 32   |      |      |      |      | a 47 | b 53 | 62   | 68   | 64   | 48    |
| 27      | a 44 | 33   |      |      |      |      | --   | 58   | 64   | b 78 | 60   | 46    |
| 28      | 52   | 32   |      |      |      |      | --   | 60   | 67   | a 74 | 60   | 52    |
| 29      | 51   | 31   |      |      |      |      | 58   | 54   | 68   | 78   | 63   | 59    |
| 30      | a 49 | 32   |      |      |      |      | 62   | a 66 | 66   | 69   | 61   | a 54  |
| 31      | a 48 | --   |      |      |      |      | --   | 68   | --   | a 73 | 60   | --    |
| Average | 49   | 38   | c 32 | c 32 | c 32 | c 32 | --   | 59   | 65   | 71   | 68   | 56    |

a Measurement between 8 a. m. and 12 m.

b Measurement between 6 p. m. and 8 p. m.

c Estimated.

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## PARTRIDGE RIVER NEAR AURORA, MINN.

LOCATION.--At gaging station at highway bridge, 1,000 feet downstream from Second Creek, 2½ miles east of Aurora, St. Louis County, and 2½ miles upstream from mouth.

DRAINAGE AREA.--156 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1957.

Water temperatures: April 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82°F July 29; minimum, freezing point on many days during November to March.

EXTREMES, April 1956 to September 1957.--Water temperatures: Maximum, 82°F June 10, 1956, July 29, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Lincoln, Nebr. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection            | Mean discharge | Silica (SiO <sub>2</sub> ) | Iron <sup>a</sup> (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Boron (B) | Dissolved solids (residue at 180°C) |                    |              | Hardness as CaCO <sub>3</sub> |               | Percent sodium carbonate ratio | Specific conductance (micro-mhos at 25°C) | pH   | Color or Turbidity as SiO <sub>2</sub> (daily) |     |    |
|-------------------------------|----------------|----------------------------|------------------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------|-------------------------------------|--------------------|--------------|-------------------------------|---------------|--------------------------------|-------------------------------------------|------|------------------------------------------------|-----|----|
|                               |                |                            |                        |              |                |             |               |                                 |                            |               |              |                            |           | Parts per million                   | Tons per acre-foot | Tons per day | Calcium, magnesium            | Non-carbonate |                                |                                           |      |                                                |     |    |
|                               |                |                            |                        |              |                |             |               |                                 |                            |               |              |                            |           |                                     |                    |              |                               |               |                                |                                           |      |                                                |     |    |
| Oct. 1-31, 1956               | 28.9           | 11                         | 0.27                   | 11           | 4.0            | 2.9         | 1.1           | 46                              | 10                         | 0.5           | 0.2          | 1.3                        | 0.10      | 90                                  | 0.12               | 7.02         | 44                            | 6             | 12                             | 0.2                                       | 98.8 | 7.1                                            | 110 | 6  |
| Nov. 1-30                     | 50.3           | 13                         | 0.28                   | 11           | 3.1            | 2.4         | .9            | 38                              | 10                         | .5            | .2           | 1.3                        | .10       | 87                                  | .12                | 11.8         | 40                            | 9             | 11                             | .2                                        | 85.8 | 7.0                                            | 110 | 6  |
| Dec. 1-15                     | 33.0           | 14                         | .52                    | 13           | 3.8            | 3.1         | 1.4           | 48                              | 13                         | .5            | .2           | 1.7                        | .19       | 107                                 | .15                | 9.53         | 48                            | 9             | 12                             | .2                                        | 106  | 6.9                                            | 140 | 4  |
| Jan. 9, 1957                  | 18             | 17                         | 74                     | 12           | 5.8            | 4.4         | 1.3           | 57                              | 15                         | 1.0           | .1           | 2.2                        | .12       | 111                                 | .15                | 5.39         | 54                            | 7             | 15                             | .3                                        | 119  | 7.2                                            | 110 | 2  |
| Feb. 15                       | 12             | 18                         | 50                     | 15           | 8.2            | 4.7         | 1.6           | 73                              | 16                         | 4.5           | .1           | 2.4                        | .10       | 138                                 | .19                | 4.47         | 71                            | 11            | 12                             | .2                                        | 161  | 7.0                                            | 110 | 5  |
| Mar. 23                       | 19             | 15                         | 33                     | 18           | 8.8            | 5.5         | 1.9           | 65                              | 23                         | 11            | .3           | 3.3                        | .09       | 148                                 | .20                | 7.59         | 81                            | 28            | 13                             | .3                                        | 194  | 7.0                                            | 60  | 6  |
| Apr. 1-18                     | 74.9           | 13                         | 43                     | 9.5          | 4.5            | 2.6         | 1.1           | 36                              | 19                         | 1.0           | .1           | 1.5                        | .09       | 101                                 | .14                | 20.4         | 42                            | 12            | 12                             | .2                                        | 91.8 | 6.8                                            | 100 | 4  |
| Apr. 19-May 31                | 351            | 7.2                        | 12                     | 7.0          | 2.8            | 1.6         | .7            | 20                              | 13                         | .5            | .2           | 1.6                        | .11       | 80                                  | .11                | 75.8         | 29                            | 13            | 10                             | .1                                        | 64.0 | 6.4                                            | 168 | 3  |
| June 1-10                     | 94.7           | 6.7                        | 12                     | 7.5          | 3.0            | 1.8         | .9            | 25                              | 11                         | .3            | .2           | 1.2                        | --        | 77                                  | .10                | 19.7         | 31                            | 10            | 11                             | .1                                        | 70.6 | 6.5                                            | 120 | 4  |
| June 11-16                    | 47.6           | 7.6                        | .08                    | 9.5          | 4.7            | 2.3         | 1.1           | 39                              | 11                         | 2.0           | .2           | .9                         | --        | 89                                  | .12                | 11.4         | 43                            | 11            | 10                             | .2                                        | 95.0 | 6.6                                            | 100 | 3  |
| June 17-22                    | 144            | 7.6                        | 11                     | 9.5          | 3.7            | 1.9         | .8            | 31                              | 12                         | .6            | .2           | .8                         | --        | 82                                  | .11                | 31.9         | 39                            | 14            | 9                              | .1                                        | 84.2 | 6.5                                            | 110 | 2  |
| June 23-29                    | 512            | 7.3                        | .22                    | 6.0          | 2.9            | 1.3         | .6            | 21                              | 11                         | .4            | .2           | .6                         | --        | 93                                  | .11                | 115          | 27                            | 10            | 9                              | .1                                        | 55.3 | 6.3                                            | 180 | 5  |
| June 30-July 28               | 210            | 10                         | 36                     | 9.0          | 2.8            | 1.8         | .5            | 29                              | 16                         | .5            | .3           | 1.6                        | --        | 107                                 | .15                | 60.7         | 38                            | 14            | 9                              | .1                                        | 73.9 | 6.3                                            | 240 | 4  |
| July 29-Aug. 4                | 60.9           | 13                         | 40                     | 14           | 5.6            | 2.9         | .8            | 46                              | 12                         | 5.0           | .3           | 1.0                        | --        | 130                                 | .18                | 21.4         | 58                            | 19            | 10                             | .2                                        | 118  | 6.8                                            | 240 | 3  |
| Aug. 5-27                     | 26.6           | 14                         | 29                     | 17           | 7.4            | 3.8         | 1.2           | 67                              | 14                         | 5.4           | .3           | 1.2                        | --        | 136                                 | .18                | 9.77         | 73                            | 18            | 10                             | .2                                        | 154  | 7.0                                            | 160 | 3  |
| Aug. 28-Sept 20               | 16.3           | 14                         | 10                     | 21           | 9.9            | 5.0         | 1.9           | 93                              | 20                         | 4.3           | .3           | .9                         | .06       | 135                                 | .18                | 5.94         | 93                            | 17            | 10                             | .2                                        | 196  | 7.3                                            | 50  | 10 |
| Sept. 21-30                   | 44.2           | 14                         | b.22                   | 17           | 7.0            | 4.7         | 2.1           | 61                              | 19                         | 4.6           | .3           | 1.3                        | .09       | 128                                 | .17                | 15.3         | 71                            | 21            | 12                             | .2                                        | 155  | 6.9                                            | 140 | 4  |
| Weighted average <sup>c</sup> | 126            | 8.8                        | 0.21                   | 8.4          | 3.4            | 1.9         | 0.8           | 28                              | 13                         | 0.8           | 0.2          | 1.2                        | --        | 90                                  | 0.12               | 30.6         | 35                            | 12            | 10                             | 0.1                                       | 74.9 | --                                             | --  | -- |
| Weighted average <sup>d</sup> | 95.2           | 9.2                        | 0.23                   | 8.7          | 3.5            | 2.0         | 0.8           | 29                              | 14                         | 0.9           | 0.2          | 1.3                        | --        | 92                                  | 0.13               | 23.6         | 36                            | 12            | 11                             | 0.1                                       | 78.0 | --                                             | --  | -- |

<sup>a</sup> In solution when analyzed.

<sup>b</sup> A sample collected Sept. 25 had 1.3 ppm of iron (Fe) and 0.01 ppm of manganese (Mn) in solution when collected.

<sup>c</sup> Represents 95 percent of runoff for water year October 1956 to September 1957.

<sup>d</sup> Includes estimated data for missing periods. Represents 100 percent of runoff for water year October 1956 to September 1957.

ST. LAWRENCE RIVER BASIN  
STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued  
PARTRIDGE RIVER NEAR AURORA, MINN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
/Once-daily measurement between 2 p. m. and 5 p. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 1       | a 53 | 50   |      |      |      |      | --   | 60   | 70   | 70   | a 75 | a 70  |
| 2       | a 54 | 52   |      |      |      |      | --   | 59   | b 59 | 75   | a 79 | a 68  |
| 3       | 58   | 53   |      |      |      |      | --   | 59   | 68   | a 72 | 77   | 62    |
| 4       | b 59 | 56   |      |      |      |      | --   | 60   | 64   | --   | 76   | a 60  |
| 5       | a 56 | 54   |      |      |      |      | --   | 62   | 70   | b 72 | 75   | b 61  |
| 6       | a 55 | 50   |      |      |      |      | --   | 63   | 68   | a 68 | 74   | 61    |
| 7       | 51   | a 46 |      |      |      |      | --   | 65   | 70   | a 73 | a 70 | 61    |
| 8       | 49   | 43   |      |      |      |      | --   | b 66 | a 66 | a 76 | a 72 | 62    |
| 9       | 49   | b 40 |      |      |      |      | --   | 64   | b 68 | b 77 | a 73 | b 62  |
| 10      | 50   | 41   |      |      |      |      | --   | 65   | 70   | a 69 | 78   | b 65  |
| 11      | a 46 | 46   |      |      |      |      | --   | 66   | 69   | b 79 | 74   | 63    |
| 12      | 54   | 45   |      |      |      |      | --   | 68   | b 70 | 77   | 68   | b 60  |
| 13      | 58   | 39   |      |      |      |      | --   | 67   | b 69 | 80   | a 64 | 59    |
| 14      | 58   | 40   |      |      |      |      | --   | a 60 | b 70 | 74   | 68   | 54    |
| 15      | a 49 | a 35 |      |      | 32   |      | --   | 58   | b 68 | 77   | 73   | 56    |
| 16      | a 48 | a 34 |      |      |      |      | --   | 60   | b 69 | a 76 | a 69 | 56    |
| 17      | a 49 | 42   |      |      |      |      | --   | a 58 | 67   | a 75 | a 64 | 56    |
| 18      | a 50 | 38   |      |      |      |      | --   | b 63 | 69   | 79   | b 72 | 55    |
| 19      | a 49 | 35   |      |      |      |      | --   | b 63 | 72   | a 79 | 71   | 52    |
| 20      | 59   | 35   |      |      |      |      | --   | b 62 | 73   | b 77 | 70   | 56    |
| 21      | 60   | a 35 |      |      |      |      | --   | 57   | b 73 | 78   | 70   | 52    |
| 22      | a 47 | a 34 |      |      |      |      | --   | 55   | a 70 | 79   | 73   | 53    |
| 23      | a 46 | 34   |      |      |      |      | --   | 58   | b 70 | 78   | 70   | a 48  |
| 24      | a 44 | 35   |      |      |      |      | --   | 58   | 70   | a 77 | 70   | a 48  |
| 25      | a 46 | 33   |      |      |      |      | --   | 60   | 70   | 75   | 69   | --    |
| 26      | a 47 | 34   |      |      |      |      | a 48 | b 53 | a 70 | a 75 | 65   | 50    |
| 27      | a 44 | 33   |      |      |      |      | a 48 | 62   | 68   | b 80 | 60   | a 48  |
| 28      | 54   | 33   |      |      |      |      | 54   | 63   | 69   | a 78 | 62   | 54    |
| 29      | 53   | 32   |      |      |      |      | 56   | 66   | 69   | 82   | 68   | 53    |
| 30      | a 50 | 33   |      |      |      |      | 61   | a 65 | 68   | 78   | a 61 | a 58  |
| 31      | a 48 | --   |      |      |      |      | --   | 70   | --   | a 75 | a 62 | --    |
| Average | 51   | 40   | c 32 | c 32 | c 32 | c 32 | --   | 62   | 69   | 76   | 70   | 57    |

a Measurement between 8 a. m. and 1 p. m.

b Measurement between 6 p. m. and 8 p. m.

c Estimated.

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## ST. LOUIS RIVER NEAR AURORA, MINN.

LOCATION.--At gaging station at highway bridge, three-quarters of a mile downstream from Partridge River and 1½ miles south of Aurora, St. Louis County. DRAINAGE AREA.--312 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1957.

REMARKS.--Value reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron<br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Boron<br>(B) | Dissolved solids        |                              | Hardness<br>as CaCO <sub>3</sub> |                    | Percent<br>sodium<br>adsorption<br>ratio | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Col-<br>or | Tur-<br>bidity<br>as SiO <sub>2</sub> |
|--------------------|--------------------|-------------------------------|--------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|--------------|-------------------------|------------------------------|----------------------------------|--------------------|------------------------------------------|--------------------------------------------------------|-----|------------|---------------------------------------|
|                    |                    |                               |              |                 |                   |                |                  |                                    |                               |                  |                 |                               |              | Parts<br>per<br>million | Tons<br>per<br>acre-<br>foot | Calcium,<br>magnesium            | Non-carbon-<br>ate |                                          |                                                        |     |            |                                       |
| Oct. 6, 1956 ..... | 72                 | 8.7                           | 0.33         | 9.0             | 5.2               | 2.4            | 1.3              | 47                                 | 11                            | 0.0              | 0.4             | 1.3                           | 0.12         | 82                      | 0.11                         | 44                               | 5                  | 10                                       | 101                                                    | 7.0 | 90         | 0.8                                   |
| Nov. 1 .....       | 110                | 10                            | .44          | 9.0             | 5.7               | 2.9            | 1.2              | 45                                 | 15                            | .0               | .4              | 1.7                           | .10          | 90                      | .12                          | 46                               | 9                  | 12                                       | 99.9                                                   | 7.0 | 85         | 1.0                                   |
| Dec. 8 .....       | 70                 | 12                            | .50          | 9.5             | 5.2               | 2.4            | 1.2              | 46                                 | 13                            | .0               | .4              | 2.0                           | .10          | 101                     | .14                          | 45                               | 7                  | 10                                       | 92.9                                                   | 7.1 | 140        | 1.0                                   |
| Jan. 8, 1957 ..... | 52                 | 13                            | .43          | 13              | 4.0               | 2.8            | 1.2              | 52                                 | 14                            | .1               | .0              | 1.7                           | .10          | 101                     | .14                          | 49                               | 6                  | 11                                       | 102                                                    | 7.1 | 100        | 3                                     |
| Feb. 15 .....      | 32                 | 16                            | .60          | 14              | 7.1               | 3.4            | 1.1              | 85                                 | 14                            | .5               | .1              | 2.1                           | .09          | 130                     | .18                          | 64                               | 11                 | 10                                       | 130                                                    | 7.0 | 160        | 5                                     |
| Mar. 23 .....      | 40                 | 14                            | .36          | 14              | 7.8               | 3.3            | 1.4              | 68                                 | 13                            | .5               | .2              | 1.7                           | .21          | 129                     | .18                          | 67                               | 11                 | 9                                        | 142                                                    | 7.1 | 100        | 4                                     |
| Apr. 17 .....      | 261                | 11                            | .19          | 7.0             | 4.3               | 2.3            | 1.4              | 31                                 | 15                            | .5               | .1              | 1.4                           | .09          | 89                      | .12                          | 35                               | 10                 | 12                                       | 83.9                                                   | 6.8 | 100        | 1                                     |
| Apr. 26 .....      | 1,990              | 7.1                           | .22          | 4.5             | 2.1               | 3.3            | 1.4              | 11                                 | 15                            | .1               | .0              | 2.3                           | .09          | 74                      | .10                          | 20                               | 11                 | 25                                       | 47.8                                                   | 6.0 | 90         | 2                                     |
| June 30 .....      | 658                | 6.2                           | .19          | 7.4             | 2.3               | 1.5            | 1.0              | 23                                 | 12                            | .5               | .5              | 2.0                           | .12          | 86                      | .12                          | 28                               | 9                  | 10                                       | 49.9                                                   | 6.7 | 168        | 3                                     |
| July 20 .....      | 418                | 8.2                           | .25          | 8.3             | 3.0               | 1.5            | .5               | 30                                 | 11                            | .0               | .3              | 2.2                           | .14          | 99                      | .13                          | 33                               | 8                  | 9                                        | 59.6                                                   | 6.8 | 200        | 2                                     |
| Aug. 17 .....      | 71                 | 10                            | .19          | 13              | 5.5               | 2.8            | .5               | 53                                 | 15                            | .8               | .4              | 1.5                           | .10          | 109                     | .15                          | 55                               | 12                 | 10                                       | 107                                                    | 7.1 | 160        | 2                                     |
| Sept. 14 .....     | 25                 | 13                            | .14          | 16              | 7.1               | 3.6            | 1.5              | 79                                 | 10                            | 1.5              | .2              | .5                            | .03          | 117                     | .16                          | 69                               | 4                  | 10                                       | 147                                                    | 7.5 | 70         | 1                                     |
| Sept. 25 .....     | 67                 | 13                            | b.27         | 14              | 6.8               | 3.6            | 1.7              | 59                                 | 18                            | 3.7              | .2              | 2.5                           | .06          | 118                     | .16                          | 63                               | 15                 | 11                                       | 138                                                    | 6.9 | 110        | 3                                     |

a In solution when analyzed.

b In solution at time of collection, iron (Fe) 1.1 ppm.

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued  
EMBARRASS RIVER AT EMBARRASS, MINN.

LOCATION --At gaging station at highway bridge at Embarrass, St. Louis County, 70 feet upstream from railroad bridge.

DRAINAGE AREA --83.8 square miles  
RECORDS AVAILABLE --Chemical analyses: April 1956 to September 1957.

Water temperatures: April 1956 to September 1957.

EXTREMES, 1956-57 --Water temperatures: Maximum 75°F Aug. 1-2; minimum, freezing point on many days during December to March.

EXTREMES, April 1956 to September 1957 --Water temperatures: Maximum 79°F June 12, 1956; minimum, freezing point on many days during winter months.

REMARKS --Records of specific conductance of daily samples available in district office at Lincoln, Nebr. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection                    | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Boron (B) | Dissolved solids (residue at 180°C) |                    |              | Hardness as CaCO <sub>3</sub> |               | Percent sodium adsorption ratio | Specific conductance (micro-mhos at 25°C) | pH   | Color | Turbidity as SiO <sub>2</sub> (daily) |    |     |
|---------------------------------------|----------------------|---------------------------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------|-------------------------------------|--------------------|--------------|-------------------------------|---------------|---------------------------------|-------------------------------------------|------|-------|---------------------------------------|----|-----|
|                                       |                      |                                 |              |                |             |               |                                 |                            |               |              |                            |           | Parts per million                   | Tons per acre-foot | Tons per day | Calcium, magnesium            | Non-carbonate |                                 |                                           |      |       |                                       |    |     |
| Oct. 1-31, 1956                       | 15.5                 | 14                              | 0.67         | 14             | 3.7         | 3.2           | 1.1                             | 54                         | 10            | 0.2          | 1.0                        | 0.10      | 106                                 | 0.14               | 4.44         | 50                            | 6             | 12                              | 0.2                                       | 104  | 7.2   | 120                                   | 3  | 0.7 |
| Nov. 1-20, .....                      | 42.5                 | 14                              | .59          | 11             | 2.6         | 2.0           | .5                              | 30                         | 15            | .0           | 2.8                        | .14       | 116                                 | .16                | 13.3         | 38                            | 13            | 10                              | .1                                        | 77.0 | 6.8   | 190                                   | 1  | .6  |
| Nov. 21-Dec. 13                       | 17.1                 | 16                              | .44          | 12             | 3.4         | 2.3           | .7                              | 48                         | 7.5           | .3           | 2.1                        | .08       | 101                                 | .14                | 4.66         | 44                            | 5             | 10                              | .2                                        | 92.1 | 6.9   | 110                                   | 2  |     |
| Jan. 6, 1957, ....                    | 9.3                  | 19                              | .53          | 13             | 3.8         | 3.6           | 1.1                             | 54                         | 7.5           | .0           | 2.1                        | .08       | 100                                 | .14                | 2.51         | 48                            | 4             | 14                              | .2                                        | 105  | 7.1   | 80                                    | 2  |     |
| Feb. 14, .....                        | 4.0                  | 21                              | .96          | 19             | 6.5         | 3.3           | 1.1                             | 89                         | 5.0           | .5           | 1.1                        | .03       | 122                                 | .17                | 1.32         | 74                            | 1             | 9                               | .2                                        | 152  | 7.2   | 70                                    | 4  |     |
| Mar. 23, .....                        | 6.7                  | 19                              | .84          | 19             | 5.3         | 3.1           | 1.2                             | 82                         | 5.0           | .5           | 1.1                        | .05       | 116                                 | .16                | 2.10         | 69                            | 2             | 9                               | .2                                        | 144  | 7.2   | 65                                    | 3  |     |
| Apr. 8-19, .....                      | 125                  | 11                              | .28          | 7.0            | 2.6         | 2.0           | 1.0                             | 20                         | 13            | .2           | 1.1                        | .09       | 84                                  | .11                | 28.4         | 28                            | 12            | 13                              | .2                                        | 60.6 | 6.5   | 110                                   | 3  |     |
| Apr. 20-May 31                        | 238                  | 7.1                             | .18          | 8.0            | 1.7         | 1.5           | .3                              | 22                         | 7.8           | .0           | 1.2                        | .12       | 83                                  | .11                | 53.3         | 27                            | 9             | 11                              | .1                                        | 52.6 | 6.5   | 188                                   | 5  | 1   |
| June 1-6, .....                       | 49.3                 | 7.4                             | .20          | 8.0            | 2.4         | 1.6           | .6                              | 28                         | 11            | .3           | 2.1                        | --        | 80                                  | .11                | 10.6         | 30                            | 7             | 10                              | .1                                        | 59.6 | 6.6   | 120                                   | 2  | 2   |
| June 7-20, .....                      | 34.2                 | 9.5                             | .29          | 11             | 2.3         | 1.8           | .8                              | 38                         | 7.3           | .4           | 1.1                        | --        | 87                                  | .12                | 8.03         | 37                            | 6             | 9                               | .1                                        | 72.9 | 6.6   | 180                                   | 2  | 1   |
| June 21-July 16                       | 161                  | 11                              | .51          | 9.5            | 2.7         | 1.4           | .5                              | 30                         | 11            | .3           | 1.2                        | --        | 113                                 | .15                | 49.1         | 35                            | 10            | 8                               | .1                                        | 62.9 | 6.5   | 180                                   | 5  | 4   |
| July 17-31, .....                     | 84.5                 | 15                              | 1.4          | 12             | 4.1         | 1.5           | .6                              | 39                         | 15            | .7           | 4.1                        | --        | 147                                 | .20                | 33.5         | 47                            | 15            | 6                               | .1                                        | 77.3 | 6.6   | 400                                   | 4  | 3   |
| Aug. 1-23, .....                      | 15.6                 | 18                              | 1.3          | 14             | 3.4         | 2.1           | .8                              | 50                         | 12            | .5           | 2.1                        | --        | 125                                 | .17                | 5.26         | 49                            | 8             | 8                               | .1                                        | 92.9 | 6.7   | 250                                   | 2  | 2   |
| Aug. 24-Sept. 21                      | 8.95                 | 14                              | .40          | 15             | 3.5         | 2.0           | 1.3                             | 61                         | 6.0           | .3           | .9                         | .06       | 100                                 | .14                | 2.42         | 52                            | 2             | 8                               | .1                                        | 107  | 7.0   | 100                                   | 4  | 2   |
| Sept. 22-30, ....                     | 45.3                 | 14                              | .40          | 10             | 2.7         | 1.7           | 1.3                             | 33                         | 10            | .4           | 2.1                        | .09       | 94                                  | .13                | 11.5         | 36                            | 9             | 9                               | .1                                        | 68.7 | 6.5   | 148                                   | 3  | 2   |
| Weighted-average <sup>a</sup> , ..... | 80.9                 | 9.8                             | 0.39         | 9.1            | 2.3         | 1.6           | 0.5                             | 28                         | 9.8           | 0.2          | 1.8                        | --        | 97                                  | 0.13               | 21.2         | 32                            | 9             | 10                              | 0.1                                       | 62.2 | --    | --                                    | -- | --  |
| Weighted-average <sup>b</sup> , ..... | 59.8                 | 10                              | 0.40         | 9.3            | 2.4         | 1.7           | 0.5                             | 29                         | 9.8           | 0.2          | 1.9                        | --        | 97                                  | 0.13               | 15.7         | 33                            | 9             | 10                              | 0.1                                       | 63.9 | --    | --                                    | -- | --  |

<sup>a</sup> In solution when analyzed.

<sup>b</sup> Represents 94 percent of runoff for water year October 1956 to September 1957.

<sup>c</sup> Includes estimated data for missing periods. Represents 100 percent of runoff for water year October 1956 to September 1957.

## STREAMS TRIBUTARY TO LAKE SUPERIOR

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## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## EMBARRASS RIVER AT EMBARRASS, MINN--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement between 5 p.m. and 7 p.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 54   | 47   |      |      |      |      | --   | 59  | 63   | 64   | 75   | --    |
| 2       | 54   | 48   |      |      |      |      | --   | 55  | 54   | 67   | 75   | 66    |
| 3       | 54   | --   |      |      |      |      | --   | 53  | 59   | 69   | 71   | 63    |
| 4       | 53   | 51   |      |      |      |      | --   | 54  | 60   | 66   | 68   | 63    |
| 5       | 53   | 52   |      |      |      |      | --   | a53 | 62   | 65   | 68   | 62    |
| 6       | 50   | 49   |      |      |      |      | --   | 57  | 63   | 68   | 69   | 62    |
| 7       | 50   | 43   |      |      |      |      | --   | 58  | 63   | 70   | 70   | a60   |
| 8       | 48   | 40   |      |      |      |      | --   | 58  | 63   | 71   | 73   | 62    |
| 9       | 46   | 37   |      |      |      |      | --   | 58  | 63   | 71   | 72   | 60    |
| 10      | 46   | 38   |      |      |      |      | --   | 58  | 64   | 71   | 73   | 63    |
| 11      | 47   | 36   |      |      |      |      | --   | 60  | 65   | 70   | 69   | 62    |
| 12      | 50   | 36   |      |      |      |      | --   | 60  | 65   | 69   | 66   | 59    |
| 13      | 55   | 37   |      |      |      |      | --   | 60  | 66   | a70  | 65   | 58    |
| 14      | 53   | 37   |      |      |      |      | --   | 55  | 65   | 69   | 66   | 55    |
| 15      | 51   | --   |      |      |      |      | --   | 55  | 66   | 67   | 66   | a55   |
| 16      | 52   | --   |      |      |      |      | --   | 57  | 64   | 69   | 66   | a54   |
| 17      | 53   | --   |      |      |      |      | --   | 54  | 65   | 70   | 65   | 60    |
| 18      | 51   | --   |      |      |      |      | --   | 53  | 62   | 74   | a65  | 54    |
| 19      | 52   | --   |      |      |      |      | --   | a53 | 65   | 73   | 67   | 52    |
| 20      | 53   | --   |      |      |      |      | --   | 56  | 67   | 68   | 66   | 51    |
| 21      | --   | --   |      |      |      |      | --   | 53  | 65   | 69   | 68   | 49    |
| 22      | 51   | --   |      |      |      |      | --   | 51  | 64   | 71   | 69   | 49    |
| 23      | 48   | --   |      |      |      |      | --   | 51  | 62   | 70   | 70   | 49    |
| 24      | 47   | --   |      |      |      |      | --   | 55  | 63   | 68   | --   | 49    |
| 25      | 49   | --   |      |      |      |      | --   | --  | 62   | 68   | 68   | 47    |
| 26      | 47   | --   |      |      |      |      | --   | 55  | 61   | 70   | 65   | 46    |
| 27      | 45   | --   |      |      |      |      | --   | 54  | 61   | 72   | 61   | 45    |
| 28      | 46   | --   |      |      |      |      | --   | a56 | 63   | a72  | 60   | 47    |
| 29      | 46   | --   |      |      |      |      | --   | 60  | 64   | 74   | 62   | 50    |
| 30      | 49   | --   |      |      |      |      | --   | 60  | --   | 74   | 61   | 54    |
| 31      | 47   | --   |      |      |      |      | --   | 62  | --   | 74   | 63   | --    |
| Average | 50   | --   | b32  | b32  | b32  | b32  | --   | 56  | 63   | 70   | 67   | 55    |

a Measurement between 8 p.m. and 10 p.m.

b Estimated.

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## EMBARRASS RIVER NEAR MCKINLEY, MINN.

LOCATION --At gaging station on highway bridge, 0.9 mile downstream from outlet on Esquagama Lake and 4½ miles southeast of McKinley, St. Louis County.  
 RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1957.  
 REMARKS.--Value reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1956 to September 1957 given in WSP 1307.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Discharge<br>(cfs) | Silica<br>(SiO <sub>2</sub> ) | Iron <sup>a</sup><br>(Fe) | Calcium<br>(Ca) | Magnesium<br>(Mg) | Sodium<br>(Na) | Potassium<br>(K) | Bicarbonate<br>(HCO <sub>3</sub> ) | Sulfate<br>(SO <sub>4</sub> ) | Chloride<br>(Cl) | Fluoride<br>(F) | Nitrate<br>(NO <sub>3</sub> ) | Boron<br>(B) | Dissolved solids        |                              | Hardness<br>as CaCO <sub>3</sub> |                        | Percent<br>sodium | Sodium<br>adsorption<br>ratio | Specific<br>conductance<br>(micro-<br>mhos at<br>25°C) | pH  | Color<br>or | Turbidity<br>as<br>SiO <sub>2</sub> |
|--------------------|--------------------|-------------------------------|---------------------------|-----------------|-------------------|----------------|------------------|------------------------------------|-------------------------------|------------------|-----------------|-------------------------------|--------------|-------------------------|------------------------------|----------------------------------|------------------------|-------------------|-------------------------------|--------------------------------------------------------|-----|-------------|-------------------------------------|
|                    |                    |                               |                           |                 |                   |                |                  |                                    |                               |                  |                 |                               |              | Parts<br>per<br>million | Tons<br>per<br>acre-<br>foot | Calcium,<br>magnesium            | Non-<br>carbon-<br>ate |                   |                               |                                                        |     |             |                                     |
| Oct. 5, 1956.....  | 39                 | 8.2                           | 0.16                      | 12              | 4.4               | 2.3            | 0.9              | 49                                 | 11                            | 0.0              | 0.0             | 1.2                           | 0.05         | 89                      | 0.12                         | 48                               | 8                      | 9                 | 0.1                           | 104                                                    | 7.3 | 70          | 0.9                                 |
| Nov. 1.....        | 64                 | 9.6                           | .13                       | 13              | 4.5               | 2.7            | .9               | 54                                 | 13                            | .0               | .1              | 1.8                           | .07          | 97                      | .13                          | 51                               | 7                      | 10                | .2                            | 119                                                    | 7.3 | 60          | .4                                  |
| Dec. 7.....        | 49                 | 9.1                           | .08                       | 13              | 5.5               | 2.4            | 1.4              | 57                                 | 15                            | .5               | .2              | 1.1                           | .07          | 95                      | .13                          | 55                               | 8                      | 8                 | .1                            | 119                                                    | 7.3 | 50          | .7                                  |
| Jan. 6, 1957.....  | 34                 | 11                            | .17                       | 17              | 4.8               | 2.9            | 1.2              | 64                                 | 15                            | .1               | .0              | 1.1                           | .07          | 102                     | .14                          | 62                               | 10                     | 9                 | .2                            | 130                                                    | 7.2 | 60          | 2                                   |
| Feb. 14.....       | 25                 | 12                            | .13                       | 17              | 5.5               | 3.1            | 1.1              | 65                                 | 14                            | .5               | .1              | 1.1                           | .07          | 111                     | .15                          | 65                               | 12                     | 9                 | .2                            | 139                                                    | 7.2 | 70          | 3                                   |
| Mar. 22.....       | 28                 | 12                            | .11                       | 17              | 6.0               | 3.0            | 1.3              | 69                                 | 14                            | .5               | .1              | 1.2                           | .20          | 122                     | .17                          | 67                               | 10                     | 9                 | .2                            | 142                                                    | 7.2 | 65          | 1                                   |
| Apr. 17.....       | 205                | 10                            | .09                       | 16              | 5.1               | 3.5            | 1.6              | 59                                 | 21                            | .1               | .0              | 1.2                           | .07          | 109                     | .15                          | 61                               | 13                     | 11                | .2                            | 133                                                    | 7.2 | 50          | 2                                   |
| Apr. 26.....       | 1,240              | 14                            | .26                       | 16              | 4.9               | 3.5            | 1.1              | 58                                 | 19                            | .2               | .2              | 1.8                           | .07          | 108                     | .15                          | 60                               | 12                     | 11                | .2                            | 131                                                    | 6.9 | 70          | 5                                   |
| June 30.....       | 424                | 8.4                           | .07                       | 10              | 3.9               | 2.4            | 1.0              | 39                                 | 9.0                           | .5               | .2              | 1.1                           | .07          | 83                      | .11                          | 41                               | 9                      | 11                | .2                            | 86.0                                                   | 7.1 | 86          | 2                                   |
| July 20.....       | 247                | 8.9                           | .11                       | 11              | 3.3               | 2.1            | 1.0              | 40                                 | 14                            | .5               | .2              | 1.2                           | .09          | 96                      | .13                          | 41                               | 8                      | 10                | .1                            | 82.5                                                   | 7.0 | 120         | 3                                   |
| Aug. 17.....       | 42                 | 8.8                           | .11                       | 12              | 3.4               | 2.0            | 1.0              | 44                                 | 11                            | 1.0              | .2              | 1.6                           | .09          | 96                      | .13                          | 44                               | 8                      | 9                 | .1                            | 90.0                                                   | 7.0 | 120         | 2                                   |
| Sept. 14.....      | 22                 | 8.4                           | .16                       | 12              | 4.4               | 2.1            | 1.1              | 48                                 | 13                            | .1               | .2              | 1.0                           | .06          | 100                     | .14                          | 48                               | 9                      | 8                 | .1                            | 97.2                                                   | 7.2 | 120         | 2                                   |
| Sept. 26.....      | 48                 | 9.3                           | b.20                      | 13              | 4.3               | 2.2            | 1.1              | 49                                 | 15                            | .1               | .2              | 2.2                           | .07          | 99                      | .13                          | 50                               | 10                     | 9                 | .1                            | 103                                                    | 6.7 | 110         | 2                                   |

a In solution when analyzed.

b In solution at time of collection. Iron (Fe) 0.53 ppm.

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## WEST TWO RIVER NEAR IRON JUNCTION, MINN.

LOCATION.--At gaging station at bridge on State Highway 216, 5 miles southwest of Iron Junction, St. Louis County, and 9½ miles upstream from St. Louis River.

RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1957.

Water temperatures: April 1956 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 80°F July 15, 30, Aug. 10; minimum, freezing point on many days during November to March.

EXTREMES, April 1956 to September 1957.--Water temperatures: Maximum, 85°F June 11, 12, 1956; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Lincoln, Nebr. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection            | Mean discharge | Silica (SiO <sub>2</sub> ) | Iron (Fe) <sup>a</sup> | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Boron (B) | Dissolved solids (residue at 180° C) |                    |              | Hardness as CaCO <sub>3</sub> |               | Percent sodium adsorption ratio | Specific conductance (micro-mhos at 25° C) | pH or Col. | Turbidity as SiO <sub>2</sub> (daily) |      |
|-------------------------------|----------------|----------------------------|------------------------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------|--------------------------------------|--------------------|--------------|-------------------------------|---------------|---------------------------------|--------------------------------------------|------------|---------------------------------------|------|
|                               |                |                            |                        |              |                |             |               |                                 |                            |               |              |                            |           | Parts per million                    | Tons per acre-foot | Tons per day | Calcium, magnesium            | Non-carbonate |                                 |                                            |            | max.                                  | min. |
|                               |                |                            |                        |              |                |             |               |                                 |                            |               |              |                            |           |                                      |                    |              |                               |               |                                 |                                            |            |                                       |      |
| Oct. 1-11, 1956               | 10.1           | 8.5                        | 0.01                   | 33           | 14             | 7.1         | 2.1           | 161                             | 23                         | 2.5           | 0.1          | 0.1                        | 0.04      | 168                                  | 0.23               | 4.58         | 140                           | 8             | 0.3                             | 295                                        | 7.8        | 5                                     | --   |
| Oct. 12-Nov. 25               | 14.7           | 7.8                        | .02                    | 23           | 7.7            | 7.9         | 1.2           | 108                             | 16                         | 1.0           | .1           | .1                         | .02       | 117                                  | .16                | 4.64         | 94                            | 5             | 8                               | 204                                        | 7.7        | 7                                     | 2    |
| Nov. 26-Dec. 15               | 9.53           | 15                         | .02                    | 37           | 16             | 3.6         | 2.1           | 176                             | 24                         | 3.5           | .1           | 2.1                        | .03       | 197                                  | .27                | 5.07         | 158                           | 14            | 9                               | 330                                        | 7.5        | 7                                     | 4    |
| Jan. 15, 1957                 | 3.1            | 19                         | .02                    | 33           | 18             | 8.1         | 1.9           | 173                             | 25                         | 5.0           | .2           | 3.9                        | .03       | 203                                  | .28                | 1.70         | 156                           | 14            | 10                              | 338                                        | 7.7        | 10                                    | 2    |
| Feb. 12                       | 3.3            | 18                         | .02                    | 37           | 16             | 8.6         | 2.2           | 180                             | 23                         | 6.0           | .1           | 4.1                        | .03       | 203                                  | .28                | 1.81         | 160                           | 12            | 10                              | 339                                        | 7.7        | 5                                     | 3    |
| Mar. 20                       | 5.2            | 17                         | .01                    | 35           | 16             | 8.0         | 2.5           | 167                             | 24                         | 5.5           | .2           | 4.3                        | .03       | 202                                  | .27                | 2.84         | 153                           | 16            | 10                              | 328                                        | 7.4        | 6                                     | 2    |
| Apr. 18-25                    | 504            | 8.3                        | .09                    | 11           | 4.3            | 2.8         | 1.5           | 39                              | 19                         | .5            | .1           | .8                         | .07       | 85                                   | .12                | 11.6         | 45                            | 13            | 12                              | 105                                        | 6.7        | 70                                    | 7    |
| Apr. 26-May 4                 | 141            | 9.0                        | .09                    | 15           | 5.5            | 2.9         | 1.3           | 55                              | 18                         | .5            | .2           | .9                         | .06       | 102                                  | .14                | 38.8         | 60                            | 15            | 9                               | 129                                        | 7.0        | 78                                    | --   |
| May 5-23                      | 33.8           | 7.8                        | .06                    | 21           | 7.2            | 4.9         | 1.5           | 84                              | 21                         | 1.5           | .2           | .6                         | .05       | 119                                  | .16                | 10.8         | 82                            | 13            | 11                              | 177                                        | 7.3        | 49                                    | 7    |
| May 24-June 1                 | 50.6           | 8.4                        | .05                    | 16           | 6.6            | 3.8         | 1.8           | 68                              | 14                         | 1.3           | .2           | 1.0                        | --        | 109                                  | .15                | 14.9         | 67                            | 11            | 12                              | 151                                        | 7.2        | 70                                    | 5    |
| June 2-22                     | 26.6           | 5.3                        | .04                    | 21           | 8.4            | 4.3         | 1.7           | 98                              | 12                         | 1.4           | .2           | 1.0                        | --        | 119                                  | .16                | 8.55         | 87                            | 7             | 9                               | 183                                        | 7.2        | 75                                    | 10   |
| June 23-25                    | 226            | 10                         | .15                    | 14           | 4.4            | 2.6         | 1.3           | 51                              | 12                         | .3            | .3           | 1.6                        | --        | 107                                  | .13                | 65.3         | 33                            | 11            | 9                               | 113                                        | 6.8        | 120                                   | 10   |
| June 26-July 5                | 100            | 9.8                        | .08                    | 16           | 6.1            | 3.1         | 1.4           | 66                              | 12                         | .2            | .2           | 1.1                        | --        | 111                                  | .15                | 30.0         | 65                            | 11            | 9                               | 137                                        | 6.9        | 80                                    | 8    |
| July 6-28                     | 165            | 11                         | .16                    | 16           | 6.6            | 3.2         | 1.6           | 69                              | 13                         | .3            | .2           | 1.4                        | --        | 113                                  | .15                | 50.3         | 67                            | 10            | 9                               | 138                                        | 7.7        | 100                                   | 6    |
| July 29-Aug. 31               | 22.7           | 7.1                        | .08                    | 21           | 8.9            | 4.8         | 2.0           | 100                             | 11                         | 2.5           | .1           | 1.2                        | --        | 126                                  | .17                | 7.72         | 89                            | 7             | 10                              | 189                                        | 7.2        | 70                                    | 3    |
| Sept. 1-30                    | 13.8           | 4.7                        | .03                    | 27           | 9.6            | 5.7         | 2.5           | 123                             | 13                         | 3.5           | .2           | .3                         | .04       | 139                                  | .19                | 5.18         | 107                           | 6             | 10                              | 226                                        | 7.2        | 40                                    | 1    |
| Sept. 26 <sup>b</sup>         | 28             | 8.9                        | .09                    | 23           | 12             | 5.6         | 2.5           | 112                             | 21                         | 3.2           | .2           | .2                         | .05       | 156                                  | .21                | 11.8         | 105                           | 13            | 10                              | 228                                        | 7.8        | 45                                    | 6    |
| Weighted average <sup>c</sup> | 59.6           | 9.0                        | 0.10                   | 16           | 6.3            | 3.4         | 1.6           | 67                              | 16                         | 0.7           | 0.2          | 1.0                        | --        | 107                                  | 0.15               | 17.2         | 66                            | 11            | 10                              | 143                                        | --         | --                                    | --   |
| Weighted average <sup>d</sup> | 48.3           | 9.2                        | 0.10                   | 17           | 6.2            | 3.5         | 1.5           | 68                              | 16                         | 0.8           | 0.2          | 1.1                        | --        | 109                                  | 0.15               | 14.2         | 68                            | 12            | 10                              | 146                                        | --         | --                                    | --   |

a In solution when analyzed.

b Not included in weighted average. In solution when collected, iron (Fe) 0.56 ppm.

c Represents 83 percent of runoff for water year October 1956 to September 1957.

d Includes estimated data for missing periods. Represents 100 percent of runoff for water year October 1956 to September 1957.



## ST. LAWRENCE RIVER BASIN

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## WEST TWO RIVER NEAR IRON JUNCTION, MINN.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement between 4 p. m. and 6 p. m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May  | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 1       | 62   | 52   |      |      |      |      | --   | 59   | 66   | 68   | a 77 | a 73  |
| 2       | 66   | 52   |      |      |      |      | --   | 54   | 65   | 71   | a 76 | 74    |
| 3       | 64   | 52   |      |      |      |      | --   | 50   | a 65 | 73   | a 74 | 71    |
| 4       | 64   | b 53 |      |      |      |      | --   | 48   | 64   | 68   | a 71 | 69    |
| 5       | 62   | 53   |      |      |      |      | --   | 55   | a 65 | 69   | a 69 | 64    |
| 6       | 60   | 46   |      |      |      |      | --   | 64   | a 64 | 71   | 74   | 63    |
| 7       | 60   | 40   |      |      |      |      | --   | 63   | a 67 | --   | 75   | a 65  |
| 8       | --   | 38   |      |      |      |      | --   | 64   | a 69 | 75   | 79   | 64    |
| 9       | --   | 35   |      |      |      |      | --   | 64   | a 67 | 74   | a 78 | 65    |
| 10      | --   | 31   |      |      |      |      | --   | 65   | a 65 | --   | 80   | 68    |
| 11      | --   | 35   |      |      |      |      | --   | 66   | 68   | 75   | b 75 | 62    |
| 12      | --   | 37   |      |      |      |      | --   | 65   | a 66 | 76   | 70   | 63    |
| 13      | --   | 40   |      |      |      |      | --   | 65   | a 68 | a 74 | 69   | 57    |
| 14      | --   | 37   |      |      |      |      | --   | 56   | b 65 | 75   | b 74 | 56    |
| 15      | 62   | 32   |      |      |      |      | --   | 60   | 70   | 80   | 71   | 55    |
| 16      | 62   | 32   |      |      |      |      | --   | 62   | 67   | a 77 | 73   | 57    |
| 17      | 62   | --   |      |      |      |      | --   | 59   | b 68 | 79   | 70   | 59    |
| 18      | 60   | --   |      |      |      |      | --   | 58   | 66   | a 79 | 76   | 56    |
| 19      | 59   | --   |      |      |      |      | --   | 56   | b 69 | 79   | a 70 | 55    |
| 20      | 63   | --   |      |      |      |      | --   | 57   | b 66 | 70   | 77   | 54    |
| 21      | b 52 | --   |      |      |      |      | --   | 58   | 71   | a 71 | b 74 | 52    |
| 22      | 46   | --   |      |      |      |      | --   | 57   | 66   | 73   | 75   | 53    |
| 23      | 46   | --   |      |      |      |      | --   | b 55 | 65   | 76   | 74   | 52    |
| 24      | 47   | --   |      |      |      |      | --   | 56   | 65   | a 77 | 73   | 53    |
| 25      | 47   | --   |      |      |      |      | --   | 58   | 64   | a 73 | 74   | 51    |
| 26      | 47   | --   |      |      |      |      | --   | 53   | 60   | 64   | 75   | 52    |
| 27      | 48   | --   |      |      |      |      | --   | 54   | 62   | b 67 | 77   | 54    |
| 28      | b 49 | --   |      |      |      |      | --   | 55   | 63   | b 67 | a 78 | 62    |
| 29      | 52   | --   |      |      |      |      | --   | 57   | 63   | 69   | a 76 | a 64  |
| 30      | 50   | --   |      |      |      |      | --   | 60   | 62   | 70   | 80   | 65    |
| 31      | 50   | --   |      |      |      |      | --   | 60   | --   | a 77 | 67   | --    |
| Average | --   | --   | c 32 | c 32 | c 32 | c 32 | --   | 59   | 67   | 75   | 72   | 59    |

a Measurement between 7 p. m. and 8 p. m.

b Measurement between 11 a. m. and 3 p. m.

c Estimated.

## STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

## BLACK RIVER NEAR BESEMER, MICH.

LOCATION.--Temperature recorder at gaging station, 450 feet downstream from bridge on county highway, 500 feet downstream from Powder Mill Creek, and 2 1/2 miles south of Bessemer, Gogebic County.

DRAINAGE AREA--202 square miles.

RECORDS AVAILABLE.--October 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 83 F. Aug. 2; minimum, freezing point on many days during November to March.

EXTREMES, 1954-57.--Water temperatures: Maximum, 83 F. Aug. 2, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Temperatures given for this period are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507. Stream frozen Nov. 15 to Mar. 29.

Temperature, (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/7

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 51      | 49  | 53       | 52  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 37    | 33  | 62  | 58  | 60   | 68  | 62   | 81  | 73     | 70  | 66        |  |
| 2.....       | 54      | 51  | 55       | 53  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 35    | 33  | 59  | 55  | 56   | 74  | 66   | 83  | 77     | 68  | 65        |  |
| 3.....       | 55      | 50  | 55       | 54  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 36    | 33  | 56  | 50  | 54   | 76  | 71   | 80  | 75     | 65  | 60        |  |
| 4.....       | 55      | 52  | 55       | 54  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 33    | 33  | 55  | 48  | 62   | 58  | 73   | 68  | 75     | 69  | 60        |  |
| 5.....       | 53      | 49  | 55       | 54  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 33  | 56  | 48  | 57   | 73  | 65   | 74  | 65     | 59  | 55        |  |
| 6.....       | 52      | 48  | 54       | 49  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 35    | 33  | 61  | 54  | 63   | 59  | 77   | 66  | 77     | 65  | 60        |  |
| 7.....       | 50      | 46  | 49       | 41  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 33  | 63  | 58  | 65   | 56  | 75   | 70  | 76     | 68  | 60        |  |
| 8.....       | 49      | 46  | 41       | 39  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 33  | 62  | 60  | 68   | 58  | 78   | 71  | 75     | 70  | 59        |  |
| 9.....       | 47      | 45  | 39       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 34  | 60  | 56  | 67   | 82  | 80   | 68  | 78     | 72  | 61        |  |
| 10.....      | 46      | 43  | 38       | 36  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 38    | 34  | 61  | 54  | 68   | 64  | 75   | 66  | 80     | 68  | 62        |  |
| 11.....      | 47      | 44  | 39       | 36  | 33       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 64  | 56  | 68   | 65  | 70   | 66  | 80     | 70  | 62        |  |
| 12.....      | 51      | 47  | 39       | 38  | 33       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 34    | 34  | 61  | 57  | 67   | 61  | 68   | 67  | 78     | 67  | 61        |  |
| 13.....      | 57      | 51  | 38       | 37  | 33       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 62  | 56  | 72   | 64  | 73   | 66  | 72     | 65  | 60        |  |
| 14.....      | 58      | 56  | 39       | 38  | 33       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 40    | 34  | 59  | 51  | 68   | 65  | 73   | 59  | 75     | 65  | 59        |  |
| 15.....      | 56      | 51  | 39       | 34  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 40    | 36  | 55  | 48  | 71   | 62  | 72   | 66  | 76     | 67  | 58        |  |
| 16.....      | 55      | 51  | 34       | 34  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 39    | 37  | 55  | 48  | 67   | 66  | 74   | 69  | 76     | 65  | 58        |  |
| 17.....      | 57      | 54  | 34       | 33  | 32       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 39    | 36  | 55  | 51  | 73   | 66  | 75   | 71  | 75     | 62  | 55        |  |
| 18.....      | 55      | 50  | 33       | 32  | 33       | 32  | 33      | 32  | 32       | 32  | 32    | 32  | 38    | 35  | 51  | 49  | 70   | 67  | 80   | 72  | 76     | 63  | 52        |  |
| 19.....      | 53      | 49  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 37  | 54  | 46  | 69   | 64  | 82   | 76  | 74     | 61  | 59        |  |
| 20.....      | 54      | 51  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 37  | 57  | 50  | 72   | 66  | 80   | 77  | 75     | 63  | 56        |  |
| 21.....      | 54      | 51  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 39  | 56  | 52  | 69   | 67  | 76   | 71  | 77     | 62  | 54        |  |
| 22.....      | 52      | 49  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 40  | 52  | 51  | 68   | 65  | 75   | 70  | 79     | 64  | 54        |  |
| 23.....      | 52      | 47  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 48    | 43  | 52  | 50  | 67   | 61  | 75   | 69  | 72     | 68  | 53        |  |
| 24.....      | 47      | 45  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 54    | 48  | 57  | 48  | 71   | 56  | 75   | 68  | 74     | 66  | 50        |  |
| 25.....      | 50      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 31  | 31    | 32  | 55    | 52  | 57  | 55  | 60   | 55  | 72   | 70  | 75     | 64  | 49        |  |
| 26.....      | 50      | 48  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 31  | 32    | 32  | 55    | 54  | 55  | 52  | 61   | 58  | 77   | 69  | 70     | 64  | 47        |  |
| 27.....      | 48      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 51  | 54  | 48  | 65   | 59  | 79   | 72  | 67     | 60  | 46        |  |
| 28.....      | 47      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 57    | 52  | 58  | 51  | 63   | 73  | 65   | 60  | 48     | 45  |           |  |
| 29.....      | 49      | 47  | 32       | 32  | 32       | 32  | 32      | 32  | --       | --  | 33    | 33  | 60    | 53  | 64  | 56  | 67   | 62  | 81   | 75  | 64     | 59  | 51        |  |
| 30.....      | 53      | 49  | 32       | 32  | 32       | 32  | 32      | 32  | --       | --  | 34    | 33  | 63    | 55  | 66  | 58  | 67   | 64  | 77   | 73  | 64     | 59  | 53        |  |
| 31.....      | 53      | 53  | --       | --  | 32       | 32  | 32      | 32  | --       | --  | 33    | 33  | --    | --  | 68  | 63  | --   | --  | 78   | 71  | 68     | 62  | --        |  |
| Average..... | 52      | 49  | 39       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 39  | 58  | 53  | 66   | 61  | 75   | 69  | 74     | 66  | 57        |  |

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued  
MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO LAKE SUPERIOR IN MINNESOTA  
Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Boron (B) | Dissolved solids (residue at 180°C) |                    | Hardness as CaCO <sub>3</sub> |               | Percent sodium   | Specific conductance (micro-mhos at 25°C) | pH  | Col- or |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|-----------|-------------------------------------|--------------------|-------------------------------|---------------|------------------|-------------------------------------------|-----|---------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |           | Parts per million                   | Tons per acre-foot | Calcium, magnesium            | Non-carbonate | adsorption ratio |                                           |     |         |
| Sept. 28, 1955 ....  | 63                   | 15                         | 20.70     | 22           | 10             | 7.9         | 5.1           | 96                              | 19                         | 4.2           | 3.1          | 0.03                       | 158       | 0.21                                | 96                 | 17                            | 10            | 0.2              | 211                                       | 7.2 | 100     |
| Sept. 27, 1957, .... | 85                   | 11                         | .66       | 26           | 12             | 2.3         | 2.3           | 115                             | 29                         | 8.2           | 0.3          | 3.8                        | .07       | .23                                 | 116                | 22                            | 13            | .3               | 261                                       | 7.2 | 75      |

SWAN RIVER NEAR TOIVOLA

<sup>a</sup> In solution when analyzed.

## STREAMS TRIBUTARY TO LAKE MICHIGAN

## BLACK RIVER NEAR GARNET, MICH.

LOCATION.--Temperature recorder at gaging station, 10 feet upstream from county bridge, 15 feet downstream from unnamed tributary entering from right, 3 miles upstream from Lake Michigan, and 4 miles southwest of Garnet, Mackinac County.

DRAINAGE AREA.--28 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1957. 8, 9, 13, 14, 22.

EXTREMES, 1956-57.--Water temperatures: Maximum, 62 F June 17, 18, July 21, 22, 1952; minimum freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1507. River does not freeze over.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 45      | 44  | 47       | 46  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 51  | 49  | 57   | 55  | 58   | 54  | 60     | 56  | 56        | 55  |
| 2.....       | 46      | 45  | 48       | 47  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 50  | 47  | 56   | 52  | 58   | 55  | 60     | 58  | 58        | 56  |
| 3.....       | 46      | 44  | 48       | 48  | 34       | 33  | 32      | 32  |          |     |       |     |       |     | 47  | 44  | 54   | 52  | 60   | 58  | 61     | 59  | 58        | 56  |
| 4.....       | 46      | 46  | 48       | 48  | 34       | 33  | 32      | 32  |          |     |       |     |       |     | 48  | 44  | 56   | 52  | 60   | 59  | 59     | 55  | 58        | 54  |
| 5.....       | 46      | 44  | 48       | 48  | 34       | 33  | 32      | 32  |          |     |       |     |       |     | 47  | 44  | 55   | 51  | 61   | 60  | 57     | 54  | 55        | 52  |
| 6.....       | 45      | 44  | 48       | 48  | 34       | 34  | 32      | 32  |          |     |       |     |       |     | 49  | 44  | 54   | 52  | 61   | 60  | 58     | 54  | 54        | 50  |
| 7.....       | 45      | 45  | 48       | 48  | 34       | 34  | 32      | 32  |          |     |       |     |       |     | 51  | 46  | 54   | 51  | 61   | 61  | 59     | 54  | 54        | 51  |
| 8.....       | 45      | 45  | 46       | 43  | 34       | 33  | 32      | 32  |          |     |       |     |       |     | 50  | 48  | 56   | 49  | 62   | 61  | 59     | 58  | 54        | 49  |
| 9.....       | 45      | 44  | 43       | 41  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 50  | 47  | 57   | 51  | 63   | 59  | 59     | 57  | 54        | 50  |
| 10.....      | 44      | 41  | 41       | 38  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 50  | 47  | 57   | 55  | 59   | 57  | 60     | 56  | 54        | 51  |
| 11.....      | 42      | 41  | 39       | 38  | 33       | 32  | 32      | 32  |          |     |       |     |       |     | 52  | 46  | 56   | 56  | 61   | 58  | 60     | 56  | 53        | 53  |
| 12.....      | 44      | 42  | 39       | 32  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 52  | 46  | 59   | 55  | 60   | 58  | 58     | 54  | 54        | 53  |
| 13.....      | 45      | 44  | 39       | 38  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 55  | 51  | 57   | 56  | 62   | 58  | 54     | 53  | 55        | 54  |
| 14.....      | 47      | 45  | 38       | 32  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 55  | 49  | 57   | 56  | 62   | 61  | 59     | 54  | 54        | 51  |
| 15.....      | 47      | 47  | 38       | 38  | 33       | 32  | 32      | 32  |          |     |       |     |       |     | 49  | 47  | 60   | 57  | 61   | 58  | 57     | 55  | 55        | 53  |
| 16.....      | 48      | 47  | 38       | 38  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 49  | 45  | 61   | 58  | 60   | 57  | 58     | 55  | 55        | 55  |
| 17.....      | 48      | 46  | 36       | 36  | 33       | 32  | 32      | 32  |          |     |       |     |       |     | 48  | 46  | 62   | 59  | 60   | 57  | 57     | 53  | 55        | 53  |
| 18.....      | 46      | 46  | 36       | 36  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 48  | 45  | 62   | 61  | 61   | 57  | 56     | 53  | 53        | 53  |
| 19.....      | 46      | 45  | 36       | 36  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 48  | 46  | 61   | 57  | 61   | 58  | 56     | 52  | 53        | 54  |
| 20.....      | 45      | 45  | 37       | 36  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 52  | 46  | 58   | 54  | 61   | 59  | 56     | 52  | 55        | 54  |
| 21.....      | 46      | 45  | 37       | 36  | 33       | 32  | 32      | 32  |          |     |       |     |       |     | 52  | 48  | 58   | 56  | 61   | 59  | 57     | 52  | 54        | 54  |
| 22.....      | 46      | 45  | 36       | 34  | 33       | 33  | 33      | 33  |          |     |       |     |       |     | 53  | 48  | 61   | 57  | 62   | 60  | 56     | 52  | 54        | 52  |
| 23.....      | 46      | 45  | 34       | 34  | 33       | 33  | 33      | 33  |          |     |       |     |       |     | 53  | 49  | 61   | 58  | 60   | 57  | 55     | 54  | 52        | 50  |
| 24.....      | 45      | 43  | 34       | 34  | 33       | 33  | 33      | 33  |          |     |       |     |       |     | 52  | 47  | 58   | 55  | 60   | 56  | 58     | 55  | 50        | 49  |
| 25.....      | 44      | 43  | 34       | 34  | 33       | 32  | 32      | 32  |          |     |       |     |       |     | 46  | 46  | 55   | 55  | 58   | 56  | 58     | 55  | 49        | 48  |
| 26.....      | 44      | 44  | 34       | 33  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 51  | 50  | 55   | 55  | 57   | 56  | 58     | 55  | 48        | 46  |
| 27.....      | 44      | 43  | 33       | 33  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 51  | 50  | 59   | 54  | 59   | 55  | 56     | 54  | 46        | 44  |
| 28.....      | 43      | 43  | 33       | 33  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 51  | 47  | 57   | 55  | 61   | 57  | 54     | 54  | 46        | 44  |
| 29.....      | 44      | 43  | 33       | 33  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 51  | 51  | 59   | 55  | 61   | 58  | 55     | 54  | 47        | 45  |
| 30.....      | 44      | 44  | 33       | 32  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 56  | 50  | 59   | 56  | 61   | 57  | 57     | 54  | 49        | 47  |
| 31.....      | 46      | 45  | --       | --  | 32       | 32  | 32      | 32  |          |     |       |     |       |     | 57  | 54  | --   | --  | 60   | 56  | 57     | 55  | --        | --  |
| Average..... | 45      | 44  | 39       | 39  | 33       | 33  | 32      | 32  |          |     |       |     |       |     | 51  | 47  | 58   | 55  | 60   | 58  | 58     | 55  | 53        | 51  |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## EAST BRANCH ESCANABA RIVER AT GWINN, MICH.

LOCATION.--Temperature recorder at gaging station in county park at Gwin, Marquette County, and 1 mile upstream from mouth.

DRAINAGE AREA.--125 square miles.

RECORDS AVAILABLE.--Water temperatures: November 1954 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Minimum, freezing point on many days during winter months.

EXTREMES, 1954-57.--Water temperatures: Maximum, 79° F July 4, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1507. Complete ice cover during winter months.

Temperature (°F) of water, water year October 1956 to September 1957  
 Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/7

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1.....       | 50      | 47  | 47       | 46  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 34    | 32  | 58  | 54  | 65   | 61  | --   | --  | 71     | 66  | 66        | 62 |
| 2.....       | 50      | 49  | 48       | 47  | 32       | 32  | 32      | 32  | 33       | 33  | 33    | 33  | 34    | 32  | 56  | 52  | 65   | 61  | --   | --  | 72     | 68  | 66        | 66 |
| 3.....       | 51      | 47  | 50       | 48  | 32       | 32  | 32      | 32  | 33       | 33  | 33    | 33  | 34    | 33  | 52  | 48  | 61   | 57  | --   | --  | 72     | 68  | 66        | 63 |
| 4.....       | 51      | 50  | 50       | 50  | 32       | 32  | 32      | 32  | 33       | 33  | 33    | 33  | 33    | 32  | 50  | 46  | 61   | 58  | --   | --  | 71     | 64  | 63        | 60 |
| 5.....       | 50      | 46  | 50       | 50  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 33  | 32    | 32  | 52  | 46  | 60   | 57  | --   | --  | 67     | 59  | 60        | 57 |
| 6.....       | 49      | 49  | 50       | 49  | 32       | 32  | 32      | 32  | 32       | 32  | 33    | 33  | 32    | 32  | 56  | 49  | 60   | 55  | --   | --  | 69     | 60  | 53        | 56 |
| 7.....       | 49      | 47  | 49       | 45  | 32       | 32  | 32      | 32  | 32       | 32  | 33    | 33  | 33    | 32  | 59  | 52  | 61   | 56  | --   | --  | 70     | 61  | 58        | 56 |
| 8.....       | 48      | 47  | 45       | 41  | 32       | 32  | 32      | 32  | 32       | 32  | 33    | 33  | 35    | 33  | 61  | 56  | 62   | 55  | --   | --  | 72     | 66  | 59        | 54 |
| 9.....       | 47      | 44  | 41       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 33    | 33  | 34    | 33  | 60  | 55  | 62   | 56  | --   | --  | 72     | 67  | 60        | 55 |
| 10.....      | 45      | 42  | 38       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 33    | 33  | 35    | 33  | 58  | 53  | 65   | 60  | 71   | 65  | 72     | 65  | 61        | 59 |
| 11.....      | 46      | 43  | 36       | 36  | 32       | 32  | 32      | 32  | 33       | 32  | 33    | 32  | 37    | 34  | 60  | 53  | 66   | 64  | 68   | 67  | 72     | 66  | 61        | 58 |
| 12.....      | 49      | 45  | 36       | 36  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 59  | 54  | 64   | 61  | 68   | 65  | 67     | 61  | 60        | 57 |
| 13.....      | 52      | 47  | 36       | 36  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 35  | 61  | 56  | --   | --  | 71   | 63  | 65     | 60  | 60        | 58 |
| 14.....      | 55      | 52  | 36       | 36  | 33       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 39    | 35  | 59  | 53  | --   | --  | 71   | 67  | 68     | 60  | 59        | 56 |
| 15.....      | 54      | 50  | 36       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 40    | 36  | 53  | 49  | --   | --  | 70   | 62  | 68     | 64  | 59        | 53 |
| 16.....      | 52      | 49  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 39    | 38  | 51  | 48  | --   | --  | 69   | 63  | 66     | 62  | 59        | 57 |
| 17.....      | 54      | 51  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 38    | 37  | 50  | 50  | --   | --  | 72   | 64  | 66     | 60  | 57        | 55 |
| 18.....      | 53      | 50  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 38    | 37  | 50  | 48  | --   | --  | 73   | 67  | 64     | 59  | 59        | 56 |
| 19.....      | 50      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 39    | 39  | 53  | 48  | --   | --  | 73   | 69  | 66     | 58  | 59        | 57 |
| 20.....      | 50      | 48  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 33  | 32    | 32  | 43    | 39  | 56  | 50  | --   | --  | 72   | 68  | 67     | 60  | 58        | 54 |
| 21.....      | 50      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 44    | 43  | 55  | 52  | --   | --  | 70   | 68  | 67     | 60  | 56        | 55 |
| 22.....      | 50      | 47  | 34       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 44  | 54  | 51  | --   | --  | 70   | 64  | 68     | 60  | 55        | 52 |
| 23.....      | 49      | 47  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 44  | 57  | 54  | --   | --  | 68   | 61  | 68     | 65  | 54        | 52 |
| 24.....      | 47      | 45  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 49    | 45  | 60  | 52  | --   | --  | 68   | 59  | 66     | 63  | 52        | 49 |
| 25.....      | 45      | 44  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 52    | 49  | 59  | 56  | --   | --  | 68   | 63  | 67     | 60  | 49        | 46 |
| 26.....      | 46      | 45  | 32       | 32  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 54    | 51  | 57  | 56  | --   | --  | 68   | 64  | 68     | 63  | 46        | 45 |
| 27.....      | 47      | 43  | 32       | 32  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 56    | 54  | 57  | 53  | --   | --  | 72   | 64  | 66     | 61  | 46        | 43 |
| 28.....      | 46      | 44  | 32       | 32  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 55    | 52  | 55  | 50  | --   | --  | 72   | 68  | 63     | 61  | 47        | 44 |
| 29.....      | 47      | 45  | 32       | 32  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 54    | 52  | 58  | 54  | --   | --  | 72   | 68  | 63     | 60  | 48        | 44 |
| 30.....      | 49      | 47  | 32       | 32  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 57    | 52  | 61  | 57  | --   | --  | 72   | 66  | 63     | 61  | 49        | 46 |
| 31.....      | 48      | 47  | --       | --  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | --    | --  | 63  | 60  | --   | --  | 72   | 63  | 63     | 62  | --        | -- |
| Average..... | 49      | 47  | 38       | 37  | 32       | 32  | 32      | 32  | 33       | 32  | 32    | 32  | 41    | 39  | 56  | 52  | --   | --  | 68   | 62  | 67     | 62  | 57        | 54 |



STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued  
 FORD RIVER NEAR HYDE, MICH.--Continued

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl-alcohol actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 56      | 55  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 55  | 53  | --   | --  | 74   | 65  | 83     | 73  | 73        | 68  |
| 2.....       | 57      | 56  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 56  | 52  | --   | --  | 76   | 70  | 86     | 75  | 74        | 70  |
| 3.....       | 57      | 55  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 56  | 50  | --   | --  | 80   | 74  | 82     | 76  | 72        | 65  |
| 4.....       | 57      | 57  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 52  | 49  | --   | --  | 76   | 70  | 77     | 67  | 61        | 61  |
| 5.....       | 57      | 53  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 53  | 49  | --   | --  | 72   | 65  | 74     | 61  | 64        | 58  |
| 6.....       | 54      | 54  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 54  | 51  | --   | --  | 74   | 67  | 78     | 64  | 60        | 60  |
| 7.....       | 54      | 53  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 57  | 53  | --   | --  | 74   | 70  | 78     | 67  | 64        | 58  |
| 8.....       | 54      | 52  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 57  | 56  | --   | --  | 77   | 72  | 78     | 71  | 64        | 58  |
| 9.....       | 53      | 50  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 57  | 56  | --   | --  | 77   | 70  | 76     | 74  | 66        | 59  |
| 10.....      | 50      | 48  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 56  | 53  | --   | --  | 73   | 67  | 82     | 70  | 68        | 62  |
| 11.....      | 49      | 48  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 57  | 54  | --   | --  | 71   | 67  | 80     | 72  | 65        | 63  |
| 12.....      | 52      | 49  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 57  | 55  | --   | --  | 70   | 67  | 74     | 66  | 66        | 62  |
| 13.....      | 55      | 52  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 58  | 55  | --   | --  | 79   | 66  | 70     | 65  | 68        | 63  |
| 14.....      | 58      | 55  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 35  | 58  | 52  | --   | --  | 80   | 74  | 77     | 64  | 66        | 61  |
| 15.....      | 58      | 57  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 39  | 52  | 49  | --   | --  | 77   | 67  | 75     | 69  | 68        | 62  |
| 16.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 39  | 51  | 47  | --   | --  | 75   | 67  | 74     | 66  | 64        | 60  |
| 17.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 40  | 51  | 48  | --   | --  | 79   | 68  | 73     | 62  | 60        | 55  |
| 18.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 41  | 48  | 48  | --   | --  | 81   | 70  | 73     | 62  | 64        | 59  |
| 19.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 44  | 51  | 47  | --   | --  | 86   | 73  | 75     | 62  | 64        | 62  |
| 20.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 44  | 53  | 49  | --   | --  | 82   | 76  | 73     | 64  | 62        | 57  |
| 21.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 48    | 46  | 53  | 50  | --   | --  | 83   | 76  | 75     | 66  | 59        | 58  |
| 22.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 49    | 47  | --  | --  | --   | --  | 82   | 72  | 76     | 64  | 58        | 55  |
| 23.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 49    | 47  | --  | --  | --   | --  | 75   | 69  | 73     | 65  | 57        | 54  |
| 24.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 49    | 47  | --  | --  | --   | --  | 75   | 68  | 72     | 63  | 55        | 50  |
| 25.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 51    | 49  | --  | --  | --   | --  | 74   | 70  | 73     | 63  | 51        | 48  |
| 26.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 54    | 50  | --  | --  | --   | --  | 78   | 70  | 75     | 67  | 48        | 46  |
| 27.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 53  | --  | --  | --   | --  | 80   | 72  | 69     | 63  | 49        | 45  |
| 28.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 53  | --  | --  | --   | --  | 82   | 74  | 63     | 61  | 50        | 46  |
| 29.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 53  | --  | --  | --   | --  | 71   | 65  | 82     | 74  | 63        | 47  |
| 30.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 53  | --  | --  | --   | --  | 72   | 62  | 82     | 76  | 64        | 52  |
| 31.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 53  | --  | --  | --   | --  | 81   | 74  | 70     | 64  | 52        | 50  |
| 31.....      | --      | --  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | --  | --  | --   | --  | 83   | 72  | 70     | 67  | --        | --  |
| Average..... | --      | --  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 40  | --  | --  | --   | --  | 78   | 70  | 75     | 66  | 62        | 57  |

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued  
PAINT RIVER NEAR ALPHA, MICH.

LOCATION.--Temperature recorder at gaging station, five-eighths of a mile downstream from Paint River Diversion Dam, 5½ miles upstream from confluence with Brule River, and 6 miles southwest of Alpha, Iron County.

DRAINAGE AREA.--644 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1954, October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 81°F July 19; minimum, freezing point on many days during December to April.

EXTREMES, 1952-54, 1955-57.--Water temperatures: Maximum, 81°F Sept. 2, 1953, July 19, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 7 to Mar. 28, Mar. 30, Apr. 2-10. Temperatures for these periods are for the underflow.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 58      | 54  | 50       | 48  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 62  | 57  | 66   | 61  | 71   | 65  | 80     | 75  | 69        | 66  |
| 2.....       | 58      | 52  | 50       | 50  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 62  | 57  | 66   | 61  | 71   | 65  | 80     | 75  | 69        | 66  |
| 3.....       | 58      | 51  | 51       | 50  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 35    | 32  | 60  | 55  | 66   | 61  | 74   | 69  | 80     | 77  | 68        | 65  |
| 4.....       | 57      | 52  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 61  | 54  | 65   | 61  | 72   | 69  | 77     | 74  | 68        | 63  |
| 5.....       | 56      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 61  | 53  | 66   | 61  | 72   | 68  | 77     | 70  | 67        | 61  |
| 6.....       | 53      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 60  | 55  | 66   | 61  | 74   | 68  | 73     | 68  | 66        | 61  |
| 7.....       | 55      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 32  | 60  | 55  | 67   | 61  | 73   | 69  | 73     | 68  | 66        | 60  |
| 8.....       | 54      | 49  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 64  | 58  | 67   | 61  | 74   | 70  | 74     | 70  | 65        | 59  |
| 9.....       | 50      | 47  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 63  | 56  | 67   | 62  | 74   | 70  | 72     | 70  | 65        | 59  |
| 10.....      | 52      | 46  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 32  | 64  | 59  | 68   | 64  | 74   | 69  | 74     | 69  | 66        | 61  |
| 11.....      | 50      | 46  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 35    | 32  | 64  | 58  | 70   | 66  | 73   | 70  | 74     | 70  | 64        | 61  |
| 12.....      | 51      | 47  | --       | --  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 35    | 32  | 64  | 59  | 69   | 65  | 72   | 71  | 73     | 69  | 66        | 61  |
| 13.....      | 54      | 47  | --       | --  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 33  | 65  | 59  | 69   | 66  | 70   | 70  | 72     | 67  | 66        | 60  |
| 14.....      | 55      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 33  | 60  | 58  | --   | --  | 77   | 71  | 72     | 67  | 66        | 60  |
| 15.....      | 54      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 34  | 61  | 55  | --   | --  | 76   | 70  | 71     | 68  | 65        | 61  |
| 16.....      | 55      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 36  | 60  | 52  | --   | --  | 76   | 71  | 71     | 67  | 63        | 60  |
| 17.....      | 56      | 52  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 37  | 56  | 54  | --   | --  | 77   | 72  | 71     | 66  | 63        | 59  |
| 18.....      | 55      | 52  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 41  | 54  | 53  | --   | --  | 78   | 73  | 70     | 66  | 63        | 58  |
| 19.....      | 55      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 42  | 58  | 51  | --   | --  | 81   | 74  | 70     | 66  | 62        | 59  |
| 20.....      | 54      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 48    | 43  | 59  | 51  | --   | --  | 79   | 75  | 71     | 66  | 62        | 57  |
| 21.....      | 55      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 45  | 55  | 54  | --   | --  | 80   | 76  | 71     | 66  | 60        | 58  |
| 22.....      | 55      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 46  | 58  | 54  | --   | --  | 79   | 75  | 71     | 66  | 60        | 57  |
| 23.....      | 53      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 47  | 60  | 54  | --   | --  | 78   | 73  | 69     | 68  | 59        | 56  |
| 24.....      | 50      | 49  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 51    | 47  | 62  | 53  | --   | --  | 78   | 73  | 71     | 67  | 57        | 54  |
| 25.....      | 49      | 48  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 32  | 53    | 51  | 59  | 56  | 68   | 66  | 77   | 73  | 71     | 66  | 55        | 52  |
| 26.....      | 50      | 47  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 32  | 53    | 51  | 61  | 58  | 69   | 65  | 77   | 73  | 72     | 67  | 55        | 50  |
| 27.....      | 49      | 47  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 32  | 56    | 52  | 60  | 55  | 69   | 64  | 77   | 74  | 68     | 65  | 55        | 48  |
| 28.....      | 50      | 47  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 32  | 58    | 52  | 61  | 55  | 68   | 65  | 79   | 75  | 67     | 66  | 55        | 48  |
| 29.....      | 50      | 46  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 61    | 55  | 62  | 56  | 70   | 65  | 80   | 75  | 67     | 65  | 55        | 49  |
| 30.....      | 50      | 48  | --       | --  | --       | --  | 32      | 32  | 32       | 32  | 35    | 32  | 61    | 55  | 64  | 59  | 69   | 66  | 78   | 75  | 67     | 65  | 55        | 51  |
| 31.....      | 50      | 49  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 65  | 60  | --   | --  | 79   | 75  | 68     | 65  | --        | --  |
| Average..... | 53      | 49  | --       | --  | a32      | a32 | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 40  | 61  | 56  | --   | --  | 76   | 72  | 72     | 68  | 62        | 58  |

a Includes estimated temperature, 32°F, on missing days.





STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued  
 STURGEON RIVER NEAR FOSTER CITY, MICH.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 55      | 51  | 53       | 50  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 33  | 60  | 57  | 67   | 63  | 73   | 64  | 82     | 74  | 70        | 65  |
| 2.....       | 53      | 52  | 53       | 52  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 34  | 58  | 54  | 64   | 60  | 77   | 69  | 83     | 75  | 70        | 68  |
| 3.....       | 56      | 51  | 53       | 52  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 35  | 54  | 51  | 65   | 59  | 77   | 71  | 81     | 75  | 68        | 64  |
| 4.....       | 53      | 53  | 53       | 53  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 34  | 55  | 50  | 65   | 61  | 75   | 69  | 77     | 69  | 66        | 60  |
| 5.....       | 54      | 50  | 54       | 53  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 33    | 58  | 50  | 62  | 60   | 72  | 65   | 77  | 63     | 65  | 58        | 58  |
| 6.....       | 54      | 52  | 53       | 51  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 57  | 51  | 63  | 58   | 76  | 67   | 75  | 65     | 63  | 58        | 57  |
| 7.....       | 54      | 50  | 51       | 45  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 61  | 54  | 66  | 58   | 75  | 69   | 74  | 67     | 63  | 57        | 57  |
| 8.....       | 53      | 50  | 45       | 41  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 34    | 62  | 58  | 67  | 59   | 79  | 71   | 77  | 69     | 64  | 57        | 57  |
| 9.....       | 51      | 47  | 41       | 39  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 61  | 57  | 67  | 61   | 77  | 70   | 77  | 73     | 65  | 58        | 58  |
| 10.....      | 50      | 45  | 39       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 63  | 56  | 71  | 64   | 74  | 67   | 79  | 69     | 66  | 61        | 61  |
| 11.....      | 49      | 45  | 38       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 63  | 55  | 73  | 69   | 73  | 69   | 77  | 61     | 64  | 60        | 60  |
| 12.....      | 52      | 48  | 37       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 60  | 56  | 72  | 66   | 72  | 69   | 75  | 67     | 64  | 60        | 60  |
| 13.....      | 57      | 49  | 37       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 64  | 55  | 71  | 66   | 79  | 67   | 73  | 66     | 64  | 60        | 59  |
| 14.....      | 59      | 55  | 37       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 61  | 53  | 69  | 66   | 79  | 73   | 75  | 65     | 63  | 59        | 63  |
| 15.....      | 58      | 54  | 37       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 37  | 53  | 47  | 54   | 78  | 69   | 74  | 69     | 63  | 60        | 60  |
| 16.....      | 58      | 54  | 35       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 39  | 53  | 47  | 73   | 68  | 75   | 68  | 72     | 66  | 60        | 58  |
| 17.....      | 60      | 55  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 37  | 51  | 46  | 76   | 69  | 78   | 68  | 71     | 64  | 58        | 55  |
| 18.....      | 59      | 54  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 36  | 46  | 47  | 76   | 72  | 80   | 71  | 70     | 64  | 62        | 57  |
| 19.....      | 59      | 50  | 34       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 41  | 52  | 45  | 74   | 69  | 83   | 74  | 70     | 64  | 61        | 60  |
| 20.....      | 54      | 50  | 34       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 55  | 48  | 76  | 68   | 81  | 76   | 70  | 64     | 60  | 56        | 56  |
| 21.....      | 55      | 51  | 33       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 50    | 46  | 54  | 50  | 79   | 71  | 79   | 75  | 72     | 66  | 58        | 57  |
| 22.....      | 56      | 52  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 49    | 46  | 56  | 50  | 78   | 72  | 77   | 72  | 71     | 65  | 58        | 54  |
| 23.....      | 55      | 51  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 56  | 54  | 76   | 70  | 75   | 69  | 70     | 65  | 56        | 54  |
| 24.....      | 51      | 48  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 59  | 52  | 70   | 63  | 75   | 68  | 69     | 62  | 54        | 50  |
| 25.....      | 49      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 58  | 56  | 66   | 63  | 73   | 69  | 70     | 63  | 51        | 48  |
| 26.....      | 51      | 48  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 59  | 56  | 69   | 63  | 75   | 68  | 72     | 66  | 50        | 46  |
| 27.....      | 49      | 45  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 54    | 54  | 57  | 54  | 73   | 64  | 79   | 70  | 67     | 62  | 50        | 46  |
| 28.....      | 49      | 45  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 57    | 54  | 59  | 53  | 70   | 67  | 80   | 72  | 65     | 62  | 50        | 46  |
| 29.....      | 49      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | --       | --  | 32    | 59  | 60    | 57  | 72  | 64  | 83   | 74  | 64   | 61  | 61     | 51  | 46        | 46  |
| 30.....      | 52      | 48  | 32       | 32  | 32       | 32  | 32      | --  | --       | 32  | 60    | 54  | 63    | 59  | 71  | 66  | 80   | 74  | 66   | 60  | 62     | 52  | 48        | 46  |
| 31.....      | 53      | 51  | --       | --  | 32       | 32  | 32      | --  | --       | 32  | 32    | --  | --    | 65  | 61  | --  | --   | 81  | 72   | 66  | 64     | --  | --        | --  |
| Average..... | 54      | 50  | 39       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 39  | 58  | 53  | 70   | 65  | 77   | 70  | 73     | 66  | 60        | 56  |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

MUSKOGON RIVER AT EVART, MICH.

LOCATION --Temperature recorder at gaging station, 500 feet downstream from bridge on U. S. Highway 10 at Ewart, Osceola County, 0.4 mile upstream from Twin Creek, and at mile 123.9.  
 DRAINAGE AREA, 450 square miles, approximately.  
 RECORDS AVAILABLE. --Water temperatures: November 1956 to September 1957.  
 EXTREMES, November 1956 to September 1957. --Water temperatures: Maximum, 74°F Aug. 3; minimum, freezing point Feb. 25, 26.  
 REMARKS. --Stream frozen Jan. 2 to 31, Feb. 4, 5, 8, 11, 12, 14, 15, 17, 19-21, Feb. 27 to Mar. 5, Mar. 8-10. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, November 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer

| Day          | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|--------------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|              | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....       |         |     | --       | --  | 35       | 34      | 35       | 34    | 33    | 39  | 61   | 64   | 73     | 71        |
| 2.....       |         |     | --       | --  | 36       | 35      | 34       | 34    | 33    | 41  | 59   | 62   | 73     | 71        |
| 3.....       |         |     | --       | --  | 37       | 36      | 34       | 35    | 34    | 38  | 59   | 62   | 74     | 72        |
| 4.....       |         |     | --       | --  | 37       | 37      | 33       | 34    | 35    | 34  | 38   | 61   | 73     | 70        |
| 5.....       |         |     | --       | --  | 38       | 37      | 33       | 35    | 34    | 36  | 57   | 63   | 70     | 68        |
| 6.....       |         |     | --       | --  | 38       | 38      | 33       | 35    | 34    | 34  | 57   | 63   | 69     | 66        |
| 7.....       |         |     | --       | --  | 38       | 38      | 33       | 35    | 34    | 33  | 54   | 65   | 69     | 66        |
| 8.....       | 46      | 43  | 38       | 37  | 38       | 37      | 34       | 33    | 36    | 35  | 61   | 65   | 64     | 61        |
| 9.....       | 43      | 41  | 37       | 36  | 34       | 33      | 35       | 34    | 33    | 36  | 61   | 66   | 64     | 61        |
| 10.....      | 41      | 39  | 36       | 35  | 34       | 33      | 35       | 34    | 33    | 36  | 57   | 66   | 71     | 67        |
| 11.....      | 40      | 39  | 36       | 35  | 34       | 33      | 35       | 34    | 33    | 38  | 65   | 64   | 72     | 68        |
| 12.....      | 40      | 40  | 36       | 35  | 34       | 34      | 34       | 34    | 33    | 37  | 66   | 64   | 71     | 68        |
| 13.....      | 41      | 39  | 36       | 35  | 35       | 34      | 35       | 34    | 36    | 33  | 65   | 63   | 70     | 67        |
| 14.....      | 41      | 40  | 37       | 36  | 36       | 34      | 34       | 33    | 38    | 35  | 65   | 62   | 69     | 66        |
| 15.....      | 45      | 41  | 36       | 35  | 35       | 36      | 35       | 34    | 33    | 38  | 58   | 64   | 67     | 66        |
| 16.....      | 45      | 40  | 36       | 35  | 35       | 35      | 34       | 33    | 36    | 35  | 67   | 66   | 68     | 65        |
| 17.....      | 40      | 39  | 35       | 35  | 35       | 35      | 34       | 33    | 36    | 34  | 65   | 66   | 67     | 65        |
| 18.....      | 39      | 38  | 36       | 35  | 35       | 35      | 34       | 33    | 36    | 35  | 68   | 66   | 67     | 64        |
| 19.....      | 39      | 38  | 36       | 35  | 35       | 35      | 34       | 33    | 36    | 34  | 68   | 64   | 66     | 63        |
| 20.....      | 39      | 38  | 36       | 35  | 34       | 34      | 34       | 33    | 36    | 34  | 65   | 62   | 66     | 63        |
| 21.....      | 39      | 39  | 36       | 35  | 34       | 34      | 34       | 33    | 35    | 34  | 67   | 67   | 67     | 64        |
| 22.....      | 40      | 37  | 36       | 36  | 34       | 33      | 33       | 33    | 36    | 35  | 68   | 71   | 69     | 66        |
| 23.....      | 37      | 36  | 36       | 34  | 33       | 33      | 33       | 33    | 37    | 35  | 69   | 68   | 64     | 64        |
| 24.....      | 36      | 36  | 36       | 35  | 34       | 33      | 33       | 33    | 38    | 35  | 67   | 68   | 70     | 66        |
| 25.....      | 36      | 35  | 35       | 34  | 34       | 33      | 33       | 33    | 35    | 35  | 68   | 67   | 64     | 64        |
| 26.....      | 35      | 35  | 35       | 34  | 34       | 34      | 33       | 32    | 37    | 36  | 65   | 68   | 65     | 62        |
| 27.....      | 35      | 35  | 35       | 34  | 34       | 34      | 34       | 33    | 36    | 36  | 60   | 69   | 62     | 57        |
| 28.....      | 36      | 35  | 35       | 34  | 34       | 34      | 34       | 33    | 37    | 36  | 63   | 61   | 62     | 55        |
| 29.....      | 35      | 35  | 35       | 34  | 34       | 34      | --       | --    | 37    | 37  | 63   | 61   | 64     | 54        |
| 30.....      | 35      | 35  | 35       | 34  | 34       | 34      | --       | --    | 37    | 37  | 62   | 70   | 61     | 51        |
| 31.....      | --      | --  | 34       | 33  | 35       | 34      | --       | --    | 39    | 37  | 63   | 72   | 61     | 60        |
| Average..... | --      | --  | 36       | 35  | 34       | 34      | 34       | 33    | 35    | 45  | 64   | 68   | 66     | 60        |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## MANISTEE RIVER NEAR GRAYLING, MICH.

LOCATION.--Temperature recorder at gaging station, 25 feet upstream from bridge on State Highway 72, 2½ miles downstream from Goose Creek, and 6½ miles northwest of Grayling, Crawford County.

DRAINAGE AREA.--159 square miles.

RECORDS AVAILABLE.--Water temperatures: May to September 1957.

EXTREMES, May to September 1957.--Water temperatures: Maximum, 73°F June 22, July 20, Aug. 3.

REMARKS.--Records of discharge for the water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, May to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 66   | 59  | 65   | 55  | 70     | 62  | 65        | 58  |
| 2.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 61   | 53  | 65   | 58  | 70     | 61  | 65        | 61  |
| 3.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 63   | 54  | 68   | 62  | 73     | 65  | 64        | 60  |
| 4.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 64   | 56  | 66   | 62  | 70     | 61  | 61        | 56  |
| 5.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 62   | 54  | 65   | 59  | 64     | 54  | 59        | 53  |
| 6.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 59   | 52  | 67   | 58  | 65     | 56  | 58        | 52  |
| 7.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 65   | 55  | 67   | 60  | 67     | 57  | 59        | 53  |
| 8.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 66   | 56  | 66   | 63  | 66     | 61  | 59        | 51  |
| 9.....       |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 66   | 55  | 66   | 60  | 65     | 60  | 58        | 52  |
| 10.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 70   | 60  | 64   | 57  | 68     | 58  | 57        | 54  |
| 11.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 69   | 63  | 64   | 59  | 68     | 60  | 56        | 53  |
| 12.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 68   | 60  | 63   | 58  | 66     | 59  | 55        | 54  |
| 13.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 66   | 58  | 68   | 60  | 64     | 57  | 60        | 54  |
| 14.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 64   | 57  | 70   | 62  | 67     | 57  | 58        | 54  |
| 15.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 70   | 62  | 68   | 61  | 66     | 59  | 58        | 55  |
| 16.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 68   | 61  | 67   | 59  | 63     | 56  | 58        | 54  |
| 17.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 68   | 64  | 68   | 58  | 63     | 55  | 58        | 51  |
| 18.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 70   | 63  | 70   | 60  | 61     | 55  | 60        | 54  |
| 19.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 69   | 60  | 72   | 62  | 62     | 54  | 62        | 55  |
| 20.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 64   | 54  | 73   | 63  | 64     | 56  | 62        | 56  |
| 21.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 58  | 51  | 71   | 60  | 72   | 65  | 65     | 58  | 56        | 55  |
| 22.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 63  | 51  | 73   | 63  | 71   | 66  | 63     | 55  | 57        | 55  |
| 23.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 63  | 55  | 71   | 66  | 68   | 59  | 62     | 56  | 56        | 52  |
| 24.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 61  | 50  | 66   | 60  | 68   | 58  | 61     | 59  | 52        | 49  |
| 25.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 60  | 54  | 62   | 57  | 66   | 60  | 64     | 55  | 54        | 49  |
| 26.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 63  | 55  | 61   | 57  | 62   | 58  | 63     | 56  | 53        | 48  |
| 27.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 62  | 52  | 66   | 56  | 65   | 57  | 61     | 56  | 51        | 45  |
| 28.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 60  | 57  | 65   | 58  | 69   | 61  | 59     | 54  | 51        | 45  |
| 29.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 58  | 55  | 63   | 60  | 71   | 63  | 60     | 54  | 52        | 46  |
| 30.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 55  | 53  | 62   | 59  | 68   | 60  | 64     | 58  | 56        | 48  |
| 31.....      |         |     |          |     |          |     |         |     |          |     |       |     |       |     | 65  | 56  | --   | --  | 70   | 61  | 60     | 58  | 56        | 48  |
| Average..... |         |     |          |     |          |     |         |     |          |     |       |     |       |     | --  | --  | 66   | 58  | 68   | 60  | 64     | 57  | 58        | 53  |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## EAST BRANCH PINE RIVER NEAR TUSTIN, MICH.

LOCATION --Temperature recorder at gaging station, 75 feet from highway bridge, half a mile upstream from North Branch, 2 $\frac{3}{4}$  miles west of Tustin, Oscoda County and 5 $\frac{1}{2}$  miles northwest of Le Roy.

DRAINAGE AREA--63 square miles, approximately.

RECORDS AVAILABLE--Water temperatures: July 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Minimum, 33° F. on many days during February and March.

EXTREMES, 1952-57.--Water temperatures: Maximum, 73° F. July 4, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 29-31, Jan. 8-17, Jan. 24 to Feb. 1, Feb. 10, 15-18, 21, Feb. 25 to Mar. 2, Mar. 7-9. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer--

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 53      | 50  | 51       | 49  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 37    | 37  | 62  | 58  | 61   | 60  |      |     | --     | --  | 61        | 58  |
| 2.....       | 54      | 52  | 52       | 51  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 37    | 37  | 62  | 56  | 60   | 56  |      |     | --     | --  | 61        | 60  |
| 3.....       | 54      | 52  | 52       | 51  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 37    | 37  | 62  | 56  | 60   | 56  |      |     | --     | --  | 61        | 60  |
| 4.....       | 52      | 52  | 52       | 52  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 36    | 36  | 56  | 53  | 59   | 57  |      |     | --     | --  | 61        | 59  |
| 5.....       | 52      | 50  | 52       | 52  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 35    | 35  | 56  | 53  | 59   | 57  |      |     | --     | --  | 59        | 56  |
| 6.....       | 50      | 50  | 52       | 50  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 35    | 35  | 58  | 53  | 58   | 55  |      |     | --     | --  | 57        | 54  |
| 7.....       | 50      | 50  | 50       | 46  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 34    | 34  | 62  | 56  | 59   | 57  |      |     | --     | --  | 57        | 54  |
| 8.....       | 51      | 50  | 46       | 44  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 34    | 34  | 64  | 59  | 59   | 55  |      |     | --     | --  | 56        | 53  |
| 9.....       | 50      | 49  | 44       | 41  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 34    | 34  | 54  | 57  | 60   | 55  |      |     | 58     | 58  | 56        | 53  |
| 10.....      | 49      | 47  | 41       | 39  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 34    | 34  | 57  | 54  | 60   | 59  |      |     | 58     | 57  | 56        | 55  |
| 11.....      | 47      | 45  | 40       | 40  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 37    | 37  | 54  | 54  | 60   | 60  |      |     | 58     | 57  | 56        | 56  |
| 12.....      | 48      | 45  | 40       | 40  | 36       | 36  | 34      | 34  | 34       | 34  | 33    | 33  | 37    | 35  | 54  | 54  | 60   | 60  |      |     | 58     | 57  | 56        | 56  |
| 13.....      | 53      | 48  | 40       | 40  | 35       | 35  | 34      | 34  | 34       | 34  | 33    | 33  | 35    | 35  | 59  | 54  | --   | --  |      |     | 59     | 57  | 59        | 56  |
| 14.....      | 53      | 53  | 41       | 40  | 35       | 35  | 34      | 34  | 34       | 34  | 33    | 33  | 38    | 35  | 59  | 58  | --   | --  |      |     | 59     | 58  | 58        | 57  |
| 15.....      | 53      | 53  | 46       | 41  | 35       | 35  | 34      | 34  | 34       | 34  | 34    | 33  | 39    | 37  | 58  | 54  | --   | --  |      |     | 60     | 58  | 58        | 57  |
| 16.....      | 53      | 53  | 46       | 40  | 35       | 35  | 34      | 34  | 34       | 34  | 33    | 33  | 40    | 39  | 54  | 51  | --   | --  |      |     | 60     | 58  | 58        | 57  |
| 17.....      | 53      | 53  | 40       | 39  | 35       | 35  | 34      | 34  | 34       | 34  | 33    | 33  | 44    | 40  | 53  | 51  | --   | --  |      |     | 60     | 57  | 57        | 53  |
| 18.....      | 53      | 52  | 39       | 37  | 35       | 35  | 34      | 34  | 34       | 33  | 33    | 33  | 44    | 40  | 51  | 50  | --   | --  |      |     | 59     | 56  | 57        | 54  |
| 19.....      | 52      | 49  | 37       | 37  | 35       | 35  | 34      | 34  | 34       | 33  | 33    | 33  | 50    | 44  | 50  | 50  | --   | --  |      |     | 59     | 54  | 56        | 56  |
| 20.....      | 50      | 49  | 38       | 37  | 35       | 35  | 34      | 34  | 34       | 33  | 33    | 33  | 56    | 50  | 54  | 50  | --   | --  |      |     | 58     | 55  | 59        | 56  |
| 21.....      | 52      | 50  | 39       | 38  | 35       | 35  | 34      | 34  | 33       | 33  | 34    | 34  | 56    | 53  | 54  | 54  | --   | --  |      |     | 60     | 56  | 58        | 58  |
| 22.....      | 53      | 51  | 39       | 37  | 35       | 35  | 34      | 34  | 33       | 33  | 34    | 34  | 55    | 51  | 61  | 58  | --   | --  |      |     | 60     | 56  | 58        | 56  |
| 23.....      | 52      | 50  | 37       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 35    | 34  | 56    | 53  | 60  | 58  | --   | --  |      |     | 59     | 56  | 56        | 53  |
| 24.....      | 50      | 48  | 36       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 35    | 34  | 57    | 56  | 58  | 54  | --   | --  |      |     | 58     | 53  | 51        | 58  |
| 25.....      | 48      | 46  | 36       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 35    | 34  | 57    | 57  | 58  | 57  | --   | --  |      |     | 60     | 57  | 54        | 52  |
| 26.....      | 48      | 48  | 36       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 34    | 34  | 60    | 53  | 59  | 57  | --   | --  |      |     | 60     | 57  | 54        | 51  |
| 27.....      | 48      | 46  | 36       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 35    | 34  | 60    | 58  | 59  | 55  | --   | --  |      |     | 60     | 57  | 51        | 49  |
| 28.....      | 47      | 46  | 36       | 36  | 35       | 35  | 34      | 34  | 33       | 33  | 35    | 34  | 59    | 54  | 55  | 52  | --   | --  |      |     | 58     | 57  | 49        | 48  |
| 29.....      | 47      | 45  | 36       | 36  | 35       | 35  | 34      | 34  | --       | --  | 35    | 35  | 59    | 55  | 54  | 54  | --   | --  |      |     | 57     | 57  | 49        | 48  |
| 30.....      | 49      | 46  | 36       | 36  | 34       | 34  | 34      | 34  | --       | --  | 36    | 34  | 61    | 56  | 54  | 54  | --   | --  |      |     | 58     | 57  | 52        | 48  |
| 31.....      | 49      | 49  | --       | --  | 34       | 34  | 34      | 34  | --       | --  | 37    | 34  | --    | --  | 60  | 54  | --   | --  |      |     | 58     | 58  | --        | --  |
| Average..... | 51      | 49  | 42       | 41  | 35       | 35  | 34      | 34  | 34       | 34  | 34    | 33  | 45    | 43  | 57  | 54  | --   | --  |      |     | --     | --  | 57        | 55  |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## PINE RIVER NEAR LE ROY, MICH.

LOCATION.--Temperature recorder at gaging station, 15 feet downstream from highway bridge, 3½ miles downstream from East Branch, 5 miles northwest of Le Roy, Osceola County, and 5½ miles southwest of Tustin.

DRAINAGE AREA.--118 square miles.

RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 69°F June 22, 1953, Aug. 1, 2, 5, 6, 1955; minimum, freezing point on many days during winter months.

EXTREMES, 1953-57.--Water temperatures: Maximum, 69°F July 22, 1953, Aug. 1, 2, 5, 6, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 11-14, 19, Dec. 27 to Jan. 2, Jan. 8-27, Feb. 5, Feb. 9 to Mar. 11. Temperatures given for these periods are for the underflow. Records of discharge for the water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer<sup>7</sup>

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 52      | 50  | 48       | 37  | 36       | 35  | 35      | 35  | 35       | 36  | 34    | 41  | 41    | 59  | 55  | 60  | 58   | 61  | 58   | 64  | 60     | 59  | 56        |  |
| 2.....       | 53      | 51  | 52       | 38  | 37       | 35  | 35      | 36  | 35       | 35  | 34    | 41  | 49    | 58  | 54  | 59  | 56   | 62  | 62   | 61  | 61     | 59  | 58        |  |
| 3.....       | 53      | 50  | 52       | 38  | 37       | 35  | 35      | 36  | 36       | 35  | 34    | 41  | 38    | 54  | 50  | 59  | 56   | 61  | 60   | 66  | 62     | 60  | 58        |  |
| 4.....       | 52      | 51  | 52       | 38  | 38       | 36  | 36      | 36  | 34       | 35  | 33    | 39  | 37    | 53  | 50  | 59  | 56   | 63  | 60   | 64  | 60     | 58  | 57        |  |
| 5.....       | 51      | 50  | 52       | 38  | 38       | 36  | 36      | 34  | 33       | 36  | 33    | 38  | 37    | 56  | 50  | 59  | 56   | 62  | 60   | 60  | 57     | 57  | 53        |  |
| 6.....       | 51      | 50  | 51       | 49  | 38       | 38  | 36      | 36  | 35       | 34  | 37    | 35  | 38    | 56  | 50  | 57  | 54   | 63  | 59   | 60  | 56     | 55  | 52        |  |
| 7.....       | 51      | 50  | 50       | 47  | 38       | 38  | 36      | 35  | 36       | 35  | 37    | 35  | 37    | 58  | 52  | 58  | 55   | 62  | 59   | 61  | 57     | 54  | 52        |  |
| 8.....       | 51      | 50  | 47       | 44  | 38       | 37  | 35      | 34  | 36       | 34  | 37    | 36  | 36    | 60  | 54  | 59  | 55   | 64  | 60   | 62  | 59     | 53  | 52        |  |
| 9.....       | 50      | 50  | 44       | 42  | 37       | 36  | 35      | 35  | 36       | 35  | 37    | 33  | 36    | 59  | 54  | 60  | 55   | 65  | 64   | 62  | 61     | 53  | 51        |  |
| 10.....      | 50      | 48  | 42       | 40  | 36       | 36  | 35      | 34  | 36       | 35  | 37    | 34  | 38    | 54  | 51  | 62  | 57   | 65  | 61   | 64  | 61     | 54  | 53        |  |
| 11.....      | 48      | 47  | 41       | 40  | 37       | 36  | 34      | 34  | 35       | 33  | 37    | 36  | 39    | 52  | 52  | 62  | 60   | 62  | 61   | 64  | 61     | 54  | 53        |  |
| 12.....      | 48      | 47  | 41       | 41  | 37       | 36  | 34      | 34  | 34       | 33  | 37    | 35  | 39    | 57  | 53  | 62  | 59   | 61  | 60   | 64  | 61     | 54  | 53        |  |
| 13.....      | 52      | 48  | 42       | 41  | 36       | 35  | 34      | 34  | 35       | 34  | 36    | 35  | 37    | 56  | 53  | 61  | 59   | 65  | 61   | 62  | 59     | 56  | 54        |  |
| 14.....      | 53      | 52  | 43       | 42  | 35       | 35  | 34      | 34  | 35       | 34  | 38    | 36  | 40    | 58  | 54  | 61  | 58   | 66  | 62   | 63  | 59     | 56  | 54        |  |
| 15.....      | 54      | 53  | 46       | 43  | 36       | 35  | 34      | 34  | 35       | 33  | 38    | 34  | 42    | 39  | 55  | 52  | 64   | 60  | 65   | 62  | 61     | 59  | 55        |  |
| 16.....      | 54      | 53  | 46       | 42  | 36       | 36  | 34      | 34  | 35       | 34  | 34    | 42  | 42    | 52  | 49  | 64  | 60   | 64  | 60   | 61  | 58     | 55  | 54        |  |
| 17.....      | 54      | 52  | 42       | 40  | 36       | 36  | 34      | 34  | 35       | 34  | 36    | 34  | 44    | 51  | 49  | 66  | 62   | 64  | 59   | 60  | 58     | 54  | 51        |  |
| 18.....      | 53      | 52  | 40       | 39  | 36       | 34  | 34      | 35  | 34       | 35  | 36    | 35  | 44    | 49  | 49  | 67  | 64   | 64  | 60   | 58  | 56     | 54  | 52        |  |
| 19.....      | 52      | 50  | 40       | 39  | 36       | 35  | 34      | 34  | 35       | 34  | 35    | 34  | 48    | 49  | 49  | 66  | 60   | 64  | 60   | 58  | 55     | 56  | 53        |  |
| 20.....      | 50      | 50  | 40       | 36  | 36       | 35  | 34      | 36  | 34       | 37  | 35    | 54  | 48    | 53  | 48  | 61  | 56   | 65  | 61   | 58  | 56     | 55  | 53        |  |
| 21.....      | 52      | 50  | 40       | 38  | 36       | 36  | 35      | 35  | 34       | 38  | 36    | 54  | 52    | 53  | 52  | 64  | 59   | 66  | 63   | 60  | 57     | 55  | 55        |  |
| 22.....      | 52      | 51  | 40       | 39  | 38       | 36  | 35      | 36  | 35       | 38  | 37    | 53  | 50    | 59  | 51  | 66  | 61   | 65  | 65   | 60  | 57     | 55  | 54        |  |
| 23.....      | 52      | 50  | 39       | 37  | 38       | 37  | 35      | 34  | 36       | 35  | 39    | 53  | 51    | 60  | 56  | 65  | 62   | 65  | 61   | 59  | 57     | 54  | 52        |  |
| 24.....      | 50      | 49  | 37       | 36  | 37       | 37  | 34      | 34  | 37       | 35  | 39    | 54  | 53    | 53  | 56  | 63  | 59   | 63  | 59   | 58  | 58     | 52  | 50        |  |
| 25.....      | 49      | 47  | 36       | 36  | 37       | 37  | 34      | 34  | 37       | 34  | 39    | 54  | 53    | 55  | 59  | 58  | 62   | 60  | 59   | 56  | 52     | 50  | 50        |  |
| 26.....      | 49      | 48  | 36       | 36  | 37       | 37  | 34      | 34  | 34       | 34  | 37    | 56  | 51    | 58  | 55  | 58  | 56   | 61  | 60   | 59  | 56     | 52  | 50        |  |
| 27.....      | 48      | 47  | 36       | 36  | 37       | 37  | 34      | 34  | 34       | 33  | 40    | 57  | 52    | 58  | 54  | 60  | 57   | 62  | 60   | 59  | 57     | 50  | 49        |  |
| 28.....      | 47      | 46  | 37       | 36  | 37       | 37  | 34      | 34  | 35       | 33  | 40    | 55  | 52    | 54  | 51  | 60  | 59   | 64  | 60   | 57  | 55     | 49  | 48        |  |
| 29.....      | 47      | 46  | 37       | 36  | 37       | 36  | 35      | 34  | --       | --  | 40    | 53  | 53    | 53  | 53  | 61  | 58   | 64  | 61   | 55  | 55     | 49  | 48        |  |
| 30.....      | 48      | 47  | 36       | 36  | 36       | 35  | 34      | --  | --       | --  | 40    | 57  | 54    | 53  | 61  | 60  | 65   | 62  | 57   | 55  | 50     | 48  | --        |  |
| 31.....      | 48      | 48  | --       | --  | 35       | 35  | 34      | --  | --       | 41  | 38    | --  | --    | 58  | 53  | --  | --   | 64  | 60   | 56  | 56     | --  | --        |  |
| Average..... | 51      | 49  | 43       | 37  | 36       | 35  | 34      | 35  | 34       | 37  | 35    | 46  | 43    | 55  | 52  | 61  | 58   | 64  | 61   | 60  | 58     | 54  | 53        |  |

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## PINE RIVER NEAR HOXEYVILLE, MICH.

LOCATION.--Temperature recorder at gaging station, 500 feet upstream from bridge on State Highway 37, 4½ miles northwest of Hoxeyville, Wexford County, 7 miles east of Wellston, and 9 miles upstream from mouth.

DRAINAGE AREA.--251 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 66°F June 18; minimum, 34°F Jan. 21, Jan. 23 to Feb. 1.

EXTREMES, 1952-57.--Water temperatures: Maximum, 68°F Aug. 1, 1955; minimum, freezing point Jan. 21, 1955.

REMARKS.--Stream frozen Jan. 25-29, Feb. 6, Feb. 27 to Mar. 2, Mar. 5-10. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1.....       | 52      | 50  | 49       | 38  | 38       | 36  | 36      | 35  | 34       | 37  | 35    | 42  | 41    | 55  | 53  | 57  | 55   | 61  | 58   | 64  | 60     | 57  | 55        |    |
| 2.....       | 53      | 51  | 50       | 39  | 38       | 36  | 36      | 36  | 35       | 37  | 36    | 43  | 42    | 55  | 52  | 56  | 54   | 61  | 57   | 64  | 60     | 58  | 57        |    |
| 3.....       | 53      | 51  | 40       | 39  | 36       | 36  | 36      | 36  | 35       | 36  | 35    | 43  | 41    | 52  | 50  | 57  | 54   | 62  | 59   | 65  | 62     | 58  | 57        |    |
| 4.....       | 52      | 51  | 51       | 40  | 40       | 36  | 36      | 36  | 36       | 36  | 35    | 41  | 39    | 52  | 50  | 57  | 55   | 62  | 60   | 64  | 60     | 57  | 55        |    |
| 5.....       | 52      | 50  | 51       | 40  | 40       | 36  | 36      | 36  | 35       | 37  | 36    | 40  | 39    | 52  | 49  | 56  | 54   | 63  | 60   | 60  | 57     | 55  | 53        |    |
| 6.....       | 51      | 50  | 51       | 40  | 40       | 36  | 36      | 36  | 35       | 38  | 37    | 40  | 38    | 53  | 49  | 55  | 53   | 63  | 60   | 59  | 55     | 53  | 52        |    |
| 7.....       | 51      | 51  | 49       | 40  | 40       | 36  | 36      | 37  | 36       | 38  | 38    | 38  | 38    | 55  | 51  | 57  | 54   | 62  | 60   | 60  | 56     | 53  | 52        |    |
| 8.....       | 51      | 50  | 49       | 48  | 40       | 39  | 36      | 37  | 37       | 38  | 37    | 38  | 38    | 57  | 54  | 57  | 54   | 62  | 60   | 60  | 57     | 53  | 51        |    |
| 9.....       | 50      | 50  | 48       | 45  | 39       | 38  | 36      | 37  | 37       | 37  | 37    | 38  | 38    | 57  | 53  | 58  | 54   | 64  | 62   | 60  | 58     | 53  | 51        |    |
| 10.....      | 50      | 49  | 45       | 44  | 38       | 38  | 36      | 37  | 37       | 37  | 37    | 39  | 38    | 53  | 51  | 59  | 55   | 64  | 62   | 61  | 57     | 54  | 53        |    |
| 11.....      | 49      | 47  | 45       | 44  | 38       | 38  | 36      | 35  | 37       | 36  | 39    | 41  | 39    | 51  | 51  | 59  | 58   | 62  | 61   | 62  | 58     | 54  | 53        |    |
| 12.....      | 49      | 47  | 45       | 45  | 38       | 37  | 35      | 35  | 36       | 36  | 40    | 39  | 41    | 51  | 51  | 60  | 57   | 61  | 60   | 62  | 59     | 53  | 53        |    |
| 13.....      | 51      | 49  | 45       | 45  | 37       | 36  | 35      | 35  | 36       | 36  | 40    | 40  | 39    | 54  | 51  | 59  | 57   | 64  | 61   | 60  | 58     | 55  | 53        |    |
| 14.....      | 51      | 46  | 45       | 36  | 36       | 35  | 35      | 36  | 36       | 40  | 40    | 41  | 39    | 54  | 54  | 58  | 56   | 64  | 62   | 61  | 57     | 55  | 53        |    |
| 15.....      | 52      | 51  | 46       | 45  | 36       | 36  | 35      | 35  | 36       | 36  | 40    | 40  | 42    | 40  | 54  | 61  | 58   | 64  | 62   | 61  | 58     | 55  | 53        |    |
| 16.....      | 53      | 53  | 47       | 44  | 38       | 38  | 35      | 35  | 36       | 36  | 38    | 36  | 43    | 42  | 52  | 49  | 61   | 59  | 64   | 61  | 60     | 58  | 55        | 53 |
| 17.....      | 53      | 53  | 44       | 44  | 39       | 38  | 35      | 35  | 36       | 36  | 38    | 36  | 45    | 43  | 52  | 49  | 65   | 61  | 64   | 60  | 59     | 57  | 53        | 52 |
| 18.....      | 53      | 52  | 44       | 43  | 39       | 37  | 35      | 35  | 36       | 36  | 38    | 38  | 45    | 45  | 49  | 49  | 66   | 63  | 64   | 60  | 58     | 56  | 54        | 52 |
| 19.....      | 52      | 51  | 43       | 43  | 37       | 37  | 35      | 35  | 36       | 36  | 38    | 38  | 48    | 45  | 49  | 49  | 64   | 59  | 65   | 61  | 57     | 54  | 55        | 53 |
| 20.....      | 51      | 50  | 43       | 43  | 38       | 37  | 35      | 35  | 36       | 36  | 39    | 38  | 52    | 48  | 52  | 49  | 60   | 57  | 65   | 62  | 58     | 55  | 54        | 54 |
| 21.....      | 51      | 50  | 43       | 43  | 39       | 38  | 35      | 34  | 36       | 36  | 39    | 39  | 52    | 51  | 52  | 51  | 63   | 59  | 65   | 62  | 59     | 56  | 54        | 54 |
| 22.....      | 51      | 51  | 43       | 41  | 39       | 39  | 36      | 35  | 37       | 36  | 41    | 39  | 52    | 50  | 56  | 51  | 64   | 61  | 64   | 63  | 59     | 56  | 54        | 53 |
| 23.....      | 51      | 50  | 40       | 38  | 39       | 39  | 36      | 34  | 37       | 37  | 41    | 41  | 53    | 51  | 56  | 55  | 64   | 62  | 63   | 60  | 57     | 55  | 53        | 52 |
| 24.....      | 50      | 49  | 38       | 38  | 39       | 39  | 34      | 38  | 37       | 41  | 41    | 53  | 53    | 55  | 53  | 62  | 58   | 63  | 60   | 56  | 55     | 52  | 50        | 50 |
| 25.....      | 49      | 48  | 38       | 38  | 39       | 39  | 34      | 39  | 38       | 41  | 40    | 53  | 53    | 55  | 53  | 58  | 57   | 62  | 60   | 57  | 54     | 52  | 50        | 50 |
| 26.....      | 49      | 49  | 39       | 38  | 39       | 39  | 34      | 39  | 37       | 40  | 39    | 53  | 51    | 55  | 53  | 57  | 56   | 60  | 59   | 57  | 54     | 52  | 50        | 50 |
| 27.....      | 49      | 48  | 39       | 39  | 39       | 39  | 34      | 37  | 35       | 41  | 39    | 53  | 53    | 55  | 52  | 59  | 56   | 61  | 58   | 56  | 55     | 50  | 48        | 48 |
| 28.....      | 48      | 47  | 39       | 39  | 39       | 39  | 34      | 35  | 35       | 41  | 40    | 53  | 51    | 52  | 50  | 59  | 57   | 62  | 60   | 53  | 53     | 49  | 48        | 48 |
| 29.....      | 47      | 47  | 39       | 39  | 39       | 37  | 34      | 34  | --       | --  | 41    | 54  | 52    | 52  | 52  | 60  | 57   | 64  | 60   | 53  | 53     | 49  | 48        | 48 |
| 30.....      | 48      | 47  | 39       | 38  | 37       | 36  | 34      | 34  | --       | --  | 41    | 40  | 55    | 52  | 52  | 51  | 60   | 59  | 64   | 61  | 53     | 53  | 51        | 49 |
| 31.....      | 49      | 48  | --       | --  | 36       | 36  | 34      | 34  | --       | --  | 41    | 41  | --    | --  | 55  | 51  | --   | --  | 64   | 60  | 55     | 53  | --        | -- |
| Average..... | 51      | 50  | 45       | 44  | 39       | 38  | 35      | 35  | 36       | 36  | 39    | 38  | 46    | 44  | 53  | 51  | 60   | 57  | 63   | 60  | 59     | 56  | 54        | 52 |





## STREAMS TRIBUTARY TO LAKE HURON

## PIGEON RIVER NEAR VANDERBILT, MICH.

LOCATION.--Temperature recorder at gaging station at Pigeon River Fisheries Experiment Station, 10 miles east of Vanderbilt, Otsego County, and 10½ miles southeast of Wolverine.

DRAINAGE AREA.--63 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 73°F July 20, 30, Aug. 3; minimum, freezing point on many days during December, January, February and March.

EXTREMES, 1950-57.--Water temperatures: Maximum, 81°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 12-14, 18-19, Jan. 1-6, 9-19, 22, Jan. 24 to Feb. 16, Feb. 19-20, Feb. 27 to Mar. 1, Mar. 3-5, 8-10. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 56      | 50  | 52       | 51  | --       | --  | 33      | 33  | 32       | 32  | 35    | 33  | 40    | 39  | 59  | 52  | 63   | 55  | 64   | 53  | 70     | 58  | 64        | 56  |
| 2.....       | 55      | 51  | 54       | 52  | --       | --  | 33      | 33  | 32       | 32  | 35    | 32  | 42    | 37  | 57  | 49  | 59   | 50  | 65   | 55  | 71     | 59  | 65        | 59  |
| 3.....       | 57      | 50  | 54       | 53  | 36       | 34  | 33      | 33  | 32       | 32  | 34    | 32  | 42    | 37  | 54  | 47  | 59   | 50  | 65   | 58  | 73     | 63  | 63        | 60  |
| 4.....       | 56      | 51  | 54       | 53  | 34       | 33  | 33      | 33  | 32       | 32  | 34    | 32  | 37    | 34  | 54  | 46  | 61   | 51  | 64   | 58  | 67     | 59  | 62        | 56  |
| 5.....       | 56      | 50  | 54       | 53  | 36       | 35  | 33      | 33  | 32       | 32  | 34    | 32  | 36    | 34  | 56  | 45  | 55   | 51  | 64   | 56  | 64     | 53  | 61        | 53  |
| 6.....       | 53      | 50  | 52       | 50  | 36       | 36  | 33      | 33  | 32       | 32  | 35    | 33  | 35    | 35  | 58  | 47  | 53   | 49  | 67   | 54  | 66     | 54  | 61        | 51  |
| 7.....       | 52      | 49  | 50       | 47  | 37       | 36  | 33      | 32  | 32       | 32  | 36    | 32  | 39    | 34  | 61  | 50  | 60   | 50  | 64   | 57  | 68     | 54  | 61        | 53  |
| 8.....       | 52      | 46  | 47       | 44  | 36       | 35  | 32      | 32  | 32       | 32  | 38    | 32  | 39    | 36  | 63  | 53  | 62   | 50  | 62   | 59  | 64     | 59  | 60        | 50  |
| 9.....       | 50      | 48  | 44       | 40  | 35       | 34  | 32      | 32  | 33       | 32  | 37    | 32  | 39    | 35  | 58  | 54  | 62   | 50  | 61   | 56  | 61     | 58  | 60        | 50  |
| 10.....      | 49      | 45  | 40       | 37  | 35       | 34  | 32      | 32  | 34       | 33  | 36    | 32  | 42    | 35  | 57  | 50  | 66   | 54  | 63   | 53  | 69     | 57  | 56        | 54  |
| 11.....      | 48      | 44  | 39       | 38  | 35       | 32  | 32      | 32  | 34       | 32  | 34    | 33  | 43    | 36  | 56  | 50  | 62   | 58  | 65   | 56  | 67     | 57  | 55        | 53  |
| 12.....      | 50      | 46  | 38       | 38  | 34       | 32  | 32      | 32  | 32       | 32  | 37    | 34  | 40    | 36  | 54  | 49  | 64   | 55  | 62   | 56  | 65     | 55  | 56        | 54  |
| 13.....      | 55      | 48  | 39       | 38  | 34       | 33  | 32      | 32  | 33       | 32  | 38    | 34  | 40    | 35  | 55  | 51  | 59   | 54  | 66   | 57  | 67     | 61  | 53        | 50  |
| 14.....      | 57      | 53  | 40       | 37  | 34       | 33  | 32      | 32  | 34       | 32  | 42    | 36  | 44    | 38  | 52  | 50  | 61   | 54  | 68   | 59  | 67     | 56  | 58        | 54  |
| 15.....      | 59      | 55  | 42       | 40  | 34       | 33  | 32      | 32  | 32       | 32  | 40    | 34  | 46    | 37  | 50  | 44  | 66   | 57  | 67   | 56  | 63     | 57  | 60        | 55  |
| 16.....      | 60      | 55  | 42       | 38  | 34       | 33  | 32      | 32  | 33       | 32  | 34    | 33  | 44    | 42  | 48  | 40  | 65   | 58  | 66   | 55  | 64     | 53  | 58        | 54  |
| 17.....      | 60      | 57  | 34       | 37  | 34       | 33  | 32      | 32  | 34       | 32  | 35    | 34  | 45    | 41  | 46  | 43  | 65   | 56  | 67   | 54  | 62     | 50  | 61        | 51  |
| 18.....      | 56      | 50  | 39       | 36  | 35       | 33  | 32      | 32  | 34       | 33  | 38    | 33  | 47    | 42  | 49  | 43  | 66   | 58  | 70   | 57  | 59     | 52  | 61        | 52  |
| 19.....      | 54      | 49  | 38       | 37  | 35       | 33  | 32      | 32  | 34       | 32  | 35    | 34  | 47    | 44  | 46  | 44  | 62   | 57  | 72   | 59  | 63     | 51  | 63        | 53  |
| 20.....      | 52      | 47  | 39       | 37  | 35       | 32  | 32      | 32  | 34       | 32  | 39    | 34  | 53    | 47  | 54  | 42  | 61   | 52  | 73   | 60  | 61     | 52  | 59        | 54  |
| 21.....      | 52      | 47  | 38       | 37  | 35       | 33  | 32      | 32  | 35       | 33  | 43    | 36  | 52    | 48  | 49  | 47  | 68   | 56  | 70   | 62  | 65     | 54  | 56        | 54  |
| 22.....      | 54      | 49  | 37       | 34  | 35       | 33  | 32      | 32  | 35       | 33  | 42    | 37  | 51    | 47  | 56  | 47  | 71   | 60  | 71   | 62  | 63     | 51  | 57        | 53  |
| 23.....      | 52      | 46  | 34       | 33  | 36       | 35  | 32      | 32  | 35       | 33  | 42    | 37  | 54    | 48  | 54  | 49  | 70   | 62  | 68   | 57  | 59     | 54  | 54        | 51  |
| 24.....      | 50      | 47  | 34       | 33  | 36       | 35  | 32      | 32  | 35       | 33  | 41    | 37  | 54    | 50  | 57  | 47  | 63   | 57  | 68   | 55  | 59     | 56  | 51        | 48  |
| 25.....      | 50      | 45  | 34       | 33  | --       | --  | 32      | 32  | 36       | 35  | 40    | 36  | 52    | 48  | 53  | 50  | 62   | 55  | 63   | 57  | 65     | 54  | 52        | 48  |
| 26.....      | 48      | 46  | --       | --  | --       | --  | 32      | 32  | 38       | 35  | 40    | 36  | 50    | 46  | 58  | 51  | 58   | 54  | 60   | 57  | 64     | 54  | 52        | 47  |
| 27.....      | 50      | 45  | --       | --  | --       | --  | 32      | 32  | 38       | 32  | 42    | 36  | 50    | 48  | 54  | 48  | 64   | 54  | 64   | 55  | 60     | 53  | 50        | 44  |
| 28.....      | 50      | 45  | --       | --  | --       | --  | 32      | 32  | 38       | 32  | 42    | 37  | 53    | 47  | 57  | 46  | 60   | 56  | 70   | 57  | 56     | 53  | 51        | 44  |
| 29.....      | 50      | 46  | --       | --  | --       | --  | 32      | 32  | --       | --  | 42    | 37  | 55    | 47  | 52  | 50  | 61   | 54  | 72   | 61  | 55     | 53  | 52        | 44  |
| 30.....      | 52      | 47  | --       | --  | --       | --  | 32      | 32  | --       | --  | 43    | 37  | 59    | 49  | 56  | 50  | 60   | 56  | 73   | 62  | 61     | 54  | 54        | 49  |
| 31.....      | 52      | 49  | --       | --  | --       | --  | 32      | 32  | --       | --  | 42    | 37  | --    | --  | 60  | 53  | --   | --  | 71   | 59  | 58     | 56  | --        | --  |
| Average..... | 53      | 49  | 43       | 41  | --       | --  | 32      | 32  | 34       | 32  | 38    | 34  | 46    | 41  | 55  | 48  | 62   | 54  | 67   | 57  | 64     | 55  | 58        | 52  |

Temperature (°F) of water, water year October 1956 to September 1957  
/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph--

## STREAMS TRIBUTARY TO LAKE HURON--Continued

AU SABLE RIVER AT GRAYLING, MICH.

LOCATION.--Temperature recorder at gaging station, 65 feet upstream from bridge on U. S. Highway 27 at Grayling, Crawford County, and three-quarters of a mile upstream from East Branch.

DRAINAGE AREA.--110 square miles.

RECORDS AVAILABLE.--Water temperatures: March 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 78° F July 20-22; minimum, freezing point on many days during December, January and February.

EXTREMES, 1953-57.--Water temperatures: Maximum, 80° F June 20, 21, 1953, July 6, 7, Aug. 1, 2, 5, 6, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Nov. 25-29, Jan. 9-17, 25, 26, Feb. 3-4, 17-18, 21-22. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 54      | 50  | 54       | 52  | 34       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 44    | 44  | 63  | 59  | 66   | 63  | 68   | 61  | 75     | 70  | 68        | 62  |
| 2.....       | 55      | 52  | 56       | 54  | 34       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 44    | 42  | 63  | 56  | 65   | 68  | 63   | 68  | 75     | 71  | 70        | 67  |
| 3.....       | 55      | 52  | 56       | 56  | 34       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 44    | 39  | 58  | 51  | 63   | 58  | 71   | 67  | 75     | 73  | 69        | 66  |
| 4.....       | 55      | 52  | 56       | 55  | 34       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 43    | 35  | 54  | 50  | 64   | 60  | 71   | 68  | 75     | 68  | 62        | 62  |
| 5.....       | 55      | 51  | 55       | 54  | 34       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 36    | 34  | 55  | 51  | 64   | 59  | 71   | 65  | 68     | 64  | 63        | 58  |
| 6.....       | 53      | 50  | 54       | 51  | 35       | 34  | 32      | 32  | 32       | 32  | 33    | 33  | 36    | 35  | 59  | 53  | 60   | 56  | 69   | 63  | 67     | 64  | 61        | 58  |
| 7.....       | 51      | 49  | 51       | 47  | 35       | 35  | 32      | 32  | 32       | 32  | 33    | 33  | 41    | 35  | 62  | 56  | 64   | 58  | 70   | 66  | 70     | 65  | 61        | 58  |
| 8.....       | 50      | 47  | 47       | 42  | 35       | 35  | 32      | 32  | 32       | 32  | 34    | 33  | 41    | 38  | 63  | 59  | 66   | 61  | 69   | 67  | 70     | 67  | 61        | 58  |
| 9.....       | 50      | 47  | 42       | 39  | 35       | 35  | 32      | 32  | 32       | 32  | 34    | 34  | 39    | 37  | 63  | 58  | 67   | 61  | 68   | 65  | 69     | 68  | 61        | 58  |
| 10.....      | 48      | 47  | 39       | 37  | 35       | 34  | 32      | 32  | 32       | 32  | 34    | 34  | 41    | 35  | 58  | 54  | 71   | 64  | 67   | 62  | 72     | 68  | 60        | 53  |
| 11.....      | 48      | 46  | 38       | 36  | 34       | 34  | 32      | 32  | 32       | 32  | 34    | 33  | 41    | 38  | 56  | 53  | 71   | 68  | 68   | 64  | 72     | 68  | 58        | 57  |
| 12.....      | 50      | 47  | 38       | 34  | 33       | 33  | 32      | 32  | 32       | 32  | 34    | 33  | 41    | 36  | 56  | 55  | 69   | 66  | 69   | 66  | 71     | 68  | 58        | 58  |
| 13.....      | 57      | 50  | 38       | 37  | 33       | 33  | 32      | 32  | 32       | 32  | 37    | 34  | 38    | 36  | 56  | 55  | 69   | 64  | 74   | 67  | 70     | 65  | 60        | 58  |
| 14.....      | 57      | 55  | 41       | 37  | 33       | 33  | 32      | 32  | 32       | 32  | 40    | 37  | 42    | 36  | 56  | 53  | 67   | 63  | 76   | 70  | 69     | 64  | 60        | 58  |
| 15.....      | 57      | 57  | 43       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 41    | 36  | 45    | 40  | 53  | 49  | 70   | 65  | 76   | 70  | 69     | 66  | 59        | 58  |
| 16.....      | 58      | 56  | 43       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 36    | 34  | 45    | 44  | 54  | 46  | 72   | 66  | 74   | 68  | 66     | 64  | 59        | 58  |
| 17.....      | 58      | 56  | 37       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 34  | 49    | 44  | 54  | 49  | 74   | 70  | 73   | 66  | 66     | 64  | 59        | 55  |
| 18.....      | 58      | 55  | 36       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 37    | 34  | 49    | 47  | 49  | 47  | 75   | 70  | 75   | 68  | 65     | 62  | 60        | 57  |
| 19.....      | 55      | 49  | 36       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 37    | 34  | 53    | 49  | 47  | 46  | 75   | 65  | 76   | 70  | 65     | 61  | 62        | 57  |
| 20.....      | 51      | 48  | 37       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 37    | 34  | 61    | 53  | 55  | 46  | 66   | 61  | 78   | 73  | 67     | 63  | 61        | 58  |
| 21.....      | 54      | 50  | 37       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 40    | 36  | 61    | 54  | 55  | 51  | 71   | 65  | 78   | 75  | 67     | 65  | 58        | 56  |
| 22.....      | 55      | 53  | 36       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 42    | 39  | 57    | 52  | 61  | 51  | 74   | 68  | 78   | 74  | 67     | 63  | 57        | 56  |
| 23.....      | 55      | 53  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 44    | 40  | 60    | 54  | 61  | 58  | 74   | 72  | 75   | 69  | 67     | 63  | 56        | 53  |
| 24.....      | 53      | 48  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 44    | 41  | 61    | 59  | 61  | 54  | 73   | 68  | 72   | 67  | 65     | 64  | 53        | 50  |
| 25.....      | 48      | 45  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 43    | 39  | 61    | 58  | 61  | 56  | 68   | 63  | 72   | 68  | 68     | 63  | 52        | 49  |
| 26.....      | 48      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 34  | 40    | 36  | 61    | 54  | 61  | 57  | 65   | 63  | 68   | 66  | 68     | 65  | 52        | 48  |
| 27.....      | 48      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 34  | 42    | 36  | 61    | 58  | 61  | 54  | 68   | 62  | 70   | 65  | 68     | 64  | 50        | 47  |
| 28.....      | 47      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 33  | 43    | 40  | 59    | 54  | 60  | 51  | 68   | 65  | 74   | 68  | 64     | 61  | 49        | 46  |
| 29.....      | 50      | 47  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 33  | 43    | 41  | 60    | 54  | 60  | 56  | 67   | 61  | 75   | 72  | 61     | 59  | 49        | 47  |
| 30.....      | 42      | 49  | 34       | 34  | 32       | 32  | 32      | 32  | 32       | 32  | 44    | 40  | 62    | 56  | 59  | 56  | 66   | 62  | 76   | 73  | 61     | 59  | 52        | 48  |
| 31.....      | 52      | 51  | --       | --  | 32       | 32  | 32      | 32  | --       | --  | 44    | 41  | --    | --  | 65  | 58  | --   | --  | 76   | 72  | 62     | 61  | --        | --  |
| Average..... | 53      | 50  | 41       | 40  | 33       | 33  | 32      | 32  | 32       | 32  | 38    | 36  | 49    | 45  | 58  | 53  | 68   | 64  | 72   | 68  | 68     | 65  | 59        | 56  |

## STREAMS TRIBUTARY TO LAKE HURON--Continued

## AU SABLE RIVER AT MIO, MICH.

LOCATION.--Temperature recorder at gaging station, 150 feet upstream from bridge on State Highway 33 at Mio, Oscoda County, 10 miles downstream from Big Creek, and 80 miles upstream from mouth.  
 DRAINAGE AREA.--1,100 square miles, approximately.  
 RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1957.  
 EXTREMES, 1956-57.--Water temperatures: Maximum, 76°F Aug. 3; minimum, 33°F Jan. 6-7, 20-23, 30.  
 EXTREMES, 1952-57.--Water temperatures: Maximum, 77°F Aug. 4, 1955; minimum, freezing point on Jan. 8, 1953 and several days during January and February 1956.  
 REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water; water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 54      | 54  | 50       | 37  | 36       | 35  | 35      | 35  | 34       | 33  | 34    | 39  | 43    | 42  | 59  | 58  | 63   | 60  | 67   | 62  | 74     | 70  | 62        | 60  |
| 2.....       | 55      | 54  | 51       | 50  | 37       | 36  | 35      | 34  | 35       | 35  | 39    | 38  | 44    | 42  | 60  | 58  | 62   | 60  | 67   | 63  | 75     | 72  | 64        | 60  |
| 3.....       | 55      | 54  | 52       | 51  | 36       | 35  | 34      | 34  | 35       | 34  | 38    | 37  | 44    | 43  | 59  | 58  | 65   | 61  | 67   | 66  | 76     | 74  | 64        | 62  |
| 4.....       | 55      | 54  | 52       | 52  | 37       | 35  | 34      | 34  | 35       | 35  | 38    | 37  | 43    | 42  | 58  | 57  | 64   | 63  | 68   | 66  | 74     | 72  | 63        | 62  |
| 5.....       | 54      | 54  | 54       | 52  | 37       | 36  | 34      | 34  | 35       | 35  | 39    | 37  | 42    | 41  | 57  | 56  | 63   | 61  | 67   | 67  | 72     | 70  | 63        | 62  |
| 6.....       | 54      | 54  | 54       | 54  | 37       | 36  | 34      | 33  | 35       | 34  | 38    | 36  | 41    | 40  | 59  | 55  | 64   | 61  | 69   | 67  | 71     | 69  | 63        | 62  |
| 7.....       | 54      | 52  | 54       | 53  | 38       | 37  | 34      | 33  | 35       | 34  | 38    | 37  | 40    | 39  | 59  | 56  | 63   | 62  | 68   | 67  | 71     | 69  | 62        | 60  |
| 8.....       | 53      | 52  | 53       | 51  | 38       | 37  | 34      | 34  | 36       | 35  | 38    | 37  | 40    | 39  | 59  | 57  | 62   | 61  | 68   | 67  | 69     | 68  | 62        | 60  |
| 9.....       | 52      | 50  | 51       | 49  | 39       | 38  | 34      | 34  | 35       | 34  | 38    | 37  | 40    | 39  | 59  | 58  | 63   | 61  | 68   | 66  | 68     | 66  | 60        | 58  |
| 10.....      | 50      | 49  | 46       | 44  | 39       | 37  | 34      | 34  | 35       | 35  | 39    | 37  | 41    | 40  | 59  | 58  | 66   | 62  | 68   | 66  | 68     | 66  | 59        | 58  |
| 11.....      | 50      | 49  | 46       | 44  | 37       | 36  | 34      | 34  | 35       | 35  | 38    | 38  | 42    | 41  | 59  | 58  | 67   | 64  | 68   | 66  | 69     | 66  | 58        | 57  |
| 12.....      | 50      | 49  | 44       | 43  | 36       | 35  | 34      | 34  | 35       | 35  | 38    | 37  | 41    | 41  | 59  | 59  | 69   | 65  | 69   | 66  | 67     | 66  | 57        | 56  |
| 13.....      | 50      | 49  | 43       | 41  | 35       | 35  | 34      | 34  | 35       | 35  | 38    | 37  | 41    | 41  | 59  | 59  | 66   | 65  | 68   | 65  | 67     | 66  | 58        | 56  |
| 14.....      | 51      | 50  | 42       | 40  | 36       | 35  | 34      | 34  | 35       | 35  | 38    | 37  | 43    | 41  | 56  | 55  | 68   | 65  | 69   | 68  | 70     | 68  | 57        | 56  |
| 15.....      | 52      | 51  | 43       | 40  | 35       | 35  | 34      | 34  | 36       | 35  | 39    | 36  | 44    | 42  | 55  | 54  | 70   | 67  | 70   | 69  | 67     | 66  | 57        | 56  |
| 16.....      | 54      | 52  | 41       | 40  | 35       | 35  | 34      | 34  | 36       | 35  | 40    | 39  | 44    | 44  | 54  | 53  | 70   | 66  | 70   | 69  | 67     | 65  | 58        | 57  |
| 17.....      | 56      | 53  | 44       | 41  | 35       | 35  | 34      | 34  | 38       | 36  | 40    | 39  | 46    | 44  | 53  | 52  | 70   | 66  | 71   | 69  | 67     | 65  | 58        | 57  |
| 18.....      | 55      | 54  | 43       | 41  | 35       | 35  | 34      | 34  | 38       | 36  | 39    | 38  | 46    | 45  | 52  | 51  | 72   | 67  | 71   | 69  | 66     | 64  | 58        | 57  |
| 19.....      | 55      | 54  | 44       | 40  | 35       | 34  | 34      | 34  | 38       | 36  | 38    | 38  | 49    | 46  | 51  | 50  | 70   | 67  | 72   | 68  | 66     | 64  | 60        | 57  |
| 20.....      | 54      | 54  | 44       | 40  | 35       | 34  | 34      | 33  | 38       | 36  | 38    | 37  | 53    | 49  | 52  | 50  | 70   | 67  | 74   | 70  | 64     | 62  | 59        | 58  |
| 21.....      | 54      | 54  | 42       | 39  | 35       | 35  | 33      | 33  | 36       | 36  | 38    | 37  | 54    | 52  | 51  | 50  | 71   | 68  | 74   | 71  | 63     | 62  | 58        | 53  |
| 22.....      | 54      | 52  | 40       | 39  | 35       | 34  | 33      | 33  | 36       | 36  | 38    | 38  | 57    | 53  | 55  | 51  | 71   | 69  | 74   | 71  | 64     | 62  | 58        | 57  |
| 23.....      | 53      | 51  | 39       | 38  | 34       | 34  | 34      | 33  | 37       | 36  | 40    | 38  | 59    | 56  | 55  | 55  | 72   | 68  | 72   | 71  | 64     | 62  | 57        | 56  |
| 24.....      | 51      | 50  | 38       | 37  | 35       | 34  | 34      | 34  | 37       | 36  | 41    | 40  | 59    | 56  | 60  | 55  | 69   | 68  | 72   | 70  | 64     | 62  | 56        | 55  |
| 25.....      | 50      | 50  | 37       | 37  | 36       | 35  | 34      | 34  | 36       | 35  | 41    | 41  | 59    | 58  | 59  | 58  | 70   | 68  | 72   | 70  | 64     | 62  | 55        | 54  |
| 26.....      | 50      | 50  | 37       | 36  | 36       | 36  | 34      | 34  | 37       | 36  | 41    | 41  | 62    | 59  | 60  | 58  | 69   | 67  | 70   | 68  | 65     | 62  | 54        | 53  |
| 27.....      | 50      | 50  | 37       | 36  | 36       | 36  | 34      | 34  | 37       | 36  | 41    | 40  | 61    | 59  | 60  | 59  | 69   | 66  | 70   | 68  | 64     | 61  | 54        | 52  |
| 28.....      | 50      | 50  | 36       | 36  | 36       | 36  | 34      | 34  | 39       | 37  | 40    | 40  | 60    | 59  | 62  | 58  | 67   | 64  | 70   | 68  | 62     | 61  | 53        | 52  |
| 29.....      | 50      | 49  | 36       | 36  | 36       | 35  | 34      | 34  | --       | --  | 41    | 40  | 60    | 57  | 60  | 58  | 66   | 64  | 72   | 68  | 61     | 60  | 53        | 51  |
| 30.....      | 50      | 49  | 37       | 36  | 36       | 35  | 34      | 33  | --       | --  | 42    | 40  | 61    | 58  | 60  | 58  | 65   | 62  | 72   | 69  | 62     | 60  | 52        | 51  |
| 31.....      | 50      | 50  | --       | --  | 35       | 35  | 34      | 34  | --       | --  | 43    | 42  | --    | --  | 51  | 58  | --   | --  | 72   | 70  | 61     | 60  | --        | --  |
| Average..... | 52      | 52  | 44       | 43  | 36       | 35  | 34      | 34  | 36       | 35  | 39    | 38  | 49    | 47  | 57  | 56  | 67   | 64  | 70   | 68  | 67     | 65  | 58        | 57  |

STREAMS TRIBUTARY TO LAKE HURON--Continued

LOCATION.--Temperature recorder at gaging station, 25 feet downstream from highway bridge at McIvor, Iosco County, 1.1 miles east of National City, and 9 miles southwest of Tawas City.

DRAINAGE AREA. --84 square miles, approximately.

RECORDS AVAILABLE. --Water temperatures: October 1951 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 76°F Aug. 3; minimum, freezing point on many days during December, January, February, and March.

EXTREMES, 1951-57. --water temperatures: Maximum, 76 F Aug. 3, 1957; minimum, freezing point on many days during winter months.

REMARKS. --Stream frozen Nov. 23 to Dec. 2, Dec. 12-20, Dec. 29 to Mar. 12. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |    |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |    |
| 1.....       | 50      | 46  | 52       | 52  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 43  | 60  | 56  | 64   | 61  | 67   | 61  | 72     | 64  | 66        | 60 |
| 2.....       | 53      | 49  | 52       | 52  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 46    | 41  | 58  | 54  | 61   | 56  | 68   | 63  | 74     | 65  | 68        | 63 |
| 3.....       | 53      | 48  | 52       | 51  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 40  | 54  | 49  | 61   | 55  | 69   | 66  | 76     | 66  | 68        | 64 |
| 4.....       | 52      | 48  | 52       | 51  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 36  | 55  | 49  | 61   | 57  | 69   | 67  | 71     | 65  | 66        | 61 |
| 5.....       | 51      | 48  | 52       | 53  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 36  | 53  | 49  | 60   | 57  | 68   | 64  | 66     | 60  | 62        | 56 |
| 6.....       | 49      | 47  | 52       | 49  | 37       | 35  | 32      | 32  | 32       | 32  | 32    | 32  | 32    | 37  | 58  | 50  | 59   | 54  | 67   | 62  | 67     | 60  | 60        | 55 |
| 7.....       | 48      | 48  | 49       | 46  | 37       | 37  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 37  | 62  | 54  | 61   | 57  | 66   | 62  | 70     | 60  | 59        | 55 |
| 8.....       | 50      | 48  | 46       | 43  | 37       | 36  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 39  | 64  | 58  | 60   | 54  | 66   | 65  | 69     | 64  | 57        | 52 |
| 9.....       | 49      | 48  | 43       | 40  | 36       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 37  | 63  | 57  | 62   | 55  | 68   | 63  | 67     | 62  | 57        | 52 |
| 10.....      | 46      | 44  | 40       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 38  | 57  | 53  | 66   | 58  | 66   | 62  | 70     | 60  | 57        | 55 |
| 11.....      | 45      | 42  | 37       | 37  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 41  | 53  | 51  | 66   | 64  | 66   | 63  | 70     | 64  | 56        | 54 |
| 12.....      | 49      | 44  | 37       | 37  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 39  | 52  | 51  | 68   | 62  | 68   | 64  | 68     | 63  | 56        | 56 |
| 13.....      | 54      | 49  | 37       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 35  | 54  | 52  | 66   | 62  | 70   | 65  | 64     | 58  | 60        | 56 |
| 14.....      | 54      | 51  | 41       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 37  | 46  | 38  | 54   | 63  | 65   | 61  | 70     | 62  | 59        | 56 |
| 15.....      | 54      | 52  | 47       | 41  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 37  | 40  | 53  | 49   | 70  | 64   | 69  | 65     | 66  | 63        | 60 |
| 16.....      | 54      | 52  | 47       | 41  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 36  | 46  | 44  | 52   | 46  | 70   | 65  | 66     | 62  | 60        | 59 |
| 17.....      | 54      | 51  | 41       | 39  | 34       | 33  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 36  | 49  | 44  | 51   | 47  | 74   | 66  | 68     | 62  | 65        | 57 |
| 18.....      | 54      | 50  | 39       | 36  | 34       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 36  | 48  | 46  | 47   | 69  | 65   | 70  | 63     | 64  | 56        | 53 |
| 19.....      | 50      | 46  | 38       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 48  | 47  | 48  | 47   | 69  | 64   | 71  | 64     | 66  | 58        | 51 |
| 20.....      | 47      | 44  | 38       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 36  | 57  | 51  | 56   | 66  | 61   | 74  | 67     | 66  | 58        | 61 |
| 21.....      | 50      | 47  | 41       | 38  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 56  | 55  | 51  | 70   | 64  | 74   | 70  | 66     | 60  | 58        | 57 |
| 22.....      | 52      | 50  | 40       | 35  | 34       | 33  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 54  | 48  | 61  | 73   | 67  | 72   | 68  | 64     | 57  | 58        | 57 |
| 23.....      | 52      | 50  | 35       | 33  | 34       | 34  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 39  | 57  | 52  | 61   | 56  | 73   | 66  | 68     | 64  | 57        | 53 |
| 24.....      | 50      | 47  | 33       | 33  | 34       | 34  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 58  | 54  | 60  | 53   | 70  | 66   | 68  | 62     | 65  | 63        | 49 |
| 25.....      | 47      | 45  | 33       | 33  | 34       | 32  | 32      | 32  | 32       | 32  | 32    | 41  | 38    | 56  | 54  | 59  | 65   | 66  | 65   | 66  | 62     | 65  | 60        | 55 |
| 26.....      | 48      | 47  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 39  | 38    | 60  | 55  | 63  | 65   | 63  | 64   | 62  | 66     | 58  | 54        | 49 |
| 27.....      | 48      | 45  | 33       | 33  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 43  | 38    | 60  | 57  | 63  | 67   | 67  | 62   | 69  | 62     | 65  | 58        | 50 |
| 28.....      | 47      | 45  | 33       | 33  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 43  | 38    | 57  | 54  | 58  | 65   | 67  | 64   | 72  | 64     | 58  | 50        |    |
| 29.....      | 47      | 45  | 33       | 33  | 32       | 32  | --      | --  | --       | --  | --    | 43  | 39    | 59  | 53  | 58  | 64   | 66  | 62   | 73  | 67     | 58  | 50        |    |
| 30.....      | 49      | 46  | 33       | 33  | 32       | 32  | --      | --  | --       | --  | --    | 44  | 38    | 60  | 55  | 56  | 65   | 67  | 64   | 74  | 68     | 63  | 56        |    |
| 31.....      | 52      | 49  | --       | --  | 32       | 32  | 32      | 32  | --       | --  | --    | 44  | 38    | --  | --  | 56  | 64   | 66  | 73   | 66  | 62     | 60  | --        |    |
| Average..... | 50      | 47  | 41       | 40  | 34       | 32  | 32      | 32  | 32       | 32  | 32    | 38  | 35    | 49  | 45  | 57  | 62   | 66  | 61   | 69  | 64     | 67  | 61        | 54 |

## STREAMS TRIBUTARY TO LAKE HURON.--Continued

## AU GRES RIVER NEAR NATIONAL CITY, MICH.

LOCATION.--Temperature recorder at gaging station, 20 feet downstream from highway bridge,  $1\frac{1}{2}$  miles upstream from Elm Creek, 4 miles southwest of National City, Iosco County,  $12\frac{1}{2}$  miles southwest of Iwas City, and  $13\frac{1}{2}$  miles upstream from mouth.

DRAINAGE AREA.--169 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1957.

EXTREMES, 1956.--57.--Water temperatures: Maximum, 82° F June 17, July 29-30, Aug. 3; minimum, freezing point on many days during December, January, February and March.

EXTREMES, 1951-57.--Water temperatures: Maximum, 84° F Aug. 1, 4, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Nov. 23 to Dec. 1, Dec. 10 to Mar. 24. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 53      | 50  | 56       | 54  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 41  | 62  | 59  | 67   | 64  | 67   | 64  | 80     | 68  | 72        | 65  |
| 2.....       | 56      | 52  | 56       | 52  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 39  | 62  | 57  | 64   | 58  | 68   | 64  | 81     | 69  | 74        | 67  |
| 3.....       | 55      | 52  | 56       | 52  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 38  | 57  | 52  | 65   | 58  | 71   | 68  | 82     | 74  | 72        | 68  |
| 4.....       | 56      | 53  | 57       | 56  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 35  | 56  | 52  | 66   | 60  | 72   | 69  | 76     | 68  | 69        | 63  |
| 5.....       | 53      | 51  | 57       | 56  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 56  | 52  | 64   | 59  | 71   | 68  | 73     | 63  | 66        | 59  |
| 6.....       | 52      | 50  | 56       | 53  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 35  | 59  | 53  | 62   | 57  | 69   | 65  | 72     | 63  | 65        | 56  |
| 7.....       | 52      | 50  | 53       | 48  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 39  | 63  | 57  | 64   | 60  | 69   | 66  | 76     | 63  | 63        | 56  |
| 8.....       | 52      | 49  | 48       | 43  | 35       | 34  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 36  | 65  | 60  | 64   | 57  | 69   | 69  | 74     | 66  | 64        | 54  |
| 9.....       | 50      | 48  | 43       | 40  | 34       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 37  | 65  | 60  | 67   | 57  | 70   | 66  | 73     | 69  | 62        | 54  |
| 10.....      | 48      | 46  | 40       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 37  | 60  | 55  | 70   | 62  | 69   | 64  | 73     | 66  | 59        | 59  |
| 11.....      | 48      | 44  | 38       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 40  | 55  | 53  | 70   | 68  | 68   | 66  | 76     | 68  | 60        | 57  |
| 12.....      | 51      | 46  | 39       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 39  | 54  | 53  | 72   | 65  | 70   | 67  | 73     | 66  | 60        | 60  |
| 13.....      | 57      | 50  | 38       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 38  | 56  | 54  | 68   | 66  | 74   | 69  | 70     | 61  | 64        | 60  |
| 14.....      | 58      | 53  | 40       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 37  | 56  | 54  | 67   | 65  | 75   | 70  | 75     | 66  | 63        | 58  |
| 15.....      | 58      | 55  | 46       | 40  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 39  | 55  | 50  | 76   | 67  | 73   | 69  | 70     | 67  | 63        | 61  |
| 16.....      | 60      | 55  | 44       | 40  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 43  | 51  | 48  | 77   | 68  | 70   | 64  | 70     | 64  | 63        | 60  |
| 17.....      | 60      | 54  | 40       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 43  | 51  | 48  | 82   | 71  | 73   | 64  | 70     | 61  | 62        | 56  |
| 18.....      | 57      | 52  | 38       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 46  | 48  | 48  | 75   | 68  | 74   | 66  | 70     | 61  | 63        | 56  |
| 19.....      | 52      | 48  | 37       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 51    | 47  | 48  | 48  | 71   | 68  | 77   | 67  | 72     | 62  | 65        | 57  |
| 20.....      | 52      | 47  | 38       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 51    | 48  | 55  | 48  | 68   | 63  | 79   | 70  | 72     | 62  | 64        | 61  |
| 21.....      | 56      | 51  | 40       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 35    | 32  | 56    | 54  | 55  | 52  | 74   | 66  | 81   | 74  | 71     | 64  | 61        | 60  |
| 22.....      | 55      | 54  | 40       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 33  | 55    | 50  | 61  | 52  | 77   | 69  | 75   | 73  | 70     | 61  | 62        | 59  |
| 23.....      | 55      | 53  | 35       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 34  | 59    | 54  | 61  | 59  | 74   | 66  | 73   | 68  | 68     | 60  | 59        | 55  |
| 24.....      | 51      | 48  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 30    | 37  | 60    | 57  | 61  | 55  | 71   | 67  | 73   | 66  | 67     | 65  | 55        | 52  |
| 25.....      | 51      | 46  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 36    | 36  | 59    | 56  | 61  | 57  | 67   | 65  | 69   | 66  | 70     | 63  | 58        | 52  |
| 26.....      | 50      | 48  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 36    | 34  | 62    | 57  | 64  | 58  | 66   | 63  | 72   | 66  | 71     | 60  | 55        | 51  |
| 27.....      | 50      | 46  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 38    | 34  | 63    | 61  | 64  | 58  | 66   | 62  | 77   | 66  | 67     | 61  | 53        | 48  |
| 28.....      | 50      | 46  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 41    | 36  | 61    | 57  | 61  | 54  | 86   | 65  | 80   | 68  | 62     | 60  | 53        | 46  |
| 29.....      | 51      | 46  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 40    | 36  | 61    | 56  | 60  | 56  | 66   | 63  | 82   | 72  | 73     | 61  | 54        | 46  |
| 30.....      | 52      | 47  | 33       | 33  | 32       | 32  | 32      | 32  | 32       | 32  | 41    | 36  | 61    | 59  | 58  | 57  | 67   | 64  | 82   | 72  | 67     | 62  | 55        | 48  |
| 31.....      | 55      | 50  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 42    | 36  | --    | --  | 66  | 58  | --   | --  | 80   | 70  | 67     | 63  | --        | --  |
| Average..... | 53      | 50  | 42       | 40  | 32       | 32  | 32      | 32  | 32       | 32  | 34    | 33  | 48    | 45  | 58  | 54  | 69   | 64  | 73   | 68  | 72     | 64  | 62        | 57  |

## STREAMS TRIBUTARY TO LAKE HURON--Continued

## HOUGHTON CREEK NEAR LUPTON, MICH.

LOCATION.--Temperature recorder at gaging station, half a mile upstream from mouth, 3 miles downstream from Wilkins Creek, and 3 miles southwest of Lupton, Ogemaw County.

DRAINAGE AREA.--27 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 65° F. June 25; minimum, freezing point on many days during December, January, and February.

EXTREMES, 1950-57.--Water temperatures: Maximum, 69° F. June 25, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 14, Jan. 1-2, 10-11, 13-28, 30, Mar. 2-4. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

//Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 50      | 46  | 51       | 50  | 36       | 35  | 32      | 32  | 34       | 32  | 39    | 36  | 44    | 42  | 57  | 50  | 58   | 54  | 60   | 55  | 62     | 58  | 58        | 55  |
| 2.....       | 52      | 49  | 52       | 51  | 37       | 36  | 32      | 32  | 35       | 34  | 39    | 34  | 44    | 40  | 54  | 48  | 54   | 50  | 60   | 55  | 63     | 58  | 59        | 57  |
| 3.....       | 52      | 48  | 52       | 52  | 38       | 37  | 33      | 32  | 35       | 35  | 34    | 33  | 42    | 38  | 50  | 44  | 55   | 50  | 61   | 56  | 64     | 60  | 59        | 57  |
| 4.....       | 51      | 49  | 52       | 52  | 38       | 37  | 35      | 35  | 35       | 34  | 36    | 33  | 40    | 36  | 51  | 45  | 55   | 52  | 60   | 58  | 63     | 58  | 57        | 55  |
| 5.....       | 50      | 47  | 52       | 51  | 38       | 37  | 35      | 34  | 34       | 32  | 37    | 34  | 39    | 36  | 52  | 44  | 55   | 51  | 59   | 56  | 58     | 54  | 56        | 52  |
| 6.....       | 49      | 47  | 51       | 50  | 38       | 38  | 35      | 34  | 36       | 33  | 39    | 36  | 36    | 34  | 54  | 46  | 56   | 50  | 54   | 58  | 54     | 55  | 51        | 51  |
| 7.....       | 48      | 48  | 50       | 47  | 38       | 38  | 35      | 34  | 37       | 36  | 38    | 37  | 41    | 36  | 57  | 49  | 57   | 53  | 59   | 56  | 60     | 54  | 54        | 52  |
| 8.....       | 50      | 46  | 47       | 44  | 38       | 37  | 34      | 32  | 36       | 34  | 38    | 34  | 39    | 37  | 58  | 51  | 57   | 51  | 60   | 58  | 60     | 56  | 53        | 50  |
| 9.....       | 49      | 46  | 44       | 42  | 37       | 35  | 35      | 33  | 38       | 36  | 38    | 35  | 40    | 36  | 57  | 51  | 58   | 51  | 61   | 57  | 59     | 57  | 53        | 50  |
| 10.....      | 47      | 45  | 42       | 39  | 35       | 35  | 33      | 32  | 38       | 36  | 37    | 34  | 43    | 37  | 51  | 48  | 60   | 53  | 59   | 55  | 61     | 56  | 53        | 53  |
| 11.....      | 46      | 44  | 41       | 40  | 37       | 35  | 32      | 32  | 36       | 33  | 38    | 35  | 43    | 39  | 49  | 48  | 60   | 56  | 59   | 56  | 62     | 58  | 53        | 52  |
| 12.....      | 49      | 46  | 42       | 41  | 36       | 33  | 33      | 32  | 35       | 33  | 36    | 34  | 41    | 37  | 50  | 48  | 60   | 55  | 59   | 56  | 62     | 58  | 53        | 53  |
| 13.....      | 52      | 49  | 42       | 40  | 33       | 32  | 32      | 32  | 36       | 35  | 40    | 35  | 40    | 37  | 52  | 50  | 59   | 55  | 53   | 59  | 59     | 55  | 56        | 53  |
| 14.....      | 52      | 50  | 43       | 40  | 36       | 32  | 32      | 32  | 36       | 35  | 42    | 37  | 44    | 37  | 51  | 49  | 58   | 54  | 62   | 59  | 61     | 57  | 55        | 52  |
| 15.....      | 52      | 51  | 47       | 43  | 38       | 36  | 32      | 32  | 35       | 33  | 40    | 36  | 45    | 39  | 49  | 46  | 63   | 57  | 62   | 58  | 61     | 57  | 56        | 54  |
| 16.....      | 53      | 51  | 47       | 40  | 38       | 38  | 32      | 32  | 36       | 35  | 37    | 35  | 45    | 42  | 50  | 43  | 62   | 57  | 59   | 55  | 58     | 55  | 53        | 53  |
| 17.....      | 53      | 50  | 40       | 39  | 38       | 38  | 32      | 32  | 36       | 34  | 39    | 36  | 47    | 41  | 49  | 45  | 64   | 58  | 60   | 54  | 58     | 54  | 54        | 50  |
| 18.....      | 53      | 49  | 39       | 37  | 36       | 32  | 32      | 32  | 37       | 35  | 39    | 36  | 47    | 44  | 46  | 43  | 63   | 59  | 61   | 56  | 57     | 54  | 51        | 51  |
| 19.....      | 49      | 46  | 40       | 39  | 36       | 32  | 32      | 32  | 36       | 33  | 39    | 37  | 48    | 45  | 46  | 43  | 62   | 58  | 54   | 57  | 58     | 54  | 57        | 52  |
| 20.....      | 49      | 46  | 41       | 40  | 36       | 36  | 32      | 32  | 36       | 33  | 42    | 37  | 53    | 47  | 53  | 45  | 53   | 53  | 63   | 58  | 59     | 55  | 57        | 54  |
| 21.....      | 51      | 49  | 42       | 40  | 37       | 36  | 32      | 32  | 36       | 34  | 42    | 37  | 52    | 48  | 51  | 47  | 63   | 56  | 63   | 59  | 59     | 56  | 54        | 53  |
| 22.....      | 52      | 51  | 40       | 35  | 37       | 37  | 36      | 32  | 38       | 36  | 42    | 37  | 51    | 45  | 57  | 47  | 62   | 58  | 62   | 61  | 58     | 53  | 54        | 53  |
| 23.....      | 52      | 49  | 35       | 33  | 38       | 37  | 32      | 32  | 38       | 36  | 43    | 38  | 54    | 49  | 57  | 51  | 65   | 62  | 61   | 57  | 57     | 54  | 53        | 50  |
| 24.....      | 49      | 47  | 34       | 33  | 38       | 37  | 32      | 32  | 37       | 36  | 42    | 38  | 53    | 50  | 55  | 48  | 62   | 60  | 57   | 60  | 55     | 50  | 48        | 48  |
| 25.....      | 47      | 44  | 35       | 34  | 37       | 34  | 32      | 32  | 40       | 34  | 40    | 37  | 51    | 48  | 54  | 50  | 58   | 56  | 60   | 56  | 58     | 54  | 52        | 49  |
| 26.....      | 48      | 47  | 37       | 35  | 36       | 35  | 32      | 32  | 36       | 34  | 39    | 37  | 56    | 48  | 57  | 51  | 58   | 55  | 57   | 55  | 58     | 53  | 52        | 48  |
| 27.....      | 48      | 46  | 36       | 35  | 37       | 36  | 32      | 32  | 34       | 33  | 42    | 37  | 56    | 50  | 56  | 50  | 59   | 55  | 60   | 55  | 58     | 54  | 48        | 45  |
| 28.....      | 48      | 46  | 36       | 36  | 37       | 35  | 34      | 32  | 36       | 35  | 47    | 53  | 47    | 53  | 47  | 53  | 47   | 59  | 56   | 62  | 57     | 55  | 48        | 45  |
| 29.....      | 48      | 46  | 36       | 34  | 35       | 32  | 34      | 32  | 36       | 34  | 42    | 39  | 56    | 47  | 53  | 49  | 62   | 57  | 62   | 57  | 53     | 53  | 49        | 46  |
| 30.....      | 49      | 46  | 35       | 33  | 32       | 32  | 32      | 32  | 36       | 34  | 44    | 38  | 56    | 49  | 51  | 50  | 61   | 58  | 63   | 59  | 56     | 53  | 51        | 47  |
| 31.....      | 50      | 48  | --       | --  | 33       | 32  | 34      | 32  | --       | --  | 44    | 38  | --    | --  | 58  | 51  | --   | --  | 63   | 58  | 56     | 55  | --        | --  |
| Average..... | 50      | 47  | 43       | 41  | 37       | 35  | 33      | 32  | 36       | 34  | 40    | 36  | 47    | 42  | 53  | 48  | 59   | 55  | 61   | 57  | 59     | 55  | 54        | 51  |

## STREAMS TRIBUTARY TO LAKE HURON--Continued

## RIFLE RIVER AT "THE RANCH" NEAR LUPTON, MICH.

LOCATION.--Temperature recorder at gaging station, a quarter of a mile downstream from Houghton Creek, and 3 miles southwest of Lupton, Ogemaw County. DRAINAGE AREA.--54 square miles, approximately.

RECORDS AVAILABLE.--54 square miles, approximately.

EXTREMES, 1956-57.--Water temperatures: Maximum, 69°F June 17, Aug. 3; minimum, freezing point on many days during January, February, and March.

EXTREMES, 1950-57.--Water temperatures: Maximum, 72°F June 25, 26, 1952; July 5, 6, 9, Aug. 1, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 30, Jan. 1-2, 10-11, 13-28, 30, 31, Mar. 1-4. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 51      | 47  | 53       | 52  | 39       | 37  | 33      | 33  | 34       | 34  | 36    | 35  | 41    | 41  | 58  | 51  | 61   | 57  | 64   | 56  | 67     | 59  | 61        | 56  |
| 2.....       | 54      | 50  | 54       | 53  | 39       | 39  | 33      | 33  | 34       | 34  | 36    | 34  | 42    | 39  | 54  | 50  | 59   | 53  | 64   | 56  | 67     | 59  | 62        | 58  |
| 3.....       | 53      | 49  | 54       | 53  | 39       | 39  | 33      | 33  | 34       | 34  | 36    | 34  | 40    | 38  | 51  | 46  | 57   | 53  | 64   | 56  | 67     | 59  | 61        | 58  |
| 4.....       | 53      | 49  | 53       | 53  | 40       | 39  | 35      | 35  | 36       | 35  | 34    | 32  | 39    | 36  | 52  | 46  | 57   | 52  | 63   | 59  | 64     | 58  | 60        | 56  |
| 5.....       | 51      | 48  | 53       | 52  | 41       | 40  | 35      | 35  | 35       | 34  | 36    | 36  | 37    | 36  | 53  | 46  | 55   | 51  | 62   | 57  | 62     | 55  | 58        | 52  |
| 6.....       | 50      | 48  | 52       | 50  | 41       | 41  | 35      | 35  | 36       | 34  | 38    | 35  | 36    | 34  | 54  | 47  | 57   | 50  | 62   | 55  | 62     | 54  | 56        | 51  |
| 7.....       | 49      | 48  | 50       | 47  | 41       | 41  | 35      | 34  | 37       | 36  | 38    | 35  | 39    | 35  | 56  | 50  | 59   | 53  | 62   | 57  | 64     | 55  | 56        | 52  |
| 8.....       | 50      | 46  | 47       | 45  | 41       | 40  | 34      | 32  | 37       | 35  | 38    | 33  | 38    | 36  | 57  | 51  | 60   | 51  | 61   | 59  | 62     | 58  | 56        | 50  |
| 9.....       | 49      | 46  | 45       | 43  | 40       | 39  | 35      | 34  | 36       | 35  | 37    | 34  | 38    | 36  | 54  | 51  | 61   | 50  | 64   | 58  | 61     | 59  | 55        | 50  |
| 10.....      | 47      | 45  | 43       | 41  | --       | --  | 34      | 32  | 36       | 35  | 37    | 34  | 40    | 36  | 51  | 50  | 63   | 54  | 62   | 55  | 66     | 57  | 55        | 54  |
| 11.....      | 47      | 44  | 42       | 41  | --       | --  | 33      | 32  | 35       | 32  | 36    | 35  | 41    | 38  | 51  | 50  | 61   | 57  | 61   | 57  | 65     | 58  | 55        | 52  |
| 12.....      | 50      | 47  | 42       | 42  | --       | --  | 33      | 33  | 34       | 33  | 35    | 34  | 39    | 37  | 51  | 50  | 64   | 56  | 63   | 58  | 63     | 58  | 55        | 54  |
| 13.....      | 52      | 49  | 42       | 41  | --       | --  | 33      | 32  | 35       | 34  | 37    | 34  | 39    | 37  | 53  | 50  | 61   | 56  | 66   | 60  | 60     | 54  | 58        | 54  |
| 14.....      | 52      | 50  | 45       | 42  | --       | --  | 32      | 32  | 35       | 34  | 39    | 36  | 42    | 37  | 51  | 50  | 61   | 56  | 66   | 60  | 64     | 57  | 56        | 53  |
| 15.....      | 54      | 52  | 48       | 45  | --       | --  | 32      | 32  | 34       | 33  | 38    | 35  | 43    | 38  | 50  | 47  | 68   | 59  | 65   | 59  | 61     | 57  | 58        | 55  |
| 16.....      | 54      | 53  | 48       | 42  | --       | --  | 32      | 32  | 35       | 34  | 35    | 35  | 42    | 41  | 52  | 45  | 67   | 58  | 63   | 56  | 60     | 55  | 56        | 53  |
| 17.....      | 54      | 53  | 42       | 41  | --       | --  | 32      | 32  | 35       | 33  | 36    | 35  | 45    | 40  | 50  | 46  | 69   | 61  | 65   | 56  | 60     | 54  | 56        | 51  |
| 18.....      | 54      | 52  | 41       | 39  | 38       | 36  | 32      | 32  | 35       | 34  | 37    | 35  | 45    | 43  | 47  | 46  | 67   | 61  | 66   | 57  | 59     | 54  | 57        | 51  |
| 19.....      | 52      | 50  | 42       | 41  | 37       | 36  | 32      | 32  | 35       | 32  | 37    | 36  | 45    | 43  | 47  | 46  | 64   | 58  | 67   | 58  | 61     | 54  | 59        | 52  |
| 20.....      | 49      | 42  | 41       | 39  | 38       | 37  | 32      | 32  | 35       | 32  | 38    | 36  | 49    | 45  | 53  | 45  | 63   | 54  | 68   | 60  | 60     | 54  | 59        | 55  |
| 21.....      | 50      | 43  | 41       | 39  | 38       | 33  | 32      | 35  | 33       | 39  | 36    | 50  | 46    | 50  | 47  | 67  | 58   | 66  | 62   | 61  | 56     | 55  | 54        | 54  |
| 22.....      | 53      | 52  | 41       | 38  | 39       | 39  | 32      | 36  | 35       | 40  | 37    | 49  | 44    | 55  | 47  | 67  | 59   | 66  | 63   | 60  | 53     | 56  | 54        | 51  |
| 23.....      | 53      | 52  | 38       | 36  | 39       | 39  | 32      | 36  | 35       | 41  | 37    | 51  | 48    | 54  | 50  | 68  | 62   | 65  | 58   | 59  | 53     | 54  | 51        | 51  |
| 24.....      | 52      | 50  | 38       | 32  | 37       | 39  | 38      | 32  | 35       | 35  | 40    | 38  | 51    | 50  | 54  | 48  | 64   | 59  | 65   | 56  | 58     | 56  | 51        | 47  |
| 25.....      | 50      | 48  | 38       | 38  | 38       | 35  | 32      | 32  | 38       | 34  | 39    | 38  | 50    | 48  | 53  | 50  | 61   | 57  | 61   | 57  | 61     | 54  | 54        | 48  |
| 26.....      | 49      | 49  | 39       | 38  | 37       | 36  | 33      | 32  | 36       | 34  | 38    | 37  | 54    | 48  | 55  | 51  | 59   | 56  | 60   | 57  | 60     | 54  | 53        | 48  |
| 27.....      | 49      | 49  | 39       | 38  | 38       | 36  | 33      | 33  | 36       | 34  | 41    | 38  | 53    | 51  | 55  | 50  | 63   | 56  | 64   | 56  | 59     | 54  | 49        | 44  |
| 28.....      | 49      | 48  | 39       | 39  | 37       | 35  | 33      | 33  | 35       | 34  | 40    | 38  | 53    | 49  | 56  | 48  | 61   | 58  | 67   | 58  | 56     | 53  | 49        | 44  |
| 29.....      | 50      | 48  | 39       | 37  | 35       | 33  | 34      | 33  | --       | --  | 40    | 39  | 52    | 49  | 54  | 52  | 63   | 58  | 66   | 60  | 54     | 50  | 45        | 40  |
| 30.....      | 50      | 49  | 37       | 36  | 33       | 33  | 34      | 33  | --       | --  | 42    | 38  | 55    | 49  | 54  | 52  | 63   | 58  | 66   | 61  | 58     | 54  | 52        | 46  |
| 31.....      | 52      | 50  | --       | --  | 34       | 33  | 34      | 33  | --       | --  | 41    | 38  | --    | --  | 61  | 53  | ---  | --  | 67   | 59  | 57     | 55  | --        | --  |
| Average..... | 51      | 49  | 44       | 43  | --       | --  | 33      | 33  | 35       | 34  | 38    | 36  | 45    | 42  | 53  | 49  | 62   | 56  | 64   | 58  | 61     | 56  | 56        | 52  |

## STREAMS TRIBUTARY TO LAKE HURON--Continued

## PRIOR CREEK NEAR SELKIRK, MICH.

LOCATION --Temperature recorder at gaging station, a quarter of a mile upstream from mouth, half a mile downstream from Ammond Creek, and a mile north of Selkirk, Ogemaw County.

DRAINAGE AREA --19 square miles, approximately.

RECORDS AVAILABLE. --Water temperatures: October 1950 to September 1957.

EXTREMES, 1950-57. --Water temperatures: Maximum, 76°F Aug. 3; minimum, freezing point on many days during November, December, January, February, and March.

EXTREMES, 1950-57. --Water temperatures: Maximum, 76°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

REMARKS. --Stream frozen Nov. 24 to Dec. 1, Dec. 13-17, Dec. 24 to Mar. 18. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 50      | 46  | 54       | 53  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 56  | 50  | 58   | 58  | 64   | 61  | 69     | 64  | 64        | 59  |
| 2.....       | 53      | 49  | 55       | 54  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 54  | 48  | 59   | 53  | 64   | 60  | 70     | 65  | 65        | 62  |
| 3.....       | 52      | 48  | 55       | 55  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 50  | 44  | 57   | 53  | 66   | 63  | 73     | 68  | 65        | 62  |
| 4.....       | 52      | 50  | 55       | 54  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 50  | 44  | 57   | 55  | 66   | 64  | 69     | 63  | 62        | 58  |
| 5.....       | 51      | 47  | 54       | 54  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 50  | 44  | 57   | 54  | 65   | 63  | 64     | 60  | 58        | 54  |
| 6.....       | 49      | 47  | 54       | 52  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 53  | 45  | 57   | 53  | 64   | 60  | 63     | 58  | 57        | 52  |
| 7.....       | 48      | 48  | 52       | 48  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 56  | 49  | 58   | 56  | 64   | 62  | 65     | 58  | 56        | 54  |
| 8.....       | 50      | 46  | 48       | 44  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 56  | 51  | 58   | 54  | 66   | 64  | 65     | 62  | 56        | 51  |
| 9.....       | 48      | 45  | 44       | 41  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 33  | 56  | 52  | 59   | 54  | 66   | 64  | 65     | 64  | 55        | 50  |
| 10.....      | 46      | 44  | 41       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 41    | 34  | 52  | 48  | 62   | 58  | 64   | 60  | 66     | 62  | 55        | 55  |
| 11.....      | 44      | 42  | 38       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 42    | 36  | 49  | 48  | 62   | 62  | 63   | 62  | 66     | 62  | 55        | 54  |
| 12.....      | 49      | 44  | 40       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 34  | 49  | 48  | 63   | 61  | 65   | 63  | 66     | 62  | 56        | 55  |
| 13.....      | 54      | 49  | 40       | 39  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 38    | 34  | 51  | 49  | 63   | 61  | 69   | 65  | 62     | 57  | 60        | 56  |
| 14.....      | 54      | 51  | 43       | 39  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 34  | 51  | 49  | 63   | 61  | 69   | 66  | 66     | 61  | 59        | 55  |
| 15.....      | 55      | 53  | 49       | 43  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 36  | 49  | 46  | 68   | 64  | 68   | 65  | 65     | 61  | 59        | 57  |
| 16.....      | 55      | 53  | 49       | 40  | --       | --  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 40  | 49  | 42  | 68   | 64  | 65   | 61  | 62     | 59  | 59        | 56  |
| 17.....      | 55      | 52  | 49       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 39  | 48  | 44  | 70   | 66  | 64   | 60  | 60     | 55  | 56        | 52  |
| 18.....      | 54      | 49  | 38       | 35  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 42  | 44  | 43  | 70   | 67  | 66   | 62  | 59     | 55  | 57        | 53  |
| 19.....      | 49      | 45  | 38       | 36  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 47    | 44  | 44  | 44  | 68   | 63  | 67   | 63  | 61     | 56  | 60        | 54  |
| 20.....      | 46      | 44  | 37       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 47  | 51  | 44  | 63   | 59  | 63   | 61  | 56     | 60  | 56        | 56  |
| 21.....      | 52      | 48  | 40       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 49  | 50  | 46  | 67   | 63  | 69   | 67  | 62     | 58  | 57        | 57  |
| 22.....      | 55      | 52  | 38       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 45  | 55  | 46  | 68   | 64  | 69   | 60  | 54     | 57  | 56        | 56  |
| 23.....      | 55      | 51  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 49  | 55  | 51  | 68   | 67  | 69   | 65  | 59     | 54  | 56        | 53  |
| 24.....      | 51      | 47  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 51  | 55  | 49  | 68   | 64  | 66   | 62  | 59     | 59  | 53        | 49  |
| 25.....      | 48      | 44  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 52    | 50  | 55  | 51  | 64   | 62  | 66   | 62  | 62     | 57  | 54        | 50  |
| 26.....      | 49      | 48  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 57    | 50  | 57  | 52  | 63   | 61  | 65   | 63  | 61     | 56  | 54        | 49  |
| 27.....      | 49      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 57    | 52  | 57  | 52  | 65   | 61  | 67   | 63  | 61     | 57  | 49        | 45  |
| 28.....      | 48      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 53    | 53  | 54  | 49  | 65   | 64  | 70   | 65  | 57     | 56  | 49        | 44  |
| 29.....      | 49      | 46  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 55    | 55  | 47  | 54  | 62   | 62  | 70   | 66  | 56     | 56  | 50        | 45  |
| 30.....      | 51      | 48  | 32       | 32  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 56    | 49  | 51  | 51  | 65   | 62  | 71   | 68  | 59     | 56  | 52        | 46  |
| 31.....      | 53      | 51  | --       | --  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 58  | 53  | --   | --  | 70   | 65  | 59     | 59  | --        | --  |
| Average..... | 51      | 48  | 42       | 40  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | --    | --  | 52  | 48  | 63   | 60  | 67   | 63  | 63     | 59  | 57        | 53  |



STREAMS TRIBUTARY TO LAKE HURON--Continued  
RIFLE RIVER AT SELKIRK, MICH.

LOCATION.--Temperature recorder at gaging station at upstream side of highway bridge at Selkirk, Ogemaw County, and 1½ miles downstream from Prior Creek. DRAINAGE AREA 110 square miles.  
RECORDS AVAILABLE.--October 1950 to September 1957.  
WATER TEMPERATURES.--Water temperatures: Maximum, 73° F Aug. 3; minimum, freezing point on many days during January and February.  
EXTREMES, 1950-57.--Water temperatures: Maximum, 78° F Aug. 1, 1950; minimum, freezing point on many days during winter months.  
REMARKS.--Stream frozen Nov. 23-24, 29-30, Dec. 12-14, 18-19, Dec. 29 to Jan. 6, Jan. 8, Jan. 10 to Feb. 13, Feb. 19-21, 19-21, Mar. 3-5. Temperatures given for these periods are for the underflow. Records of discharge for the water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957  
Recorder with temperature attachment, continuous ethyl alcohol-actuated thermometer<sup>7</sup>

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....       | 52      | 48  | 55       | 54  | 34       | 34  | 32      | 32  | 32       | 32  | 36    | 34  | 43    | 42  | 63  | 56  | 64   | 61  | 85   | 60  | 70     | 64  | 63        | 59  |
| 2.....       | 54      | 51  | 55       | 55  | 36       | 34  | 32      | 32  | 32       | 32  | 36    | 35  | 44    | 41  | 61  | 55  | 61   | 56  | 85   | 61  | 71     | 64  | 65        | 62  |
| 3.....       | 53      | 50  | 55       | 55  | 37       | 36  | 33      | 33  | 32       | 32  | 32    | 35  | 43    | 40  | 56  | 51  | 63   | 56  | 86   | 64  | 73     | 67  | 64        | 62  |
| 4.....       | 54      | 51  | 55       | 55  | 37       | 36  | 33      | 33  | 32       | 32  | 34    | 34  | 43    | 38  | 57  | 51  | 63   | 57  | 86   | 64  | 69     | 63  | 62        | 59  |
| 5.....       | 52      | 49  | 55       | 54  | 36       | 34  | 32      | 32  | 32       | 32  | 34    | 34  | 39    | 38  | 58  | 50  | 61   | 56  | 85   | 62  | 64     | 59  | 60        | 56  |
| 6.....       | 50      | 49  | 54       | 52  | 37       | 36  | 33      | 33  | 32       | 32  | 36    | 35  | 39    | 37  | 61  | 52  | 60   | 53  | 65   | 59  | 63     | 58  | 58        | 55  |
| 7.....       | 50      | 49  | 52       | 48  | 37       | 37  | 33      | 33  | 32       | 32  | 36    | 35  | 41    | 37  | 64  | 55  | 62   | 57  | 63   | 60  | 66     | 59  | 58        | 55  |
| 8.....       | 50      | 48  | 48       | 45  | 37       | 36  | 33      | 33  | 32       | 32  | 37    | 34  | 41    | 38  | 65  | 57  | 63   | 56  | 64   | 63  | 65     | 62  | 57        | 53  |
| 9.....       | 50      | 47  | 45       | 42  | 36       | 34  | 33      | 33  | 32       | 32  | 37    | 35  | 40    | 37  | 63  | 57  | 63   | 56  | 66   | 61  | 64     | 61  | 56        | 53  |
| 10.....      | 47      | 46  | 42       | 39  | 34       | 34  | 33      | 33  | 32       | 32  | 36    | 34  | 43    | 38  | 57  | 54  | 66   | 59  | 64   | 59  | 66     | 59  | 56        | 55  |
| 11.....      | 46      | 44  | 40       | 39  | 36       | 34  | 33      | 33  | 32       | 32  | 36    | 36  | 44    | 41  | 55  | 54  | 65   | 63  | 63   | 61  | 68     | 63  | 55        | 54  |
| 12.....      | 50      | 46  | 40       | 40  | 35       | 34  | 33      | 33  | 32       | 32  | 36    | 35  | 44    | 40  | 55  | 54  | 65   | 60  | 65   | 62  | 66     | 62  | 56        | 55  |
| 13.....      | 54      | 50  | 40       | 39  | 34       | 33  | 33      | 33  | 32       | 32  | 36    | 35  | 43    | 39  | 57  | 55  | 64   | 60  | 67   | 63  | 63     | 58  | 59        | 56  |
| 14.....      | 54      | 52  | 42       | 39  | 33       | 33  | 33      | 33  | 32       | 32  | 36    | 36  | 46    | 40  | 57  | 54  | 61   | 59  | 68   | 64  | 66     | 60  | 58        | 56  |
| 15.....      | 55      | 54  | 47       | 42  | 35       | 33  | 33      | 33  | 32       | 32  | 39    | 36  | 47    | 42  | 54  | 51  | 66   | 61  | 67   | 63  | 64     | 60  | 58        | 57  |
| 16.....      | 56      | 54  | 47       | 40  | 36       | 35  | 33      | 33  | 33       | 32  | 36    | 35  | 47    | 45  | 55  | 48  | 66   | 63  | 65   | 60  | 62     | 58  | 58        | 56  |
| 17.....      | 56      | 54  | 40       | 38  | 36       | 35  | 33      | 33  | 32       | 32  | 37    | 35  | 49    | 44  | 54  | 49  | 68   | 65  | 66   | 59  | 62     | 57  | 57        | 54  |
| 18.....      | 56      | 52  | 39       | 36  | 35       | 33  | 33      | 33  | 34       | 33  | 37    | 35  | 48    | 48  | 49  | 48  | 70   | 66  | 68   | 61  | 61     | 57  | 58        | 54  |
| 19.....      | 52      | 48  | 39       | 37  | 33       | 33  | 33      | 32  | 34       | 33  | 37    | 35  | 50    | 48  | 49  | 49  | 70   | 63  | 69   | 62  | 63     | 57  | 59        | 55  |
| 20.....      | 50      | 48  | 39       | 38  | 34       | 33  | 32      | 32  | 33       | 33  | 38    | 35  | 56    | 50  | 56  | 48  | 65   | 58  | 71   | 65  | 63     | 58  | 59        | 58  |
| 21.....      | 53      | 50  | 41       | 39  | 36       | 34  | 32      | 32  | 34       | 33  | 39    | 36  | 56    | 53  | 55  | 52  | 70   | 63  | 69   | 67  | 63     | 59  | 58        | 57  |
| 22.....      | 56      | 52  | 40       | 36  | 36       | 32  | 32      | 35  | 34       | 39  | 37    | 34  | 50    | 52  | 59  | 52  | 70   | 65  | 67   | 66  | 62     | 56  | 58        | 57  |
| 23.....      | 56      | 54  | 36       | 34  | 37       | 36  | 32      | 32  | 35       | 35  | 40    | 37  | 57    | 53  | 59  | 55  | 69   | 66  | 66   | 62  | 61     | 57  | --        | --  |
| 24.....      | 54      | 51  | 34       | 34  | 37       | 37  | 32      | 32  | 35       | 35  | 40    | 38  | 57    | 55  | 59  | 52  | 68   | 63  | 66   | 60  | 61     | 59  | --        | --  |
| 25.....      | 51      | 49  | 34       | 34  | 37       | 34  | 32      | 32  | 35       | 35  | 40    | 38  | 57    | 55  | 59  | 55  | 64   | 61  | 65   | 61  | 63     | 57  | --        | --  |
| 26.....      | 51      | 51  | 36       | 34  | 35       | 34  | 32      | 32  | 35       | 34  | 39    | 37  | 61    | 54  | 61  | 56  | 63   | 60  | 63   | 60  | 63     | 58  | 54        | 50  |
| 27.....      | 51      | 49  | 35       | 34  | 36       | 35  | 32      | 32  | 34       | 34  | 41    | 37  | 61    | 57  | 60  | 56  | 64   | 59  | 66   | 60  | 62     | 58  | 52        | 46  |
| 28.....      | 50      | 48  | 35       | 35  | 36       | 34  | 32      | 32  | 34       | 33  | 41    | 39  | 58    | 54  | 58  | 52  | 64   | 62  | 69   | 62  | 59     | 57  | 50        | 47  |
| 29.....      | 50      | 49  | 35       | 34  | 34       | 34  | 32      | 32  | --       | --  | 41    | 39  | 61    | 54  | 58  | 54  | 64   | 60  | 70   | 65  | 57     | 56  | 50        | 46  |
| 30.....      | 51      | 50  | 34       | 34  | 34       | 34  | 32      | 32  | --       | --  | 43    | 39  | 61    | 55  | 56  | 55  | 64   | 62  | 71   | 65  | 59     | 56  | 52        | 49  |
| 31.....      | 54      | 51  | --       | --  | 34       | 33  | 32      | 32  | --       | --  | 43    | 39  | --    | --  | 63  | 56  | --   | --  | 71   | 64  | 59     | 57  | 55        | --  |
| Average..... | 52      | 50  | 43       | 41  | 35       | 35  | 33      | 33  | 33       | 33  | 38    | 36  | 45    | 45  | 58  | 53  | 65   | 60  | 66   | 62  | 64     | 59  | 57        | 55  |

## STREAMS TRIBUTARY TO LAKE HURON --Continued

WEST BRANCH RIFLE RIVER NEAR SELKIRK, MICH

LOCATION.--Temperature recorder at gaging station half a mile downstream from Campbell Creek, 3½ miles upstream from mouth, 4 miles southwest of Selkirk, Ogemaw County, and 6½ miles southeast of West Branch.

DRAINAGE AREA. --52 square miles, approximately.

RECORDS AVAILABLE. ---Water temperatures: May 1952 to September 1957.

EXTREMES, 1956-57. ---water temperatures: Maximum, 77°F Aug. 3; minimum, freezing point on many days during November, December, January, February, and March

EXTREMES, 1952-57.--Water temperatures: Maximum, 78°F June 20, 21, 1953, July 4, 6, 9, Aug. 1, 4, 1955; minimum, freezing point on many days during

REMARKS.--Stream frozen Nov. 23-30, Dec. 12-20, 22, Dec. 29 to Mar. 11. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature ( $^{\circ}\text{F}$ ) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day          | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |  |
|--------------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|--|
|              | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       |  |
| 1.....       | 53      | 48  | 55       | 53  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 42  | 64  | 55  | 65   | 61  | 67   | 61  | 74     | 68  | 67        |  |
| 2.....       | 55      | 51  | 56       | 55  | 34       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 45    | 40  | 58  | 63  | 63   | 56  | 68   | 61  | 75     | 68  | 64        |  |
| 3.....       | 55      | 50  | 56       | 56  | 36       | 34  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 38  | 56  | 48  | 63   | 55  | 70   | 65  | 77     | 72  | 69        |  |
| 4.....       | 55      | 51  | 56       | 55  | 36       | 35  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 38  | 56  | 48  | 64   | 56  | 70   | 68  | 74     | 68  | 66        |  |
| 5.....       | 54      | 49  | 54       | 55  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 37    | 35  | 57  | 48  | 63   | 57  | 68   | 63  | 68     | 64  | 62        |  |
| 6.....       | 52      | 48  | 54       | 52  | 37       | 35  | 32      | 32  | 32       | 32  | 32    | 32  | 36    | 34  | 61  | 49  | 62   | 55  | 68   | 61  | 66     | 61  | 56        |  |
| 7.....       | 51      | 48  | 52       | 46  | 37       | 35  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 35  | 65  | 63  | 63   | 57  | 68   | 63  | 61     | 60  | 57        |  |
| 8.....       | 51      | 46  | 48       | 44  | 37       | 35  | 32      | 32  | 32       | 32  | 32    | 32  | 40    | 37  | 66  | 56  | 63   | 55  | 68   | 65  | 69     | 64  | 59        |  |
| 9.....       | 50      | 46  | 44       | 41  | 35       | 33  | 32      | 32  | 32       | 32  | 32    | 32  | 39    | 35  | 62  | 58  | 65   | 55  | 68   | 65  | 69     | 66  | 59        |  |
| 10.....      | 47      | 44  | 41       | 37  | 33       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 43    | 35  | 58  | 53  | 68   | 59  | 67   | 62  | 70     | 63  | 59        |  |
| 11.....      | 46      | 42  | 38       | 37  | 35       | 32  | 32      | 32  | 32       | 32  | 32    | 32  | 44    | 39  | 54  | 52  | 68   | 64  | 68   | 63  | 71     | 65  | 59        |  |
| 12.....      | 50      | 46  | 39       | 38  | 33       | 32  | 32      | 32  | 32       | 32  | 35    | 32  | 40    | 37  | 54  | 52  | 70   | 63  | 69   | 65  | 71     | 65  | 58        |  |
| 13.....      | 54      | 48  | 39       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 35    | 36  | 36    | 36  | 56  | 53  | 68   | 63  | 71   | 66  | 87     | 61  | 58        |  |
| 14.....      | 55      | 51  | 42       | 38  | 32       | 32  | 32      | 32  | 32       | 32  | 41    | 37  | 44    | 35  | 55  | 53  | 66   | 62  | 73   | 68  | 69     | 63  | 61        |  |
| 15.....      | 56      | 53  | 48       | 42  | 32       | 32  | 32      | 32  | 32       | 32  | 40    | 37  | 45    | 37  | 53  | 48  | 72   | 65  | 71   | 66  | 68     | 62  | 62        |  |
| 16.....      | 57      | 53  | 48       | 40  | 33       | 32  | 32      | 32  | 32       | 32  | 35    | 34  | 45    | 42  | 52  | 46  | 73   | 66  | 68   | 62  | 65     | 62  | 61        |  |
| 17.....      | 57      | 53  | 40       | 37  | 34       | 33  | 32      | 32  | 32       | 32  | 38    | 34  | 49    | 43  | 50  | 47  | 76   | 68  | 70   | 61  | 64     | 59  | 59        |  |
| 18.....      | 57      | 52  | 37       | 35  | 33       | 32  | 32      | 32  | 32       | 32  | 38    | 34  | 48    | 45  | 47  | 46  | 75   | 70  | 71   | 63  | 64     | 59  | 54        |  |
| 19.....      | 52      | 47  | 38       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 36    | 34  | 52    | 46  | 48  | 46  | 74   | 66  | 73   | 65  | 66     | 59  | 63        |  |
| 20.....      | 51      | 46  | 38       | 37  | 32       | 32  | 32      | 32  | 32       | 32  | 32    | 39  | 34    | 52  | 46  | 51  | 68   | 60  | 76   | 63  | 67     | 60  | 63        |  |
| 21.....      | 54      | 50  | 40       | 38  | 35       | 32  | 32      | 32  | 32       | 32  | 40    | 34  | 56    | 53  | 52  | 45  | 73   | 64  | 75   | 70  | 65     | 63  | 60        |  |
| 22.....      | 55      | 52  | 39       | 34  | 35       | 35  | 32      | 32  | 32       | 32  | 41    | 37  | 57    | 50  | 61  | 50  | 74   | 67  | 73   | 70  | 65     | 60  | 58        |  |
| 23.....      | 54      | 52  | 34       | 33  | 36       | 35  | 32      | 32  | 32       | 32  | 44    | 37  | 59    | 54  | 60  | 57  | 72   | 68  | 70   | 66  | 64     | 59  | 58        |  |
| 24.....      | 51      | 48  | 33       | 32  | 36       | 35  | 32      | 32  | 32       | 32  | 42    | 38  | 59    | 56  | 61  | 52  | 70   | 65  | 70   | 63  | 64     | 63  | 54        |  |
| 25.....      | 49      | 45  | 32       | 32  | 35       | 32  | 32      | 32  | 32       | 32  | 39    | 37  | 57    | 56  | 59  | 66  | 63   | 69  | 64   | 65  | 61     | 55  | 50        |  |
| 26.....      | 49      | 48  | 32       | 32  | 33       | 33  | 32      | 32  | 32       | 32  | 37    | 35  | 60    | 53  | 64  | 56  | 65   | 62  | 68   | 64  | 66     | 59  | 55        |  |
| 27.....      | 49      | 46  | 33       | 32  | 35       | 32  | 32      | 32  | 32       | 32  | 42    | 34  | 60    | 56  | 62  | 56  | 66   | 61  | 71   | 64  | 66     | 60  | 52        |  |
| 28.....      | 48      | 46  | 34       | 33  | 35       | 33  | 32      | 32  | 32       | 32  | 44    | 37  | 57    | 52  | 60  | 51  | 65   | 63  | 74   | 66  | 62     | 59  | 50        |  |
| 29.....      | 50      | 46  | 34       | 33  | 33       | 33  | 32      | 32  | 32       | 32  | 43    | 37  | 61    | 52  | 59  | 53  | 64   | 61  | 75   | 69  | 59     | 59  | 52        |  |
| 30.....      | 51      | 47  | 33       | 33  | 33       | 33  | 32      | 32  | 32       | 32  | 45    | 37  | 63    | 54  | 58  | 58  | 66   | 63  | 76   | 70  | 62     | 59  | 55        |  |
| 31.....      | 54      | 50  | --       | --  | 34       | 33  | 32      | 32  | 32       | 32  | --    | 45  | 37    | --  | 65  | 68  | --   | --  | 74   | 68  | 63     | 60  | --        |  |
| Average..... | 52      | 48  | 40       | 34  | 33       | 32  | 32      | 32  | 32       | 32  | 37    | 34  | 49    | 44  | 58  | 52  | 68   | 62  | 71   | 65  | 67     | 62  | 60        |  |

Average

## STREAMS TRIBUTARY TO LAKE ERIE

## MAUMEE RIVER AT WATERVILLE, OHIO

LOCATION. --At gaging station at bridge on State Highway 64, at Waterville, Lucas County, 3 miles downstream from Tontogany Creek.

DRAINAGE AREA. --6,374 square miles.

RECORD AVAILABLE. --Chemical analyses: March 1950 to February 1952.

Water temperatures: April 1950 to September 1957.

Sediment records: April 1950 to September 1957.

EXTREMES, 1956-57. --Water temperatures: Maximum, 87° F Aug. 1, 2; minimum, freezing point on many days during January and February.

Sediment concentrations: Maximum daily, 900 ppm Apr. 6; minimum daily, 3 ppm Nov. 27.

Sediment loads: Maximum daily, 146,000 tons Apr. 6; minimum daily, 1 ton Oct. 10, Nov. 18.

EXTREMES, 1950-57. --Water temperatures: Maximum, 90° F July 27, 1952, July 27, Aug. 3-5, 1953; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 2,240 ppm Mar. 26, 1954; minimum daily, 1 ppm on many days during October to December 1953, September and

November 1955, and January 1956.

Sediment loads: Maximum daily, 161,000 tons Feb. 27, 1956; minimum daily, less than 0.5 ton on several days during October to December 1953, and

September 1955.

REMARKS. --Records of discharge for water year October 1956 to September 1957 given in WSP 1507. Flow affected by ice Nov. 28, Jan. 10-22, Feb. 1-2.

Low flow slightly regulated by power plant above station.

Temperature (°F) of water, water year October 1956 to September 1957

/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/

| Day     | October |     | November |     | December |     | January |     | February |     | March |     | April |     | May |     | June |     | July |     | August |     | September |     |
|---------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|
|         | max     | min | max      | min | max      | min | max     | min | max      | min | max   | min | max   | min | max | min | max  | min | max  | min | max    | min | max       | min |
| 1.....  | 64      | 59  | 58       | 58  | 36       | 35  | 34      | 33  | 31       | 31  | 36    | 36  | 43    | 43  | 66  | 64  | 68   | 68  | 73   | 71  | 87     | 82  | 78        | 71  |
| 2.....  | 66      | 63  | 59       | 58  | 36       | 33  | 33      | 33  | 31       | 31  | 36    | 36  | 44    | 43  | 66  | 63  | 68   | 68  | 74   | 73  | 87     | 82  | 77        | 74  |
| 3.....  | 65      | 61  | 58       | 58  | 37       | 36  | 33      | 33  | 31       | 31  | 36    | 35  | 44    | 43  | 63  | 61  | 69   | 67  | 76   | 74  | 86     | 83  | 75        | 73  |
| 4.....  | 66      | 62  | 58       | 58  | 38       | 36  | 33      | 33  | 31       | 31  | 35    | 34  | 43    | 42  | 61  | 59  | 70   | 69  | 76   | 76  | 84     | 80  | 73        | 70  |
| 5.....  | 65      | 59  | 58       | 58  | 39       | 38  | 33      | 33  | 31       | 31  | 35    | 34  | 42    | 39  | 59  | 58  | 71   | 70  | 76   | 76  | 80     | 76  | 70        | 63  |
| 6.....  | 63      | 58  | 56       | 41  | 39       | 33  | 33      | 33  | 31       | 31  | 34    | 34  | 40    | 40  | 61  | 59  | 72   | 71  | 76   | 75  | 78     | 72  | 71        | 64  |
| 7.....  | 60      | 58  | 56       | 54  | 41       | 41  | 33      | 33  | 31       | 31  | 34    | 34  | 41    | 40  | 62  | 61  | 72   | 69  | 78   | 76  | 79     | 74  | 71        | 67  |
| 8.....  | 59      | 55  | 54       | 49  | 41       | 40  | 33      | 33  | 31       | 31  | 34    | 34  | 41    | 40  | 63  | 62  | 69   | 67  | 78   | 77  | 80     | 74  | 70        | 63  |
| 9.....  | 59      | 55  | 49       | 47  | 40       | 40  | 33      | 33  | 31       | 31  | 35    | 34  | 40    | 39  | 64  | 63  | 67   | 66  | 78   | 76  | 81     | 76  | 68        | 64  |
| 10..... | 59      | 52  | 47       | 45  | 40       | 37  | 33      | 33  | 31       | 31  | 36    | 35  | 39    | 38  | 65  | 64  | 69   | 66  | 77   | 75  | 80     | 77  | 67        | 67  |
| 11..... | 56      | 51  | 48       | 45  | 37       | 36  | 33      | 33  | 31       | 31  | 38    | 36  | 41    | 39  | 65  | 63  | 74   | 69  | 77   | 76  | 82     | 76  | 71        | 65  |
| 12..... | 58      | 53  | 48       | 46  | 36       | 36  | 33      | 32  | 31       | 31  | 41    | 38  | 42    | 41  | 64  | 63  | 73   | 73  | 78   | 77  | 81     | 76  | 71        | 68  |
| 13..... | 61      | 57  | 46       | 44  | 36       | 35  | 32      | 32  | 32       | 31  | 42    | 41  | 42    | 42  | 66  | 64  | 74   | 72  | 78   | 78  | 78     | 73  | 70        | 69  |
| 14..... | 61      | 57  | 47       | 43  | 35       | 34  | 32      | 32  | 32       | 32  | 45    | 42  | 42    | 42  | 66  | 66  | 75   | 74  | 79   | 78  | 79     | 75  | 72        | 66  |
| 15..... | 63      | 59  | 49       | 47  | 35       | 34  | 32      | 32  | 32       | 33  | 45    | 44  | 42    | 41  | 67  | 66  | 77   | 75  | 80   | 78  | 81     | 76  | 71        | 68  |
| 16..... | 64      | 60  | 49       | 44  | 35       | 35  | 32      | 32  | 34       | 33  | 44    | 42  | 42    | 42  | 67  | 65  | 78   | 76  | 79   | 78  | 79     | 74  | 71        | 68  |
| 17..... | 64      | 61  | 44       | 42  | 37       | 35  | 32      | 32  | 34       | 33  | 43    | 42  | 42    | 42  | 65  | 63  | 80   | 78  | 78   | 77  | 79     | 73  | 70        | 65  |
| 18..... | 61      | 43  | 41       | 37  | 37       | 32  | 32      | 32  | 33       | 32  | 43    | 42  | 45    | 43  | 63  | 61  | 80   | 79  | 79   | 77  | 77     | 72  | 70        | 63  |
| 19..... | 62      | 57  | 42       | 40  | 37       | 36  | 32      | 32  | 33       | 32  | 42    | 42  | 45    | 45  | 61  | 59  | 80   | 79  | 81   | 78  | 77     | 73  | 72        | 68  |
| 20..... | 61      | 59  | 43       | 42  | 36       | 36  | 32      | 32  | 32       | 32  | 42    | 42  | 43    | 49  | 59  | 58  | 79   | 77  | 84   | 80  | 77     | 71  | 70        | 69  |

|              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 21.....      | 63 | 59 | 44 | 43 | 36 | 36 | 32 | 31 | 33 | 32 | 42 | 41 | 58 | 53 | 58 | 57 | 79 | 79 | 86 | 82 | 76 | 72 | 70 | 70 |
| 22.....      | 63 | 60 | 43 | 39 | 37 | 36 | 31 | 31 | 34 | 33 | 43 | 42 | 58 | 58 | 60 | 58 | 80 | 79 | 85 | 82 | 75 | 70 | 70 | 68 |
| 23.....      | 63 | 61 | 39 | 37 | 38 | 37 | 31 | 31 | 34 | 34 | 43 | 42 | 61 | 58 | 61 | 60 | 81 | 79 | 83 | 78 | 74 | 68 | 68 | 65 |
| 24.....      | 62 | 57 | 37 | 37 | 38 | 38 | 31 | 31 | 35 | 34 | 44 | 43 | 63 | 61 | 62 | 61 | 80 | 77 | 80 | 76 | 73 | 71 | 65 | 64 |
| 25.....      | 59 | 55 | 37 | 36 | 38 | 38 | 31 | 31 | 37 | 35 | 44 | 40 | 65 | 63 | 63 | 62 | 77 | 76 | 78 | 77 | 72 | 71 | 64 | 64 |
| 26.....      | 58 | 54 | 37 | 36 | 38 | 37 | 31 | 31 | 38 | 37 | 40 | 39 | 66 | 64 | 66 | 63 | 76 | 74 | 78 | 78 | 75 | 69 | 64 | 61 |
| 27.....      | 56 | 54 | 37 | 36 | 36 | 36 | 31 | 31 | 39 | 37 | 40 | 40 | 67 | 66 | 66 | 65 | 76 | 75 | 81 | 78 | 74 | 70 | 61 | 58 |
| 28.....      | 56 | 52 | 36 | 35 | 36 | 36 | 31 | 31 | 37 | 36 | 40 | 40 | 67 | 66 | 66 | 64 | 73 | 74 | 82 | 80 | 70 | 68 | 58 | 58 |
| 29.....      | 57 | 54 | 37 | 35 | 36 | 34 | 31 | 31 | -- | -- | 41 | 40 | 66 | 64 | 67 | 66 | 74 | 73 | 86 | 80 | 73 | 66 | 58 | 57 |
| 30.....      | 54 | 54 | 36 | 35 | 34 | 34 | 31 | 31 | -- | -- | 42 | 41 | 66 | 65 | 69 | 67 | 74 | 73 | 86 | 82 | 74 | 71 | 60 | 57 |
| 31.....      | 58 | 57 | -- | -- | 34 | 34 | 31 | 31 | -- | -- | 43 | 42 | -- | -- | 69 | 68 | -- | -- | 86 | 83 | 73 | 71 | -- | -- |
| Average..... | 61 | 57 | 47 | 45 | 37 | 36 | 32 | 32 | 33 | 32 | 40 | 39 | 50 | 48 | 64 | 62 | 75 | 73 | 80 | 77 | 78 | 74 | 69 | 66 |

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 184                   | 14                        | 7            | 270                   | 8                         | 6            | 468                   | 33                        | s 56         |
| 2.....  | 201                   | 10                        | 5            | 270                   | 8                         | 6            | 459                   | 40                        | a 50         |
| 3.....  | 200                   | 10                        | 5            | 270                   | 8                         | a 6          | 333                   | 9                         | 8            |
| 4.....  | 136                   | 9                         | 3            | 262                   | 8                         | a 6          | 278                   | 6                         | 4            |
| 5.....  | 159                   | 10                        | 4            | 262                   | 9                         | 6            | 287                   | 7                         | 5            |
| 6.....  | 153                   | 12                        | 5            | 262                   | 10                        | 7            | 333                   | 6                         | 5            |
| 7.....  | 270                   | 13                        | 9            | 323                   | 13                        | 11           | 392                   | 6                         | 6            |
| 8.....  | 194                   | 11                        | 6            | 343                   | 12                        | 12           | 402                   | 9                         | 10           |
| 9.....  | 165                   | 10                        | 4            | 262                   | 8                         | 6            | 541                   | 11                        | 16           |
| 10..... | 83                    | 6                         | 1            | 188                   | 8                         | 4            | 670                   | 17                        | 31           |
| 11..... | 96                    | 6                         | 2            | 146                   | 8                         | 3            | 541                   | 16                        | 23           |
| 12..... | 141                   | 8                         | 3            | 299                   | 6                         | 5            | 643                   | 10                        | 17           |
| 13..... | 184                   | 8                         | 4            | 190                   | 7                         | 4            | 885                   | 11                        | 26           |
| 14..... | 190                   | 7                         | 4            | 142                   | 16                        | 6            | 725                   | 11                        | 22           |
| 15..... | 184                   | 5                         | 2            | 237                   | 8                         | 5            | 810                   | 10                        | 22           |
| 16..... | 171                   | 8                         | 4            | 535                   | 31                        | 45           | 766                   | 12                        | a 25         |
| 17..... | 171                   | 9                         | a 4          | 156                   | 9                         | 4            | 739                   | 14                        | 28           |
| 18..... | 171                   | 10                        | 5            | 68                    | 4                         | 1            | 698                   | 13                        | 24           |
| 19..... | 171                   | 6                         | 3            | 171                   | 5                         | 2            | 567                   | 11                        | 17           |
| 20..... | 184                   | 7                         | 3            | 295                   | 5                         | 4            | 725                   | 10                        | 20           |
| 21..... | 246                   | 8                         | a 5          | 762                   | 45                        | sb 120       | 643                   | 11                        | 19           |
| 22..... | 237                   | 8                         | 5            | 470                   | 12                        | s 24         | 1,070                 | 14                        | 40           |
| 23..... | 221                   | 11                        | 6            | 277                   | 4                         | 3            | 766                   | 17                        | 35           |
| 24..... | 215                   | 10                        | 6            | 432                   | 10                        | 12           | 1,140                 | 15                        | 46           |
| 25..... | 184                   | 10                        | 5            | 382                   | 9                         | 9            | 900                   | 16                        | 39           |
| 26..... | 221                   | 9                         | 5            | 413                   | 5                         | 6            | 753                   | 13                        | 26           |
| 27..... | 303                   | 11                        | 9            | 362                   | 3                         | 3            | 1,010                 | 10                        | 27           |
| 28..... | 209                   | 9                         | 5            | 300                   | 8                         | 6            | 712                   | 10                        | 19           |
| 29..... | 221                   | 8                         | 5            | 270                   | 5                         | 4            | 1,310                 | 12                        | 42           |
| 30..... | 254                   | 8                         | 5            | 237                   | 8                         | 5            | 698                   | 8                         | 15           |
| 31..... | 270                   | 8                         | 6            | --                    | --                        | --           | 739                   | 9                         | 18           |
| Total.  | 5,989                 | --                        | 145          | 8,856                 | --                        | 341          | 21,003                | --                        | 741          |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day | Mean dis-charge (cfs) | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 900                   | 11                        | 27           | 2,400                 | 42                        | 272          | 18,000                | 580                       | 28,200       |
| 2.....  | 657                   | 18                        | 32           | 2,000                 | 36                        | 194          | 13,400                | 410                       | 14,800       |
| 3.....  | 436                   | 12                        | 14           | 1,810                 | 48                        | 234          | 10,400                | 319                       | 8,960        |
| 4.....  | 567                   | 10                        | 15           | 1,480                 | 42                        | 168          | 8,350                 | 207                       | 4,670        |
| 5.....  | 541                   | 9                         | 13           | 1,560                 | 39                        | 164          | 6,820                 | 169                       | 3,110        |
| 6.....  | 448                   | 10                        | 12           | 1,980                 | 37                        | 198          | 4,530                 | 156                       | 1,910        |
| 7.....  | 372                   | 10                        | 10           | 1,560                 | 38                        | 160          | 3,350                 | 141                       | 1,280        |
| 8.....  | 470                   | 8                         | 10           | 2,960                 | 43                        | 344          | 2,790                 | 126                       | 949          |
| 9.....  | 541                   | 11                        | 16           | 5,730                 | 62                        | s 1,060      | 2,500                 | 117                       | 790          |
| 10..... | 550                   |                           |              | 11,000                | 142                       | 4,220        | 1,850                 | 105                       | 524          |
| 11..... | 370                   |                           |              | 12,600                | 288                       | 9,800        | 1,460                 | 100                       | a 390        |
| 12..... | 450                   |                           |              | 12,600                | 376                       | 12,800       | 2,120                 | 88                        | 504          |
| 13..... | 500                   |                           |              | 9,350                 | 256                       | 6,460        | 1,350                 | 80                        | 292          |
| 14..... | 550                   | --                        | e 15         | 7,390                 | 159                       | 3,170        | 1,520                 | 72                        | 295          |
| 15..... | 550                   |                           |              | 5,550                 | 135                       | 2,020        | 2,230                 | 78                        | 470          |
| 16..... | 360                   |                           |              | 5,200                 | 100                       | 1,400        | 1,270                 | 61                        | 209          |
| 17..... | 440                   |                           |              | 3,560                 | 96                        | 923          | 885                   | 53                        | 127          |
| 18..... | 490                   |                           |              | 3,440                 | 78                        | 724          | 1,110                 | 49                        | 147          |
| 19..... | 300                   | 15                        | 4            | 2,560                 | 64                        | 442          | 1,980                 | 41                        | 219          |
| 20..... | 230                   | 7                         | 4            | 2,260                 | 53                        | 323          | 1,630                 | 32                        | 141          |
| 21..... | 230                   | 5                         | 3            | 1,650                 | 45                        | 200          | 1,830                 | 31                        | 153          |
| 22..... | 1,600                 | 54                        | 233          | 1,630                 | 40                        | 176          | 1,740                 | 29                        | 136          |
| 23..... | 9,350                 | 214                       | 5,400        | 1,460                 | 41                        | 162          | 2,200                 | 30                        | 178          |
| 24..... | 15,600                | 152                       | 6,400        | 1,230                 | 39                        | 130          | 2,120                 | 36                        | 206          |
| 25..... | 15,600                | 358                       | 15,100       | 1,440                 | 32                        | 124          | 1,230                 | 60                        | 199          |
| 26..... | 12,200                | 257                       | 8,460        | 1,280                 | 34                        | 118          | 2,420                 | 78                        | 510          |
| 27..... | 8,750                 | 180                       | 4,250        | 9,320                 | 156                       | s 4,160      | 1,330                 | 71                        | 255          |
| 28..... | 6,820                 | 127                       | 2,340        | 16,200                | 372                       | 17,500       | 1,880                 | 62                        | 315          |
| 29..... | 4,180                 | 108                       | 1,220        | --                    | --                        | --           | 2,310                 | 55                        | 343          |
| 30..... | 4,090                 | 78                        | 861          | --                    | --                        | --           | 2,370                 | 47                        | 301          |
| 31..... | 3,930                 | 52                        | 552          | --                    | --                        | --           | 2,500                 | 49                        | 331          |
| Total.  | 92,072                | --                        | 45,111       | 131,200               | --                        | 67,616       | 109,475               | --                        | 70,914       |

e Estimated

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                 |                           |              | May                   |                           |              | June                  |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 1,810                 | 48                        | 234          | 8,550                 | 143                       | 3,300        | 6,460                 | 75                        | 1,310        |
| 2.....  | 3,170                 | 52                        | 445          | 7,200                 | 107                       | 2,080        | 6,820                 | 73                        | 1,340        |
| 3.....  | 7,960                 | 84                        | 1,800        | 6,090                 | 81                        | 1,330        | 5,910                 | 67                        | 1,070        |
| 4.....  | 20,700                | 251                       | s 19,000     | 4,860                 | 56                        | 735          | 4,530                 | 79                        | 966          |
| 5.....  | 48,600                | 855                       | 112,000      | 4,210                 | 49                        | 557          | 3,810                 | 68                        | 700          |
| 6.....  | 60,000                | 900                       | 146,000      | 3,020                 | 48                        | 391          | 2,900                 | 72                        | 564          |
| 7.....  | 62,400                | 690                       | 116,000      | 2,420                 | 42                        | 274          | 2,450                 | 68                        | 450          |
| 8.....  | 51,300                | 418                       | 57,900       | 2,180                 | 43                        | 253          | 2,050                 | 68                        | 376          |
| 9.....  | 48,600                | 282                       | 37,000       | 1,900                 | 42                        | 215          | 1,540                 | 42                        | 175          |
| 10..... | 45,100                | 238                       | 29,000       | 1,460                 | 30                        | 118          | 1,720                 | 30                        | a 140        |
| 11..... | 52,200                | 230                       | 32,400       | 1,310                 | 21                        | 74           | 1,540                 | 22                        | 91           |
| 12..... | 51,300                | 217                       | 30,000       | 4,020                 | 35                        | 380          | 930                   | 18                        | 45           |
| 13..... | 40,300                | 168                       | 18,300       | 7,770                 | 47                        | 986          | 885                   | 18                        | 43           |
| 14..... | 29,700                | 130                       | 10,400       | 8,150                 | 100                       | 2,200        | 2,910                 | 10                        | 78           |
| 15..... | 22,000                | 113                       | 6,710        | 10,800                | 248                       | 7,230        | 5,730                 | 45                        | 696          |
| 16..... | 16,200                | 93                        | 4,070        | 11,200                | 318                       | 9,620        | 5,550                 | 85                        | 1,270        |
| 17..... | 12,200                | 80                        | 2,640        | 9,350                 | 257                       | 6,490        | 6,270                 | 123                       | 2,080        |
| 18..... | 12,400                | 76                        | 2,540        | 7,010                 | 240                       | 4,540        | 6,460                 | 118                       | 2,060        |
| 19..... | 18,600                | 158                       | 7,930        | 5,730                 | 172                       | 2,660        | 5,550                 | 122                       | 1,820        |
| 20..... | 25,500                | 350                       | 24,100       | 5,550                 | 152                       | 2,280        | 5,200                 | 95                        | 1,330        |
| 21..... | 23,400                | 432                       | 27,300       | 7,200                 | 119                       | 2,310        | 3,440                 | 90                        | 836          |
| 22..... | 18,600                | 421                       | 21,100       | 9,950                 | 116                       | 3,120        | 2,180                 | 87                        | 512          |
| 23..... | 16,200                | 309                       | 13,500       | 8,550                 | 123                       | 2,840        | 1,950                 | 75                        | 395          |
| 24..... | 15,000                | 309                       | 12,500       | 6,640                 | 105                       | 1,880        | 1,330                 | 68                        | 244          |
| 25..... | 15,000                | 273                       | 11,000       | 6,820                 | 86                        | 1,580        | 1,070                 | 83                        | 240          |
| 26..... | 11,700                | 260                       | 8,210        | 6,820                 | 86                        | 1,580        | 915                   | 79                        | 195          |
| 27..... | 10,600                | 183                       | 5,240        | 5,380                 | 102                       | 1,480        | 915                   | 76                        | 188          |
| 28..... | 12,900                | 208                       | 7,240        | 4,020                 | 71                        | 771          | 2,850                 | 105                       | s 946        |
| 29..... | 12,600                | 308                       | 10,500       | 3,500                 | 48                        | 454          | 14,400                | 203                       | 7,890        |
| 30..... | 10,600                | 190                       | 5,440        | 2,960                 | 45                        | 360          | 24,100                | 425                       | 27,600       |
| 31..... | --                    | --                        | --           | 2,390                 | 54                        | 348          | --                    | --                        | --           |
| Total.  | 776,640               | --                        | 780,499      | 177,010               | --                        | 62,436       | 132,365               | --                        | 55,660       |
| Day     | July                  |                           |              | August                |                           |              | September             |                           |              |
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 27,600                | 435                       | 32,400       | 567                   | 20                        | 31           | 313                   | 18                        | 15           |
| 2.....  | 26,200                | 475                       | 33,600       | 505                   | 15                        | 20           | 295                   | 24                        | 19           |
| 3.....  | 16,800                | 288                       | 13,100       | 618                   | 20                        | 33           | 313                   | 42                        | 35           |
| 4.....  | 11,200                | 173                       | 5,230        | 470                   | 18                        | 23           | 238                   | 24                        | s 16         |
| 5.....  | 9,550                 | 144                       | 3,710        | 343                   | 18                        | 17           | 136                   | 12                        | 4            |
| 6.....  | 9,350                 | 118                       | 2,980        | 323                   | 20                        | 17           | 158                   | 13                        | 6            |
| 7.....  | 8,750                 | 112                       | 2,650        | 459                   | 25                        | 31           | 215                   | 18                        | 10           |
| 8.....  | 7,770                 | 118                       | 2,480        | 352                   | 15                        | 14           | 270                   | 20                        | 14           |
| 9.....  | 7,960                 | 134                       | 2,880        | 333                   | 17                        | 15           | 237                   | 20                        | 13           |
| 10..... | 8,550                 | 218                       | 5,030        | 287                   | 23                        | 18           | 262                   | 17                        | 12           |
| 11..... | 7,960                 | 195                       | 4,190        | 270                   | 16                        | 12           | 246                   | 18                        | 12           |
| 12..... | 6,460                 | 173                       | 3,020        | 276                   | 16                        | 12           | 221                   | 12                        | 7            |
| 13..... | 4,020                 | 148                       | 1,610        | 459                   | 30                        | 37           | 246                   | 14                        | 9            |
| 14..... | 3,140                 | 131                       | 1,110        | 413                   | 20                        | 22           | 202                   | 16                        | 9            |
| 15..... | 1,590                 | 103                       | 442          | 323                   | 18                        | 16           | 221                   | 17                        | 10           |
| 16..... | 1,500                 | 99                        | 401          | 313                   | 22                        | 18           | 323                   | 20                        | 17           |
| 17..... | 1,230                 | 100                       | 332          | 278                   | 25                        | 19           | 218                   | 16                        | 9            |
| 18..... | 1,130                 | 97                        | 296          | 285                   | 20                        | 16           | 190                   | 15                        | 8            |
| 19..... | 1,130                 | 90                        | 274          | 287                   | 32                        | 25           | 215                   | 21                        | 12           |
| 20..... | 1,060                 | 78                        | 223          | 295                   | 23                        | 18           | 333                   | 26                        | 23           |
| 21..... | 725                   | 62                        | 121          | 278                   | 12                        | 9            | 516                   | 32                        | 44           |
| 22..... | 605                   | 55                        | 90           | 237                   | 15                        | 10           | 1,270                 | 42                        | 144          |
| 23..... | 493                   | 47                        | 62           | 237                   | 14                        | 9            | 2,340                 | 47                        | 297          |
| 24..... | 529                   | 38                        | 54           | 366                   | 25                        | sb 25        | 3,290                 | 51                        | 453          |
| 25..... | 1,710                 | 89                        | 411          | 657                   | 32                        | 57           | 2,420                 | 45                        | 294          |
| 26..... | 2,560                 | 114                       | 788          | 425                   | 17                        | 20           | 1,560                 | 50                        | 211          |
| 27..... | 1,250                 | 107                       | 361          | 287                   | 15                        | 12           | 1,290                 | 42                        | 146          |
| 28..... | 1,010                 | 56                        | 153          | 287                   | 16                        | 12           | 962                   | 32                        | 83           |
| 29..... | 739                   | 57                        | 114          | 323                   | 17                        | 15           | 825                   | 25                        | 56           |
| 30..... | 855                   | 65                        | a 160        | 278                   | 15                        | 11           | 567                   | 20                        | 31           |
| 31..... | 684                   | 31                        | 57           | 323                   | 22                        | 19           | --                    | --                        | --           |
| Total.  | 174,110               | --                        | 118,329      | 11,166                | --                        | 613          | 19,892                | --                        | 2,019        |

Total discharge for year (cfs-days) ..... 1,659,778

Total load for year (tons)..... 1,204,454

s Computed by subdividing day.

b Computed from estimated concentration graph.

a Computed from partly estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water; W, in distilled water; C, Chemically dispersed; M, mechanically dispersed)

| Date of collection | Time        | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |       |
|--------------------|-------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|-------|
|                    |             |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |       |
|                    |             |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     | 1.000 |
| Jan. 25, 1957...   | 12:15 p. m. | 16,200          |                        | 381                           | 864                                        | 80                                                | 90    | 93    | 96    | 97    | 98    | 99    | 100   |       |       |                     | SBWCM |
| Feb. 12.....       | 6:00 p. m.  | 11,700          |                        | 376                           | 1,240                                      | 57                                                | 71    | 83    | 90    | 98    | 99    | 100   | --    |       |       |                     | SBWCM |
| Feb. 27.....       | 6:45 p. m.  | 11,200          |                        | 169                           | 751                                        | 64                                                | 73    | 88    | 95    | 98    | 99    | 99    | 100   |       |       |                     | SBWCM |
| Feb. 28.....       | 6:00 p. m.  | 18,600          |                        | 578                           | 573                                        | 75                                                | 83    | 89    | 92    | 94    | 95    | 98    | 100   |       |       |                     | SBWCM |
| Mar. 1.....        | 5:05 p. m.  | 18,000          |                        | 558                           | 565                                        | 75                                                | 85    | 90    | 96    | 98    | 99    | 100   | --    |       |       |                     | SBWCM |
| Apr. 4.....        | 6:45 p. m.  | 32,500          |                        | 396                           | 405                                        | 64                                                | 69    | 76    | 87    | 92    | 96    | 99    | 100   |       |       |                     | SBWCM |
| Apr. 5.....        | 3:15 p. m.  | 51,300          |                        | 801                           | 1,660                                      | 51                                                | 67    | 80    | 85    | 90    | 97    | 98    | 100   |       |       |                     | SBWCM |
| Apr. 5.....        | 3:15 p. m.  | 51,300          |                        | 801                           | 1,650                                      | 16                                                | 27    | 46    | 82    | 94    | 96    | 99    | 100   |       |       |                     | BSNM  |
| Apr. 6.....        | 4:50 p. m.  | 52,200          |                        | 896                           | 1,650                                      | 61                                                | 70    | 81    | 87    | 92    | 96    | 98    | 100   |       |       |                     | SBWCM |
| Apr. 20.....       | 11:45 a. m. | 26,200          |                        | 348                           | 328                                        | 79                                                | 85    | 92    | 96    | 96    | 97    | 99    | 100   |       |       |                     | SBWCM |
| Apr. 22.....       | 4:45 p. m.  | 18,000          |                        | 397                           | 389                                        | 79                                                | 85    | 91    | 94    | 96    | 98    | 99    | 100   |       |       |                     | SBWCM |
| Apr. 22.....       | 4:45 p. m.  | 18,000          |                        | 397                           | 389                                        | 71                                                | 83    | 93    | 95    | 96    | 98    | 99    | 100   |       |       |                     | SBWCM |
| July 1.....        | 3:00 p. m.  | 28,300          |                        | 466                           | 1,820                                      | 65                                                | 78    | 88    | 95    | 98    | 99    | 100   | --    |       |       |                     | SBWCM |
| July 1.....        | 3:00 p. m.  | 28,300          |                        | 466                           | 1,800                                      | 33                                                | 48    | 76    | 95    | 99    | 100   | --    | --    |       |       |                     | BSNM  |

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## HURON RIVER AT MILAN, OHIO

LOCATION.--Temperature recorder at gaging station, 500 feet downstream from bridge on U. S. Highway 250, a quarter of a mile northwest of Milan, Erie County, and 2 miles downstream from confluence of East and West Branches.

DRAINAGE AREA.--363 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1950 to February 1952.

Water temperatures: March to August 1950, July 1953 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 90° F July 21; minimum, freezing point on many days during December to February.

EXTREMES, 1953-57.--Water temperatures: Maximum 91° F July 27, Aug. 4, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

| Day          | Temperature (°F) of water, water year October 1956 to September 1957<br>/Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph/ |          |          |         |          |        |        |        |        |        |        |           |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|---------|----------|--------|--------|--------|--------|--------|--------|-----------|
|              | October                                                                                                                                                       | November | December | January | February | March  | April  | May    | June   | July   | August | September |
| 1.....       | max 82                                                                                                                                                        | min 57   | max 34   | min 32  | max 31   | min 31 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 2.....       | max 64                                                                                                                                                        | min 57   | max 34   | min 32  | max 31   | min 31 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 3.....       | max 64                                                                                                                                                        | min 59   | max 35   | min 34  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 4.....       | max 66                                                                                                                                                        | min 60   | max 35   | min 34  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 5.....       | max 66                                                                                                                                                        | min 61   | max 35   | min 34  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 6.....       | max 64                                                                                                                                                        | min 60   | max 38   | min 34  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 7.....       | max 62                                                                                                                                                        | min 57   | max 38   | min 34  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 8.....       | max 61                                                                                                                                                        | min 56   | max 48   | min 38  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 9.....       | max 57                                                                                                                                                        | min 52   | max 49   | min 47  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 10.....      | max 59                                                                                                                                                        | min 55   | max 47   | min 42  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 11.....      | max 56                                                                                                                                                        | min 52   | max 44   | min 42  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 12.....      | max 53                                                                                                                                                        | min 49   | max 45   | min 42  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 13.....      | max 56                                                                                                                                                        | min 50   | max 45   | min 42  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 14.....      | max 61                                                                                                                                                        | min 54   | max 45   | min 43  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 15.....      | max 63                                                                                                                                                        | min 58   | max 47   | min 42  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 16.....      | max 65                                                                                                                                                        | min 59   | max 52   | min 47  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 17.....      | max 65                                                                                                                                                        | min 60   | max 52   | min 45  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 18.....      | max 63                                                                                                                                                        | min 59   | max 45   | min 41  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 19.....      | max 62                                                                                                                                                        | min 59   | max 40   | min 38  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 20.....      | max 60                                                                                                                                                        | min 56   | max 39   | min 36  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 21.....      | max 61                                                                                                                                                        | min 57   | max 38   | min 33  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 22.....      | max 64                                                                                                                                                        | min 60   | max 47   | min 40  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 23.....      | max 64                                                                                                                                                        | min 61   | max 43   | min 40  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 24.....      | max 66                                                                                                                                                        | min 63   | max 41   | min 39  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 25.....      | max 65                                                                                                                                                        | min 59   | max 36   | min 35  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 26.....      | max 59                                                                                                                                                        | min 55   | max 34   | min 32  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 27.....      | max 58                                                                                                                                                        | min 54   | max 34   | min 31  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 28.....      | max 57                                                                                                                                                        | min 54   | max 34   | min 31  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 29.....      | max 56                                                                                                                                                        | min 52   | max 34   | min 31  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 30.....      | max 58                                                                                                                                                        | min 54   | max 35   | min 31  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| 31.....      | max 60                                                                                                                                                        | min 56   | max 34   | min 31  | max 32   | min 32 | max 48 | min 43 | max 72 | min 65 | max 85 | min 76    |
| Average..... | max 61                                                                                                                                                        | min 57   | max 46   | min 44  | max 38   | min 36 | max 33 | min 32 | max 35 | min 32 | max 43 | min 38    |



STREAMS TRIBUTARY TO LAKE ERIE--Continued  
CUYAHOGA RIVER AT INDEPENDENCE, OHIO

LOCATION.--At gaging station, 140 feet downstream from highway bridge on Rockside Road, 1 mile northeast of Independence, Cuyahoga County, and 3 miles downstream from Tinkers Creek.

DRAINAGE AREA.--709 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: October 1948 to September 1949, August 1952 to September 1957.

Sediment records: October 1950 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 82°F July 21; minimum, freezing point on several days during January.

Sediment concentrations: Maximum daily, 2,860 ppm Apr. 24; minimum daily, 3 ppm Nov. 3-4, 12, 20.

Sediment loads: Maximum daily, 31,700 tons Apr. 24; minimum daily, 1 ton Nov. 3-4, 12, 19-20.

EXTREMES, 1948-49, 1950-57.--Water temperatures: (1948-49, 1952-57): Maximum, 88°F Aug. 18, 1949; minimum, freezing point on many days during winter months.

Sediment concentrations (1950-57): Maximum daily, 2,860 ppm Apr. 24, 1957; minimum daily, 1 ppm Sept. 4, 10, 1955.

Sediment loads (1950-57): Maximum daily, 34,000 tons Mar. 25, 1954; minimum daily, less than 0.5 ton on several days during August to September 1954, and September 1955.

REMARKS.--Flow affected by ice Jan. 14-19. Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>

| Day     | October |     | November |     | December | January | February | March | April | May | June | July | August | September |
|---------|---------|-----|----------|-----|----------|---------|----------|-------|-------|-----|------|------|--------|-----------|
|         | max     | min | max      | min | max      | min     | max      | min   | max   | min | max  | min  | max    | min       |
| 1.....  | 62      | 59  | 61       | 60  | 40       | 36      | 35       | 40    | 39    | 47  | 46   | 66   | 80     | 76        |
| 2.....  | 62      | 60  | 61       | 59  | 40       | 35      | 34       | 36    | 40    | 47  | 46   | 66   | 78     | 74        |
| 3.....  | 63      | 60  | 61       | 58  | 42       | 40      | 34       | 36    | 40    | 47  | 43   | 64   | 78     | 74        |
| 4.....  | 64      | 62  | 59       | 58  | 41       | 40      | 36       | 33    | 36    | 37  | 43   | 68   | 73     | 72        |
| 5.....  | 64      | 62  | 59       | 58  | 43       | 40      | 36       | 35    | 39    | 37  | 43   | 60   | 79     | 73        |
| 6.....  | 62      | 60  | 59       | 57  | 48       | 43      | 36       | 36    | 37    | 35  | 41   | 39   | 73     | 69        |
| 7.....  | 61      | 59  | 58       | 57  | 50       | 48      | 36       | 36    | 37    | 41  | 42   | 67   | 74     | 71        |
| 8.....  | 59      | 56  | 57       | 52  | 50       | 47      | 36       | 36    | 39    | 35  | 41   | 40   | 74     | 69        |
| 9.....  | 58      | 58  | 52       | 50  | 47       | 43      | 36       | 36    | 40    | 39  | 41   | 39   | 76     | 72        |
| 10..... | 58      | 56  | 50       | 47  | 43       | 40      | 36       | 35    | 40    | 39  | 41   | 40   | 79     | 76        |
| 11..... | 56      | 54  | 48       | 46  | 41       | 40      | 35       | 34    | 39    | 36  | 42   | 40   | 78     | 75        |
| 12..... | 56      | 54  | 48       | 48  | 41       | 41      | 34       | 34    | 36    | 35  | 46   | 42   | 79     | 76        |
| 13..... | 59      | 56  | 48       | 47  | 41       | 40      | 34       | 34    | 38    | 35  | 47   | 45   | 72     | 72        |
| 14..... | 80      | 58  | 49       | 47  | 40       | 40      | 34       | 32    | 38    | 37  | 49   | 47   | 74     | 71        |
| 15..... | 61      | 60  | 53       | 49  | 43       | 40      | 32       | 32    | 38    | 37  | 51   | 49   | 76     | 73        |
| 16..... | 61      | 60  | 53       | 51  | 44       | 43      | 32       | 32    | 38    | 38  | 50   | 48   | 77     | 74        |
| 17..... | 62      | 60  | 51       | 47  | 44       | 43      | 32       | 32    | 38    | 36  | 48   | 46   | 77     | 76        |
| 18..... | 62      | 60  | 47       | 45  | 43       | 41      | 32       | 32    | 36    | 35  | 47   | 44   | 75     | 73        |
| 19..... | 61      | 58  | 45       | 43  | 41       | 39      | 32       | 32    | 35    | 35  | 46   | 44   | 75     | 72        |
| 20..... | 60      | 59  | 45       | 43  | 43       | 39      | 33       | 36    | 35    | 32  | 46   | 44   | 76     | 73        |
| 21..... | 62      | 59  | 48       | 45  | 44       | 43      | 37       | 36    | 45    | 43  | 59   | 56   | 78     | 75        |
| 22..... | 61      | 60  | 48       | 43  | 45       | 44      | 36       | 33    | 38    | 37  | 47   | 45   | 80     | 77        |
| 23..... | 62      | 61  | 43       | 40  | 43       | 45      | 36       | 34    | 38    | 37  | 40   | 46   | 81     | 78        |
| 24..... | 61      | 60  | 40       | 40  | 45       | 44      | 33       | 33    | 39    | 39  | 49   | 47   | 77     | 74        |
| 25..... | 60      | 57  | 40       | 39  | 44       | 41      | 33       | 39    | 47    | 43  | 65   | 82   | 72     | 70        |

|              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 26.....      | 57 | 55 | 39 | 39 | 41 | 40 | 33 | 33 | 42 | 41 | 45 | 42 | 66 | 64 | 67 | 65 | 75 | 71 | 75 | 71 | 72 | 70 | 65 | 63 |
| 27.....      | 57 | 56 | 40 | 39 | 40 | 39 | 33 | 33 | 41 | 40 | 45 | 45 | 67 | 65 | 67 | 65 | 74 | 73 | 76 | 72 | 72 | 70 | 63 | 61 |
| 28.....      | 57 | 55 | 40 | 40 | 39 | 39 | 33 | 33 | 40 | 38 | 46 | 45 | 67 | 65 | 64 | 60 | 73 | 69 | 78 | 74 | 70 | 68 | 61 | 58 |
| 29.....      | 57 | 55 | 40 | 40 | 39 | 37 | 34 | 33 | -- | -- | 46 | 45 | 65 | 63 | 66 | 62 | 70 | 68 | 78 | 73 | 72 | 68 | 61 | 58 |
| 30.....      | 58 | 55 | 40 | 40 | 37 | 36 | 35 | 34 | -- | -- | 46 | 45 | 66 | 63 | 69 | 65 | 71 | 69 | 80 | 75 | 74 | 72 | 62 | 59 |
| 31.....      | 60 | 57 | -- | -- | 36 | 36 | 35 | 35 | -- | -- | 47 | 45 | -- | -- | 70 | 68 | -- | -- | 81 | 77 | 75 | 74 | -- | -- |
| Average..... | 60 | 58 | 49 | 48 | 43 | 41 | 34 | 34 | 38 | 37 | 45 | 43 | 51 | 49 | 64 | 61 | 73 | 70 | 76 | 72 | 75 | 72 | 71 | 68 |

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957

| Day     | October               |                           |              | November              |                           |              | December              |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 175                   | 10                        | 5            | 166                   | 11                        | 5            | 199                   | 14                        | 8            |
| 2.....  | 190                   | 9                         | 5            | 163                   | 7                         | 3            | 193                   | 12                        | 6            |
| 3.....  | 178                   | 11                        | 5            | 161                   | 3                         | 1            | 212                   | 5                         | 3            |
| 4.....  | 193                   | 11                        | 6            | 149                   | 3                         | 1            | 258                   | 7                         | 5            |
| 5.....  | 187                   | 11                        | 6            | 141                   | 5                         | 2            | 245                   | 10                        | 7            |
| 6.....  | 193                   | 11                        | 6            | 163                   | 5                         | 2            | 248                   | 7                         | 5            |
| 7.....  | 412                   | 55                        | sa 6         | 155                   | 5                         | 2            | 531                   | 139                       | s 251        |
| 8.....  | 310                   | 15                        | 12           | 152                   | 5                         | 2            | 659                   | 87                        | 105          |
| 9.....  | 268                   | 7                         | 5            | 141                   | 6                         | 2            | 807                   | 140                       | 355          |
| 10..... | 251                   | 6                         | 4            | 147                   | 7                         | 3            | 770                   | 60                        | 125          |
| 11..... | 258                   | 5                         | 3            | 141                   | 4                         | 2            | 696                   | 51                        | 96           |
| 12..... | 262                   | 5                         | 4            | 136                   | 3                         | 1            | 900                   | 85                        | 206          |
| 13..... | 234                   | 6                         | 4            | 158                   | 5                         | 2            | 807                   | 40                        | 87           |
| 14..... | 245                   | 9                         | 6            | 155                   | 8                         | 3            | 678                   | 28                        | 51           |
| 15..... | 215                   | 10                        | 6            | 158                   | 8                         | 3            | 604                   | 23                        | 38           |
| 16..... | 190                   | 10                        | 5            | 152                   | 5                         | 2            | 531                   | 20                        | 29           |
| 17..... | 181                   | 9                         | 4            | 141                   | 4                         | 2            | 473                   | 12                        | 15           |
| 18..... | 169                   | 11                        | 5            | 141                   | 4                         | 2            | 437                   | 18                        | 21           |
| 19..... | 155                   | 11                        | 5            | 132                   | 4                         | 1            | 370                   | 19                        | 19           |
| 20..... | 158                   | 12                        | 5            | 158                   | 3                         | 1            | 352                   | 17                        | 16           |
| 21..... | 166                   | 12                        | 5            | 416                   | 185                       | s 252        | 463                   | 42                        | s 55         |
| 22..... | 141                   | 11                        | 4            | 477                   | 104                       | s 154        | 567                   | 65                        | s 108        |
| 23..... | 161                   | 6                         | 3            | 290                   | 40                        | 30           | 604                   | 52                        | 85           |
| 24..... | 166                   | 5                         | 2            | 272                   | 28                        | 20           | 549                   | 17                        | 25           |
| 25..... | 163                   | 7                         | 3            | 245                   | 15                        | 10           | 531                   | 27                        | 39           |
| 26..... | 172                   | 11                        | 5            | 238                   | 13                        | 8            | 513                   | 26                        | 36           |
| 27..... | 202                   | 8                         | 4            | 248                   | 10                        | 7            | 531                   | 26                        | 37           |
| 28..... | 172                   | 8                         | 4            | 221                   | 8                         | 5            | 549                   | 27                        | 40           |
| 29..... | 152                   | 7                         | 3            | 218                   | 9                         | 5            | 513                   | 23                        | 32           |
| 30..... | 169                   | 8                         | 4            | 205                   | 9                         | 5            | 441                   | 16                        | 19           |
| 31..... | 163                   | 10                        | 4            | --                    | --                        | --           | 430                   | 13                        | 15           |
| Total.  | 6,251                 | --                        | 217          | 5,840                 | --                        | 538          | 15,661                | --                        | 1,939        |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| Day     | January               |                           |              | February              |                           |              | March                 |                           |              |
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 416                   | 15                        | 17           | 844                   | 72                        | 164          | 1,540                 | 90                        | 374          |
| 2.....  | 360                   | 10                        | 10           | 714                   | 58                        | 112          | 1,460                 | 75                        | 296          |
| 3.....  | 335                   | 18                        | 16           | 659                   | 48                        | 85           | 1,300                 | 57                        | 200          |
| 4.....  | 321                   | 20                        | 17           | 1,380                 | --                        | e 700        | 1,110                 | 41                        | 123          |
| 5.....  | 324                   | 13                        | 11           | 1,340                 | 116                       | 420          | 936                   | 50                        | 126          |
| 6.....  | 332                   | 13                        | 12           | 1,030                 | 60                        | 167          | 807                   | 57                        | 124          |
| 7.....  | 328                   | 15                        | 13           | 955                   | 60                        | 155          | 752                   | 48                        | 97           |
| 8.....  | 352                   | 15                        | 14           | 881                   | 50                        | 119          | 733                   | 38                        | 75           |
| 9.....  | 332                   | 19                        | 17           | 1,340                 | 161                       | s 675        | 733                   | 85                        | 168          |
| 10..... | 384                   | 32                        | 33           | 1,800                 | 270                       | 1,310        | 714                   | 110                       | 212          |
| 11..... | 346                   | 22                        | 20           | 1,460                 | 76                        | 300          | 881                   | 130                       | sa 320       |
| 12..... | 335                   | 20                        | 18           | 1,220                 | 54                        | 178          | 1,710                 | 302                       | 1,390        |
| 13..... | 342                   | 15                        | 14           | 1,180                 | 40                        | 127          | 1,340                 | 112                       | 405          |
| 14..... | 340                   | 12                        | 11           | 1,180                 | 40                        | 127          | 1,070                 | 60                        | 173          |
| 15..... | 300                   | 22                        | 18           | 1,070                 | 32                        | 92           | 993                   | 53                        | 142          |
| 16..... | 300                   | 23                        | 19           | 993                   | 23                        | 62           | 936                   | 55                        | 139          |
| 17..... | 290                   | 21                        | 16           | 826                   | 33                        | 74           | 826                   | 38                        | 85           |
| 18..... | 290                   | 27                        | 21           | 714                   | 43                        | 83           | 714                   | 27                        | 52           |
| 19..... | 280                   | 20                        | 15           | 659                   | 38                        | 68           | 788                   | 53                        | 113          |
| 20..... | 282                   | 15                        | 11           | 567                   | 25                        | 38           | 1,030                 | 115                       | 320          |
| 21..... | 562                   | 160                       | sa 550       | 513                   | 22                        | 30           | 936                   | 38                        | 96           |
| 22..... | 5,300                 | 1,420                     | 20,300       | 495                   | 26                        | 35           | 788                   | 38                        | 81           |
| 23..... | 6,500                 | 690                       | s 13,200     | 585                   | 64                        | 101          | 696                   | 33                        | 62           |
| 24..... | 3,800                 | 260                       | 2,670        | 676                   | 69                        | 126          | 585                   | 40                        | 63           |
| 25..... | 3,080                 | 182                       | 1,510        | 807                   | 58                        | 126          | 549                   | 30                        | 44           |
| 26..... | 2,960                 | 163                       | 1,300        | 1,430                 | --                        | e 2,900      | 678                   | 58                        | 106          |
| 27..... | 2,440                 | 152                       | 1,000        | 2,600                 | 430                       | sa 3,300     | 770                   | 50                        | 104          |
| 28..... | 1,760                 | 139                       | 660          | 1,580                 | 112                       | 478          | 622                   | 25                        | 42           |
| 29..... | 1,500                 | 145                       | 587          | --                    | --                        | --           | 640                   | 44                        | 76           |
| 30..... | 1,220                 | 112                       | 369          | --                    | --                        | --           | 826                   | 70                        | 156          |
| 31..... | 993                   | 72                        | 193          | --                    | --                        | --           | 678                   | 32                        | 58           |
| Total.  | 36,704                | --                        | 42,662       | 29,500                | --                        | 12,152       | 28,141                | --                        | 5,822        |

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Suspended sediment, water year October 1956 to September 1957--Continued

| Day     | April                 |                           |              | May                   |                           |              | June                  |                           |              |
|---------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|-----------------------|---------------------------|--------------|
|         | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              | Mean dis-charge (cfs) | Suspended sediment        |              |
|         |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |                       | Mean concen-tration (ppm) | Tons per day |
| 1.....  | 604                   | 27                        | 44           | 1,500                 | 172                       | 697          | 366                   | 63                        | 62           |
| 2.....  | 1,750                 | 354                       | s 1,820      | 1,300                 | 145                       | 509          | 501                   | 67                        | 91           |
| 3.....  | 1,500                 | 35                        | 142          | 1,070                 | 129                       | 373          | 380                   | 69                        | 71           |
| 4.....  | 5,980                 | 856                       | s 15,700     | 900                   | 95                        | 231          | 359                   | 77                        | 75           |
| 5.....  | 6,320                 | 515                       | 8,790        | 752                   | 75                        | b 150        | 338                   | 40                        | 36           |
| 6.....  | 4,950                 | 600                       | b 8,000      | 640                   | 71                        | 123          | 331                   | 28                        | 25           |
| 7.....  | 3,680                 | 355                       | 3,530        | 604                   | 60                        | 98           | 335                   | 38                        | 34           |
| 8.....  | 4,460                 | 267                       | 3,220        | 549                   | 52                        | 77           | 335                   | 26                        | 24           |
| 9.....  | 4,460                 | 304                       | 3,660        | 549                   | 44                        | 65           | 307                   | 18                        | 15           |
| 10..... | 5,020                 | 333                       | 4,510        | 513                   | 56                        | 78           | 273                   | 18                        | 13           |
| 11..... | 5,740                 | 313                       | 4,850        | 1,300                 | --                        | e 1,800      | 267                   | 17                        | 12           |
| 12..... | 4,740                 | 260                       | 3,330        | 770                   | 97                        | 202          | 254                   | 20                        | 14           |
| 13..... | 3,320                 | 274                       | 2,460        | 585                   | 51                        | 80           | 231                   | 26                        | 16           |
| 14..... | 2,780                 | 225                       | 1,690        | 1,100                 | 120                       | sa 430       | 263                   | 19                        | 13           |
| 15..... | 2,490                 | 205                       | 1,380        | 1,540                 | 220                       | sa 1,000     | 209                   | 16                        | 9            |
| 16..... | 2,160                 | 178                       | 1,040        | 955                   | 74                        | 191          | 244                   | 19                        | 12           |
| 17..... | 1,950                 | 190                       | 1,000        | 733                   | 82                        | 162          | 237                   | 22                        | 14           |
| 18..... | 2,440                 | 327                       | s 2,440      | 733                   | 85                        | 168          | 501                   | 440                       | sa 1,300     |
| 19..... | 2,380                 | 83                        | 533          | 733                   | 71                        | 140          | 910                   | 700                       | sa 1,900     |
| 20..... | 1,800                 | 82                        | 398          | 6,160                 | 680                       | s 12,500     | 387                   | 124                       | s 142        |
| 21..... | 1,540                 | 63                        | 262          | 2,540                 | 209                       | s 1,550      | 263                   | 37                        | 26           |
| 22..... | 1,380                 | 62                        | 231          | 1,770                 | 108                       | 516          | 240                   | 36                        | 23           |
| 23..... | 1,720                 | 1,000                     | sa 7,500     | 1,470                 | 102                       | 405          | 234                   | 23                        | 14           |
| 24..... | 4,100                 | 2,860                     | 31,700       | 1,310                 | 85                        | 301          | 287                   | --                        | e 75         |
| 25..... | 3,740                 | 825                       | s 8,700      | 1,110                 | 58                        | 174          | 1,150                 | 550                       | sa 1,800     |
| 26..... | 3,980                 | 370                       | 3,980        | 910                   | 52                        | 128          | 618                   | 123                       | 205          |
| 27..... | 3,500                 | 318                       | 3,000        | 754                   | 39                        | 79           | 413                   | 62                        | 69           |
| 28..... | 2,900                 | 305                       | 2,390        | 637                   | 50                        | 86           | 1,720                 | 684                       | s 4,890      |
| 29..... | 2,160                 | 284                       | 1,660        | 520                   | 35                        | b 50         | 4,810                 | 107                       | 1,380        |
| 30..... | 1,710                 | 222                       | 1,020        | 475                   | 24                        | 31           | 2,900                 | 286                       | 2,240        |
| 31..... | --                    | --                        | --           | 391                   | 30                        | b 30         | --                    | --                        | --           |
| Total.  | 95,254                | --                        | 128,980      | 34,873                | --                        | 22,424       | 19,663                | --                        | 14,600       |
|         | July                  |                           |              | August                |                           |              | September             |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
|         |                       |                           |              |                       |                           |              |                       |                           |              |
| 1.....  | 2,060                 | 186                       | 1,030        | 154                   | 23                        | 10           | 156                   | 15                        | 6            |
| 2.....  | 1,550                 | 172                       | 720          | 156                   | 18                        | 8            | 136                   | 19                        | 7            |
| 3.....  | 1,430                 | 173                       | 668          | 180                   | 17                        | 8            | 114                   | 18                        | 6            |
| 4.....  | 1,190                 | 126                       | 405          | 228                   | 18                        | 11           | 167                   | 16                        | 7            |
| 5.....  | 1,010                 | 90                        | 245          | 189                   | 22                        | 11           | 140                   | 18                        | 7            |
| 6.....  | 754                   | 65                        | 132          | 203                   | 27                        | 15           | 147                   | 13                        | 5            |
| 7.....  | 774                   | 94                        | 196          | 169                   | 32                        | 15           | 131                   | 11                        | 4            |
| 8.....  | 1,080                 | 582                       | s 2,380      | 136                   | 31                        | 11           | 112                   | 25                        | 8            |
| 9.....  | 4,670                 | 1,010                     | s 10,800     | 121                   | 24                        | 8            | 102                   | 30                        | 8            |
| 10..... | 2,620                 | 340                       | 2,400        | 120                   | 18                        | 6            | 136                   | 29                        | 11           |
| 11..... | 1,680                 | 280                       | 1,270        | 110                   | 15                        | 4            | 169                   | 30                        | 14           |
| 12..... | 1,680                 | 245                       | 1,110        | 96                    | 20                        | 5            | 147                   | 14                        | 6            |
| 13..... | 1,150                 | 157                       | 487          | 104                   | 20                        | 6            | 172                   | 21                        | 10           |
| 14..... | 950                   | 86                        | 220          | 118                   | 25                        | 8            | 247                   | 27                        | 18           |
| 15..... | 734                   | 63                        | 125          | 273                   | 45                        | sa 35        | 159                   | 8                         | 3            |
| 16..... | 578                   | 55                        | 86           | 180                   | 24                        | 12           | 133                   | 9                         | 3            |
| 17..... | 449                   | 49                        | 59           | 142                   | 23                        | 9            | 129                   | 13                        | 4            |
| 18..... | 395                   | 36                        | 40           | 125                   | 15                        | 5            | 136                   | 13                        | 5            |
| 19..... | 366                   | 32                        | 32           | 123                   | 17                        | 6            | 121                   | 19                        | 6            |
| 20..... | 331                   | 32                        | 28           | 138                   | 18                        | 7            | 486                   | 634                       | s 1,780      |
| 21..... | 304                   | 25                        | 20           | 129                   | 17                        | 6            | 445                   | 170                       | s 251        |
| 22..... | 277                   | 53                        | 40           | 125                   | 22                        | 7            | 420                   | 93                        | 105          |
| 23..... | 352                   | 41                        | 39           | 120                   | 18                        | 6            | 598                   | 125                       | 202          |
| 24..... | 280                   | 16                        | 14           | 118                   | 10                        | 3            | 311                   | 71                        | 60           |
| 25..... | 228                   | 13                        | 8            | 129                   | 8                         | 3            | 225                   | 38                        | 23           |
| 26..... | 222                   | 21                        | 12           | 123                   | 7                         | 2            | 194                   | 20                        | 10           |
| 27..... | 215                   | 25                        | 14           | 129                   | 14                        | 5            | 174                   | 19                        | 9            |
| 28..... | 263                   | 18                        | 13           | 123                   | 12                        | 4            | 164                   | 20                        | 9            |
| 29..... | 174                   | 21                        | 10           | 123                   | 7                         | 2            | 136                   | 19                        | 7            |
| 30..... | 192                   | 23                        | 12           | 140                   | 13                        | 5            | 123                   | 20                        | 7            |
| 31..... | 194                   | 23                        | 12           | 183                   | 16                        | 8            | --                    | --                        | --           |
| Total.  | 28,152                | --                        | 22,627       | 4,507                 | --                        | 251          | 6,030                 | --                        | 2,601        |

Total discharge for year (cfs-days) ..... 310,576

Total load for year (tons) ..... 254,813

e Estimated.

a Computed from partly estimated concentration graph.

s Computed by subdividing day.

b Computed from estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1956 to September 1957  
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipet; S, sieve; N, in native water;  
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

| Date of collection | Time       | Discharge (cfs) | Water temperature (°F) | Suspended sediment            |                                            |                                                   |       |       |       |       |       |       |       |       |       | Methods of analysis |
|--------------------|------------|-----------------|------------------------|-------------------------------|--------------------------------------------|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                    |            |                 |                        | Concentration of sample (ppm) | Concentration of suspension analyzed (ppm) | Percent finer than indicated size, in millimeters |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                 |                        |                               |                                            |                                                   |       |       |       |       |       |       |       |       |       |                     |
|                    |            |                 |                        |                               |                                            | 0.002                                             | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.350 | 0.500 |                     |
| Jan. 22, 1957 ...  | 4:00 p. m. | 6,140           |                        | 1,560                         | 1,310                                      | 23                                                | 35    | 49    | 63    | 76    | 87    | 92    | 97    |       | 99    | BSWCM               |
| Feb. 9 .....       | 5:00 p. m. | 1,900           |                        | 258                           | 477                                        | 35                                                | 50    | 62    | 72    | 86    | 94    | 99    | 100   |       | --    | BSWCM               |
| Feb. 26 .....      | 4:30 p. m. | 1,220           |                        | 422                           | 726                                        | 28                                                | 41    | 53    | 69    | 83    | 91    | 95    | 99    |       | 100   | BSWCM               |
| Mar. 4 .....       | 1:00 p. m. | 7,250           |                        | 1,290                         | 1,040                                      | 22                                                | 33    | 45    | 61    | 73    | 83    | 87    | 94    |       | 97    | BSWCM               |
| Apr. 4 .....       | 1:00 p. m. | 7,250           |                        | 1,290                         | 1,230                                      | 16                                                | 22    | 38    | 64    | 80    | 87    | 91    | 95    |       | 99    | BSNM                |
| Apr. 9 .....       | 4:00 p. m. | 4,320           |                        | 317                           | 457                                        | 23                                                | 28    | 35    | 48    | 65    | 77    | 86    | 95    |       | 100   | BSWCM               |
| Apr. 23 .....      | 4:45 p. m. | 1,710           |                        | 1,340                         | 1,040                                      | 28                                                | 38    | 49    | 66    | 80    | 90    | 96    | 99    |       | 100   | BSWCM               |
| Apr. 23 .....      | 4:45 p. m. | 1,710           |                        | 1,110                         | 1,340                                      | 16                                                | 24    | 39    | 60    | 78    | 90    | 95    | 99    |       | 100   | BSNM                |
| Apr. 24 .....      | 4:30 p. m. | 3,620           |                        | 3,480                         | 2,470                                      | 36                                                | 47    | 62    | 78    | 89    | 97    | 99    | 100   |       | --    | BSWCM               |
| May 20 .....       | 2:45 p. m. | 8,170           |                        | 805                           | 703                                        | 38                                                | 50    | 63    | 73    | 82    | 91    | 94    | 98    |       | 100   | BSWCM               |
| June 18 .....      | 5:00 p. m. | 910             |                        | 1,260                         | 2,260                                      | 40                                                | 56    | 71    | 87    | 94    | 97    | 98    | 99    |       | 100   | BSWCM               |
| June 28 .....      | 4:45 p. m. | 2,540           |                        | 1,320                         | 1,230                                      | 27                                                | 40    | 54    | 70    | 84    | 93    | 97    | 99    |       | 100   | BSWCM               |
| June 28 .....      | 4:45 p. m. | 2,540           |                        | 1,200                         | 1,200                                      | 10                                                | 16    | 27    | 53    | 81    | 93    | 97    | 99    |       | 100   | BSNM                |
| July 8 .....       | 4:30 p. m. | 1,350           |                        | 1,020                         | 934                                        | 44                                                | 57    | 70    | 83    | 91    | 96    | 98    | 100   |       | --    | BSWCM               |
| Sept. 20 .....     | 5:00 p. m. | 1,230           |                        | 2,420                         | 1,860                                      | 28                                                | 37    | 50    | 70    | 89    | 95    | 98    | 100   |       | --    | BSWCM               |

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO LAKE ERIE IN NEW YORK

Chemical analyses, in parts per million, water year October 1956 to September 1957

| Date of collection | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH | Color |
|--------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|----|-------|
|                    |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |    |       |

## LAKE ERIE AT BARCELONA

|                     |  |     |      |    |     |    |     |     |    |    |     |     |     |     |    |     |     |   |
|---------------------|--|-----|------|----|-----|----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 26, 1957 ..... |  | 1.0 | 0.78 | 35 | 7.8 | 10 | 1.5 | 113 | 22 | 21 | 0.1 | 0.8 | 179 | 120 | 27 | 296 | 7.2 | 5 |
|---------------------|--|-----|------|----|-----|----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|

## CATTARAUGUS CREEK NEAR IRVING

|                     |  |  |  |  |  |  |  |     |  |    |  |     |  |     |    |     |     |  |
|---------------------|--|--|--|--|--|--|--|-----|--|----|--|-----|--|-----|----|-----|-----|--|
| Aug. 27, 1957 ..... |  |  |  |  |  |  |  | 172 |  | 13 |  | 9.3 |  | 194 | 53 | 398 | 7.8 |  |
|---------------------|--|--|--|--|--|--|--|-----|--|----|--|-----|--|-----|----|-----|-----|--|

## LAKE ERIE AT IRVING

|                     |  |     |      |    |     |    |     |     |    |    |     |     |     |     |    |     |     |   |
|---------------------|--|-----|------|----|-----|----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 27, 1957 ..... |  | 2.0 | 0.15 | 47 | 8.4 | 10 | 1.6 | 141 | 30 | 18 | 0.1 | 3.9 | 216 | 152 | 37 | 340 | 7.0 | 2 |
|---------------------|--|-----|------|----|-----|----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|

## STREAMS TRIBUTARY TO NIAGARA RIVER

## MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO NIAGARA RIVER IN NEW YORK

## NIAGARA RIVER AT BUFFALO

|                     |  |     |      |    |     |     |     |     |    |    |     |     |     |     |    |     |     |   |
|---------------------|--|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 27, 1957 ..... |  | 0.5 | 0.42 | 39 | 8.1 | 8.8 | 1.2 | 116 | 25 | 22 | 0.2 | 0.5 | 168 | 131 | 36 | 303 | 7.6 | 2 |
|---------------------|--|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|

## NIAGARA RIVER AT FORT NIAGARA

|                     |  |     |      |    |     |     |     |     |    |    |     |     |     |     |    |     |     |   |
|---------------------|--|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 27, 1957 ..... |  | 0.7 | 0.02 | 39 | 8.0 | 9.5 | 1.4 | 116 | 27 | 23 | 0.2 | 0.6 | 174 | 131 | 36 | 308 | 7.3 | 4 |
|---------------------|--|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|

a By compleximetric titration.



## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## OSWEGO RIVER AT LOCK 5, MINETTO, N. Y.

LOCATION.--At Lock 5, Minetto, Oswego County, and about 4.5 miles upstream from gaging station at lock 7, Oswego, N. Y.

DRAINAGE AREA.--5,121 square miles (above gaging station)

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1957.

Water temperatures: October 1955 to September 1957.

EXTREMES: 1956-57.--Dissolved solids: Maximum, 836 ppm Sept. 11-20; minimum, 448 ppm Apr. 21-30.

Hardness: Maximum, 455 ppm Oct. 11; minimum, 196 ppm Feb. 28.

Specific conductance: Maximum daily, 740 micromhos Oct. 11; minimum daily, 551 micromhos Feb. 28.

Water temperatures: Maximum, 79°F June 23, 27-28; minimum, freezing point Nov. 18, 20, 21.

EXTREMES: 1955-57.--Dissolved solids: Maximum, 836 ppm Sept. 11-20, 1957; minimum, 369 ppm May 1-7, 10, 1956.

Hardness: Maximum, 490 ppm Oct. 7, 1955; minimum, 84 ppm May 11-20, 1956.

Specific conductance: Maximum daily, 1980 micromhos Oct. 7, 1955; minimum daily, 551 micromhos Feb. 28, 1957.

Water temperatures: Maximum, 79°F June 23, 27, 28, 1957; minimum, freezing point Nov. 18, 20, 21, 1956.

REMARKS.--Record of specific conductance and pH of daily samples available in district office in Albany, N. Y. Records of discharge for gaging station at lock 7, Oswego, N. Y. for water year October 1956 to September 1957 given in WSP 1507. No appreciable inflow between sampling location and gaging station.

| Date of collection       | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|--------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Oct. 1-10, 1956          | 2,986                | 2.8                        | 0.12      | 107          | 12             | 96          | 3.0           | 135                             | 85                         | 233           | 0.0          | 2.0                        | 692                                                | 317                           | 206           | 1,170                                     | 7.2 | 12    | 6               | 5        |
| Oct. 11                  | 3,860                | 2.3                        | 0.10      | 116          | 13             | 108         | 3.3           | 137                             | 92                         | 289           | --           | .2                         | --                                                 | a455                          | 340           | 1,740                                     | 7.1 | 10    | --              | --       |
| Oct. 12-20               | 2,298                | 2.3                        | 0.10      | 116          | 13             | 108         | 3.3           | 137                             | 87                         | 270           | .0           | .9                         | 760                                                | 343                           | 231           | 1,270                                     | 7.3 | 13    | 6               | 5        |
| Oct. 21-22, 24-28, 30-31 | 2,754                | 1.5                        | 0.13      | 118          | 14             | 112         | 3.6           | 135                             | 88                         | 281           | .0           | 1.9                        | 761                                                | 352                           | 242           | 1,310                                     | 7.2 | 10    | --              | --       |
| Oct. 23, 29              | 2,760                | --                         | 0.08      | --           | --             | --          | --            | --                              | --                         | --            | --           | --                         | --                                                 | --                            | --            | --                                        | --  | --    | --              | --       |
| Nov. 1-5, 7-10           | 2,777                | 3.0                        | 0.10      | 119          | 13             | 116         | 3.6           | 140                             | 89                         | 285           | .1           | 2.6                        | 767                                                | 351                           | 236           | 1,310                                     | 7.1 | 9     | 11              | 4        |
| Nov. 6-12                | 2,530                | --                         | 0.08      | --           | --             | --          | --            | --                              | --                         | --            | --           | --                         | --                                                 | --                            | --            | --                                        | --  | --    | --              | --       |
| Nov. 11-13, 15-20        | 3,068                | 3.3                        | 0.17      | 118          | 13             | 112         | 3.5           | 145                             | 88                         | 270           | .1           | 2.7                        | 752                                                | 348                           | 229           | 1,270                                     | 7.2 | 9     | 8               | 4        |
| Nov. 14                  | 3,960                | --                         | 0.08      | --           | --             | --          | --            | --                              | 58                         | 154           | --           | .6                         | --                                                 | a286                          | 164           | 902                                       | 7.1 | --    | --              | --       |
| Nov. 21-30               | 4,172                | 3.9                        | 0.08      | 111          | 13             | 100         | 3.4           | 141                             | 85                         | 245           | .1           | 2.7                        | 692                                                | 331                           | 215           | 1,170                                     | 7.4 | 12    | 8               | 4        |
| Dec. 1                   | 4,400                | --                         | 0.08      | --           | --             | --          | --            | --                              | --                         | --            | --           | --                         | --                                                 | --                            | --            | --                                        | --  | --    | --              | --       |
| Dec. 2-4, 6-10           | 7,411                | 3.8                        | 0.10      | 77           | 12             | 55          | 2.3           | 126                             | 70                         | 130           | .2           | 3.0                        | 454                                                | a307                          | 197           | 1,120                                     | 7.3 | --    | --              | --       |
| Dec. 5                   | 7,150                | --                         | 0.11      | --           | --             | 125         | 2.5           | 138                             | 78                         | 330           | --           | 2.8                        | 454                                                | 242                           | 238           | 755                                       | 7.4 | 7     | 6               | 5        |
| Dec. 6                   | 8,776                | 4.4                        | 0.09      | 86           | 12             | 70          | 2.5           | 130                             | 74                         | 164           | .2           | 5.1                        | --                                                 | a392                          | 279           | 1,470                                     | 7.2 | --    | --              | --       |
| Dec. 11-20, 28-31        | 8,623                | 4.0                        | 0.14      | 81           | 12             | 64          | 2.5           | 133                             | 70                         | 149           | .0           | 2.1                        | 499                                                | 264                           | 158           | 892                                       | 7.4 | 8     | 6               | 5        |
| Dec. 27                  | 9,590                | --                         | 0.11      | --           | --             | 82          | 2.4           | 136                             | 58                         | 249           | --           | 1.9                        | --                                                 | a252                          | 143           | 834                                       | 7.5 | 11    | 6               | 5        |
| Jan. 1-10, 1957          | 7,490                | 3.4                        | 0.07      | 81           | 12             | 64          | 2.4           | 134                             | 69                         | 150           | .0           | 2.5                        | 485                                                | a346                          | 235           | 1,140                                     | 7.2 | --    | --              | --       |
| Jan. 11-18               | 6,762                | 3.4                        | 0.07      | 82           | 12             | 68          | 2.3           | 136                             | 67                         | 157           | .0           | 2.4                        | 500                                                | a252                          | 142           | 834                                       | 7.5 | 11    | 6               | 5        |
| Jan. 20                  | 4,830                | --                         | 0.10      | --           | --             | 107         | 2.9           | 136                             | 74                         | 294           | --           | 3.3                        | --                                                 | a254                          | 143           | 854                                       | 7.4 | 9     | 7               | 5        |
| Jan. 21-24-31            | 10,280               | 4.9                        | 0.25      | 93           | 12             | 82          | --            | 136                             | 73                         | 194           | .1           | 5.2                        | 584                                                | a374                          | 263           | 1,330                                     | 7.2 | --    | --              | --       |
| Jan. 22-23               | 8,545                | --                         | 0.17      | --           | --             | --          | --            | 124                             | --                         | 117           | --           | 2.6                        | --                                                 | a227                          | 125           | 713                                       | 7.2 | --    | --              | --       |



## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## OSWEGO RIVER AT LOCK 5, MINETTO, N. Y.--Continued

Chemical analyses, in parts per million, water year October, 1956 to September 1957--Continued

| Date of collection   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color | Oxygen consumed |          |
|----------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|-----------------|----------|
|                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       | Unfiltered      | Filtered |
| Feb. 1-10, 1957      | 6,403                | 4.7                        | 0.15      | 82           | 12             | 58          | 2.4           | 132                             | 71                         | 139           | 0.1          | 4.3                        | 491                                                | 254                           | 146           | 814                                       | 7.3 | 9     | 8               | 5        |
| Feb. 11-20           | 6,834                | 4.0                        | 0.17      | 84           | 13             | 60          | 2.4           | 143                             | 78                         | 140           | 0.1          | 4.4                        | 496                                                | 263                           | 146           | 840                                       | 7.4 | 9     | 7               | 6        |
| Feb. 21-27           | 6,673                | 4.1                        | 0.09      | 88           | 12             | 66          | 2.5           | 141                             | 76                         | 154           | 0            | 3.4                        | 523                                                | 269                           | 154           | 871                                       | 7.4 | 11    | 6               | 4        |
| Feb. 28              | 11,300               | --                         | 0.16      | --           | --             | --          | 26            | 127                             | 44                         | 71            | --           | 2.9                        | --                                                 | a196                          | 92            | 551                                       | 7.3 | --    | --              | --       |
| Mar. 1-8, 10         | 9,254                | 4.5                        | 0.09      | 88           | 12             | 68          | 2.3           | 138                             | 71                         | 162           | 0            | 4.3                        | 531                                                | 269                           | 156           | 894                                       | 7.3 | 13    | 7               | 5        |
| Mar. 9               | 8,100                | --                         | 0.12      | --           | --             | --          | --            | 130                             | --                         | 90            | --           | 3.0                        | --                                                 | a224                          | 117           | 645                                       | 7.4 | --    | --              | --       |
| Mar. 11-20           | 11,900               | 4.2                        | 0.07      | 90           | 12             | 69          | 2.5           | 132                             | 68                         | 174           | 0.1          | 3.2                        | 536                                                | 274                           | 166           | 890                                       | 7.4 | 11    | 9               | 5        |
| Mar. 21-31           | 9,246                | 4.2                        | 0.07      | 85           | 11             | 59          | 2.3           | 132                             | 62                         | 148           | 0            | 3.2                        | 490                                                | 257                           | 149           | 809                                       | 7.4 | 13    | 14              | 4        |
| Apr. 1-10            | 6,173                | 3.6                        | 0.05      | 97           | 13             | 87          | 2.8           | 146                             | 71                         | 204           | 0            | 4.0                        | 613                                                | 296                           | 176           | 1020                                      | 7.4 | 13    | 6               | 4        |
| Apr. 11-17, 19-20    | 8,444                | 7.6                        | 0.23      | 97           | 13             | 74          | 2.6           | 148                             | 69                         | 180           | 0.1          | 3.9                        | 635                                                | 296                           | 174           | 953                                       | 7.5 | 13    | 8               | 5        |
| Apr. 18              | 9,300                | --                         | 0.20      | --           | --             | --          | --            | 70                              | --                         | 70            | --           | 3.5                        | --                                                 | a219                          | 162           | 581                                       | 7.4 | --    | --              | --       |
| Apr. 21-30           | 9,072                | 4.8                        | 0.09      | 78           | 12             | 53          | 2.2           | 138                             | 62                         | 125           | 0.2          | 2.7                        | 448                                                | 244                           | 131           | 730                                       | 7.4 | 13    | 6               | 4        |
| May 1-9              | 4,850                | 2.5                        | 0.06      | 98           | 13             | 78          | 2.6           | 146                             | 69                         | 193           | 0.2          | 3.1                        | 589                                                | 298                           | 179           | 966                                       | 7.4 | 13    | 6               | 4        |
| May 10               | 2,890                | --                         | 0.06      | --           | --             | 114         | --            | 153                             | 75                         | 280           | --           | 2.6                        | --                                                 | a353                          | 227           | 1270                                      | 7.5 | --    | --              | --       |
| May 11-20            | 2,707                | 4.6                        | 0.09      | 109          | 15             | 100         | 3.0           | 154                             | 79                         | 247           | 0.1          | 2.1                        | 746                                                | 334                           | 208           | 1170                                      | 7.6 | 15    | 6               | 5        |
| May 21-31            | 9,341                | 2.8                        | 0.12      | 74           | 12             | 54          | 2.2           | 141                             | 66                         | 124           | 0.1          | 2.7                        | 467                                                | 234                           | 119           | 750                                       | 7.6 | 20    | 9               | 5        |
| May 21-22            | 7,405                | --                         | 0.12      | --           | --             | 100         | --            | 145                             | 72                         | 232           | --           | 2.6                        | --                                                 | a305                          | 186           | 1100                                      | 7.7 | --    | --              | --       |
| June 1-2, 4, 6-8, 10 | 5,028                | 9.3                        | 0.16      | 83           | 11             | 68          | 2.4           | 139                             | 62                         | 155           | 0.1          | 3.4                        | 527                                                | 252                           | 138           | 838                                       | 7.5 | 7     | 13              | 4        |
| June 3               | 7,320                | --                         | 0.15      | --           | --             | 37          | --            | 138                             | 46                         | 85            | --           | 3.3                        | --                                                 | a204                          | 91            | 611                                       | 7.4 | --    | --              | --       |
| June 5               | 5,800                | --                         | 0.13      | --           | --             | 94          | --            | 133                             | 68                         | 224           | --           | 3.9                        | --                                                 | a295                          | 186           | 1070                                      | 7.3 | --    | --              | --       |
| June 11-13, 15-20    | 2,908                | 3.6                        | 0.12      | 96           | 11             | 86          | 2.8           | 140                             | 71                         | 210           | 0.2          | 3.6                        | 628                                                | 285                           | 170           | 1010                                      | 7.5 | 6     | 8               | 5        |
| June 14              | 2,880                | --                         | 0.12      | --           | --             | 129         | --            | 144                             | 85                         | 316           | --           | 4.6                        | --                                                 | a375                          | 257           | 1400                                      | 7.4 | --    | --              | --       |
| June 21-22, 24-30    | 2,828                | 4.8                        | 0.08      | 94           | 13             | 100         | 3.1           | 138                             | 77                         | 225           | 0.2          | 2.5                        | 660                                                | 288                           | 175           | 1090                                      | 7.4 | 10    | 5               | 4        |
| June 23              | 2,060                | --                         | 0.07      | --           | --             | 154         | --            | 129                             | 80                         | 372           | --           | 2.4                        | --                                                 | a382                          | 276           | 1540                                      | 7.2 | --    | --              | --       |
| July 1-10            | 4,523                | 2.9                        | 0.09      | 90           | 12             | 92          | 2.9           | 133                             | 71                         | 205           | 0.2          | 2.4                        | 608                                                | 274                           | 165           | 1010                                      | 7.4 | 10    | 6               | 5        |
| July 11-20           | 4,508                | 5.3                        | 0.25      | 79           | 10             | 62          | 2.2           | 129                             | 64                         | 140           | 0.1          | 3.0                        | 503                                                | 238                           | 133           | 808                                       | 7.4 | 7     | 4               | 4        |
| July 21-31           | 2,406                | 4.8                        | 0.12      | 101          | 13             | 112         | 3.1           | 130                             | 79                         | 255           | 0.2          | 2.3                        | 707                                                | 306                           | 199           | 1200                                      | 7.3 | 4     | 8               | 4        |
| Aug. 1-8             | 5,492                | 3.2                        | 0.07      | 101          | 12             | 104         | 3.0           | 130                             | 77                         | 246           | 0.2          | 2.5                        | 694                                                | 302                           | 195           | 1200                                      | 7.2 | 4     | 9               | 5        |
| Aug. 9-10            | 5,910                | --                         | 0.65      | --           | --             | 37          | --            | 112                             | 25                         | 140           | --           | 1.6                        | --                                                 | a237                          | 145           | 777                                       | 7.6 | --    | --              | --       |
| Aug. 11-14           | 4,950                | --                         | 0.07      | --           | --             | --          | --            | 112                             | --                         | 130           | --           | 1.8                        | --                                                 | a252                          | 140           | 759                                       | 7.5 | --    | --              | --       |
| Aug. 15, 17-20       | 2,400                | 3.5                        | 0.07      | 101          | 12             | 104         | 3.3           | 121                             | 77                         | 240           | 0.2          | 2.9                        | 667                                                | 302                           | 203           | 1170                                      | 7.4 | 7     | --              | --       |
| Aug. 16              | 2,840                | --                         | 0.46      | --           | --             | --          | --            | 124                             | --                         | 394           | --           | 3.5                        | --                                                 | a400                          | 299           | 1580                                      | 7.3 | --    | --              | --       |
| Aug. 21-31           | 1,916                | 4.6                        | 0.13      | 107          | 13             | 120         | 3.5           | 124                             | 81                         | 282           | 0.2          | 2.4                        | 740                                                | 321                           | 219           | 1290                                      | 7.5 | 4     | --              | --       |

a By complexometric titration.

|                                |       |     |      |     |    |     |     |     |    |     |     |     |     |     |     |      |     |    |    |    |
|--------------------------------|-------|-----|------|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|------|-----|----|----|----|
| Sept. 1-10, 1957.....          | 1.869 | 3.2 | 0.12 | 109 | 14 | 120 | 3.1 | 123 | 82 | 295 | 0.1 | 2.6 | 758 | 330 | 229 | 1290 | 7.4 | 8  | -- | -- |
| Sept. 11-20.....               | 1.935 | 3.0 | .05  | 120 | 14 | 132 | 3.1 | 122 | 85 | 332 | .1  | 2.7 | 836 | 357 | 257 | 1420 | 7.5 | 10 | -- | -- |
| Sept. 21-30.....               | 1.803 | 6.1 | .08  | 117 | 16 | 128 | 3.6 | 129 | 84 | 315 | .2  | 2.8 | 834 | 358 | 253 | 1320 | 7.4 | 7  | -- | -- |
| Time-weighted<br>average ..... | 5.461 | 4.1 | 0.12 | 96  | 13 | 86  | 2.8 | 135 | 74 | 207 | 0.1 | 2.9 | 618 | 292 | 182 | 1030 | --  | 10 | 8  | 5  |

## ST. LAWRENCE RIVER BASIN

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## OSWEGO RIVER AT LOCK 5, MINETTO, N. Y.--Continued

Temperature (°F) of water, water year October 1956 to September 1957  
 /Once-daily measurement at approximately 12 m.7

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 47   | 42   | 37   | 35   | 34   | --   | 43   | 60  | 66   | 74   | 77   | 72    |
| 2       | 46   | 42   | 37   | 33   | 34   | 36   | 43   | 58  | 60   | 72   | 77   | 70    |
| 3       | --   | 42   | 37   | 34   | 34   | 36   | 44   | 52  | 66   | 73   | 78   | 72    |
| 4       | 47   | 43   | 36   | 34   | 34   | 37   | 44   | 56  | 67   | 73   | 78   | 72    |
| 5       | 47   | 43   | 37   | 33   | 34   | 37   | 43   | 64  | 68   | 74   | 74   | 70    |
| 6       | 56   | 42   | 37   | 35   | 40   | 37   | 42   | 56  | 68   | 73   | 76   | 68    |
| 7       | 46   | 42   | 39   | 33   | 35   | 37   | 42   | 57  | 67   | 74   | 74   | 68    |
| 8       | 45   | 41   | 38   | 34   | 34   | 37   | 42   | 59  | 66   | 75   | 77   | 68    |
| 9       | 44   | 39   | 37   | 33   | 35   | 37   | 42   | 61  | --   | 74   | 78   | 68    |
| 10      | 45   | 37   | 37   | 33   | 35   | 37   | 42   | 62  | 64   | 73   | 74   | 68    |
| 11      | 43   | 37   | 37   | 34   | 35   | 37   | --   | 60  | 69   | 72   | 78   | 68    |
| 12      | 42   | 35   | 37   | 33   | 34   | 37   | 42   | 60  | 71   | 72   | 74   | 68    |
| 13      | 42   | 34   | 37   | 34   | 35   | 38   | 40   | 59  | 72   | 72   | 73   | 70    |
| 14      | 56   | 33   | 35   | 33   | 35   | 38   | 42   | 61  | 72   | 72   | 74   | 69    |
| 15      | 44   | 33   | 36   | 33   | 35   | 38   | 42   | 62  | 75   | 73   | 75   | 69    |
| 16      | 44   | 35   | 37   | 33   | 35   | 40   | 43   | 60  | 75   | 73   | 75   | --    |
| 17      | 44   | 33   | 37   | 33   | 35   | 40   | 44   | 60  | 76   | 73   | 75   | 69    |
| 18      | 44   | 32   | 37   | 33   | 35   | 39   | 44   | 60  | 78   | 74   | 74   | 68    |
| 19      | 43   | 36   | 36   | 34   | 35   | 39   | 46   | 60  | 78   | 76   | 73   | 69    |
| 20      | 42   | 32   | 36   | 34   | 35   | 40   | 49   | 58  | 76   | 77   | 74   | 69    |
| 21      | 43   | 32   | 36   | --   | 35   | 39   | 47   | 57  | 76   | 78   | 74   | 70    |
| 22      | 43   | 46   | 38   | 34   | 35   | 40   | 53   | 58  | 77   | 78   | 73   | 71    |
| 23      | 44   | 42   | 38   | 34   | 36   | 40   | 54   | 59  | 79   | 77   | 72   | 70    |
| 24      | 43   | 41   | 37   | 34   | 36   | 40   | 56   | 59  | 75   | 76   | 73   | 68    |
| 25      | 42   | 42   | 37   | 34   | 37   | 40   | 58   | 60  | 78   | 76   | 74   | 67    |
| 26      | 41   | 40   | 37   | 33   | 37   | 41   | 58   | 61  | 78   | 77   | 74   | 66    |
| 27      | 40   | 39   | 37   | 34   | 37   | 42   | 61   | 60  | 79   | 76   | 73   | 64    |
| 28      | 43   | 38   | 37   | 34   | 35   | 42   | 61   | 62  | 79   | 75   | 71   | 63    |
| 29      | 41   | 38   | 36   | 34   | --   | 42   | 62   | 61  | 76   | 76   | 71   | 63    |
| 30      | 41   | 38   | 35   | 34   | --   | 42   | 60   | 62  | 76   | 77   | 71   | 64    |
| 31      | 41   | --   | 36   | 34   | --   | 43   | --   | 63  | --   | 77   | 71   | --    |
| Average | 44   | 38   | 37   | 34   | 35   | 39   | 48   | 62  | 73   | 75   | 74   | 68    |

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## BEAVER RIVER AT MOSHIER FALLS, N. Y.

LOCATION.--At the Niagara Mohawk, Moshier Falls Power Station which is at the confluence of Beaver River and Sunday Creek near Number Four, N. Y.

DRAINAGE AREA.--184 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 71°F Aug. 4; minimum, 34°F on many days during January to March.

EXTREMES, 1955-57.--Water temperatures: Maximum, 71°F Aug. 4, 1956; minimum, 34°F on many days during March to April 1956, January to March 1957.

REMARKS.--Measurements made by plant employees five feet below water surface in the tailrace of the Moshier Falls hydroelectric station.

Temperature (°F) of water, water year October 1956 to September 1957

Once-daily measurement at approximately 9 a. m.

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 56   | 50   | 37   | 35   | 34   | 34   | 36   | 46  | 56   | 64   | 70   | 64    |
| 2       | 55   | 51   | 36   | 35   | 34   | 34   | 36   | 46  | 56   | 66   | 70   | 67    |
| 3       | 54   | 51   | 36   | 35   | 34   | 34   | 36   | 44  | 54   | 66   | 69   | 67    |
| 4       | 54   | 51   | 36   | 35   | 34   | 34   | 36   | 44  | 58   | 66   | 70   | 68    |
| 5       | 54   | 51   | 36   | 35   | 34   | 34   | 36   | 44  | 58   | 65   | 71   | 67    |
| 6       | 53   | 51   | 36   | 35   | 34   | 34   | 36   | 45  | 59   | 65   | 70   | 66    |
| 7       | 53   | 51   | 36   | 35   | 35   | 34   | 36   | 46  | 60   | 64   | 69   | 65    |
| 8       | 53   | 51   | 36   | 35   | 35   | 34   | 36   | 47  | 59   | 65   | 69   | 65    |
| 9       | 53   | 50   | 36   | 35   | 35   | 34   | 36   | 48  | 59   | 66   | 69   | 64    |
| 10      | 53   | 49   | 36   | 35   | 35   | 34   | 36   | 51  | 58   | 65   | 68   | 64    |
| 11      | 52   | 48   | 36   | 34   | 34   | 34   | 36   | 51  | 60   | 66   | 68   | 64    |
| 12      | 52   | 46   | 36   | 34   | 34   | 34   | 36   | 53  | 60   | 66   | 70   | 64    |
| 13      | 51   | 46   | 36   | 34   | 34   | 34   | 36   | 53  | 63   | 66   | 70   | 64    |
| 14      | 51   | 46   | 36   | 34   | 34   | 35   | 36   | 54  | 63   | 66   | 68   | 64    |
| 15      | 52   | 46   | 36   | 34   | 34   | 35   | 36   | 54  | 64   | 67   | 68   | 62    |
| 16      | 52   | 46   | 36   | 34   | 34   | 36   | 37   | 54  | 64   | 67   | 68   | 63    |
| 17      | 52   | 46   | 36   | 34   | 34   | 36   | 38   | 52  | 66   | 67   | 68   | 63    |
| 18      | 52   | 46   | 36   | 34   | 34   | 35   | 38   | 53  | 68   | 68   | 64   | 64    |
| 19      | 52   | 43   | 36   | 34   | 34   | 35   | 38   | 53  | 66   | 68   | 68   | 64    |
| 20      | 51   | 42   | 36   | 34   | 34   | 35   | 38   | 53  | 64   | 68   | 68   | 64    |
| 21      | 51   | 42   | 36   | 34   | 34   | 35   | 38   | 53  | 65   | 68   | 68   | 64    |
| 22      | 51   | 42   | 36   | 34   | 34   | 35   | 39   | 54  | 67   | 70   | 66   | 64    |
| 23      | 52   | 40   | 36   | 34   | 34   | 35   | 40   | 54  | 66   | 69   | 68   | 64    |
| 24      | 52   | 38   | 36   | 34   | 34   | 36   | 42   | 54  | 67   | 68   | 68   | 64    |
| 25      | 51   | 38   | 36   | 34   | 34   | 36   | 45   | 55  | 67   | 68   | 68   | 63    |
| 26      | 50   | 38   | 36   | 34   | 34   | 36   | 46   | 54  | 67   | 69   | 68   | 62    |
| 27      | 50   | 38   | 36   | 34   | 34   | 36   | 45   | 54  | 68   | 70   | 68   | 62    |
| 28      | 50   | 38   | 36   | 34   | 34   | 36   | 46   | 54  | 67   | 70   | 68   | 60    |
| 29      | 50   | 38   | 36   | 34   | --   | 36   | 45   | 54  | 67   | 70   | 68   | 58    |
| 30      | 50   | 37   | 35   | 34   | --   | 36   | 45   | 55  | 66   | 70   | 68   | 58    |
| 31      | 50   | --   | 36   | 34   | --   | 36   | --   | 51  | 63   | 70   | 64   | --    |
| Average | 52   | 45   | 36   | 34   | 34   | 35   | 39   | 51  | 63   | 67   | 68   | 64    |

ST. LAWRENCE RIVER BASIN  
STREAMS TRIBUTARY TO LAKE ONTARIO  
BLACK RIVER AT WATERTOWN, N. Y.

LOCATION.--At dam at Watertown Municipal powerplant, Watertown, Jefferson County, and about 1.6 miles upstream from gaging station.

DRAINAGE AREA.--1,876 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1956.

Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 77°F June 19, 20; minimum, freezing point on many days during winter months.

EXTREMES, 1955-57.--Water temperatures: Maximum, 77°F June 19, 20, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1956 to September 1957 given in WSP 1507.

Temperature (°F) of water, water year October 1956 to September 1957

(Once-daily measurement at approximately 7 a.m.)

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 54   | 52   | 32   | 32   | 32   | 33   | 42   | 58  | 62   | 63   | 74   | 70    |
| 2       | 52   | 52   | 32   | 32   | 32   | 33   | 41   | 57  | 64   | 68   | 75   | 71    |
| 3       | 52   | 54   | 32   | 32   | 32   | 33   | 40   | 54  | 64   | 68   | 74   | 71    |
| 4       | 52   | 54   | 32   | 32   | 32   | 32   | 39   | 52  | 64   | 68   | 75   | 70    |
| 5       | 53   | 54   | 32   | 32   | 32   | 32   | 39   | 51  | 65   | 68   | 74   | 66    |
| 6       | 52   | 54   | 34   | 32   | 32   | 32   | 38   | 53  | 66   | 68   | 73   | 66    |
| 7       | 52   | 53   | 33   | 32   | 32   | 32   | 38   | 52  | 65   | 68   | 70   | 67    |
| 8       | 52   | 52   | 33   | 32   | 32   | 32   | 38   | 54  | 65   | 70   | 71   | 65    |
| 9       | 52   | 49   | 32   | 32   | 32   | 32   | 38   | 58  | 65   | 70   | 72   | 64    |
| 10      | 52   | 47   | 32   | 32   | 32   | 32   | 38   | 60  | 64   | 70   | 73   | 64    |
| 11      | 52   | 45   | 32   | 32   | 32   | 32   | 37   | 60  | 67   | 69   | 74   | 64    |
| 12      | 51   | 43   | 32   | 32   | 33   | 32   | 37   | 60  | 68   | 69   | 74   | 65    |
| 13      | 50   | 41   | 32   | 32   | 33   | 33   | 37   | 60  | 69   | 70   | 74   | 65    |
| 14      | 49   | 40   | 32   | 32   | 33   | 33   | 37   | 60  | 71   | 70   | 74   | 65    |
| 15      | 50   | 40   | 33   | 32   | 33   | 33   | 38   | 59  | 73   | 70   | 74   | 65    |
| 16      | 52   | 42   | 34   | 32   | 33   | 33   | 40   | 58  | 74   | 71   | 74   | 66    |
| 17      | 52   | 41   | 34   | 32   | 32   | 33   | 42   | 56  | 75   | 71   | 74   | 65    |
| 18      | 54   | 41   | 34   | 32   | 32   | 32   | 43   | 57  | 76   | 72   | 73   | 65    |
| 19      | 52   | 41   | 33   | 33   | 32   | 33   | 44   | 56  | 77   | 73   | --   | 66    |
| 20      | 52   | 42   | 34   | 33   | 32   | 34   | 48   | 55  | 77   | 74   | --   | 66    |
| 21      | 52   | 42   | 34   | 32   | 32   | 34   | 52   | 52  | 75   | 73   | 70   | 66    |
| 22      | 52   | 40   | 34   | 32   | 32   | 34   | 54   | 53  | 74   | 76   | 68   | 66    |
| 23      | 54   | 38   | 34   | 32   | 33   | 36   | 56   | 55  | 76   | 75   | 69   | 66    |
| 24      | 53   | 37   | 34   | 32   | 33   | 37   | 56   | 58  | 76   | 74   | 69   | 65    |
| 25      | 52   | 36   | 35   | 32   | 33   | 38   | 57   | 60  | 76   | 74   | 70   | 64    |
| 26      | 51   | 32   | 33   | 32   | 33   | 38   | 58   | 62  | 74   | 75   | 72   | 62    |
| 27      | 50   | 32   | 34   | 32   | 33   | 38   | 60   | 62  | 76   | 74   | 71   | 60    |
| 28      | 50   | 32   | 34   | 32   | 33   | 39   | 60   | 62  | 75   | 74   | 70   | 58    |
| 29      | 49   | 34   | 33   | 32   | --   | 40   | 59   | 60  | 74   | 76   | 68   | 57    |
| 30      | 50   | 33   | 32   | 32   | --   | 40   | 58   | 60  | 69   | 75   | 69   | 55    |
| 31      | 50   | --   | 32   | 32   | --   | 40   | --   | 62  | --   | 74   | 69   | --    |
| Average | 52   | 43   | 33   | 32   | 32   | 34   | 45   | 57  | 71   | 71   | 72   | 65    |

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO LAKE ONTARIO IN NEW YORK

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                   | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|-------------------------------------------|-----|-------|
| TWELVE MILE CREEK AT ROOSEVELT BEACH |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      |                            |           |              |                |             |               | 135                             |                            | 24            |              | 0.7                        |                                                    | a 154                         | 44                                        | 343 | 7.0   |
| LAKE ONTARIO AT ROOSEVELT BEACH      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      | 0.9                        | 0.27      | 55           | 7.5            | 10          | 1.6           | 161                             | 23                         | 22            | 0.1          | 1.2                        | 221                                                | 168                           | 36                                        | 364 | 7.0   |
| LAKE ONTARIO AT ROCK LEDGE BEACH     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      | 1.2                        | 0.24      | 61           | 8.8            | 8.6         | 2.0           | 201                             | 14                         | 23            | 0.2          | 0.1                        | 226                                                | 188                           | 24                                        | 417 | 5.9   |
| LAKE ONTARIO AT SEA BREEZE           |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      | 0.4                        | 0.06      | 41           | 8.1            | 9.5         | 1.7           | 118                             | 28                         | 24            | 0.2          | 1.3                        | 186                                                | 136                           | 40                                        | 325 | 7.4   |
| SALMON CREEK AT PULTNEFVILLE         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      |                            |           |              |                |             |               | 145                             |                            | 26            |              | 1.2                        |                                                    | a 154                         | 35                                        | 350 | 7.2   |
| LAKE ONTARIO AT PULTNEFVILLE         |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      | 0.0                        | 0.40      | 40           | 7.9            | 12          | 1.5           | 116                             | 25                         | 25            | 0.2          | 1.3                        | 198                                                | 132                           | 38                                        | 316 | 7.2   |
| LAKE ONTARIO AT SODUS POINT          |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 27, 1957 .....                  |                      | 0.3                        | 0.02      | 39           | 8.0            | 8.7         | 1.7           | 113                             | 27                         | 24            | 0.1          | 0.8                        | 182                                                | 131                           | 38                                        | 311 | 7.5   |
| LAKE ONTARIO NEAR NORTH STERLING     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |                                           |     |       |
| Aug. 28, 1957 .....                  |                      | 1.0                        | 0.03      | 40           | 8.2            | 11          | 1.5           | 116                             | 27                         | 26            | 0.1          | 0.7                        | 189                                                | 134                           | 39                                        | 327 | 7.4   |

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued  
MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO LAKE ONTARIO IN NEW YORK--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

| Date of collection                     | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|----------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium                       | Non-carbonate |                                           |     |       |
| SKANEATELES CREEK AT SKANEATELES FALLS |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Feb. 20, 1957 .....                    |                      | 14                         | 0.08      | 44           | 9.8            | 18          | 0.9           | b190                            | 23                         | 6.6           | 0.0          | 4.5                        | 213                                                | 150                           | 33            | 341                                       | 9.1 | 2     |
| OSWEGO RIVER AT OSWEGO                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                    | 1,610                |                            |           |              |                |             |               | 117                             |                            | 156           |              | 1.8                        |                                                    | a229                          | 133           | 788                                       | 7.2 |       |
| LAKE ONTARIO AT OSWEGO                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                    |                      | 0.5                        | 0.02      | 53           | 8.4            | 34          | 1.9           | 111                             | 36                         | 79            | 0.2          | 0.9                        | 324                                                | 167                           | 76            | 497                                       | 7.1 | 10    |
| LAKE ONTARIO AT NINE MILE POINT        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                    |                      | 0.3                        | 0.05      | 38           | 8.0            | 8.7         | 1.7           | 113                             | 25                         | 23            | 0.1          | 0.7                        | 178                                                | 128                           | 36            | 306                                       | 7.9 | 4     |
| SALMON RIVER AT SELKIRK                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                    |                      |                            |           |              |                |             |               | 39                              |                            | 3.0           |              | 1.6                        |                                                    | a44                           | 12            | 90                                        | 6.7 |       |
| LAKE ONTARIO AT SELKIRK                |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                    |                      | 1.3                        | 0.10      | 14           | 3.4            | 3.5         | 0.6           | 49                              | 8.9                        | 4.8           | 0.1          | 0.6                        | 72                                                 | 49                            | 9             | 108                                       | 7.2 | 15    |

a By compleximetric titration.

b Includes equivalent of 23 parts per million of carbonate (CO<sub>3</sub>).

a By complexometric titration.

b Includes equivalent of 23 parts per million of carbonate (CO<sub>3</sub>).

## LAKE ONTARIO AT STONY POINT

|               |       |     |      |    |     |    |     |    |    |    |     |     |     |     |    |     |     |   |
|---------------|-------|-----|------|----|-----|----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 28, 1957 | ..... | 1.0 | 0.04 | 35 | 7.7 | 10 | 2.0 | 96 | 25 | 24 | 0.2 | 1.7 | 162 | 119 | 41 | 304 | 7.2 | 2 |
|---------------|-------|-----|------|----|-----|----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|---|

## LAKE ONTARIO AT SNOWSHOE BAY

|               |       |     |      |    |     |     |     |     |    |    |     |     |     |     |    |     |     |   |
|---------------|-------|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 28, 1957 | ..... | 0.3 | 0.27 | 37 | 8.3 | 9.7 | 1.0 | 108 | 26 | 24 | 0.0 | 0.8 | 168 | 127 | 38 | 259 | 7.7 | 5 |
|---------------|-------|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|-----|-----|---|

## LAKE ONTARIO AT SACKET HARBOR

|               |       |     |      |    |     |     |     |    |    |    |     |     |     |     |    |     |     |    |
|---------------|-------|-----|------|----|-----|-----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|----|
| Aug. 28, 1957 | ..... | 0.9 | 0.13 | 32 | 6.4 | 7.3 | 1.7 | 92 | 23 | 19 | 0.3 | 0.7 | 156 | 107 | 31 | 258 | 7.2 | 13 |
|---------------|-------|-----|------|----|-----|-----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|----|

## LAKE ONTARIO AT POINT PENINSULA

|               |       |     |      |    |     |    |     |    |    |    |     |     |     |     |    |     |     |   |
|---------------|-------|-----|------|----|-----|----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|---|
| Aug. 28, 1957 | ..... | 0.0 | 0.01 | 34 | 7.3 | 11 | 1.4 | 99 | 26 | 25 | 0.1 | 0.6 | 164 | 115 | 34 | 291 | 7.3 | 7 |
|---------------|-------|-----|------|----|-----|----|-----|----|----|----|-----|-----|-----|-----|----|-----|-----|---|



## ST. LAWRENCE RIVER BASIN

## ST. LAWRENCE RIVER MAIN STEM

## ST. LAWRENCE RIVER AT THOUSAND ISLAND PARK, N. Y.

LOCATION.--At thousand Island Park Public Water Supply pumping station.

RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 72°F Aug. 2-4, 11; minimum, freezing point on many days during December to March.

EXTREMES, 1955-57.--Water temperatures: Maximum, 72°F Aug. 2-4, 11, 1957; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1956 to September 1957

/Once-daily measurement at approximately 10 a.m./

| Day     | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---------|------|------|------|------|------|------|------|-----|------|------|------|-------|
| 1       | 58   | 53   | 35   | 33   | 33   | 33   | 37   | 46  | 52   | 66   | 71   | 67    |
| 2       | 58   | 54   | 35   | 33   | 33   | 33   | 37   | 46  | 52   | 68   | 72   | 67    |
| 3       | 58   | 54   | 35   | 32   | 33   | 33   | 37   | 47  | 53   | 68   | 72   | 67    |
| 4       | 58   | 54   | 39   | 33   | 33   | 33   | 37   | 45  | 54   | 68   | 72   | 67    |
| 5       | 58   | 55   | 37   | 32   | 33   | 33   | 37   | 45  | 55   | 68   | 71   | 64    |
| 6       | 59   | 54   | 39   | 32   | 33   | 33   | 38   | 46  | 55   | 67   | 70   | 64    |
| 7       | 59   | 54   | 40   | 32   | 33   | 33   | 38   | 46  | 55   | 67   | 70   | 65    |
| 8       | 57   | 53   | 37   | 32   | 33   | 33   | 38   | 46  | 55   | 68   | 71   | 65    |
| 9       | 56   | 54   | 37   | 32   | 33   | 33   | 37   | 47  | 55   | 68   | 71   | 65    |
| 10      | 56   | 48   | 35   | 32   | 33   | 33   | 38   | 47  | 55   | 68   | 71   | 65    |
| 11      | 56   | 47   | 38   | 32   | 32   | 32   | 37   | 47  | 56   | 67   | 72   | 65    |
| 12      | 55   | 47   | 38   | 32   | 32   | 34   | 37   | 47  | 57   | 67   | 71   | 66    |
| 13      | 55   | 46   | 36   | 32   | 32   | 35   | 37   | 47  | 58   | 67   | 70   | 67    |
| 14      | 56   | 47   | 35   | 32   | 33   | 39   | 37   | 47  | 60   | 68   | 70   | 67    |
| 15      | 57   | 49   | 35   | 32   | 33   | 35   | 38   | 47  | 62   | 67   | 70   | 67    |
| 16      | 57   | 46   | 35   | 32   | 33   | 34   | 39   | 47  | 62   | 67   | 70   | 67    |
| 17      | 57   | 45   | 35   | 32   | 33   | 34   | 40   | 47  | 63   | 68   | 70   | 67    |
| 18      | 57   | 45   | 36   | 32   | 33   | 34   | 40   | 48  | 64   | 68   | 70   | 67    |
| 19      | 56   | 45   | 36   | 32   | 33   | 34   | 41   | 47  | 65   | 69   | 70   | 67    |
| 20      | 55   | 45   | 37   | 32   | 32   | 34   | 41   | 47  | 65   | 69   | 70   | 67    |
| 21      | 55   | 46   | 38   | 33   | 33   | 34   | 41   | 47  | 66   | 70   | 69   | 67    |
| 22      | 55   | 44   | 38   | 34   | 33   | 34   | 42   | 48  | 66   | 70   | 69   | 67    |
| 23      | 55   | 42   | 38   | 33   | 34   | 35   | 43   | 49  | 67   | 70   | 69   | 65    |
| 24      | 55   | 40   | 38   | 32   | 34   | 35   | 43   | 49  | 68   | 70   | 69   | 64    |
| 25      | 54   | 41   | 37   | 32   | 34   | 35   | 44   | 50  | 69   | 70   | 69   | 63    |
| 26      | 54   | 41   | 36   | 32   | 34   | 35   | 45   | 50  | 69   | 69   | 69   | 61    |
| 27      | 54   | 40   | 37   | 32   | 33   | 36   | 45   | 50  | 70   | 69   | 69   | 60    |
| 28      | 54   | 40   | 37   | 32   | 33   | 36   | 45   | 50  | 70   | 69   | 68   | 59    |
| 29      | 53   | 40   | 36   | 32   | --   | 36   | 45   | 50  | 69   | 69   | 68   | 60    |
| 30      | 53   | 37   | 34   | 32   | --   | 36   | 46   | 50  | 68   | 70   | 67   | 61    |
| 31      | 54   | --   | 32   | 32   | --   | 36   | --   | 51  | --   | 70   | 67   | --    |
| Average | 56   | 47   | 36   | 32   | 33   | 34   | 40   | 48  | 61   | 68   | 70   | 65    |

## ST. LAWRENCE RIVER MAIN STEM--Continued

## ST. LAWRENCE RIVER AT ALEXANDRIA BAY, N. Y.

LOCATION.--Off pier behind post office at river-stage gage at Alexandria Bay, Jefferson County.

RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1957.

EXTREMES, 1956-57.--Water temperatures: Maximum, 72°F Aug. 3-6; minimum, freezing point many days during January to March.

EXTREMES, 1955-57.--Water temperatures: Maximum, 72°F Aug. 17-20, 1955, Aug. 3-6, 1957; minimum, freezing point on many days during winter months.

REMARKS.--River frozen Jan. 10 to Mar. 31.

Temperature (°F) of water, water year October 1956 to September 1957

Twice-daily measurements at approximately 8 a.m. and 4 p.m.

| Day          | October |      | November |      | December | January | February | March | April | May  | June | July | August | September |
|--------------|---------|------|----------|------|----------|---------|----------|-------|-------|------|------|------|--------|-----------|
|              | a.m.    | p.m. | a.m.     | p.m. | a.m.     | p.m.    | a.m.     | p.m.  | a.m.  | p.m. | a.m. | p.m. | a.m.   | p.m.      |
| 1.....       | 60      | 60   | 54       | 55   | 41       | 42      | 34       | 34    | 36    | 44   | 45   | 51   | 66     | 66        |
| 2.....       | 59      | 62   | 55       | 55   | 40       | 41      | 34       | 34    | 36    | 36   | 44   | 44   | 70     | 71        |
| 3.....       | 60      | 62   | 54       | 55   | 40       | 40      | 33       | 33    | 36    | 35   | 44   | 44   | 71     | 71        |
| 4.....       | 60      | 61   | 54       | 55   | 40       | 40      | 33       | 34    | 34    | 34   | 44   | 46   | 72     | 67        |
| 5.....       | 59      | 60   | 54       | 55   | 39       | 40      | 33       | 34    | 34    | 35   | 44   | 46   | 71     | 72        |
| 6.....       | 58      | 60   | 54       | 56   | 40       | 40      | --       | --    | 35    | 36   | 44   | 45   | 71     | 65        |
| 7.....       | 59      | 60   | 54       | 54   | 40       | 40      | --       | --    | 36    | 36   | 45   | 47   | 70     | 65        |
| 8.....       | 58      | 60   | 54       | 54   | 40       | 40      | --       | --    | 35    | 35   | 45   | 46   | 70     | 65        |
| 9.....       | 58      | 58   | 52       | 52   | 40       | 40      | 34       | 34    | 34    | 35   | 45   | 48   | 70     | 64        |
| 10.....      | 57      | 57   | 48       | 50   | 40       | 40      | --       | --    | 35    | 36   | 45   | 55   | 71     | 65        |
| 11.....      | 56      | 58   | 49       | 50   | 39       | 40      | --       | --    | 34    | 35   | 45   | 48   | 71     | 65        |
| 12.....      | 56      | 58   | 50       | 50   | 39       | 39      | --       | --    | 35    | 36   | 46   | 47   | 70     | 66        |
| 13.....      | 56      | 58   | 49       | 49   | 38       | 39      | --       | --    | 35    | 36   | 46   | 47   | 70     | 66        |
| 14.....      | 57      | 59   | 49       | 50   | 38       | 38      | --       | --    | 36    | 36   | 46   | 47   | 70     | 66        |
| 15.....      | 57      | 58   | 49       | 50   | 38       | 38      | --       | --    | 36    | 36   | 46   | 48   | 70     | 66        |
| 16.....      | 56      | 60   | 49       | 48   | 39       | 39      | --       | --    | 37    | 38   | 45   | 47   | 70     | 66        |
| 17.....      | 56      | 58   | 47       | 47   | 39       | 38      | --       | --    | 38    | 38   | 45   | 46   | 69     | 66        |
| 18.....      | 56      | 58   | 46       | 47   | 38       | 38      | --       | --    | 38    | 44   | 46   | 48   | 70     | 66        |
| 19.....      | 55      | 57   | 47       | 47   | 38       | 38      | --       | --    | 40    | 41   | 45   | 48   | 70     | 66        |
| 20.....      | 55      | 56   | 46       | 47   | 38       | 39      | --       | --    | 41    | 42   | 46   | 47   | 69     | 66        |
| 21.....      | 56      | 57   | 47       | 47   | 39       | 39      | --       | --    | 41    | 42   | 45   | 46   | 69     | 66        |
| 22.....      | 56      | 57   | 46       | 46   | 38       | 39      | --       | --    | 41    | 43   | 46   | 47   | 69     | 66        |
| 23.....      | 57      | 57   | 45       | 46   | 38       | 39      | --       | --    | 42    | 44   | 47   | 48   | 68     | 66        |
| 24.....      | 55      | 56   | 45       | 46   | 38       | 39      | --       | --    | 42    | 44   | 48   | 48   | 68     | 65        |
| 25.....      | 54      | 55   | 44       | 44   | 38       | 38      | --       | --    | 43    | 42   | 48   | 49   | 67     | 65        |
| 26.....      | 53      | 56   | 43       | 43   | 38       | 38      | --       | --    | 44    | 44   | 49   | 50   | 67     | 64        |
| 27.....      | 54      | 54   | 43       | 44   | 38       | 38      | --       | --    | 44    | 45   | 50   | 52   | 68     | 63        |
| 28.....      | 54      | 55   | 43       | 44   | 38       | 38      | --       | --    | 44    | 46   | 50   | 52   | 68     | 63        |
| 29.....      | 53      | 56   | 42       | 42   | 38       | 38      | --       | --    | 44    | 45   | 50   | 52   | 67     | 62        |
| 30.....      | 54      | 55   | 42       | 42   | 37       | 38      | --       | --    | 44    | 46   | 51   | 52   | 67     | 62        |
| 31.....      | 54      | 55   | --       | --   | 36       | 35      | --       | --    | --    | 51   | 53   | --   | 68     | --        |
| Average..... | 56      | 58   | 48       | 49   | 39       | 39      | a32      | a32   | 38    | 46   | 48   | 61   | 69     | 65        |

a Includes estimated temperatures, 32°F on missing days.

STREAMS TRIBUTARY TO ST. LAWRENCE RIVER--Continued  
MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO ST. LAWRENCE RIVER IN NEW YORK AND VERMONT  
Chemical analyses, in parts per million, water year October 1956 to September 1957

Chemical analyses, in parts per million, water year October 1956 to September 1957.

| Date of collection                               | Mean discharge (cfs) | Silica (SiO <sub>2</sub> ) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate (HCO <sub>3</sub> ) | Sulfate (SO <sub>4</sub> ) | Chloride (Cl) | Fluoride (F) | Nitrate (NO <sub>3</sub> ) | Dissolved solids (residue on evaporation at 180°C) | Hardness as CaCO <sub>3</sub> |               | Specific conductance (micro-mhos at 25°C) | pH  | Color |
|--------------------------------------------------|----------------------|----------------------------|-----------|--------------|----------------|-------------|---------------|---------------------------------|----------------------------|---------------|--------------|----------------------------|----------------------------------------------------|-------------------------------|---------------|-------------------------------------------|-----|-------|
|                                                  |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    | Calcium, magnesium            | Non-carbonate |                                           |     |       |
| ST. LAWRENCE RIVER AT CAPE VINCENT, N. Y.        |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 28, 1957 .....                              |                      | 1.4                        | 0.06      | 38           | 8.2            | 10          | 1.0           | 110                             | 26                         | 24            | 0.1          | 0.4                        | 169                                                | 129                           | 39            | 303                                       | 7.8 | 4     |
| GRASS RIVER AT LOUISVILLE, N. Y.                 |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 6, 1957 .....                               |                      | 3.5                        | 0.42      | 8.8          | 3.0            | 1.5         | 0.8           | 35                              | 7.2                        | 0.8           | 0.2          | 0.7                        | 54                                                 | 34                            | 6             | 75                                        | 6.9 | 33    |
| GRASS RIVER AT MORLEY, N. Y.                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 16, 1957 .....                              |                      |                            |           |              |                |             |               | 32                              |                            |               |              |                            |                                                    | a 37                          | 11            | 78                                        | 6.3 |       |
| RAQUETTE RIVER AT RAYMONDVILLE, N. Y.            |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Aug. 15, 1957 .....                              | 795                  |                            |           |              |                |             |               | 12                              |                            |               |              |                            |                                                    | a 19                          | 9             | 47                                        | 6.5 |       |
| NORTH BRANCH WINOOSKI RIVER AT WRIGHTSVILLE, VT. |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 26, 1957 .....                              | 170                  | 4.0                        | 0.14      | 5.0          | 0.7            | 1.1         | 0.5           | 11                              | 6.1                        | 1.1           | 0.1          | 1.2                        | 30                                                 | 15                            | 6             | 39                                        | 6.7 | 9     |
| DOG RIVER AT NORTHFIELD FALLS, VT.               |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Mar. 26, 1957 .....                              | 131                  | 3.4                        | 0.12      | 15           | 1.6            | 6.7         | 0.6           | 36                              | 11                         | 13            | 0.0          | 1.2                        | 72                                                 | 44                            | 15            | 124                                       | 6.9 | 4     |
| MAD RIVER NEAR MORETOWN, VT.                     |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956 .....                              | 155                  | 4.2                        | 0.03      | 7.3          | 1.5            | 1.8         | 0.6           | 17                              | 9.9                        | 2.4           | 0.0          | 1.1                        | 37                                                 | 24                            | 10            | 59                                        | 6.6 | 3     |
| CLYDE RIVER AT NEWPORT, VT.                      |                      |                            |           |              |                |             |               |                                 |                            |               |              |                            |                                                    |                               |               |                                           |     |       |
| Dec. 19, 1956 .....                              | 188                  | 5.2                        | 0.12      | 17           | 1.7            | 2.1         | 1.2           | 48                              | 8.5                        | 3.6           | 0.0          | 0.9                        | 71                                                 | 49                            | 10            | 111                                       | 7.2 | 12    |
| Mar. 27, 1957 .....                              | 287                  | 4.6                        | .10       | 17           | 1.2            | 2.0         | 1.3           | 49                              | 7.8                        | 3.4           | .1           | 1.3                        | 68                                                 | 47                            | 7             | 111                                       | 7.0 | 11    |

By compleximetric titration.

a By complexometric titration.

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