

# Quality of Surface Waters of the United States 1955

## 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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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1400

*Prepared in cooperation with the States  
of Delaware, Florida, Georgia, Illinois,  
Indiana, Kentucky, New York, North  
Carolina, Ohio, Pennsylvania, South  
Carolina, Virginia, West Virginia,  
Wisconsin, 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 Delaware, Florida, Georgia, Kentucky, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Virginia, Wisconsin, the Ohio River Valley Water Sanitation Commission in the States of Illinois, Indiana, and West Virginia, and with other agencies.

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# QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1955

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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.

The regular yearly publication of records of chemical analyses, suspended sediment, and water temperature was begun by the Geological Survey in 1941. The annual records prior to 1948 were published 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 were collected from October 1, 1954, to September 30, 1955. 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 dissolved solids, hardness, sediment loads, water temperature, and

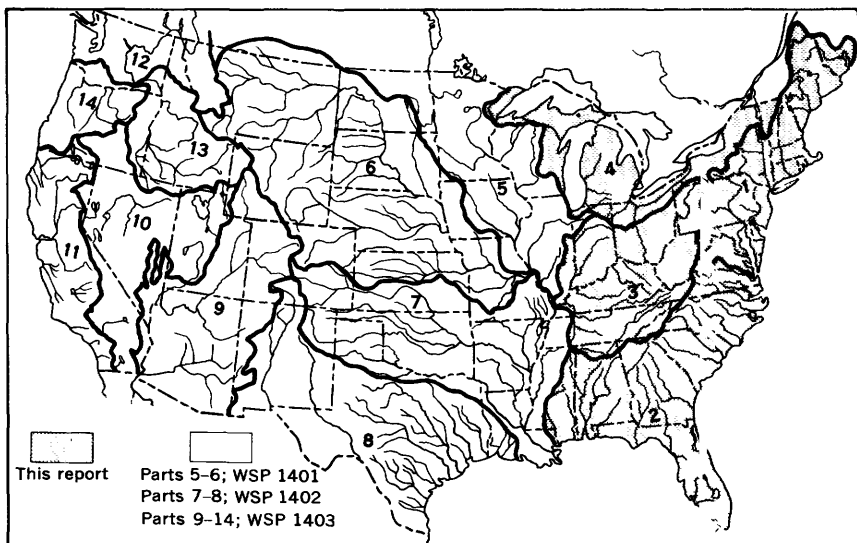


Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1955. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

other pertinent data. Records of water discharge of the streams at, or near, the sampling point for the sampling period are included in most tables of analyses. The records are arranged by drainage basins, according to Geological Survey practice in reporting records of stream flow.

Beginning with the series of reports for the water year ending September 30, 1951, the order of listing station records was changed. In this report, stations on tributary streams are listed between stations on the main stream in the order in which those tributaries enter the main stem. Stations on tributaries to tributaries are inserted in a similar manner.

During the year ended September 30, 1955, 213 regular sampling stations on 144 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 147 of the regular sampling 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, determinations made on the

daily samples before compositing have not been reported. Specific conductance was usually determined on each daily sample, and as noted in the table headings this information is available for reference at the district offices listed under Division of Work, on page 19.

Quantities of suspended sediment are reported for 44 stations during the year ended September 30, 1955. 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 39 of the stations. As noted under "Remarks" in the table headings, suspended-sediment concentrations also were determined from the samples collected for chemical analyses in some parts of the country. The data do not provide a reliable basis for computing the loads of suspended sediment carried by the stream but may be of value for design and operation of filtration plants utilizing these stream waters. Records of these infrequent determinations are available for reference in the district offices listed.

Material which is transported essentially in continuous contact with the streambed and the material that bounces along the bed in short skips or leaps is termed bed load 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 method has been developed for determining bed load on a routine basis.

## COLLECTION AND EXAMINATION OF SAMPLES

### CHEMICAL QUALITY

Samples of 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 samples for analysis are used in Geological Survey Laboratories: (1) Equal volume method-For streams, mostly east of the Mississippi River, not subject to rapid and large fluctuations in chemical composition or concentration, 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 during the remainder of the month. Samples were sometimes composited for shorter periods on the basis of the concentration of dissolved solids as indicated by measurements of specific conductance of the daily samples.

(2) Discharge method-Composites based on discharge consist of a volume taken from each sample in proportion to the product of the rate of water discharge when the sample was collected and the length of time the sample represents. With this method usually each daily sample was assumed to represent an equal time and the volumes composited were taken in proportion to the rates of discharge when the samples were collected.

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., 1946).

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 the sum of the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. The sum of the constituents may be given instead of or in addition to the residue. Specific conductance is given for most analyses and was determined by means of a conductance bridge using a standard potassium chloride solution as reference.

## 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. Suspended-sediment samples, consisting of depth-integrated samples at three or more verticals in the cross section, were made periodically to determine the cross-sectional distribution of the suspended concentration 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.

In addition to the records of quantities of suspended sediment transported, records of the particle sizes of sediment are included also. 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 pipette 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. Size fractions between 1.000 mm and 0.062 mm were usually analyzed by the visual accumulation tube method (U. S. Interagency 1957). Separations between sand and silt-clay sizes and some analyses of all sediment coarser than 0.062 mm were made by sieve analysis. Native or distilled water, as noted in the tables of analyses, was used as the settling medium. In some instances, chemical dispersing agents were added to the settling medium. In some instances, chemical dispersing agents were added to the settling medium. As settling diameters of the clay and colloidal fractions are often affected by the chemical character of the

settling medium, analyses made using native water may more nearly simulate particle sizes existing in the stream. Results of analyses using distilled water or using a settling medium containing dispersing agents 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 pipette method. The concentration of suspended sediment used in the bottom-withdrawal tube or pipette cylinder was often different from the concentration in the original suspension. The concentration at which analyses were made is indicated in the appropriate tables.

### TEMPERATURE

For most of the stations, daily water temperatures were obtained at the time that the chemical quality or sediment samples were collected. So far as practicable the water temperatures were observed at about the same time each day for an individual river station in order that the data would be relatively unaffected by diurnal variations in temperature. For most large, swiftly flowing streams the diurnal variation in water temperature is probably small, but for sluggish or shallow streams the daily range in temperature may amount to several degrees and may follow closely changes in air temperature. The thermometers used for determination of water temperature were accurate to plus or minus about 0.5° F.

Records of thermograph observations consist of maximum and minimum temperatures for each day, and the monthly averages of the maximum daily and minimum daily temperatures.

### 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, as 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.

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 values are expressed in reciprocal ohms per centimeter times  $10^6$  (micromhos per cm at  $25^\circ\text{C}$ ). The discharge of the streams is reported in cubic feet per second (see Streamflow, p. 24). 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 which 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. The discharge-weighted average reported for some station 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 finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union Subcommittee on sediment terminology (Lane, et al; 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 through which the water has passed and the length of time it has been in contact with the rocks or soils. Some streams are fed by both surface runoff and underground 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. Underground water is usually more highly concentrated than surface runoff as 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 return drain waters.

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. 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 few contain more than 50 parts, but the more common range is from 10 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 steam turbines.

### Aluminum (Al)

Aluminum is usually 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 practically 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 practically 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--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, 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 to about the same extent 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 in some instances may indicate previous contamination by sewage or other organic matter. The quantities of nitrate present in surface waters usually amount to 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 be the cause of methemoglobinemia in infants (Waring, 1949). In a report published by the National Re-

search 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 boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions of the Southwest and West 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. Waters 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.

## PROPERTIES AND CHARACTERISTICS OF WATER

### Oxygen consumed

The value for 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. Naturally highly colored waters may have relatively high oxygen consumed, although 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 usually 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, 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 value of 7.0 indicates that the water is neither acid nor alkaline. Waters having pH values progressively lower than 7.0 denote increasing acidity, whereas values progressively higher than 7.0 denote increasing alkalinity (see p. 7 ). 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. 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. (See p. 7. )

### Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is usually 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 usually requires some softening before being used for most purposes.

### Total acidity

The total acidity of a natural water represents the content of free carbon dioxide, mineral acids, and salts--especially sulfates of iron and aluminum-- that hydrolyze to give hydrogen ions. Acid waters are very corrosive and generally contain excessive amounts of objectionable constituents, such as iron, aluminum, and manganese.

### 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

Percent sodium 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 basic constituents in the water has a bearing on the suitability of a water for irrigation. (See p. 7.) 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; Wilcox, 1948, p. 6).

#### Sodium-adsorption-ratio

The U. S. Salinity Laboratory Staff (1954) introduced the term sodium-adsorption-ratio (SAR), a ratio for irrigation waters and soil extracts used to express the relative activity of sodium ions in exchange reactions with the soil. This ratio 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). It has more significance than percent sodium for use as an index of the sodium or alkali hazard of the water because it relates more directly to the adsorption of sodium by the soil.

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR value 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 at 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 sediment 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



Geological Survey reports containing analyses of surface-water samples collected prior to 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 south-eastern 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.

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, vegetal 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.

## PUBLICATIONS

Reports giving chemical analyses, suspended-sediment loads, and water temperatures of samples of surface water made by the Geological Survey have been published yearly since 1941. Records for many of the stations listed in this report for the water years ending September 30, 1941-1955 are listed below:

Numbers of water-supply papers containing records for  
Parts 1-4, 1941-55

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

State	Cooperating agency	Drainage basin	District office
Delaware	Newcastle County Soil Conservation District, Marvin W. Klair, chairman Delaware Geological Survey University of Delaware Department of Geology and Geography, Dr. Johan J. Groot, State Geologist.	North Atlantic slope	Room 1302 U. S. Custom House, 2nd and Chestnut Streets, Philadelphia 6, Pa.
Florida	Florida Geological Survey, Herman Gunter, director Central and Southern Florida Flood Control District, W. Turner Wallis, secretary. City of Pensacola, O. J. Semmes, Jr., City Manager.	South Atlantic slope and Eastern Gulf of Mexico.	P. O. Box 607 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 Columbus 9, Ohio

- \*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 water 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

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. The locations of quality-of-water district offices responsible for the data collected in the drainage basins are given in the table, also.

In addition to these cooperative programs, many of the stations were operated from funds appropriated directly to the Geological Survey for quality-of-water investigations.

Assistance in collecting records was given by many municipal, State, and Federal agencies.

## DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer, and S. K. Love, chief of the Quality of Water Branch. The records were collected and prepared for publication under the supervision of district chemists as follows: In Georgia, and Florida, Eugene Brown; in North Carolina and South Carolina, G. A. Billingsley; in Virginia, M. E. Schroeder; in Illinois, Indiana, Kentucky, Ohio, West Virginia, and Wisconsin, W. L. Lamar; in Delaware and Pennsylvania, N. H. Beamer; and in New York and New England, F. H. Pauszek. Any additional information on file can be obtained by writing the responsible Survey district office.

State	Cooperating agency	Drainage basin	District office
Indiana	Ohio River Valley Water Sanitation Commission, Edward J. Cleary, executive director and chief engineer	Ohio River	2822 E. Main Street Columbus 9, Ohio
Kentucky	Agricultural and Industrial Development Board, Joseph H. Taylor, executive director.		
New York	New York State Department of Commerce, Bureau of Industrial Development, Ronald J. Peterson, director.	North Atlantic slope	P. O. Box 68 Room 348 Federal Building, Albany 1, N. Y.
North Carolina	North Carolina Department of Conservation and Development, Ben E. Douglas, director a	South Atlantic slope and Eastern Gulf of Mexico	P. O. Box 2857 Federal Building Raleigh, N. C.
Ohio	Ohio Department of Natural Resources, A. W. Marion, director.	Ohio River, St. Lawrence River	2822 East Main Street Columbus 9, Ohio

a Succeeded by William P. Saunders, director, Dec. 15, 1955.

State	Cooperating agency	Drainage basin	District office
Pennsylvania	Pennsylvania Department of Commerce, William R. Davlin, secretary. Pennsylvania Department of Agriculture, Dr. William L. Henning, secretary Soil Conservation Commission, Dr. William L. Henning, chairman. City of Philadelphia, Joseph S. Clark, Jr., Mayor. Department of Water, Samuel S. Baxter, Water Commissioner.	North Atlantic slope, Ohio River St. Lawrence River	Room 1302 U. S. Custom House 2nd and Chestnut Streets, Philadelphia 6, Pa.
South Carolina	South Carolina State Development Board, L. W. Bishop, director. <sup>b</sup>	South Atlantic slope and Eastern Gulf of Mexico	P. O. Box 2857 Federal Building Raleigh, N. C.
Virginia	Virginia Department of Conservation and Development Raymond V. Long, director.	North Atlantic slope, South Atlantic slope, Ohio River	P. O. Box 3327 University Station Charlottesville, Va. <sup>c</sup>

<sup>b</sup> Succeeded by R. M. Cooper, director, Sept. 1, 1955.

<sup>c</sup> Discontinued September 1956. For information write district office at Raleigh, N. C.

State	Cooperating agency	Drainage basin	District office
West Virginia	Ohio River Valley Water Sanitation Commission, Edward J. Cleary, executive director and chief engineer.	Ohio River	2822 E. Main Street, Columbus 9, Ohio.
Wisconsin	Committee on Water Pollution, George P. Steinmetz, chairman, and Theodore F. Wisniewski, director.	Hudson Bay and Upper Mississippi River	

## 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 the mean daily discharges for the normal composite period. For analyses in which the composite periods differ from the normal 10 or 11-day period, the discharges reported are the averages of the mean daily discharges for the days indicated. 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.

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## CHEMICAL ANALYSES, WATER TEMPERATURES, AND SUSPENDED SEDIMENT

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

## MISCELLANEOUS ANALYSES OF STREAMS IN NEW ENGLAND

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Total	Non- carbon- ate			

## MISCELLANEOUS ANALYSES OF STREAMS IN ST. JOHN RIVER BASIN

ST. JOHN RIVER BELOW FISH RIVER AT FORT KENT, MAINE

Sept. 24, 1954	13,500	3.4	0.48	8.1	1.5	0.9	0.2	25	5.7	0.4	0.2	1.1	61	26	6	56.4	6.8	55
May 3, 1955	64,000	1.9	.15	6.1	.6	.4	.2	17	3.4	.4	.0	.8	42	18	4	37.0	6.7	60

## MEDUXNEKEAG RIVER NEAR BOULTON, MAINE

Sept. 22, 1954	182	5.1	0.13	20	1.3	1.6	0.4	57	8.8	1.6	0.1	1.6	74	50	4	117	7.8	60
May 3, 1955	1,050	1.7	.08	12	1.0	.8	.3	35	6.8	.2	.0	.7	60	34	6	74.0	7.1	40

## MISCELLANEOUS ANALYSES OF STREAMS IN ST. CROIX RIVER BASIN

ST. CROIX RIVER AT VANCEBORO, MAINE

Oct. 7, 1954	208	1.2	0.16	2.9	0.6	1.1	0.2	8.4	3.5	0.4	0.1	1.1	27	10	3	26.3	6.8	22
May 10, 1955	1,200	2.0	.04	2.6	.5	.7	.1	9.4	2.6	.2	.0	.2	30	9	1	21.9	6.6	38

## MISCELLANEOUS ANALYSES OF STREAMS IN MACHIAS RIVER BASIN

EAST MACHIAS RIVER NEAR EAST MACHIAS, MAINE

Oct. 7, 1954	600	1.9	0.27	2.2	0.8	1.9	0.4	6.3	4.9	1.5	0.2	1.2	45	9	4	29.2	6.0	75
May 9, 1955	237	2.3	.13	3.6	.2	1.4	.0	6.8	4.2	1.3	.0	.6	32	7	2	21.4	6.3	50

a Mean discharge.

## MISCELLANEOUS ANALYSES OF STREAMS IN PENOBSCOT RIVER BASIN

## PISCATAQUIS RIVER AT DOVER-FOXCROFT, MAINE

Oct. 5, 1954 .....	a 1,700	3.5	0.27	3.6	0.9	1.3	0.4	11	5.7	0.4	0.0	1.2	35	13	4	32.5	6.1	45
May 12, 1955 .....	980	1.9	.06	3.4	.9	1.0	.3	12	4.1	.6	.0	.1	28	12	2	32.7	6.8	37

## PLEASANT RIVER NEAR MILO, MAINE

Oct. 5, 1954 .....	a 2,090	6.1	0.15	1.8	0.7	1.0	0.0	7.0	3.1	0.5	0.1	1.0	25	8	2	23.9	6.9	37
May 12, 1955 .....	1,440	3.4	.07	1.7	.7	.5	.2	7.4	3.0	.4	.0	.1	32	7	1	18.9	6.6	32

## PENOBSCOT RIVER AT WEST ENFIELD, MAINE

Oct. 5, 1954 .....	a 30,600	2.6	0.30	4.9	1.0	1.1	0.2	13	6.9	0.4	0.0	1.0	48	16	6	38.9	7.1	55
May 17, 1955 .....	27,000	2.5	.14	3.8	.9	.7	.2	13	3.9	.2	.0	.5	39	13	3	29.7	6.4	52

## PASSADUMKEAG RIVER AT LOWELL, MAINE

Oct. 5, 1954 .....	a 786	6.9	0.25	3.0	0.5	1.5	0.4	11	1.2	0.7	0.2	1.5	35	10	1	29.9	6.8	90
May 19, 1955 .....	703	2.3	.14	2.8	1.0	1.0	.4	13	2.2	.3	.1	.5	35	11	1	27.2	6.6	65

## KENDUSKEAG STREAM NEAR KENDUSKEAG, MAINE

Oct. 5, 1954 .....	a 1,290	5.5	0.29	12	2.0	1.9	0.8	46	2.9	1.8	0.1	1.4	61	38	1	91.2	7.5	65
Apr. 16, 1955 .....	2,400	1.4	.29	16	2.0	1.7	.4	56	5.2	.2	.0	.5	78	49	4	103	7.3	45

## MISCELLANEOUS ANALYSES OF STREAMS IN SHEEPSKOT RIVER BASIN

## SHEEPSKOT RIVER AT NORTH WHITEFIELD, MAINE

Sept. 29, 1954 .....	a 250	3.1	0.36	3.7	0.7	2.0	1.1	12	5.3	1.6	0.1	0.6	39	12	2	39.9	6.3	45
Apr. 24, 1955 .....	392	2.4	.15	3.5	.4	1.9	.4	12	3.3	1.7	.0	.9	36	11	1	35.4	6.6	40

a Mean discharge.

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

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Total	Non-carbonate			

## MISCELLANEOUS ANALYSES OF STREAMS IN KENNEBEC RIVER BASIN

## DEAD RIVER NEAR DEAD RIVER, MAINE

Sept. 24, 1954	a 1,120	1.4	0.53	2.9	0.9	0.8	0.4	11	2.9	0.4	0.1	0.8	36	11	2	28.7	7.0	32
June 2, 1955	1,000	2.8	.17	2.9	1.3	.5	.2	11	4.2	.4	.0	.3	39	13	4	26.6	6.6	38

## CORBOSSECONTEE STREAM AT GARDINER, MAINE

Aug. 25, 1954	a 230	0.9	0.17	5.4	1.0	2.0	0.6	17	6.8	1.0	0.1	0.4	48	18	4	50.0	7.3	8
Apr. 25, 1955	a 390	1.3	.11	5.8	.9	1.7	.7	18	5.4	2.5	.0	.2	40	18	4	47.0	6.7	21

## MISCELLANEOUS ANALYSES OF STREAMS IN ANDROSCOGGIN RIVER BASIN

## ANDROSCOGGIN RIVER AT ERROL, N. H.

Apr. 28, 1955	2,180	3.4	0.56	3.5	0.4	0.7	0.0	7.0	4.7	0.2	0.0	1.2	38	10	5	26.8	6.4	25
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## NEZINSCOT RIVER AT TURNER CENTER, MAINE

Oct. 30, 1954	456	5.8	0.28	4.4	0.8	1.8	0.8	13	7.2	0.7	0.0	0.7	40	14	4	40.1	7.1	35
May 20, 1955	148	.3	.30	5.0	1.3	1.6	.5	18	3.6	1.2	.0	.3	38	18	3	40.2	6.8	40

## MISCELLANEOUS ANALYSES OF STREAMS IN SAGO RIVER BASIN

## SAGO RIVER AT CORNISH, MAINE

Aug. 26, 1954	a 829	5.1	0.29	2.6	0.4	1.8	0.4	9.1	3.5	0.4	0.1	1.3	27	8	1	28.4	7.0	7
Apr. 26, 1955	8,860	3.2	.12	2.9	1.0	4.1	.5	8.0	3.9	6.4	.2	.2	33	12	5	42.3	5.3	20

a Mean discharge.

## LITTLE OSSISPEE RIVER NEAR SOUTH LIMINGTON, MAINE

Aug. 26, 1954.....	858	4.2	0.37	3.0	1.3	1.8	0.8	15	2.1	1.6	0.1	0.9	26	13	1	35.8	7.2	32
Apr. 26, 1955.....	6,648	2.6	.14	3.4	1.3	1.4	.5	14	4.3	1.4	.0	.4	37	14	3	31.1	6.7	36

## OSSISPEE RIVER BELOW OSSISPEE LAKE AT EFFINGHAM FALLS, N. H.

Oct. 1, 1954.....	995	5.6	0.25	2.8	0.7	1.7	0.1	6.6	3.0	1.5	0.4	0.2	30	10	4	25.7	6.2	37
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## MISCELLANEOUS ANALYSES OF STREAMS IN PISCATAQUA RIVER BASIN

## SALMON FALLS RIVER AT SOUTH LEBANON, MAINE

Aug. 26, 1954.....	8130	1.5	0.52	3.5	1.1	2.6	0.2	10	9.6	0.8	0.1	0.4	38	13	5	43.8	6.5	7
Apr. 27, 1955.....	396	3.3	.36	2.7	1.0	2.3	.6	10	4.5	2.1	.0	.1	33	11	3	38.7	6.0	36

## MISCELLANEOUS ANALYSES OF STREAMS IN MERRIMACK RIVER BASIN

## LAKE WINNIPESAUKEE OUTLET AT LAKEPORT, N. H.

Sept. 30, 1954.....	550	0.9	0.08	3.9	0.5	2.0	0.2	6.2	5.2	2.3	0.1	0.2	21	12	5	33.0	6.3	15
May 18, 1955.....	335	1.0	.01	3.5	.1	2.2	.3	11	4.2	2.0	.0	.6	30	9	0	36.4	6.6	5

## MERRIMACK RIVER AT FRANKLIN JUNCTION, N. H.

Sept. 30, 1954.....	2,530	5.3	0.45	3.8	0.7	1.8	0.2	6.4	6.5	2.4	0.3	0.4	39	13	7	40.5	5.8	28
May 24, 1955.....	1,760	5.0	.49	5.2	.1	2.1	.5	10	6.7	2.2	.0	.7	50	14	6	41.3	6.3	20

## PISCATAQUOG RIVER AT GOFFSTOWN, N. H.

Oct. 6, 1954.....	723	6.8	0.42	3.9	0.8	2.3	0.6	10	4.1	3.3	0.0	1.1	52	13	5	37.4	6.6	28
May 20, 1955.....	712	3.4	.12	3.5	.2	2.5	.6	11	4.2	2.2	.0	1.2	40	10	1	37.4	6.5	35

a Mean discharge.

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

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Total	Non- carbon- ate			

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

NORTH NASHUA RIVER NEAR LEOMINSTER, MASS.

Oct. 12, 1954	118	6.8	1.5	12	1.6	34	2.5	73	32	12	0.0	3.0	148	37	0	219	7.1	6
Apr. 29, 1955	640	4.5	.50	6.7	.5	11	1.4	20	15	7.7	.0	2.6	77	19	3	98.9	6.4	19

## MISCELLANEOUS ANALYSES OF STREAMS IN PROVIDENCE RIVER BASIN

BLACKSTONE RIVER AT NORTHBIDGE, MASS.

Oct. 18, 1954	379	5.6	1.8	11	1.9	11	3.2	17	23	13	0.0	6.4	112	38	22	137	6.8	17
May 3, 1955	449	4.6	3.6	12	1.5	12	3.0	6.0	32	15	.1	11	b 133	40	35	169	5.9	45

## MISCELLANEOUS ANALYSES OF STREAMS IN THAMES RIVER BASIN

QUINEBAUG RIVER AT WESTVILLE, MASS.

Oct. 16, 1954	175	8.1	1.1	3.6	1.7	2.6	0.6	9.6	10	3.8	0.2	0.6	46	17	9	49.4	6.2	65
Apr. 28, 1955	406	5.0	.09	3.5	.6	2.7	.4	8.0	7.6	2.8	.0	.8	43	11	5	41.8	6.3	20

FRENCH RIVER AT WEBSTER, MASS.

Oct. 18, 1954	255	5.3	0.47	5.7	1.1	5.8	2.0	14	12	5.6	0.0	2.9	67	19	8	74.6	6.4	33
Apr. 26, 1955	358	2.8	.13	5.2	.2	11	1.4	20	13	4.2	.0	1.9	56	14	0	87.1	6.5	32

HOP RIVER NEAR COLUMBIA, CONN.

Oct. 5, 1954	53	9.0	0.38	4.9	1.3	3.7	1.7	12	7.1	7.5	0.1	3.5	54	18	8	64.4	7.3	30
Apr. 27, 1955	418	5.7	.08	3.6	.9	2.3	.8	7	8.8	3.0	.0	.7	35	13	8	46.4	6.2	25

b Contains 0.14 parts per million manganese (Mn).

## QUINEBAUG RIVER AT PUTNAM, CONN.

Oct. 5, 1954 .....	398	7.3	0.86	5.0	1.2	8.3	1.7	20	9.2	6.5	0.1	2.3	71	18	2	86.7	7.5	42
Apr. 27, 1955 .....	1,190	3.8	.24	4.4	.8	4.9	1.1	11	9.0	4.5	.0	1.8	42	16	7	66.6	6.2	30

## MOOSUP RIVER AT MOOSUP, CONN.

Oct. 5, 1954 .....	109	8.7	0.56	2.7	1.1	3.3	1.0	10	4.1	3.2	0.2	1.1	52	12	3	52.7	6.8	43
Apr. 27, 1955 .....	306	2.6	.07	2.4	.6	2.8	1.0	7	5.2	3.2	.1	1.6	32	10	4	43.6	6.2	40

## YANTIC RIVER AT YANTIC, CONN.

Oct. 5, 1954 .....	87	9.0	0.36	4.9	0.9	4.0	1.7	16	7.5	4.3	0.1	1.4	55	16	3	63.5	7.4	33
Apr. 27, 1955 .....	245	5.1	.04	4.6	1.6	2.9	1.1	11	6.5	3.5	.0	1.0	38	16	7	53.8	6.8	30

## MISCELLANEOUS ANALYSES OF STREAMS IN CONNECTICUT RIVER BASIN

## FARMINGTON RIVER AT RIVERTON, CONN.

Oct. 1, 1954 .....	146	4.2	0.26	5.2	1.6	2.0	0.8	15	7.3	5.2	0.1	0.5	35	20	8	55.8	7.2	27
Apr. 27, 1955 .....	1,980	4.1	.04	3.5	1.1	1.5	.7	8	7.6	2.2	.1	1.5	32	15	8	43.3	6.3	35

## UPPER AMMONOSUC RIVER NEAR GROVETON, N. H.

Oct. 9, 1954 .....	a 639	7.6	0.20	3.5	0.9	1.3	0.3	7.4	5.6	1.1	0.2	0.4	32	13	7	29.4	6.8	16
June 1, 1955 .....	2,470	4.8	.23	4.4	.4	.8	.2	9.0	4.1	.4	.0	1.0	52	13	6	28.0	6.5	70

## MOOSE RIVER AT ST. JOHNSBURY, VT.

Oct. 9, 1954 .....	229	6.1	0.23	7.4	1.1	1.1	0.7	21	5.4	1.2	0.0	0.6	59	23	6	47.9	7.0	26
June 3, 1955 .....	376	4.4	.33	5.5	1.1	.8	.6	17	4.4	.9	.0	.9	51	18	5	37.9	6.6	66

a Mean discharge.

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

Chemical analyses, in parts per million, water year October 1954 to September 1955.--Continued

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Total	Non- carbon- ate			

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

## OPOWAPANOUC RIVER AT UNION VILLAGE, VT.

Oct. 5, 1954 .....	141	5.8	0.24	14	1.5	1.5	1.4	47	7.7	1.0	0.0	0.6	69	41	3	94.3	7.8	4
May 26, 1955 .....	141	4.4	.47	29	1.2	1.4	1.8	75	18	.3	.0	.5	112	78	16	170	7.8	10

## MASCOMA RIVER AT MASCOMA, N. H.

Oct. 4, 1954 .....	166	2.7	0.26	4.6	1.0	1.8	0.2	11	6.7	1.3	0.2	0.5	36	16	7	42.6	6.9	35
May 21, 1955 .....	132	3.5	.05	5.2	.3	1.7	.3	13	7.0	1.0	.0	.7	40	14	4	41.1	6.8	20

## OTTAUQUECHEE RIVER AT NORTH HARTLAND, VT.

Sept. 23, 1954 .....	269	2.7	0.16	16	2.3	1.5	0.7	53	8.2	1.7	0.0	0.6	75	49	6	107	7.3	2
May 26, 1955 .....	312	1.9	.26	20	2.6	2.1	2.0	67	8.8	3.3	.0	.9	84	61	6	133	7.4	9

## BLACK RIVER AT NORTH SPRINGFIELD, VT.

Sept. 30, 1954 .....	a 121	2.7	0.17	9.2	2.2	2.6	0.8	32	8.4	2.7	0.0	0.6	62	32	6	74.3	7.5	3
June 2, 1955 .....	236	3.1	.10	6.7	1.1	2.4	.7	28	7.3	1.1	.0	.7	52	26	4	69.7	7.4	15

## CONNECTICUT RIVER AT NORTH WALPOLE, N. H.

Sept. 30, 1954 .....	9,670	5.4	0.40	12	1.2	1.6	0.1	32	7.7	1.5	0.2	0.6	54	35	9	74.4	6.9	45
June 2, 1955 .....	23,200	4.7	.20	12	1.6	2.1	.7	34	8.6	2.7	.0	.6	63	37	9	82.7	7.2	38

## DEERFIELD RIVER AT CHARLEMONT, MASS.

Sept. 26, 1954 .....	a 109	4.9	0.17	5.6	1.2	1.5	0.7	12	10	2.4	0.0	1.2	47	19	9	50.3	7.2	2
May 24, 1955 .....	111	4.0	.12	4.5	1.4	1.1	.5	13	9.4	1.9	.0	.6	34	17	7	45.1	6.7	14

a Mean discharge.



MISCELLANEOUS ANALYSES OF STREAMS IN ST. LAWRENCE RIVER BASIN  
OTTER CREEK AT CENTER RUTLAND, VT.

Oct. 6, 1954 .....	365	4.0	0.46	18	5.8	2.0	1.1	80	7.5	2.0	0.0	2.2	104	64	3	142	7.3	4
June 2, 1955 .....	730	3.6	.39	16	5.1	1.7	.5	62	7.6	2.1	.0	1.3	86	61	10	121	7.3	27

MAD RIVER NEAR MORETOWN, VT.

Sept. 22, 1954 .....	a 297	3.6	0.14	7.7	0.8	0.8	0.1	17	7.0	1.1	0.1	0.4	38	23	9	50.8	6.2	20
May 25, 1955 .....	105	2.5	.11	7.2	1.2	1.4	1.4	20	7.4	2.4	.0	.7	46	23	7	55.4	7.1	10

LAMOILLE RIVER AT EAST GEORGIA, VT.

Oct. 5, 1954 .....	6,180	4.0	0.82	9.3	1.4	0.8	0.3	27	7.7	1.0	0.3	0.6	c 50	29	7	68.5	6.8	50
May 24, 1955 .....	1,360	2.1	.17	15	2.7	1.6	1.8	51	8.8	2.6	.0	.6	67	49	7	105	7.3	14

a Mean discharge.

c Contains 0.16 parts per million manganese (Mn).

## NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## CONNECTICUT RIVER BASIN

## SCANTIC RIVER AT BROAD BROOK, CONN.

LOCATION.--Highway bridge on State Highway 140, 300 feet downstream of gaging station, 1 mile southwest 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 1955.

Sediment records: November 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 83°F Aug. 2; minimum, freezing point several days during December, January and February.

Sediment concentrations: Maximum daily, 242 ppm Aug. 20; minimum daily, 1 ppm Dec. 5.

Sediment loads: Maximum daily 6,670 tons Aug. 19; minimum daily 0.2 ton Aug. 4.

EXTREMES, 1952-55.--Water temperatures (1953-55): Maximum, 88°F Aug. 2, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 360 ppm Feb. 7, 1953; minimum daily, 1 ppm Jan. 22, 23, 1953, Dec. 5, 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.

REMARKS.--Records of specific conductance of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1954 to September 1955 given in WSP 1381.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	44	43	37	33	41	48	--	60	75	81	87
2	64	43	--	--	32	39	45	59	64	77	83	89
3	--	48	38	39	32	37	49	60	62	79	82	87
4	67	46	36	40	34	36	43	66	63	81	81	82
5	65	47	38	37	34	36	43	67	65	80	72	71
6	60	45	36	36	34	35	49	60	68	81	79	65
7	50	45	33	--	35	35	48	58	68	75	77	71
8	50	45	34	33	32	--	51	57	64	80	78	64
9	55	45	36	--	33	37	50	60	64	80	73	66
10	55	44	37	34	35	40	51	--	64	71	73	65
11	63	40	36	34	38	45	53	64	68	76	76	65
12	68	45	36	34	34	47	54	62	61	77	72	65
13	68	41	37	34	32	44	51	62	60	74	71	61
14	68	42	35	33	34	43	51	68	64	76	73	60
15	69	44	35	33	35	43	57	61	66	76	76	62
16	68	42	37	34	36	48	58	66	68	76	77	63
17	60	46	34	--	36	41	55	61	73	75	76	64
18	60	48	36	33	36	39	58	58	70	75	76	--
19	57	49	--	33	36	--	56	61	73	78	--	66
20	58	53	--	33	42	40	59	65	69	77	74	68
21	56	55	33	33	39	40	55	67	76	79	72	63
22	55	49	32	34	39	39	52	--	69	80	73	66
23	56	44	35	35	40	38	60	67	70	79	73	56
24	55	43	34	35	37	38	58	70	70	77	70	59
25	55	44	33	35	35	38	48	66	66	76	68	56
26	56	40	34	35	36	36	51	70	70	77	64	59
27	54	--	34	35	40	38	45	67	66	76	64	59
28	53	--	35	33	38	36	47	--	--	75	65	60
29	50	43	34	32	--	41	49	70	75	76	63	60
30	50	43	32	33	--	44	49	70	77	77	64	62
31	43	--	39	33	--	49	--	69	--	70	67	--
Average	59	45	35	34	36	40	50	64	67	77	73	63

## CONNECTICUT RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955

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.....	91	6	1.5	138	15	5.6	256	5	3.4
2.....	88	7	1.7	115	17	5.3	209	4	2.3
3.....	93	6	1.5	334	60	s 57	172	2	.9
4.....	93	8	2.0	333	42	38	150	2	.8
5.....	83	25	5.6	307	27	22	144	1	.4
6.....	82	10	2.2	216	26	15	133	2	.7
7.....	80	24	5.2	172	19	8.8	120	4	1.3
8.....	78	13	2.7	150	13	5.3	116	5	1.6
9.....	76	15	3.1	130	4	1.4	116	4	1.2
10.....	76	17	3.5	121	2	.7	138	4	1.5
11.....	80	19	4.1	113	3	.9	156	4	1.7
12.....	80	17	3.7	111	3	.9	144	4	1.6
13.....	78	14	2.9	109	3	.9	128	2	.7
14.....	75	24	4.9	107	2	.6	147	15	s 8.6
15.....	75	14	2.8	106	2	.6	400	52	56
16.....	83	30	6.7	103	3	.8	389	23	24
17.....	112	41	12	102	3	.8	333	11	9.9
18.....	111	40	12	102	3	.8	314	27	s 27
19.....	92	40	9.9	103	3	.8	440	35	42
20.....	85	40	9.2	217	23	s 16	440	36	43
21.....	82	38	8.4	345	24	22	367	13	13
22.....	80	40	8.6	389	28	29	266	13	9.3
23.....	78	42	8.8	307	12	9.9	216	5	2.9
24.....	76	24	4.9	216	8	4.7	202	6	3.3
25.....	76	10	2.0	216	6	3.5	196	5	2.6
26.....	75	5	1.0	216	6	3.5	178	2	1.0
27.....	75	5	1.0	202	5	2.7	166	4	1.8
28.....	82	4	.9	184	6	3.0	161	6	2.6
29.....	107	17	4.9	234	13	8.2	190	21	11
30.....	138	19	7.1	256	7	4.8	332	32	s 27
31.....	146	17	6.7	--	--	--	356	--	2.6
Total.	2,727	--	151.5	5,754	--	273.5	7,075	--	312.7
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.....	339	9	8.2	82	3	0.7	244	53	s 42
2.....	300	8	6.5	82	4	.9	327	39	34
3.....	307	6	5.0	83	6	1.3	300	23	19
4.....	284	5	3.8	75	7	1.4	231	16	10
5.....	239	4	2.6	78	5	1.0	184	9	4.5
6.....	231	7	4.4	80	6	1.3	190	15	7.7
7.....	256	7	4.8	254	63	s 47	248	10	6.7
8.....	216	5	2.9	223	22	13	209	6	3.4
9.....	196	5	2.6	196	10	5.3	202	--	s 9.3
10.....	178	4	1.9	137	8	3.0	256	--	a 16
11.....	161	4	1.7	154	36	s 21	307	--	a 17
12.....	150	4	1.6	292	68	54	345	--	a 29
13.....	138	4	1.5	184	39	19	333	18	16
14.....	126	4	1.4	172	41	19	292	8	6.3
15.....	121	5	1.6	138	22	8.2	256	6	4.1
16.....	125	4	1.4	118	14	4.5	266	18	s 14
17.....	122	3	1.0	156	25	s 12	307	8	6.6
18.....	113	4	1.2	202	20	11	300	2	1.6
19.....	111	5	1.5	172	11	5.1	239	2	1.3
20.....	109	4	1.2	150	9	3.6	202	2	1.1
21.....	95	4	1.0	144	5	1.9	190	3	1.5
22.....	103	3	.8	135	3	1.1	310	89	s 91
23.....	102	3	.8	210	64	s 42	513	86	119
24.....	104	3	.8	284	32	25	586	81	128
25.....	103	2	.6	239	12	7.7	470	31	39
26.....	100	2	.5	178	10	4.8	378	21	21
27.....	100	3	.8	156	10	4.2	356	16	15
28.....	84	2	.4	172	10	4.6	321	12	10
29.....	91	3	.7	--	--	--	275	11	8.2
30.....	91	2	.5	--	--	--	239	10	6.4
31.....	85	3	.7	--	--	--	216	9	5.2
Total.	4,880	--	64.4	4,546	--	323.6	9,092	--	693.9

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## NORTH ATLANTIC SLOPE BASINS, MAINE TO CONNECTICUT

## CONNECTICUT RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	202	7	3.8	387	21	21	109	20	5.9
2.....	196	8	4.2	292	18	14	115	18	5.6
3.....	196	15	7.9	231	14	8.7	96	14	3.6
4.....	321	--	a55	196	11	5.8	85	12	2.8
5.....	345	20	19	220	78	s56	83	11	2.5
6.....	327	16	14	266	35	s27	83	10	2.2
7.....	321	10	8.7	239	15	10	76	8	1.6
8.....	284	7	5.4	223	13	7.8	73	10	2.0
9.....	239	7	4.5	202	10	5.4	73	10	2.0
10.....	202	8	4.4	178	--	a4.8	70	8	1.5
11.....	190	9	4.6	166	10	4.5	67	7	1.3
12.....	172	11	5.1	150	10	4.0	83	17	3.8
13.....	166	10	4.5	138	10	3.7	104	18	5.0
14.....	172	7	3.2	130	8	2.8	98	12	3.2
15.....	172	10	4.6	124	7	2.3	82	8	1.8
16.....	186	9	4.0	117	6	1.9	71	8	1.5
17.....	156	9	3.8	113	5	1.5	65	8	1.4
18.....	150	7	2.6	112	6	1.8	58	8	1.2
19.....	155	7	2.7	106	6	1.7	62	8	1.1
20.....	144	7	2.7	102	6	1.6	52	10	1.7
21.....	138	8	3.0	96	6	1.6	61	10	1.6
22.....	156	8	3.4	93	6	1.5	86	18	4.2
23.....	172	9	4.2	91	6	1.5	82	14	3.1
24.....	166	9	4.0	92	5	1.2	76	13	2.7
25.....	249	--	a15	135	14	5.1	85	15	3.4
26.....	338	43	s43	115	10	3.1	83	16	3.6
27.....	450	49	60	112	10	3.0	75	11	2.2
28.....	430	32	37	96	10	2.6	65	--	b1.4
29.....	420	26	29	89	8	1.9	62	--	b1.3
30.....	400	23	25	88	10	2.4	57	8	1.2
31.....	--	--	--	89	12	2.9	--	--	--
Total.	7,184	--	388.5	4,768	--	213.1	2,337	--	76.4
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.....	50	8	1.0	31	10	0.8	242	20	13
2.....	50	8	1.0	31	8	.7	221	13	7.8
3.....	55	9	1.3	29	4	.3	206	18	10
4.....	64	8	1.4	28	3	.2	192	24	12
5.....	58	8	1.2	25	4	.3	182	16	7.9
6.....	52	8	1.1	28	4	.3	203	27	15
7.....	49	8	1.0	29	9	.7	204	18	9.9
8.....	57	8	1.2	65	25	4.4	193	12	6.2
9.....	49	7	.9	62	20	3.3	168	6	2.7
10.....	44	8	1.0	48	9	1.2	152	4	1.6
11.....	57	9	1.4	48	12	1.6	154	14	5.8
12.....	64	10	1.7	93	44	11	172	25	12
13.....	52	8	1.1	258	91	s68	159	14	6.0
14.....	43	6	.7	403	78	s85	144	5	1.9
15.....	42	7	.8	416	64	s73	135	5	1.8
16.....	42	10	1.1	233	36	23	134	6	2.2
17.....	49	16	2.1	114	24	7.4	132	6	2.1
18.....	52	11	1.5	398	216	s268	122	6	2.0
19.....	44	9	1.1	7,770	--	b6,870	118	10	3.2
20.....	46	8	1.0	5,070	242	s4,220	130	8	2.8
21.....	38	9	.9	1,460	53	s220	102	7	1.9
22.....	38	7	.7	850	54	124	105	16	4.5
23.....	35	7	.7	606	49	80	102	24	6.6
24.....	34	8	.7	580	42	96	134	--	a118
25.....	39	7	.7	450	35	42	232	--	a256
26.....	31	8	.7	370	37	37	206	21	12
27.....	26	8	.6	333	35	31	172	--	a49
28.....	29	7	.5	310	32	27	162	--	a31
29.....	30	6	.5	284	27	21	166	16	7.2
30.....	31	7	.6	259	21	15	152	13	5.3
31.....	31	8	.7	246	20	13	--	--	--
Total.	1,381	--	338.5	20,927	--	12,115.2	4,896	--	617.4
Total discharge for year (cfs-days)									75,567
Total load for year (tons)									15,568.7

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

CONNECTICUT RIVER BASIN--Continued  
SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965  
(Methods of analysis: B, by centrifugation; D, decantation; P, pipette; S, sedimentation; W, 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. 13, 1955...	4.30 p.m.	335	71	212	398	23	40	53	66	80	94	99	100			BWCM
Aug. 13.....	6.30 p.m.	365	71	154	321	20	25	36	47	63	95	99	100			BWCM
Aug. 14.....	6.30 a.m.	413	73	88	177	20	30	40	59	76	88	98	100			BWCM
Aug. 18.....	11.30 a.m.	260	76	369	665	35	50	61	78	87	96	100	--			BWCM
Aug. 18.....	2.30 p.m.	445	76	473	791	25	37	47	62	72	90	100	--			BWCM
Aug. 18.....	7.00 p.m.	768	76	273	422	25	36	49	64	74	90	99	100			BWCM
Aug. 20.....	11.50 a.m.	4,200	74	222	374	9	30	64	77	86	94	99	100			BWCM
Aug. 20.....	3.30 p.m.	3,280	74	154	294	39	57	74	87	92	94	99	100			BWCM

## HUDSON RIVER BASIN

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

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

DRAINAGE AREA.--26.0 square miles.

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

Water temperatures: March 1953 to September 1955.

EXTREMES, 1954-55.--Hardness: Maximum, 132 ppm Oct. 1-10; minimum, 47 ppm Feb. 23-24.

Specific conductance: Maximum, 251 micromhos June 11-20; minimum, 104 micromhos

Mar. 11-13.

Water temperatures: Maximum, 80°F July 16; minimum, freezing point on many days during

December, January, February, and March.

EXTREMES, 1953-55.--Hardness: Maximum, 132 ppm Oct. 1-10, 1954; minimum, 47 ppm

Feb. 23-24, 1955.

Specific conductance: Maximum, 262 micromhos Nov. 6, 1953; minimum, 104 micromhos

Mar. 11-13, 1955.

Water temperatures: Maximum, 81°F July 18, 1953; 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 1954 to September 1955 is given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Mean discharge (cfs)	Bicarbonate (HCO <sub>3</sub> )	Chloride (Cl)	Hardness as CaCO <sub>3</sub>		Specific conductance (micromhos at 25°C)	pH	Color
				Total (b)	Non-carbonate			
Oct. 1-10, 1954	6.3	134	4.2	132	22	246	7.0	3
Oct. 11-20	8.4	126	4.8	130	27	247	7.6	3
Oct. 21-31	8.2	127	5.2	124	20	247	7.4	3
Nov. 1-10	99	95	4.5	110	32	209	7.2	3
Nov. 11-20	25	110	5.8	117	27	238	7.2	3
Dec. 1-10	28	110	4.5	122	32	228	7.0	3
Dec. 11-20	69	90	5.2	108	34	201	6.9	2
Dec. 21-31	27	104	4.2	114	29	216	7.0	3
Jan. 1-10, 1955	23	108	4.0	114	26	218	7.0	4
Jan. 11-20	8.2	116	4.2	126	31	233	7.2	3
Jan. 21-31	5.1	114	3.8	118	24	231	6.7	0
Feb. 1-6, 9-10	5.7	108	6.0	109	20	225	6.9	0
Feb. 7-8	38	38	1.4	52	20	156	6.0	7
Feb. 11-20	13	102	6.2	104	20	226	6.8	3
Feb. 21-22	16	99	7.2	107	26	227	6.7	5
Feb. 23-24	111	32	4.8	47	20	112	6.2	7
Feb. 25-28	53	67	5.0	81	26	168	6.6	5
Mar. 1-3	196	41	3.8	54	20	116	6.3	3
Mar. 4-10	45	81	5.2	86	20	185	6.8	5
Mar. 11-13	249	44	3.5	52	16	104	6.7	5
Mar. 14-20	109	74	3.5	81	20	160	7.2	5
Mar. 21, 24, 26-30	70	88	4.5	94	22	183	7.6	5
Mar. 22-23, 25, 31	157	62	3.5	69	18	138	6.7	4
Apr. 1-10	176	72	4.0	80	21	154	7.1	4
Apr. 11-20	95	80	4.0	88	22	170	7.1	8
Apr. 21-30	70	88	5.0	96	24	186	7.2	10
May 1-10	26	112	6.4	118	26	229	7.9	12
May 11-20	11	118	5.5	121	24	237	7.7	7
May 21-31	48	124	4.0	116	14	240	8.0	23
June 1	106	99	4.4	102	21	198	7.6	--
June 2-3	62	116	4.2	115	20	228	7.8	25
June 4-10	18	132	4.8	128	20	248	7.9	15
June 11-20	8.9	135	4.2	121	12	251	8.3	10
June 21-30	5.5	122	4.8	123	23	242	7.8	5
July 1-10	4.7	124	4.2	122	20	237	7.7	5
July 11-20	3.8	122	4.5	115	15	228	7.6	5
July 21-31	5.6	114	3.0	115	22	225	7.6	5
Aug. 1-10	2.8	117	6.2	119	23	238	7.8	7
Aug. 11-12, 14-20	33	93	5.2	113	37	229	7.4	32
Aug. 13	104	59	4.5	79	31	170	6.9	32
Aug. 21-31	18	125	4.8	132	30	254	7.5	22
Sept. 1-10	6.3	131	4.5	129	22	248	7.6	8
Sept. 11-20	4.7	129	4.8	124	18	249	7.7	8
Sept. 21-23, 25-30	15	114	4.8	121	28	236	7.5	18
Sept. 24	59	85	5.0	95	25	191	6.9	28
Average	50.1	100	4.6	105	23	209	--	8

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

b By compleximetric titration.



## HUDSON RIVER BASIN--Continued

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

LOCATION.--On highway bridge, 1,500 feet downstream from gaging station which is 500 feet downstream from Glowegee Creek, 1 mile east of West Milton, Saratoga County, and 3½ miles northwest of Ballston Spa. Temperature recorder is at gaging station.

DRAINAGE AREA.--90 square miles approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to June 1955 (discontinued).

Water temperature: October 1952 to September 1955.

Sediment records: February 1953 to June 1955 (discontinued).

EXTREMES, 1954-55.--Hardness: Maximum, 88 ppm Oct. 1-10; minimum, 46 ppm Mar. 11-13.

Specific conductance: Maximum, 174 micromhos Oct. 1-10; minimum, 98.3 micromhos

Mar. 11-13.

Water temperatures: Maximum, 83°F July 10; minimum, freezing point on many days during December, January, February and March.

Sediment concentration: Maximum, 162 ppm Nov. 3; minimum, 0.1 ppm May 20.

Sediment loads: Maximum daily, 374 tons Nov. 3; minimum daily, less than 0.05 tons

Oct. 1, 4, 19, 22, 24, 26, 27.

EXTREMES, 1952-55.--Dissolved solids (1953-54): Maximum, 112 ppm Jan. 1-10, 1954; minimum, 74 ppm Mar. 1-10, 1954.

Hardness (1953-54): Maximum, 88 ppm Oct. 1-10, 1954; minimum, 40 ppm Mar. 21-22, 1954.

Water temperatures: Maximum, 83°F July 10, 1955; minimum, freezing point many days

during winter months.

Sediment concentration: (1953-55): Maximum observed, 193 ppm Mar. 16, 1953; minimum,

0.1 ppm Dec. 28, 29, 30, 1953, May 20, 1955.

Sediment loads (1953-55): Maximum daily, 453 tons Apr. 7, 1953, minimum daily, less than 0.05 ton on several days.

REMARKS.--Records of specific conductance of daily samples available in district office at Albany, N. Y. Records of discharge for water year October 1954 to September 1955 given in WSP 1382. No appreciable inflow between sampling point and gaging station.

CORRECTIONS.--WSP 1290: Sediment loads for Apr. 7, 1953 should be 263 tons instead of 453 tons and the monthly total for April 1953 should be 558.6 instead of 748.6.

WSP 1350: Sediment loads for Apr. 7, 1954 should be 58.8 tons instead of 88 tons.

## Chemical analyses, in parts per million, October 1954 to June 1955

Date of collection	Mean discharge (cfs)	Bicarbonate (HCO <sub>3</sub> )	Chloride (Cl)	Hardness as CaCO <sub>3</sub>		Specific conductance (micromhos at 25°C)	pH	Color
				Total	Non-carbonate			
Oct. 1-10, 1954.....	46	90	3.2	88	14	174	7.3	3
Oct. 11-20.....	54	86	3.0	87	16	168	7.3	3
Oct. 21-31.....	53	84	3.2	84	15	168	6.7	3
Nov. 1-10.....	322	60	4.2	72	23	150	5.8	3
Nov. 11-20.....	98	76	3.5	80	18	158	6.9	3
Nov. 21-30.....	291	62	3.5	71	20	142	6.7	3
Dec. 1-10.....	105	74	2.8	81	20	153	7.0	2
Dec. 11-20.....	221	60	2.5	68	19	134	7.0	2
Dec. 21-31.....	113	66	3.0	72	18	144	6.8	3
Jan. 1-10, 1955.....	93	70	3.0	74	17	147	6.7	4
Jan. 11-20.....	45	74	2.8	82	21	160	6.9	2
Jan. 21-31.....	32	81	5.2	82	16	162	7.2	3
Feb. 1-10.....	44	66	5.5	68	14	153	7.2	4
Feb. 11-20.....	66	72	5.2	82	23	157	7.3	3
Feb. 21-22.....	67	73	5.5	75	15	158	7.0	9
Feb. 23-24.....	405	32	8.0	47	21	112	6.9	6
Feb. 25-28.....	204	60	4.2	68	19	141	7.1	9
Mar. 1, 5-10.....	225	58	3.5	70	22	135	7.2	5
Mar. 2-4.....	430	40	3.5	54	21	101	6.7	5
Mar. 11-13, 16-17.....	573	40	2.6	46	13	98.3	7.1	5
Mar. 14-15, 18-20.....	284	54	2.6	60	16	121	7.4	6
Mar. 21, 24-28.....	270	56	3.0	62	14	128	6.7	12
Mar. 22, 27-30.....	228	63	3.5	70	18	140	7.8	4
Mar. 23, 31.....	494	46	2.5	50	12	104	7.2	6
Apr. 1-10.....	574	45	2.5	50	13	103	7.0	5
Apr. 11-16.....	468	43	3.3	53	18	104	7.3	7
Apr. 17-20.....	311	54	4.6	60	16	129	7.2	10
Apr. 21-30.....	266	56	2.8	62	16	122	7.1	12
May 1.....	162	64	2.8	67	14	133	7.4	--
May 2-10.....	121	74	6.4	80	19	165	7.4	7
May 11-20.....	73	78	5.6	76	12	154	7.6	7
May 21-29.....	134	77	3.5	80	17	159	7.5	17
May 30-31.....	288	59	1.8	60	12	121	7.4	25
June 1-4.....	228	64	2.5	67	14	129	7.3	20
June 5-10.....	82	82	2.5	79	12	155	7.5	10
June 11-20.....	57	82	2.8	82	15	166	7.6	5
June 21-30.....	42	86	2.6	85	15	169	7.8	7



## HUDSON RIVER BASIN--Continued

KAYADEROSERAS CREEK NEAR WEST WILTON, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

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	60	42	41	38	36	33	33	32	32	32	32	39	35	61	56	62	60	77	68	79	69	68	64
2.....	63	61	41	40	36	34	33	33	32	32	32	32	37	35	62	55	60	58	76	71	80	73	68	62
3.....	62	60	43	41	34	33	33	33	32	32	32	32	37	34	63	58	63	56	80	71	78	69	68	61
4.....	63	61	41	40	33	33	34	33	32	32	32	32	38	34	64	58	61	58	80	69	78	71	68	61
5.....	62	59	42	41	33	32	33	32	32	32	32	32	40	35	68	62	65	59	80	70	82	73	69	62
6.....	59	55	42	40	32	32	32	32	32	32	32	32	39	37	65	58	69	61	77	71	80	73	68	61
7.....	55	49	41	39	33	32	32	32	32	32	32	32	38	37	61	54	69	64	78	68	79	75	67	61
8.....	51	46	40	38	33	32	32	32	32	32	32	32	39	36	62	57	67	64	80	69	75	69	64	57
9.....	50	46	41	40	32	32	32	32	32	32	32	32	41	37	58	53	68	62	80	71	70	63	63	56
10.....	53	50	40	37	32	32	32	32	32	32	32	32	43	39	59	51	69	61	83	73	72	62	66	60
11.....	57	53	37	35	33	32	32	32	32	32	32	32	45	40	62	56	65	62	90	72	71	66	66	63
12.....	61	56	40	37	33	32	32	32	32	32	32	32	44	41	63	56	63	61	77	68	67	66	66	60
13.....	63	60	39	36	33	32	32	32	32	32	32	32	42	42	63	57	64	60	75	65	67	66	63	57
14.....	61	58	37	35	32	32	32	32	32	32	32	32	43	42	65	58	62	61	78	67	71	67	62	55
15.....	62	60	38	37	33	32	32	32	32	32	32	32	44	43	64	56	69	59	77	70	75	70	63	59
16.....	62	58	37	35	33	33	32	32	32	32	32	32	47	44	62	58	71	63	79	73	75	71	65	60
17.....	59	53	40	37	33	32	32	32	32	32	32	32	47	43	59	55	73	65	81	73	74	70	65	58
18.....	53	50	43	40	33	32	32	32	32	32	32	32	48	42	61	53	75	66	81	73	73	70	67	61
19.....	51	51	46	43	33	33	32	32	32	32	32	32	47	46	63	55	74	66	80	73	74	69	69	64
20.....	52	50	48	46	33	32	32	32	32	32	32	32	49	45	64	55	74	68	78	68	77	71	68	64
21.....	51	48	47	45	32	32	32	32	32	32	32	32	48	46	66	57	75	67	79	69	77	72	65	59
22.....	50	47	46	41	32	32	32	32	32	32	32	32	51	46	66	58	76	68	82	73	77	70	58	53
23.....	51	45	41	40	32	32	32	32	32	32	32	32	53	49	66	63	74	67	81	73	74	68	56	50
24.....	53	49	41	40	32	32	32	32	32	32	32	32	53	49	65	60	69	66	79	74	70	65	56	54
25.....	50	47	40	39	32	32	32	32	32	32	32	32	52	47	65	63	71	63	77	69	71	64	57	54
26.....	49	47	40	39	33	32	32	32	32	32	32	32	48	47	63	61	70	65	78	68	71	63	56	51
27.....	49	47	39	38	32	32	32	32	32	32	32	32	49	47	63	60	72	64	75	70	71	67	55	50
28.....	48	45	39	38	32	32	32	32	32	32	32	32	51	47	66	60	73	64	72	69	69	62	57	55
29.....	45	43	39	38	33	32	32	32	32	32	32	32	55	50	67	63	76	66	75	66	68	60	58	54
30.....	44	43	38	38	33	32	32	32	32	32	32	32	56	52	65	62	74	67	76	66	67	61	56	55
31.....	43	41	--	--	33	32	32	32	--	--	39	35	--	--	64	62	--	--	77	67	69	66	--	--
Average.....	55	52	41	39	33	32	32	32	32	32	32	35	46	42	63	58	69	63	78	70	74	68	63	58

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

## HUDSON RIVER BASIN--Continued

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

## Suspended sediment, October 1954 to June 1955

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.....	44	0.3	(t)	70	0.8	0.2	221	1	0.6
2.....	44	.8	0.1	94	.8	.2	170	.8	.4
3.....	54	.8	.1	786	162	s 374	116	.8	.2
4.....	57	.3	(t)	860	50	s 123	90	.3	.1
5.....	49	.7	.1	493	11	15	82	1	.2
6.....	44	2	.2	286	2	1.5	76	1	.2
7.....	42	4	.4	204	1	.6	70	.6	.1
8.....	41	.9	.1	165	.8	.4	68	2	.4
9.....	41	.6	.1	142	2	.8	74	4	.8
10.....	42	1	.1	122	1	.3	82	2	.4
11.....	59	.4	.1	108	.4	.1	84	1	.2
12.....	62	1	.2	105	.3	.1	78	2	.4
13.....	54	1	.2	96	.4	.1	74	2	.4
14.....	47	1	.1	90	.4	.1	92	5	1.2
15.....	46	1	.1	90	.3	.1	580	--	a 120
16.....	57	1	.2	82	.4	.1	288	8	6.2
17.....	55	.5	.1	84	.4	.1	185	3	1.3
18.....	48	1	.1	103	2	.6	268	--	a 6
19.....	50	.3	(t)	100	1	.3	366	7	6.9
20.....	64	1	.2	125	1	.3	215	4	2.3
21.....	58	1	.2	528	70	s 122	145	2	.8
22.....	52	.3	(t)	494	16	s 23	100	2	.5
23.....	48	.4	.1	260	3	2.1	108	2	.6
24.....	46	.3	(t)	194	2	1.0	114	3	.9
25.....	44	1	.1	208	2	1.1	92	.8	.2
26.....	43	.4	(t)	192	1	.5	76	2	.4
27.....	47	.3	(t)	160	2	.9	78	2	.4
28.....	58	.7	.1	156	.6	.2	84	3	.7
29.....	55	.4	.1	389	--	a 21	160	8	3.4
30.....	68	.5	.1	333	8	s 8.2	150	4	1.6
31.....	63	.5	.1	--	--	--	140	3	1.1
Total.	1,582	--	3.2	7,119	--	697.9	4,506	--	158.9
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.....	130	2	0.7	25	2	0.1	620	49	s 104
2.....	120	4	1.3	25	2		666	29	s 55
3.....	130	2	.7	24	3	.2	405	7	7.6
4.....	110	3	.9	22	3	.2	220	5	3.0
5.....	94	2	.5	21	1	.1	175	2	.9
6.....	88	3	.7	30	4	.3	190	7	3.6
7.....	80	4	.9	90	7	1.7	183	4	2.0
8.....	64	2	.3	70	10	1.9	140	6	2.3
9.....	58	4	.6	64	4	.7	124	5	1.7
10.....	60	.9	.1	66	2	.4	145	8	3.1
11.....	54	1	.1	68	4	.7	470	--	a 84
12.....	50	2	.3	80	4	.9	735	70	139
13.....	48	2	.2	86	1	.2	623	57	96
14.....	46	2	.2	68	2	.4	425	35	40
15.....	45	4	.5	62	1	.2	337	13	12
16.....	45	.8	.1	60	1	.2	580	46	s 76
17.....	44	1	.1	58	2	.3	458	25	31
18.....	42	2	.2	58	2	.3	270	8	5.8
19.....	39	2	.2	58	2	.3	197	5	2.6
20.....	35	2	.2	60	2	.3	190	--	a 23
21.....	31	3	.2	66	3	.5	208	16	9.0
22.....	32	2	.2	68	5	.9	356	24	s 35
23.....	34	3	.3	410	45	s 68	532	16	s 25
24.....	36	2	.2	400	14	s 24	336	19	17
25.....	37	3	.3	250	4	2.7	292	--	a 37
26.....	36	2	.2	200	3	1.6	242	5	3.3
27.....	35	3	.3	180	5	2.4	183	6	3.0
28.....	32	3	.2	185	16	8.0	165	6	2.7
29.....	30	2	.2	--	--	--	156	3	1.3
30.....	28	.6	(t)	--	--	--	282	42	s 49
31.....	26	2	.1	--	--	--	457	--	a 140
Total.	1,739	--	11.0	2,854	--	117.6	10,362	--	1,014.9

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated curve.

## HUDSON RIVER BASIN--Continued

KAYADEROSSERAS CREEK NEAR WEST MILTON, N. Y.--Continued

Suspended sediment, October 1954 to June 1955--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.....	621	--	a 240	162	1	0.4	333	11	s11
2.....	701	67	127	150	.8	.3	279	6	4.5
3.....	643	25	s45	140	.6	.2	173	1	.5
4.....	646	--	a 82	133	.7	.2	127	1	.3
5.....	664	--	a 65	124	.8	.3	113	.8	.2
6.....	637	35	60	111	1	.3	92	.4	.1
7.....	604	22	36	105	.6	.2	81	.4	.1
8.....	450	5	6.1	115	.9	.3	74	.3	.1
9.....	357	5	4.8	108	.8	.2	67	.3	.1
10.....	413	--	a 18	99	.7	.2	62	.3	.1
11.....	490	--	a 37	92	.4	.1	58	.6	.1
12.....	450	15	s19	86	.5	.1	69	.2	(t)
13.....	357	8	7.7	82	.4	.1	78	.4	.1
14.....	339	3	2.7	78	.4	.1	64	.3	.1
15.....	604	37	60	73	.3	.1	61	.4	.1
16.....	571	20	31	70	.4	.1	53	3	.4
17.....	379	10	10	65	.3	.1	48	2	.2
18.....	287	8	6.2	64	2	.3	47	4	.5
19.....	292	5	3.9	61	.4	.1	44	4	.5
20.....	287	5	3.9	58	.1	(t)	45	2	.2
21.....	278	8	6.0	56	1	.2	47	3	.4
22.....	284	4	3.1	53	.8	.1	46	2	.2
23.....	234	3	1.9	117	30	s22	47	3	.4
24.....	197	3	1.6	228	33	s26	41	.5	.1
25.....	357	12	s15	165	12	s6.8	41	3	.3
26.....	398	13	14	209	8	s5.0	45	.8	.1
27.....	298	.6	.5	137	2	.7	40	.4	(t)
28.....	237	.7	.4	100	.8	.2	39	.1	.1
29.....	201	.6	.3	140	9	s8.4	35	--	e.1
30.....	177	.3	.1	384	30	s34	34	.6	.1
31.....	--	--	--	192	7	3.6	--	--	--
Total.	12,453	--	908.2	3,757	--	110.7	2,383	--	21.0
Total discharge for period Oct. 1, 1954 to June 30, 1955 (cfs-days) .....									46 755
Total load for period Oct. 1, 1954 to June 30, 1955 (tons) .....									2,043.5

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from partly estimated curve.

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

## 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, N. Y.

DRAINAGE AREA.--4,500 square miles.

RECORDS AVAILABLE.--Water temperatures: January 1947 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 82°F Aug. 5-7; minimum, freezing point on several days during December, January and February.

EXTREMES, 1947-55.--Water temperatures: Maximum, 82°F July 1-2, 1953, Aug. 5-7, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955  
/Once-daily measurement at approximately 8 a. m./

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

## HUDSON RIVER BASIN--Continued

MOHAWK RIVER AT COHOES, N. Y.

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

DRAINAGE AREA.--3,456 square miles.

RECORDS AVAILABLE.--Sediment records: January 1954 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 279 ppm Mar. 13; minimum daily, 2 ppm Oct. 6, 7, 21, 31.

Sediment loads: Maximum daily, 30,900 tons Mar. 12; minimum daily, 0.8 ton Aug. 7.

EXTREMES, January 1954 to September 1955.--Sediment concentrations: Maximum daily, 323 ppm Feb. 18, 1954; minimum daily, 1.0 July 18, 1954.

Sediment loads: Maximum daily, 42,100 tons Feb. 18, 1954; minimum daily, 0.8 ton Aug. 7, 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

## Suspended sediment, water year October 1954 to September 1955

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.....	1,580	15	64	1,740	6	28	11,100	15	450
2.....	1,580	15	64	1,710	14	65	8,420	15	341
3.....	760	12	25	10,300	30	s1,040	6,070	15	246
4.....	1,600	9	39	22,800	49	3,020	5,730	14	216
5.....	1,670	4	18	12,800	70	2,420	5,390	14	204
6.....	1,740	2	9.4	9,010	48	1,170	7,280	10	196
7.....	1,750	2	9.4	5,240	32	453	6,360	8	137
8.....	1,740	3	14	3,500	26	246	6,360	8	137
9.....	1,380	5	19	3,780	20	204	6,250	9	152
10.....	837	9	20	4,110	16	178	5,210	9	127
11.....	1,240	8	27	3,090	13	108	4,140	13	145
12.....	1,560	8	34	2,940	12	95	3,730	12	121
13.....	1,340	8	29	2,440	11	72	3,450	12	112
14.....	1,740	14	36	2,700	10	73	3,440	12	111
15.....	1,810	14	68	2,360	9	57	10,700	13	376
16.....	1,930	13	68	2,460	8	53	14,000	39	1,470
17.....	1,880	11	56	2,260	8	49	9,820	43	1,140
18.....	1,740	9	42	2,630	6	43	8,710	33	776
19.....	1,510	6	24	2,540	6	41	14,800	26	1,043
20.....	1,270	4	14	2,450	6	40	12,000	38	s1,190
21.....	1,660	2	9.0	9,340	18	s703	8,210	38	842
22.....	1,270	4	14	17,500	23	1,090	4,250	30	s362
23.....	1,280	4	14	10,400	30	842	4,310	22	256
24.....	1,160	5	16	8,260	30	669	4,290	16	185
25.....	1,400	18	68	7,330	37	732	4,300	12	139
26.....	1,200	5	16	7,130	28	539	3,930	9	95
27.....	1,180	3	9.6	6,630	21	376	3,660	8	79
28.....	1,210	4	13	3,600	18	175	3,520	7	66
29.....	1,480	8	32	8,780	15	356	6,390	5	86
30.....	1,860	13	65	14,300	15	579	14,600	10	394
31.....	1,800	2	9.7	--	--	--	13,600	47	1,730
Total.	46,157	--	976.1	194,130	--	15,516	224,020	--	12,921

s Computed by subdividing day.

## 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 1954 to September 1955--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.....	11,100	42	1,260	2,230	6	36	10,000	14	s 434
2.....	8,360	33	745	2,190	8	47	30,400	146	s 12,200
3.....	8,680	26	609	2,100	10	57	21,600	150	s 9,020
4.....	9,070	19	465	2,050	--	a 61	14,400	72	2,800
5.....	7,460	14	282	1,740	--	a 52	10,500	44	1,250
6.....	6,150	13	216	2,040	--	a 60	8,640	27	630
7.....	5,440	9	132	2,750	7	52	7,300	15	296
8.....	4,030	8	87	3,450	5	46	6,050	11	180
9.....	4,660	8	101	3,690	9	94	5,520	9	134
10.....	4,190	8	90	3,680	9	89	5,990	8	129
11.....	3,490	8	75	3,570	7	67	19,500	20	s 1,220
12.....	4,170	7	79	5,370	25	s 372	41,100	274	s 30,900
13.....	3,760	5	51	5,180	8	112	31,700	279	s 24,200
14.....	3,490	9	85	3,850	15	156	21,500	139	s 8,240
15.....	2,480	10	67	3,540	25	239	15,600	80	3,370
16.....	3,670	8	79	3,400	17	156	16,000	45	1,940
17.....	3,070	7	58	3,340	18	162	18,000	51	2,480
18.....	2,730	7	52	3,300	11	98	12,900	54	1,880
19.....	2,420	7	46	2,970	7	56	10,200	40	1,100
20.....	2,650	7	50	3,240	6	52	8,430	26	592
21.....	2,260	6	37	2,690	6	44	8,640	20	466
22.....	2,680	6	43	3,090	7	58	9,600	18	466
23.....	2,490	5	34	6,440	10	174	17,600	25	1,190
24.....	2,840	5	38	16,200	26	s 1,110	15,500	50	2,090
25.....	2,410	7	46	11,100	54	1,620	13,200	38	1,350
26.....	2,410	6	39	7,330	38	752	12,500	32	1,080
27.....	2,690	4	29	5,900	21	334	9,640	33	859
28.....	2,800	4	30	5,590	11	166	7,430	29	582
29.....	2,290	3	18	--	--	--	6,370	17	292
30.....	1,820	7	34	--	--	--	7,050	15	285
31.....	2,220	4	24	--	--	--	11,100	15	450
Total.	127,980	--	5,001	122,220	--	6,322	433,960	--	112,105
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.....	15,400	37	1,540	6,180	24	400	2,990	18	145
2.....	18,900	57	2,910	4,810	23	299	5,360	31	449
3.....	19,700	45	2,390	5,000	24	324	6,240	32	539
4.....	19,900	55	2,960	3,590	24	233	4,440	24	288
5.....	19,900	62	3,330	3,320	25	224	3,540	19	182
6.....	15,600	57	2,400	3,350	30	271	3,320	19	170
7.....	18,700	40	2,020	3,380	33	301	3,300	18	160
8.....	17,700	37	1,770	3,290	35	311	2,880	20	156
9.....	13,500	29	1,060	2,770	38	284	2,230	20	120
10.....	12,100	24	784	3,570	31	299	2,040	18	99
11.....	10,500	20	567	3,490	26	245	1,740	18	84
12.....	11,700	20	632	3,320	23	206	1,350	17	62
13.....	14,000	21	794	3,140	22	186	2,070	25	140
14.....	13,100	22	778	2,270	20	122	1,980	27	144
15.....	15,600	22	927	2,140	20	116	2,140	25	144
16.....	21,400	28	1,620	2,360	20	127	2,360	22	140
17.....	17,900	34	1,640	2,000	22	119	2,100	18	102
18.....	17,200	34	1,580	1,940	27	141	1,340	16	58
19.....	13,600	33	1,210	2,210	25	149	1,550	16	87
20.....	14,800	29	1,160	2,200	23	137	1,800	22	107
21.....	15,400	28	1,160	1,200	14	45	1,960	22	116
22.....	17,400	29	1,360	972	10	26	1,570	21	89
23.....	13,000	29	1,020	1,680	15	68	1,480	20	80
24.....	10,600	30	859	1,730	16	75	1,670	19	86
25.....	10,800	29	846	2,080	15	84	1,590	18	77
26.....	17,000	30	1,380	2,970	18	144	996	17	46
27.....	12,100	30	980	3,540	20	191	1,580	15	64
28.....	10,700	30	867	2,770	22	164	1,410	14	53
29.....	8,110	30	657	3,040	22	180	1,420	12	46
30.....	6,560	30	531	2,700	19	138	1,430	10	39
31.....	--	--	--	2,810	16	121	--	--	--
Total.	442,870	--	41,732	89,822	--	5,730	69,676	--	4,052

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 1954 to September 1955--Continued

Day	July			August			September		
	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.....	1,330	9	32	972	11	29	2,320	24	150
2.....	1,110	8	24	1,000	11	30	1,830	18	89
3.....	727	7	14	1,050	11	31	1,460	15	59
4.....	658	7	12	978	10	26	506	13	18
5.....	1,290	8	28	960	10	26	589	11	17
6.....	1,300	7	24	806	9	20	1,090	13	38
7.....	1,300	7	24	79	4	8	1,040	17	48
8.....	1,320	7	25	944	11	28	1,200	13	42
9.....	804	7	17	952	26	67	1,080	13	38
10.....	250	8	5.4	838	12	27	995	17	46
11.....	1,010	11	30	1,680	20	91	240	15	9.7
12.....	1,060	11	31	1,240	27	90	1,240	17	57
13.....	1,080	10	29	2,430	22	144	982	15	40
14.....	1,080	10	29	6,970	29	546	931	15	38
15.....	944	10	25	3,490	23	217	1,190	18	58
16.....	790	10	21	2,510	23	156	982	16	42
17.....	238	10	6.4	2,020	24	131	866	14	33
18.....	1,690	15	68	2,450	28	185	129	19	6.6
19.....	1,330	14	50	3,170	39	334	1,740	19	86
20.....	1,340	12	43	9,380	35	886	1,080	14	41
21.....	1,100	9	27	3,950	30	320	1,170	14	44
22.....	1,150	10	31	3,960	28	299	1,080	16	47
23.....	824	8	18	4,170	27	304	1,020	17	47
24.....	100	6	1.6	3,390	37	339	1,130	16	49
25.....	1,120	7	21	3,110	45	378	1,520	15	62
26.....	1,010	10	27	2,050	32	177	1,400	14	53
27.....	996	10	27	1,920	25	130	1,500	13	53
28.....	938	10	25	1,370	23	85	1,790	14	68
29.....	1,040	10	28	1,800	23	112	2,500	15	101
30.....	830	10	22	1,630	25	110	2,440	16	105
31.....	118	7	2.2	1,480	34	136	--	--	--
Total.	29,977	--	767.6	72,749	--	5,454.8	37,040	--	1,590.3

Total discharge for year (cfs-days) ..... 1,830,801

Total load for year (tons) ..... 23,167.8

## HUDSON RIVER BASIN--Continued

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

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

DRAINAGE AREA.--3,385 square miles.

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

Water temperatures: October 1951 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 85°F Aug. 5; minimum, freezing point on many days during December, January and February.

EXTREMES, 1951-55.--Water temperatures: Maximum, 85°F Aug. 5, 1955; minimum, freezing point on many days during December, January, February and March.

Temperature (°F) of water, water year October 1954 to September 1955

Twice-daily measurements at approximately 8 a. m. and 4 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.
1.....	63	63	53	53	39	39	35	34	35	32	68	68	75	78
2.....	65	65	51	53	39	39	34	35	38	52	68	77	80	81
3.....	65	66	50	54	38	38	33	35	41	50	67	77	80	84
4.....	65	66	49	45	36	36	35	34	39	40	65	77	81	82
5.....	65	65	47	45	36	36	35	33	35	39	67	78	80	84
6.....	64	63	46	46	36	36	34	34	35	41	66	78	80	81
7.....	64	62	44	44	33	34	32	34	40	61	67	80	81	83
8.....	60	61	44	44	33	33	32	34	40	61	68	80	82	84
9.....	60	60	44	44	33	33	32	34	40	60	69	81	80	82
10.....	60	60	43	43	33	33	34	34	42	59	71	81	84	80
11.....	60	61	43	43	33	34	32	34	35	43	69	71	83	77
12.....	60	62	43	43	34	34	32	33	37	45	69	70	82	77
13.....	62	62	43	44	33	33	32	35	45	60	70	80	78	68
14.....	62	62	42	43	33	34	32	35	45	62	64	69	79	76
15.....	62	63	40	42	35	34	33	35	46	62	63	81	82	75
16.....	64	63	40	41	34	34	32	36	45	63	69	70	76	68
17.....	63	63	41	42	33	33	32	35	46	63	69	70	78	68
18.....	61	62	42	42	33	33	32	34	45	61	63	70	78	68
19.....	61	61	42	43	34	33	33	34	46	62	72	81	82	79
20.....	60	60	44	44	34	34	33	34	46	62	73	81	79	80
21.....	59	59	44	43	33	33	32	36	46	63	73	81	82	70
22.....	58	59	43	43	32	33	34	36	48	64	73	81	76	67
23.....	59	59	43	43	33	33	34	35	48	64	75	83	84	66
24.....	59	59	42	43	33	34	34	35	49	66	75	82	77	76
25.....	58	58	42	42	33	34	33	38	52	67	74	80	75	65
26.....	57	57	42	43	34	33	34	35	52	67	76	80	75	66
27.....	57	57	40	41	35	33	33	35	50	67	74	75	73	64
28.....	55	55	40	41	34	35	33	36	49	67	74	70	70	64
29.....	55	54	40	41	33	34	33	37	48	69	74	70	75	64
30.....	55	54	40	40	33	34	33	37	49	71	75	70	75	64
31.....	55	54	40	40	34	34	33	36	50	72	77	70	75	64
Average.....	60	60	44	44	34	35	33	35	45	62	70	80	78	69



## HUDSON RIVER BASIN--Continued

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

LOCATION.--At east shore of Green Island, Albany County, at Ford Motors Co. powerplant, opposite Troy barge locks.

DRAINAGE AREA.--8,090 square miles, approximately at gaging station (including that above site of auxiliary gage).

RECORDS AVAILABLE.--Water temperatures: April 1947 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 83°F Aug. 4-6; minimum, freezing point Jan. 15, 16, 18-20.

EXTREMES, 1947-55.--Water temperatures: Maximum, 84°F Aug. 8, 9, 1949; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year, October 1954 to September 1955  
/Once-daily measurement at approximately 8 a.m./

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

HUDSON RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN HUDSON RIVER BASIN IN NEW YORK

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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
														Total	Non- carbon- ate			
WEST CANADA CREEK AT HINKLEY																		
Jan. 19, 1955 .....	a 842	6.3	0.12	5.2	1.0	2.4		11	9.9	1.0	0.1	1.6	45	17	8	45.1	6.9	8
MOHAWK RIVER AT COHOES																		
Jan. 5, 1955 .....	934	16	0.17	29	4.6	5.5	1.3	84	27	5.4	0.0	3.3	136	91	22	211	7.5	18
Daily mean discharge.																		

a Daily mean discharge.

## DELAWARE RIVER BASIN

## DELAWARE RIVER AT TRENTON, N. J.

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 normally collected at midstream from bridge. DRAINAGE AREA. --6,780 square miles.

RECORDS AVAILABLE. --Chemical analyses: October 1944 to September 1955.

Water temperatures: October 1944 to September 1955.

Sediment records: September 1949 to September 1955.

EXTREMES, 1954-55. --Dissolved solids: Maximum, 135 ppm Oct. 11-20 and Aug. 11-14; minimum, 55 ppm Mar. 11-20.

Hardness: Maximum, 88 ppm Oct. 11-20; minimum, 31 ppm Mar. 1-10, and 11-20.

Specific conductance: Maximum daily, 243 micromhos Oct. 14; minimum point on many days during December and January.

Water temperatures: Maximum, not determined; minimum, freezing point on many days during December and January.

Sediment concentrations: Maximum daily, 1,680 ppm Aug. 19; minimum daily, 1 ppm on several days.

Sediment loads: Maximum daily, 1,087,000 tons, Aug. 20; minimum daily, 5 tons, Oct. 10, 12.

EXTREMES, 1944-47, 1949-55. --Dissolved solids (1944-47, 1950-51, 1953-55): Maximum, 156 ppm Oct. 1-9, 1953; minimum, 44 ppm Mar. 21-31, 1945.

Hardness (1944-47, 1949-55): Maximum, 103 ppm Oct. 1-9, 1953; minimum, 25 ppm Apr. 1-10, 1950, Feb. 21-28, 1954.

Specific conductance: Maximum, 280 micromhos Aug. 31, 1953; minimum, 58 micromhos Apr. 1, 1951.

Water temperatures: Maximum, 88°F July 30, 1949, Aug. 30, 1948; minimum, freezing point on many days during the winter months.

Sediment concentrations (1949-55): Maximum daily, 1,720 ppm Nov. 26, 1950; minimum daily, 0 ppm Oct. 21, 1952.

Sediment loads (1949-55): 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 1954 to September 1955 given in WSP 1382.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 1-10, 1954.....	2,480	2.8	0.03	20	7.0	6.5		53	30	10	0.2	4.2	118	79	35	201	7.4	8
Oct. 11-20.....	2,360	7.3	.02	21	8.7	7.2		59	33	12	.1	4.8	135	88	40	223	7.4	9
Oct. 21-31.....	2,600	3.1	.02	19	6.5	5.9		48	29	11	.1	2.0	109	74	35	195	7.4	6
Nov. 1-10.....	11,000	6.8	.02	13	4.1	6.5		28	26	7.0	.1	4.1	91	49	28	138	7.0	10
Nov. 11-20.....	6,630	6.8	.02	12	3.7	5.7		26	24	5.5	.1	4.1	88	45	24	127	7.0	5
Nov. 21-30.....	20,600	5.4	.01	11	3.1	5.1		23	23	3.5	.1	4.1	77	40	21	109	7.1	4
Dec. 1-10.....	11,400	6.0	.01	11	3.3	6.1		26	22	5.0	.1	3.4	78	41	20	114	7.1	6
Dec. 11-20.....	13,100	8.9	.02	13	3.7	5.2		30	24	4.0	.2	4.0	80	43	23	127	7.3	7
Dec. 21-31.....	14,700	6.0	.02	10	3.5	5.8		25	21	4.5	.1	3.7	75	39	19	109	7.3	5
Jan. 1-10, 1955.....	17,800	28	.02	11	4.0	5.5		34	20	3.5	.1	2.4	100	44	16	116	7.3	4
Jan. 11-20.....	8,500	9.6	.01	13	4.1	5.9		33	24	5.0	.1	3.5	88	49	22	129	7.4	6
Jan. 21-31.....	5,370	15	.07	15	4.4	9.2		45	26	5.5	.1	4.6	107	56	19	155	7.4	3
Feb. 1-10.....	7,070	6.0	.02	16	5.1	7.4		43	28	5.5	.1	5.6	104	61	26	164	7.4	5
Feb. 11-20.....	8,590	5.5	.02	13	4.0	6.1		34	23	4.5	.1	4.7	88	49	21	135	7.5	4
Feb. 21-28.....	11,900	5.9	.04	13	4.2	4.4		32	21	5.0	.1	4.8	83	50	24	124	7.0	5

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

Chemical analyses, in parts per million, water year October 1954 to September 1955--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			
Mar. 1-10, 1955	20,900	5.7	0.03	8.7	2.2	4.8	5.8	21	18	3.0	0.1	3.7	67	31	14	95.8	7.0	4
Mar. 11-20	19,300	3.9	.04	8.7	2.2	4.8	4.8	20	18	2.5	.1	2.6	55	31	14	90.4	7.0	6
Mar. 21-31	23,500	4.8	.04	9.5	3.2	3.6	3.6	22	19	3.0	.1	3.0	66	37	19	97.1	7.0	3
Apr. 1-10	12,400	6.0	.02	9.9	3.3	11	11	36	22	5.0	.1	2.5	81	38	9	110	7.3	3
Apr. 11-20	13,500	7.3	.01	9.5	3.0	9.9	9.9	34	21	4.0	.1	2.4	81	38	8	110	7.2	2
Apr. 21-30	23,500	4.1	.07	9.1	2.8	8.7	8.7	30	20	4.0	.1	2.2	74	34	10	105	7.2	2
May 1-10	9,510	4.8	.06	9.9	3.2	8.1	8.1	33	21	3.5	.1	1.8	75	38	11	108	7.0	4
May 11-20	5,560	3.2	.01	12	4.4	40	8.6	40	23	5.5	.1	2.4	83	48	15	135	7.2	3
May 21-31	4,490	3.8	.05	14	5.1	11	11	47	27	6.5	.1	3.7	100	56	17	159	7.4	3
June 1-10	5,220	4.7	.04	13	5.1	9.0	9.0	44	24	6.5	.1	3.1	92	53	17	142	7.2	2
June 11-20	6,060	4.3	.05	13	4.2	7.6	7.6	38	23	6.0	.1	3.1	84	50	19	136	7.2	1
June 21-30	3,760	4.4	.08	15	5.4	11	11	50	27	8.0	.1	2.9	107	60	19	160	7.3	2
July 1-10	2,970	3.6	.06	16	6.2	9.9	9.9	52	29	8.0	.1	3.3	117	65	23	176	7.3	2
July 11-20	2,340	5.7	.11	18	6.9	12	12	61	32	9.0	.1	3.0	130	73	23	197	7.4	3
July 21-31	2,270	5.5	.01	18	6.7	15	15	64	31	12	.1	2.9	131	72	20	204	7.4	3
Aug. 1-10	2,180	3.9	.01	17	6.4	17	17	64	32	12	.1	2.7	132	69	16	209	7.5	1
Aug. 11-14	15,600	5.7	.03	17	6.3	13	13	53	33	10	.2	4.6	135	68	25	201	7.3	3
Aug. 15-20	88,500	5.7	.08	11	3.1	6.0	6.0	24	24	4.0	.1	3.5	90	40	21	116	7.0	27
Aug. 21-31	29,700	5.5	.07	12	3.4	6.2	6.2	32	23	3.5	.1	2.6	86	44	18	120	7.2	22
Sept. 1-10	9,460	7.3	.14	14	4.7	4.2	4.2	43	25	4.0	.1	2.1	99	54	20	140	7.3	5
Sept. 11-20	5,940	10	.08	16	5.5	5.4	2.0	50	27	6.0	.1	2.0	114	62	22	162	7.2	5
Sept. 21-30	6,820	4.2	.17	15	5.3	5.0	1.7	47	26	5.5	.1	2.6	103	59	21	159	7.0	5
Weighted average	11,160	6.4	0.04	13	4.5	8.0	8.0	39	25	6.0	0.1	3.3	95	52	20	143	--	5

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

Temperature (°F) of water, October 1954 to January 1955  
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	max	min	max	min	max	min	max	min	max	min
1.....	75	71	48	45	40	40	38	36																
2.....	75	72	48	46	40	38	37	36																
3.....	75	72	48	45	39	37	38	36																
4.....	75	71	46	44	37	36	40	37																
5.....	77	68	46	44	37	35	37	36																
6.....	69	59	44	43	34	34	37	36																
7.....	66	57	43	41	34	31	36	34																
8.....	61	58	45	41	38	36	34	33																
9.....	62	59	45	42	38	37	34	33																
10.....	65	61	43	41	32	31	36	33																
11.....	70	64	43	40	32	32	36	32																
12.....	73	66	44	41	34	32	33	31																
13.....	76	68	43	41	34	31	33	31																
14.....	73	69	43	40	33	31	32	31																
15.....	70	64	44	41	--	--	32	31																
16.....	69	61	44	41	--	--	32	31																
17.....	69	64	45	41	--	--	33	31																
18.....	64	58	47	45	--	--	32	31																
19.....	59	58	48	47	--	--	32	31																
20.....	59	56	50	48	--	--	32	31																
21.....	59	53	53	49	--	--	32	31																
22.....	58	53	49	47	--	--	31	31																
23.....	59	52	47	44	--	--	31	31																
24.....	61	53	44	42	--	--	33	31																
25.....	59	53	43	42	--	--	--	--																
26.....	59	56	42	41	--	--	--	--																
27.....	61	56	41	40	34	32	--	--																
28.....	59	52	41	40	37	33	--	--																
29.....	54	52	43	41	39	37	--	--																
30.....	52	48	43	40	39	38	--	--																
31.....	50	47	--	--	38	37	--	--																
Average.....	65	60	46	43	--	--	34	33																

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## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955

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.....	2,320			3,220	6	52	17,800	17	481
2.....	2,240	2	13	2,960	3	24	15,400	6	249
3.....	2,830			5,100	26	s 410	13,800		
4.....	2,790			11,200	108	s 3,890	12,300	3	101
5.....	2,340	2	13	22,200	145	s 8,650	11,300		
6.....	2,270			18,800	47	2,390	9,840		
7.....	2,680			15,100	17	693	8,360	4	95
8.....	2,680	4	28	12,200	9	296	8,160		
9.....	2,500			10,200	4	110	7,910		
10.....	2,080			9,300	4	100	9,300		
11.....	2,030	1	5	8,560	4	92	8,870	3	68
12.....	1,990			7,910	3	64	8,410		
13.....	1,870			7,050	1	19	7,430		
14.....	1,810	3	15	6,680	2	36	7,190	9	175
15.....	1,990			6,050	4	65	11,300	14	427
16.....	2,640	18	s 132	5,630	2	30	13,400	12	434
17.....	2,960	18	144	5,920	2	32	16,300	11	484
18.....	3,130	14	118	6,140	5	83	15,300	9	372
19.....	2,680	4	29	5,840	2	32	18,300	17	840
20.....	2,520	3	20	6,540	17	300	24,300	17	1,110
21.....	2,390			18,700	218	s 12,760	22,200	13	779
22.....	2,570	3	20	25,200	126	s 9,560	16,600	8	359
23.....	2,470			36,600	124	12,300	14,400		
24.....	2,340			26,500	38	2,720	12,800	4	143
25.....	2,340	2	13	21,300	20	1,150	12,400		
26.....	2,520			18,000	8	389	11,100		
27.....	2,270	3	18	15,700	6	254	9,570	3	80
28.....	2,150			14,400	5	194	8,870		
29.....	2,570	--	a 42	14,400	6	233	9,250	3	75
30.....	3,680	17	169	15,600	11	463	16,400	37	s 1,540
31.....	3,340	8	72	--	--	--	27,700	97	s 6,900
Total.	77,090	--	1,083	363,000	--	57,391	408,260	--	15,822
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.....	26,900	32	2,320	3,500	--	a 19	12,400	7	234
2.....	22,000	15	891	5,000	--	a 40	20,000	27	s 1,680
3.....	20,000	10	540	4,500	--	a 24	29,700	107	s 8,260
4.....	19,800	7	374	4,500	--	a 36	24,300	67	s 4,500
5.....	18,000	6	292	4,500	--	a 36	23,000	37	2,050
6.....	18,400	6	266	5,000	--	a 81	22,200	15	899
7.....	15,900	6	258	13,000	145	5,090	23,600	13	828
8.....	15,200	4	164	10,000	150	4,050	20,800	6	337
9.....	12,800	4	138	8,770	50	1,180	17,100	5	231
10.....	11,300	4	122	8,770	15	355	15,600	4	168
11.....	10,400			9,520	63	1,610	16,200	5	219
12.....	10,500	4	109	10,600	70	2,000	18,800	7	355
13.....	9,300			9,840	20	531	22,400	13	786
14.....	8,980			8,060	13	283	21,400	15	867
15.....	8,260	4	92	7,960	14	301	19,200	17	985
16.....	8,310			8,310	10	224	17,300	17	467
17.....	7,470			8,010			17,400	9	423
18.....	7,100	4	79	8,510	3	66	19,000	6	308
19.....	7,240			7,960			16,500	8	356
20.....	7,430			7,140			14,400	4	156
21.....	6,500	4	72	6,910	3	61	13,200	3	107
22.....	6,140			6,870			20,000	54	s 3,430
23.....	6,410			9,350			36,600	177	s 18,300
24.....	5,630	2	30	12,800	30	1,040	40,900	112	s 12,500
25.....	4,880			17,300	69	3,220	31,500	49	s 4,240
26.....	4,840			16,000	43	1,860	25,800	27	1,390
27.....	5,370	1	14	13,900	23	863	23,100	15	936
28.....	5,420			12,100	10	327	19,900	11	591
29.....	4,650			--	--	--	17,500	5	236
30.....	4,700	2	24	--	--	--	15,800	5	213
31.....	4,000			--	--	--	14,400	3	117
Total.	321,830	--	6,625	248,680	--	23,612	650,000	--	66,169

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

## Suspended sediment, water year October 1954 to September 1955--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.....	13,400	5	181	13,600	6	220	5,080	10	137
2.....	13,100	5	177	12,100	8	261	6,180	16	267
3.....	12,300	6	199	10,900	4	118	5,920	11	176
4.....	12,100	7	229	10,600	2	57	5,710	9	139
5.....	12,300	8	266	9,570	2	52	5,080	9	123
6.....	12,500	6	202	8,820	1	24	4,610	5	62
7.....	12,100	9	294	8,460	3	69	4,300	1	12
8.....	12,400	9	301	7,430	2	40	4,420	3	36
9.....	12,500	9	304	6,960	2	38	5,210	7	98
10.....	11,300	7	214	6,680	3	54	5,670	8	122
11.....	10,200	6	165	7,190	5	97	5,920	10	160
12.....	9,730	14	368	6,870	4	74	5,840	11	173
13.....	10,900	15	441	6,320	4	68	5,870	14	260
14.....	11,900	13	418	6,050	4	65	6,770	13	238
15.....	14,200	18	690	5,500	8	119	7,190	13	252
16.....	16,700	35	1,580	5,080	12	165	7,240	7	137
17.....	17,900	25	1,210	4,610	6	75	6,140	7	116
18.....	15,600	20	842	4,800	2	26	5,250	4	57
19.....	14,000	15	567	4,720	3	38	4,720	4	48
20.....	13,600	12	441	4,490	6	73	4,610		
21.....	13,000	12	421	4,450	4	48	4,120		
22.....	12,800	11	380	4,300	3	35	4,050	2	22
23.....	12,600	11	374	3,810	5	51	4,180		
24.....	12,100	12	392	3,880	4	42	4,160		
25.....	11,200	13	393	5,000	8	108	3,950	2	21
26.....	12,700	17	583	4,920	7	93	4,050		
27.....	15,500	19	795	4,680	9	114	3,650		
28.....	15,800	19	811	4,960	12	161	3,340	2	17
29.....	14,800	13	519	4,610	11	137	3,240		
30.....	14,200	10	383	4,340	8	94	3,060		
31.....	--	--	--	4,420	6	72	--	--	--
Total.	393,430	--	14,140	200,120	--	2,688	150,510	--	2,889
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.....	3,000	2	16	1,900	4	20	12,900	12	418
2.....	2,820	4	33	1,900			12,400	11	368
3.....	3,210			1,620			11,800	11	350
4.....	3,210			1,730	3	16	10,100	7	191
5.....	2,850			2,220			9,520	8	206
6.....	2,590	4	30	2,160			8,210	13	288
7.....	3,030	5	40	2,340	2	14	7,810	7	148
8.....	3,240			2,880			7,760	3	63
9.....	2,850			2,480			7,330	5	99
10.....	2,700	4	23	1,920	4	21	6,820	5	92
11.....	2,760			2,120	3	17	6,680	2	33
12.....	2,700			3,840	56	s 1,080	6,100		
13.....	2,370	4	24	28,500	600	s 51,100	5,330		
14.....	2,290			28,400	225	s 18,100	6,140	4	68
15.....	2,090			33,300	256	s 23,700	6,910		
16.....	2,040	5	32	23,500	74	s 4,880	6,230	4	57
17.....	2,020			15,600	41	s 1,730	6,230		
18.....	2,370			16,900	87	s 5,680	5,800		
19.....	2,290	4	24	163,000	1,680	s 848,000	5,210	4	57
20.....	1,940			279,000	1,360	s 1,087,000	4,800		
21.....	2,790	4	23	88,100	225	53,500	5,800		
22.....	2,480			50,700	100	13,700	6,410	4	59
23.....	2,090			37,800	62	6,330	4,880		
24.....	2,240	4	24	33,800	44	4,020	5,080	15	276
25.....	2,370			26,000	40	2,810	6,820		
26.....	2,040			20,500	29	1,610	8,060	13	283
27.....	1,920	4	23	17,000	20	918	7,620	9	185
28.....	2,400			14,600	19	749	7,470	9	182
29.....	2,040			12,600	15	510	7,570	7	143
30.....	2,020	4	22	11,600	12	376	8,510	5	115
31.....	2,020			11,000	8	238	--	--	--
Total.	76,780	--	853	939,010	--	2,126,219	222,300	--	4,159
Total discharge for year (cfs-days).....									4,069,010
Total load for year (tons).....									2,321,650

s Computed by subdividing day.

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

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	Discharge (cfs)	Water tem- per- 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
Mar. 22, 1955	1:50 p. m.	37,800		163	254	21	45	66	80	90	94	98			99	BWCM
Mar 25	1:30 p. m.	31,000		48	380	51	60	67	80	90	94	98			100	BWCM
Aug. 20	2:40 p. m.	288,000		971	1,490	14	25	30	56	61	71	82			96	BSWCM



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

RECORDS AVAILABLE --Chemical analyses: August 1949 to September 1955.  
EXTREMES 1954-55 --Water temperatures: Maximum 83°F July 21-28; minimum, freezing point on many days during December to February.  
Water temperatures: October 1954 to September 1955  
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 1954 to September 1955

Date of collection	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, mg per liter	Non-carbonate					
Oct. 5, 1954	2,340	1.9	0.05	19	5.6	8.5	2.2	40	37	13	0.1	5.1	115	70	38	206	7.7		2.2	8.4
Nov. 5	22,200	5.7	.02	19	5.7	8.4	2.6	38	36	12	.1	7.6	129	71	40	211	7.6		.6	9.2
Dec. 2	15,400	5.1	.01	12	3.2	20	1.4	22	37	17	.1	4.0	124	43	25	199	6.8		.2	10.6
Jan. 4, 1955	19,800	6.4	.03	8.7	2.3	3.2	.8	15	16	4.0	.1	3.5	62	31	19	96.2	7.2		2.3	11.7
Feb. 8	12,700	5.0	.03	13	4.6	4.9	2.5	22	28	7.5	.1	7.6	99	51	33	148	7.1		5.2	11.7
Mar. 3	29,700	3.8	.15	11	3.2	3.4	.9	23	21	5.5	.1	1.6	71	41	22	111	6.8		1.2	10.7
Apr. 5	12,300	3.7	.26	12	3.3	3.5	.9	27	22	5.0	.1	3.0	100	44	21	110	7.7		2.3	10.6
May 3	10,900	3.4	.03	11	3.0	4.1	1.3	24	21	4.5	.1	2.8	78	40	20	165	7.6		1.4	8.9
June 2	6,180	1.9	.02	15	5.3	7.3	2.0	40	31	8.0	.1	5.8	132	59	26	170	7.8		5.4	7.6
July 5	2,870	1.3	.03	17	5.2	8.5	2.3	40	35	10	.1	6.1	115	64	31	195	7.7		1.7	8.0
Aug. 1	1,970	2.9	.01	20	7.0	13	2.7	49	44	16	.1	5.5	151	79	39	240	7.1		9.6	4.9
Sept. 7	7,810	4.6	.04	14	4.1	3.6	1.6	36	25	5.0	.1	3.2	95	49	22	138	7.3		.4	7.3

a Samples taken approximately 3 feet from surface.

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

Temperature, (°F) of water, water year October 1954 to September 1955

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

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT TORRESDALE INTAKE, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1955.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data are 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 1954 to September 1955

Date	Discharge at Trenton (cfs)	Chloride (Cl)	Specific conduct- ance (microm- hos at 25°C)	pH	Bio- chemical oxygen demand <sup>a</sup>	Dissolved oxygen
Oct. 5, 1954 .....	2,340	8.0	201	6.9	1.3	8.1
Nov. 5 .....	22,200	16	213	7.1	1.3	8.8
Dec. 2 .....	15,400	5.5	122	6.6	1.0	10.4
Jan. 4, 1955 .....	19,800	6.5	117	6.6	2.3	11.1
Feb. 8 .....	12,700	10	176	6.5	3.1	12.0
Mar. 3 .....	29,700	5.0	125	6.3	2.1	10.4
Apr. 5 .....	12,300	5.0	125	6.9	1.7	10.2
May 3 .....	10,900	5.0	110	6.5	1.4	8.5
June 2 .....	6,180	9.0	185	6.8	.7	7.4
July 5 .....	2,870	11	198	7.2	1.6	7.1
Aug. 1 .....	1,970	14	237	6.5	6.1	4.9
Sept. 7 .....	7,810	5.5	141	6.9	.4	6.5

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

## DELAWARE RIVER AT LEHIGH AVENUE, PHILADELPHIA, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1955.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom.

Additional data are 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 1954 to September 1955

Date	Discharge at Trenton (cfs)	Chloride (Cl)	Specific conduct- ance (microm- hos at 25°C)	pH	Bio- chemical oxygen demand <sup>a</sup>	Dissolved oxygen
Oct. 5, 1954 .....	2,340	17	240	6.6	0.6	2.8
Nov. 5 .....	22,200	18	256	6.8	2.6	6.4
Dec. 2 .....	15,400	6.5	115	7.2	.4	9.6
Jan. 4, 1955 .....	19,800	8.5	128	6.2	3.2	10
Feb. 8 .....	12,700	12	178	6.8	2.3	10.7
Mar. 3 .....	29,700	7.0	142	6.2	3.0	9.3
Apr. 5 .....	12,300	6.0	130	7.3	3.6	10.6
May 3 .....	10,900	6.0	121	6.5	2.3	9.4
June 2 .....	6,180	11	198	6.5	4.3	10
July 5 .....	2,870	12	202	6.8	0.0	3.6
Aug. 1 .....	1,970	26	300	6.3	3.9	2.1
Sept. 7 .....	7,810	7.5	164	6.7	2.5	3.8

<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 1955.  
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.

Date of collection	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	Bio-chemical oxygen demand <sup>a</sup>	Dissolved oxygen
														Calcium	Non-carbonate					
Oct. 5, 1954	2,340	2.7	0.08	20	7.2	27	3.9	31	51	38	0.2	7.7	192	80	54	339	7.4		0.3	1.5
Nov. 5	22,200	2.2	.01	20	7.8	18	3.3	43	44	23	.1	8.2	153	82	47	276	7.9		.8	5.4
Dec. 2	15,400	5.4	.24	11	3.1	5.1	1.5	14	26	8.0	.1	5.6	94	40	29	123	6.8		1.6	8.0
Jan. 4, 1955	19,900	5.6	.03	12	2.9	5.0	1.1	13	27	6.5	.1	4.4	85	42	31	122	7.2		3.0	10.3
Feb. 8	12,700	5.3	.14	15	4.4	9.0	1.9	26	35	10	.1	5.6	101	56	34	178	7.2		1.9	10.4
Mar. 3	29,700	4.2	.31	12	3.4	6.9	1.6	21	29	7.0	.2	2.6	88	44	27	146	7.0		4.5	9.6
Apr. 5	12,300	4.7	.26	12	3.1	5.0	1.2	23	27	6.0	.1	4.5	116	43	24	123	7.6		2.5	10.0
May 3	10,900	3.5	.03	12	3.3	5.2	1.4	25	24	6.0	.1	4.1	97	44	23	119	7.6		1.5	6.7
June 2	6,180	1.3	.01	15	4.9	12	2.2	35	37	11	.1	6.1	118	58	29	194	7.5		3.6	6.8
July 5	2,870	1.6	.01	15	4.7	14	2.4	33	41	14	.2	6.6	128	57	30	210	7.5		.0	2.46
Aug. 1	1,970	6.5	.03	20	7.3	24	3.6	38	62	27	.1	6.3	191	83	52	321	6.9		4.5	1.7
Sept. 1	7,510	6.6	.05	15	4.8	6.9	2.0	37	32	7.5	.2	6.3	132	57	27	166	7.3		.0	1.6

<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 1955.

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 1954 to September 1955

Date	Discharge at Trenton (cfs)	Chloride (Cl)	Specific conduct- ance (microm- hos at 25 C)	pH	Bio- chemical oxygen demand <sup>a</sup>	Dissolved oxygen
Oct. 4, 1954	2,340	36	332	6.3	0.8	1.3
Nov. 3	22,400	78	517	6.7	8.8	1.9
Dec. 1	15,400	8.5	125	6.4	2.1	8.6
Jan. 3, 1955	19,800	9.5	153	6.4	2.4	10.0
Feb. 1	12,700	17	214	5.8	4.0	6.3
Mar. 2	29,700	9.0	201	6.3	3.7	7.9
Apr. 4	12,300	7.0	138	6.3	4.5	9.0
May 2	10,900	8.0	138	6.4	9.3	5.2
June 1	6,180	15	218	6.3	6.0	.6
July 6	2,870	17	255	6.6	.0	1.9
Aug. 2	1,970	61	462	6.3	5.4	3.3
Sept. 6	7,810	8.5	170	6.5	.0	2.0

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

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1955.

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 1954 to September 1955

Date	Discharge at Trenton (cfs)	Chloride (Cl)	Specific conduct- ance (microm- hos at 25 C)	pH	Bio- chemical oxygen demand <sup>a</sup>	Dissolved oxygen
Oct. 4, 1954	2,340	63	452	6.4	0.0	1.3
Nov. 3	22,200	125	709	6.7	1.8	3.2
Dec. 1	15,400	7.0	129	6.3	.7	8.1
Jan. 3, 1955	19,800	10	152	6.2	3.1	9.3
Feb. 1	12,700	18	226	5.8	4.2	6.4
Mar. 2	29,700	10	203	6.3	3.4	7.5
Apr. 4	12,300	8.0	183	6.2	2.1	7.8
May 2	10,900	8.0	168	6.2	5.9	3.2
June 1	6,180	17	252	6.2	12	1.6
July 6	2,870	19	270	6.4	.3	2.6
Aug. 2	1,970	130	708	6.0	.8	3.4
Sept. 6	7,810	8.5	178	7.0	.0	1.0

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

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

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL 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 Schuylkill River.

DRAINAGE AREA.--355 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1947 to February 1953.

Water temperatures: February 1948 to April 1953.

Sediment records: October 1947 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 914 Aug. 18; minimum daily 1 ppm many days.

Sediment loads: Maximum daily, 43,200 tons Aug. 18; minimum daily, 0.2 ton Oct. 11-15.

EXTREMES, 1947-55.--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 discharge for water year October 1954 to September 1955 given in WSP 1382.

## Suspended sediment, water year October 1954 to September 1955

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.....	92	1	0.3	140	3	1	410	2	2
2.....	92			149	5	2	382		
3.....	103			406	31	s 36	355		
4.....	114			322	17	15	328		
5.....	92			315	8	7	303		
6.....	118	2	.6	277	4	3	265	4	3
7.....	111			248	4	3	242		
8.....	99			214	5	3	220		
9.....	88			198	8	4	271		
10.....	107			193	8	4	300		
11.....	95	1	.2	183	10	5	238	2	2
12.....	79			172	11	5	250		
13.....	84			172	10	5	225		
14.....	81			172	3	1	242		
15.....	115			154	2	.8	536		
16.....	437	36	sa 48	162	3	1	455	4	5
17.....	203			154	4	2	382	26	27
18.....	144			162	3	1	717	54	s 120
19.....	122			183	5	2	1,210	21	s 72
20.....	136			340	25	s 26	932	8	20
21.....	122	4	1	698	34	s 66	747	6	12
22.....	118			738	12	24	600	9	15
23.....	107			538	4	6	550	7	10
24.....	131			455	5	6	560	4	6
25.....	111			418	4	5	492	3	4
26.....	103	3	1	362	4	4	420	2	2
27.....	107			322	2	2	380		
28.....	122			315	2	2	376		
29.....	140			495	13	sa 20	432	29	34
30.....	198			470	5	6	1,770	59	s 269
31.....	188	5	3	--	--	--	1,530	15	62
Total.	3,959	--	72.5	9,127	--	267.8	16,165	--	692

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--Continued

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.....	1,200	10	32	230	--	b2	964	5	s15
2.....	1,080	6	18	240	--	b3	1,160	2	6
3.....	943	5	13	205	--	b2	976	3	8
4.....	830	7	16	205	--	b2	1,140	4	12
5.....	738	2	4	210	--	b2	1,300	6	21
6.....	729	2	4	400	9	s44	1,320	7	25
7.....	696	3	6	1,600	70	s429	1,360	5	18
8.....	608	2	3	928	28	s74	1,150	4	12
9.....	576	2	3	530	10	14	1,060	4	11
10.....	545	7	10	460	10	12	987	3	8
11.....	515	7	10	576	32	s56	870	3	7
12.....	460	3	4	656	24	42	783	1	2
13.....	455	4	5	500	15	20	712	1	2
14.....	420	4	5	450	9	11	632	1	2
15.....	430	4	5	480	7	9	592	2	3
16.....	410	4	4	430	10	12	648	3	5
17.....	380	2	2	425	10	11	632	2	3
18.....	360	4	4	432	4	5	568	1	2
19.....	340	4	4	410	3	3	568	1	2
20.....	300	1	.8	425	2	2	538	2	3
21.....	290	4	3	410	4	4	538	6	9
22.....	320	4	3	403	20	22	2,060	141	s991
23.....	341	2	2	1,060	59	s191	3,590	66	s664
24.....	315	3	3	1,040	16	45	2,440	20	132
25.....	277	5	4	870	5	12	1,840	8	40
26.....	280	3	2	792	2	4	1,570	7	30
27.....	260	4	3	747	1	2	1,290	8	28
28.....	230	--	b2	712	3	6	1,060	10	29
29.....	210	--	b2	--	--	--	943	6	15
30.....	210	--	b2	--	--	--	830	4	9
31.....	220	--	b2	--	--	--	756	3	6
Total.	14,978	--	180.8	15,826	--	1,041	34,877	--	2,120
Day	April			May			June		
	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.....	696	4	7	592	2	3	332	3	2
2.....	656			552	--	b3	257		
3.....	632			522	--	b3	240		
4.....	576			500	--	--	240		
5.....	530			478	--	--	246		
6.....	500	1	1	436	2	2	225	3	2
7.....	500	1	1	429	--	--	215		
8.....	464	1	1	443	--	--	225		
9.....	450	3	4	402	--	--	484		
10.....	422	3	3	376	--	--	350		
11.....	396	2	2	382	2	2	356	14	s14
12.....	450	4	5	356	--	--	1,240	28	s96
13.....	560	4	6	338	--	--	860	6	14
14.....	774	27	s70	338	--	--	696	6	11
15.....	1,490	22	89	314	3	3	624	6	10
16.....	1,160	5	16	284	--	--	530	6	9
17.....	976	2	5	279	--	--	471	8	10
18.....	870	2	5	262	2	1	457	8	10
19.....	801	3	6	240	--	--	422	8	9
20.....	792	3	6	246	10	7	396	6	6
21.....	850	6	14	230	17	11	356	6	6
22.....	900	1	2	220	5	3	350	8	8
23.....	810	1	2	240	2	1	320	6	5
24.....	765	2	4	403	8	s10	302	1	.8
25.....	820	1	2	308	8	7	296		
26.....	810	3	7	246	5	3	302		
27.....	738	2	4	230	4	2	274		
28.....	688	--	b4	225	4	2	257		
29.....	648	--	b3	257	10	7	240	2	1
30.....	632	--	b3	414	10	s10	235	--	--
31.....	--	--	--	296	9	7	--	--	--
Total.	21,356	--	288	10,838	--	111	11,798	--	277.4

s Computed by subdividing day.

b Computed from estimated concentration graph.

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

## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--Continued

Suspended sediment, Water year October 1954 to September 1955-Continued											
Day	Mean discharge (cfs)	July		Mean discharge (cfs)	August		Mean discharge (cfs)	September			
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		
1.....	240	2	1	106	2	0.5	781	10	18		
2.....	252			98			658				
3.....	215			98			580				
4.....	199			98			564				
5.....	184	1	.5	102	1	.3	521	2	3		
6.....	194			102			500				
7.....	310			--			b8			110	466
8.....	189			--			b1			130	426
9.....	170	--	b.5	98	1	.3	407	1	1		
10.....	189	--	b.5	95			383				
11.....	189	--	b1	151			377				
12.....	152	--		232			377				
13.....	156	2	.8	1,240	6	4	347	1	1		
14.....	143			1,390	18	s 284	377				
15.....	143			696	2	86	336				
16.....	152					4	336				
17.....	147	2	.7	464	1	1	314	1	1		
18.....	130			391	1	1	320				
19.....	128			8,250	914	s 43,200	308				
20.....	122			16,000	523	s 30,800	298				
21.....	118	1	.3	4,640	72	s 1,020	371	2	2		
22.....	114			2,630	12	s 88	298				
23.....	106			2,100	5	28	262				
24.....	114			2,320	20	s 148	272				
25.....	118	2	.6	1,500	2	8	522	--	b7		
26.....	106			1,180	2	6	550				
27.....	102			1,010	3	8	365				
28.....	106			860	2	5	320				
29.....	98	2	.6	754	2	4	424	--	b4		
30.....	98			675	2	4	395				
31.....	106			617	2	3	359				
Total.	4,788			--	27.5	1,280	17			s 59	--
Total.		4,788	--	27.5	49,417	--	75,765.3	12,437	--	92.2	
Total discharge for year (cfs-days) .....									205,566		
Total load for year (tons) .....									80,935.5		

s Computed by subdividing day.

b Computed from estimated concentration graph.



## 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.--Sediment records: November 1947 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 3,140 ppm Aug. 19; minimum daily, 2 ppm Dec. 28.

Sediment loads: Maximum daily, 650,000 tons Aug. 19; minimum daily, 4 tons Oct. 5.

EXTREMES, 1947-55.--Sediment concentrations: Maximum daily, 4,910 ppm Dec. 30, 1948; minimum daily, 1 ppm on several days.

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

REMARKS.--Records of specific conductance and pH of random samples available at the Harrisburg Subdistrict office. Records of discharge for water year October 1954 to September 1955 based on records for the Schuylkill River at Philadelphia (Fairmount Dam) given in WSP 1382, and include water diverted by the city of Philadelphia for municipal water supply.

## Suspended sediment, water year October 1954 to September 1955

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.....	523	12	17	918	10	25	2,150	16	93
2.....	575	17	26	993	15	s 49	1,790	10	48
3.....	527	9	13	4,840	105	s 1,440	1,650	8	36
4.....	516	5	7	2,370	50	320	1,480	9	36
5.....	348	4	4	1,760	31	147	1,420	5	19
6.....	565	10	15	1,610	17	74	1,280	5	17
7.....	673	10	18	1,340	13	47	1,030	10	28
8.....	679	10	18	1,100	8	24	942	12	31
9.....	572	9	14	995	4	11	1,050	11	31
10.....	533	7	10	898	4	10	2,000	22	s 131
11.....	523	6	8	830	3	7	1,870	7	35
12.....	524	6	8	785	4	8	1,440	12	47
13.....	535	7	10	740	6	12	1,220	14	46
14.....	495	6	8	752	5	10	1,250	12	40
15.....	515	9	13	730	6	12	3,230	31	s 277
16.....	733	12	24	719	4	8	2,750	23	171
17.....	952	18	46	716	4	8	2,200	20	119
18.....	908	14	34	686	5	9	2,670	27	s 230
19.....	688	18	33	737	6	12	4,810	53	s 715
20.....	634	12	21	1,240	16	s 56	3,870	39	408
21.....	599	8	13	6,870	99	s 2,430	2,920	23	181
22.....	598	9	15	6,620	107	s 2,080	2,170	17	100
23.....	542	7	10	4,260	27	311	1,880	11	56
24.....	545	10	15	3,070	15	124	2,010	8	43
25.....	525	7	10	2,550	11	76	1,920	8	41
26.....	547	5	7	2,170	6	35	1,620	5	22
27.....	581	5	8	1,790	6	29	1,410	4	15
28.....	587	9	14	1,580	7	30	1,350	2	7
29.....	1,080	23	s 74	2,720	16	s 130	1,540	5	21
30.....	1,770	26	s 135	2,790	17	128	7,640	139	s 3,920
31.....	1,180	11	35	--	--	--	7,470	160	s 3,300
Total.	20,572	--	683	59,179	--	7,662	72,032	--	10,264

s Computed by subdividing day.

## 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 1954 to September 1955--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.....	5,150	48	687	707	9	17	3,090	10	83
2.....	4,470	25	302	770	--	a 19	4,400	20	238
3.....	4,290	20	232	715	--	a 14	3,640	22	216
4.....	3,420	19	175	592	--	a 6	4,720	46	s 657
5.....	2,980	12	97	712	8	15	6,010	68	s 1,100
6.....	2,680	15	109	1,000	12	s 48	6,110	114	s 2,290
7.....	2,700	16	117	11,200	407	s 13,800	8,360	231	s 5,580
8.....	2,460	11	73	8,940	242	s 6,160	5,150	46	640
9.....	2,090	10	56	3,960	85	s 957	4,280	16	185
10.....	1,970	6	32	2,480	35	234	4,010	14	152
11.....	1,860	7	35	2,450	30	198	3,640	11	108
12.....	1,680	5	23	3,680	--	a 1,000	3,200	12	104
13.....	1,630	9	40	2,450	--	a 350	2,910	15	118
14.....	1,450	13	51	1,890	20	102	2,560	11	76
15.....	1,440	10	39	1,940	20	105	2,330	10	63
16.....	1,420	9	35	1,800	13	63	2,390	10	65
17.....	1,290	10	35	2,010	10	54	2,370	6	38
18.....	1,220	10	33	2,400	12	78	2,280	6	37
19.....	1,140	6	18	2,010	10	54	2,230	5	30
20.....	1,060	7	20	1,760	10	48	2,180	5	29
21.....	968	9	24	1,670	8	36	2,780	10	75
22.....	914	6	15	1,660	10	45	7,300	333 <sup>s</sup>	s 11,300
23.....	992	7	19	3,020	50	s 610	16,300	832	s 39,000
24.....	1,010	6	16	5,600	110	s 1,700	10,700	250	7,220
25.....	923	4	10	3,890	35	368	7,630	80	1,650
26.....	883	5	12	2,990	25	202	6,660	60	1,080
27.....	856	6	14	2,670	12	67	6,120	50	826
28.....	813	5	11	2,490	10	67	4,720	25	319
29.....	715	5	10	--	--	--	4,080	20	220
30.....	681	4	7	--	--	--	3,670	20	198
31.....	660	7	12	--	--	--	3,260	15	132
Total.	55,815	--	2,339	77,456	--	26,437	149,080	--	73,629
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.....	3,010	6	49	2,480	10	67	1,430	23	89
2.....	2,770	5	37	2,310	10	62	1,160	17	53
3.....	2,600	10	70	2,130	10	58	1,010	16	44
4.....	2,460	8	53	2,070	9	50	932	13	33
5.....	2,330	8	50	1,970	6	32	876	13	31
6.....	2,180	9	53	1,840	13	65	868	11	26
7.....	2,160	14	82	1,600	14	60	828	10	22
8.....	2,030	15	82	1,560	15	63	990	16	s 40
9.....	1,820	10	49	1,420	19	73	2,200	29	s 179
10.....	1,740	13	61	1,400	12	45	2,220	28	168
11.....	1,660	15	67	1,320	14	50	1,660	24	108
12.....	2,020	21	115	1,290	10	35	3,180	34	s 298
13.....	2,840	20	153	1,250	10	34	4,320	57	673
14.....	3,060	13	107	1,210	12	39	3,140	49	415
15.....	5,230	35	s 491	1,160	12	38	2,330	35	220
16.....	4,950	--	a 360	1,090	12	35	2,000	23	124
17.....	3,990	20	215	1,030	14	39	1,670	15	68
18.....	3,430	14	130	972	13	34	1,460	10	39
19.....	3,120	10	84	963	14	36	1,390	13	49
20.....	3,320	12	108	909	10	25	1,820	19	s 98
21.....	3,450	15	140	906	10	24	1,810	18	88
22.....	3,770	20	204	911	9	22	1,330	15	54
23.....	3,860	20	208	937	9	23	1,220	13	43
24.....	3,150	19	162	1,010	13	35	1,310	14	50
25.....	2,930	18	142	1,190	13	42	1,190	17	55
26.....	3,180	17	146	1,250	15	51	1,100	18	53
27.....	3,250	11	97	981	16	42	1,060	15	43
28.....	2,840	8	61	893	18	43	1,040	14	39
29.....	2,700	9	66	945	17	s 46	938	14	35
30.....	2,640	9	64	1,140	20	62	864	11	26
31.....	--	--	--	1,540	24	100	--	--	--
Total.	88,490	--	3,706	41,677	--	1,430	47,346	--	3,263

s Computed by subdividing day.

a Computed from estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	857	13	30	478	14	18	3,470	16	150
2.....	813	10	22	476	20	26	2,900	17	133
3.....	823	7	16	482	23	30	2,330	10	63
4.....	795	6	13	477	26	33	2,020	9	49
5.....	747	10	20	494	25	33	1,850	6	30
6.....	893	19	s 58	485	7	9	1,760	6	29
7.....	813	33	72	449	16	19	1,670	5	23
8.....	809	28	61	947	31	79	1,550	5	21
9.....	788	13	28	590	13	21	1,460	6	24
10.....	735	8	16	551	10	15	1,430	5	19
11.....	787	15	32	510	15	21	1,370	6	22
12.....	799	19	41	3,220	180	s 1,990	1,380	5	19
13.....	705	16	30	29,400	1,050	s 93,500	1,300	4	14
14.....	652	20	35	14,400	385	s 16,000	1,280	5	17
15.....	636	16	27	8,010	200	4,330	1,240	4	13
16.....	620	19	32	3,820	100	1,030	1,240	5	17
17.....	606	15	25	2,930	50	396	1,210	4	13
18.....	592	20	32	8,400	452	s 33,400	1,180	6	19
19.....	565	18	27	65,500	3,140	sa 650,000	1,190	5	16
20.....	552	21	31	27,300	502	s 46,600	1,240	9	30
21.....	540	23	34	10,800	150	4,370	1,240	5	17
22.....	515	19	26	10,000	115	3,100	1,220	6	20
23.....	512	15	21	9,000	68	1,650	1,200	6	19
24.....	525	25	35	6,520	38	669	1,380	9	34
25.....	556	25	38	4,820	20	260	2,300	10	62
26.....	553	20	30	3,870	12	125	2,220	8	48
27.....	520	16	22	3,260	6	53	1,480	9	36
28.....	520	27	38	2,900	7	55	1,570	9	38
29.....	481	13	17	2,570	10	69	1,810	10	49
30.....	479	20	26	2,340	9	57	1,670	10	45
31.....	459	17	21	2,270	8	49	--	--	--
Total.	20,247	--	956	227,269	--	858,007	49,160	--	1,089
Total discharge for year (cfs-days) .....									908,323
Total load for year (tons) .....									989,665

s Computed by subdividing day.

a Computed from estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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		0.500
Dec. 30, 1954.....	2:15 p. m.	1,800		278	2,360	17	39	48	68	98	100	--		BWCM	
Feb. 7, 1955.....	2:30 p. m.	13,900		538	2,020	18	28	46	74	95	99	100		BWCM	
Mar. 6.....	8:00 a. m.	5,140		38	507	24	45	61	79	90	94	97	99	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 at Fairmount Dam in Philadelphia.  
DRAINAGE AREA.--1,890 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1955.

Water temperatures: October 1945 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 335 ppm Aug. 1-10; minimum, 164 ppm Mar. 1-10.

Hardness: Maximum, 201 ppm Oct. 1-10; minimum, 89 ppm Mar. 1-10, and Mar. 21-31.

Specific conductance: Maximum daily, 338 micromhos Aug. 8; minimum daily, 178 micromhos Aug. 20.

Water temperatures: Maximum, 88°F July 20, Aug. 7; minimum, 34°F Feb. 3-8.

EXTREMES, 1945-55.--Dissolved solids: 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, 77 ppm Dec. 11-20, 1953.

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 water year October 1954 to September 1955 for Schuylkill River at Philadelphia given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 23°C)	pH	Color
																	Calcium, mg./nestum	Non-carbonate				
Oct. 1-10, 1954 ..	268	6.4			0.06		46	21	15	15	82	121	25	0.2	6.7	323	201	134		507	7.4	6
Oct. 11-20 ..	350	5.9			.14		44	19	14	14	82	107	24	.1	7.7	328	188	121		486	7.5	2
Oct. 21-31 ..	489	7.4			.08		45	18	12	12	73	110	22	.1	7.8	304	186	126		482	7.5	3
Nov. 1-10 ..	1,380	9.2			.08		32	13	8.4	8.4	50	77	16	.1	9.6	208	133	92		340	7.4	10
Nov. 11-20 ..	499	13			.06		36	15	20	20	56	108	18	.2	12	262	152	106		410	7.1	4
Nov. 21-30 ..	3,150	13			.07		27	9.8	12	12	45	70	10	.1	12	181	108	71		290	7.1	3
Dec. 1-10 ..	1,170	15			.10		29	10	14	14	49	74	12	.1	13	204	113	73		315	7.0	3
Dec. 11-20 ..	2,230	13			.08		27	9.2	16	16	47	71	12	.1	13	182	105	67		307	7.1	3
Dec. 21-31 ..	2,600	11			.06		27	9.3	14	14	44	73	9.0	.1	13	181	106	70		290	7.1	2
Jan. 1-10, 1955 ..	2,920	11			.07		23	8.2	14	14	39	64	10	.1	12	165	91	59		255	7.6	3
Jan. 11-20 ..	1,120	12			.09		30	10	24	24	50	92	14	.1	13	224	116	75		323	7.7	2
Jan. 21-31 ..	553	12			.10		35	14	18	18	60	97	16	.1	14	242	145	96		379	7.7	2
Feb. 1-10 ..	2,800	12			.08		33	13	20	20	58	94	16	.2	12	259	136	88		364	7.5	1
Feb. 11-20 ..	1,930	11			.10		26	8.5	13	13	50	63	10	.1	9.5	179	100	59		274	7.8	2
Feb. 21-28 ..	2,700	11			.11		27	9.2	15	15	45	74	11	.1	10	180	105	68		286	7.5	3
Mar. 1-10 ..	4,680	14			.12		22	8.3	13	13	41	59	10	.1	10	164	89	55		239	7.4	2
Mar. 11-20 ..	2,313	15			.11		25	9.0	16	16	51	65	12	.1	10	186	99	58		271	7.9	1
Mar. 21-31 ..	6,360	16			.18		24	7.0	13	13	46	56	9.0	.1	10	165	89	51		235	7.9	3
Apr. 1-10 ..	2,030	11			.04		27	11	15	15	54	78	9.0	.2	8.4	191	113	68		291	7.3	2
Apr. 11-20 ..	3,060	10			.04		26	11	16	16	52	79	9.5	.2	7.1	186	110	68		291	7.4	1
Apr. 21-30 ..	2,900	9.2			.05		23	10	15	15	51	71	8.0	.1	6.1	174	98	57		267	7.3	1

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

Chemical analyses, in parts per million, water year October 1954 to September 1955--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 as H <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color
																	Calcium, mg./neuston	Non-carbonate				
May 1-10, 1955 ...	1,610		6.5		0.08		27	11	18		60	80	10	0.1	5.8	199	113	63		308	7.5	2
May 11-20 .....	827		10		.01		33	14	18		70	95	12	.1	6.1	241	140	83		351	7.4	1
May 21-31 .....	757		9.0		.04		36	14	24		74	109	15	.1	6.3	271	147	87		406	7.6	2
June 1-10 .....	862		10		.08		34	16	22		78	102	16	.2	7.6	266	151	87		386	7.3	2
June 11-20 .....	2,010		11		.14		30	13	15		58	89	11	.2	6.7	219	128	91		328	7.3	2
June 21-30 .....	866		14		.03		31	13	20		71	85	15	.2	6.2	286	131	73		344	7.4	2
July 1-10 .....	475		12		.01		35	14	25		77	103	17	.2	5.2	262	145	82		345	7.6	2
July 11-20 .....	311		11		.10		40	17	26		83	126	18	.2	5.1	312	178	100		445	7.6	2
July 21-31 .....	170		8.5		.12		41	16	31		94	126	22	.2	4.4	321	176	99		475	7.4	2
Aug. 1-10 .....	203		4.2		.02		41	20	40		98	143	27	.2	4.0	335	185	103		525	7.5	4
Aug. 11-20 .....	16,000		9.1		.01		31	15	24		60	111	16	.2	5.3	258	139	90		387	7.4	4
Aug. 21-31 .....	4,990		12		.02		26	11	13		40	83	9.5	.2	7.6	204	110	77		280	7.4	3
Sept. 1-10 .....	1,890		11		.18		34	14	9.9	2.5	54	105	9.5	.2	6.6	231	142	98		354	7.2	1
Sept. 11-20 .....	1,020		8.3		.13		38	17	14	2.6	64	120	13	.2	5.6	271	165	112		432	7.1	2
Sept. 21-30 .....	1,620		9.3		.16		40	19	16	2.8	67	140	14	.2	6.4	296	178	123		450	7.2	3
Average .....	2,184		11		0.08		32	13	18		60	92	14	0.1	8.5	234	133	84		355	--	3

## DELAWARE RIVER BASIN--Continued

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

Temperature (°F) of water, water year October 1954 to September 1955												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	55	44	43	35	44	44	59	75	--	84	74
2	74	53	43	42	35	45	47	61	74	--	82	79
3	75	51	41	42	34	50	50	63	73	--	85	78
4	76	48	41	41	34	46	50	64	73	--	84	76
5	75	45	42	41	34	46	56	66	72	--	85	73
6	75	45	41	41	34	46	56	69	72	--	86	76
7	72	46	38	41	34	42	57	70	74	--	88	77
8	--	45	36	40	34	40	55	64	75	--	85	75
9	--	45	37	41	35	41	55	69	71	--	83	75
10	68	43	36	41	35	41	56	67	69	--	83	75
11	69	44	37	38	37	44	54	66	69	--	83	78
12	69	44	36	38	38	50	57	66	68	--	80	75
13	69	47	36	--	37	50	57	67	68	--	80	75
14	67	47	36	--	36	50	--	68	69	--	71	74
15	67	47	39	37	36	50	60	68	68	--	74	73
16	69	48	41	37	35	52	--	69	69	--	78	74
17	69	48	40	37	36	52	61	--	71	83	77	76
18	69	48	--	37	38	51	60	--	71	84	79	76
19	66	50	--	36	38	49	61	--	71	85	79	76
20	65	52	--	35	40	41	62	--	77	88	--	77
21	61	--	44	35	41	40	61	--	78	87	78	77
22	59	52	39	36	41	48	61	--	78	87	77	76
23	58	49	37	35	44	45	--	--	78	86	79	78
24	58	51	40	36	42	45	64	75	81	87	77	74
25	60	48	38	37	42	45	63	79	--	86	77	74
26	60	47	35	37	42	44	61	79	79	87	75	71
27	60	48	36	38	42	43	53	78	80	86	75	71
28	60	45	37	36	42	42	57	77	78	86	73	71
29	60	45	40	36	--	40	57	74	78	86	77	70
30	59	45	42	36	--	41	57	75	80	83	77	69
31	57	--	42	35	--	42	--	76	--	82	80	--
Average	66	48	39	38	38	45	57	--	74	--	80	75

## DELAWARE RIVER BASIN--Continued

## SCHUYLKILL RIVER AT PASSYUNK AVENUE, PHILADELPHIA, PA.

LOCATION --Continuous sample collected from intake pipe at Atlantic Refining Company, Passyunk Avenue, Philadelphia, Pa.  
 DRAINAGE AREA--1,893 square miles (at Fairmount Dam).  
 RECORDS AVAILABLE--Chemical analyses: October 1953 to September 1955.  
 EXTREMES 1954-55.--Hardness: Maximum, 204 ppm Oct. 10-20; minimum 89 ppm Mar. 20-31, Apr. 1.  
 Specific conductance: Maximum daily, 767 micromhos Oct. 16; minimum daily, 209 micromhos Mar. 24.  
 Water temperatures: Maximum, 90°F July 24, 25; minimum, 35°F Feb. 9.  
 EXTREMES 1953-55.--Hardness: Maximum, 224 ppm Oct. 11-20, 1953; minimum, 85 ppm Mar. 1-10, 1954.  
 Specific conductance: Maximum daily, 795 micromhos Oct. 26, 1953; minimum daily, 194 micromhos Dec. 15, 1953.  
 Water temperatures: Maximum, 90°F July 24, 25, 1955; minimum, 35°F Jan. 24, 1954, Feb. 9, 1955.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. nesium	Non-carbonate			
Oct. 1-10, 1954		13	0.13	45	18	60		122	113	54	0.3	24	397	186	83	673	8.3	4
Oct. 10-20		12	.16	49	20	61		122	141	52	.4	21	429	204	105	700	8.0	3
Oct. 20-31		10	.13	49	19	56		110	143	46	.3	21	426	200	110	654	8.1	4
Oct. 31, Nov. 1-9		10	.14	35	15	32		72	109	26	.3	11	277	149	90	434	6.8	4
Nov. 10-20		14	.14	38	15	40		67	122	34	.3	15	315	156	102	498	6.6	3
Nov. 20-30		12	.04	33	11	20		59	85	19	.2	8.9	223	128	79	342	8.0	2
Nov. 30, Dec. 1-10		19	.02	30	11	31		68	87	22	.2	12	248	120	64	379	7.9	3
Dec. 10-20		12	.12	30	11	28		59	88	20	.2	15	245	120	72	366	7.9	3
Dec. 20-30		18	.08	28	11	24		50	90	16	.2	13	242	115	74	350	7.4	5
Jan. 1-10, 1955		10	.06	24	9.4	20		44	75	12	.2	13	184	99	62	303	7.2	4
Jan. 10-20		10	.04	29	11	28		52	94	16	.2	15	247	118	75	366	7.1	5
Jan. 20-31		10	.06	35	12	41		65	114	28	.3	16	284	137	83	461	7.1	7
Jan. 31, Feb. 6-9		11	.05	39	14	56		77	142	38	.2	15	361	155	92	552	7.4	9
Feb. 10-20		9.8	.03	28	8.0	28		57	76	38	.2	11	297	102	55	335	7.3	7
Feb. 20-30, Mar. 1		10	.06	28	10	35		74	85	15	.2	19.7	234	106	44	336	7.3	6
Mar. 10-20		10	.02	23	8.2	18		28	70	12	.1	13	196	95	72	298	7.4	3
Mar. 20-31, Apr. 1		10	.04	22	8.3	16		43	67	10	.2	9.4	174	89	54	259	7.3	3
Apr. 4-10		14	.03	29	11	25		59	88	16	.2	12	239	118	69	351	7.4	4
Apr. 10-20		9.4	.04	27	10	32		74	87	13	.2	9.3	233	108	48	326	7.3	4
Apr. 20-30		8.6	.04	25	9.5	20		62	75	12	.2	8.4	192	101	59	293	7.3	3
Apr. 30, May 1-10		9.6	.04	27	11	26		50	85	16	.3	9.3	236	113	63	337	7.2	4
May 10-20		8.2	.09	34	13	32		75	105	22	.3	7.7	286	138	77	418	7.2	5
May 22-29		7.3	.03	37	14	35		73	114	27	.3	12	296	150	90	456	7.1	5



June 1-10, 1955 .....	9.0	.04	38	14	34	75	117	24	.3	11	314	152	91	458	7.0	7
June 10-20 .....	8.9	.04	37	13	23	66	101	17	.2	7.4	255	126	74	388	7.3	6
June 20-30 .....	9.3	.05	38	12	24	66	101	22	.2	10	285	119	65	392	7.3	8
June 30 .....	8.3	.13	36	12	36	72	103	27	.2	10	300	139	80	446	7.0	12
July 1-10 .....	13	.12	41	14	49	84	138	34	.3	20	389	160	91	532	6.8	15
July 10-20 .....	7.9	.12	44	16	57	94	128	46	.5	28	419	176	98	611	7.0	15
July 20-27, 31, Aug. 1 .....																
Aug. 1-10 .....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 10-20 .....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 20-31 .....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 31, Sept. 1-11 .....	11	.14	34	15	17	56	120	15	.3	7.2	253	147	101	393	6.8	3
Sept. 11-20 .....	9.0	.10	37	18	24	56	140	20	.3	8.9	300	166	120	469	6.8	4
Sept. 20-30 .....	7.0	.10	40	19	25	70	150	22	.2	8.8	327	178	119	504	6.9	5
Average .....	10	0.08	33	13	--	69	104	24	0.3	13	282	137	80	428	--	5

DELAWARE RIVER BASIN--Continued  
SCHUYLKILL RIVER AT PASSYUNK AVENUE, PHILADELPHIA, PA.--Continued

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
	Temperature (°F) of water, water year October 1954 to September 1955																							
1.....	77	77	--	--	48	48	43	42	41	40	46	44	47	49	60	60	78	--	82	82	86	86	80	80
2.....	78	78	58	58	47	47	43	43	41	41	46	44	44	44	62	62	76	82	83	83	87	87	80	80
3.....	78	78	58	58	47	47	43	43	41	41	46	44	44	44	62	62	75	83	83	83	87	87	79	79
4.....	78	78	58	58	47	46	42	42	41	40	49	48	54	54	63	63	--	83	83	83	87	87	78	78
5.....	79	79	52	52	46	46	43	43	40	39	49	49	54	54	63	63	--	84	84	84	87	87	77	77
6.....	78	78	50	50	45	45	43	43	39	38	47	45	56	56	69	69	76	85	85	85	88	88	77	77
7.....	77	77	49	49	45	43	43	43	42	39	45	43	57	57	71	71	76	84	84	80	89	89	80	80
8.....	78	78	51	51	43	43	44	44	41	34	42	42	58	58	72	72	73	87	87	82	89	89	79	79
9.....	76	76	50	50	43	43	43	43	35	35	41	41	57	57	74	73	73	87	82	82	89	89	79	79
10.....	75	75	52	52	43	42	43	41	37	36	41	41	57	57	71	71	70	89	89	87	87	87	79	79
11.....	74	74	51	51	43	43	42	41	39	37	43	42	57	57	70	70	--	87	87	87	86	86	78	78
12.....	74	74	52	52	41	41	41	41	39	39	47	46	57	57	71	71	--	87	87	87	85	85	78	78
13.....	75	75	52	52	41	41	42	40	41	40	50	49	58	58	70	70	69	86	86	86	85	85	76	76
14.....	75	75	52	52	41	41	40	40	40	39	53	51	58	58	70	70	70	86	86	86	79	79	76	76
15.....	77	77	52	52	43	41	40	40	39	37	53	53	60	60	71	71	71	86	86	86	72	72	79	79
16.....	77	77	52	52	43	43	41	41	37	37	53	52	59	59	71	71	71	86	86	86	75	75	80	80
17.....	76	76	53	53	43	43	41	40	37	37	54	54	58	58	71	71	73	87	87	87	79	79	78	78
18.....	75	75	53	53	44	43	40	39	39	39	54	53	59	59	71	71	--	88	88	88	80	80	78	78
19.....	73	73	54	54	44	44	40	34	41	39	53	53	59	59	71	71	--	89	88	88	80	80	77	77
20.....	71	71	56	56	44	43	40	40	40	43	51	51	60	60	71	71	77	88	88	88	75	75	77	77
21.....	70	70	57	57	42	42	40	39	44	43	50	50	62	62	74	71	79	87	87	87	73	73	77	77
22.....	69	69	55	55	41	41	38	38	44	43	50	50	62	62	74	74	80	88	88	88	77	77	77	77
23.....	68	68	55	55	39	39	38	38	45	44	49	43	63	63	74	74	81	88	88	88	78	78	79	79
24.....	68	68	55	55	38	38	39	39	45	45	45	43	65	65	75	75	82	90	90	90	77	77	80	80
25.....	69	69	52	52	38	38	39	39	45	45	45	45	66	66	75	76	73	90	90	90	76	76	76	76
26.....	68	68	51	51	38	38	40	38	45	43	47	47	65	65	78	78	68	89	89	89	76	76	78	78
27.....	68	68	50	50	38	38	42	40	44	44	48	48	63	63	78	78	81	88	88	88	75	75	73	73
28.....	68	68	50	50	38	38	43	42	44	44	46	45	60	60	78	78	81	88	88	88	77	77	72	72
29.....	68	68	50	50	42	39	42	41	--	--	43	43	59	59	77	77	82	88	88	88	76	76	72	72
30.....	66	66	50	50	42	41	41	--	--	--	42	42	59	59	78	78	82	88	88	88	80	80	71	71
31.....	62	62	--	--	44	43	41	40	--	--	45	43	--	--	78	78	--	87	87	87	78	78	--	--
Average.....	73	73	53	53	43	43	43	42	40	39	47	46	58	58	71	71	--	87	87	87	81	81	77	77

## DELAWARE RIVER BASIN--Continued

## DELAWARE RIVER AT EDDYSTONE, PA.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1955.

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 1954 to September 1955

Date	Discharge at Trenton (cfs)	Chloride (Cl)	Specific conduct- ance (microm- mhos at 25°C)	pH	Bio- chemical oxygen demand <sup>a</sup>	Dissolved oxygen
Oct. 4, 1954 .....	2,340	195	951	6.5	1.2	1.7
Nov. 4 .....	22,200	375	1,560	6.5	1.9	3.5
Dec. 1 .....	15,400	10	151	6.2	1.4	7.3
Jan. 3, 1955 .....	19,800	10	188	6.1	3.4	8.2
Feb. 1 .....	12,700	20	233	5.8	.8	6.6
Mar. 2 .....	29,700	12	219	6.1	3.8	6.0
Apr. 4 .....	12,300	8.0	165	7.2	2.2	8.4
May 2 .....	10,900	11	188	6.2	1.5	2.4
June 1 .....	6,180	23	288	6.2	6.0	1.5
July 6 .....	2,870	43	368	6.3	1.6	2.7
Aug. 2 .....	1,970	535	2,120	6.3	.0	3.5
Sept. 6 .....	7,810	9.5	201	6.4	.0	1.2

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

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

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1955.  
REMARKS.--Data obtained from analyses of center river samples taken approximately 3 feet from surface and 3 feet from bottom. For additional data refer to WSP 1262, Chemical characteristics of Delaware River water, Trenton, N. J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	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	Biochemical oxygen demand	Dissolved oxygen
														Calcium	Non-carbonate				
Oct. 4, 1954.. Top	2,340	2.3	0.02	38	36	244	--	--	--	487	0.6	5.2	--	--	243	1,900	6.4	0.9	1.9
Nov. 4..... Bottom	22,200	--	--	--	--	--	--	24	136	453	--	--	1,060	--	223	1,870	7.3	--	--
Dec. 1..... Top	15,400	4.3	.01	40	56	412	--	18	181	700	.8	8.5	--	--	315	2,230	6.5	3.5	4.5
Jan. 3, 1955.. Bottom	19,800	5.6	.04	13	4.0	8.1	--	15	35	11	--	--	--	--	--	165	6.9	.0	6.8
Apr. 4..... Top	12,300	6.6	.14	13	3.3	9.5	--	13	38	12	.1	6.5	119	49	37	105	6.8	3.4	7.2
May 2..... Bottom	10,900	5.7	.16	15	4.3	8.2	--	5	54	8.0	.3	6.1	153	55	51	184	5.4	1.4	8.8
June 1..... Top	6,180	5.6	.02	16	5.0	12	--	6	60	14	.2	7.3	165	--	56	219	5.5	1.6	2.6
July 6..... Bottom	2,870	2.8	.01	23	11	73	--	2	98	105	.6	5.7	391	103	101	615	5.1	12.9	2.5
Aug. 2..... Top	1,970	2.1	.04	23	13	67	--	18	95	120	.6	6.4	358	--	96	621	6.4	.44	2.75
Sept. 6..... Bottom	7,810	4.7	.38	41	67	560	--	7	254	800	1.0	2.0	2,140	378	372	2,950	5.9	1.2	3.9
		7.1	.05	16	5.5	9.4	--	28	45	10	.2	7.0	150	62	40	3,630	6.0	.0	1.4
							--									191	7.3	--	--



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

## 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.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to July 1953.

Sediment records: December 1946 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 944 ppm Aug. 13; minimum daily, 1 ppm on several days during the year.

Sediment loads: Maximum daily, 20,700 tons Aug. 13; minimum daily, less than 0.50 ton Oct. 2, 10; Feb. 3, 4, 5.

EXTREMES, 1946-55.--Sediment concentrations: Maximum daily, 1,420 ppm July 9, 1952; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 20,700 tons Aug. 13, 1955; minimum daily, less than 0.5 ton on many days.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Day	Suspended sediment, water year October 1954 to September 1955								
	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.....	82	5	1	128	12	4	184	5	2
2.....	82	2	(t)	165	23	s16	160	4	2
3.....	88	2	1	390	52	s55	151	7	3
4.....	85	4	1	220	18	11	145	}	1
5.....	82	4	1	172	10	5	142		
6.....	85	4	1	157	15	6	136	}	1
7.....	100	8	2	142	15	6	120		
8.....	90	4	1	125	9	3	125		
9.....	82	4	1	118	8	3	164		
10.....	82	2	(t)	112	6	2	366	4	4
11.....	80	3	1	108	8	2	250	4	3
12.....	78	4	1	108	8	2	184	4	2
13.....	78	14	3	105	8	2	168	4	2
14.....	78	18	4	105	10	3	188	4	2
15.....	80	14	3	105	8	2	275	5	4
16.....	118	14	5	105	10	3	250	4	3
17.....	120	8	3	108	8	2	192	2	1
18.....	100	6	2	110	7	2	282	10	s10
19.....	92	5	1	118	10	3	468	18	s22
20.....	100	2	1	260	12	s10	290	7	5
21.....	100	2	1	730	101	s222	190	}	1
22.....	95	2	1	544	48	s87	155		
23.....	90	4	1	265	16	11	176		
24.....	85	2	1	192	8	4	176		
25.....	85	5	1	172	5	2	168		
26.....	85	2	1	154	5	2	151	}	1
27.....	92	3	1	145	5	2	148		
28.....	100	5	1	142	4	2	154		
29.....	200	25	s16	270	13	9	230	4	s3
30.....	225	13	8	270	10	7	727	110	sa 300
31.....	160	7	3	--	--	--	564	112	s200
Total.	3,099	--	69	5,845	--	490	7,099	--	582

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from partly estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--Continued.

Day	Mean discharge (cfs)	January		Mean discharge (cfs)	February		Mean discharge (cfs)	March	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	324	20	17	122	4	1	290	3	2
2.....	290	6	5	120	2	1	414	8	9
3.....	306	4	3	115	--	(b t)	290	6	5
4.....	245	1	1	108	--	(b t)	487	17	s 26
5.....	220	1	1	112	--	(b t)	1,120	92	s 289
6.....	210	1	1	200	--	b 11	914	68	s 167
7.....	210	2	1	3,290	--	b 5,200	1,180	166	s 557
8.....	190			826	145	323	564	28	43
9.....	190			408	30	33	462	10	12
10.....	190	2	1	312	8	7	432	6	7
11.....	175			336	6	5	396	5	5
12.....	160			432	8	9	366	5	5
13.....	170	3	1	245	5	3	324	4	3
14.....	140			240	6	4	300	3	2
15.....	176			255			295	4	3
16.....	160	4	2	230	2	2	354	5	5
17.....	154	4	2	285			324	4	3
18.....	143	4	2	306			295	3	2
19.....	154	3	1	260	3	2	324	3	3
20.....	133	5	2	230			300	2	2
21.....	120	5	2	220			330	3	3
22.....	154	5	2	220	7	8	1,860	376	s 2,660
23.....	148	3	1	402			1,500	298	s 1,450
24.....	148	5	2	564	13	20	641	55	95
25.....	136	3	1	342	12	11	522	12	17
26.....	133	4	1	275	3	2	564	7	11
27.....	142	5	2	260	1	1	543	6	9
28.....	104	4	1	260	2	1	444	2	2
29.....	112	3	1	--	--	--	408	1	1
30.....	110	6	2	--	--	--	390	2	2
31.....	105	5	1	--	--	--	372	4	4
Total.	5,352	--	62	10,975	--	5,661	17,005	--	5,404
Day	Mean discharge (cfs)	April		Mean discharge (cfs)	May		Mean discharge (cfs)	June	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	354	6	6	275	4	3	225	12	7
2.....	330	6	5	260	2	1	187	13	6
3.....	324	7	6	250	2	1	167	11	5
4.....	312	9	8	250	4	3	152	8	3
5.....	300	10	8	245	3	2	149	8	3
6.....	306	10	8	225	3	2	143	3	1
7.....	306	10	8	205	4	2	137	5	2
8.....	285	11	8	205	3	2	252	66	s 110
9.....	275	11	8	210	4	2	1,060	267	s 864
10.....	265	9	6	197	5	3	438	59	s 72
11.....	255	9	6	200	5	3	360	38	s 40
12.....	290	14	11	200	4	2	1,770	676	s 3,960
13.....	372	14	14	193	4	2	508	60	82
14.....	354	15	s 15	193	3	2	348	23	22
15.....	599	30	s 50	187	7	4	275	14	10
16.....	414	9	10	184	9	4	235	13	8
17.....	324	16	14	174	8	4	200	15	8
18.....	300	11	9	167	6	3	190	12	6
19.....	290	12	9	164	5	2	194	6	3
20.....	285	16	12	161	4	2	366	16	16
21.....	318	10	9	158	2	1	285	16	12
22.....	390	8	8	155	3	1	220	14	8
23.....	372	6	6	167	6	3	193	14	7
24.....	295	8	6	245	8	5	255	16	11
25.....	300	9	7	190	5	3	250	15	10
26.....	398	4	4	164	7	3	230	19	12
27.....	402	2	2	152	7	3	200	14	8
28.....	324	4	3	152	6	2	177	13	6
29.....	306	6	5	158	2	1	167	10	4
30.....	300	6	5	210	5	3	155	10	4
31.....	--	--	--	235	6	4	--	--	--
Total.	9,943	--	276	6,131	--	78	9,488	--	5,312

s Computed by subdividing day.

t Less than 0.50 ton.

b Computed from estimated concentration graph.

## DELAWARE RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	155	8	3	90	10	2	606	3	5
2.....	158	6	3	88	6	1	522	2	3
3.....	143	7	3	84	4	1	487	3	4
4.....	129	8	3	74	5	1	474	2	3
5.....	127	7	2	70	5	1	450	2	2
6.....	124	6	2	84	4	1	432	1	1
7.....	121	6	2	106	6	2	408	2	2
8.....	124	--	b3	122	9	3	372	3	3
9.....	121	9	3	152	9	4	354	5	5
10.....	147	12	sa 6	106	6	2	366	8	8
11.....	197	17	s 9	311	137	s 161	386	4	4
12.....	158	10	4	1, 170	237	s 890	354	3	3
13.....	121	8	3	8, 010	944	s 20, 700	312		
14.....	116	10	3	5, 750	682	s 11, 900	306		
15.....	111	12	4	4, 510	292	s 4, 930	312	2	2
16.....	111	12	4	832	25	56	312		
17.....	106	8	2	683	95	175	306		
18.....	102	5	1	2, 870	335	s 4, 360	306	2	2
19.....	102	4	1	9, 660	268	s 8, 960	306		
20.....	95	5	1	1, 600	60	259	318		
21.....	95	6	2	1, 020	30	83	290	3	2
22.....	93	9	2	1, 270	88	s 320	270		
23.....	86	11	3	909	40	98	275		
24.....	95	15	4	714	20	39	456	4	5
25.....	124	18	6	658	10	18	474	4	5
26.....	104	17	5	613	12	20	330	2	2
27.....	93	14	4	613	10	17	290	1	1
28.....	84	11	2	613	10	17	384	4	4
29.....	82	14	3	543	8	12	372	4	4
30.....	84	16	4	522	5	7	306	3	2
31.....	90	15	4	676	10	18	--	--	--
Total.	3, 598	--	101	44, 523	--	53, 058	11, 116	--	90

Total discharge for year (cfs-days)..... 134, 174  
 Total load for year (tons)..... 71, 183

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.



## DELAWARE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN DELAWARE RIVER BASIN IN DELAWARE

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Discharge (cfs)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
								Calcium, magnesium	Non-carbonate			

## CHRISTINA RIVER AT COOCHS BRIDGE

Aug. 10, 1955..	1.40	11		42	15	6	4.3	38	4	138	6.4	
Sept. 27, .....	2.66	4.6		27	10	4	4.6	32	10	105	6.6	

## RED CLAY CREEK AT WOODDALE

Aug. 10, 1955..	12	30		88	33	35	3.1	92	20	348	6.7	
-----------------	----	----	--	----	----	----	-----	----	----	-----	-----	--

## RED CLAY CREEK NEAR WOODDALE

Aug. 25, 1955..	56.5	10		57	20	9	4.7	62	15	192	6.7	
-----------------	------	----	--	----	----	---	-----	----	----	-----	-----	--

## RED CLAY CREEK AT MARSHALLTOWN

Sept. 21, 1955..						16				245	7.9	
------------------	--	--	--	--	--	----	--	--	--	-----	-----	--

## SHELLPOT CREEK AT WILMINGTON

Aug. 5, 1955 ..	0.890	19		80	33	18	2.0	86	2	275	8.3	
Aug. 26, .....	1.61	14		69	36	12	3.1	83	41	243	8.8	

## WHITE CLAY CREEK ABOVE NEWARK

Aug. 10, 1955..	13.5	8.2		78	13	6	2.4	70	6	189	7.1	
Aug. 25, .....	61.0	6.1		62	15	6	5.5	66	15	172	6.8	
Sept. 28, .....	54.2	4.0		60	13	4	5.3	64	15	160	7.6	

## WHITE CLAY CREEK AT NEWARK

Aug. 10, 1955..	23	9.6		70	16	18	1.9	80	23	225	6.7	
-----------------	----	-----	--	----	----	----	-----	----	----	-----	-----	--

## WHITE CLAY CREEK NEAR NEWARK

Aug. 25, 1955..	90	7.9		58	16	14	5.2	71	23	199	6.6	
-----------------	----	-----	--	----	----	----	-----	----	----	-----	-----	--

## BRANDYWINE CREEK AT WILMINGTON

Mar. 3, 1955 ..	290	7.0		36	25	7.0	4.9	54	24	158	7.1	22
Apr. 1, .....	354	14		43	26	8.0	7.2	48	13	157	7.6	4
May 4, .....	250	10		49	24	7.5	3.8	56	16	159	7.6	6
June 3, .....	187	12		41	27	8.0	4.0	50	16	155	6.5	7
Aug. 5, .....	73.6	14		74	27	10	.7	72	11	222	6.8	

## BRANDYWINE CREEK AT NEW CASTLE

Jan. 7, 1955...	a270	5.1		37	26	7.5	6.4	62	32	172	7.0	
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a Discharge at Wilmington.

## SUSQUEHANNA RIVER BASIN

## SUSQUEHANNA RIVER AT CONKLIN, N. Y.

LOCATION.--At gaging station at highway bridge at Conklin, Broome County, three-quarters of a mile downstream from Little Snake Creek and 3½ miles downstream from Pennsylvania State line.

DRAINAGE AREA.--2,240 square miles. approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 179 ppm July 25, 26, 30, 31; minimum, 52 ppm Mar. 1-10.

Hardness: Maximum, 91 ppm July 25, 26, 30, 31; minimum, 28 ppm Aug. 19.

Specific conductance: Maximum daily 220 micromhos July 25, 26, 30, 31; minimum daily, 75.9 micromhos Aug. 19.

Water temperatures: Maximum, 82°F July 3, 5, 10; minimum, freezing point on several 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 1954 to September 1955 given in WSP 1382. Stream frozen over Feb. 4, 7-23.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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	
														Total	Non-carbonate				Unfiltered	Filtered
Oct. 1-10, 1954.....	434	1.1	0.13	23	3.1	4.6	0.8	66	18	5.1	0.1	0.4	91	71	17	150	7.5	11	--	--
Oct. 11-20.....	370	4.3	24	22	3.0	5.1	0.8	70	14	4.4	0	0.5	108	68	11	165	7.4	35	--	--
Oct. 21-24, 26-29, 31	453	4.0	--	23	2.8	4.4	1.7	73	12	4.3	0	8	86	70	10	161	7.2	7	--	--
Oct. 25.....	444	--	--	--	--	--	4.0	78	12	4.0	--	--	--	74	10	168	7.8	7	--	--
Oct. 30 <sup>a</sup> .....	507	--	--	--	--	--	--	70	12	3.4	--	--	--	72	14	152	--	--	--	--
Oct. 21-31.....	--	--	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1-2.....	526	--	--	--	--	3.6	--	67	12	4.0	--	2.3	--	67	12	153	7.2	13	--	--
Nov. 3-10.....	5,990	4.9	--	13	2.1	2.6	.7	36	12	3.2	0	1.8	59	42	13	102	7.0	12	--	--
Nov. 11-10.....	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 11-20.....	2,440	5.1	10	13	2.1	2.6	.6	36	12	3.8	0	1.3	58	42	12	105	7.0	12	--	--
Nov. 21-29.....	7,550	5.3	--	11	1.8	2.4	.6	29	13	1.7	0	1.8	55	36	12	89.1	6.8	13	--	--
Nov. 30 <sup>a</sup> .....	6,680	--	--	--	--	--	--	31	12	2.1	--	--	--	41	16	93.3	--	--	--	--
Nov. 21-30.....	--	--	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 1-10.....	3,790	5.9	11	14	1.3	2.1	.3	39	12	2.8	0	1.8	71	41	9	107	7.2	12	--	--
Dec. 11-20.....	5,670	4.2	13	14	2.0	2.4	.3	38	12	3.5	0	1.0	66	44	13	110	7.0	13	--	--
Dec. 21-31.....	6,740	4.8	11	14	1.7	2.1	.3	38	10	3.0	0	2.0	54	43	11	104	7.1	13	--	--
Dec. 30 <sup>a</sup> .....	14,200	--	--	--	--	--	--	29	12	2.4	--	--	--	39	16	90.6	--	--	--	--
Jan. 1-10, 1955.....	7,430	6.0	.09	15	2.1	1.6	.5	36	11	3.0	.1	2.7	68	46	16	107	6.9	5	--	--
Jan. 11-20.....	2,520	7.1	.10	20	2.5	2.1	--	54	13	2.8	.1	2.7	84	61	17	141	6.9	3	--	--
Jan. 23, 24.....	1,720	--	--	--	--	7.3	--	41	11	6.5	--	3.2	--	41	7	105	7.0	--	--	--
Jan. 21-22, 25-31.....	1,400	6.8	--	22	2.2	3.4	.8	62	16	4.2	0	4.2	96	64	13	151	7.3	8	--	--
Jan. 30 <sup>a</sup> .....	1,040	--	--	--	--	--	--	70	17	3.3	--	--	--	73	16	164	--	--	--	--
Jan. 21-31.....	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 1-3, 5-6.....	944	4.5	.34	26	3.0	3.0	.8	75	17	5.2	0	3.7	109	78	17	173	7.4	12	--	--

<sup>a</sup> Average of monthly cross-section.

9,350	3.9	--	12	.6	2.2	1.2	25	11	4.0	.0	4.3	54	33	12	88.5	7.0	12	--	--
Feb. 24-27, 1955...																			
Feb. 28 a...	8,070	4.6	0.11	12	1.4	1.9	.9	29	12	3.8	.0	3.8	52	37	13	84.0	7.0	7	--
Mar. 1-10...	11,600	4.4	.16	13	1.5	1.4	.7	34	8.6	3.2	.1	2.4	61	40	12	97.7	7.1	8	--
Mar. 11-20...	13,000	4.4	.12	16	1.8	1.5	.7	38	10	5.0	.1	2.0	74	47	16	114	7.2	7	--
Mar. 21-31...	8,970	15	.12	16	--	--	--	48	14	3.6	--	--	50	12	116	--	--	--	--
Mar. 31 a...	5,870	15	--	--	--	--	--	48	14	3.6	--	--	50	12	116	--	--	--	--
Apr. 1-10...	6,630	15	.10	17	2.2	1.5	.4	46	10	3.8	.0	2.2	73	51	14	119	7.3	7	--
Apr. 11-13-19...	5,370	3.5	--	20	2.1	1.9	.7	52	13	3.0	.0	1.4	93	59	16	121	7.4	9	--
Apr. 12, 20...	4,650	--	--	--	--	6.9	50	13	14	--	1.1	--	60	19	154	--	--	--	--
Apr. 11-20...	--	--	.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 21-30...	6,220	4.0	--	16	1.8	2.0	.7	45	16	2.0	.0	.6	80	48	11	112	7.3	8	--
Apr. 30 a...	5,190	--	--	--	--	--	--	42	9.8	5.5	--	--	44	10	117	--	--	--	--
May 1-10...	3,000	3.8	.12	18	2.1	2.2	.8	52	15	4.2	.0	.1	92	55	13	126	7.2	8	--
May 11-20...	1,460	2.2	.14	22	2.1	2.9	.8	65	14	2.4	.0	.1	102	64	10	141	7.6	8	--
May 21-27...	1,340	2.4	--	25	1.2	2.9	1.1	71	14	3.5	.0	.8	101	68	9	154	7.3	12	--
May 28-31...	2,390	--	--	--	--	--	3.4	54	11	2.5	--	1.7	--	53	9	118	7.4	19	--
May 31 a...	2,830	--	--	--	--	--	--	48	11	1.2	--	--	44	5	111	--	--	--	--
May 31...	--	--	.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 21-31...	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 1-10...	1,980	4.2	.10	19	1.1	2.3	1.0	52	11	3.8	.0	1.3	83	52	10	117	7.2	16	--
June 11-20...	1,380	3.1	.20	18	2.3	2.5	1.0	52	11	3.2	.0	1.1	78	54	12	114	7.2	14	--
June 21-30...	1,870	3.7	.05	18	3.5	3.0	1.2	57	13	3.6	.1	.9	83	59	13	138	7.0	2	5.6
June 30 a...	694	--	--	--	--	--	--	71	16	2.6	--	--	70	12	158	--	--	--	--
July 1-10...	625	5.4	.15	22	2.6	4.0	.8	70	13	4.5	.1	.5	93	66	8	166	6.7	2	5.7
July 11-20...	406	12	.15	22	2.5	5.2	1.3	74	12	5.8	.1	.0	108	65	5	163	7.0	7	3.5
July 21-24, 27-29...	313	27	--	16	9.5	7.5	1.7	88	16	4.2	.7	.6	126	79	7	186	8.1	8.2	6.3
July 25, 26, 30, 31...	287	51	--	27	5.8	12	1.2	b113	13	4.9	.7	.6	179	91	0	220	8.5	4	1.9
July 21-31...	--	--	.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
July 31 a...	263	--	--	--	--	--	--	80	14	5.9	--	--	--	79	14	182	--	--	--
Aug. 1...	253	--	--	--	--	--	--	c109	--	--	--	--	--	66	0	219	9.3	--	--
Aug. 2-10...	222	5.2	--	23	4.3	5.1	1.0	76	16	6.3	.0	.9	104	75	13	179	7.7	3	3.2
Aug. 1-10...	--	--	.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 11-18, 20...	1,710	4.1	--	19	3.6	3.7	1.3	59	13	4.9	.0	1.4	86	62	14	147	7.1	6	3.4
Aug. 19...	7,760	--	--	--	--	--	--	20	--	4.0	--	2.6	--	28	12	75.9	6.4	--	--

a Average of monthly cross-section.

b Includes equivalent of 5 parts per million of carbonate (CO<sub>3</sub>).c Includes equivalent of 30 parts per million of carbonate (CO<sub>3</sub>).

## SUSQUEHANNA RIVER BASIN--Continued

## SUSQUEHANNA RIVER AT CONKLIN, N. Y.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--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	
														Total	Non-carbonate				Unfiltered	Filtered
Aug. 11-20, 1955.....	--	--	0.09	--	--	--	--	--	--	--	--	--	--	--	--	122	--	--	--	--
Aug. 21-31.....	1,490	7.2	.18	14	3.5	3.7	1.6	43	14	4.6	0.1	1.3	74	49	14	124	7.4	3	5.7	3.8
Aug. 31a.....	1,956	6.7	.11	16	3.2	4.2	1.4	51	13	4.0	--	--	--	52	10	124	--	--	--	--
Sept. 1-10.....	745	6.7	.11	16	3.2	4.2	1.4	54	13	4.2	.0	.6	80	53	9	134	7.6	3	3.5	2.2
Sept. 11-20.....	455	3.3	.10	17	2.9	3.7	1.4	56	13	4.0	.0	.5	78	54	8	137	7.2	3	4.1	2.6
Sept. 21-29.....	473	5.8	.12	19	3.6	4.3	1.2	61	13	4.5	.0	.8	86	62	12	147	7.3	3	5.1	3.5
Sept. 30.....	591	--	--	--	--	--	--	63	13	4.2	--	--	--	62	10	144	--	--	--	--
Average.....	3,420	7.3	0.15	18	2.6	3.3	0.9	55	13	4.1	0.1	1.5	85	56	12	133	--	9	--	--

a Average of monthly cross-section.

## SUSQUEHANNA RIVER BASIN--Continued

## SUSQUEHANNA RIVER AT CONKLIN, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at approximately 9 a. m./

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

## SUSQUEHANNA RIVER BASIN--Continued

## COREY CREEK NEAR MAINESBURG, PA.

LOCATION.--At gaging station, 1.1 miles downstream from Mainesburg, Tioga County,  $3\frac{1}{2}$  miles east of Mansfield, and  $4\frac{1}{2}$  miles upstream from mouth.

DRAINAGE AREA.--12.2 square miles.

RECORDS AVAILABLE.--Sediment records: May 1954 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 542 ppm Mar. 22; minimum daily, no flow on several days during July and August.

Sediment loads: Maximum daily, 150 tons on Mar. 22; minimum daily, 0 tons on several days during July and August.

EXTREMES, May 1954 to September 1955.--Sediment concentrations: Maximum daily, 939 ppm, May 29, 1954; minimum daily, no flow on several days during July and August 1955.

Sediment loads: Maximum daily, 175 tons June 1, 1954; minimum daily, 0 tons on several days during July and August 1955.

REMARKS.--Records of specific conductance and pH of periodic sediment samples available in district office at Philadelphia, Pa. Station established May 1954 as an index station for the Corey Creek Watershed Project and part of an SCS Pilot Watershed study of Corey Creek. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Suspended sediment, water year October 1954 to September 1955									
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.....	0.7			0.9			2.9		
2.....	.7			1.0			2.6		
3.....	.7	2	(t)	1.9	2	(t)	1.8		
4.....	.8			2.9			1.9		
5.....	.7			3.2			1.9	--	(t)
6.....	.9	2	(t)	3.3			1.5		
7.....	.7			2.3			2.1		
8.....	.7			2.0	--	(t)	2.4	4	(t)
9.....	.7			2.0			2.1	--	(t)
10.....	.8			1.8			2.3	2	(t)
11.....	.9	5	(t)	1.6			2.0		
12.....	.8			1.5			2.0	--	(t)
13.....	.7			1.4	3	(t)	2.0		
14.....	.8			1.4			13	--	a10
15.....	3.3			1.4			25	145	s12
16.....	5.7	5	(t)	1.4			10	--	a.2
17.....	2.0			1.5			13	4	.1
18.....	1.5			1.4	2	(t)	38	--	a16
19.....	1.6			1.4			22	--	a1.2
20.....	1.3			1.5			17		
21.....	1.2	2	(t)	2.3			12	--	b1.3
22.....	1.1			2.7	2	(t)	11		
23.....	1.0			2.3			12		
24.....	1.0			2.0	--	(t)	9.0		
25.....	.9			2.1			7.5		
26.....	.9	2	(t)	2.0	1	(t)	6.5	--	b.2
27.....	.9			1.9	--	(t)	6.8		
28.....	.9			1.9	--	(t)	16	--	e.6
29.....	.9			3.3	--	(t)	25	--	a1.4
30.....	.9	2	(t)	3.3	--	(t)	163	177	s109
31.....	.8			--	--	--	43	19	2.2
Total.	36.5	--	0.4	59.6	--	0.3	477.3	--	158.9

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed on basis of infrequent samples.

## SUSQUEHANNA RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	26	--	a 0.4	1.3			61	384	s 66
2.....	31	--	a 2.5	1.2	4	(t)	34	40	3.7
3.....	17	--	e .4	1.1			22	20	1.2
4.....	16	--	e .2	1.3			118	98	s 61
5.....	13	4	.1	1.2	4	(t)	72	77	s 13
6.....	18	43	2.1	1.2			51	60	8.3
7.....	12			2.0	11	0.1	30	25	2.0
8.....	9.0			1.8	10	.1	25	55	3.7
9.....	8.0	15	4	1.5	5	(t)	26	67	s 4.8
10.....	7.4			1.7	87	.3	24	120	7.8
11.....	6.0			4.0			47	200	s 28
12.....	4.5			2.7	3	(t)	33	50	4.5
13.....	4.2			2.0			24	20	1.3
14.....	3.8	2	(t)	1.8			20	10	.5
15.....	3.3			2.1	4	(t)	16	20	.9
16.....	3.0			1.9			31	51	s 5.1
17.....	2.7			1.7			18	20	1.0
18.....	2.3			1.6	10	.1	16	18	.8
19.....	1.9	5	(t)	1.7			14	20	.8
20.....	1.6			2.4	80	.5	12	20	.6
21.....	1.4			5.0	60	.8	26	90	6.3
22.....	1.8			15	100	4.0	77	542	s 150
23.....	1.7			50	105	14	45	50	6.1
24.....	1.5	8	(t)	30	42	3.4	32	30	2.6
25.....	1.4			18	20	1.0	22	20	1.2
26.....	1.5			13	10	.4	19	15	.8
27.....	1.0			11	9	.3	15	13	.5
28.....	1.1			19	30	1.5	12	25	.9
29.....	1.3	14	.1	--	--	--	11	25	.7
30.....	1.4			--	--	--	10	20	.5
31.....	1.3			--	--	--	9.4	10	.2
Total	206.1	--	8.6	197.2	--	26.9	972.4	--	384.8
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.....	9.0	10	0.2	8.3	4	0.1	3.8	7	0.1
2.....	8.3	6	.1	7.0			2.9	3	(t)
3.....	7.3	6	.1	6.1			2.3	3	(t)
4.....	6.7	--	b .1	5.6	4	.1	1.8	3	(t)
5.....	5.8			8.5			1.4	4	(t)
6.....	5.6			5.6			1.3	7	(t)
7.....	5.6	6	.1	5.3			1.1	5	(t)
8.....	5.0			9.0	6	.1	1.0	3	(t)
9.....	4.8	--	e .1	6.4			1.4	4	(t)
10.....	4.4			5.8	7	.1	1.4	4	(t)
11.....	4.2	5	.1	5.3			1.2	3	(t)
12.....	6.1			4.6	2	(t)	2.0	4	(t)
13.....	7.6			4.2			1.4	6	(t)
14.....	7.3	6	.1	3.8			1.3	8	(t)
15.....	7.6			3.0	3	(t)	1.0	7	(t)
16.....	7.3			2.9			.7	13	(t)
17.....	7.0	2	(t)	2.6			.6	9	(t)
18.....	7.0			2.3	5	(t)	.5	6	(t)
19.....	6.4			2.1			.5	12	(t)
20.....	6.1	2	(t)	2.0			.4	8	(t)
21.....	6.7			1.6	14	.1	.5	9	(t)
22.....	7.6			1.5			.4	10	(t)
23.....	5.8	3	.1	1.4			.3	8	(t)
24.....	8.8	--	c .3	1.4	8	(t)	.3	8	(t)
25.....	19	33	s 2.0	1.8			.3	10	(t)
26.....	18	18	.9	6.6	39	s .8	.4	7	(t)
27.....	16	11	.5	2.7			.4	17	(t)
28.....	14			2.0	10	.1	.3	13	(t)
29.....	11	2	.1	7.2	71	s 2.9	.3	8	(t)
30.....	9.7			4.6	23	.3	.2	12	(t)
31.....	--	--	--	4.2	10	.1	--	--	--
Total	245.7	--	6.0	135.4	--	6.0	31.4	--	0.5

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed on basis of infrequent samples.

c Computed from partly estimated concentration graph.

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

## SUSQUEHANNA RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	0.2	10	(t)	0.1	9	(t)	7.0	4	0.1
2.....	.2	4	(t)	.1	10	(t)	4.8	--	(t)
3.....	.1	3	(t)	.1	14	(t)	4.0	--	(t)
4.....	.1	2	(t)	.1	15	(t)	3.4		
5.....	.1	2	(t)	.1	14	(t)	2.9	6	.1
6.....	.1	3	(t)	.1	13	(t)	2.6		
7.....	.2	7	(t)	.1	17	(t)	2.1		
8.....	.2	5	(t)	.1	10	(t)	1.9	2	(t)
9.....	.1	4	(t)	0	--	0	1.6		
10.....	.1	5	(t)	0	--	0	1.5		
11.....	0	--	0	.1	--	(t)	3.1	4	(t)
12.....	0	--	0	.2	--	(t)	3.2		
13.....	0	--	0	90	204	s 66	2.0		
14.....	0	--	0	30	--	c 3.2	1.6	4	(t)
15.....	0	--	0	11	--	c .2	1.5		
16.....	0	--	0	7.3	--	e .1	1.4		
17.....	.2	3	(t)	4.6	--	e .1	1.3	4	(t)
18.....	.1	9	(t)	31	78	s 11	1.3		
19.....	.4	9	(t)	15	25	1.0	1.2		
20.....	.2	8	(t)	8.7	--	c .2	1.1	6	(t)
21.....	.1	10	(t)	16	--	c 4.0	1.0		
22.....	0	--	0	22	--	c 8.0	.9		
23.....	0	--	0	17	--	c 3.0	1.2	4	(t)
24.....	.2	17	(t)	9.7	--	c .5	2.9		
25.....	.2	10	(t)	6.7	--	c .1	1.6		
26.....	.1	11	(t)	5.0			1.2	4	(t)
27.....	.1	24	(t)	4.4	1	(t)	1.1		
28.....	.7	23	(t)	3.6			1.4		
29.....	.3	9	(t)	2.9			1.3	4	(t)
30.....	.2	8	(t)	22	120	s 20	1.2		
31.....	.1	7	(t)	15	50	2.0	--	--	--
Total.	4.3	--	0.1	323.0	--	119.5	63.3	--	0.8
Total discharge for year (cfs-days).....									2,752.2
Total load for year (tons).....									713.0

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

c Computed from partly estimated concentration graph.



Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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)

[illegible]

## 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.--Sediment records: May 1954 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 719 ppm, Mar. 22; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 294 tons Mar. 22; minimum daily, 0 tons on many days.

EXTREMES, May 1954-55.--Sediment concentrations: Maximum daily, 719 ppm Mar. 22, 1955; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 294 tons Mar. 22, 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. Station established May 1954 as an index station for Elk Creek Watershed Project and part of SCS Pilot Watershed Study of Corey Creek which is adjacent to Elk Creek. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Suspended sediment, water year October 1954 to September 1955

Day	October			November			December		
	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.....	0.4	2	(t)	0.6	2	(t)	3.8	8	0.1
2.....	.4			.7	2	(t)	3.4	4	(t)
3.....	.3			1.4	3	(t)	2.3	1	(t)
4.....	.3			2.7	10	0.1	2.4	1	(t)
5.....	.2			3.2	2	(t)	2.5	46	.3
6.....	.3	2	(t)	2.9	2	(t)	2.3	42	.3
7.....	.3			2.0			2.0	14	.1
8.....	.3			2.2			2.4	12	.1
9.....	.3			3.3			2.5	6	(t)
10.....	.3			2.6			3.0	--	0
11.....	.4	1	(t)	2.3	2	(t)	2.6	4	(t)
12.....	.4			2.1			2.3	2	(t)
13.....	.5			2.1			2.1	7	(t)
14.....	.4			2.1			13	24	s1.8
15.....	1.6			2.1			28	38	2.9
16.....	4.5	6	(s t)	2.0	6	(t)	10	9	.2
17.....	2.1			1.8			14	6	.2
18.....	1.3			2.1			42	54	s9.6
19.....	1.6			1.8			23	22	1.4
20.....	1.1			2.1			17	10	s.7
21.....	1.0	4	(t)	4.2	6	.1	12	3	.1
22.....	.7			4.5			11	6	s1.5
23.....	.7			3.2			12	6	s.7
24.....	.7			3.3			9.0	1	(t)
25.....	.6			3.8			7.6	--	0
26.....	.6	2	(t)	2.6	1	(t)	6.6	--	0
27.....	.6			2.5			6.8	3	s.1
28.....	.7			2.9			16	5	.2
29.....	.6			4.5			29	21	s2.0
30.....	.6			3.8			133	40	s16
31.....	.6			--	--	--	47	11	1.4
Total.	24.4	--	0.2	77.4	--	0.6	470.6	--	39.9

e Estimated.

s Computed by subdividing day.

t Below 0.05 ton.

## SUSQUEHANNA RIVER BASIN--Continued

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

## Suspended sediment, water year October 1954 to September 1955--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.....	28	16	s 2.5	1.4			72	289	s 65
2.....	35	15	1.4	1.3	10	(t)	38	30	3.1
3.....	17	4	.2	1.2			26	20	1.4
4.....	19	16	.8	1.4	1	(t)	99	311	s 113
5.....	13	--	a .5	1.3	1	(t)	85	260	60
6.....	21	--	a .8	1.3			45	110	13
7.....	13	15	.5	2.2			30	--	a 1.6
8.....	10	8	.2	2.0			27	20	1.5
9.....	9.0	13	.3	1.7			28	8	.6
10.....	8.0	7	.2	1.8			25	30	2.0
11.....	6.2	7	.1	4.2			56	184	s 33
12.....	5.0	--	a .1	2.8			33	30	2.7
13.....	4.7			2.2			28	--	a 1.5
14.....	4.1	4	(t)	2.0	--	(t)	24	13	.8
15.....	3.5			2.3			21	8	.4
16.....	3.2			2.1			35	45	s 4.5
17.....	3.0	3	(t)	1.9			20	8	.4
18.....	2.5			1.8			16	2	.1
19.....	2.1			1.9			13	16	.6
20.....	1.7	1	(t)	2.6			15	10	.4
21.....	1.5			5.4			30	59	s 5.0
22.....	1.9			16	--	a 1.5	104	719	s 294
23.....	1.8			52	--	a 13	44	60	7.1
24.....	1.6	2	(t)	32	--	a 3	30	6	.5
25.....	1.5			20	1	.1	22	2	.1
26.....	1.6			14	--	(a t)	20	1	.1
27.....	1.1			12	21	.7	16	1	(t)
28.....	1.2			20	11	.6	13	1	(t)
29.....	1.4	4	(t)	--	--	--	12	1	(t)
30.....	1.5			--	--	--	11	1	(t)
31.....	1.4			--	--	--	10	1	(t)
Total.	225.5	--	7.9	210.8	--	19.1	1,048	--	612.6
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.....	8.8			8.8			1.7	5	(t)
2.....	7.4			7.4	4	0.1	1.4		
3.....	7.4			6.6			1.2	4	(t)
4.....	6.6	4	0.1	5.0			.9		
5.....	5.7			6.6			.8		
6.....	5.0			4.0	2	(t)	.6		
7.....	5.0			3.7			.4	2	(t)
8.....	4.7			9.1			.6		
9.....	3.7	2	(t)	6.6			.9		
10.....	3.0			4.3			1.0	3	(t)
11.....	3.0			3.3	3	(t)	.9		
12.....	4.7			2.8			1.5		
13.....	6.4			2.6			.9	3	(t)
14.....	3.7	4	.1	2.3			.8		
15.....	6.6			1.9			.8		
16.....	5.7			1.9	4	(t)	.6	3	(t)
17.....	6.1			1.7			.4		
18.....	5.7	3	.1	1.5			.4		
19.....	6.1			1.4	2	(t)	.2	3	(t)
20.....	5.7	9	.1	1.2			.2		
21.....	7.0			1.1			.1	4	(t)
22.....	9.8	4	.1	1.0	2	(t)	.1	4	(t)
23.....	5.7			1.0			0	--	0
24.....	9.3			.9	4	(t)	0	--	0
25.....	17	19	s 1.0	.9			0	--	0
26.....	17	20	.9	3.2	--	a .2	0	--	0
27.....	15	18	.7	1.3	--	(b t)	0	--	0
28.....	13			1.0	--	(b t)	0	--	0
29.....	11	6	.2	3.8	--	b .2	0	--	0
30.....	10			3.0	--	b .1	0	--	0
31.....	--	--	--	2.2	--	(b t)	--	--	--
Total.	225.8	--	5.2	102.1	--	1.4	16.4	--	0.2

s Computed by subdividing day.

t Below 0.05 ton.

a Computed from water-sediment discharge curve.

b Computed from estimated concentration graph.

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

## SUSQUEHANNA RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--Continued

Suspended sediment, water year October 1967 to September 1968--Continued									
Day	Mean discharge (cfs)	July		Mean discharge (cfs)	August		Mean discharge (cfs)	September	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	0	--	0	0	--	0	6.6	7	0.1
2.....	0	--	0	1.1	50	s .2	4.6	7	.1
3.....	0	--	0	.6	13	(t)	4.6	8	.1
4.....	0	--	0	.4	11	(t)	3.5	--	a .1
5.....	0	--	0	.2	5	(t)	2.7	12	.1
6.....	0	--	0	0	--	0	1.8	2	(t)
7.....	0	--	0	.1	6	(t)	1.4		
8.....	0	--	0	0	--	0	1.0		
9.....	0	--	0	0	--	0	.8		
10.....	0	--	0	0	--	0	.7		
11.....	0	--	0	0	--	0	1.8	--	(b t)
12.....	0	--	0	.2	13	(t)	3.4	--	b .1
13.....	0	--	0	84	56	s 13	1.1	--	(b t)
14.....	0	--	0	50	19	s 3.0	.7	--	(b t)
15.....	0	--	0	15	13	.5	.7	--	(b t)
16.....	0	--	0	11	8	.2	.7	5	(t)
17.....	0	--	0	7.3	8	.2	.6		
18.....	0	--	0	25	20	s 1.6	.5		
19.....	0	--	0	15	7	.3	.4		
20.....	0	--	0	9.0	3	.1	.4		
21.....	0	--	0	10	4	.1	.3	2	(t)
22.....	0	--	0	12	4	.1	.3		
23.....	0	--	0	11	3	.1	.7		
24.....	0	--	0	7.3	--	a .1	2.0		
25.....	0	--	0	5.9	2	(t)	1.1		
26.....	0	--	0	5.3	3	(t)	.7	3	(t)
27.....	.4	29	s .1	4.6	7	.1	.6		
28.....	.8	17	(t)	2.0	9	.1	1.5		
29.....	.2	3	(t)	1.4	10	(t)	.7		
30.....	0	--	0	26	11	s 1.5	.6		
31.....	0	--	0	17	8	s .4	--	--	--
Total.	1.4	--	0.1	321.4	--	21.8	46.5	--	0.9
Total discharge for year (cfs-days) .....									2,770.3
Total load for year (tons) .....									709.9

s Computed by subdividing day.

t Below 0.05 ton.

a Computed from water-sediment discharge curve.

b Computed from estimated concentration graph.

## 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.

DRAINAGE AREA.--3,354 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953.

Water temperatures: October 1944 to June 1953.

Sediment records: January 1951 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 536 ppm Oct. 16; minimum daily, 1 ppm on several days.

Sediment loads: Maximum daily, 52,600 tons Oct. 17; minimum daily, 2 tons many days

during July and September.

EXTREMES, 1951-55.--Sediment concentrations: Maximum daily, 1,130 ppm Mar. 2, 1954;

minimum daily, 0 ppm several days.

Sediment loads: Maximum daily, 128,000 tons Mar. 2, 1954; minimum daily, 0 tons several days.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382. Flow affected by ice December 7-8, 22-23, January 16 to February 14.

Day	Suspended sediment, water year October 1954 to September 1955								
	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.....	580	2	3	2,050	4	22	4,480	15	181
2.....	648			2,330	4	25	4,110	10	111
3.....	635			2,500	10	68	3,990	9	97
4.....	635			3,280	17	151	3,750	8	81
5.....	537			3,630	15	147	3,510	10	95
6.....	830	5	21	3,510	22	208	3,040	10	82
7.....	1,090			3,040	14	115	2,600	10	70
8.....	2,060			2,930	13	103	2,300	9	56
9.....	2,080			2,520	12	71	2,160	10	58
10.....	1,780			2,390			2,440	12	79
11.....	1,170	4	11	2,110			2,520	14	95
12.....	1,040			2,130			2,330	10	63
13.....	835			1,870			2,200	12	71
14.....	858			1,950			2,260	5	31
15.....	1,070			1,810	10	48	5,760	81	s 1,310
16.....	20,800	536	s 42,400	1,810	6	26	10,900	101	s 3,030
17.....	40,400	470	s 52,600	1,760			9,600	25	648
18.....	17,800	250	12,000	1,680			8,020	25	541
19.....	8,190	125	2,760	1,460			11,900	48	1,540
20.....	5,670	50	765	1,910	23	119	11,900	32	1,030
21.....	4,480	35	423	4,650	185	sa 1,000	8,640	17	397
22.....	3,630	25	245	8,960	125	sa 3,000	6,200	22	368
23.....	3,160	25	213	8,640	65	1,520	5,200	15	211
24.....	2,590	8	47	6,520	35	616	4,870	17	224
25.....	2,330			5,400	24	350	4,740	10	128
26.....	2,050			4,740	17	218	4,240	10	114
27.....	1,990			4,240	6	64	3,750	8	81
28.....	1,870			3,870			3,630	2	20
29.....	1,720	4	19	3,750			3,630	3	29
30.....	1,720	2	9	4,360	23	271	8,780	63	s 1,990
31.....	1,910	5	26	--	--	--	22,000	172	s 10,400
Total.	136,158	--	111,870	101,600	--	8,702	175,450	--	23,231

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

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

## SUSQUEHANNA RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--Continued

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.....	20,800	94	5,230	1,200			7,140	78	s1,760
2.....	14,300	83	3,200	1,500			15,100	181	s7,570
3.....	10,900	46	1,350	1,300	3	11	15,600	154	s6,550
4.....	8,960	25	605	1,250			12,900	70	2,440
5.....	7,560	20	408	1,100			17,400	133	s6,600
6.....	6,810	18	331	1,050	4	14	26,900	206	s14,900
7.....	6,660	24	432	1,800			23,500	195	s12,500
8.....	6,090	19	312	4,200	15	170	16,400	70	3,100
9.....	5,260	15	213	5,400	38	554	11,900	38	1,220
10.....	4,870	10	131	5,300	67	959	9,660	30	782
11.....	4,610	9	112	5,500	55	817	8,330	35	787
12.....	4,360	10	118	5,200	18	253	8,330	40	900
13.....	4,110	10	111	4,400	30	356	8,020	50	1,080
14.....	3,870	14	146	3,500	33	312	7,410	45	900
15.....	3,750	17	172	3,160	30	256	6,520	32	563
16.....	3,100	14	117	3,160	22	188	6,090	30	493
17.....	3,000	10	81	3,160	20	171	6,380	37	637
18.....	2,700			3,870	33	345	5,950	35	562
19.....	1,800	8	44	3,510	27	256	5,670	28	429
20.....	1,600			3,750	27	273	5,400	19	277
21.....	1,500			4,240	20	229	5,870	18	285
22.....	1,500	8	33	4,870	23	302	18,100	181	s10,700
23.....	1,600			6,040	48	s822	32,900	255	s22,500
24.....	2,000			10,500	156	s4,500	26,900	128	9,300
25.....	2,100	8	41	10,000	114	s3,150	17,200	70	3,250
26.....	1,600			8,020	40	866	12,900	40	1,390
27.....	1,500			6,520	25	440	10,600	36	1,030
28.....	1,250	4	14	5,870	25	383	8,370	35	791
29.....	1,150			--	--	--	7,160	22	425
30.....	1,100	4	12	--	--	--	6,300	15	255
31.....	1,100	5	15	--	--	--	5,740	10	155
Total.	141,310	--	13,492	119,170	--	15,688	378,640	--	114,131
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.....	5,200			7,760	24	503	1,320		
2.....	4,810	8	105	6,580	22	391	1,260		
3.....	4,550			5,880	20	318	1,170	2	7
4.....	4,300			5,200	20	281	1,170		
5.....	3,800			4,680	18	227	1,320		
6.....	3,550	6	63	4,300			931	2	6
7.....	3,800			4,040	8	86	830		
8.....	3,020	6	51	3,870			1,090		
9.....	2,540			3,430			2,440	9	59
10.....	2,510			3,310	6	53	4,170	35	394
11.....	2,740	6	43	3,070			4,170	40	450
12.....	2,720			2,950			4,170	31	349
13.....	3,440	18	s180	2,860	3	23	4,170	28	315
14.....	4,680	35	s443	2,810			4,420	29	346
15.....	4,680	22	278	2,560			4,420	36	430
16.....	4,940	30	400	2,060	2	12	3,920	32	339
17.....	4,940	25	333	2,280			3,310	20	179
18.....	4,940	22	293	2,190			2,880	20	156
19.....	4,680	20	253	2,040	2	11	2,400	15	97
20.....	4,550	18	221	1,930			2,080		
21.....	5,470	30	443	1,760			1,930	6	30
22.....	12,300	170	s6,920	1,910			1,550		
23.....	22,800	250	s15,600	1,720	2	9	1,450		
24.....	17,500	105	4,960	1,760			1,390		
25.....	12,900	85	2,960	1,570			1,320	4	14
26.....	13,800	52	1,940	1,690			1,170		
27.....	15,500	52	2,180	1,810			1,120	--	b6
28.....	13,800	40	1,490	1,650			1,140		
29.....	11,600	35	1,100	1,350	2	8	1,060	2	6
30.....	9,310	25	628	1,430			1,060		
31.....	--	--	--	1,450	1	4	--	--	--
Total.	215,370	--	41,408	91,520	--	2,364	64,831	--	3,336

s Computed by subdividing day.

b Computed from estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

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

Suspended sediment, water year October 1954 to September 1955--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.....	1,040	2	6	591	2	3	1,970	20	106
2.....	1,070			569			2,280	18	111
3.....	993			536			1,430		
4.....	916			558			1,170		
5.....	830			569			1,090	2	6
6.....	830	2	6	547	2	3	1,070		
7.....	844			635			1,040		
8.....	1,170			832			978		
9.....	1,210			558	3	5	900		
10.....	1,740	5	23	648	2	3	931		
11.....	1,820	5	25	660	2	4	886	1	2
12.....	1,140	1	4	980	5	13	830		
13.....	1,320			4,720	135	s 2,920	802		
14.....	1,470			9,850	231	s 6,060	710		
15.....	905			6,580	100	1,780	900		
16.....	886	1	2	3,800	34	349	802	1	2
17.....	872			2,900	10	78	760		
18.....	802			3,550	11	s 176	710		
19.....	748			10,600	124	s 3,580	698		
20.....	722			8,680	56	1,310	648		
21.....	869	1	2	6,870	50	927	648	1	2
22.....	806			4,550	20	246	748		
23.....	613			3,670	5	50	624		
24.....	602			3,090	4	33	774		
25.....	648			2,840	2	15	946		
26.....	547	1	2	2,380	2	13	1,060	2	6
27.....	580			1,720	2	9	1,320		
28.....	735			1,470	2	8	1,120		
29.....	722			1,350	2	7	1,020		
30.....	591			1,300	2	7	1,010		
31.....	602	1	2	2,020	2	11	--	--	--
Total.	28,643	--	136	89,403	--	17,648	29,875	--	321
Total discharge for year (cfs-days).....									1,569,970
Total load for year (tons).....									352,327

s Computed by subdividing day.

## SUSQUEHANNA RIVER BASIN--Continued

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

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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. 30, 1954	6:00 p.m.	11,900		165	210		37	78	86	94	97	97	99		100		BWCM
Dec. 30	7:00 p.m.	12,600		155	394		51	75	80	96	97	99	100				BWCM
Dec. 31	9:00 a.m.	22,400		225	189		59	83	89	94	94	99	100				BWCM
Jan. 1, 1955	8:00 a.m.	9,900		165	257		62	66	80	88	92	95	100				BWCM
Feb. 24	12:45 p.m.	11,200		145	188		29	54	65	76	86	92	94		96	100	BWCM
Mar. 2	6:00 a.m.	13,200		120	129		44	64	79	88	92	98	100				BWCM
Mar. 2	11:45 a.m.	16,000		140	261		30	55	70	81	87	90	94		100		BWCM
Mar. 2	3:30 p.m.	17,400		182	255		20	43	66	80	86	93	97		100		BWCM
Aug. 19	7:30 a.m.	11,600		154	164		40	54	81	87	88	92	96		99		SBWCM



## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.

LOCATION.--At bridge on Pennsylvania Highway 850, 400 feet downstream from gaging station, 3.6 miles west of Loysville, Perry County, and 2.3 miles upstream from mouth.

DRAINAGE AREA.--15.0 square miles.

RECORDS AVAILABLE.--Sediment records: February 1954 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 459 ppm Aug. 11.

Sediment loads: Maximum daily, 449 tons Aug. 13; minimum daily, less than 0.05 tons on many days.

EXTREMES, February 1954 to September 1955.--Sediment concentrations: Maximum daily, 986 ppm June 10, 1954; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 449 tons Aug. 13, 1955; minimum daily, less than 0.05 ton on many days.

REMARKS.--Records of specific conductance and pH of periodic sediment samples available in district office at Philadelphia, Pa. Station established February 1954 as an index station for the Bixler Run Watershed Project. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Suspended sediment, water year October 1954 to September 1955

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.....	3.9			5.4	--	a 0.1	9.2	4	0.1
2.....	4.0			7.7	--	a.3	9.2		
3.....	4.2		b 0.1	19	--	a 1.6	8.4		
4.....	4.1			18	13	.6	7.2		
5.....	4.4			14	5	.2	7.2	--	b.1
6.....	7.5	15	.3	10	3	.1	6.4		
7.....	4.4			8.4	--	a.1	5.7		
8.....	4.1			7.6			5.7	4	.1
9.....	4.1			6.7			7.2		
10.....	4.1			6.2			7.6		
11.....	4.0		(bt)	5.7			6.7	--	b.1
12.....	4.0			5.7			6.2		
13.....	4.0			5.6	--	(b t)	6.2		
14.....	4.0			5.6			42	101	s 9.7
15.....	70	112	s 48	5.6			36	11	s 1.1
16.....	36	66	s 9.3	5.4			24	7	.5
17.....	13	15	.5	5.6			18	8	.4
18.....	8.4	10	.2	5.6	5	.1	46	25	s 4.0
19.....	6.7	9	.2	5.9	--	a.1	34	7	.6
20.....	5.7			21	46	s 3.3	25	5	.3
21.....	5.4			12	10	.3	18	--	a.3
22.....	5.0			8.4			15	--	a.1
23.....	4.9		b.1	7.2			16	--	a.2
24.....	4.8			7.6			16		
25.....	4.8			10	--	b.1	13		
26.....	4.8			7.2			11	--	b.1
27.....	4.9			6.7			11		
28.....	4.8	9	.1	6.9			12		
29.....	7.2	26	s.5	17	--	a 1.3	30	33	s 5.7
30.....	6.4	--	a.2	10	5	.1	101	69	s 22
31.....	5.6	--	a.1	--	--	--	45	17	2.1
Total.	259.2	--	61.2	267.7	--	8.9	605.9	--	48.8

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed on the basis of infrequent samples.

## SUSQUEHANNA RIVER BASIN--Continued

## BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	34	5	0.5	7.3			49	92	s13
2.....	32	9	.8	7.3			36	20	1.9
3.....	25	5	.3	8.4	--	b0.1	28	10	.8
4.....	23	3	.2	6.0			49	57	s8.0
5.....	21			6.0			50	20	2.7
6.....	23			14	--	a2.0	53	18	2.6
7.....	19			68	189	s42	40	--	a1.1
8.....	18			21	19	1.1	32	9	.8
9.....	17			16	6	.3	32	9	.8
10.....	16			17	15	.7	27	10	.8
11.....	15			32	121	s19	29	25	2.0
12.....	14			17	--	a.8	25	10	.7
13.....	14			15	--	a.6	22	5	.3
14.....	11			14	--	a.4	20	5	.3
15.....	13			14	--	a.4	20	11	.6
16.....	11			13	--	a.4	23	16	1.0
17.....	11	--	b.1	17	20	s1.1	19	8	.4
18.....	9.2			19			20	--	a.5
19.....	10			18	--	b1	19	8	.4
20.....	8.8			18			18	--	a.4
21.....	7.6			17	10	.5	46	79	s13
22.....	9.9			22	20	1.2	167	199	91
23.....	9.5			40	121	s18	94	98	s25
24.....	8.4			25	12	.8	61	70	11
25.....	7.6			22	5	.3	44	60	7.1
26.....	8.4			20	5	.3	41	40	4.4
27.....	6.8			19	4	.2	32	26	2.2
28.....	6.4			21	10	.6	27	--	a.8
29.....	6.9			--	--	--	25	--	a.5
30.....	6.9			--	--	--	23	--	a.3
31.....	5.6	2	(t)	--	--	--	21	--	a.3
Total.	429.0	--	4.4	532.0	--	94.2	1,192	--	194.7
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.....	20	--	a0.3	17			5.1		
2.....	19	5	.3	16			4.8	--	(b t)
3.....	18			15			4.6		
4.....	17			14			4.3	2	(t)
5.....	16			13			4.3		
6.....	16	--	b.2	12			4.3	--	(t)
7.....	15			11			4.6		
8.....	14			11			16	75	sc5.6
9.....	13			10			18	48	s2.9
10.....	12			10			9.1	30	.7
11.....	12	5	.2	10	--	b0.1	18	55	2.9
12.....	14			9.5			20		
13.....	14	--	b.3	9.1			14		
14.....	15			9.1			11	--	b.1
15.....	16	12	.5	8.4			8.8		
16.....	14			8.0			6.9		
17.....	13	--	b.2	7.6			6.3		
18.....	12			6.9			5.6		
19.....	12			6.9			5.6		
20.....	13	10	.4	6.9			5.3		
21.....	24	43	s3.4	6.3	2	(t)	5.1		
22.....	35	46	s5.2	6.3			5.1		
23.....	26	19	1.3	6.9			4.6	--	(b t)
24.....	23	--	a.9	6.6			4.8		
25.....	26	16	1.1	5.9			4.6		
26.....	26	10	.7	5.6	--	(b t)	5.1		
27.....	22	9	.6	5.3			5.3		
28.....	21	8	.5	5.3			5.3		
29.....	20	5	.3	7.4			4.6		
30.....	18	4	.2	6.3			4.6		
31.....	--	--	--	5.3			--	--	--
Total.	536	--	19.8	278.6	--	2.5	225.9	--	12.5

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed on the basis of infrequent samples.

c Computed from partly estimated concentration graph.

## SUSQUEHANNA RIVER BASIN--Continued

BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	4.8	--	e0.3	3.5			11	10	0.3
2.....	4.6	28	.3	3.3			9.5		
3.....	4.3			3.3	--	(b t)	9.5		
4.....	4.1			3.3			9.1		
5.....	4.1			3.3			8.8	--	b.1
6.....	4.1	--	b.3	9.6	218	s 14	8.0		
7.....	4.1			7.2	165	s 3.7	7.6		
8.....	4.3			14	216	s 12	6.9		
9.....	5.9	46	s.9	4.1	25	.3	6.9		
10.....	4.3			3.9	12	.1	6.9		
11.....	4.1			13	459	s 27	6.9		
12.....	3.7	--	b.2	7.3	175	s 3.2	6.9		
13.....	3.7			325	336	s 449	6.3		
14.....	3.7			52	33	5.7	6.3		
15.....	3.9			26	10	.7	6.3	--	(b t)
16.....	3.9	2	(t)	18	10	.5	6.3		
17.....	3.7			16	--	(a t)	6.3		
18.....	3.7			161	157	s 104	6.3		
19.....	3.5			103	77	s 28	6.3		
20.....	3.5	--	(t)	41	40	4.4	5.9		
21.....	3.5			29	40	3.1	5.3		
22.....	3.5			23	--	a 3.1	5.6		
23.....	3.5			21	50	2.8	6.6		
24.....	4.7	78	sc 1.6	17			16	156	s.8
25.....	7.4	359	s 10	15			8.0		
26.....	3.9			14	--	b.6	7.0		
27.....	3.7			13			6.6	--	b.1
28.....	3.7			11			9.0		
29.....	3.7	--	(b t)	11			7.4		
30.....	3.9			15	117	sc 8.5	8.0		
31.....	3.7			14	81	s 3.6	--	--	--
Total..	127.2	--	16.5	1,000.8	--	677.4	227.5	--	3.0

Total discharge for year (cfs-days) ..... 5,681.8

Total load for year (tons) ..... 1,143.3

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed on the basis of infrequent samples.

c Computed from partly estimated concentration graph.



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.--February 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum recorded, 82°F Aug. 2, 3; minimum, freezing point Jan. 28, 29.

EXTREMES, February 1952 to September 1955.--Water temperatures: Maximum recorded, 82°F Aug. 2, 3, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Temperatures only fair, probably because of friction in recorder. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955

/Water level recorder with thermograph 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
1.....	66	63	42	40	41	40	34	34	44	51	42	58	80	67
2.....	64	62	41	39	41	39	34	47	44	51	46	61	82	66
3.....	66	61	40	38	40	37	42	40	46	52	47	51	82	66
4.....	66	63	40	38	39	37	43	41	46	53	46	65	80	67
5.....	68	62	40	39	40	37	42	41	48	50	46	65	80	61
6.....	65	57	40	39	39	33	45	40	52	49	60	66	75	72
7.....	57	49	41	40	33	33	40	36	43	41	50	46	75	70
8.....	54	48	42	40	33	33	38	36	42	40	49	45	74	69
9.....	60	51	43	42	37	33	39	37	41	39	48	52	69	67
10.....	61	54	43	42	37	34	39	38	42	40	48	55	73	69
11.....	64	55	42	42	36	33	38	36	40	36	49	58	72	68
12.....	65	57	44	42	37	33	36	35	40	46	54	51	69	67
13.....	63	57	44	43	37	34	36	35	33	33	49	46	64	64
14.....	65	59	44	43	38	35	35	34	43	44	54	59	70	66
15.....	61	53	46	44	38	36	35	34	46	47	50	60	73	66
16.....	53	51	45	44	38	37	36	35	37	36	50	61	72	68
17.....	52	50	47	45	37	37	35	35	38	37	46	51	69	69
18.....	51	49	49	47	39	37	35	35	38	36	44	51	69	61
19.....	50	48	49	48	39	38	35	34	39	36	45	41	68	68
20.....	46	46	51	47	38	36	34	33	40	38	48	61	67	60
21.....	50	47	51	44	36	35	33	33	40	39	48	61	66	66
22.....	51	48	44	43	35	33	33	33	40	48	45	62	63	59
23.....	50	48	43	42	37	35	33	33	42	40	45	63	60	58
24.....	52	49	44	43	37	35	33	33	40	39	47	60	60	59
25.....	52	50	43	42	37	36	33	33	45	42	56	62	63	57
26.....	53	51	42	40	36	35	34	34	40	38	45	51	62	54
27.....	55	53	40	39	37	36	34	33	42	40	39	51	68	61
28.....	54	50*	41	39	40	37	33	42	38	58	61	55	76	62
29.....	50	49	40	40	41	40	34	32	43	39	56	49	67	64
30.....	49	45	40	40	42	41	34	34	46	39	57	62	73	65
31.....	45	42	43	42	43	42	34	36	40	40	53	67	70	59
Average.....	57	52	43	42	38	36	37	36	47	43	55	50	62	66

a. Temperature bulb out of water.

b. Temperature bulb covered with gravel.

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

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 84°F Aug. 3; minimum, freezing point on several days during January and February.

EXTREMES, 1947-55.--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 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, November 1954 to September 1955

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

## POTOMAC RIVER BASIN--Continued

## SOUTH BRANCH POTOMAC RIVER AT ROMNEY, W. VA.

LOCATION.--At water plant at Romney, Hampshire County, 18.6 miles upstream from gaging station near Springfield.

DRAINAGE AREA.--1,412 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to March 1951, October 1951 to September 1952, January 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 84°F Aug. 2-3; minimum, freezing point on several days during December to February.

EXTREMES, 1950-52, 1954-55.--Water temperatures: Maximum, 85°F June 29, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Water temperatures furnished by Water Department, Romney, W. Va.

Temperature (°F) of water, water year October 1954 to September 1955

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

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

## POTOMAC RIVER BASIN--Continued

## SOUTH BRANCH POTOMAC RIVER AT ROMNEY, W. VA.--Continued

Temperature (°F) of water, January to September 1954

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

Temperature (°F) of water, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.
1	63	54	36	42	36	42	53	55	69	77	78	76
2	64	50	36	45	41	40	53	59	68	75	77	77
3	66	46	38	45	42	40	52	60	68	79	78	75
4	66	45	42	43	43	40	53	60	71	80	80	72
5	66	43	43	40	44	40	54	60	72	79	78	71
6	68	43	45	41	42	39	48	62	72	79	79	71
7	69	45	47	37	40	38	47	63	75	80	78	72
8	65	43	49	35	39	42	44	60	73	78	78	69
9	63	42	46	35	41	41	44	60	77	77	79	67
10	60	44	46	38	40	42	47	62	72	74	78	68
11	58	47	40	38	43	44	49	61	73	73	78	69
12	58	46	42	38	44	44	52	55	70	75	78	69
13	57	45	39	34	41	44	51	54	70	79	80	69
14	56	51	32	40	40	44	51	54	73	78	78	70
15	57	50	32	44	37	43	52	59	74	78	77	74
16	61	50	36	47	39	40	48	60	77	80	78	71
17	60	48	32	48	40	39	50	60	80	80	77	70
18	60	46	35	47	41	42	51	61	76	81	76	69
19	60	40	35	45	40	43	52	60	76	82	76	69
20	63	44	36	43	42	43	54	57	77	81	77	76
21	65	32	33	41	42	44	56	55	75	82	78	67
22	62	36	32	40	40	44	59	59	70	84	77	65
23	60	44	32	38	38	52	62	62	73	84	74	63
24	60	43	32	37	40	52	59	65	73	83	73	64
25	58	45	38	36	41	47	54	66	76	79	72	63
26	58	44	38	37	43	47	51	59	80	80	72	64
27	59	40	36	43	40	47	51	65	81	80	73	65
28	56	38	34	47	40	47	52	68	83	80	75	64
29	56	37	38	42	41	48	52	69	85	81	74	65
30	55	36	36	36	--	48	53	65	83	80	75	65
31	54	--	40	34	--	47	--	66	--	79	77	--
Average	61	44	38	41	41	44	52	61	75	81	77	69



## POTOMAC RIVER BASIN--Continued

## SOUTH BRANCH POTOMAC RIVER AT ROMNEY, W. VA.--Continued

Temperature (°F) of water, October 1950 to March 1951

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

POTOMAC RIVER BASIN--Continued  
POTOMAC RIVER AT HANCOCK, MD.

LOCATION.--Temperature recorder at gaging station on left bank 0.2 mile downstream from Little Tonoloway Creek, half a mile downstream from new highway bridge at Hancock, Washington County, and 1.1 miles upstream from Tonoloway Creek (formerly called Great or Big Tonoloway Creek).

DRAINAGE AREA.--4,073 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 92°F July 17, Aug. 2, 3, 5; minimum, 33°F Dec. 7-11, 22-28, Jan. 18 to Feb. 10, Feb. 16, 17.

EXTREMES, 1952-55.--Water temperatures: Maximum, 93°F July 22, 1952; minimum, 33°F on many days during winter months.

REMARKS.--Temperatures only fair, probably because of friction in recorder. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955

(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.....	79	74	51	48	41	41	40	40	33	33	47	43	48	43	60	57	73	70	82	79	90	79	79	77
2.....	77	74	48	46	41	40	40	40	33	33	48	47	51	47	63	59	71	69	84	80	92	83	76	75
3.....	78	73	46	43	40	39	40	40	33	33	48	47	53	49	64	62	72	68	87	81	92	83	76	74
4.....	76	74	43	42	39	38	41	40	33	33	48	47	54	50	66	63	74	69	89	81	91	83	74	73
5.....	75	73	42	42	38	37	41	41	33	33	49	48	54	51	69	66	77	71	90	84	92	84	77	73
6.....	73	67	42	41	37	35	41	41	33	33	50	49	53	52	69	67	81	74	85	81	91	84	78	75
7.....	67	62	41	41	35	33	41	40	33	33	50	48	52	48	69	66	73	74	87	72	86	84	78	73
8.....	63	60	41	40	33	33	40	39	33	33	48	47	48	46	70	68	74	64	84	83	97	81	76	73
9.....	65	60	43	41	33	33	39	39	33	33	44	42	52	49	68	65	64	61	85	81	92	79	74	72
10.....	68	63	43	41	33	33	39	38	35	33	46	43	55	52	67	65	61	60	87	83	90	77	76	71
11.....	70	65	43	41	34	33	38	37	35	35	49	46	55	55	67	64	63	61	87	84	82	78	77	74
12.....	73	67	43	42	34	34	37	36	35	35	52	49	57	55	69	65	63	63	85	82	80	76	76	73
13.....	74	69	43	41	34	34	36	36	35	34	53	52	57	55	69	65	63	62	85	82	76	72	73	71
14.....	75	70	43	41	38	34	36	35	34	34	53	51	56	55	65	64	62	62	86	81	72	68	72	68
15.....	73	60	43	43	38	38	35	35	34	34	53	51	57	56	67	65	63	61	88	83	71	69	75	69
16.....	60	58	43	41	38	38	35	35	34	33	52	51	59	56	67	65	66	63	90	85	74	71	77	71
17.....	58	57	46	43	38	38	35	35	35	33	52	49	59	58	66	65	70	66	92	85	75	74	76	74
18.....	57	56	47	46	38	38	35	35	35	34	49	48	58	58	67	64	72	70	89	85	75	72	80	74
19.....	56	56	50	47	38	38	33	33	37	35	49	48	60	57	67	65	72	72	90	83	72	69	77	75
20.....	56	54	51	50	38	37	33	33	37	36	48	47	60	60	69	67	76	72	90	82	71	70	79	74
21.....	54	53	51	51	37	34	33	33	38	37	48	47	62	60	72	69	78	74	91	82	74	71	75	72
22.....	54	53	51	49	34	33	33	33	40	38	48	47	64	62	71	71	80	76	91	82	73	73	72	69
23.....	54	53	49	47	33	33	33	33	41	39	47	47	64	62	74	71	80	77	90	82	76	74	69	66
24.....	54	53	49	47	33	33	33	33	41	39	47	47	64	62	77	74	80	77	85	82	74	74	66	63
25.....	56	55	45	44	33	33	33	33	41	38	47	46	62	56	77	74	79	73	89	81	74	72	70	65
26.....	56	56	44	44	33	33	33	33	40	39	47	46	56	55	76	73	74	71	90	81	73	71	67	65
27.....	57	56	44	42	33	33	33	33	40	39	46	43	55	53	77	74	74	72	90	82	74	72	66	65
28.....	57	55	42	41	34	33	33	33	43	40	54	52	54	52	79	76	75	72	91	84	76	73	70	65
29.....	56	55	42	41	36	34	33	33	--	--	42	40	54	54	79	76	78	74	87	82	79	76	71	66
30.....	55	53	41	41	38	36	33	33	--	--	43	40	57	55	78	76	80	76	83	81	81	78	68	67
31.....	53	51	--	--	40	38	33	33	--	--	45	41	--	--	77	73	--	--	84	79	81	79	--	--
Average.....	64	61	45	44	36	35	36	36	36	35	48	46	56	54	70	68	72	69	88	82	80	76	74	71

## POTOMAC RIVER BASIN--Continued

## SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.

LOCATION --At gaging station at highway bridge, 1.0 mile west of Front Royal, Warren County, and 3.5 miles upstream from confluence with North Fork. DRAINAGE AREA --1,638 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1948 to September 1949, October 1952 to September 1955.

Water temperatures: October 1952 to September 1955.

Sediment records: April 1953 to September 1955.

EXTREMES, 1954-55 --Hardness: Maximum, 161 ppm Oct. 1-10; minimum, 71 ppm Aug. 11-20.

Specific conductance: Maximum daily, 369 microhos Oct. 7; minimum daily, 85.8 microhos Aug. 18.

Water temperatures: Maximum, 90°F July 5; minimum, 33°F on several days during January and February.

Sediment concentrations: Maximum daily, 1,170 ppm Oct. 17; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 183,000 tons Aug. 19; minimum daily, 1 ton on several days.

EXTREMES, 1952-55 --Hardness: Maximum, 172 ppm Oct. 21-31, 1953; minimum, 65 ppm Feb. 23-28, 1953.

Specific conductance: Maximum daily, 405 microhos Dec. 16, 1953; minimum daily, 85.8 microhos Aug. 18, 1955.

Water temperatures: Maximum, 90°F July 5, 1955; minimum, freezing point on several days during January and February 1953 and January 1954.

Sediment concentrations (April 1953 to September 1955): Maximum daily, 1,170 ppm Oct. 17, 1954; minimum daily, 1 ppm on many days during each year.

Sediment loads (April 1953 to September 1955): Maximum daily, 183,000 tons Aug. 19, 1955; minimum daily, 1 ton on several to many days during each year.

REMARKS --Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	381	4.8	0.00	38	16	10	3.3	185	17	11	0.0	0.6	202	161	9	348	7.9	8
Oct. 11-20	3,477	--	.06	31	10	--	--	130	13	--	--	--	--	118	12	263	7.8	45
Oct. 21-31	700	--	.06	30	7.8	--	--	111	12	--	--	--	--	107	16	233	7.9	15
Nov. 1-10	586	--	.00	38	12	--	--	151	14	--	--	--	--	144	20	302	7.9	8
Nov. 11-20	523	--	.00	37	12	--	--	152	14	--	--	--	--	142	17	299	8.1	6
Nov. 21-30	3,548	--	.01	24	5.5	--	--	83	8.8	--	--	--	--	82	14	176	7.5	10
Dec. 1-10	1,066	--	.02	32	9.7	--	--	122	12	--	--	--	--	120	20	248	7.9	7
Dec. 11-20	1,975	--	.04	29	8.8	--	--	111	13	--	--	--	--	109	18	230	7.5	7
Dec. 21-31	2,560	--	.05	26	6.2	--	--	96	15	--	--	--	--	90	12	202	7.5	5
Jan. 1-10, 1955	2,946	7.2	.01	23	5.1	2.4	1.3	85	8.7	3.4	.1	4.5	98	78	9	173	7.5	7
Jan. 11-20	1,218	--	.00	32	8.3	--	--	131	11	--	--	--	--	114	7	244	8.1	10
Jan. 21-31	741	--	.00	36	10	--	--	151	11	--	--	--	--	131	7	274	8.3	5
Feb. 1-10	1,892	--	.02	33	9.3	--	--	134	10	--	--	--	--	121	11	253	7.9	25
Feb. 11-20	1,851	--	.00	24	5.5	--	--	93	9.8	--	--	--	--	82	6	184	8.0	8
Feb. 21-28	1,308	--	.00	30	7.5	--	--	121	10	--	--	--	--	106	7	224	8.3	5
Mar. 1-10	5,290	--	.06	24	5.1	--	--	94	9.0	--	--	--	--	81	1	181	7.7	20
Mar. 11-20	2,709	--	.03	26	5.4	--	--	100	8.6	--	--	--	--	87	5	195	7.8	9
Mar. 21-31	3,569	--	.06	24	5.0	--	--	93	7.5	--	--	--	--	80	4	181	7.9	15

POTOMAC RIVER BASIN--Continued  
SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.--Continued  
Chemical analyses, in parts per million, water year October 1954 to September 1955--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			
Apr. 1-10, 1955.....	1,514	2.8	0.00	32	9.4	3.0	1.2	126	11	4.4	0.0	3.6	128	118	15	232	8.2	5
Apr. 11-20.....	2,246	--	--	34	8.6	--	--	118	8.1	--	--	--	--	120	24	217	7.8	15
Apr. 21-30.....	1,988	--	.02	26	7.0	--	--	94	8.3	--	--	--	--	94	17	183	7.6	6
May 1-10.....	1,157	--	.02	30	9.7	--	--	118	8.8	--	--	--	--	115	18	218	8.2	5
May 11-20.....	1,239	--	.02	34	11	--	--	133	9.2	--	--	--	--	130	21	241	8.1	5
May 21-31.....	1,222	--	.02	31	10	--	--	126	7.6	--	--	--	--	118	15	226	8.3	5
June 1-10.....	1,741	--	.00	29	9.9	--	--	117	9.0	--	--	--	--	113	17	221	7.8	20
June 11-20.....	3,063	--	.05	25	3.6	--	--	87	19	--	--	--	--	85	14	170	7.6	25
June 21-30.....	1,007	--	.04	26	8.7	--	--	114	15	--	--	--	--	100	7	206	8.1	15
July 1-10.....	987	3.4	.04	25	10	5.2	1.7	129	5.8	6.2	.0	.7	136	104	0	232	8.3	5
July 11-20.....	1,841	--	.03	28	12	--	--	135	11	--	--	--	--	119	9	239	8.5	8
July 21-31.....	587	--	.02	23	11	--	--	116	7.2	--	--	--	--	103	8	209	8.8	10
Aug. 1-10.....	799	--	.00	25	12	--	--	136	14	--	--	1.1	--	112	0	238	8.5	3
Aug. 11-20.....	16,703	--	.05	19	5.8	--	--	83	12	--	--	2.6	--	71	4	161	7.9	20
Aug. 21-31.....	8,272	--	.00	28	8.0	--	--	110	9.1	--	--	3.4	--	103	13	200	8.3	3
Sept. 1-10.....	1,594	--	.00	32	10	--	--	142	14	--	--	2.1	--	121	5	244	8.4	3
Sept. 11-20.....	1,065	2.9	.03	20	11	3.6	1.5	133	12	5.6	.0	1.1	128	118	9	239	8.1	5
Sept. 21-30.....	748	4.0	.03	34	13	4.7	1.6	148	12	7.1	.0	1.9	140	138	17	264	8.2	5
Average.....	2,159	--	0.02	29	8.9	--	--	119	11	--	--	--	--	113	11	223	--	10

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

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

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

## POTOMAC RIVER BASIN--Continued

## SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	48	42	47	36	52	51	63	72	84	87	77
2	75	45	42	45	33	51	53	67	70	87	88	75
3	75	45	41	45	33	50	54	67	71	88	88	74
4	77	43	40	45	33	54	54	70	73	88	89	78
5	77	45	40	44	33	54	56	74	75	90	88	75
6	72	45	38	46	33	52	55	71	80	86	86	76
7	64	44	36	43	35	48	55	70	76	87	85	76
8	60	47	35	40	37	47	53	70	71	87	79	74
9	62	47	38	39	38	47	56	69	67	84	76	74
10	65	47	39	41	42	51	60	69	66	85	75	75
11	68	46	38	39	40	51	61	69	68	84	79	77
12	71	47	36	36	35	53	64	72	68	83	77	76
13	73	46	36	38	33	54	58	68	67	82	69	73
14	73	48	37	38	33	54	59	64	66	83	71	72
15	71	48	38	39	37	54	60	66	68	85	73	74
16	60	47	38	38	39	58	64	70	72	87	75	77
17	58	49	38	38	41	52	63	69	74	87	75	75
18	56	51	40	36	41	52	61	69	76	88	70	77
19	--	54	39	36	42	50	62	70	72	87	71	75
20	54	55	38	36	44	51	64	73	76	87	72	77
21	55	53	36	35	45	51	66	74	77	88	75	74
22	57	52	34	36	46	52	66	73	78	89	77	72
23	57	49	37	36	47	51	67	77	81	87	75	68
24	60	49	38	36	45	53	67	79	80	84	75	68
25	58	--	38	36	45	49	63	79	75	86	74	69
26	58	45	37	37	44	--	61	76	--	87	76	68
27	60	44	39	36	46	42	58	79	75	89	75	67
28	58	44	44	--	51	44	60	80	79	89	76	70
29	55	44	44	33	--	44	62	83	80	84	79	71
30	53	43	45	33	--	46	63	80	82	81	80	69
31	48	--	45	33	--	49	--	75	--	82	78	--
Average	64	47	39	39	39	51	60	72	74	86	78	73

## POTOMAC RIVER BASIN--Continued

## SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	264	2	2	731	5	10	1,400	5	20
2.....	376	2	2	666	5	9	1,300	4	14
3.....	368	2	2	616	3	5	1,150	4	12
4.....	388	1	1	666	4	7	1,130	4	12
5.....	376	1	1	592	3	5	1,090	3	9
6.....	376	1	1	520	3	4	1,090	5	15
7.....	376	1	1	532	3	4	854	3	7
8.....	376	1	1	604	2	3	1,050	4	11
9.....	412	1	1	520	2	3	757	2	4
10.....	376	1	1	508	2	3	840	3	7
11.....	352	1	1	496	2	3	882	3	7
12.....	340	1	1	484	2	3	1,160	4	13
13.....	328	1	1	460	1	1	1,110	3	9
14.....	316	1	1	400	1	1	1,460	4	16
15.....	2,170	112	656	412	1	1	2,240	12	73
16.....	14,800	1,108	44,300	436	1	1	2,520	17	115
17.....	9,550	1,170	30,200	400	1	1	2,240	10	60
18.....	3,380	524	4,780	436	1	1	2,100	8	45
19.....	2,100	213	a 1,210	484	1	1	2,520	8	54
20.....	1,430	78	301	1,220	25	82	3,520	20	190
21.....	1,160	34	106	7,500	252	5,100	3,080	24	200
22.....	1,010	22	60	7,700	218	4,530	2,520	27	184
23.....	770	17	35	5,250	97	1,370	2,100	14	79
24.....	692	13	24	3,600	49	476	1,890	8	41
25.....	568	10	15	2,800	27	a 204	1,740	5	23
26.....	556	8	12	2,240	13	79	1,570	3	13
27.....	604	7	11	1,890	8	41	1,410	3	11
28.....	486	6	8	1,800	7	30	1,250	2	7
29.....	556	5	8	1,530	6	25	1,400	2	8
30.....	604	6	10	1,370	5	18	2,660	13	93
31.....	679	5	9	--	--	--	8,540	243	5,600
Total.	46,269	--	81,762	46,663	--	12,021	58,573	--	6,952
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.....	6,390	222	3,830	653	3	5	1,540	2	8
2.....	4,500	82	996	592	1	2	1,650	3	13
3.....	3,520	36	342	757	2	4	1,670	2	9
4.....	2,940	22	175	692	2	4	1,720	3	14
5.....	2,520	14	95	718	1	a 2	2,450	19	126
6.....	2,310	11	69	653	2	4	9,250	274	6,840
7.....	2,100	9	51	1,890	56	286	13,400	580	21,000
8.....	1,890	7	36	6,050	233	3,810	10,200	524	14,400
9.....	1,720	5	23	3,900	432	4,550	6,220	189	3,170
10.....	1,570	5	21	3,010	151	1,230	4,800	73	946
11.....	1,510	4	16	2,590	44	308	3,900	44	463
12.....	1,460	4	16	2,450	24	159	3,380	39	356
13.....	1,370	3	11	2,240	15	91	3,150	37	315
14.....	1,290	3	10	2,100	8	45	2,800	24	181
15.....	1,230	3	10	1,890	6	31	2,520	24	163
16.....	1,150	2	6	1,650	4	18	2,380	24	154
17.....	1,090	3	9	1,540	3	12	2,380	24	154
18.....	1,090	2	6	1,470	3	12	2,310	24	150
19.....	1,040	2	6	1,360	2	7	2,170	19	111
20.....	952	2	5	1,220	2	7	2,100	18	102
21.....	910	2	5	1,200	2	6	2,170	17	100
22.....	868	1	2	1,110	2	6	2,660	33	237
23.....	812	2	4	1,160	2	6	6,610	185	3,300
24.....	744	1	2	1,260	2	7	6,390	266	4,590
25.....	798	1	2	1,460	2	8	4,650	105	1,320
26.....	770	1	2	1,410	1	4	3,750	51	516
27.....	705	2	4	1,430	2	8	3,300	32	285
28.....	568	3	a 5	1,430	2	8	2,870	23	178
29.....	705	4	8	--	--	--	2,520	16	109
30.....	679	2	4	--	--	--	2,240	10	61
31.....	592	3	5	--	--	--	2,100	10	57
Total.	49,793	--	5,776	47,885	--	10,640	119,250	--	59,428

a Computed from estimated concentration graph.

## POTOMAC RIVER BASIN--Continued

## SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	1,980	7	37	1,470	15	60	994	6	16
2.....	1,820	9	44	1,460	12	47	952	6	15
3.....	1,690	9	41	1,300	10	35	882	4	10
4.....	1,610	8	35	1,260	9	31	784	5	11
5.....	1,510	7	29	1,150	8	25	812	6	13
6.....	1,440	6	23	1,090	7	21	812	7	15
7.....	1,390	6	23	1,040	6	17	868	8	19
8.....	1,330	6	22	1,010	6	16	1,550	37	155
9.....	1,300	13	46	910	7	17	5,410	180	2,630
10.....	1,090	4	12	882	6	14	4,350	474	5,570
11.....	1,160	4	13	868	7	16	3,220	425	3,690
12.....	1,230	4	13	812	6	13	3,600	252	2,450
13.....	1,690	6	27	938	3	8	5,680	218	3,460
14.....	1,890	13	66	1,130	6	18	4,500	230	2,790
15.....	1,890	13	66	1,270	6	21	3,380	142	1,300
16.....	3,450	61	568	1,370	6	22	2,730	77	568
17.....	3,380	59	538	1,600	7	30	2,310	59	368
18.....	2,870	46	356	1,500	6	24	1,960	39	206
19.....	2,590	43	301	1,440	5	19	1,750	24	113
20.....	2,310	35	218	1,360	4	15	1,500	17	69
21.....	2,170	34	199	1,200	4	13	1,340	16	58
22.....	2,240	54	327	1,050	4	11	1,150	12	37
23.....	2,030	32	175	1,150	4	12	994	11	30
24.....	1,960	31	164	1,220	6	20	987	10	27
25.....	2,030	31	170	1,750	6	28	980	8	21
26.....	2,240	34	206	1,320	5	18	966	7	a 17
27.....	2,030	27	148	1,390	4	15	924		
28.....	1,890	24	122	1,150	5	16	952		
29.....	1,720	20	93	1,160	5	16	938		
30.....	1,570	16	68	1,040	5	14	840	--	--
31.....	--	--	--	1,010	6	16	--		
Total.	57,480	--	4,150	37,300	--	648	58,315	--	2 <sup>a</sup> 726
	July			August			September		
1.....	784	4	8	653	1	2	1,700	8	37
2.....	666			568	1	2	1,580	5	21
3.....	744			544	2	3	1,490	9	36
4.....	616			616	1	2	1,760	12	57
5.....	692			616	3	5	1,890	9	46
6.....	640	6	13	679	4	11	1,620	11	54
7.....	705			966			1,580	6	26
8.....	784			1,130			1,490	4	16
9.....	798			1,220			1,370	3	11
10.....	544			994			1,260	2	7
11.....	744	5	10	938	109	512	1,230	2	7
12.....	1,190	5	16	1,740			1,120	2	6
13.....	1,400	6	23	14,500			1,180	2	6
14.....	826	5	11	9,100			1,230	1	3
15.....	718	5	10	4,800			962	1	3
16.....	744	2	4	3,680	87	864	1,010	1	3
17.....	666	3	a 5	5,270	141	2,010	973	1	3
18.....	532	5	7	50,800	1,133	155,000	1,030	1	3
19.....	520	3	4	59,300	1,146	163,000	940	1	3
20.....	568	3	5	16,900	262	12,000	973	2	5
21.....	592	2	3	7,310	97	1,910	898	1	2
22.....	692	6	11	5,100	58	799	745	1	2
23.....	616	5	8	4,500	78	948	785	1	2
24.....	388	4	4	3,600	56	544	785	2	4
25.....	496	3	4	3,010	36	293	716	1	2
26.....	556	2	3	2,590	28	196	745	1	2
27.....	666	5	9	2,310	22	137	755	1	2
28.....	604	4	7	2,030	18	99	716	2	4
29.....	604	2	3	1,690	13	66	679	1	2
30.....	508	4	5	1,760	9	43	669	1	2
31.....	840	1	2	1,890	19	97	--	--	--
Total.	21,443	--	237	211,004	--	386,088	34,081	--	377
Total discharge for year (cfs-days).....									78 <sup>a</sup> 056
Total load for year (tons).....									59 <sup>a</sup> 805

a Computed from estimated concentration graph.

POTOMAC RIVER BASIN--Continued  
SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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	
Oct. 16, 1954.....	6:50 a.m.	15,600		1,300	3,560	48	66	84	94	98	98	100		--	--	BWMC
Mar. 6, 1955.....	6:55 p.m.	12,600		462	1,420	22	40	77	84	92	95	99		100	--	BN
June 9.....	7:45 p.m.	6,590		189	252	30	62	77	92	97	98	99		100	--	BWMC
June 9.....	8:45 a.m.	6,800		205	582	38	75	91	97	98	100	--		--	--	BWMC
June 9.....	8:45 a.m.	6,800		225	543	23	50	76	87	91	92	93		99	100	BN
Aug. 13.....	3:08 p.m.	20,700		785	1,900	19	40	60	81	91	91	92		98	99	BN
Aug. 18.....	8:28 p.m.	61,300		1,200	3,080	35	56	78	94	98	98	98		99	100	BWMC
Aug. 18.....	8:28 p.m.	61,300		1,200	2,880	23	37	56	80	100	--	--		--	--	BN



POTOMAC RIVER BASIN--Continued  
LINGANORE CREEK NEAR FREDERICK, MD.

LOCATION.--Temperature recorder at gaging station on left bank, 2½ miles upstream from mouth, and 4 miles east of Frederick, Frederick County.  
DRAINAGE AREA.--82.3 square miles.  
RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1955.  
EXTREMES, 1954-55.--Water temperatures: Maximum, 87°; Aug. 2, 3, 5, 6; minimum, freezing point on several days during January and February.  
EXTREMES, 1951-55.--Water temperatures: Maximum, 88°; July 31, 1954; minimum, freezing point on many days during winter months.  
REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	73	69	46	43	39	38	39	38	33	33	32	(a)	54	47	67	60	68	63	77	81	85	71	72	89
2.....	71	70	45	42	38	37	44	39	32	32	(a)	(a)	56	50	68	58	67	62	81	71	87	71	69	88
3.....	74	67	42	41	37	36	42	39	32	(a)	(a)	(a)	58	52	67	60	70	62	84	74	87	76	68	88
4.....	74	70	43	40	36	34	43	40	35	35	32	51	47	57	50	71	60	73	61	85	74	86	71	87
5.....	72	69	45	43	37	35	41	38	35	35	31	47	56	49	74	64	64	61	85	76	87	78	72	89
6.....	70	62	44	40	37	34	41	39	34	34	47	43	53	52	61	63	79	67	78	74	87	78	72	89
7.....	62	54	43	38	34	34	39	36	32	32	43	40	52	48	69	59	73	69	82	72	80	76	73	89
8.....	55	51	43	38	34	34	36	35	35	35	41	37	52	45	69	64	69	60	76	72	79	75	69	85
9.....	59	53	44	40	34	34	36	35	35	35	48	41	58	48	87	59	60	59	77	71	75	72	(b)	(b)
10.....	62	55	43	39	35	34	37	36	35	35	51	47	62	51	63	60	65	59	77	74	76	70	(b)	(b)
11.....	66	58	42	37	36	35	37	35	33	33	53	51	59	54	65	60	66	63	79	72	82	73	(b)	(b)
12.....	66	62	43	38	36	34	35	33	33	33	53	51	59	54	65	60	66	63	79	72	82	73	(b)	(b)
13.....	60	64	42	39	36	33	34	33	33	33	54	50	57	53	66	59	66	63	78	70	71	69	(b)	(b)
14.....	69	65	44	38	36	34	38	34	33	33	54	48	58	53	63	53	63	62	75	69	72	68	(b)	(b)
15.....	68	65	44	41	39	39	34	33	33	33	50	49	61	56	67	58	68	60	82	73	75	72	(b)	(b)
16.....	65	57	43	40	39	38	34	33	33	(a)	54	49	66	57	70	59	73	64	85	77	75	73	(b)	(b)
17.....	58	53	47	43	38	37	34	33	33	33	51	46	61	56	68	60	76	66	86	77	74	73	70	69
18.....	53	50	50	47	39	37	33	33	33	33	47	44	59	55	67	56	76	68	85	77	(a)	(a)	72	68
19.....	53	50	52	50	39	37	34	33	33	33	49	44	66	58	66	57	72	69	84	77	(a)	(a)	70	67
20.....	53	48	54	52	37	34	33	32	32	32	50	44	64	58	70	61	76	67	83	75	(a)	(a)	74	69
21.....	53	48	44	49	34	34	34	33	32	32	48	45	62	57	74	63	77	69	85	75	(a)	(a)	70	66
22.....	53	49	49	44	34	34	34	33	32	32	49	46	67	59	69	66	79	70	85	74	(a)	(a)	66	63
23.....	53	47	44	41	34	34	32	32	32	32	48	41	70	62	77	68	78	69	85	76	(a)	(a)	63	62
24.....	55	49	42	41	34	34	32	32	32	32	49	46	67	63	78	69	77	70	80	76	(a)	(a)	64	62
25.....	55	50	42	40	34	34	32	32	32	32	49	45	63	57	71	71	71	65	88	75	71	69	66	62
26.....	53	51	41	40	34	34	33	32	32	32	48	42	57	54	77	68	67	62	84	75	71	67	63	59
27.....	56	52	40	38	34	34	32	32	32	32	42	38	54	54	76	67	69	63	86	76	72	68	62	58
28.....	54	50	41	38	35	34	33	32	32	32	42	36	63	52	72	69	73	63	85	78	73	69	66	61
29.....	53	50	42	40	35	35	33	33	33	33	42	36	60	57	79	70	76	65	81	76	74	71	66	62
30.....	51	47	40	38	42	41	33	33	--	--	49	40	66	57	72	68	76	68	77	74	77	72	64	63
31.....	48	45	--	--	41	38	33	33	--	--	51	45	--	--	70	66	--	--	79	73	74	72	--	--
Average.....	61	53	44	41	37	35	35	34	--	--	43	43	53	53	72	73	73	73	83	74	--	--	--	--

a Recorder stopped; range in temperature only from Feb. 4 to Mar. 3, Aug. 18-24; maxima 50° and 75°F, minima 33° and 69°F respectively during these periods.

b Pen not marking; no range in temperature available.

## POTOMAC RIVER BASIN--Continued

## ACCOTINK CREEK NEAR ACCOTINK STATION, VA.

LOCATION.--Samples taken at bridge on U. S. Highway 1, near Accotink, Fairfax County.

DRAINAGE AREA.--37.0 square miles (at gaging station).

REMARKS.--Samples taken from river surface. Records of discharge for Accotink Creek near Accotink station, Va., for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, October 1954 to August 1955

Date of collection	Time	Mean discharge (cfs)	Bicarbonate (HCO <sub>3</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Turbidity
						Calcium, magnesium	Non-carbonate			
Oct. 6, 1954.....	10:15 a.m.	3.0	37	9.2	--	24	0.0	101	7.0	6.2
Oct. 14.....	10:50 a.m.	2.2	30	11	0.2	21	0	88.8	7.0	3.0
Oct. 21.....	--	1.3	23	9.0	.6	26	7	79.8	6.8	10
Nov. 4.....	10:15 a.m.	1.4	13	6.0	1.5	20	9	70.8	6.8	64
Nov. 12.....	--	.6	17	5.0	.4	15	3	58.3	6.6	22
Dec. 20.....	1:17 p.m.	7.3	19	8.0	2.8	25	9	96.6	6.7	36
Jan. 25, 1955.....	10:25 a.m.	16	26	9.2	3.0	54	32	99.5	7.1	20
Feb. 8.....	--	40	38	8.5	--	--	--	103	7.1	--
Feb. 17.....	--	13	12	6.8	2.2	22	12	87.1	6.6	80
Mar. 3.....	--	9.1	18	11	--	--	--	101	6.8	--
Mar. 10.....	10:30 a.m.	28	16	7.0	2.0	25	12	82.9	6.9	91
Mar. 24.....	9:50 a.m.	42	18	4.8	2.0	26	12	79.9	7.2	71
Apr. 7.....	12:00 p.m.	14	20	6.4	.5	28	12	83.6	7.3	8.5
Apr. 28.....	11:00 a.m.	29	26	6.3	--	22	1	82.2	7.2	22
May 16.....	1:45 p.m.	17	26	6.1	--	23	2	82.0	7.0	6.0
May 27.....	10:05 a.m.	16	25	6.1	--	25	4	82.2	7.0	25
June 6.....	10:15 a.m.	7.4	33	6.5	--	20	0	90.0	7.0	6.0
June 22.....	1:00 p.m.	9.7	26	5.4	--	24	2.7	78.3	7.4	25
July 5.....	10:00 a.m.	5.0	35	7.3	--	33	4	94.1	6.9	8.8
July 26.....	1:20 p.m.	4.6	16	5.2	--	17	4	69.7	7.2	56
Aug. 4.....	11:00 a.m.	3.0	36	12	--	26	0	108	7.0	11
Aug. 22.....	--	35	14	4.6	--	19	8	62.1	6.7	52

POTOMAC RIVER BASIN--Continued  
POTOMAC RIVER AT GUNSTON COVE, VA.

LOCATION.--At Gunston Cove, 2,000 feet south of APPR No. 1 site, Fort Belvoir, Fairfax County, Va.  
DRAINAGE AREA.--11,560 square miles (at gaging station near Washington, D.C.).

REMARKS.--Samples taken from river surface at predicted high and low tides. Records of discharge for Potomac River near Washington, D.C. for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Mean discharge (cfs)	Pre-dicted tide stage	Silica (SiO <sub>2</sub> )	Alum-inum (Al)	Iron (Fe)	Mang- anese (Mn)	Cal-cium (Ca)	Mag- ne-sium (Mg)	Sod- ium (Na)	Pot- as- 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> Calcium, mag- nesium	Total acid- ity as H <sub>2</sub> SO <sub>4</sub>	Specific conduct- ance (micro- mhos at 25°C)	pH	Tur- bidity
Oct. 6, 1954	1,090	high	0.4	0.0	--	--	39	20	130	7.0	105	74	228	0.3	2.0	589	180	94	1,070	7.4	22
2:01 p.m.		low	.4	.1	--	--	38	20	124	6.5	110	71	210	.3	1.5	549	177	87	1,000	7.5	22
8:44 a.m.	1,370	high	--	--	--	--	--	--	--	--	121	--	308	--	2.9	--	204	105	1,320	7.2	--
8:40 a.m.		low	--	--	--	--	--	--	--	--	104	--	290	--	2.7	--	202	117	1,230	7.3	--
2:48 p.m.	12,900	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 21		high	4.3	.1	--	--	21	3.3	8.6	3.7	57	22	12	.1	5.0	121	67	20	193	6.9	79
3:25 p.m.		low	3.3	.1	--	--	24	9.5	47	6.5	69	36	82	.1	4.5	267	100	43	479	6.9	66
8:35 a.m.	6,380	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	82	38	236	7.5	36
Nov. 4		high	--	--	--	--	--	--	--	--	66	--	12	--	9.4	--	93	36	341	7.0	62
7:05 p.m.		low	--	--	--	--	--	--	--	--	67	--	47	--	5.7	--	--	--	--	--	--
7:45 a.m.	3,600	high	6.1	.1	0.59	0.00	31	7.2	13	33	91	36	15	.2	5.5	167	108	33	281	8.3	35
2:25 p.m.		low	5.0	.0	.23	.02	26	7.2	17	3.9	85	29	22	.2	7.2	170	95	25	283	7.9	9.5
6:45 a.m.	18,800	high	5.2	.1	.41	--	27	5.2	7.1	1.9	83	28	6.5	.2	1.8	132	89	21	223	7.1	32
Dec. 6		low	5.0	.1	.39	--	26	4.9	7.3	2.2	76	28	7.3	.1	6.0	134	88	23	220	7.3	25
9:15 p.m.	4,640	high	5.7	--	.68	.01	26	5.0	6.0	1.2	76	21	5.0	.0	7.5	126	86	23	213	7.2	28
Jan. 25, 1955		low	5.9	--	.43	.02	26	4.6	5.7	1.1	70	26	4.6	.1	6.8	117	84	27	196	7.6	25
10:00 a.m.	19,600	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2:45 p.m.		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 8		high	--	--	--	--	--	--	--	--	100	--	16	--	--	--	--	--	281	7.5	--
2:55 p.m.		low	--	--	--	--	--	--	--	--	84	--	12	--	--	--	--	--	241	8.1	--
Feb. 17	11,100	high	4.3	--	.68	.06	24	5.4	5.0	2.6	68	28	5.6	.2	7.0	131	83	27	197	7.0	12
9:30 a.m.		low	3.6	--	.71	.05	27	5.8	7.3	2.8	75	31	8.4	.2	6.0	136	92	30	225	6.9	22
Mar. 3	19,100	high	--	--	--	--	--	--	--	--	62	--	5.0	--	--	--	--	--	185	7.2	--
2:45 p.m.		low	--	--	--	--	--	--	--	--	60	--	6.0	--	--	--	--	--	171	7.4	--
8:45 a.m.		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 4	26,200	high	--	--	--	--	--	--	--	--	63	--	4.0	--	--	--	--	--	180	7.5	--
4:10 p.m.		low	--	--	--	--	--	--	--	--	60	--	6.0	--	--	--	--	--	173	--	--
10:30 a.m.		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
low		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--





POTOMAC RIVER BASIN--Continued  
POTOMAC RIVER AT FORT BELVOIR, VA.

LOCATION.--At Fort Belvoir, Fairfax County, 400 feet offshore from point 300 yards below U. S. Bureau of Fisheries dock.  
DRAINAGE AREA.--11,560 square miles (at gaging station near Washington, D. C.)

REMARKS.--Samples taken from river surface at predicted high and low tides. Records of discharge for Potomac River near Washington, D. C. for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Mean discharge (cfs)	Pre-dicted tide stage	Silica (SiO <sub>2</sub> )	Alum-inum (Al)	Iron (Fe)	Man-gan-ese (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 <sub>2</sub> SO <sub>4</sub>	Specific conduct-ance (micro-mhos at 25°C)	pH	Tur-bidity
																	Calcium, mag-nesium	Non-carbon-ate				
Oct. 6, 1954	1,090	high	0.9	0.0	--	--	39	26	174	8.5	101	92	302	0.3	3.0	737	204	122		1,310	7.4	25
2:23 p.m.		low	.7	.0	--	--	37	16	95	5.5	104	69	155	.1	2.0	440	158	75		814	7.4	32
9:07 a.m.	1,370	high	--	--	--	--	--	--	--	--	100	--	325	--	2.0	--	260	178		1,660	7.2	5.0
Oct. 14		high	--	--	--	--	--	--	--	--	102	--	162	--	3.9	--	172	88		814	7.2	7.0
9:00 a.m.	12,900	low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
3:15 p.m.		high	3.3	.2	--	--	21	4.7	20	4.6	60	26	34	.1	4.5	174	73	24		279	7.1	70
Oct. 21		high	4.2	.2	--	--	19	3.5	5.3	3.5	59	23	5.0	.1	5.5	112	64	15		167	7.3	83
3:50 p.m.	6,380	low	--	--	--	--	--	--	--	--	66	--	15	--	8.2	--	93	39		248	6.8	52
Nov. 4		high	--	--	--	--	--	--	--	--	--	--	6.1	--	8.2	--	88	34		216	6.8	47
1:33 p.m.		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
8:20 a.m.	3,800	high	5.2	.0	0.63	0.00	30	7.9	19	3.6	85	37	27	.2	5.5	182	107	38		312	7.5	35
Nov. 19		low	6.4	.0	.61	.32	29	7.6	12	3.5	104	29	11	.3	5.5	166	104	18		276	8.3	38
2:50 p.m.	18,800	high	6.0	.0	.31	--	26	5.1	6.0	2.0	76	27	5.5	.2	5.0	134	86	24		217	7.2	36
10:10 a.m.		low	5.4	.0	.53	--	26	4.7	6.4	1.9	73	29	5.5	.2	5.8	136	84	25		211	7.6	41
4:08 p.m.	4,640	high	5.9	--	--	--	24	4.9	6.3	1.2	70	23	6.5	.1	6.8	115	80	23		203	7.7	38
10:22 a.m.		low	5.9	--	.88	.13	27	5.2	6.2	1.0	78	28	5.0	.1	7.0	125	89	25		215	8.0	69
Jan. 25, 1955	19,600	high	--	--	--	--	--	--	--	--	100	--	12	--	--	--	--	--		276	7.5	--
8:40 a.m.		low	--	--	--	--	--	--	--	--	108	--	--	--	--	--	--	--		281	7.3	--
3:30 p.m.	11,100	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Feb. 8		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
9:30 a.m.		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
3:15 p.m.		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Feb. 17		high	4.3	--	.74	.16	24	4.4	4.9	2.7	87	27	5.2	.2	6.2	125	79	24		191	7.6	26
3:30 p.m.		low	4.8	--	.80	.00	23	4.2	4.2	2.6	62	25	4.6	.3	6.6	131	75	24		181	7.0	28
9:55 a.m.	19,100	high	--	--	--	--	--	--	--	--	64	--	5.0	--	--	--	--	--		187	7.4	--
Mar. 3		low	--	--	--	--	--	--	--	--	62	--	5.0	--	--	--	--	--		184	7.2	--
3:30 p.m.		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
9:30 a.m.		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--

## POTOMAC RIVER BASIN

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[illegible]

## POTOMAC RIVER BASIN--Continued

## POTOMAC RIVER AT FORT BELVOIR, VA.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

Date of collection	Mean discharge (cfs)	Predicted tide stage	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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Turbidity	
Aug. 22, 1955	42,200	high	--	--	--	--	--	--	--	--	55	--	0.6	--	--	--	--	54	9	127	7.3	123
1:25 a.m.		low	--	--	--	--	--	--	--	--	56	--	1.6	--	--	--	--	54	8	130	7.3	128
Aug. 30	8,540																					
6:23 p.m.		high	--	--	--	--	--	--	--	--	72	--	3.5	--	--	--	--	74	15	174	7.9	22
1:30 p.m.		low	--	--	--	--	--	--	--	--	84	--	4.2	--	--	--	--	82	13	192	7.8	45
Sept. 1	5,880																					
11:40 p.m.		high	--	--	--	--	--	--	--	--	84	--	5.0	--	--	--	--	130	11	205	7.3	40
8:30 a.m.		low	--	--	--	--	--	--	--	--	90	--	4.0	--	--	--	--	88	14	210	7.4	34
Sept. 15	4,230																					
8:00 a.m.		high	--	--	--	--	--	--	--	--	89	--	5.0	--	--	--	--	94	21	213	7.4	40
2:25 p.m.		low	--	--	--	--	--	--	--	--	102	--	7.0	--	--	--	--	109	25	240	7.5	41
Sept. 26	4,040																					
3:00 p.m.		high	--	--	--	--	--	--	--	--	110	--	7.0	--	--	--	--	110	20	249	7.9	36
9:46 a.m.		low	--	--	--	--	--	--	--	--	118	--	8.0	--	--	--	--	114	17	270	7.8	47



## POTOMAC RIVER BASIN--Continued

## POTOMAC RIVER AT FORT WASHINGTON, MD.

LOCATION.--At Fort Washington, Prince Georges County, Md., 5 miles upstream from Fort Belvoir, Va.  
DRAINAGE AREA.--11,560 square miles (at gaging station near Washington, D. C.).

REMARKS.--Samples taken from river surface between buoys 79 and 80 at predicted high and low tides. Records of discharge for Potomac River near Washington, D. C., for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Mean discharge (cfs)	Predicted tide stage	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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Turbidity
																	Calcium	Non-magnesium carbonate				
Oct. 6, 1954	1,090	high	0.4	0.0	--	--	35	8.7	42	3.8	102	49	60	0.2	2.4	266	123	40		462	7.6	13
2:50 p.m.		low	.8	.0	--	--	35	7.6	32	3.6	104	48	40	.2	2.0	249	119	33		407	7.3	18
Oct. 19	1,370	high	--	--	--	--	--	--	--	--	103	--	95	--	4.1	--	148	64		900	7.2	--
9:40 a.m.		low	--	--	--	--	--	--	--	--	104	--	64	--	6.5	--	124	39		477	7.3	--
Oct. 21	12,900	high	4.5	.3	--	--	20	3.2	4.5	3.7	57	23	4.2	.1	5.8	115	65	18		167	7.1	70
4:30 p.m.		low	4.7	.3	--	--	19	3.5	4.3	3.7	54	22	4.0	.1	6.0	111	64	20		163	7.3	76
Oct. 30	6,380	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Nov. 4		low	--	--	--	--	--	--	--	--	71	--	4.8	--	11	--	94	36		222	6.9	30
2:00 p.m.		low	--	--	--	--	--	--	--	--	76	--	--	--	9.4	--	98	36		235	7.0	30
Nov. 19	3,600	high	5.7	.0	0.93	0.00	32	6.9	11	3.6	92	34	13	.2	6.0	171	108	33		279	8.2	32
3:15 p.m.		low	5.9	.0	.41	.00	33	7.6	10	3.5	98	36	9.4	.2	5.8	164	114	33		275	8.2	34
Dec. 20	13,800	high	5.5	.0	.45	--	22	4.7	5.7	2.0	69	22	5.5	.3	5.8	131	74	18		199	7.2	30
10:47 a.m.		low	5.9	.1	.36	--	22	4.1	4.8	1.9	66	20	4.5	.2	5.5	115	72	18		181	7.2	23
Jan. 25, 1955	4,640	high	5.6	--	.75	.02	28	5.5	6.3	1.4	79	27	4.8	.1	7.0	129	93	23		215	7.3	44
9:00 a.m.		low	5.7	--	.45	.00	29	5.5	6.6	1.0	84	30	5.2	.1	3.0	139	95	26		231	7.8	20
Feb. 8	19,000	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
3:45 p.m.		low	--	--	--	--	--	--	--	--	108	--	8.0	--	--	--	--	--		280	7.4	--
Oct. 5 a.m.		low	--	--	--	--	--	--	--	--	112	--	9.5	--	--	--	--	--		287	7.9	--
Feb. 17	11,100	high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
3:55 p.m.		low	5.0	--	.64	.03	21	3.9	5.8	2.4	61	20	5.0	.2	6.8	127	69	19		177	7.0	41
Mar. 3	19,100	high	4.5	--	.59	.11	22	4.3	4.4	2.2	61	23	4.2	.3	6.1	116	73	23		177	7.1	39
3:45 p.m.		low	--	--	--	--	--	--	--	--	60	--	5.0	--	--	--	--	--		178	7.4	--
9:45 a.m.		low	--	--	--	--	--	--	--	--	62	--	5.0	--	--	--	--	--		176	7.3	--

POTOMAC RIVER BASIN--Continued  
 POTOMAC RIVER AT FORT WASHINGTON, MD.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--Continued

Date of collection	Mean discharge (cfs)	Pre-dicted stage	Silica (SiO <sub>2</sub> )	Alum-inum (Al)	Iron (Fe)	Man-ga-nese (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 evap-oration 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	Tur-bidity
																	Calcium	Non-carbon-ate				
Mar. 10, 1955.....	37,600	high	6.4	--	0.82	0.09	18	3.6	2.4	1.6	51	19	2.3	0.2	4.0	93	80	18		137	6.9	77
9:15 a.m.....		low	6.4	--	.76	.49	18	3.3	2.5	1.4	47	20	2.2	.2	4.8	94	59	20		136	6.8	92
3:55 p.m.....	91,400	high	--	--	--	--	--	--	--	--	55	--	3.4	--	3.8	--	89	24		152	7.5	180
8:10 a.m.....		low	--	--	--	--	--	--	--	--	47	--	2.4	--	3.5	--	64	26		134	7.4	182
3:05 p.m.....	8,880	high	8.5	--	.74	.06	--	--	6.5	--	77	24	4.5	.2	3.8	130	84	21		195	7.5	59
8:30 a.m.....		low	5.1	--	.49	.04	--	--	7.3	--	85	26	4.7	.2	3.6	133	91	21		208	7.6	41
3:05 p.m.....	29,500	high	--	--	--	--	--	--	--	--	82	--	4.3	--	--	--	84	17		192	7.7	12
1:55 p.m.....		low	--	--	--	--	--	--	--	--	81	--	3.9	--	--	--	82	16		195	7.7	8
8:20 a.m.....	6,280	high	3.0	0.0	.33	.05	24	5.8	5.9	2.0	84	25	4.1	.2	1.5	110	84	15		205	7.3	18
7:15 p.m.....		low	2.4	.0	.42	.03	26	6.0	5.6	2.0	85	25	4.5	.2	4.5	112	90	20		205	7.2	16
10:35 a.m.....	5,400	high	--	--	--	--	--	--	--	--	92	--	6.0	--	--	--	98	22		232	7.1	24
1:55 p.m.....		low	--	--	--	--	--	--	--	--	92	--	6.1	--	--	--	100	25		239	7.3	26
8:10 a.m.....	3,130	high	--	--	--	--	--	--	--	--	104	--	6.2	--	--	--	99	14		222	7.4	37
9:20 a.m.....		low	--	--	--	--	--	--	--	--	91	--	6.0	--	--	--	98	15		231	8.6	11
4:35 p.m.....	6,330	high	--	--	--	--	--	--	--	--	72	--	3.0	--	--	--	72	13		171	7.3	23
June 22.....		low	--	--	--	--	--	--	--	--	66	--	2.6	--	--	--	66	14		162	7.3	24
10:50 a.m.....	2,690	high	1.7	--	--	--	24	5.6	6.5	2.2	84	23	5.2	.1	1.9	136	83	14		199	7.4	11
5:15 p.m.....		low	--	--	--	--	--	--	--	--	80	--	5.5	--	--	--	81	15		198	7.5	9.0
9:10 a.m.....	1,830	high	--	--	.37	--	--	--	--	--	96	--	9.0	--	--	--	94	15		248	7.3	9.5
4:20 p.m.....		low	--	--	--	--	--	--	--	--	100	--	9.0	--	--	--	97	15		257	7.3	11
July 26.....	1,640	high	--	--	--	--	--	--	--	--	98	--	16	--	--	--	96	16		255	7.4	8
2:25 p.m.....		low	--	--	--	--	--	--	--	--	103	--	10	--	--	--	103	19		264	7.2	16
9:00 a.m.....	42,200	high	--	--	--	--	--	--	--	--	55	--	1.8	--	--	--	57	12		129	7.5	123
3:50 p.m.....		low	--	--	--	--	--	--	--	--	57	--	2.3	--	--	--	58	11		137	7.3	113
Aug. 4.....		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Aug. 22.....		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
11:50 a.m.....		high	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
5:30 p.m.....		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--

[illegible]

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

## POTOMAC RIVER BASIN--Continued

## POHICK CREEK AT POHICK CHURCH, VA.

LOCATION.--Samples taken at bridge on U. S. Highway 1 at Pohick Church, Va.

REMARKS.--Samples taken from river surface.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Time	Bicar- bonate (HCO <sub>3</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	Turbidity
					Calcium, mag- nesium	Non- carbon- ate			
Oct. 14, 1954 ...	11:01 a.m.	16	7.5	0.8	16	3	62.4	6.9	3
Oct. 21 .....	--	0	10	.4	21	0	129	4.0	3
Nov. 4 .....	10:20 a.m.	18	7.0	1.7	27	7	81.8	6.9	5
Nov. 19 .....	--	24	7.0	.5	--	--	76.8	6.7	5
Dec. 20 .....	1:10 p.m.	16	5.0	.5	22	8	76.6	6.9	3
Jan. 25, 1955 ...	10:30 a.m.	21	6.8	1.0	34	17	67.3	7.2	4
Feb. 8 .....	--	8	5.0	--	--	--	68.0	6.3	-
Feb. 17 .....	--	14	5.1	.4	17	6	67.1	6.8	48
Mar. 3 .....	--	16	6.0	--	--	--	71.1	6.9	--
Mar. 4 .....	11:45 a.m.	15	5.0	--	--	--	70.2	6.9	--
Mar. 10 .....	10:35 a.m.	14	5.4	1.0	18	7	65.2	7.0	8
Mar. 24 .....	10:00 a.m.	12	3.6	1.2	17	7	59.3	7.4	45
Apr. 7 .....	12:00 p.m.	19	3.9	.3	16	0	59.6	7.5	5
Apr. 28 .....	10:50 a.m.	15	4.1	--	16	4	59.9	7.2	40
May 16 .....	1:55 p.m.	16	4.9	.5	17	4	61.6	6.9	4
May 27 .....	10:15 a.m.	20	3.4	--	18	2	59.8	7.0	4
June 6 .....	10:25 a.m.	24	7.0	--	14	0	62.1	7.2	6
June 22 .....	--	24	2.9	--	16	0	57.5	7.5	45
July 5 .....	10:10 a.m.	27	5.0	--	30	8	67.0	7.1	9
July 26 .....	1:30 p.m.	26	5.1	--	16	0	66.2	7.5	2
Aug. 4 .....	11:05 a.m.	29	6.2	--	20	0	73.6	7.2	1
Aug. 22 .....	--	15	4.7	--	15	3	62.4	6.9	4
Aug. 30 .....	3:10 p.m.	21	4.3	--	14	0	59.7	7.5	6
Sept. 9 .....	10:30 a.m.	27	5.0	--	18	0	65.0	7.0	4
Sept. 15 .....	11:10 a.m.	25	6.0	--	18	0	59.7	7.1	2
Sept. 26 .....	11:25 a.m.	24	6.0	--	24	4	60.5	7.2	3

## POTOMAC RIVER BASIN--Continued

## POTOMAC RIVER AT GLYMONT, MD.

LOCATION.--At Glymont, Prince Georges County, 4 miles from Fort Belvoir, Va., and 1½ miles upstream from Indian Head, Md.

DRAINAGE AREA.--11,560 square miles (at gaging station near Washington, D. C.).

REMARKS.--Samples taken from river surface at predicted high and low tides. Records of discharge for Potomac River near Washington, D. C., for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Mean discharge (cfs)	Pre- dicted tide stage	Silica (SiO <sub>2</sub> )	Alum- inum (Al)	Iron (Fe)	Man- gan- ese (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 <sub>2</sub> SO <sub>4</sub>	Specific conduct- ance (micro- mhos at 25°C)	pH	Tur- bidity
																	Calcium, mg./ nesium	Non- carbon- ate				
Oct. 6, 1954	1,090	high	0.2	0.1	--	--	41	28	198	10	107	92	352	0.1	1.5	807	218	130	1,450	7.4	15	
8:15 a.m.		low	.3	.0	--	--	42	37	265	11	107	112	465	.1	2.5	1,040	257	169	1,860	7.4	22	
Oct. 14	1,370	high	--	--	--	--	--	--	--	--	98	--	700	--	.8	--	340	260	2,800	7.1	34	
8:10 a.m.		low	--	--	--	--	--	--	--	--	97	--	418	--	2.2	--	240	160	1,700	7.1	11	
Oct. 21	12,900	high	4.0	.2	--	--	22	2.3	11	3.6	58	24	15	.2	4.5	137	66	18	205	7.0	84	
3:00 p.m.		low	4.0	.2	--	--	21	3.9	12	3.7	57	25	18	.1	4.8	142	70	24	215	7.0	66	
9:15 a.m.	6,380	high	--	--	--	--	--	--	--	--	62	--	56	--	6.2	--	101	50	376	7.1	70	
Nov. 4		low	--	--	--	--	--	--	--	--	64	--	36	--	6.8	--	90	38	298	7.1	60	
12:40 p.m.	3,600	high	5.2	.1	0.68	0.00	30	10	43	4.9	82	45	73	.3	5.2	262	117	49	472	7.2	26	
7:20 a.m.		low	5.9	.1	.28	.02	30	7.8	14	3.9	84	37	24	.2	4.5	188	106	39	309	8.1	38	
Nov. 19	18,800	high	--	--	--	--	27	5.2	7.2	1.9	78	27	7.0	.2	6.2	144	87	23	223	7.4	35	
Dec. 20		low	5.1	.0	.75	--	26	5.2	7.1	2.2	79	27	7.2	.1	6.5	134	89	24	224	7.2	41	
3:25 p.m.	4,640	high	6.1	--	.86	.10	21	7.7	31	2.4	66	23	50	.1	5.5	204	84	30	357	7.2	62	
9:40 a.m.		low	5.9	--	.83	.00	25	5.0	6.3	1.2	72	26	6.0	.1	6.8	126	83	24	201	7.5	35	
7:40 a.m.	19,800	high	--	--	--	--	--	--	--	--	102	--	82	--	--	--	--	--	518	7.4	--	
Feb. 8		low	--	--	--	--	--	--	--	--	98	--	14	--	--	--	--	--	274	7.5	--	
8:20 a.m.	11,100	high	--	--	--	--	27	6.4	9.2	2.9	79	33	11	.2	6.2	150	94	29	243	7.3	20	
Feb. 17		low	3.8	--	.96	.08	27	5.5	7.1	2.8	74	32	8.0	.2	6.8	138	90	30	225	7.0	22	
2:50 p.m.	19,100	high	3.7	--	.75	.06	27	--	--	--	--	--	--	--	--	--	--	--	187	7.4	--	
9:15 a.m.		low	--	--	--	--	--	--	--	--	68	--	5.0	--	--	--	--	--	187	7.3	--	
Mar. 3		high	--	--	--	--	--	--	--	--	66	--	--	--	--	--	--	--	187	7.4	--	
2:30 p.m.		low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
8:30 a.m.			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

POTOMAC RIVER BASIN--Continued  
POTOMAC RIVER AT GLYMONT, MD.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

Date of collection	Mean discharge (cfs)	Pre- dicted tide stage	Silica (SiO <sub>2</sub> )	Alum- inum (Al)	Iron (Fe)	Man- gan- ese (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 <sub>2</sub> SO <sub>4</sub>	Specific conduct- ance (micro- mhos at 25°C)	pH	Tur- bidity
																	Calcium	Non- carbon- ate				
Mar. 4, 1955..... 3:49 p.m.....	26, 200	high low	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	66 63	-- --	5.0 4.0	-- --	-- --	-- --	-- --	-- --	-- --	187 184	7.4 7.3	-- --
Mar. 10..... 10:00 a.m.....	37, 800	high	6.0	--	0.97	0.14	19	3.8	2.8	1.8	53	19	3.0	0.1	4.0	108	64	20	6.9	147	6.9	85
Mar. 10..... 2:50 p.m.....	91, 400	low	6.5	--	1.0	.13	18	3.4	2.4	1.6	49	18	2.3	.2	4.5	99	59	19	138	138	6.9	87
Mar. 24..... 6:45 a.m.....	high	high	--	--	--	--	--	--	--	--	63	--	3.8	--	3.8	--	70	18	169	7.6	85	
Mar. 24..... 1:35 p.m.....	low	low	--	--	--	--	--	--	--	--	56	--	2.8	--	4.0	--	64	18	151	7.6	276	
Apr. 7..... 7:05 a.m.....	8, 800	high	8.2	--	.51	.09	--	--	--	6.9	66	23	4.4	--	4.0	108	73	19	172	7.4	49	
Apr. 7..... 1:35 p.m.....	low	low	6.2	--	.66	.00	--	--	7.6	7.6	71	23	4.8	--	4.2	123	76	18	178	7.7	47	
Apr. 28..... 12:40 p.m.....	29, 500	high	--	--	--	--	--	--	--	--	94	--	4.8	--	--	--	97	20	226	7.4	14	
Apr. 28..... 7:05 a.m.....	low	low	--	--	--	--	--	--	--	--	94	--	5.2	--	--	--	97	20	221	7.6	14	
May 16..... 2:45 p.m.....	6, 280	high	3.5	0.0	.53	.02	24	4.6	4.8	2.0	73	23	3.8	.2	2.8	105	79	19	181	7.3	24	
May 16..... 9:15 a.m.....	low	low	3.8	.1	.38	.01	23	4.9	5.0	1.9	75	24	3.8	.3	2.0	105	78	17	185	7.4	24	
May 27..... 12:25 a.m.....	5, 400	high	--	--	--	--	--	--	--	--	78	--	4.6	--	--	--	83	19	197	7.2	15	
May 27..... 6:50 a.m.....	low	low	--	--	--	--	--	--	--	--	80	--	5.5	--	--	--	84	18	201	7.1	6.1	
June 6..... 8:20 a.m.....	3, 130	high	--	--	--	--	--	--	--	--	86	--	6.0	--	--	--	89	19	206	7.0	2.1	
June 6..... 3:10 p.m.....	low	low	--	--	--	--	--	--	--	--	94	--	6.5	--	--	--	96	19	221	7.7	34	
June 22..... 9:30 a.m.....	6, 330	high	--	--	--	--	--	--	--	--	67	--	3.3	--	--	--	68	13	163	7.5	18	
June 22..... 4:00 p.m.....	low	low	--	--	--	--	--	--	--	--	64	--	2.6	--	--	--	69	16	158	7.4	16	
July 5..... 7:55 a.m.....	2, 690	high	--	--	--	--	--	--	--	--	71	--	4.5	--	--	--	69	11	169	7.5	7.5	
July 5..... 2:45 p.m.....	high	high	--	--	--	--	--	--	--	--	80	--	4.8	--	--	--	74	8	173	7.5	12	
July 26..... 1:10 p.m.....	1, 830	low	--	--	.16	--	--	--	--	--	80	--	--	--	--	--	33	22	233	7.3	1.3	
July 26..... 7:45 a.m.....	low	low	--	--	--	--	--	--	--	--	89	--	34	--	.8	153	84	11	226	7.2	19	
Aug. 4..... 8:00 a.m.....	1, 640	high	--	--	--	--	--	--	--	--	82	42	135	.5	2.1	389	122	55	655	7.4	172	
Aug. 4..... 2:50 p.m.....	high	high	.0	--	.38	--	26	14	76	5.3	92	--	--	--	--	--	102	27	291	7.6	225	
Aug. 23..... 10:50 a.m.....	42, 200	low	--	--	--	--	--	--	--	--	92	--	26	--	--	--	122	55	655	7.4	172	
Aug. 23..... 4:30 p.m.....	low	low	6.4	--	1.7	--	18	1.8	2.3	3.1	54	14	.4	.3	2.6	125	53	8	126	7.4	172	
Aug. 23..... 4:30 p.m.....	high	high	--	--	--	--	--	--	--	--	64	--	1.6	--	--	--	56	11	127	7.4	225	

[illegible]

## RAPPAHANNOCK RIVER BASIN

## HAZEL RIVER AT RIXEYVILLE, VA.

LOCATION.--At gaging station at bridge on State Highway 229, 0.4 mile upstream from Waterford Run, 1.1 miles northeast of Rixeyville, Culpeper County, 2.8 miles downstream from Thornton River, and 9.1 miles upstream from mouth.

DRAINAGE AREA.--286 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1951 to September 1952.

Water temperatures: October 1951 to September 1955.

Sediment records: October 1951 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 61.9 micromhos Oct. 13; minimum daily, 32.2 micromhos Aug. 18.

Water temperatures: Maximum, 88°F Aug. 3; minimum, freezing point on several days in December, January, and February.

Sediment concentrations: Maximum daily, 639 ppm Aug. 13; minimum daily, 1 ppm Oct. 1, 2, 12, Nov. 8, 16.

Sediment loads: Maximum daily, 34,700 tons Aug. 18; minimum daily, less than 0.5 ton on many days.

EXTREMES, 1951-55.--Water temperatures: Maximum, 88°F Aug. 3, 1955; minimum, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 1,063 ppm Mar. 1, 1954; minimum daily, 1 ppm on several days during most water years.

Sediment loads: Maximum daily, 34,700 tons Aug. 18, 1955; minimum daily, less than 0.5 ton on many days during each year.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	40	38	33	34	50	52	64	65	72	80	70
2	74	42	39	38	--	49	55	58	62	85	85	68
3	70	40	35	39	--	49	51	66	65	85	88	67
4	80	40	34	40	--	50	55	65	60	85	86	67
5	73	42	34	40	32	50	56	65	--	84	83	67
6	70	40	33	42	33	45	51	65	65	80	86	74
7	65	39	34	40	34	41	51	60	70	80	78	68
8	46	38	32	41	33	38	54	65	67	78	74	65
9	60	40	34	35	38	44	54	60	60	80	70	64
10	60	39	32	33	35	46	54	62	60	78	67	70
11	59	34	34	38	41	51	54	63	65	78	74	67
12	64	38	32	32	--	54	--	64	67	70	73	66
13	65	44	32	33	33	55	56	64	68	75	68	68
14	65	38	35	36	--	52	55	59	66	80	68	58
15	60	40	39	35	32	49	57	60	70	73	75	62
16	59	40	39	34	36	55	65	60	68	85	72	65
17	55	45	35	33	40	51	57	60	67	86	74	69
18	50	49	38	--	36	51	54	57	75	77	71	70
19	50	52	39	37	35	47	55	59	69	83	67	68
20	48	55	33	35	37	44	58	64	--	83	72	68
21	48	52	32	34	37	47	58	60	71	84	70	64
22	48	42	38	37	43	51	60	69	67	80	71	65
23	48	40	35	32	46	49	65	68	70	80	71	61
24	48	42	33	35	40	51	67	68	69	80	70	60
25	49	40	35	32	35	47	60	76	70	80	70	64
26	50	40	33	32	36	47	67	69	68	79	71	60
27	55	39	38	32	42	39	55	69	72	85	70	58
28	50	37	40	--	48	47	54	72	70	80	72	62
29	50	40	45	--	--	42	57	73	77	78	72	60
30	50	39	45	--	--	49	60	70	75	80	74	64
31	46	--	40	32	--	49	--	66	--	75	72	--
Average	58	42	36	36	37	48	57	65	68	80	74	65



## RAPPAHANNOCK RIVER BASIN--Continued

## HAZEL RIVER AT RIXEYVILLE, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	3.2	1	(t)	100	6	2	141	4	2
2.....	2.4	1	(t)	98	5	1	135	2	1
3.....	2.0	2	(t)	147	8	3	125	3	1
4.....	2.8	2	(t)	119	4	1	117	2	1
5.....	4.8	2	(t)	110	3	1	113	4	1
6.....	5.6	2	(t)	106	2	1	111	4	1
7.....	7.2	3	(t)	98	2	1	96	4	1
8.....	6.6	4	(t)	91	1	(t)	104	4	a1
9.....	6.0	2	(t)	86	3	1	125	4	1
10.....	6.6	2	(t)	84	2	(t)	141	4	2
11.....	7.2	2	(t)	80	3	1	121	3	1
12.....	7.2	1	(t)	77	4	1	106	3	1
13.....	6.6	2	(t)	75	4	1	110	10	3
14.....	6.0	12	(t)	74	4	1	720	205	s135
15.....	682	621	s 4,400	72	2	(t)	1,000	128	346
16.....	2,440	537	s 5,960	70	1	(t)	562	24	36
17.....	355	42	40	72	2	(t)	412	14	16
18.....	195	18	9	82	3	1	412	10	11
19.....	135	9	3	224	43	26	426	14	16
20.....	105	6	2	680	141	259	365	14	14
21.....	85	4	1	547	42	62	277	36	27
22.....	75	3	1	362	12	12	237	33	21
23.....	65	2	(t)	275	7	5	289	15	12
24.....	60	2	(t)	227	8	5	234	3	2
25.....	55	2	(t)	198	3	2	198	3	2
26.....	55	3	(t)	171	2	1	167	6	3
27.....	60	3	(t)	150	2	1	158	8	3
28.....	65	9	2	145	2	1	156	14	6
29.....	105	44	12	184	4	2	255	38	26
30.....	135	27	10	164	3	1	1,060	359	1,030
31.....	129	14	5	--	--	--	659	76	135
Total.	4,875.2	--	10,448	4,968	--	395	9,132	--	2,458
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.....	516	16	22	129	4	1	232	6	4
2.....	426	13	15	133	4	a1	224	5	3
3.....	365	11	11	110	4	a1	198	5	3
4.....	325	9	8	100	3	a1	224	5	3
5.....	294	8	6	110	3	1	828	189	423
6.....	269	4	3	208	30	17	1,140	428	1,320
7.....	245	4	3	826	202	451	1,500	296	1,200
8.....	215	4	2	456	46	57	960	64	166
9.....	210	4	2	336	19	17	750	33	67
10.....	203	4	2	269	15	a11	568	20	31
11.....	194	4	2	305	19	a16	499	23	31
12.....	184	4	2	339	22	a20	466	33	42
13.....	180	4	2	245	14	9	383	12	12
14.....	169	4	2	272	9	a7	337	7	6
15.....	164	3	1	272	5	4	307	9	7
16.....	162	3	1	245	5	3	326	8	7
17.....	150	3	1	222	7	4	289	7	5
18.....	141	3	a1	205	5	3	284	7	5
19.....	143	4	2	184	5	2	282	21	16
20.....	131	4	1	175	7	3	255	6	4
21.....	121	4	1	169	4	2	350	36	34
22.....	143	4	2	178	7	3	1,060	236	675
23.....	131	4	1	275	17	13	980	93	246
24.....	123	4	1	283	13	10	694	30	56
25.....	117	3	1	250	8	5	568	14	21
26.....	111	3	1	227	5	3	516	12	17
27.....	123	3	1	234	7	4	417	14	16
28.....	96	3	1	250	6	4	362	17	17
29.....	120	3	a1	--	--	--	331	4	4
30.....	110	3	1	--	--	--	302	4	3
31.....	100	3	1	--	--	--	278	4	3
Total.	5,981	--	101	7,007	--	673	15,908	--	4,447

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

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

## RAPPAHANNOCK RIVER BASIN--Continued

## HAZEL RIVER AT RIXEYVILLE, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--Continued<sup>1</sup>

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.....	259	5	3	232	4	3	112	8	2
2.....	246	5	3	212	5	3	103	7	2
3.....	237	5	3	199	9	5	96	7	2
4.....	215	5	3	193	5	3	87	6	1
5.....	204	5	3	182	4	2	82	7	2
6.....	204	4	2	164	5	2	74	5	1
7.....	206	4	2	146	4	2	72	5	1
8.....	184	4	2	142	7	3	350	94	89
9.....	172	4	2	132	7	2	450	94	114
10.....	168	4	2	126	3	1	312	76	64
11.....	166	11	5	126	3	1	392	195	206
12.....	340	18	17	130	5	2	637	160	284
13.....	289	12	9	136	8	3	401	30	32
14.....	350	19	9	417	38	43	302	15	12
15.....	482	17	22	328	6	5	248	22	15
16.....	395	13	14	237	4	3	204	11	6
17.....	348	7	7	208	4	2	168	12	5
18.....	320	8	7	184	4	2	142	10	4
19.....	305	6	5	170	4	2	263	114	81
20.....	284	6	5	156	4	2	274	84	62
21.....	259	7	a 5	150	5	2	162	15	7
22.....	315	7	6	174	11	5	130	11	4
23.....	269	5	4	310	41	34	132	13	5
24.....	248	6	4	252	22	15	103	6	2
25.....	289	11	9	193	13	7	92	6	1
26.....	365	14	14	160	9	a 4	101	6	2
27.....	326	7	6	136	8	3	94	6	2
28.....	302	6	5	125	6	2	82	8	2
29.....	274	6	4	128	9	3	74	8	2
30.....	248	4	3	180	23	11	68	8	1
31.....	--	--	--	136	21	8	--	--	--
Total.	8,269	--	185	5,764	--	185	5,827	--	1,013
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.....	6	6	1	33	6	(t)	310	8	7
2.....	58	6	1	36	8	1	292	7	6
3.....	50	6	1	26	5	(t)	295	16	13
4.....	44	6	1	61	23	4	400	12	13
5.....	41	8	1	72	20	4	338	6	5
6.....	49	8	1	43	42	5	288	5	4
7.....	66	8	1	38	66	7	258	3	2
8.....	58	8	1	466	609	s 891	230	3	2
9.....	110	60	18	140	71	27	210	3	2
10.....	79	82	17	74	20	4	200	3	2
11.....	244	148	98	68	20	4	195	3	2
12.....	112	19	6	338	306	s 731	185	3	1
13.....	82	18	4	3,970	639	6,850	171	3	1
14.....	71	14	3	1,120	71	215	162	3	1
15.....	63	19	3	676	41	75	153	3	1
16.....	54	10	1	417	26	29	146	3	1
17.....	47	17	2	1,480	266	s 2,280	140	3	1
18.....	46	11	1	23,800	580	s 34,700	142	3	1
19.....	47	10	1	6,540	143	2,530	140	3	1
20.....	50	12	2	1,740	84	395	160	3	1
21.....	39	10	1	1,060	61	175	135	3	1
22.....	34	8	1	810	41	90	122	3	1
23.....	31	7	1	1,250	214	722	125	3	1
24.....	30	8	1	694	39	73	175	4	2
25.....	30	10	1	545	32	47	185	6	3
26.....	27	9	1	475	17	22	142	3	1
27.....	25	8	1	415	10	11	127	2	1
28.....	22	11	1	362	10	10	122	2	1
29.....	19	13	1	338	10	9	118	2	1
30.....	18	13	1	315	10	9	112	2	1
31.....	23	6	(t)	320	10	9	--	--	--
Total.	1,732	--	174	47,722	--	49,930	5,778	--	80

Total discharge for year (cfs-days).....

122,963.2

Total load for year (tons).....

70,089

s Computed by subdividing day.

t Discharge less than 0.5 ton.

a Computed from estimated concentration graph.

RAPPAHANNOCK RIVER BASIN--Continued  
HAZEL RIVER AT RIXEYVILLE, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	Discharge (cfs)	Water tem- per- 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		1.000
Oct. 16, 1954.....	9:43 a. m.	1,990		369	824		34	54	70	84	92	95	97		99	100	BWMC
Dec. 30.....	10:28 a. m.	1,324		505	955		27	47	67	82	89	93	95		98	99	BN
Feb. 7, 1955.....	2:06 p. m.	761		214	604		35	55	72	82	87	90	93		96	98	BWMC
Aug. 13.....	12:00 m.	5,573		436	1,110		10	25	42	66	84	90	96		99	100	BN
Aug. 18.....	12:55 p. m.	32,995		436	1,280		28	43	65	85	87	87	87		92	95	BN
Aug. 18.....	6:33 p. m.	25,280		209	577		37	64	85	96	97	98	99		100	--	BWMC

RAPPAHANNOCK RIVER BASIN--Continued  
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 Tuffins Run, 1.5 miles downstream from Hazel River, and at mile 35.2.

DATA AREA.--616 square miles.

RECORDS AVAILABLE.--1951 to September 1955.

Seasons.--May 1951 to September 1955.

Specific conductance: October 1951 to September 1955.

EXPRESSIONS 1954-55.--Hardness: Maximum, 94 ppm Oct. 1-10, July 21-31; minimum, 15 ppm Jan. 11-20, Feb. 11-20, Mar. 1-10.

Specific conductance: Maximum daily, 94  $\mu$ mhos Oct. 1; minimum daily, 47  $\mu$ mhos Dec. 26.

Water temperatures: Maximum, 80°F July 16, 28 Aug. 5; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 1,050 ppm Oct. 16; minimum daily, 1 ppm Feb. 2-4.

Sediment loads: Maximum daily, 21,270 tons Aug. 18; minimum daily, less than 0.50 ton on many days.

EXTREMES 1951-55.--Dissolved solids (October 1951 to September 1952): Maximum, 51 ppm July 1-10, 1952; minimum, 39 ppm Feb. 21-29, 1952.

Hardness: Maximum, 27 ppm Oct. 1-10, 1954; July 21-31 1955; minimum, 15 ppm Feb. 21-28, 1953; Mar. 1-10, 1954; Jan. 11-20, Feb. 11-20, Mar. 1-10, 1955.

Specific conductance: Maximum daily, 95  $\mu$ mhos Aug. 11, 1954; minimum daily, 41  $\mu$ mhos Mar. 27, 1955.

Water temperatures: Maximum, 82°F July 30, 1953; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,240 ppm June 10, 1951; minimum daily, 1 ppm on one or more days during each year.

Sediment loads: Maximum daily, 23,400 tons June 10, 1951; minimum daily, less than 0.50 ton on many days during each year.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	6.5	6.5	0.00	7.7	2.0	3.4	2.7	37	3.0	3.2	0.1	0.6	48	27	0	79.7	7.1	7
Oct. 11-20	632	--	--	5.8	1.5	--	--	25	3.0	--	--	--	--	21	0	70.9	7.1	30
Oct. 21-30	127	--	1.4	5.6	1.4	--	--	23	3.7	--	--	--	--	20	1	61.6	7.3	16
Nov. 1-10	162	--	1.5	5.7	1.5	--	--	24	4.2	--	--	--	--	20	1	62.5	7.3	22
Nov. 11-20	222	--	1.4	5.7	1.5	--	--	24	3.7	--	--	--	--	20	1	52.4	7.3	12
Nov. 21-30	421	--	.08	4.6	2.3	--	--	19	3.7	--	--	--	--	21	5	56.3	7.0	9
Dec. 1-10	224	--	1.2	4.8	1.5	--	--	22	3.7	--	--	--	--	18	0	56.5	7.0	9
Dec. 11-20	797	--	.09	4.7	2.1	--	--	16	3.9	--	--	--	--	20	7	54.8	7.3	20
Dec. 21-31	633	--	.10	4.2	2.0	--	--	16	3.8	--	--	--	--	19	6	51.6	7.1	20
Jan. 1-10, 1955	565	12	.04	4.3	1.3	2.6	1.0	16	4.3	2.8	1	2.3	43	16	3	54.6	7.0	10
Jan. 11-20	303	--	.07	4.8	1.7	--	--	19	3.0	--	--	--	--	15	0	51.8	7.2	5
Jan. 21-31	208	--	.07	4.8	1.0	--	--	20	3.0	--	--	--	--	16	0	52.6	7.2	7
Feb. 1-10	530	--	.05	5.0	.7	--	--	19	3.4	--	--	--	--	16	0	57.7	6.9	5
Feb. 11-20	521	--	.06	4.8	.8	--	--	17	4.2	--	--	--	--	15	1	56.7	7.1	10
Feb. 21-28	517	--	.06	5.2	.8	--	--	21	4.4	--	--	--	--	16	0	60.9	7.4	12
Mar. 1-10	1,364	--	.08	5.0	.6	--	--	19	4.7	--	--	--	--	15	0	54.0	7.0	23
Mar. 11-20	698	--	.05	5.2	1.1	--	--	17	4.3	--	--	--	--	18	4	54.0	7.0	20
Mar. 21-31	1,231	--	.06	5.4	1.0	--	--	18	4.2	--	--	--	--	18	3	54.1	7.0	25

Apr. 1-10, 1965	431	11	.05	5.1	1.0	2.4	.8	19	3.0	2.3	0.1	1.1	44	17	1	49.8	7.2	10
Apr. 11-20	652	--	.08	4.9	1.1	--	--	20	3.0	--	--	--	--	16	0	50.7	7.1	13
Apr. 21-30	687	--	.08	5.2	1.3	--	--	22	4.5	--	--	--	--	19	1	54.5	7.1	10
May 1-10	393	--	.08	5.2	1.6	--	--	24	3.7	--	--	--	--	20	0	53.8	7.2	8
May 11-20	393	--	.07	5.5	1.1	--	--	22	3.7	--	--	--	--	18	0	53.4	7.1	8
May 21-31	405	--	.14	5.3	1.5	--	--	22	2.8	--	--	--	--	19	1	55.5	7.1	30
June 1-10	381	--	.15	5.4	1.7	--	--	24	3.4	--	--	--	--	20	1	54.2	7.2	30
June 11-20	635	--	.12	4.7	1.5	--	--	21	4.1	--	--	--	--	18	1	51.9	7.1	25
June 21-30	207	--	.17	6.2	1.9	--	--	26	2.3	--	--	--	--	19	0	56.4	7.3	25
July 1-10	150	9.0	.20	5.1	1.4	2.7	2.0	27	8	2.3	0	.8	42	18	0	58.9	7.2	50
July 11-20	115	--	.17	7.1	1.7	--	--	29	5	--	--	--	--	21	0	62.7	7.5	35
July 21-31	46.0	--	.01	8.2	1.6	--	--	37	6.2	--	--	--	--	27	0	69.7	7.4	10
Aug. 1-10	216	--	.02	7.0	1.8	--	--	32	3.8	--	--	1.1	--	25	0	65.0	7.9	10
Aug. 11-20	7,401	--	.08	5.9	2.3	--	--	23	6.7	--	--	1.7	--	24	6	58.1	7.6	18
Aug. 21-31	1,321	--	.05	5.8	1.6	--	--	22	7.6	--	--	--	--	21	3	56.9	7.1	15
Sept. 1-10	549	--	.05	6.4	1.6	--	--	25	3.6	--	--	--	--	23	2	61.1	7.2	8
Sept. 11-20	308	--	.04	5.4	1.7	--	--	27	3.8	--	--	--	--	21	0	58.1	7.4	5
Sept. 21-30	294	12	.08	6.0	1.8	3.1	1.5	27	3.5	3.2	.2	.8	40	22	0	62.5	7.1	5
Average	654	--	0.09	5.5	1.4	--	--	23	3.7	--	--	--	--	19	1	57.8	--	16

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

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

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	6.2	5	(t)	193	11	6	260	5	4
2.....	6.2	3	(t)	162	9	4	241	4	3
3.....	6.2	5	(t)	260	15	11	228	4	2
4.....	5.6	4	(t)	236	10	6	214	3	2
5.....	5.0	6	(t)	189	6	3	201	2	1
6.....	6.8	7	(t)	181	5	2	205	3	2
7.....	9.6	7	(t)	169	4	2	210	5	3
8.....	10	3	(t)	154	4	2	158	3	1
9.....	12	3	(t)	140	3	1	250	5	3
10.....	12	3	(t)	134	3	1	270	6	4
11.....	14	4	(t)	127	3	1	255	5	3
12.....	15	3	(t)	121	3	1	205	3	2
13.....	15	6	(t)	121	2	1	214	10	6
14.....	15	4	(t)	115	2	1	1,110	222	665
15.....	191	308	s 701	112	2	1	2,080	255	1,430
16.....	4,590	1,090	13,500	109	3	1	1,090	52	153
17.....	768	133	276	109	6	2	768	20	41
18.....	338	29	26	124	4	1	716	16	31
19.....	214	12	7	218	20	12	865	22	51
20.....	162	7	3	865	126	294	670	13	24
21.....	134	5	2	995	62	187	527	10	14
22.....	115	5	2	638	18	31	439	14	17
23.....	103	4	1	475	7	9	501	6	8
24.....	92	4	1	355	4	4	463	7	9
25.....	88	5	1	338	4	4	391	5	5
26.....	85	7	2	290	3	2	328	6	5
27.....	85	7	2	260	4	3	316	8	7
28.....	85	6	1	241	5	3	322	5	4
29.....	115	37	11	300	6	5	527	50	71
30.....	236	47	30	316	6	5	1,850	241	1,200
31.....	260	26	18	--	--	--	1,300	104	365
Total.	7,799.6	--	14,586	8,047	--	586	17,174	--	4,136
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.....	962	37	96	193	2	a 1	488	12	16
2.....	794	34	73	228	1	1	457	15	19
3.....	670	14	25	201	1	1	403	9	10
4.....	592	10	16	173	1	(t)	427	39	45
5.....	534	9	13	165	35	16	1,370	226	836
6.....	494	8	11	334	133	a 120	2,450	377	2,490
7.....	451	5	6	1,740	434	2,040	3,670	638	6,320
8.....	403	6	6	1,030	134	373	1,890	158	806
9.....	379			670	31	56	1,400	78	295
10.....	373			566	31	47	1,090	55	162
11.....	355	5	5	624	36	61	962	38	99
12.....	344			794	92	197	930	38	95
13.....	328			534	29	42	780	28	59
14.....	350	4	3	560	11	17	670	20	36
15.....	306			540	12	17	612	17	28
16.....	306			475	19	24	690	23	43
17.....	270	4	3	494	13	17	624	16	27
18.....	265			445	10	12	598	12	19
19.....	270			385	14	15	592	14	22
20.....	240	4	3	361	7	7	520	11	15
21.....	230	4	3	344	9	8	650	37	65
22.....	300			344	14	13	2,520	270	1,840
23.....	250			612	41	68	2,150	179	1,040
24.....	240	4	2	709	49	94	1,400	66	249
25.....	218			586	20	32	1,120	38	115
26.....	190			508	15	21	995	24	64
27.....	190	3	1	501	11	15	865	22	51
28.....	169			534	13	19	742	14	28
29.....	170			--	--	--	676	12	22
30.....	170	6	3	--	--	--	624	12	20
31.....	165	3	a 1	--	--	--	566	8	12
Total.	10,978	--	319	14,650	--	3,334	32,931	--	14,948

s Computed by subdividing day.

t Load less than 0.5 tons.

a Computed from estimated concentration graph.

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	527	12	17	508	10	14	218	15	9
2.....	501	12	16	457	7	9	197	6	3
3.....	475	10	13	427	9	10	185		
4.....	433	8	9	403	8	9	169		
5.....	403	8	9	379	8	8	158	4	2
6.....	403	11	12	338			148		
7.....	421	11	13	300			144	20	8
8.....	373	7	7	290	6	5	334	110	99
9.....	344	9	8	275			1,480	418	1,670
10.....	328	5	4	255			780	71	150
11.....	322	13	11	250			791	85	182
12.....	657	41	73	265	4	3	1,510	306	1,250
13.....	702	26	49	260			1,030	158	439
14.....	618	19	32	742	31	62	657	58	103
15.....	995	35	94	748	28	57	520	26	37
16.....	832	23	52	457	10	12	409	20	22
17.....	690	13	24	361	9	9	333	12	11
18.....	631	12	20	311	6	5	285	10	8
19.....	592	14	22	280	5	4	275	24	18
20.....	579	10	16	255	5	3	539	92	134
21.....	527	11	16	250	5	3	311	24	20
22.....	683	16	30	270	11	8	255	77	53
23.....	664	27	48	525	51	72	306	214	177
24.....	572	13	20	1,100	852	2,530	210	28	16
25.....	850	17	30	560	112	169	185	10	5
26.....	865	32	75	385	35	36	181		
27.....	800	23	50	290	22	a 17	189		
28.....	722	16	31	255	14	10	154	6	3
29.....	624	14	24	246	11	7	144		
30.....	560	9	14	300	30	24	134		
31.....	--	--	--	270	18	13	--	--	--
Total.	17,493	--	839	12,012	--	3,123	12,231	--	4,437
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.....	127			39	4	(t)	735	39	77
2.....	124			49	7	1	560	15	23
3.....	112	4	1	41	3	(t)	572	10	15
4.....	103			38	2	(t)	735	12	24
5.....	95			86	16	4	696	15	28
6.....	90	9	2	57	12	2	560	9	14
7.....	137	34	13	75	112	23	475	9	12
8.....	177	86	41	1,100	920	2,730	415	6	7
9.....	342	606	560	516	204	284	373	7	7
10.....	197	265	141	162	29	13	373	6	6
11.....	295	255	203	121	26	8	361	4	4
12.....	158	82	35	442	138	165	367	5	5
13.....	118	36	11	8,790	604	s 12,800	328	7	6
14.....	100	17	5	4,620	184	2,300	300	5	4
15.....	92	15	4	2,060	170	955	295	3	2
16.....	80	12	3	1,110	53	159	285	4	3
17.....	75	13	3	1,960	135	s 1,250	275	2	1
18.....	82	13	3	26,800	335	s 21,300	285	5	4
19.....	80	10	2	23,800	63	4,050	285	3	2
20.....	71	8	2	4,290	97	1,120	300	5	4
21.....	65	5	1	2,210	56	334	300	4	3
22.....	57	11	2	1,510	66	269	250	6	4
23.....	51	11	2	3,750	375	3,800	255	6	4
24.....	49	5	1	1,600	81	350	338	7	6
25.....	67	2	(t)	1,120	33	100	469	14	18
26.....	47	4	1	957	27	70	322	6	5
27.....	41	3	(t)	822	35	a 78	265	4	3
28.....	36	5	(t)	716	39	75	255	5	3
29.....	33	4	(t)	624	14	24	250	4	3
30.....	28	7	1	572	12	19	232	5	a 3
31.....	32	4	(t)	650	14	25	--	--	--
Total.	3,161	--	1,043	90,707	--	52,309	11,511	--	300

Total discharge for year (cfs-days)..... 238,694.6

Total load for year (tons)..... 99,960

s Computed by subdividing day.

a Computed from estimated concentration graph.

t Load less than 0.5 tons.



RAPPAHANNOCK RIVER BASIN--Continued  
RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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	
Oct. 16, 1954	11:18 a.m.	7,180		910	1,990	35	52	71	86	93	95	98		100	--	BWMC
Dec. 30	12:49 p.m.	2,130		243	628	14	29	48	68	80	86	93		97		99
May 24, 1955	10:32 a.m.	1,410		917	2,690	32	55	75	93	97	98	99		100	--	BWMC
June 9	1:10 p.m.	1,240		334	874	34	57	81	92	97	99	100			--	BWMC
Aug. 8	12:26 p.m.	962		736	2,010	22	46	65	86	91	91	91		96	99	99
Aug. 13	2:51 p.m.	10,200		453	1,010	11	23	36	48	49	50	51		57		96
Aug. 13	2:51 p.m.	10,200		460	1,190	19	36	55	72	82	86	93		98		99
Aug. 18	9:50 a.m.	18,500		328	726	34	54	76	85	90	93	97		99	100	BWMC
Aug. 23	1:18 p.m.	4,460		495	1,300	15	34	52	70	72	72	73		97	100	EN
Aug. 23	1:18 p.m.	4,460		484	1,300	26	46	69	88	96	98	99		100	--	BWMC

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPIDAN RIVER NEAR CULPEPER, VA.

LOCATION.--At bridge on U. S. Highway 522, 0.7 mile downstream from gaging station, and 8 miles south of Culpeper, Culpeper County.

DRAINAGE AREA.--465 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1951 to September 1952.

Water temperatures: October 1945 to September 1946, May 1951 to September 1955.

Sediment records: April 1951 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 76.9 micromhos Oct. 15; minimum daily, 39.2 micromhos May 25.

Water temperatures: Maximum, 90°F Aug. 6; minimum, freezing point Dec. 21, Jan. 28, 30, Feb. 5.

Sediment concentrations: Maximum daily, 1,510 ppm Mar. 6; minimum daily, 2 ppm on several days.

Sediment loads: Maximum daily, 22,640 tons Aug. 18; minimum daily, less than 0.50 ton on several days.

EXTREMES, 1945-46, 1951-55.--Dissolved solids (1945-46): Maximum, 47 ppm Sept. 21-30, 1946; minimum, 34 ppm Mar. 1-10, 1946.

Hardness (1945-46): Maximum, 19 ppm July 21-31, Sept. 11-20, 1946; minimum, 13 ppm Jan. 11-20, 1946.

Water temperatures (1945-46, May 1951 to September 1955): Maximum, 91°F Aug. 9, 1951; minimum, freezing point on several days during winter months.

Sediment concentrations (April 1951 to September 1955): Maximum daily, 1,510 ppm Mar. 6, 1955; minimum daily, 1 ppm Oct. 2, 1952.

Sediment loads (April 1951 to September 1955): Maximum daily, 22,640 tons Aug. 18, 1955; minimum daily, less than 0.50 ton on several to many days during each year.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	--	42	--	35	55	56	64	70	--	88	74
2	77	44	42	46	--	55	58	66	71	85	--	--
3	80	45	40	41	33	50	55	67	70	87	80	69
4	81	44	39	47	34	52	58	--	74	--	80	--
5	83	46	39	43	32	51	58	73	77	80	80	75
6	73	46	36	46	33	50	58	72	80	80	90	76
7	72	--	35	44	38	45	54	71	71	78	--	--
8	62	--	35	42	40	45	56	--	67	80	74	76
9	69	47	36	39	41	50	62	70	61	79	72	70
10	59	45	36	39	45	55	64	69	67	81	70	72
11	75	46	37	38	--	53	60	69	65	76	79	74
12	77	47	--	35	36	56	62	71	68	75	73	74
13	77	46	34	36	--	57	57	63	70	75	69	70
14	71	42	36	38	34	55	60	62	68	72	68	78
15	72	48	40	39	39	51	62	62	72	71	74	72
16	59	46	41	35	41	56	63	68	72	80	73	75
17	59	49	41	38	43	53	58	68	70	--	73	73
18	55	--	40	36	44	51	59	69	--	82	72	74
19	55	52	41	36	45	48	60	70	70	81	70	71
20	54	55	37	37	39	46	65	71	69	80	72	71
21	56	50	32	34	44	49	67	75	70	79	75	--
22	57	50	34	34	45	53	64	70	70	80	75	67
23	57	46	33	36	49	51	69	76	74	82	74	65
24	--	47	34	37	44	53	--	79	--	79	73	66
25	58	45	36	37	--	48	60	79	--	79	71	--
26	56	43	34	39	40	47	59	79	70	70	74	67
27	59	--	41	34	49	46	56	79	69	80	74	67
28	56	42	40	32	50	46	62	80	68	88	76	63
29	57	44	45	33	--	44	61	80	69	80	80	70
30	52	43	46	32	--	48	65	75	73	76	78	62
31	42	--	43	33	--	54	--	73	--	89	78	--
Average	65	46	38	38	41	51	60	71	70	79	75	71

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPIDAN RIVER NEAR CULPEPER, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	8.8	7	(t)	165	45	a 20	260	15	11
2.....	2.9	4	(t)	159	21	9	231	6	4
3.....	3.7	2	(t)	290	18	14	223	3	2
4.....	2.2	4	(t)	198	14	7	194	3	2
5.....	5.4	4	(t)	174	11	5	194	3	2
6.....	6.6	2	(t)	162	7	3	198	3	2
7.....	7.2	2	(t)	147	5	a 2	168	2	1
8.....	3.7	2	(t)	142	4	2	142	3	1
9.....	4.1	2	(t)	128	4	1	204	4	2
10.....	4.8	6	(t)	120	4	1	320	7	6
11.....	2.7	5	(t)	120	2	1	223	7	4
12.....	6.6	3	(t)	117	3	a 1	212	6	a 3
13.....	7.2	3	(t)	117	6	2	208	20	a 11
14.....	6.6	2	(t)	110	5	1	2,220	448	s 4,100
15.....	199	85	46	112	3	1	2,760	363	2,710
16.....	3,130	890	7,520	108	3	1	1,110	70	210
17.....	537	161	233	112	3	1	778	30	63
18.....	290	30	23	115	5	a 2	745	20	40
19.....	198	19	10	187	17	9	764	21	43
20.....	144	11	4	843	139	316	614	12	20
21.....	130	6	2	838	83	188	520	8	11
22.....	115	5	2	586	32	51	400	6	6
23.....	100	5	1	449	13	16	476	4	5
24.....	84	4	a 1	375	8	8	427	5	6
25.....	90	4	1	340	19	17	375	6	6
26.....	86	5	1	290	8	6	335	7	6
27.....	81	6	1	243	6	a 4	305	4	3
28.....	67	5	1	235	4	3	305	5	4
29.....	119	13	4	365	14	14	990	146	390
30.....	305	54	44	325	14	12	2,310	300	1,870
31.....	255	82	56	--	--	--	1,230	100	332
Total..	6,002.5	--	7,951	7,672	--	718	19,441	--	9,876
January				February			March		
1.....	901	40	a 97	208	6	3	466	13	16
2.....	745	22	44	227	7	a 4	449	13	16
3.....	631	16	27	220	11	7	390	10	11
4.....	570	14	22	200	8	4	498	42	56
5.....	515	10	14	180	7	3	2,680	1,350	a 10,800
6.....	476	7	9	380	80	82	4,350	1,510	17,700
7.....	432	6	7	1,860	586	2,940	3,460	572	5,340
8.....	390	5	5	790	99	211	1,510	170	693
9.....	375	4	4	598	20	32	1,230	90	299
10.....	365	6	a 6	515	17	24	990	59	158
11.....	345	11	10	510	17	a 23	845	54	123
12.....	340	8	6	901	27	66	778	33	69
13.....	320	5	4	375	18	a 18	685	21	39
14.....	300	4	3	380	12	12	603	18	29
15.....	280	4	3	449	11	13	559	20	30
16.....	290	5	4	395	8	9	581	21	33
17.....	275	4	3	385	8	8	532	17	24
18.....	247	3	2	345	8	7	504	15	20
19.....	243	4	3	320	10	9	520	15	21
20.....	227	4	2	305	7	6	476	15	19
21.....	208	3	2	295	7	6	554	23	34
22.....	215	3	2	290	8	6	1,680	437	1,980
23.....	215	3	2	581	52	82	1,430	214	826
24.....	215	4	2	598	52	84	990	55	147
25.....	204	4	2	532	28	a 40	824	33	73
26.....	190	3	2	454	15	18	771	23	48
27.....	187	4	2	471	13	17	667	18	32
28.....	162	3	1	504	14	19	603	15	24
29.....	133	4	1	--	--	--	559	11	17
30.....	220	5	3	--	--	--	520	10	14
31.....	180	7	3	--	--	--	488	8	11
Total..	10,396	--	297	13,268	--	3,753	31,192	--	37,702

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

## RAPPAHANNOCK RIVER BASIN--Continued

## RAPIDAN RIVER NEAR CULPEPER, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	454	7	8	380	6	6	194	17	9
2.....	427			365	8	8	174	14	7
3.....	422			345	6	6	171	4	2
4.....	390			325	5	a 4	159	5	2
5.....	365			315	5	4	150	6	2
6.....	355	5	4	290	5	4	144	6	2
7.....	370			260	5	4	136	8	3
8.....	335			255	5	a 3	201	13	7
9.....	305			251	5	3	360	30	29
10.....	300			227	4	2	275	19	14
11.....	305	6	5	243	4	3	630	190	323
12.....	661	40	71	243	5	3	1,430	1,030	3,980
13.....	603	36	59	247	17	11	603	170	277
14.....	758	41	84	526	22	31	438	29	34
15.....	1,430	67	a 259	444	13	16	370	17	17
16.....	950	42	108	340	8	7	320	17	15
17.....	771	28	58	300	8	6	275	13	10
18.....	691	16	30	280	5	4	239	14	9
19.....	625	15	25	251	4	3	231	10	6
20.....	586	12	19	251	5	3	345	25	23
21.....	526	10	14	235	8	5	247	13	9
22.....	603	19	31	295	17	14	208	10	6
23.....	515	16	22	449	75	91	190	6	3
24.....	488	13	a 17	360	36	35	168	7	3
25.....	526	15	21	270	17	12	156	5	a 2
26.....	570	21	32	243	10	7	156	2	1
27.....	504	15	20	215	7	4	159	5	2
28.....	471	8	10	194	6	3	144	5	2
29.....	432	11	13	201	6	3	136	4	1
30.....	405	8	9	260	14	11	122	4	1
31.....	--	--	--	247	14	9	--	--	--
Total.	16,143	--	967	9,127	--	325	8,531	--	4,801
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.....	117	3	1	82	11	2	476	7	9
2.....	102	3	1	90	11	a 3	416	6	a 7
3.....	103	3	1	76	10	2	476		
4.....	110	3	a 1	106	7	2	778		
5.....	97	3	1	94	29	7	608		
6.....	89	4	1	80	27	6	520	6	8
7.....	86	4	1	194	264	138	449		
8.....	90	3	1	649	659	s 1,290	395		
9.....	220	15	9	405	223	244	360		
10.....	246	184	s 302	194	74	39	355		
11.....	762	647	1,330	156	32	13	345	3	3
12.....	243	148	97	863	307	715	320		
13.....	159	35	15	6,440	687	11,900	295		
14.....	136	24	9	2,080	223	1,250	280		
15.....	115	15	5	2,070	260	1,450	275		
16.....	96	11	3	1,110	81	243	265	3	2
17.....	94	10	a 3	2,760	254	1,890	243		
18.....	92	7	2	22,600	371	22,600	247		
19.....	74	7	1	19,500	170	8,950	247		
20.....	78	6	1	2,830	127	970	265		
21.....	69	7	1	1,800	74	360	239	2	1
22.....	76	6	1	1,370	42	155	212		
23.....	69	6	1	1,320	77	274	227		
24.....	74	10	2	978	50	132	265		
25.....	150	53	21	798	21	45	295		
26.....	103	82	23	703	19	36	247	2	1
27.....	76	46	9	625	14	24	215		
28.....	60	24	4	570	11	17	208		
29.....	73	14	3	520	8	11	204		
30.....	67	12	2	482	8	10	194		
31.....	58	11	2	476	7	9	--	--	--
Total.	3,984	--	1,854	72,021	--	52,787	9,921	--	112
Total discharge for year (cfs-days)									207,698.5
Total load for year (tons)									122,143

s Computed by subdividing day.

a Computed from estimated concentration graph.



## YORK RIVER BASIN

## HUDSON CREEK NEAR BOSWELLS TAVERN, VA.

LOCATION.--At gaging station at bridge on U. S. Highway 15, 2.7 miles south of Boswells Tavern, Louisa County, 4.8 miles north of Zion Crossroads, 5 miles upstream from mouth, and 10 miles west of Louisa.  
DRAINAGE AREA.--4.1 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1952.

Water temperatures: October 1954 to September 1955.

Periodic determinations of suspended sediment, September 1951 to September 1955.

Remarks: Minimum, 80° F July 6, 9, 10; minimum freezing point on many days in January and February.

EXTREMES, 1954-55.--Water temperatures: Maximum, 80° F July 6, 9, 10; minimum freezing point on many days in January and February.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1382.

Temperature (°F) of water, water year October 1954 to September 1955

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.....	--	--	46	40	42	38	43	40	33	32	52	49	56	42	63	57	65	58	73	68	77	73	72	70
2.....	--	--	44	42	42	38	47	43	32	32	52	44	58	46	63	53	64	59	74	70	78	74	69	69
3.....	--	--	46	42	38	35	44	40	33	32	52	46	61	60	62	54	64	58	74	71	79	76	69	68
4.....	--	--	44	41	39	35	46	42	32	32	51	45	--	--	66	56	66	56	78	72	80	78	70	68
5.....	--	--	47	44	40	35	46	44	33	32	52	50	--	--	67	59	67	59	79	74	79	77	73	67
6.....	--	--	45	40	38	32	48	43	32	32	52	47	--	--	66	58	70	62	80	77	79	77	76	67
7.....	--	--	44	38	34	32	44	40	38	32	48	42	--	--	64	54	66	64	79	76	79	77	74	68
8.....	--	--	46	37	34	32	40	36	39	36	45	38	--	--	66	59	67	61	79	76	76	66	70	64
9.....	--	--	47	39	33	32	40	37	39	32	51	41	--	--	--	61	59	80	77	66	65	69	62	--
10.....	--	--	45	39	36	33	39	36	43	35	54	46	62	48	--	61	58	80	76	68	65	--	--	--
11.....	--	--	45	36	36	32	38	36	43	35	55	51	57	50	--	66	60	77	72	69	68	--	--	--
12.....	--	--	47	38	32	32	36	34	35	32	56	50	63	53	66	59	65	62	74	70	68	64	--	--
13.....	69	64	46	40	36	32	36	34	33	32	57	50	58	54	61	57	66	60	76	70	87	84	65	61
14.....	68	63	47	38	41	35	36	33	32	32	56	50	58	54	58	65	60	73	67	69	63	65	58	58
15.....	66	59	46	40	41	39	40	36	35	32	53	51	53	55	60	54	66	60	75	69	74	67	66	59
16.....	59	52	45	40	40	38	39	37	39	32	57	51	65	54	61	53	68	60	76	72	75	70	68	62
17.....	54	48	50	45	40	38	36	34	43	39	52	46	63	54	61	56	69	61	77	73	75	72	69	65
18.....	52	45	50	43	39	34	34	32	40	34	52	47	58	55	60	51	69	63	78	74	74	72	70	67
19.....	56	52	53	51	41	37	36	34	40	33	48	45	63	54	62	52	66	64	77	74	74	70	67	66
20.....	55	49	54	53	38	33	36	33	42	34	52	46	69	58	64	57	70	63	76	72	76	72	70	66
21.....	52	48	53	46	33	32	33	32	43	35	50	48	66	60	67	58	72	65	76	72	76	71	66	62
22.....	52	46	46	41	33	32	36	32	44	40	57	49	67	59	64	62	72	65	76	72	78	72	64	62
23.....	51	46	43	40	33	32	35	33	50	44	54	46	66	59	68	62	71	66	76	74	75	72	62	62
24.....	51	46	45	42	35	32	36	33	46	40	54	46	65	61	70	64	72	67	75	73	73	69	63	62
25.....	53	47	42	38	34	32	36	32	43	36	50	46	62	58	70	65	70	66	78	73	70	68	65	62
26.....	53	49	38	35	34	32	36	33	42	36	50	42	58	55	70	64	69	64	77	74	71	67	63	59
27.....	50	38	34	37	32	36	34	47	42	47	42	47	58	56	54	70	62	68	61	78	74	72	66	61
28.....	51	40	40	41	34	34	34	43	48	44	48	37	62	53	70	64	69	63	78	76	73	70	64	60
29.....	54	46	42	39	40	43	34	33	43	40	52	48	58	53	72	65	71	68	78	75	75	70	63	60
30.....	52	48	42	39	40	43	34	33	43	40	52	48	58	53	72	65	71	68	78	75	75	70	63	60
31.....	49	44	--	--	43	39	33	32	--	--	54	41	--	--	67	62	--	53	78	76	76	72	--	--
Average.....	--	--	46	41	38	35	38	36	39	35	52	45	61	54	65	59	68	62	77	73	74	70	67	63

## YORK RIVER BASIN--Continued

## HUDSON CREEK NEAR BOSWELLS TAVERN, VA.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1954 to September 1955

Date	Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (lbs. per day)
Oct. 18, 1954	0.60	9	29
Oct. 25	.48	3	8
Nov. 1	.90	10	48
Nov. 8	.82	3	13
Nov. 15	.74	4	16
Nov. 22	1.3	4	28
Nov. 29	7.0	27	1,020
Dec. 6	1.5	2	16
Dec. 13	2.8	2	30
Dec. 20	2.7	4	58
Dec. 27	1.6	3	26
Jan. 3, 1955	2.5	8	108
Jan. 10	1.8	3	29
Jan. 17	2.5	4	54
Jan. 24	2.0	3	32
Jan. 31	1.5	3	24
Feb. 7	16	23	1,990
Feb. 14	2.6	4	56
Feb. 21	2.0	9	97
Feb. 28	6.8	7	257
Mar. 7	16	19	1,640
Mar. 14	2.9	3	47
Mar. 21	7.0	14	528
Mar. 28	3.1	3	50
Apr. 4	2.3	3	37
Apr. 11	2.7	4	58
Apr. 25	13	19	1,330
May 2	2.6	4	56
May 9	1.5	6	49
May 16	2.2	5	59
May 23	5.8	11	344
May 30	2.3	11	136
June 6	.77	5	21
June 13	2.0	6	65
June 20	1.1	4	24
June 27	.50	5	13
July 4	.31	5	8
July 11	3.2	30	518
July 18	.37	6	12
July 25	.56	5	15
Aug. 1	.34	3	5
Aug. 8	.63	2	7
Aug. 15	9.8	17	898
Aug. 22	1.9	3	31
Aug. 29	1.2	4	26
Sept. 5	3.7	3	60
Sept. 12	.93	12	60
Sept. 19	1.0	3	16
Sept. 26	.85	1	4

## JAMES RIVER BASIN

## JAMES RIVER AT BUCHANAN, VA.

LOCATION.--At bridge on U. S. Highway 11, 300 feet downstream from gaging station at Buchanan, Botetourt County, 700 feet upstream from Purgatory Creek, 1. miles downstream from Looney Creek, and at mile 301.2.

DRAINAGE AREA.--2,084 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1929 to March 1930, October 1947 to September 1948, October 1951 to September 1952.

Water temperatures: October 1947 to September 1948, May 1951 to September 1955.

Sediment records: May 1951 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 509 micromhos Oct. 5; minimum daily, 76.0 micromhos Feb. 8.

Water temperatures: Maximum, 87°F July 5; minimum, freezing point Dec. 21, 22.

Sediment concentrations: Maximum daily, 980 ppm Oct. 15; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 76,300 tons Mar. 7; minimum daily, 1 ton Sept. 11.

EXTREMES, 1947-48, 1951-55.--Water temperatures: Maximum, 87°F July 5, 1955; minimum, freezing point Dec. 20, 1951, Dec. 21, 22, 1954.

Sediment concentrations (1951-55):-- Maximum daily, 980 ppm Oct. 15, 1954; minimum daily, 1 ppm on several to many days during each year.

Sediment loads (1951-55): Maximum daily, 76,300 tons Mar. 7, 1955; minimum daily, 1 ton Oct. 26-31, Nov. 5-9, 1952, Jan. 1-3, 6-10, 1954, Sept. 11, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	49	43	43	36	49	51	63	71	76	81	76
2	72	42	42	44	38	50	53	61	72	84	80	74
3	73	43	42	46	39	48	52	65	73	86	81	71
4	72	43	--	44	38	46	54	66	74	86	86	71
5	72	42	41	46	39	51	55	73	76	87	86	73
6	70	44	38	47	39	52	55	70	78	83	85	71
7	68	45	36	46	40	46	54	69	74	81	85	73
8	61	48	38	43	41	43	56	66	72	80	80	74
9	59	46	37	42	40	44	57	65	69	81	76	73
10	60	46	39	41	43	47	--	66	68	--	75	75
11	61	44	39	39	43	49	58	69	68	78	78	74
12	64	46	--	40	--	53	57	69	68	77	77	78
13	67	48	--	--	34	46	--	67	66	76	75	72
14	69	44	38	39	33	43	58	64	66	78	73	70
15	60	47	41	40	37	52	59	66	66	82	76	73
16	57	47	41	40	41	52	60	68	68	84	77	76
17	54	49	40	39	42	50	61	69	75	80	76	73
18	55	51	41	38	45	50	60	70	75	83	74	72
19	56	54	40	37	43	48	60	70	--	83	73	74
20	55	55	38	36	43	48	65	--	72	80	77	73
21	55	52	32	36	46	48	66	73	75	82	75	73
22	56	53	32	35	47	55	68	73	76	85	77	72
23	52	47	37	36	47	49	66	72	76	84	78	70
24	51	48	--	36	47	48	65	76	76	83	76	70
25	57	47	38	37	43	48	63	73	77	81	77	69
26	--	45	39	38	44	47	60	77	72	84	79	68
27	58	42	42	37	47	42	58	78	76	83	80	66
28	58	42	41	36	47	47	58	79	78	84	81	70
29	--	43	45	35	--	44	64	78	70	81	81	67
30	49	44	47	35	--	44	64	76	78	79	83	68
31	48	--	45	35	--	50	--	73	--	--	77	--
Average	61	47	40	40	42	48	59	70	73	82	79	72



## JAMES RIVER BASIN--Continued

## JAMES RIVER AT BUCHANAN, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	322	4	3	1,120	3	9	2,400	5	32
2.....	446	7	8	1,020	2	6	2,120	3	17
3.....	605	17	28	950	2	5	1,950	2	11
4.....	452	11	13	902	2	5	1,780	2	a 10
5.....	405	8	9	878	3	7	1,680	3	14
6.....	380	5	5	854	4	9	2,000	5	27
7.....	345	5	5	838	2	5	1,950	5	26
8.....	320	5	4	822	2	4	1,680	3	14
9.....	320	6	5	806	3	7	1,730	3	14
10.....	320	6	5	782	2	4	3,530	15	143
11.....	320	7	6	766	2	4	3,800	23	236
12.....	322	7	6	750	2	4	2,860	13	a 100
13.....	327	6	5	726	2	4	2,520	8	a 54
14.....	318	5	4	710	2	4	3,180	7	60
15.....	10,900	980	s 46,300	696	2	4	6,140	27	448
16.....	30,000	613	49,700	675	2	4	5,290	18	257
17.....	10,000	252	6,800	668	2	4	3,890	7	74
18.....	4,000	46	497	710	2	4	3,360	5	45
19.....	2,500	16	108	1,130	24	73	5,090	12	165
20.....	2,000	7	39	4,160	88	988	5,090	11	151
21.....	1,500	4	16	10,600	128	3,660	3,800	3	31
22.....	1,300	4	14	9,000	49	1,190	2,860	2	15
23.....	1,100	4	12	5,090	17	234	2,520	3	20
24.....	900	3	7	3,530	8	76	2,400	3	a 19
25.....	800	2	4	2,860	4	31	2,220	1	6
26.....	700	2	a 4	2,340	4	25	2,000	1	5
27.....	700	3	6	2,060	3	17	1,780	1	5
28.....	800	3	6	1,840	3	15	1,680	1	5
29.....	830	4	a 9	1,840	3	15	3,280	18	159
30.....	1,100	5	15	2,460	4	27	21,000	235	15,300
31.....	1,180	5	16	--	--	--	21,100	183	15,400
Total.	75,512	--	103,659	61,583	--	6,444	126,680	--	25,863
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.....	9,750	49	1,300	910	1	2	16,100	117	5,090
2.....	6,360	18	309	1,090	1	3	20,400	225	12,400
3.....	4,710	9	114	1,530	2	7	11,200	52	1,570
4.....	3,710	6	60	1,850	3	16	8,750	29	685
5.....	3,180	5	43	1,680	5	23	14,400	234	s 15,000
6.....	2,860	4	31	2,600	138	s 1,640	42,800	660	76,300
7.....	2,580	3	209	23,600	336	21,400	43,600	428	55,400
8.....	2,340	2	13	21,000	126	7,140	19,400	110	5,760
9.....	2,170	2	12	10,500	35	992	11,200	41	1,240
10.....	2,060	2	11	6,590	17	302	8,000	22	475
11.....	2,000	2	11	5,290	10	143	6,140	17	282
12.....	1,900	2	10	5,290	7	a 100	5,700	18	277
13.....	1,780	2	a 10	4,160	5	56	5,290	12	171
14.....	1,680	2	9	3,440	6	56	4,620	11	137
15.....	1,580	2	9	3,270	5	44	4,250	8	92
16.....	1,480	2	8	2,860	6	46	6,590	25	445
17.....	1,480	3	12	2,580	6	42	10,800	48	1,400
18.....	1,430	2	8	2,520	6	41	9,500	35	898
19.....	1,380	1	4	2,280	9	55	11,800	36	1,150
20.....	1,380	2	7	2,170	7	41	9,000	10	243
21.....	1,290	3	10	2,000	7	38	6,820	11	203
22.....	1,190	2	6	1,950	9	47	9,500	77	1,980
23.....	1,250	2	7	2,720	10	73	21,000	235	13,300
24.....	1,260	2	7	6,330	18	308	12,000	60	1,980
25.....	1,210	5	16	5,700	21	323	8,000	17	367
26.....	1,130	2	6	4,340	19	223	6,590	9	160
27.....	1,100	1	3	5,020	89	1,210	5,700	7	a 108
28.....	1,090	1	3	13,300	141	5,060	4,800	6	78
29.....	959	1	3	--	--	--	4,160	5	56
30.....	968	1	3	--	--	--	3,710	5	50
31.....	918	1	2	--	--	--	3,180	7	60
Total.	68,175	--	2,256	146,470	--	39,431	355,200	--	190,357

s Computed by subdividing day.

a Computed from estimated concentration graph.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT BUCHANAN, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	2,860	5	39	1,470	3	12	749		6
2.....	2,620	3	21	1,370	5	18	700		5
3.....	2,400	3	19	1,320	4	14	665	3	5
4.....	2,260	2	12	1,280	2	7	630		5
5.....	2,080	2	11	1,230	2	7	610		5
6.....	1,800	1	5	1,140	2	6	591		6
7.....	1,840	1	5	1,100	1	3	598		6
8.....	1,730	1	5	1,060	1	3	728	4	8
9.....	1,680	2	9	1,040	2	6	756		8
10.....	1,520	2	a 8	996	2	5	819		9
11.....	1,520	9	37	959	1	3	1,230	37	123
12.....	1,730	10	47	938	2	5	2,250	53	322
13.....	1,780	8	a 38	986	1	3	2,140	36	220
14.....	5,100	58	799	1,230	3	10	1,520	22	90
15.....	9,750	79	2,080	2,020	10	55	1,180	11	35
16.....	7,280	25	491	2,020	10	55	1,020	7	19
17.....	5,290	8	114	1,730	19	19	840	4	9
18.....	4,430	8	97	1,470	16	16	854	5	12
19.....	3,800	8	82	1,320	14	14	756	6	a 12
20.....	3,180	6	52	1,140	4	12	700	8	15
21.....	2,780	5	38	1,060		11	672	9	16
22.....	2,540	4	27	1,100	4	12	672	7	13
23.....	2,400	4	26	1,230	5	17	630	8	14
24.....	2,200	3	18	1,180	7	22	598	8	13
25.....	2,080	4	22	1,180	10	32	552	5	7
26.....	1,960	3	16	1,100	8	24	637	7	12
27.....	1,900	3	15	988	7	19	658	6	11
28.....	1,730	2	9	917	5	12	630	8	14
29.....	1,620	3	13	938	7	18	565	5	8
30.....	1,520	3	12	903	7	17	520	5	7
31.....	--	--	--	812	4	9	--	--	--
Total.	85,480	--	4,167	37,207	--	466	25,470	--	1,036
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.....	500	6	8	476	7	9	494	6	8
2.....	476	4	5	430		6	476	4	5
3.....	464	6	8	410		6	526	5	7
4.....	452	3	4	415		6	714	8	15
5.....	440	3	4	410	5	6	784	7	15
6.....	425	4	5	385		5	714	9	17
7.....	440	7	8	380		5	665	7	13
8.....	452	6	7	494	15	20	572	5	8
9.....	532	6	9	513	70	97	468	5	7
10.....	735	10	a 20	526	32	45	468	3	4
11.....	819	13	29	482	14	18	470	1	1
12.....	966	14	37	591	15	24	440	2	2
13.....	959	29	75	714	11	21	430	2	2
14.....	700	13	25	728	13	26	415	2	2
15.....	513	7	10	672	8	15	400	2	2
16.....	513	5	7	630	10	17	390	2	2
17.....	470	7	9	665	15	27	385	3	3
18.....	458	6	7	3,880	153	1,600	375	3	3
19.....	435	6	6	5,920	123	1,970	365	6	6
20.....	425		6	3,180	46	395	355	4	4
21.....	425	5	6	1,840	20	99	340	3	3
22.....	415	6	6	1,420	14	54	340	3	3
23.....	405		5	1,060	14	40	336	3	3
24.....	435	10	12	882	8	19	340	4	4
25.....	552	14	21	770	5	10	350	4	4
26.....	584	14	22	714	4	8	365	3	3
27.....	506	22	30	637	2	3	365	3	3
28.....	435	24	28	584	2	3	360	2	2
29.....	430	12	14	558	2	3	360	3	3
30.....	458	9	11	546	3	4	355	3	3
31.....	468	11	a 14	572	8	12	--	--	--
Total.	16,307	--	458	31,484	--	4,573	13,457	--	157

Total discharge for year (cfs-days) .....

1,043,025

Total load for year (tons) .....

376,867

s Computed by subdividing day.

a Computed from estimated concentration graph.

JAMES RIVER BASIN--Continued  
JAMES RIVER AT BUCHANAN, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; 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
Oct. 15, 1954	7:25 p.m.	20,500		1,810	2,150		33	51	69	80	84	89	95		98	100	BWMC
Dec. 31	2:41 p.m.	18,000		156	460		18	34	55	76	86	91	96		98	100	BN
Feb. 7, 1955	12:44 p.m.	26,700		367	907		34	47	61	74	85	90	98		100	--	BWMC
Mar. 2	2:10 p.m.	21,200		210	636		35	64	78	88	93	96	99		100	--	BWMC
Mar. 6	1:55 p.m.	44,100		526	1,350		28	46	63	82	92	95	98		100	--	BN

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT SCOTTSVILLE, VA.

LOCATION.--At gaging station at bridge on State Highway 20 at Scottsville, Albemarle County, 6.8 miles upstream from Hardware River, and at mile 184.6.

DRAINAGE AREA.--4,571 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1930 to March 1931, October 1947 to September 1948, October 1951 to September 1952.

Water temperatures: May 1951 to September 1955.

Sediment records: December 1950 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 421 micromhos Oct. 14; minimum daily, 82.3 micromhos Aug. 18.

Water temperatures: Maximum, 92°F July 22; minimum, freezing point Jan. 28.

Sediment concentrations: Maximum daily, 1,294 ppm Oct. 16; minimum daily, 2 ppm on several days.

Sediment loads: Maximum daily, 161,000 tons Mar. 7; minimum daily, 3 tons on several days.

EXTREMES, 1950-55.--Specific conductance (1951-55): Maximum daily, 421 micromhos Oct. 14, 1954; minimum daily, 70.6 micromhos Mar. 11, 1952.

Water temperatures (1951-55): Maximum, 93°F June 26-28, July 21, 1952; minimum, freezing point Jan. 15, 1954, Jan. 28, 1955.

Sediment concentrations: Maximum daily, 1,294 ppm Oct. 16, 1954; minimum daily, 1 ppm Sept. 2, 8, 1954.

Sediment loads: Maximum daily, 170,000 tons Mar. 2, 1954; minimum daily, 2 tons Sept. 2, 8, 1954.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955  
/Once-daily measurement at approximately 11:30 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	50	42	45	--	48	52	66	74	83	--	77
2	79	48	43	48	--	50	55	65	74	85	86	74
3	80	47	40	45	33	50	--	68	73	86	88	72
4	81	46	40	46	34	51	55	69	75	87	90	72
5	81	49	37	45	35	50	56	72	77	89	85	75
6	80	--	--	48	37	54	--	72	80	89	88	--
7	65	47	37	46	41	50	--	70	75	86	88	78
8	61	47	38	44	41	47	55	71	76	85	82	75
9	64	48	37	--	40	48	58	70	71	86	77	74
10	68	46	38	--	42	50	61	70	71	84	--	--
11	70	46	39	--	44	51	--	70	70	80	79	77
12	73	47	36	38	37	53	65	73	71	78	77	76
13	75	46	36	--	35	55	60	69	70	79	75	72
14	74	48	--	38	35	55	--	65	70	80	75	--
15	71	48	40	39	39	54	60	68	70	84	77	73
16	66	48	40	39	40	56	62	68	72	86	78	76
17	59	49	39	39	43	54	62	--	72	89	77	75
18	56	52	--	48	41	54	60	69	72	89	--	76
19	55	50	41	36	42	51	61	72	74	87	75	74
20	55	56	40	37	--	50	65	73	77	86	77	77
21	--	54	37	35	44	50	64	75	81	88	78	75
22	55	54	35	37	--	50	67	75	--	92	80	72
23	57	50	38	37	49	51	68	76	82	90	79	70
24	59	49	39	36	47	53	68	79	80	85	78	70
25	59	48	37	36	45	50	67	78	81	88	76	72
26	59	45	34	37	46	50	64	79	78	89	76	69
27	60	44	39	--	47	--	61	--	78	90	80	69
28	59	43	42	32	--	45	61	80	79	90	80	71
29	59	45	45	34	--	45	64	--	80	84	82	72
30	55	--	49	35	--	46	65	80	81	81	80	71
31	54	--	47	33	--	49	--	--	--	82	--	--
Average	66	48	39	40	41	51	61	72	75	86	80	73

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT SCOTTSVILLE, VA.--Continued

## Suspended sediment, water year October 1954 to September 1955

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.....	582	3	5	2,210	15	90	4,260	15	173
2.....	575	2	3	2,290	12	74	4,630	13	163
3.....	575	2	3	2,860	23	178	4,440	11	132
4.....	562	2	3	2,780	25	188	3,900	10	105
5.....	562	2	3	2,370	12	77	3,540	9	86
6.....	759	3	6	1,760	9	43	3,280	10	a89
7.....	642	4	7	2,140	11	64	3,810	12	123
8.....	605	4	7	1,910	8	41	4,080	12	132
9.....	542	3	4	2,140	7	40	3,900	12	126
10.....	542	3	4	1,690	7	32	4,540	24	294
11.....	516	3	4	1,760	10	48	5,810	23	361
12.....	504	2	3	1,840	8	40	6,640	19	341
13.....	516	2	3	1,760	11	52	5,810	15	227
14.....	516	3	4	1,760	9	43	6,890	136	a3,260
15.....	920	93	231	1,400	8	30	9,350	118	2,980
16.....	31,600	1,294	111,000	1,760	7	33	9,110	43	1,060
17.....	39,600	752	80,400	1,480	9	36	9,110	21	577
18.....	13,400	332	12,000	1,640	10	50	8,400	15	a340
19.....	7,280	191	3,750	2,860	73	564	7,940	16	343
20.....	5,010	124	1,680	8,690	286	6,710	8,400	14	318
21.....	3,720	91	a914	24,300	290	19,000	9,110	15	369
22.....	2,860	36	278	27,200	274	20,100	7,720	12	250
23.....	2,530	26	178	16,700	130	5,860	6,220	13	218
24.....	2,290	15	93	10,400	57	1,800	5,410	13	190
25.....	2,140	11	64	8,170	27	596	5,010	12	162
26.....	1,840	11	55	6,430	19	330	4,540	7	86
27.....	1,760	8	38	5,210	13	183	4,170	7	79
28.....	1,690	11	50	4,720	11	140	3,900	6	63
29.....	1,760	11	52	4,440	10	120	4,820	47	61
30.....	2,060	19	106	4,630	12	a150	12,800	345	11,900
31.....	2,290	31	192	--	--	--	35,500	307	29,400
Total..	130,742	--	211,140	159,500	--	56,512	218,640	--	53,948
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.....	27,600	132	9,840	2,060	15	a83	17,800	122	5,860
2.....	15,300	113	4,670	2,450	20	a132	23,900	211	13,600
3.....	11,200	52	1,570	2,530	22	150	25,500	232	16,000
4.....	9,110	31	763	2,610	13	92	17,400	144	6,770
5.....	7,940	23	493	2,690	19	138	15,700	232	9,830
6.....	7,500	20	405	3,900	47	495	31,400	464	39,300
7.....	7,060	15	286	19,300	488	25,400	65,600	911	161,000
8.....	6,640	13	233	36,400	433	42,600	57,000	530	81,600
9.....	5,010	13	a176	26,400	258	16,400	27,600	237	17,700
10.....	4,630	12	a150	15,700	103	4,370	18,500	113	5,640
11.....	4,630	11	a138	11,200	48	1,450	14,000	67	2,530
12.....	4,440	9	108	9,600	34	881	12,100	48	1,570
13.....	4,080	9	a99	8,630	25	583	10,900	37	1,090
14.....	3,990	7	75	7,940	21	450	10,100	36	982
15.....	3,540	5	48	7,200	19	369	9,110	27	664
16.....	3,460	6	56	6,800	15	275	8,630	29	676
17.....	3,370	5	45	6,220	15	252	9,600	36	933
18.....	3,030	4	33	5,610	15	227	14,300	56	2,240
19.....	3,370	5	45	4,720	16	204	14,000	48	1,810
20.....	3,280	4	35	5,010	14	a189	15,700	57	2,420
21.....	2,940	6	48	4,440	10	120	13,300	41	1,470
22.....	2,860	14	108	4,350	10	a117	13,600	82	3,010
23.....	2,860	5	39	5,210	15	211	21,900	145	8,570
24.....	2,780	6	45	6,640	41	735	29,300	188	14,900
25.....	2,780	6	45	8,630	43	1,000	18,100	157	7,670
26.....	2,690	6	44	9,350	34	858	14,000	72	2,720
27.....	2,780	7	a53	8,400	25	567	11,800	31	a988
28.....	2,450	7	46	8,670	29	a695	10,400	21	590
29.....	2,210	8	48	--	--	--	8,870	19	455
30.....	2,610	7	49	--	--	--	8,400	15	340
31.....	1,980	13	69	--	--	--	7,940	14	300
Total..	168,120	--	19,862	242,860	--	101,043	576,450	--	413,228

a Computed from estimated concentration graph.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT SCOTTSVILLE, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	6,640	19	341	4,260	23	265	2,700	25	182
2.....	6,640	15	269	3,990	19	205	2,100	25	a 142
3.....	5,810	15	a 235	3,630	16	157	1,670	26	117
4.....	5,610	15	227	3,720	20	201	1,660	11	49
5.....	5,210	13	183	3,460	22	206	1,810	7	34
6.....	4,540	15	a 184	3,460	18	168	1,490	8	32
7.....	4,540	15	a 184	3,370	16	146	1,640	6	27
8.....	4,440	13	156	3,030	10	82	1,950	15	79
9.....	4,080	10	110	2,860	9	69	3,370	60	546
10.....	3,810	8	82	2,780	9	68	3,030	46	376
11.....	3,540	21	201	2,780	9	68	4,090	235	2,600
12.....	5,810	57	894	2,620	10	71	11,200	486	14,700
13.....	7,280	72	1,420	2,780	13	98	6,850	214	3,960
14.....	7,760	149	a 3,120	3,200	16	138	6,640	107	1,920
15.....	17,800	274	13,200	3,200	20	173	4,820	62	807
16.....	20,000	168	9,070	3,200	18	156	3,720	39	392
17.....	15,300	90	3,720	3,370	20	a 162	3,120	29	244
18.....	12,100	60	1,960	3,810	22	226	2,550	19	131
19.....	10,400	44	1,240	3,370	14	127	2,620	14	99
20.....	8,870	34	814	3,030	11	90	2,320	11	69
21.....	8,170	41	904	2,480	11	74	2,320	14	88
22.....	7,400	49	979	2,780	12	90	2,020	13	71
23.....	6,900	36	671	3,030	10	82	2,020	8	44
24.....	6,430	31	538	3,120	20	168	1,950	8	42
25.....	6,220	31	521	3,200	16	138	1,950	10	53
26.....	6,220	38	638	3,120	10	84	2,020	9	49
27.....	5,010	41	555	2,700	9	66	2,100	11	62
28.....	5,210	36	506	2,550	5	34	1,710	8	37
29.....	4,820	24	312	2,250	6	a 36	1,710	7	32
30.....	4,540	21	257	4,540	39	478	1,670	6	27
31.....	--	--	--	3,200	38	a 328	--	--	--
Total.	221,100	--	43,491	98,890	--	4,474	88,820	--	27,011
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.....	1,440	5	19	1,400	9	34	2,400	9	58
2.....	1,360	3	11	1,400	6	23	1,950	67	353
3.....	1,370	2	7	1,270	5	17	2,550	12	83
4.....	1,180	3	10	1,110	3	9	4,350	45	540
5.....	1,230	2	7	992	4	11	3,200	40	346
6.....	1,250	2	7	1,090	9	26	3,030	18	a 147
7.....	1,440	2	6	1,030	10	28	2,620	12	85
8.....	1,620	5	22	1,180	7	22	2,780	10	75
9.....	1,630	27	119	1,100	6	18	2,400	7	45
10.....	1,810	6	29	2,610	47	331	1,880	7	36
11.....	2,480	42	281	2,180	47	277	2,100	11	62
12.....	2,480	58	388	1,950	31	163	1,670	6	27
13.....	2,700	104	758	3,810	82	844	1,450	3	12
14.....	2,620	35	248	4,170	175	1,970	1,600	4	17
15.....	1,740	11	52	6,010	233	3,780	1,670	4	18
16.....	1,750	9	43	4,170	97	1,090	1,550	5	21
17.....	1,350	6	22	6,080	240	a 6,610	1,490	5	20
18.....	1,300	4	14	51,800	720	101,000	1,580	4	17
19.....	1,310	3	11	28,800	318	24,700	1,400	4	15
20.....	1,160	3	9	16,400	196	8,680	1,180	3	10
21.....	840	3	7	9,850	115	3,060	1,340	4	14
22.....	830	3	7	7,060	56	1,070	1,280	5	17
23.....	1,000	31	84	5,210	48	875	1,190	4	13
24.....	1,020	9	25	4,350	29	341	1,270	5	17
25.....	1,180	8	25	3,540	16	153	1,330	4	14
26.....	1,230	10	33	3,200	14	121	1,130	4	12
27.....	1,180	6	19	2,780	12	90	1,230	4	13
28.....	1,150	5	16	2,320	8	50	1,440	6	23
29.....	1,180	5	16	2,320	6	38	1,310	5	18
30.....	1,180	7	22	2,250	8	49	1,240	5	17
31.....	1,280	8	28	1,740	7	33	--	--	--
Total.	45,290	--	2,347	183,172	--	155,313	55,610	--	2,145
Total discharge for year (cfs-days) .....									2,189,594
Total load for year (tons) .....									1,090,514

s Computed by subdividing day.

a Computed from estimated concentration graph.

JAMES RIVER BASIN--Continued  
JAMES RIVER AT SCOTTSVILLE, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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	
Oct. 16, 1954	11:50 a.	45,700		1,080	3,240	4	7	13	21	61	93	99		100	--	BN
Dec. 31	1:00 p.	38,500		400	1,330	11	19	37	58	64	66	66		77	99	BN
Feb. 8, 1955	12:16 p.	38,600		555	1,880	33	49	63	76	86	90	96		98	99	BWMC
Mar. 7	11:00 a.	68,000		1,100	3,730	27	42	58	73	86	92	96		99	100	BWMC
June 11	--	9,580		391	913	12	18	39	70	98	100	--		--	--	BN
Aug. 13	6:22 p.	4,280		129	360	30	67	82	95	100	--	--		--	--	BWMC
Aug. 18	1:14 p.	62,900		685	2,220	24	36	52	69	86	90	97		99	100	BWMC
Aug. 18	1:14 p.	62,900		692	2,150	13	23	35	53	84	90	94		98	100	BN

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT RICHMOND, VA.

LOCATION.--At filtration plant of Richmond Waterworks half a mile west of city limits of Richmond, Henrico County, and 2½ miles downstream from gaging station near Richmond.

DRAINAGE AREA.--6,757 square miles above gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1951, October 1952 to September 1955.

Water temperatures: October 1947 to September 1951, October 1952 to September 1955.

EXTREMES, 1954-55.--Hardness: Maximum, 135 ppm Oct. 1-10; minimum, 33 ppm Mar. 1-10.

Specific conductance: Maximum daily, 358 micromhos Oct. 2, 13; minimum daily, 56.3 micromhos Aug. 15.

EXTREMES, 1947-51.--Hardness: Maximum, 86 F July 3, 7-10 Aug. 7, 14; minimum, 34 F Feb. 22, 23.

Specific conductance: Maximum, 86 F July 3, 7-10 Aug. 7, 14; minimum, 34 F Feb. 22, 23.

EXTREMES, 1947-51.--Dissolved solids: Maximum, 135 ppm Oct. 1-10, 1951; minimum, 58 ppm Apr. 1-10, Dec. 1-10, 1948.

Water temperatures: Maximum, 86 F Aug. 7, 14; minimum, 33 F Mar. 10, 1955.

Specific conductance (1948-51): Maximum, 358 micromhos Oct. 2, 15, 1954; minimum daily, 47.0 micromhos Aug. 17, 1949.

Water temperatures: Maximum, 86 F Aug. 28, 1948; minimum, freezing point Feb. 8, 9, 1951, Jan. 19, 1954.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for gaging station near Richmond for water year October 1954 to September 1955 given in WSP 1383. No appreciable inflow between gaging station and sampling point.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954.....	1,85	7.7	0.00	34	6.2	21	3.0	87	58	17	0.1	0.5	206	110	39	330	7.4	25
Oct. 11-20.....	9,894	--	.08	30	5.2	--	--	76	45	17	--	--	--	96	34	279	7.3	30
Oct. 21-31.....	2,169	--	.39	19	2.9	--	--	50	22	--	--	--	--	59	18	154	7.5	40
Nov. 1-10.....	2,004	--	.51	21	3.5	--	--	56	28	5.6	--	--	--	67	21	186	7.1	27
Nov. 11-20.....	919	--	.57	23	4.8	--	--	69	31	9.0	--	--	--	77	21	225	7.2	37
Nov. 21-30.....	11,640	--	.20	15	2.5	--	--	46	16	5.0	--	--	--	48	10	131	7.5	20
Dec. 1-10.....	3,811	--	.41	17	3.0	--	--	50	19	3.7	--	--	--	55	14	143	7.0	27
Dec. 11-20.....	10,450	--	.30	14	2.1	--	--	41	17	4.4	--	--	--	44	10	125	7.2	30
Dec. 21-31.....	7,503	--	.31	14	2.3	--	--	42	13	2.5	--	--	--	44	10	116	7.2	33
Jan. 1-10, 1955.....	13,120	8.1	.12	14	1.7	2.7	1.2	51	16	3.5	.1	1.8	66	42	13	193	7.1	23
Jan. 11-20.....	3,957	--	.35	16	2.2	--	--	51	16	3.5	--	--	--	46	7	152	7.4	20
Jan. 21-30.....	2,275	--	.72	18	2.8	--	--	55	19	--	--	--	--	56	11	152	7.4	35
Feb. 1-10.....	11,290	--	.66	17	3.2	--	--	49	21	5.2	--	--	--	56	15	148	7.2	40
Feb. 11-20.....	6,144	--	.35	13	1.9	--	--	37	11	2.8	--	--	--	37	6	98.7	7.3	28
Feb. 21-30.....	7,191	--	.43	13	1.8	--	--	46	13	3.6	--	--	--	45	7	122	7.4	28
Mar. 1-10.....	34,410	--	.33	12	1.8	--	--	35	8.5	2.3	--	--	--	33	5	93.0	7.2	60
Mar. 11-20.....	12,960	--	.14	17	2.5	--	--	50	9.7	2.2	--	--	--	53	12	116	7.3	20
Mar. 21-31.....	16,350	--	.17	15	2.2	--	--	44	9.3	2.2	--	--	--	46	10	104	7.3	25
Apr. 1-10.....	5,442	9.8	.22	18	2.1	3.9	1.0	53	13	3.7	.1	.7	86	54	10	129	7.5	15
Apr. 11-20.....	12,760	--	.21	15	2.5	--	--	47	11	3.1	--	--	--	48	9	118	7.4	30
Apr. 21-30.....	8,050	--	.17	13	2.5	--	--	41	9.7	3.0	--	--	--	43	9	103	7.3	25
May 1-10.....	3,504	--	.12	15	3.4	--	--	52	14	4.5	--	--	--	54	11	134	7.4	10
May 11-20.....	2,861	--	.18	19	4.0	--	--	54	18	6.8	--	--	--	64	20	149	7.4	15
May 21-31.....	2,650	--	.08	20	4.2	--	--	62	20	5.4	--	--	--	67	16	169	7.6	20



June 1-10, 1965.....	1,812	--	--	--	--	47	17	6.6	--	--	--	53	15	139	7.6	50
June 11-20.....	5,524	--	--	--	--	52	20	5.2	--	--	--	56	13	147	7.6	20
June 21-30.....	1,763	--	--	--	--	50	23	3.4	--	--	--	53	12	151	7.6	15
July 1-10.....	1,045	8.5	--	9.5	1.8	50	31	6.6	0.1	0.7	116	60	19	174	7.5	8
July 11-20.....	3,194	--	--	--	--	47	25	6.0	--	--	--	49	10	145	7.6	50
July 21-31.....	808	--	--	--	--	62	36	8.6	--	--	--	72	21	194	7.6	15
Aug. 1-10.....	789	--	--	--	--	58	40	10	--	--	--	76	28	219	7.6	15
Aug. 11-20.....	30,860	--	--	--	--	29	16	4.4	--	1.5	--	34	10	99.7	7.3	55
Aug. 21-31.....	8,084	--	--	--	--	37	13	3.2	--	--	--	36	6	99.4	7.7	30
Sept. 1-10.....	2,995	--	--	--	--	43	24	3.8	--	--	--	46	11	128	7.4	14
Sept. 11-20.....	1,684	--	--	--	--	47	27	5.4	--	--	--	53	15	148	7.5	15
Sept. 21-30.....	1,328	12	--	--	--	46	27	7.5	--	--	--	55	17	168	7.6	22
Average .....	7,029	--	--	--	--	50	21	5.5	--	--	--	55*	14	149	--	27

## JAMES RIVER BASIN--Continued

## JAMES RIVER AT RICHMOND, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	53	--	45	--	46	54	64	--	84	82	75
2	77	53	41	45	37	48	52	--	--	84	81	77
3	77	49	41	45	--	46	52	64	68	82	81	77
4	--	46	41	45	36	55	52	63	72	84	81	77
5	73	50	41	46	36	55	52	64	75	86	83	77
6	73	50	41	46	36	57	--	66	72	--	84	77
7	70	48	37	43	41	54	--	66	72	86	86	--
8	72	--	37	46	43	50	56	68	72	86	84	75
9	70	50	38	46	43	46	54	68	--	86	82	75
10	70	48	37	43	43	48	57	68	75	86	--	77
11	68	46	36	43	36	54	57	68	75	84	--	77
12	70	46	37	41	34	54	57	68	75	81	81	77
13	68	48	37	41	34	54	61	70	70	76	75	75
14	70	48	37	41	39	52	61	70	72	76	77	75
15	72	61	37	43	39	52	61	68	72	79	77	77
16	66	63	--	43	37	52	61	68	72	79	77	72
17	65	63	37	41	41	55	61	68	72	79	75	73
18	64	51	37	39	43	54	59	68	73	79	75	73
19	66	52	37	39	41	54	--	72	73	81	75	75
20	59	54	37	--	43	54	--	68	--	81	75	75
21	57	54	39	39	--	52	63	70	75	79	75	75
22	55	50	37	39	43	52	61	70	75	73	--	73
23	54	50	39	39	46	54	63	66	79	73	--	72
24	54	52	39	37	46	--	63	68	75	81	77	72
25	55	50	39	37	48	46	66	68	75	81	75	72
26	55	--	37	37	45	48	64	72	75	83	81	72
27	--	--	43	37	46	52	63	81	75	83	84	72
28	55	--	--	39	46	48	64	82	79	77	81	70
29	56	46	43	39	--	48	--	81	79	82	75	70
30	55	--	46	37	--	--	63	82	75	--	75	70
31	52	--	41	36	--	--	--	--	--	82	75	--
Average	65	51	39	41	41	51	59	70	74	82	79	74

## CHOWAN RIVER BASIN

## MEHERRIN RIVER NEAR SEVERN, N. C.

LOCATION.--At bridge on State Highway 35, 1½ miles above Tarrara Creek and 1¼ miles north of Severn, Northampton County.  
DRAINAGE AREA.--1,120 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 ignition at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 16, 1954	.....	12	0.77	13	3.2	14	4.0	83	5.2	6.2	0.0	0.3	105	46	0	166	6.3	--
Nov. 15	.....	10	.33	9.0	2.8	6.6	2.6	43	9.7	4.5	.0	.0	69	34	0	106	6.6	27
Dec. 16	.....	15	.03	4.6	2.2	6.6	1.9	27	9.0	4.5	.0	.4	65	21	0	83.1	6.7	23
Jan. 15, 1955	.....	17	.15	4.6	1.8	8.8	1.9	20	17	5.8	.0	.6	76	19	3	93.5	6.4	17
Feb. 17	.....	12	.08	4.4	1.2	7.8	1.5	8	20	4.2	.0	.8	69	16	9	91.0	5.7	22
Mar. 15	.....	12	.18	4.4	1.0	5.8	1.4	12	13	5.2	.0	.7	70	15	5	78.6	5.9	40
Apr. 15	.....	15	.17	5.2	1.4	11	1.3	24	15	4.8	.0	.6	77	19	0	103	6.4	18
May 16	.....	15	.12	5.2	1.7	5.4	1.4	32	2.9	4.2	.0	1.1	63	20	0	82.0	6.8	23
June 15	.....	13	.10	5.6	1.0	5.4	1.4	26	7.3	3.0	.0	.8	64	18	0	77.4	7.0	10
July 26	.....	14	.37	6.8	1.7	12	1.8	31	19	3.5	.0	.4	95	24	0	118	6.6	55
Aug. 15	.....	9.9	.12	5.2	1.5	4.1	2.0	23	6.5	3.5	.0	.9	61	19	0	69.4	6.7	40
Sept. 20	.....	12	.21	4.2	1.2	4.9	1.6	19	5.2	5.5	.0	.4	61	15	0	62.3	6.4	60

## CHOWAN RIVER BASIN--Continued

## CHOWAN RIVER AT WINTON, N. C.

LOCATION --At drawbridge on U. S. Highway 15S, 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 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55 --Dissolved solids: Maximum, 150 ppm Dec. 21-31; minimum, 67 ppm Oct. 11-20, May 1-10.

Hardness: Maximum, 27 ppm Feb. 1-10, July 11-20; minimum, 17 ppm May 1-10.

Specific conductance: Maximum daily, 240 micromhos Feb. 1, 2; minimum daily, 54.0 micromhos Sept. 5.

Water temperatures: Maximum, 87°F Aug. 5, 7, 8; minimum, 37°F Feb. 13.

REMARKS --Records of specific conductance of daily samples and records of suspended matter of composite 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 1954 to September 1955.

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, 1954		0.8	0.37	5.5	1.9	9.0	1.8	28	8.6	7.2	0.1	0.7	68	22	0	88.4	6.9	50	14	12
Oct. 11-20		2.4	.38	5.3	1.6	8.7	1.7	25	7.0	8.0	.0	.6	87	21	0	89.1	7.2	70	17	13
Oct. 21-31		3.2	.26	5.4	1.7	9.0	1.0	24	8.9	8.9	.0	.7	69	20	1	89.3	6.6	60	17	14
Nov. 1-10		1.2	.33	5.0	1.9	10	1.8	26	8.5	8.5	.0	.5	73	20	0	92.1	6.8	60	18	13
Nov. 11-20		3.5	.33	5.9	1.5	11	2.5	26	8.1	8.2	.1	.8	75	21	0	98.0	6.8	60	15	14
Nov. 21-30																		80	17	12
Dec. 1-10		4.0	.28	6.3	1.8	13	2.5	34	9.1	10	.0	.9	82	23	0	113	6.9	70	14	12
Dec. 11-20		6.6	.37	6.8	1.6	17	2.5	40	10	12	.0	.7	96	23	0	134	7.1	80	19	12
Dec. 21-31		12	.68	8.8	1.8	33	2.4	56	14	24	.3	.6	150	24	0	208	6.9	100	21	16
Jan. 1-10, 1955		9.2	.24	6.6	1.9	31	2.2	54	18	22	.2	.4	135	24	0	196	7.0	110	23	13
Jan. 11-20		8.5	.14	6.4	2.2	27	2.4	47	15	18	.0	.4	120	25	0	176	6.9	90	17	11
Jan. 21-31		12	.25	6.4	1.8	31	2.5	51	20	22	.2	.5	139	24	0	205	7.1	100	18	11
Feb. 1-10		14	.42	7.4	2.1	33	2.2	51	23	21	.2	.2	146	27	0	221	7.2	90	21	14
Feb. 11-19		13	.09	7.6	1.6	11	1.8	22	19	9.0	.2	.4	82	25	7	112	6.7	35	19	10
Feb. 20-28		5.5	.08	6.4	1.6	11	1.9	16	20	11	.1	.4	94	23	10	102	6.8	30	14	7.8
Mar. 1-10		7.1	.03	6.8	1.7	9.0	1.8	18	19	8.0	.1	.7	81	24	11	106	7.0	30	16	8.3
Mar. 11-20		8.9	.04	6.0	1.3	6.6	1.8	14	15	7.0	.1	.6	73	20	9	86.6	6.4	45	15	10
Mar. 21-31		7.7	.16	5.9	1.1	7.8	1.6	14	14	7.8	.2	.6	78	19	8	89.8	7.0	55	15	10
Apr. 1-10		7.9	.09	6.0	1.3	8.2	1.6	16	14	8.0	.2	.6	78	20	7	98.7	6.2	50	13	9.3
Apr. 11-20		7.9	.12	6.0	1.5	8.6	1.6	20	13	8.2	.2	.9	80	21	5	101	6.3	60	13	10
Apr. 21-30		14	.42	6.4	1.5	5.5	1.8	26	6.6	4.5	.1	1.0	76	22	1	74.1	6.1	45	17	17
May 1-10		11	.13	6.0	.5	5.9	1.9	20	8.0	7.0	.0	1.0	67	17	1	75.8	7.0	55	20	11
May 11-20		12	.13	6.1	1.1	5.9	1.8	22	6.2	7.0	.0	1.0	72	20	0	81.4	7.2	55	18	11
May 21-31		12	.34	6.3	2.0	8.3	1.7	29	10	7.5	.0	.8	77	24	.0	90.8	7.4	75	14	10

June 1-10, 1955	12	.59	6.0	1.6	7.5	1.7	29	7.3	7.0	.0	.8	79	21	0	88.3	7.0	100	14	11
June 11-20	9.5	.08	5.6	1.6	7.5	2.5	25	11	7.0	.0	1.1	71	21	0	85.2	7.5	55	16	11
June 21-30	11	.40	6.0	1.7	12	1.9	36	8.5	8.5	.0	.7	85	22	0	115	7.5	80	16	11
July 1-10	9.7	.15	6.4	2.5	15	1.9	42	7.7	9.5	.1	.9	90	26	0	121	7.6	60	13	11
July 11-20	11	.12	7.5	1.9	21	2.2	52	12	12	.2	1.1	112	27	0	149	7.8	90	21	13
July 21-31	10	.09	6.8	1.2	10	2.0	33	5.3	7.5	.1	1.3	83	22	0	102	7.0	50	13	10
Aug. 1-10	11	.16	6.8	1.2	10	1.9	32	5.7	8.0	.1	1.0	79	22	0	94.1	7.1	50	16	9.9
Aug. 11-20	9.7	.16	5.5	1.5	11	1.9	31	7.2	8.0	.1	.6	85	20	0	100	7.2	75	21	14
Aug. 21-31	10	.30	5.3	1.1	3.9	2.2	18	5.4	6.0	.0	.7	74	18	3	64.2	6.8	110	24	18
Sept. 1-10	9.7	.40	5.2	1.2	4.0	2.0	17	4.9	6.0	.0	.6	76	18	4	62.9	6.9	100	24	17
Sept. 11-20	12	.37	6.1	1.3	5.4	1.9	22	4.6	6.5	.0	.8	82	20	2	73.8	7.0	100	25	17
Average	8.7	0.25	6.2	1.6	13	2.0	30	11	10	0.1	0.7	88	22	2	111	--	70	17	12

## CHOWAN RIVER BASIN--Continued

## CHOWAN RIVER AT WINTON, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
/Once-daily measurement at 9 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	60	53	--	40	51	53	64	76	81	84	74
2	76	59	53	--	39	52	55	62	76	--	85	75
3	77	57	51	--	39	51	55	63	76	81	85	74
4	77	55	49	--	38	53	56	65	76	82	86	74
5	78	56	47	--	38	54	57	68	76	83	87	74
6	76	54	45	--	39	55	55	70	76	82	86	74
7	74	53	44	--	41	55	58	70	76	82	87	74
8	72	54	47	--	41	55	58	71	75	81	87	74
9	72	56	46	--	42	55	59	67	72	81	85	73
10	72	57	47	--	43	56	59	74	71	80	84	73
11	72	56	42	45	42	56	59	74	76	81	84	73
12	72	55	43	44	41	56	62	72	78	81	81	72
13	73	53	43	44	37	55	62	70	73	82	80	72
14	73	52	46	43	40	56	62	69	73	82	81	73
15	71	56	46	44	40	56	65	68	76	83	82	75
16	69	56	46	44	44	57	63	69	77	83	82	75
17	68	56	47	42	45	58	64	70	77	84	80	76
18	68	58	48	41	45	58	67	70	77	85	80	76
19	68	59	44	40	45	56	69	72	76	85	83	73
20	65	57	42	41	44	55	70	72	74	83	82	73
21	64	57	40	39	46	57	71	74	78	84	81	--
22	--	55	40	40	47	58	72	73	76	84	81	--
23	62	55	39	40	47	57	72	72	76	85	80	--
24	62	55	40	39	47	56	72	73	76	85	79	--
25	68	55	41	40	46	55	72	74	77	84	77	--
26	64	54	39	40	46	55	69	74	74	85	78	--
27	64	54	41	40	46	52	68	76	75	86	78	--
28	63	55	42	39	47	52	67	77	78	85	78	--
29	63	54	47	40	--	51	67	77	79	84	79	--
30	60	52	46	39	--	51	66	75	80	84	76	--
31	59	--	--	39	--	51	--	75	--	84	75	--
Average	69	56	45	--	43	55	63	71	76	83	82	--

CHOWAN RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN CHOWAN RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Dis-charge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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	Non-carbon- ate			

AHOSKIE CREEK AT AHOSKIE

Feb. 16, 1955	38.0	13	1.1	4.9	1.9	3.6	1.5	4	13	10	0.0	0.0	81	20	17	91.9	5.7	65
Aug. 31	120			2.8	.7			9	2.2	5.0	0.0	.5	a 35	10	3	44.2	6.8	

a Sum of determined constituents.

## ROANOKE RIVER BASIN

## ROANOKE RIVER AT ALTAVISTA, VA.

LOCATION.--At gaging station at bridge on U. S. Highway 29, a quarter of a mile south of Altavista, Campbell County, half a mile downstream from Sycamore Creek,  $\frac{3}{4}$  miles upstream from Otter River, and at mile 286.5.

DRAINAGE AREA.--1,802 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.

Water temperatures: October 1950 to September 1951, February 1953 to September 1955.

Sediment records: February 1953 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 358 micromhos Oct. 6; minimum daily, 54.2 micromhos Aug. 18.

Temperatures: Maximum, 80°F on several days in July and August; minimum, freezing point on several days in December, January and February.

Sediment concentrations: Maximum daily, 1,830 ppm Mar. 6; minimum daily, 7 ppm Nov. 14.

Sediment loads: Maximum daily, 141,000 tons Oct. 16, 1954; minimum daily, 6 tons Oct. 9.

EXTREMES, 1950-51, 1953-55.--Specific conductance: Maximum daily, 388 micromhos Aug. 19, 1954; minimum daily, 54.2 micromhos Aug. 18, 1955.

Water temperatures: Maximum, 86°F Aug. 10, 1951; minimum, freezing point on several days during winter months.

Sediment concentrations (1953-1955): Maximum daily, 1,830 ppm Mar. 6, 1955; minimum daily, 5 ppm Jan. 8, 9, 1954.

Sediment loads (1953-55): Maximum daily, 141,000 tons Oct. 16, 1954; minimum daily, 5 tons Sept. 1-4, 1953.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955

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



## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT ALTAVISTA, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	236	26	17	778	19	40	1,230	32	106
2.....	239	24	15	910	19	47	1,260	21	71
3.....	356	73	70	1,030	28	78	1,160	20	63
4.....	500	93	126	1,030	21	58	1,060	15	43
5.....	376	60	61	940	17	43	820	14	31
6.....	336	64	58	940	16	41	1,200	27	87
7.....	264	34	24	820	14	31	1,840	50	a 248
8.....	239	12	8	790	13	28	1,560	43	181
9.....	221	10	6	910	10	25	1,340	31	112
10.....	268	30	22	784	11	23	1,560	41	173
11.....	215	22	13	730	12	24	1,720	52	241
12.....	194	22	12	715	12	23	1,400	46	174
13.....	288	47	37	710	9	17	1,400	37	140
14.....	260	26	18	650	7	12	4,050	227	s 2,670
15.....	9,270	1,098	s 50,300	610	9	15	4,860	225	2,950
16.....	41,300	1,187	s 141,000	760	9	18	3,150	125	1,060
17.....	5,220	599	8,440	736	13	26	2,340	75	474
18.....	2,430	187	1,230	880	27	64	2,160	52	303
19.....	1,560	73	307	1,400	257	971	2,430	68	446
20.....	1,440	46	179	5,130	807	11,200	2,080	62	348
21.....	1,090	32	94	11,900	1,118	35,900	1,840	48	238
22.....	1,000	26	70	4,950	385	5,150	1,440	40	a 156
23.....	880	21	50	2,790	118	889	1,370	31	a 115
24.....	778	19	40	2,000	62	335	1,400	28	106
25.....	725	17	33	1,720	39	181	1,300	25	88
26.....	880	18	43	1,340	27	98	1,000	20	54
27.....	710	20	38	1,400	24	91	1,090	20	59
28.....	720	18	35	1,060	20	57	1,200	20	65
29.....	820	27	60	1,400	40	151	1,200	49	159
30.....	1,090	40	118	1,720	52	241	3,330	256	2,300
31.....	820	28	62	--	--	--	4,050	285	3,120
Total.	74,725	--	202,586	51,533	--	55,877	57,840	--	16,381
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.....	2,880	155	1,210	850	24	55	7,000	458	8,660
2.....	2,340	71	449	970	19	50	7,840	666	14,100
3.....	1,960	46	243	970	17	45	5,220	364	5,130
4.....	1,680	36	163	940	28	71	4,680	203	2,570
5.....	1,480	40	160	910	24	59	4,860	428	5,620
6.....	1,440	34	132	1,730	201	939	10,800	1,830	53,400
7.....	1,340	27	98	10,300	813	22,600	9,160	666	16,500
8.....	1,260	22	75	6,900	538	10,000	6,300	433	7,370
9.....	1,200	17	55	4,320	198	2,310	4,590	173	2,140
10.....	1,120	15	45	3,240	107	936	3,780	112	1,140
11.....	1,160	14	a 44	2,700	74	539	3,240	97	849
12.....	1,260	13	44	2,520	70	a 476	3,150	89	757
13.....	1,200	15	49	1,920	62	321	2,880	96	746
14.....	1,090	15	44	1,400	56	a 212	2,610	75	529
15.....	1,060	14	a 40	1,800	50	243	2,520	75	510
16.....	1,030	16	44	1,680	39	177	3,060	103	851
17.....	1,030	24	67	1,560	31	131	4,770	181	2,330
18.....	1,000	19	51	1,480	31	124	4,590	235	2,910
19.....	1,030	19	53	1,370	30	111	4,950	163	2,180
20.....	1,060	26	74	1,260	24	82	5,040	175	2,380
21.....	1,000	25	a 68	1,200	26	84	4,410	107	1,270
22.....	1,000	26	70	1,260	32	109	4,230	156	1,780
23.....	1,090	30	88	1,680	58	263	5,600	219	3,310
24.....	1,090	24	71	2,430	110	722	4,500	187	2,270
25.....	1,030	18	a 50	2,520	86	585	3,780	91	929
26.....	1,000	17	46	2,250	59	358	3,420	74	683
27.....	1,000	12	32	2,180	122	712	3,420	79	729
28.....	940	15	a 88	3,510	179	1,700	2,970	60	481
29.....	910	21	52	--	--	--	2,700	56	406
30.....	910	16	a 39	--	--	--	2,520	56	381
31.....	850	13	30	--	--	--	2,250	47	266
Total.	38,440	--	3,724	65,830	--	44,014	140,840	--	143,199

s Computed by subdividing day.

a Computed from estimated concentration graph.

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT ALTAVISTA, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	2,000	36	194	1,720	41	190	1,440	337	1,310
2.....	1,900	43	221	1,600	39	168	1,120	177	535
3.....	1,800	40	194	1,520	36	148	1,000	134	a362
4.....	1,700	43	197	1,480	34	136	970	128	a335
5.....	1,600	37	160	1,370	28	104	940	91	231
6.....	1,600	29	125	1,370	30	111	910	80	197
7.....	1,600	28	121	1,300	27	95	910	75	184
8.....	1,500	27	109	1,260	29	99	1,920	974	5,050
9.....	1,400	25	95	1,300	41	144	1,920	740	3,840
10.....	1,400	25	a95	1,160	37	116	1,340	337	1,220
11.....	1,500	28	113	1,160	43	135	4,800	1,304	s25,100
12.....	2,000	246	1,330	1,160	46	144	7,100	1,835	35,200
13.....	3,150	187	1,590	1,340	54	195	3,150	626	5,320
14.....	8,410	444	10,100	1,880	96	a487	2,160	241	1,400
15.....	14,100	1,136	43,200	1,640	86	381	1,700	166	762
16.....	7,640	540	11,400	1,400	67	253	1,600	112	484
17.....	4,500	227	2,760	1,260	56	191	1,400	91	344
18.....	3,500	128	1,210	1,200	43	139	1,300	86	302
19.....	3,000	102	826	1,120	45	136	1,200	75	243
20.....	2,500	91	614	1,090	44	129	1,200	75	243
21.....	2,200	70	416	1,030	46	128	1,160	64	200
22.....	2,100	70	397	1,090	64	188	1,090	64	188
23.....	2,000	62	335	1,760	161	765	1,030	64	178
24.....	2,100	70	397	2,160	293	1,710	1,600	385	1,660
25.....	2,880	177	1,360	3,510	1,407	13,300	1,760	753	3,580
26.....	2,700	262	1,910	2,610	808	5,690	1,720	401	1,860
27.....	2,300	102	633	1,720	428	1,990	1,260	396	1,350
28.....	2,080	68	382	1,370	193	714	1,030	251	698
29.....	1,960	57	302	1,230	144	478	940	158	401
30.....	1,840	49	243	1,340	193	698	880	118	280
31.....	--	--	--	1,680	268	1,220	--	--	--
Total.	89,160	--	81,049	46,830	--	30,382	50,550	--	93,057
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.....	880	96	228	850	187	429	1,040	34	95
2.....	880	80	190	850	141	324	1,110	71	213
3.....	850	80	184	754	96	195	1,360	125	459
4.....	778	75	158	685	65	120	1,670	89	401
5.....	850	107	246	675	65	118	1,500	67	271
6.....	778	64	134	630	43	73	1,220	45	148
7.....	1,300	417	1,460	790	135	288	1,110	42	126
8.....	1,090	655	1,930	1,370	394	1,460	1,000	35	95
9.....	970	556	1,460	1,560	626	2,640	900	26	63
10.....	1,990	606	3,260	2,250	910	5,530	830	21	47
11.....	2,790	1,075	8,100	1,340	439	1,590	830	26	58
12.....	9,160	1,749	43,300	1,120	257	777	830	22	49
13.....	4,680	888	11,200	1,200	193	625	830	24	54
14.....	2,340	441	2,790	1,260	337	1,150	736	24	48
15.....	1,720	214	994	2,080	706	3,960	712	24	46
16.....	1,400	155	586	1,200	242	784	694	21	39
17.....	1,230	107	355	3,520	555	s9,620	670	21	38
18.....	1,090	81	238	27,900	1,198	90,200	640	22	38
19.....	1,030	81	225	10,400	1,017	28,600	628	24	41
20.....	970	64	168	3,510	332	3,150	610	28	46
21.....	880	64	152	2,460	150	996	580	22	34
22.....	850	56	129	1,980	122	652	555	22	33
23.....	778	51	107	1,700	81	372	565	32	49
24.....	910	62	152	1,670	82	370	592	55	88
25.....	1,000	118	319	1,460	58	229	712	34	65
26.....	1,000	102	275	1,320	47	168	795	54	116
27.....	910	98	241	1,220	62	204	700	39	74
28.....	920	128	283	1,110	42	126	640	30	52
29.....	1,090	302	889	1,080	42	122	616	27	45
30.....	910	257	631	970	34	89	586	27	43
31.....	790	177	378	970	34	82	--	--	--
Total.	46,714	--	80,762	79,884	--	155,050	25,261	--	2,974
Total discharge for year (cfs-days).....									767,807
Total load for year (tons).....									909,055

s Computed by subdividing day.

a Computed from estimated concentration graph.

ROANOKE RIVER BASIN--Continued  
ROANOKE RIVER AT ALTAVISTA, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September, 1955  
(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	Dis-charge (cfs)	Water temperature (°F)	Suspended sediment												Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed	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	
Oct. 15, 1954	10:20 p.m.	33,750		2,240	3,370		29	41	53	61	66	69	75		86	BWMC
Oct. 16	1:56 p.m.	45,740		944	2,740		21	32	46	67	91	92	98		100	BN
Nov. 21	5:45 p.m.	14,650		927	1,310		30	42	55	65	76	82	86		91	BWMC
Dec. 14	2:44 p.m.	510		348	1,757		9	15	22	31	42	52	79		84	BN
Dec. 14	7:46 p.m.	5,370		410	1,000		21	31	36	45	54	62	91		95	BWMC
Feb. 7, 1955	4:21 p.m.	11,828		892	2,360		27	36	47	59	68	75	85		92	BWMC
Mar. 6	6:44 p.m.	10,224		1,470	4,110		27	36	47	65	86	87	91		97	BN
Apr. 15	12:15 p.m.	12,880		1,590	4,930		25	37	50	60	73	77	89		94	BWMC
June 12	7:32 a.m.	8,097		2,280	5,920		41	55	69	81	91	93	98		99	BWMC
June 15	7:28 a.m.	8,449		2,040	5,560		36	53	68	81	95	97	99		100	BWMC
July 11	2:05 p.m.	2,268		2,820	3,310		35	52	70	86	98	99	100		--	BWMC
Aug. 18	12:45 p.m.	29,824		1,320	1,900		31	48	62	71	76	78	88		95	BWMC
Aug. 18	5:30 p.m.	30,886		1,250	1,700		30	48	53	60	62	66	74		83	BWMC
Aug. 18	7:30 p.m.	30,508		969	1,500		34	46	57	65	69	72	85		92	BWMC

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.

LOCATION.--At gaging station 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 1955.

Water temperatures: October 1950 to September 1955.

Sediment records: January 1954 to September 1955.

EXTREMES, 1954-55.--Hardness: Maximum, 68 ppm Oct. 1-10; minimum, 33 ppm Mar. 1-10, Aug. 11-20. Specific conductance: Maximum daily, 294 microhmhos Oct. 11; minimum daily, 54.4 microhmhos Aug. 19.

Water temperatures: Maximum, 83°F Aug. 7; minimum, freezing point Jan. 31.

Sediment concentrations: Maximum daily, 1,717 ppm July 13; minimum daily, 8 ppm Jan. 28.

EXTREMES, 1929-30, 1950-55.--Dissolved solids (1929-30, 1950-52): Maximum, 116 ppm Oct. 1-10, 1951; minimum, 59 ppm Feb. 1-10, 1952.

Hardness: Maximum, 69 ppm Sept. 11-20, 1954; minimum, 30 ppm Dec. 1-10, 1950, Mar. 21-31, 1952.

Specific conductance (1950-55): Maximum daily, 294 microhmhos Oct. 11, 1954; minimum daily, 48.4 microhmhos Dec. 23, 1951.

Water temperatures (1950-55): Maximum, 83°F Aug. 7, 1955; minimum, freezing point on several days during some winters.

Sediment concentrations (1954-55): Maximum daily, 1,717 ppm July 13, 1955; minimum daily, 8 ppm Jan. 28, 1955.

Sediment loads (1954-55): Maximum daily, 71,500 tons Mar. 2, 1954; minimum daily, 15 tons Sept. 16, 1954.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	446	7.1	0.00	18	5.5	18	2.8	80	21	17	0.1	0.7	140	68	2	228	7.2	4
Oct. 11-20	7,408	--	46	15	4.5	--	--	59	12	--	--	--	--	56	8	162	7.5	40
Oct. 21-31	1,519	--	10	14	4.0	--	--	52	13	--	--	--	--	51	9	144	7.8	15
Nov. 1-10	1,390	--	14	13	3.9	--	--	54	12	--	--	--	--	48	4	143	7.6	15
Nov. 11-20	1,470	--	12	12	4.0	--	--	56	10	--	--	--	--	46	0	143	7.7	20
Nov. 21-30	5,139	--	21	9.2	2.8	--	--	36	7.3	--	--	--	--	34	5	95.2	7.1	65
Dec. 1-10	2,193	--	08	12	3.6	--	--	47	11	--	--	--	--	45	6	124	7.3	20
Dec. 11-20	4,112	--	12	10	3.0	--	--	41	8.1	--	--	--	--	37	4	105	7.3	45
Dec. 21-31	2,472	--	09	12	3.3	--	--	47	9.3	--	--	--	--	44	5	113	7.5	20
Jan. 1-10, 1955	2,726	13	06	13	3.1	6.1	1.5	50	11	4.6	1	2.0	82	45	4	127	7.3	20
Jan. 11-20	1,792	--	04	14	3.5	--	--	53	9.8	--	--	--	--	49	6	127	7.4	5
Jan. 21-31	1,675	--	03	12	3.9	--	--	53	9.5	--	--	--	--	46	3	126	7.5	8
Feb. 1-10	4,393	--	12	11	3.0	--	--	45	8.3	--	--	--	--	40	3	112	7.2	45
Feb. 11-20	2,917	--	06	11	2.6	--	--	46	9.0	--	--	--	--	39	1	110	7.7	20
Feb. 21-28	3,398	--	10	10	2.6	--	--	45	9.0	--	--	--	--	38	0	109	7.5	30
Mar. 1-10	9,275	--	38	9.8	2.8	--	--	38	4.2	--	--	--	--	33	2	91.1	7.0	100
Mar. 11-20	5,009	--	21	14	2.8	--	--	51	6.6	--	--	--	--	46	5	113	7.6	40
Mar. 21-31	4,885	--	09	15	4.0	--	--	55	6.7	--	--	--	--	54	9	118	7.4	25

Apr. 1-10, 1955.....	2,483	14	.03	15	3.4	4.9	1.2	58	8.6	4.3	.1	.9	82	51	4	137	7.6	8
Apr. 11-20.....	7,511	--	.15	11	3.2	--	--	43	6.3	--	--	--	--	41	5	101	7.0	50
Apr. 21-30.....	3,794	--	.07	13	3.7	--	--	48	9.4	--	--	--	--	48	8	115	7.3	30
May 1-10.....	2,082	--	.11	13	4.3	--	--	56	9.2	--	--	--	--	50	4	135	7.5	15
May 11-20.....	2,158	--	.07	13	4.2	--	--	54	8.2	--	--	--	--	50	5	126	7.5	22
May 21-31.....	2,981	--	.20	11	3.4	--	--	46	6.7	--	--	--	--	41	4	108	7.2	85
June 1-10.....	2,039	--	.29	11	3.9	--	--	47	8.0	--	--	--	--	44	5	119	7.4	80
June 11-20.....	3,599	--	.38	9.4	3.2	--	--	40	7.1	--	--	--	--	37	4	105	7.3	125
June 21-30.....	1,719	--	.16	10	3.4	--	--	50	9.2	--	--	--	--	39	0	122	7.3	50
July 1-10.....	1,342	13	.12	11	3.9	9.2	2.0	56	9.3	6.3	.1	1.0	99	44	0	140	7.4	25
July 11-20.....	3,251	--	.41	9.4	2.7	--	--	41	14	--	--	--	--	35	1	102	7.2	140
July 21-31.....	1,135	--	.09	13	3.8	--	--	57	15	--	--	--	--	48	1	148	7.4	20
Aug. 1-10.....	1,241	--	.09	13	4.2	--	--	59	19	--	--	--	--	50	1	146	7.7	30
Aug. 11-20.....	10,550	--	.16	9.0	2.5	--	--	34	4.5	--	--	--	--	33	5	79.6	7.4	--
Aug. 21-31.....	2,932	--	.12	10	3.5	--	--	47	6.3	--	--	1.4	--	39	1	109	7.5	20
Sept. 1-10.....	2,316	--	.10	10	4.2	--	--	52	13	--	--	.9	--	42	0	121	7.7	15
Sept. 11-20.....	1,322	16	.08	13	4.6	9.8	1.8	63	11	8.0	.2	.3	91	51	0	146	7.5	5
Sept. 21-30.....	1,160	12	.07	12	3.3	11	1.8	61	14	9.0	.1	.4	93	52	2	159	7.4	5
Average.....	3,203	--	0.14	12	3.6	--	--	51	9.9	--	--	--	--	45	4	135	--	35

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement between 6 a. m. and 8 a. m./

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

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

Day	October			November			December		
	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.....	435	36	42	1,400	45	170	2,800	51	388
2.....	430	32	37	1,190	26	84	2,260	41	250
3.....	490	29	31	1,330	33	119	2,100	26	147
4.....	420	34	39	1,620	31	136	1,900	25	128
5.....	540	48	70	1,580	29	124	1,740	17	80
6.....	595	53	85	1,500	27	a 109	1,700	18	83
7.....	505	31	42	1,470	21	83	2,020	26	142
8.....	415	16	18	1,360	16	a 59	2,620	41	290
9.....	370	18	18	1,190	14	45	2,350	38	241
10.....	360	17	17	1,260	26	88	2,440	37	244
11.....	355	18	17	1,220	53	175	2,800	44	333
12.....	400	26	28	1,160	13	41	2,710	48	351
13.....	358	25	23	1,120	14	42	2,350	39	247
14.....	318	20	17	1,080	18	52	4,420	151	1,800
15.....	625	213	359	1,080	11	32	7,200	202	3,930
16.....	17,600	1,434	68,100	990	12	32	6,080	226	3,710
17.....	35,700	640	61,700	1,050	19	54	4,460	102	1,230
18.....	12,600	330	11,200	1,190	18	58	3,600	78	758
19.....	3,700	262	2,620	1,470	64	254	3,700	107	1,070
20.....	2,440	126	830	4,340	291	3,410	3,800	43	441
21.....	2,180	79	465	10,500	805	3,200	3,200	37	320
22.....	1,900	59	303	14,800	621	24,800	2,710	41	300
23.....	1,700	40	184	5,740	301	4,660	2,180	21	124
24.....	1,500	36	146	4,280	141	1,630	2,180	23	135
25.....	1,440	34	132	3,400	81	744	2,180	21	124
26.....	1,190	27	87	2,900	52	407	1,980	37	198
27.....	1,260	27	92	2,350	35	222	1,780	47	226
28.....	1,260	40	136	2,260	32	195	1,740	19	89
29.....	1,220	63	208	2,260	59	360	1,820	18	88
30.....	1,400	106	a 401	2,900	80	626	2,180	70	412
31.....	1,660	128	574	--	--	--	5,240	245	3,470
Total.	95,246	--	148,021	79,990	--	61,611	90,240	--	21,347
	January			February			March		
1.....	4,910	202	2,680	1,440	16	62	6,640	194	3,480
2.....	3,900	139	1,460	1,470	18	71	9,430	427	10,900
3.....	3,200	78	674	1,500	15	61	8,160	563	12,400
4.....	2,710	47	344	1,640	14	58	6,570	301	5,340
5.....	2,440	34	224	1,440	14	54	6,920	242	4,520
6.....	2,260	30	183	1,860	53	266	15,400	1,189	49,400
7.....	2,100	25	142	9,900	485	13,000	16,600	1,052	47,200
8.....	2,020	19	104	12,100	514	16,800	10,100	475	13,000
9.....	1,900	19	97	7,360	315	6,260	7,130	398	7,660
10.....	1,820	22	108	5,320	179	2,570	5,800	204	3,190
11.....	1,820	17	84	4,460	102	1,230	5,000	157	2,120
12.....	1,900	16	82	4,190	55	622	4,640	107	1,340
13.....	1,980	19	102	3,500	42	397	4,550	109	1,340
14.....	1,900	14	72	2,710	45	329	4,370	97	1,140
15.....	1,780	14	67	2,530	43	294	4,100	108	1,200
16.....	1,700	16	73	2,620	39	276	4,190	92	1,040
17.....	1,740	32	150	2,530	40	273	5,000	118	a 1,590
18.....	1,740	31	146	2,350	33	209	6,080	177	2,910
19.....	1,700	15	69	2,180	29	171	5,940	486	2,980
20.....	1,660	14	63	2,100	25	142	6,220	153	2,570
21.....	1,700	16	73	1,980	28	150	5,940	160	2,570
22.....	1,660	24	108	1,900	37	190	5,800	157	2,460
23.....	1,740	29	136	2,260	42	256	6,010	126	2,040
24.....	1,860	22	110	4,000	84	907	6,430	184	3,190
25.....	1,860	20	100	4,280	113	1,310	5,400	162	2,360
26.....	1,780	16	77	4,000	83	896	4,730	116	1,480
27.....	1,700	14	64	3,600	72	700	4,550	89	1,090
28.....	1,660	8	36	5,180	131	1,830	4,280	75	867
29.....	1,580	12	51	--	--	--	3,800	67	687
30.....	1,440	16	62	--	--	--	3,500	48	454
31.....	1,440	16	62	--	--	--	3,300	39	347
Total.	63,600	--	7,803	100,280	--	49,384	196,580	--	162,865

a Computed from estimated concentration graph.

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Suspended sediment, water year October 1954 to September 1955--Continued

Suspended sediment, water year October 1954 to September 1955--Continued									
Day	Mean discharge (cfs)	April		Mean discharge (cfs)	May		Mean discharge (cfs)	June	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	3,000	51	413	2,680	54	382	2,180	330	a 1,940
2.....	2,900	80	626	2,440	47	310	1,740	252	1,180
3.....	2,710	62	454	2,260	47	287	1,540	203	844
4.....	2,620	45	318	2,180	50	294	1,440	171	665
5.....	2,440	39	257	2,100	48	272	1,360	120	441
6.....	2,350	36	228	1,940	41	215	1,330	95	341
7.....	2,350	40	254	1,900	43	221	1,400	126	476
8.....	2,260	48	293	1,820	47	231	2,800	534	4,040
9.....	2,180	34	200	1,780	35	168	3,700	781	7,800
10.....	2,020	56	305	1,780	33	159	2,900	791	6,190
11.....	2,020	47	a 256	1,660	37	166	2,350	669	4,240
12.....	2,260	47	287	1,780	44	211	11,300	1,415	43,200
13.....	4,280	238	s 2,980	1,940	66	346	6,030	907	14,800
14.....	8,140	479	10,500	3,400	209	1,920	3,900	645	6,790
15.....	21,100	794	45,200	3,200	119	1,030	2,710	272	1,990
16.....	15,500	669	28,000	2,440	71	468	2,260	180	1,100
17.....	6,980	456	8,560	2,020	53	289	1,980	136	727
18.....	5,640	330	5,030	1,820	47	231	1,820	100	491
19.....	4,820	170	2,210	1,700	42	193	1,680	92	412
20.....	4,370	121	1,430	1,620	32	140	1,580	85	363
21.....	3,900	112	1,180	1,540	30	125	1,580	75	320
22.....	3,700	92	919	1,540	39	162	1,540	69	287
23.....	3,500	80	756	2,620	430	3,040	1,440	61	237
24.....	3,400	78	718	4,370	922	10,900	1,470	78	310
25.....	5,240	276	3,900	5,870	771	12,200	1,980	168	898
26.....	5,000	262	3,540	4,730	490	6,260	2,440	242	1,590
27.....	4,000	191	2,060	3,300	587	5,230	2,260	340	2,070
28.....	3,400	134	1,230	2,260	373	2,260	1,760	223	1,070
29.....	3,000	82	664	1,940	230	1,200	1,400	190	718
30.....	2,800	61	461	1,820	153	752	1,300	146	512
31.....	--	--	--	2,800	316	2,390	--	--	--
Total.	137,880	--	123,257	75,190	--	52,072	73,170	--	106,042
July									
1.....	1,300	110	386	1,080	97	283	1,820	39	192
2.....	1,300	92	323	1,020	98	270	1,860	49	246
3.....	1,300	83	291	1,050	84	238	2,980	137	a 1,100
4.....	1,300	65	228	960	73	189	4,000	181	1,950
5.....	1,220	47	155	900	74	180	2,900	120	940
6.....	1,900	63	202	810	72	157	2,440	97	639
7.....	1,330	138	496	810	55	120	2,020	69	485
8.....	1,500	178	721	1,720	601	2,790	1,860	52	261
9.....	1,620	169	739	1,740	447	2,100	1,700	56	257
10.....	1,360	213	782	2,320	704	4,410	1,580	42	179
11.....	2,620	378	2,670	2,710	636	4,650	1,500	62	251
12.....	6,900	1,332	s 29,500	1,980	475	2,540	1,500	37	150
13.....	7,640	1,717	35,400	1,940	393	2,080	1,360	29	106
14.....	4,820	985	12,800	2,980	822	s 7,860	1,300	42	147
15.....	2,710	466	3,410	6,920	1,529	28,600	1,260	30	102
16.....	2,020	264	1,440	4,100	485	5,370	1,280	30	102
17.....	1,700	183	748	3,900	437	4,600	1,260	29	99
18.....	1,470	122	484	25,100	694	47,000	1,280	23	78
19.....	1,330	104	373	36,700	454	45,000	1,260	24	82
20.....	1,300	91	319	19,200	232	12,000	1,280	29	99
21.....	1,180	95	298	6,500	210	3,690	1,220	30	99
22.....	1,120	119	360	3,800	188	1,930	1,160	21	66
23.....	1,050	68	187	3,700	186	1,860	1,120	25	76
24.....	990	60	180	2,900	118	924	1,120	28	85
25.....	1,050	59	167	2,900	98	767	1,120	22	67
26.....	1,120	67	203	2,530	77	526	1,190	28	90
27.....	1,190	66	212	2,440	61	a 402	1,260	35	119
28.....	1,080	60	175	2,020	53	289	1,260	30	102
29.....	1,020	56	154	1,820	54	265	1,190	19	61
30.....	1,440	107	416	1,820	45	221	1,160	14	44
31.....	1,260	146	497	1,820	44	216	--	--	--
Total.	56,410	--	94,296	150,190	--	181,507	48,180	--	8,274
Total discharge for year (cfs-days).....									1,168,956
Total load for year (tons).....									1,046,479

s Computed by subdividing day.

a Computed from estimated concentration graph.



## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT RANDOLPH, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	Dis-charge (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
Oct. 16, 1954	6:38 a. m.	10,900		1,980	4,230		30	41	56	70	86	92	96		100	--	BWMC
Oct. 17	4:40 p. m.	39,600		806	1,710		23	34	46	55	80	84	87		98	100	BN
Nov. 22	1:20 p. m.	18,200		536	1,900		34	46	61	73	80	85	92		98	100	BWMC
Dec. 15	1:20 p. m.	7,680		273	753		29	38	47	59	69	76	84		93	98	BWMC
Feb. 8, 1955	12:18 a. m.	14,300		691	1,370		13	27	38	56	77	84	94		97	100	BN
Mar. 7	12:34 a. m.	18,500		916	1,350		44	58	70	77	82	89	96		98	100	BWMC
Apr. 15	2:48 p. m.	21,200		1,190	3,500		22	32	45	62	84	89	95		98	100	BN
June 12	7:16 a. m.	10,100		2,120	4,000		37	55	68	82	93	97	99		100	--	BWMC
June 12	7:16 a. m.	10,100		2,250	6,630		18	32	41	55	87	95	96		99	100	BN
Aug. 18	7:54 a. m.	20,800		754	1,940		35	47	60	75	83	91	99		100	--	BWMC
Aug. 19	10:47 a. m.	37,000		479	1,340		36	53	64	72	75	79	94		100	--	BN

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT LEAKSVILLE, N. C.

LOCATION. --At water plant intake of Leaksville, Rockingham County, half a mile upstream from bridge on State Highway 87, and 1.3 miles upstream from Smith River. DRAINAGE AREA. --1,050 square miles (at gaging station near Wentworth, N. C.).

RECORDS AVAILABLE. --Chemical analyses: November 1944 to October 1945, October 1954 to September 1955.

REMARKS. --Records of discharge for gaging station near Wentworth, N. C. for water year October 1954 to September 1955 given in WSP 1383. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 18, 1954	952	13	0.01	2.9	1.5	2.6	2.5	14	6.8	2.2	0.1	0.9	41	13	2	47.2	8.1	10
Nov. 18	365	18	.02	4.2	1.9	3.8	1.9	27	4.7	2.5	.1	.5	51	18	0	62.6	7.0	10
Dec. 15	2,910	11	.01	3.2	1.5	2.6	1.2	14	6.1	2.0	.1	.5	40	16	3	45.8	6.8	17
Jan. 24, 1955	663	7.9	.03	4.2	1.1	4.4	1.2	21	3.5	3.0	.1	.6	45	15	0	53.3	6.7	5
Feb. 18	952	8.8	.01	4.0	1.1	3.9	1.2	19	4.0	2.8	.1	.8	43	15	0	50.5	6.5	15
Mar. 17	2,580	7.7	.03	3.6	1.1	3.9	1.2	16	5.2	2.5	.1	.5	45	14	1	46.3	6.6	8
Apr. 19	1,850	12	.04	2.8	1.0	2.9	1.3	15	3.7	2.0	.1	.9	39	11	0	54.5	7.0	10
May 18	795	13	.03	3.8	1.1	2.8	1.2	23	2.6	2.0	.1	.6	42	14	0	53.7	6.8	8
June 21	600	15	.04	3.6	1.3	3.1	1.1	23	1.5	2.0	.1	.3	43	14	0	52.1	7.2	8
July 19	504	15	.01	3.8	1.3	3.5	1.4	25	1.4	2.0	.1	.5	46	15	0	55.0	7.0	23
Aug. 22	706	13	.01	3.2	1.1	3.1	1.8	19	3.3	2.2	.1	.8	38	13	0	48.9	6.6	5
Sept. 19	326	16	.01	4.4	1.3	4.0	1.6	29	3.1	2.0	.1	.3	56	16	0	58.1	7.0	3

## 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.--Water temperatures: January 1954 to September 1955.

Sediment records: January 1954 to September 1955.

EXTREMES, 1954-55.--Specific conductance: Maximum daily, 245 micromhos Oct. 14; minimum daily, 36.5 micromhos Oct. 17.

Water temperatures: Maximum, 90°F July 5, 23, Aug. 6; minimum, freezing point Dec. 7, 8, Feb. 12.

Sediment concentrations: Maximum daily, 2,263 ppm July 13; minimum daily, 13 ppm Jan. 6. Sediment loads: Maximum daily, 76,900 tons Oct. 16; minimum daily, 16 tons Oct. 13.

EXTREMES, January 1954 to September 1955.--Specific conductance: Maximum daily, 245 micromhos Oct. 14, 1954; minimum daily, 36.5 micromhos Oct. 17, 1954.

Water temperatures: Maximum, 91°F July 3, 14, 1954; minimum, freezing point Dec. 7, 8, 1954, Feb. 12, 1955.

Sediment concentrations: Maximum daily, 2,263 ppm July 13, 1955; minimum daily, 13 ppm Jan. 6, 1955.

Sediment loads: Maximum daily, 76,900 tons Oct. 16, 1954; minimum daily, 14 tons Sept. 29, 1954.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	53	43	48	42	55	55	62	78	84	85	80
2	82	51	44	51	42	52	50	69	--	85	88	74
3	82	49	42	49	42	52	59	69	--	87	88	72
4	88	49	42	48	40	52	58	79	--	87	87	73
5	84	49	41	53	41	--	54	75	80	90	88	74
6	--	50	37	53	42	57	56	72	80	--	90	71
7	68	49	32	--	42	52	60	72	78	81	88	80
8	61	50	32	47	42	51	61	74	75	82	83	78
9	70	--	--	47	44	53	63	72	72	84	79	73
10	75	50	38	45	46	53	65	74	72	80	78	78
11	74	51	38	43	45	55	62	74	72	79	78	80
12	76	53	38	41	32	69	64	73	70	74	75	79
13	79	53	38	41	38	61	63	67	68	75	80	74
14	77	53	42	39	37	58	61	65	71	75	76	75
15	--	52	42	42	41	52	63	66	72	79	76	76
16	62	52	42	40	45	59	65	70	72	79	77	79
17	59	54	48	42	45	55	65	70	76	85	75	78
18	57	56	45	41	46	54	63	70	78	89	75	79
19	52	59	--	37	47	49	63	75	76	88	77	74
20	51	58	41	39	49	50	71	76	79	87	80	79
21	58	55	38	38	49	51	69	76	80	88	84	78
22	60	52	36	41	51	54	71	76	84	88	84	76
23	60	48	40	38	53	55	72	75	81	90	80	74
24	63	48	40	40	46	56	70	74	83	84	81	76
25	64	48	40	40	49	52	66	74	80	87	79	73
26	69	42	40	42	50	53	62	75	79	88	87	71
27	66	44	44	40	51	48	60	78	79	87	87	72
28	63	44	45	39	50	48	59	78	81	87	84	75
29	62	45	50	39	--	48	66	79	80	82	83	76
30	56	43	51	--	--	51	66	80	82	83	84	76
31	55	--	48	38	--	52	--	--	--	82	80	--
Average	67	50	41	43	45	54	63	73	77	84	82	76

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	465	33	41	1,080	23	67	2,680	124	897
2.....	525	190	289	900	19	46	2,040	65	358
3.....	515	126	175	1,000	19	51	1,790	53	256
4.....	400	51	55	1,100	27	80	1,610	48	209
5.....	320	35	30	1,350	33	120	1,500	28	113
6.....	308	24	20	1,250	38	128	1,790	45	217
7.....	400	38	41	1,250	30	101	3,240	117	1,020
8.....	320	23	20	1,020	18	50	3,160	52	444
9.....	332	19	17	925	20	50	22,460	59	392
10.....	284	22	17	1,080	26	76	3,640	119	1,170
11.....	340	24	22	1,000	18	49	3,480	105	990
12.....	312	28	24	1,050	16	45	2,530	56	383
13.....	280	21	16	1,020	19	52	2,320	54	338
14.....	312	27	23	975	26	68	3,960	475	5,080
15.....	3,090	733	s 13,900	850	20	46	11,700	553	17,500
16.....	21,900	1,300	76,900	750	16	32	5,960	213	3,430
17.....	32,200	572	49,700	950	16	41	3,560	116	1,110
18.....	11,700	306	9,670	1,050	22	62	2,760	71	529
19.....	2,180	223	1,310	2,390	138	891	2,840	66	506
20.....	1,550	126	a 527	2,660	114	819	3,080	67	557
21.....	1,450	60	235	5,720	500	7,720	2,250	59	358
22.....	1,350	47	171	6,740	509	9,260	2,040	50	275
23.....	1,200	37	120	3,320	209	1,870	1,850	36	180
24.....	1,100	33	98	2,600	87	611	1,870	29	131
25.....	975	34	90	2,460	75	498	1,730	22	103
26.....	850	32	73	1,730	188	878	1,550	20	84
27.....	975	36	95	1,730	60	280	1,450	19	74
28.....	925	31	77	1,610	25	109	1,180	16	51
29.....	1,100	49	146	2,110	114	649	1,500	17	69
30.....	1,150	51	158	3,000	141	1,140	1,550	27	113
31.....	1,200	34	110	--	--	--	2,320	80	564
Total.	90,008	--	163,150	54,670	--	25,889	85,190	--	37,501
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.....	2,180	78	459	1,120	17	51	2,390	65	419
2.....	1,910	65	335	1,300	16	56	3,480	111	a 1,040
3.....	1,670	47	212	1,450	24	94	2,840	84	644
4.....	1,450	31	121	1,500	29	117	2,460	63	418
5.....	1,550	24	100	1,400	24	91	2,840	340	2,610
6.....	1,550	27	113	1,910	136	701	8,390	1,233	27,900
7.....	1,500	25	101	13,600	791	29,000	8,860	912	21,800
8.....	1,450	23	90	19,600	684	36,200	4,680	737	9,310
9.....	1,400	22	83	7,980	291	6,270	3,400	252	2,310
10.....	1,250	20	68	4,120	146	1,620	2,760	109	812
11.....	1,250	23	78	3,080	97	807	2,460	87	578
12.....	1,550	27	113	3,560	97	932	2,460	134	890
13.....	1,610	28	122	3,240	78	682	2,840	144	1,100
14.....	1,500	24	97	2,320	64	401	2,840	325	2,490
15.....	1,400	20	76	2,110	48	273	2,180	141	830
16.....	1,350	13	47	2,250	39	237	2,680	136	984
17.....	1,250	16	54	2,180	35	206	5,000	335	4,520
18.....	1,120	18	54	2,040	37	204	5,000	317	4,280
19.....	1,300	21	74	1,970	36	191	4,360	218	2,570
20.....	1,400	17	64	1,790	35	169	5,160	233	3,250
21.....	1,400	14	53	1,610	28	122	5,320	291	4,180
22.....	1,400	16	60	1,500	27	109	4,280	175	2,020
23.....	1,550	21	88	1,730	30	140	5,080	199	2,730
24.....	1,550	17	71	1,850	31	155	4,680	209	2,640
25.....	1,450	20	78	2,180	31	182	3,400	157	1,440
26.....	1,610	17	74	2,180	27	159	3,080	82	682
27.....	1,550	17	71	2,110	30	171	2,530	63	430
28.....	1,550	23	96	1,970	31	165	2,320	50	313
29.....	1,610	19	83	--	--	--	2,040	47	259
30.....	1,550	17	71	--	--	--	2,040	39	215
31.....	1,250	16	54	--	--	--	1,970	37	187
Total.	46,110	--	3,260	93,650	--	79,505	113,820	--	103,861

s Computed by subdividing day.

a Computed from estimated concentration graph.

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.--Continued

## Suspended sediment, water year October 1954 to September 1955--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.....	1,850	34	170	2,180	68	400	1,550	112	469
2.....	1,850	34	170	1,850	61	305	1,350	73	266
3.....	1,670	78	352	1,730	54	252	1,250	82	277
4.....	1,670	181	816	1,790	54	261	1,200	73	237
5.....	1,550	63	264	1,790	51	246	1,150	73	227
6.....	1,610	42	183	1,670	48	216	1,080	58	169
7.....	1,790	44	213	1,610	44	191	925	73	182
8.....	1,730	37	173	1,550	45	188	2,320	912	5,710
9.....	1,670	29	131	1,350	47	171	3,400	786	7,220
10.....	1,500	24	97	1,250	45	152	1,970	1,018	5,410
11.....	1,400	25	95	1,450	44	172	2,520	1,688	11,500
12.....	1,550	41	172	1,500	46	186	6,390	1,867	32,200
13.....	2,680	252	1,820	1,790	184	889	4,760	1,581	20,400
14.....	13,100	1,331	s 50,400	3,720	340	3,410	2,110	713	4,060
15.....	22,400	1,096	66,300	2,760	296	2,210	1,790	291	1,410
16.....	26,500	698	49,900	1,970	189	1,010	1,610	121	526
17.....	13,100	359	12,700	1,550	102	427	1,450	116	454
18.....	4,600	233	2,890	1,610	70	304	1,400	107	404
19.....	3,560	165	1,590	1,550	68	285	1,300	82	288
20.....	3,080	126	1,050	1,500	52	211	1,250	92	311
21.....	2,840	87	667	1,450	58	227	1,200	107	347
22.....	2,680	87	830	1,300	58	204	1,250	112	378
23.....	2,530	68	465	2,390	582	3,760	1,200	78	253
24.....	2,320	107	670	3,400	354	3,250	1,990	678	s 5,830
25.....	4,280	1,018	11,800	5,480	1,168	17,300	2,460	1,489	9,890
26.....	6,830	1,057	19,500	3,320	951	8,520	1,730	606	2,830
27.....	4,040	834	9,100	2,320	369	2,310	1,180	257	819
28.....	3,000	378	3,060	1,910	282	1,350	1,050	146	414
29.....	2,600	146	1,020	1,730	456	2,130	1,020	112	308
30.....	2,320	82	514	1,550	194	812	1,020	87	240
31.....	--	--	--	1,250	136	459	--	--	--
Total.	142,300	--	236,912	62,270	--	51,808	54,875	--	112,893
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.....	1,020	79	218	1,150	203	630	1,080	56	163
2.....	1,020	97	267	1,250	157	530	1,300	118	414
3.....	1,000	92	248	1,250	151	510	2,180	240	1,410
4.....	800	72	156	1,050	120	340	3,640	333	3,270
5.....	1,500	73	296	1,000	107	289	2,600	199	1,400
6.....	1,000	112	a 302	975	99	261	1,610	111	483
7.....	1,500	223	a 903	1,020	259	s 860	1,450	87	341
8.....	1,080	306	892	1,610	529	s 2,430	1,300	77	270
9.....	1,020	344	947	2,640	846	s 6,950	1,200	65	211
10.....	1,180	595	1,900	2,040	739	4,070	1,150	49	152
11.....	1,500	728	2,950	1,400	398	1,500	1,000	105	284
12.....	4,760	1,328	s 19,200	1,300	277	972	900	59	143
13.....	9,220	2,263	56,300	1,400	246	937	850	31	71
14.....	5,320	893	s 15,000	1,920	379	s 2,540	1,050	57	162
15.....	2,390	631	4,070	5,880	1,326	21,100	1,000	52	140
16.....	1,850	284	1,420	2,530	698	4,770	950	39	100
17.....	1,610	147	639	5,220	647	s 12,400	950	37	95
18.....	1,120	130	393	19,800	1,205	64,400	875	31	73
19.....	1,050	107	303	20,400	883	48,600	850	24	55
20.....	1,150	116	360	5,970	708	11,400	675	33	80
21.....	1,120	97	293	2,390	243	1,570	800	36	78
22.....	1,150	77	239	1,790	144	696	825	31	69
23.....	1,050	81	230	1,450	122	478	825	29	65
24.....	950	80	205	1,550	90	377	900	30	73
25.....	1,220	494	1,630	1,450	83	325	975	35	92
26.....	2,000	485	2,620	1,300	67	235	850	35	80
27.....	1,730	717	3,350	1,180	61	194	800	33	71
28.....	1,200	560	1,810	1,150	35	109	975	34	90
29.....	1,220	299	985	1,020	44	121	950	36	92
30.....	1,300	266	934	900	53	129	1,100	38	113
31.....	1,450	359	1,410	1,000	58	157	--	--	--
Total.	55,480	--	120,470	95,185	--	189,880	35,610	--	10,120
Total discharge for year (cfs-days) .....								929,168	
Total load for year (tons) .....								1,135,249	

s Computed by subdividing day.

a Computed from estimated concentration graph.

## ROANOKE RIVER BASIN--Continued

## DAN RIVER AT PACES, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
 (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	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
Oct. 16, 1954 ...	12:27 p.m.	15,000		1,980	2,760		35	46	58	67	74	80	86		89	94	BWMC
Oct. 16 ...	9:44 a.m.	19,000		1,610	5,250			38	48	58	79	83	90		95	100	BN
Oct. 16 ...	10:00 a.m.	12,500		614	1,380		33	42	53	60	67	72	89		94	97	BWMC
Feb. 7, 1955 ...	8:30 p.m.	16,600		849	2,390		36	45	56	66	77	82	92		97	99	BWMC
Mar. 6 ...	10:07 p.m.	9,860		1,180	1,660		52	67	73	76	77	77	78		89	96	BWMC
Apr. 15 ...	5:10 p.m.	22,900		1,030	3,070		48	62	74	82	87	89	97		99	100	BN
June 12 ...	10:43 a.m.	6,130		1,640	5,950		48	63	73	84	94	96	99		100	--	BN
June 12 ...	10:43 a.m.	6,130		1,650	6,250		57	68	78	86	92	95	99		100	--	BWMC
Aug. 18 ...	12:27 p.m.	19,200		1,650	5,700		25	36	44	59	84	94	98		100	--	BN
Aug. 19 ...	1:30 p.m.	21,600		633	1,830		49	60	71	77	81	86	96		99	100	BWMC

## ROANOKE RIVER BASIN--Continued

## ROANOKE RIVER AT BUGGS ISLAND, VA.

LOCATION --At gaging station 1,200 feet downstream from John H. Kerr Dam, 2.4 miles upstream from Allens Creek, 5.3 miles upstream from bridge on U. S. Highway 1, 6.7 miles southeast of Boynton, Mecklenburg County, and at mile 178.4.

DRAINAGE AREA --7,786 square miles, approximately 1951 to September 1952, October 1954 to September 1955.

RECORDS AVAILABLE --Chemical analyses: October 1951 to September 1952, October 1954 to September 1955.

REMARKS --Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 13, 1954	5,930	7.8	0.53	7.7	2.8	7.0	2.0	43	5.5	4.9	0.1	1.4	60	31	0	98.1	7.0	28
Nov. 16	4,500	5.9	.10	8.6	2.2	7.5	2.1	40	6.5	6.2	.1	1.5	97	30	0	100	6.6	35
Dec. 15	11,000	7.5	.13	7.9	1.9	8.1	2.5	36	6.7	6.1	.1	.7	75	28	0	106	7.3	35
Jan. 5, 1955	9,630	9.1	.32	6.7	1.8	6.4	2.1	34	5.5	5.1	.1	1.5	57	24	0	93.5	7.1	105
Feb. 16	4,360	12	.24	7.1	1.8	6.1	1.9	35	5.7	5.0	.0	1.9	76	25	0	91.9	7.2	155
Mar. 23	10,800	12	.32	7.2	1.8	5.2	1.5	32	4.5	3.8	.0	1.7	84	23	0	83.2	7.3	100
Apr. 19	28,500	9.3	.23	8.4	2.0	4.8	1.6	35	6.4	4.4	.0	1.7	77	29	0	90.5	6.8	100
June 13	10,800	9.0	.28	7.0	2.3	5.0	2.0	34	4.7	4.9	.0	1.7	84	27	0	85.2	7.6	85
July 19	7,850	11	.28	8.7	2.3	6.0	1.9	37	9.2	4.2	.2	.9	75	31	1	97.3	7.4	35
Aug. 24	32,200	7.7	.30	6.8	1.9	4.0	2.0	38	4.3	4.3	.1	.7	69	25	0	86.8	7.6	55
Sept. 14	4,180	9.0	.33	6.9	1.8	4.0	2.0	29	7.4	2.9	.1	1.7	68	25	1	69.5	7.5	80

## 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 1955.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 15, 1954		10	0.59	11	2.9	8.1	1.5	48	10	5.5	0.1	0.5	80	40	1	125	6.8	35
Nov. 15		7.3	.01	9.5	2.0	8.7	2.6	45	8.7	5.5	.0	.3	68	32	0	117	7.1	35
Dec. 15		5.5	.01	8.3	2.6	9.2	2.2	44	9.5	4.0	.1	.9	73	32	0	116	6.8	32
Jan. 15, 1955		10	.02	7.9	2.1	8.6	2.2	38	9.1	5.8	.1	1.2	69	29	0	104	6.7	18
Feb. 15		6.3	.04	7.2	2.4	9.4	2.2	35	12	6.5	.1	1.1	76	28	0	102	6.6	15
Mar. 15		10	.07	7.2	1.7	7.4	1.8	32	9.7	5.2	.1	.8	87	25	0	95.3	6.6	20
Apr. 15		7.9	.12	9.0	2.1	7.4	1.4	39	9.1	4.5	.1	1.4	73	31	0	111	6.6	15
May 16		8.4	.08	9.1	2.3	6.7	1.9	42	7.5	5.0	.1	1.3	73	32	0	107	6.9	10
June 15		10	.07	9.9	1.9	7.2	1.6	46	7.7	4.2	.1	.8	73	32	0	113	7.3	12
July 15		10	.10	8.8	2.1	5.3	2.0	40	5.4	4.5	.1	1.1	70	31	0	101	6.9	28
Aug. 15		9.1	.11	8.0	1.9	6.0	2.0	39	5.2	4.0	.1	.5	69	28	0	94.7	7.0	40
Sept. 15		9.3	.27	8.3	1.9	5.4	2.2	37	4.7	4.0	.1	1.1	74	29	0	89.5	6.6	40



ROANOKE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN ROANOKE RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Dis- charge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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,	Non- mag- nesium			

DAN RIVER NEAR FRANCISCO

Mar. 24, 1955	250			2.6	1.2			11	3.9	1.2		1.0	31	12	3	31.2	6.8	
Sept. 14	102	9.5	0.04	3.0	1.0	1.9	0.7	16	1.3	1.4	0.0	.7	a27	12	0	31.5	6.9	6

MAYO RIVER NEAR PRICE

Mar. 9, 1955	320			3.0	1.7			18	1	2.2		0.0	42	14	0	40.8	7.0	
Aug. 25	178	16	0.02	4.3	1.3	3.1	1.3	26	1.6	2.2	0.0	.2	a43	16	0	50.3	7.2	8

DAN RIVER NEAR WENTWORTH

Mar. 10, 1955	943			3.4	1.2			21	1	2.0		0.9	46	14	0	44.7	7.1	
Aug. 25	563	15	0.01	4.0	1.3	3.4	1.6	25	2.0	2.2	0.1	.5	a42	15	0	50.8	7.0	7

SMITH RIVER AT SPRAY

Mar. 10, 1955	473			4.7	2.1			27	4	4.2		0.7	51	21	0	67.7	7.1	
Aug. 25	259	14	0.01	5.6	1.9	7.0	2.1	35	2.6	6.2	0.0	1.1	a58	22	0	85.6	6.9	8

ROANOKE RIVER NEAR SCOTLAND NECK

Feb. 16, 1955	4,400			5.2	1.9			26	9	4.2		0.6	63	21	0	80.7	7.0	
Sept. 1	14,700	11	0.04	7.6	1.7	6.8	2.2	39	6.9	4.8	0.1	1.0	a61	26	0	94.5	6.8	35

a Sum of determined constituents.

## 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 4½ miles downstream from Rocky Creek, and at mile 27.7. DRAINAGE AREA.--521 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1949, October 1953 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 86°F July 27-29; minimum, 35°F on several days during December.

EXTREMES, 1948-49, 1953-55.--Water temperatures: Maximum, 86°F July 27-29, 1955; minimum, 33°F Dec. 28, 1948.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955  
 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.....	74	72	54	52	44	44	42	36	36	36	48	46	52	50	62	62	76	74	75	74	83	82	76	76
2.....	74	72	52	52	44	44	46	45	36	36	50	50	52	52	64	62	74	73	77	77	82	82	76	76
3.....	74	72	52	51	44	42	46	45	36	36	50	50	52	52	64	62	74	73	77	77	84	84	76	74
4.....	74	73	51	50	42	41	45	45	36	36	52	50	56	55	64	64	72	70	80	78	84	83	74	73
5.....	74	74	50	50	41	41	45	45	36	36	56	52	57	56	66	64	71	71	81	80	83	83	73	73
6.....	76	74	50	50	41	39	45	45	36	36	58	56	57	57	68	66	73	71	81	81	84	83	73	73
7.....	74	69	50	48	39	37	45	44	42	36	58	57	58	57	68	67	73	73	83	81	84	84	74	73
8.....	69	66	48	48	37	37	44	43	43	42	57	54	58	58	69	68	73	72	83	82	84	84	74	73
9.....	66	65	48	48	37	35	43	43	43	43	54	52	59	58	69	68	72	69	82	81	84	84	74	74
10.....	66	64	48	48	35	35	43	43	43	43	52	52	60	58	69	68	69	68	81	79	84	82	74	73
11.....	68	65	48	47	35	35	43	41	43	43	52	52	60	60	70	69	68	68	78	78	82	81	73	73
12.....	69	66	47	47	35	35	41	41	43	43	54	52	62	60	70	70	68	78	75	81	75	73	73	73
13.....	70	68	47	47	35	35	41	40	43	41	57	54	62	62	70	70	70	69	75	75	75	75	73	72
14.....	72	70	47	47	35	35	40	38	41	39	57	57	62	62	70	70	70	70	75	75	76	75	72	71
15.....	71	66	47	47	35	35	38	37	39	39	57	57	62	62	70	68	70	70	75	75	76	76	71	70
16.....	68	64	48	47	35	35	37	37	39	39	58	57	63	62	68	67	70	70	77	75	76	76	70	70
17.....	64	62	49	48	35	35	37	37	39	39	58	58	64	63	68	67	72	70	79	77	76	76	71	70
18.....	62	60	50	49	38	35	37	37	40	39	58	58	64	64	68	67	72	71	82	79	76	76	71	71
19.....	60	60	51	50	38	38	37	36	40	40	58	55	66	64	68	67	71	71	83	82	76	76	71	71
20.....	60	59	51	51	38	38	37	37	41	40	55	52	68	66	70	68	72	71	84	83	76	76	71	71
21.....	59	58	51	51	38	38	37	36	42	41	52	52	70	68	70	70	74	72	84	84	76	76	71	71
22.....	58	58	51	51	38	38	36	36	44	42	54	52	70	70	70	70	76	74	84	84	76	76	71	71
23.....	58	58	51	51	38	36	36	36	44	44	54	54	70	70	72	70	76	76	85	84	77	77	71	71
24.....	57	57	51	50	36	36	36	36	44	44	54	54	71	70	72	72	77	76	85	84	77	77	71	71
25.....	57	57	50	49	36	36	36	36	44	44	54	54	71	71	74	72	77	74	84	84	77	76	71	71
26.....	57	57	49	47	36	36	36	36	44	44	56	54	71	68	74	74	74	72	84	84	76	76	71	70
27.....	58	57	47	46	36	36	36	36	44	44	56	55	68	66	75	74	72	72	86	84	76	75	70	70
28.....	58	58	46	46	36	36	36	36	46	44	55	53	66	64	76	75	72	72	86	85	76	76	70	70
29.....	58	58	46	46	39	36	36	36	46	44	55	51	64	62	76	76	72	72	86	84	76	76	70	70
30.....	58	57	46	44	42	39	36	36	46	44	51	50	62	62	76	76	74	72	84	83	76	76	70	70
31.....	57	54	42	42	36	36	36	36	46	44	51	50	62	62	76	76	74	72	84	83	76	76	70	70
Average.....	65	64	49	49	38	37	40	39	41	40	54	53	63	62	70	69	72	71	81	80	79	78	72	72

## PAMLICO RIVER BASIN--Continued

## TAR RIVER AT GREENVILLE, N. C.

LOCATION.--At bridge on N. C. Highway 11, 600 feet downstream from Atlantic Coast Line Railroad bridge at Greenville, Pitt County, and at mile 21.0.

DRAINAGE AREA--2,620 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949, January to September 1955.

EXTREMES 1955.--Dissolved solids: Maximum, 79 ppm Aug. 1-10; minimum, 56 ppm July 11-20.

Hardness: Maximum, 25 ppm June 1-10; minimum, 14 ppm July 11-20.

Sulfate: Maximum, 25 ppm June 1-10; minimum, 14 ppm July 11-20.

Specific conductance: Maximum daily, 102 micromhos May 17; minimum daily, 43.4 micromhos July 15.

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, January to September, 1955

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> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium	Non-carbonate			
Jan. 1-10, 1955	.....	12	0.07	4.8	1.9	7.2	1.4	18	11	7.5	0.1	0.9	20	5	86.2	6.7	24
Jan. 11-20	.....	16	.04	5.7	1.6	8.0	1.6	22	11	7.2	.0	.8	21	3	91.5	6.7	17
Jan. 21-31	.....	13	.06	5.6	1.7	7.5	1.5	18	12	7.8	.0	1.0	21	6	90.9	6.7	22
Feb. 1-10	.....	14	.03	5.2	1.8	7.7	1.3	16	14	7.8	.1	.9	20	7	87.2	6.8	27
Feb. 11-20	.....	12	.04	5.2	1.6	6.3	1.8	11	15	6.0	.1	1.1	20	11	78.0	6.6	23
Feb. 20-28	.....	12	.08	4.5	1.5	7.8	1.8	12	13	7.2	.0	.8	17	8	79.3	6.4	18
Mar. 1-10	.....	11	.17	4.6	1.7	5.9	1.5	14	11	6.0	.0	.0	18	7	70.3	6.3	45
Mar. 11-20	.....	15	.06	5.4	1.3	5.6	2.0	14	11	5.8	.0	.6	16	5	71.3	6.3	45
Mar. 21-31	.....	13	.07	4.8	1.3	6.2	1.4	26	9.9	7.0	.9	1.2	18	3	77.9	7.2	31
Apr. 1-10	.....	12	.46	4.8	1.6	7.2	1.8	20	2.3	6.0	.1	1.0	19	8	83.1	7.1	45
Apr. 11-20	.....	12	.35	5.2	1.2	6.9	1.6	22	7.0	5.2	.1	1.0	18	0	77.1	6.8	27
Apr. 21-30	.....	19	.29	4.6	1.6	6.1	1.7	24	5.8	5.2	.0	.8	72	0	77.2	6.7	70
May 1-10	.....	19	.07	5.6	1.6	6.8	2.6	24	6.3	6.2	.1	1.0	21	1	80.7	7.1	31
May 11-20	.....	17	.07	6.8	1.2	7.6	1.6	30	6.9	7.2	.0	.7	22	0	90.3	6.6	40
May 21-31	.....	14	.05	6.2	2.0	7.6	1.6	26	7.2	6.8	.0	1.3	24	2	87.2	7.3	25
June 1-10	.....	15	.18	6.0	2.5	6.4	2.0	25	4.8	11	.0	1.3	20	5	85.4	7.2	45
June 11-20	.....	12	.06	4.5	1.4	5.9	2.2	19	7.9	6.0	.0	1.5	62	17	75.9	6.6	35
June 21-30	.....	12	.06	5.2	1.4	5.2	2.0	21	5.1	5.8	.1	.5	63	2	72.3	7.3	45
July 1-10	.....	13	.16	5.2	1.5	5.8	2.0	21	6.7	6.5	.2	1.5	70	2	76.5	6.8	45
July 11-20	.....	8.8	.08	4.3	.8	3.8	2.0	16	5.5	3.8	.0	1.9	14	1	57.1	6.5	35
July 21-31	.....	14	.10	6.0	1.7	5.8	2.2	25	4.5	7.8	.2	1.8	22	2	83.8	6.5	60

PAMLICO RIVER BASIN--Continued  
TAR RIVER AT GREENVILLE, 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, magnesium	Non-carbonate			
Aug. 1-10, 1955.....		14	0.10	6.0	2.1	7.0	2.1	29	5.8	6.8	0.0	1.7	79	24	0	90.2	7.2	30
Aug. 11-20.....		9.3	.12	5.2	1.0	4.3	2.4	16	5.8	5.5	.0	2.1	63	17	4	66.9	7.1	60
Aug. 21-31.....		9.5	.33	4.4	1.1	3.1	2.6	17	4.7	4.0	.0	2.2	72	16	2	57.7	6.4	70
Sept. 1-10.....		9.5	.52	4.1	1.6	4.0	2.6	16	8.7	4.0	.0	.8	66	17	4	62.1	6.6	110
Sept. 11-20.....		13	.19	5.8	1.4	5.8	2.2	19	7.3	7.0	.0	2.7	73	20	4	76.9	6.5	50
Sept. 21-30.....		9.5	.67	4.6	1.5	4.3	2.5	17	4.2	6.0	.0	2.4	72	18	4	60.2	6.5	110
Average.....		13	0.15	5.2	1.6	6.1	1.9	20	6.2	6.5	0.0	1.3	70	19	3	77.5	--	45

a Organic matter present; sum of mineral constituents 40 parts per million.

## 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 Grindle Creek.

DRAINAGE AREA (revised).--2,740 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES. 1954-55.--Dissolved solids: Maximum, 10,500 ppm Oct. 15 (p.m.).

Hardness: Maximum, 1,940 ppm Oct. 15 (p.m.); minimum, 13 ppm July 21.

Specific conductance: Maximum daily, 15,600 micromhos Oct. 15 (p.m.); minimum daily, 49.9 micromhos July 21.

Water temperatures: Maximum, 92°F July 28, Aug. 3; minimum, 35°F Dec. 23 (a.m.).

REMARKS.--Samples collected twice daily (8 a.m. and 4 p.m.) to Apr. 14; once daily (1 p.m. to Sept. 30). Samples collected in morning and afternoon were composited unless otherwise noted. Records of specific conductance of samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, September 1954 to September 1955

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			
Sept. 23 (p.m.), 26, 27, (a.m.), 1954.....	7.1	0.10	13	7.8	98	6.0	27	35	169	0.0	1.1	1.1	368	64	42	672	6.6	11
Sept. 24-25.....	7.3	0.08	9.6	3.6	36	3.6	27	35	55	0	1.1	1.1	158	39	17	275	6.8	10
Sept. 27 (p.m.), 28-30.....	4.9	0.03	21	35	310	15	31	81	525	0	1.3	1.3	1,010	196	171	1,880	6.6	9
Oct. 1, 2 (a.m.), 3, 4, (p.m.), 5 (p.m.).....	3.3	0.02	16	20	174	9.2	34	56	305	0	1.3	1.3	629	122	94	1,140	6.8	8
Oct. 4 (a.m.), 5 (a.m.), 6 (a.m.).....	1.4	0.03	12	8.3	77	5.2	34	28	122	0	1.3	1.3	280	62	34	516	6.8	8
Oct. 6 (p.m.), 7, 8, (p.m.), 9 (a.m.).....	.6	0.05	9.7	3.9	33	3.6	34	19	46	0	1.1	1.1	134	40	12	261	6.9	8
Oct. 8 (a.m.), 10-14.....	1.9	0.04	19	32	270	13	36	76	480	0	1.6	1.6	986	180	151	1,760	6.7	9
Oct. 9 (p.m.), 10-14.....	--	--	14	19	--	--	--	50	280	--	--	--	--	116	86	1,050	6.8	--
Oct. 15 (a.m.), 16-18.....	3.2	0.02	25	79	620	20	51	161	1,070	.2	1.8	1.8	2,010	388	346	3,510	7.2	15
Oct. 16 (a.m.), 17-21.....	--	--	44	119	--	--	45	265	1,750	--	--	--	--	600	563	5,640	6.9	--
Oct. 18 (p.m.), 19-21.....	6.3	0.03	104	408	3,200	110	63	818	5,780	.1	1.5	1.5	10,500	1,940	1,880	15,600	6.6	10
Oct. 19 (a.m.), 20-24.....	--	--	72	182	--	--	43	389	2,750	--	--	--	--	930	895	8,520	6.5	--
Oct. 16 (p.m.), 17-21.....	4.7	0.03	52	136	1,080	40	31	287	1,950	.2	1.5	1.5	3,570	690	664	6,130	6.5	17
Oct. 22, 23 (a.m.), 24 (p.m.), 25 (a.m.).....	6.5	0.06	26	50	406	9.5	29	115	700	.2	3.0	3.0	1,330	270	246	2,440	7.0	15
Oct. 24 (a.m.), 25 (a.m.), 26 (a.m.), 30-31.....	5.5	0.04	29	52	403	14	29	60	730	0	3.1	3.1	1,310	286	282	2,590	6.5	8
Oct. 25 (p.m.), 26 (a.m.), 30-31.....	--	--	22	26	--	--	33	92	400	--	--	--	--	160	133	1,510	6.8	--
Oct. 26 (a.m.), 27 (a.m.), 30-31.....	9.8	0.06	32	71	560	22	33	77	1,020	.1	3.1	3.1	1,810	370	344	3,470	6.6	7

PAMLICO RIVER BASIN--Continued  
TAR RIVER AT GRIMESLAND, N. C.--Continued

Chemical analyses, in parts per million, September 1954 to September 1955.--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			
Oct. 26 (p. m.), 27, 28, (a. m.), 29, 1954.....		8.2	0.04	20	153	1,050	44	38	142	1,920	0.1	3.0	3,360	680	649	6,100	6.4	9
Oct. 28 (p. m.).....		--	--	70	190	--	--	46	396	2,700	--	--	--	955	917	8,650	6.4	--
Nov. 1, 2 (a. m.).....		10	.03	30	68	541	22	34	74	975	.1	3.1	1,730	354	326	3,350	6.6	11
Nov. 2 (p. m.).....		--	--	18	31	--	--	31	79	460	--	--	--	173	148	1,740	6.4	--
Nov. 3 (a. m.).....		--	--	17	29	--	--	31	71	420	--	--	--	160	135	1,590	6.3	--
Nov. 3 (p. m.).....		--	--	12	14	--	--	38	40	192	--	--	--	86	55	811	6.4	--
Nov. 4 (a. m.).....		--	--	18	34	--	--	30	71	410	--	--	--	183	158	1,600	6.5	--
Nov. 4 (p. m.).....		--	--	19	27	--	--	31	75	470	--	--	--	157	132	1,770	6.4	--
Nov. 5-6, 7 (a. m.).....		10	.03	23	54	418	18	32	58	750	.1	2.8	1,350	280	254	2,650	6.6	11
Nov. 7 (p. m.), 8 (a. m.), 9-10.....		8.2	.03	66	208	1,600	64	47	208	2,900	.1	2.8	5,080	1,020	982	8,860	6.7	9
Nov. 8 (p. m.).....		--	--	58	156	--	--	42	351	2,300	--	--	--	785	851	7,310	6.4	--
Nov. 11-15.....		7.9	.04	87	283	2,130	90	54	286	3,950	.1	1.8	6,860	1,380	1,340	11,800	6.4	9
Nov. 16-24.....		9.8	.01	100	309	2,640	90	54	661	4,450	.2	1.3	8,290	1,520	1,480	13,200	6.4	17
Nov. 25, 26 (a. m.), 28 (p. m.).....		14	.05	42	113	900	44	37	235	1,650	.2	2.6	3,020	570	540	5,350	6.7	29
Nov. 26 (p. m.), 30 (p. m.).....		--	--	10	55	--	--	30	29	700	--	--	--	252	227	2,460	6.7	--
Nov. 27, 28 (a. m.), 29, 30 (a. m.).....		14	.04	29	74	585	44	31	159	1,050	.1	2.9	1,970	376	350	3,660	6.8	33
Dec. 1-2.....		12	.12	22	58	452	20	28	131	840	.1	1.5	1,550	295	272	2,910	6.4	27
Dec. 3-10.....		11	.02	68	232	1,840	79	47	476	3,250	.1	.8	5,980	1,120	1,090	9,840	6.7	19
Dec. 11.....		--	--	34	96	--	--	33	212	1,380	--	--	--	480	453	4,600	6.6	--
Dec. 12, 13 (a. m.).....		14	.07	19	48	372	18	24	108	670	.1	2.3	1,260	242	222	2,410	7.5	25
Dec. 13 (p. m.).....		--	--	14	26	--	--	21	65	370	--	--	--	141	124	1,380	7.2	--
Dec. 14 (a. m.).....		--	--	6.4	6.3	--	--	19	24	83	--	--	--	42	26	380	6.3	--
Dec. 14 (p. m.), 15-20.....		11	.03	6.0	1.7	12	2.1	14	12	18	.1	.8	89	22	11	117	6.6	22
Dec. 21-25.....		11	.03	5.2	1.9	9.3	1.3	14	14	14	.1	.8	81	21	10	105	6.6	23
Dec. 26-27.....		--	--	38	100	--	--	26	219	1,450	--	--	--	504	483	4,750	6.7	--
Dec. 28 (a. m.).....		--	--	8.0	3.4	--	--	14	20	51	--	--	--	34	23	271	6.9	--
Dec. 28 (p. m.), 29-31.....		9.5	.05	58	196	1,520	60	37	402	2,720	.1	.7	4,980	950	920	8,290	6.7	17
Jan. 1-2, 5 p. m.), 6, 8-9, 10 (a. m.), 1955.....		17	.06	8.8	8.8	70	4.4	18	29	119	.1	1.5	298	58	43	517	6.4	20
Jan. 3, 5 (a. m.).....		--	--	6.8	4.4	--	--	17	18	58	--	--	--	35	21	280	6.7	--
Jan. 4 (a. m.).....		--	--	6.0	1.7	--	--	16	16	15	--	--	--	22	9	126	6.2	--

Jan. 7, 1955	--	--	13	26	--	--	20	62	360	--	--	--	138	122	1,350	6.3	--
Jan. 10 (p. m.)	--	--	9.6	14	--	--	21	38	180	--	--	--	80	63	727	6.6	--
Jan. 11 (p. m.), 20	--	--	17	36	--	--	25	86	520	--	--	--	190	170	1,860	6.7	--
Jan. 17 (p. m.), 20	--	--	14	25	--	--	25	64	350	--	--	--	136	116	1,320	6.6	--
Jan. 18 (a. m.)	--	--	6.8	1.7	--	--	23	14	19	--	--	--	24	5	174	6.7	--
Jan. 21 (a. m.), 24	--	--	21	49	--	--	26	63	660	--	--	--	254	233	2,310	6.7	--
Jan. 21 (p. m.), 25	--	--	7.6	4.6	--	--	24	23	57	--	--	--	38	18	293	6.3	--
Jan. 22 (a. m.), 23	--	--	10	15	--	--	22	41	210	--	--	--	86	68	797	6.6	--
Jan. 24 (a. m.), 25	--	--	8.8	9.7	--	--	23	32	82	--	--	--	62	43	547	6.8	--
Jan. 26-28, 29 (p. m.), 30 (p. m.), 31	14	0.05	5.2	3.2	13	2.0	18	17	16	0.0	1.2	96	26	11	131	6.8	19
Feb. 1, 8 (a. m.), 9	16	.08	7.2	1.6	10	1.2	16	15	11	.4	.8	87	25	12	110	6.7	33
Feb. 2, 3 (a. m.), 4	9.6	.06	4.2	1.4	6.3	1.1	12	12	8.0	.1	.8	65	16	7	72.5	6.4	37
Feb. 11, 13 (p. m.), 14-15, 16 (a. m.), 18	12	.08	5.4	1.8	7.3	.9	12	14	9.5	.1	.8	73	21	11	86.8	6.1	23
Feb. 20 (p. m.), 21, 22	12	.08	5.2	1.5	7.5	.9	13	13	9.0	.1	.6	73	19	9	87.0	6.6	23
Feb. 27 (p. m.), 28																	
Mar. 1, 3-4, 5 (a. m.), 6 (a. m.), 7-10	12	.08	5.2	1.6	6.5	.7	11	12	7.2	.1	.5	68	19	10	77.9	6.4	28
Mar. 11, 12 (p. m.), 13																	
(p. m.), 14-17, 18																	
(a. m.), 19 (a. m.), 20 (p. m.)	14	.07	4.8	1.7	6.1	1.9	15	11	6.8	.1	.8	67	19	7	79.4	6.5	34
Mar. 21-25, 26 (a. m.), 26 (p. m.), 28-30	15	.22	5.2	1.2	6.5	1.9	16	11	7.5	.0	.6	72	18	5	80.9	6.8	50





PAMLICO RIVER BASIN--Continued  
TAR RIVER AT GRIMESLAND, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
/Twice-daily measurements in morning and afternoon to Apr. 14, once daily in afternoon to Sept. 30/

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.....	76	79	--	--	52	50	55	49	40	44	49	55	63	--	--	--	80	--	85	--	88	--	75	--
2.....	76	79	--	--	59	50	50	50	--	--	--	--	--	67	70	--	82	--	89	--	87	--	74	--
3.....	76	78	55	56	49	51	63	63	--	--	45	56	68	64	--	--	72	--	89	--	92	--	74	--
4.....	76	80	54	56	49	50	68	--	50	--	55	58	--	65	--	--	80	--	87	--	90	--	74	--
5.....	78	80	55	55	49	51	67	67	--	--	55	--	65	75	--	--	81	--	85	--	91	--	76	--
6.....	79	80	55	55	49	47	67	61	--	--	58	--	60	64	--	--	84	--	86	--	90	--	73	--
7.....	75	75	54	55	45	48	71	66	--	42	53	57	63	71	--	--	80	--	85	--	82	--	72	--
8.....	73	74	53	55	45	48	65	61	43	--	56	56	65	65	--	--	78	--	84	--	81	--	73	--
9.....	74	76	53	55	49	48	64	63	45	--	56	57	--	--	--	--	75	--	83	--	83	--	71	--
10.....	72	76	53	54	44	46	50	63	45	40	59	56	65	70	--	--	72	--	78	--	84	--	71	--
11.....	73	75	52	55	42	44	--	60	45	--	57	58	67	60	--	--	78	--	83	--	76	--	70	--
12.....	74	75	52	56	41	41	--	--	--	--	--	58	68	70	--	--	75	--	83	--	76	--	73	--
13.....	73	76	53	55	41	42	--	--	--	40	--	--	68	70	--	--	73	--	78	--	78	--	71	--
14.....	74	75	53	55	41	40	--	--	40	43	58	55	65	65	--	--	73	--	79	--	77	--	75	--
15.....	75	73	55	54	39	40	--	--	45	40	55	58	--	--	--	--	81	--	86	--	77	--	75	--
16.....	79	71	54	56	39	41	--	--	43	--	57	58	--	--	--	--	78	--	86	--	77	--	75	--
17.....	68	70	55	56	40	41	--	43	--	--	60	60	--	--	--	--	82	--	85	--	78	--	75	--
18.....	67	70	55	58	43	42	43	43	45	--	60	--	--	--	--	--	75	--	85	--	78	--	74	--
19.....	68	67	56	58	41	44	--	--	43	43	60	--	--	--	--	--	80	--	87	--	79	--	74	--
20.....	66	67	56	56	40	41	41	41	--	--	63	--	--	--	--	--	84	--	78	--	79	--	74	--
21.....	64	66	56	58	40	40	39	40	--	55	59	60	--	--	--	--	79	--	79	--	79	--	73	--
22.....	62	65	55	57	40	39	39	--	48	--	63	65	--	--	--	--	79	--	90	--	79	--	74	--
23.....	62	66	55	56	35	40	--	38	--	--	58	63	--	--	--	--	83	--	89	--	79	--	73	--
24.....	60	66	55	56	39	40	39	--	--	--	58	--	--	--	--	--	85	--	89	--	78	--	73	--
25.....	61	65	54	55	37	38	40	40	--	42	60	60	--	--	--	--	80	--	89	--	77	--	73	--
26.....	63	65	53	53	38	42	42	41	--	--	--	55	--	--	--	--	80	--	90	--	76	--	72	--
27.....	63	65	51	54	39	40	40	--	41	--	--	--	--	--	--	--	86	--	88	--	76	--	71	--
28.....	62	64	52	53	39	45	41	43	41	53	--	55	--	--	--	--	78	--	92	--	75	--	71	--
29.....	63	65	52	53	44	45	--	--	--	--	--	56	--	--	--	--	86	--	87	--	76	--	72	--
30.....	61	63	50	51	45	45	--	42	--	--	54	60	--	--	--	--	80	--	85	--	78	--	72	--
31.....	59	60	--	--	45	44	38	40	--	--	--	--	--	--	--	--	82	--	86	--	--	--	--	--
Average.....	69	71	54	55	43	44	--	--	--	--	--	--	--	--	--	--	79	--	86	--	81	--	73	--

PAMLICO RIVER BASIN--Continued  
 MISCELLANEOUS ANALYSES OF STREAMS IN PAMLICO RIVER BASIN IN NORTH CAROLINA  
 Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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	Non- carbon- ate			
TAR RIVER NEAR TAR RIVER																		
May 3, 1955	50.1	15	0.14	5.2	1.9	4.4	1.6	29	4.7	3.8	0.1	0.9	70	21	0	68.0	6.8	31
Aug. 29	29			10	2.1			44	2.9	4.0		.4	a63	34	0	90.3	7.5	
SAPONY CREEK NEAR NASHVILLE																		
Feb. 15, 1955	32.4	11	1.2	6.2	0.4	3.9	1.3	9	6	6.0	0.0	0.1	69	17	10	71.6	6.6	50
Aug. 31	36.6			5.8	2.3			28	2.2	4.8		.7	a47	24	1	68.6	6.6	
TAR RIVER NEAR NASHVILLE																		
Feb. 15, 1955	2,830	19	0.05	2.4	1.0	5.5	2.0	10	3	3.8	0.0	0.7	51	10	2	46.8	6.2	40
Aug. 31	254			4.4	1.3			27	3.1	4.8		1.2	a54	16	0	68.9	7.3	
FISHING CREEK NEAR ENFIELD																		
Feb. 15, 1955	620	19	0.46	2.6	1.3	5.8	2.1	13	2	2.8	0.0	0.9	46	12	1	49.4	6.6	37
Aug. 31	137			5.2	1.8			29	2.9	5.5		1.7	a58	20	0	78.9	6.6	
TAR RIVER AT TARBORO																		
Feb. 16, 1955	3,360	14	0.30	4.1	0.9	4.9	2.1	10	4	4.0	0.0	0.3	54	14	6	56.7	6.2	45
Aug. 31	1,560			6.0	1.2			21	5.4	5.8		.9	a51	20	3	73.6	5.6	
TRANTERS CREEK AT LATHAM																		
Sept. 14, 1954				--	--			9	16	12				32	25	127	5.8	58
Sept. 30				--	--			12	12	13				19	9	105	6.0	
Nov. 4		16		8.0	8.0			6	29	155				73	68	648	5.6	
Nov. 30		17		12	12			9	20	210				92	85	810	6.9	
Feb. 17, 1955		13		3.9	3.9			5	29	15				48	44	205	5.6	
June 1				5.3	1.4			12	11	14				19	9	105	5.8	

a Sum of determined constituents.

## TRANTERS CREEK NEAR WASHINGTON

Sept. 14, 1954..	---	---	---	41	279	1,870				648	514	6,040	6.4
Sept. 30 .....	76	190	---	39	231	1,380				530	496	5,100	6.7
Nov. 4 .....	60	180	---	46	454	2,350				980	942	8,960	6.7
Nov. 30 .....	24	46	---	47	370	2,600				695	831	8,700	6.7
Feb. 17, 1955 .....	11	14	---	18	106	653				25	55	2,770	6.4
June 1 .....				26	33	212				83	62	824	6.6

## HERRING RUN NEAR WASHINGTON

Sept. 30, 1954..	---	---	---	106	9	10				85	0	237	7.4
Nov. 4 .....	34	4.1	---	107	21	36				103	15	362	7.0
Nov. 30 .....	34	5.4	---	104	23	58				106	21	1,000	7.0
Feb. 3, 1955 .....	0.873	2.2	---	33	29	8.0				43	16	146	6.7
Feb. 17 .....	25	4.1	---	72	21	26			0.0	79	20	253	7.0
June 1 .....	17	2.1	---	54	16	16				52	8	223	6.8
Aug. 31 .....	12	1.1	4.2	3.1	2	7.9		0.0	.3	a41	7	64.3	4.9
													70

## HERRING RUN AT WASHINGTON

Sept. 14, 1954 .....	---	---	---	76	890	6,470				2,130	2,070	17,700	7.1
Sept. 30 .....	120	306	---	60	365	2,680				900	851	8,080	7.0
Nov. 4 .....	124	376	---	61	666	4,350				1,560	1,510	13,400	7.0
Nov. 30 .....	16	27	---	72	773	3,380				1,860	1,800	15,300	6.6
Feb. 17, 1955 .....	86	176	---	24	69	400				130	130	1,170	6.6
June 1 .....				43	369	2,700				896	859	8,290	6.5

## BATH CREEK AT BATH

Sept. 14, 1954 .....	---	---	---	76	871	6,470				2,080	2,020	17,500	7.2
Sept. 30 .....	199	602	---	82	931	6,680				2,180	2,110	17,700	7.4
Nov. 4 .....	207	665	---	86	1,300	9,000				2,970	2,900	23,700	7.2
Nov. 30 .....	128	456	---	89	1,420	9,740				3,250	3,180	24,700	7.0
Feb. 17, 1955 .....	161	489	---	63	942	6,530				2,190	2,140	17,400	7.3
June 1 .....				63	1,060	7,370				2,460	2,410	19,600	7.3

a Sum of determined constituents.

## PAMLICO RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN PAMLICO RIVER BASIN IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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, mg- nesium	Non- carbon- ate			
PUNGO RIVER AT LEECHVILLE																		
Sept. 14, 1954								46	656	4,690				1,540	1,500	13,300	6.8	
Sept. 30								57	752	5,370				1,770	1,720	14,600	6.9	
Nov. 4				214	644			81	1,350	10,000				3,190	3,120	25,100	7.3	
Nov. 30				222	729			88	1,520	10,500				3,550	3,480	26,400	7.0	
Feb. 17, 1955				128	473			81	986	6,760				2,260	2,210	18,200	6.9	
June 1				140	459			54	954	6,630				2,240	2,200	18,100	7.0	
PANTEGO CREEK AT BELHAVEN																		
Sept. 14, 1954								71	948	6,870				2,290	2,230	18,300	6.9	
Sept. 30								75	964	6,840				2,280	2,200	18,200	7.3	
Nov. 4				203	654			82	1,370	9,430				3,200	3,130	25,100	7.3	
Nov. 30				246	766			97	1,590	11,200				3,770	3,690	27,700	7.1	
Feb. 17, 1955				159	576			74	1,180	6,270				2,770	2,710	21,400	7.1	
June 1				176	547			65	1,150	7,670				2,690	2,640	21,000	7.0	
PUNGO CREEK AT YEATSVILLE																		
Sept. 14, 1954								41	598	4,050				1,400	1,370	11,700	6.4	
Sept. 30								67	790	5,640				1,690	1,640	15,400	6.8	
Nov. 4				207	545			87	1,220	8,110				2,760	2,700	21,800	6.8	
Nov. 30				230	743			83	1,560	10,500				3,630	3,560	26,600	6.8	
Feb. 17, 1955				132	458			61	973	6,560				2,210	2,160	17,800	6.8	
June 1				143	459			57	947	6,730				2,240	2,190	18,100	6.7	
PUNGO CREEK NEAR BELHAVEN																		
Sept. 14, 1954								63	837	6,040				1,980	1,930	16,500	6.7	
Sept. 30								77	1,030	7,270				2,390	2,330	19,100	7.3	
Nov. 4				214	647			79	1,350	9,580				3,200	3,140	25,100	7.1	
Nov. 30				230	774			94	1,580	11,100				3,760	3,680	27,700	7.0	
Feb. 17, 1955				151	516			85	1,090	7,570				2,500	2,450	19,700	7.1	
June 1				180	548			62	1,140	8,070				2,700	2,650	21,500	7.0	

## NEUSE RIVER BASIN

## NEUSE RIVER AT SMITHFIELD, N. C.

LOCATION --At bridge on U. S. Highway 70 in Smithfield, Johnston County, 1.4 miles upstream from Swift Creek, and 11.5 miles downstream from gaging station near Clayton, N. C.

DRAINAGE AREA --1,201 square miles (approximately).  
RECORDS AVAILABLE --Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 154 ppm Oct. 1-10; minimum, 60 ppm Feb. 20-28.

Hardness: Maximum, 34 ppm Oct. 1-10; minimum, 15 ppm Feb. 11-19, Feb. 20-28.

Specific conductance: Maximum daily, 354 micromhos Oct. 10; minimum daily, 44.4 micromhos Aug. 19.

Water temperatures: Maximum, 85° F July 27; minimum, 34° F Dec. 22.

REMARKS.--Records of specific conductance of daily samples and records of suspended matter of composite samples available in district office at Raleigh, N. C. Records of discharge for gaging station near Clayton, N. C. for water year October 1954 to September 1955 given in WSP 1363. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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-nestum	Non-carbonate				Unfiltered	Filtered
Oct. 1-10, 1954.....	72	13	0.01	9.6	2.5	45	5.0	73	6.2	46	0.2	6.9	184	34	0	303	6.7	12	5.2	5.2
Oct. 11-15.....	97	--	--	7.2	3.4	--	--	83	15	27	--	1.3	--	32	0	267	7.2	--	--	--
Oct. 16.....	1,720	--	--	4.8	1.7	--	--	22	4	8.0	--	1.5	--	19	1	90.2	6.3	--	--	--
Oct. 17-20.....	980	--	--	4.6	4.3	--	--	12	12	59	--	2.0	--	28	18	257	6.8	--	--	--
Oct. 21-31.....	233	11	.07	7.6	1.9	20	3.8	39	8.5	18	2	4.5	108	27	0	158	6.4	22	4.8	4.8
Nov. 1-5.....	178	9.6	--	15	6.4	2.1	3.5	38	7.1	11	--	5.3	92	25	0	133	6.9	19	5.0	4.6
Nov. 6-10.....	279	--	--	7.3	2.6	--	--	39	11	29	--	6.1	--	29	0	201	6.7	--	--	--
Nov. 11-20.....	202	14	.04	8.0	2.7	25	4.0	40	11	25	0	5.9	128	31	0	196	6.5	14	6.0	5.0
Nov. 21-30.....	438	16	.04	6.0	1.9	18	2.8	28	7.6	18	.1	3.3	95	23	0	140	6.5	38	7.2	5.6
Dec. 1-10.....	740	14	.06	5.0	1.9	11	1.5	19	10	12	0	2.1	77	20	5	105	6.5	35	7.3	5.8
Dec. 11-20.....	957	15	.04	5.2	1.6	10	1.9	18	10	12	0	2.2	75	19	5	106	6.4	35	7.2	5.9
Dec. 21-31.....	431	15	.16	5.3	1.7	8.8	1.9	24	8.0	7.8	0	2.7	73	20	1	95.6	6.6	8	5.8	4.4
Jan. 1-10, 1955.....	336	17	.04	7.0	2.0	17	2.4	35	8.2	17	0	2.8	98	26	0	143	6.7	30	6.1	4.7
Jan. 11-20.....	418	10	.12	6.2	1.9	14	2.0	29	9.5	14	0	3.4	91	23	0	127	6.6	10	5.1	3.7
Feb. 11-19.....	2,520	9.5	.09	4.0	1.3	6.6	1.6	15	9.1	6.8	.1	1.1	61	15	3	69.8	6.6	20	--	7.4
Feb. 20-28.....	1,260	6.2	.03	4.2	1.2	6.7	1.6	15	8.9	5.8	.1	1.3	60	15	3	68.6	6.6	20	--	9.9
Mar. 1-10.....	1,650	12	.07	4.6	1.6	9.3	1.7	22	8.6	8.2	.1	1.3	64	18	0	81.7	6.7	18	8.3	5.9
Mar. 11-20.....	1,280	8.7	.09	4.8	1.8	8.7	1.6	21	8.6	8.0	.1	1.0	66	19	2	85.7	7.1	25	9.7	8.3
Mar. 21-22, 24, 26-28	1,320	8.2	.09	5.4	1.3	8.3	1.2	19	8.0	7.2	.1	1.8	63	19	3	79.9	7.3	23	15	7.1
Mar. 23, 25, 28-31.....	881	9.0	.07	5.3	1.7	14	1.6	25	7.3	14	0	1.6	82	20	0	116	7.4	18	7.9	5.5
Apr. 1-10.....	432	13	.02	5.8	1.8	11	1.9	29	6.6	9.5	.1	2.8	80	22	0	107	6.7	15	8.9	4.1
Apr. 11-15.....	812	16	.10	6.5	1.8	10	2.5	32	5.9	9.2	.1	3.5	80	23	0	106	6.8	25	9.6	4.5

NEUSE RIVER BASIN--Continued  
NEUSE RIVER AT SMITHFIELD, N. C.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--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	Non-carbonate				Unfiltered	Filtered
Apr. 16-20, 1955.....	2,630	14	0.07	5.1	1.5	5.7	1.5	20	5.2	5.2	0.1	1.6	64	19	2	72.5	6.2	32	12	7.5
Apr. 21-30.....	856	14	.02	5.0	1.7	10	2.0	27	6.3	10	.1	2.4	75	19	0	100	6.5	20	10	7.8
May 1-10.....	339	17	.13	6.8	1.9	13	2.1	35	5.5	12	.0	2.9	92	25	0	119	6.5	40	7.6	6.2
May 11-20.....	266	9.8	.01	6.3	1.7	20	2.6	41	6.3	19	.1	3.4	102	22	0	155	6.9	18	7.6	6.6
May 21-22.....	276	10	--	6.1	1.7	25	3.0	a51	8.5	25	--	.2	--	22	0	171	9.7	--	--	--
May 23-31.....	670	13	.03	5.8	1.3	12	2.0	26	5.5	14	.0	3.1	77	20	0	113	7.3	35	9.8	5.8
June 1-5.....	230	15	.03	6.0	1.2	14	2.3	36	6.8	13	--	3.6	84	20	0	119	7.5	24	--	4.7
June 6-10.....	176	17	.28	7.1	2.2	22	2.4	39	4.3	24	.0	5.3	113	27	0	175	7.0	28	--	5.8
June 11-20.....	188	15	.03	6.8	1.4	28	2.6	49	4.2	26	.1	1.5	121	23	0	191	6.9	25	5.8	4.2
June 21-30.....	172	16	.03	7.1	2.2	24	2.6	42	7.7	28	.1	4.2	119	27	0	189	7.6	23	8.8	5.1
July 1-10.....	139	13	.03	7.4	2.1	29	3.3	55	6.5	27	.1	3.5	120	27	0	196	7.0	28	7.4	5.0
July 11-14, 17-20.....	555	12	.05	6.0	1.9	11	2.6	31	4.6	10	.1	1.9	80	23	0	111	7.1	30	3.6	3.4
July 15-16.....	2,600	8.1	--	4.4	1.4	6.3	1.8	20	4.3	7.0	--	.9	--	17	0	62.6	6.6	--	--	--
July 21, 23, 30-31.....	230	11	.03	5.2	1.7	11	2.4	29	3.6	9.5	.1	2.5	--	20	0	101	7.3	30	--	--
July 22, 24-29.....	143	13	.11	8.4	1.5	22	3.1	42	4.5	24	.1	4.3	118	27	0	177	6.9	35	8.0	6.2
Aug. 1-10.....	220	16	.04	7.4	2.2	20	3.0	40	5.0	21	.1	4.2	107	28	0	159	7.2	27	10	6.0
Aug. 11-14, 16.....	480	13	.03	6.3	1.6	20	3.0	34	6.0	22	.1	3.1	102	22	0	154	7.3	25	9.7	6.4
Aug. 15, 17-20.....	668	9.5	.06	3.9	.5	6.7	2.4	16	4.1	7.0	.1	2.3	--	12	0	70.9	7.1	40	14	9.9
Aug. 26-31.....	456	15	.55	5.9	1.5	10	2.5	27	4.8	11	.1	1.9	84	21	0	103	7.3	55	11	8.7
Sept. 1, 6, 8-10.....	1,840	15	.53	6.0	1.5	11	2.4	26	5.3	12	.1	2.6	84	21	0	106	7.2	45	12	7.6
Sept. 2-5, 7.....	6,400	9.3	.11	4.0	1.7	3.5	2.2	14	4.8	3.5	.1	.9	53	13	2	53.6	7.1	40	14	9.5
Sept. 11-20.....	434	16	.47	5.9	1.6	12	2.4	32	3.3	12	.1	2.4	87	21	0	113	7.1	50	9.3	7.1
Sept. 21-30.....	534	16	.12	6.0	2.2	13	2.6	36	5.1	14	.0	3.4	89	24	0	123	6.7	37	7.6	6.0
Average.....	916	13	0.11	6.0	1.8	15	2.4	32	7.0	16	0.1	2.8	90	22	1	133	--	28	8.5	6.1

a Includes equivalent of 17 parts per million of carbonate (CO<sub>3</sub>).

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER AT SMITHFIELD, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at 7:45 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	52	39	49	--	50	54	67	75	76	78	74
2	72	50	40	48	--	52	54	65	70	78	80	74
3	72	50	38	38	--	51	54	67	69	79	81	74
4	74	48	37	39	--	54	56	65	70	80	80	72
5	74	50	37	46	--	55	56	68	73	81	79	72
6	72	58	37	42	--	56	56	68	73	80	78	72
7	70	54	37	42	--	55	54	68	77	83	80	73
8	68	50	35	40	--	52	56	70	77	80	81	74
9	65	48	37	36	--	51	56	70	74	80	82	75
10	--	48	37	38	--	55	58	70	76	79	81	76
11	66	56	37	37	41	53	62	72	70	81	81	77
12	74	58	39	36	39	59	59	72	68	80	79	78
13	74	58	37	38	37	60	62	72	69	79	78	74
14	73	58	38	38	40	59	65	74	72	80	78	70
15	73	58	38	42	40	57	65	74	72	80	79	74
16	70	60	38	39	42	58	62	75	72	81	78	71
17	64	62	38	38	44	58	64	60	72	79	78	71
18	58	60	39	38	--	58	63	68	72	79	72	71
19	56	60	39	38	43	54	65	69	73	80	73	72
20	53	60	37	38	44	54	69	73	74	80	--	72
21	--	57	38	--	46	54	70	75	75	79	--	72
22	--	56	34	--	47	55	70	75	75	81	--	72
23	--	52	37	--	47	51	70	75	82	81	--	73
24	--	54	39	--	48	52	70	--	80	83	--	75
25	58	50	39	--	50	55	70	71	78	81	--	74
26	56	50	36	--	52	56	68	72	78	83	73	71
27	58	48	42	--	50	52	65	73	74	85	79	71
28	56	46	45	--	48	52	62	73	73	84	78	72
29	55	46	48	--	--	52	62	71	74	84	72	73
30	58	45	45	--	--	49	63	70	74	80	76	73
31	55	--	42	--	--	50	--	75	--	79	76	--
Average	65	53	39	--	--	54	62	71	74	80	78	73

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR GOLDSBORO, N. C.

LOCATION.--At gaging station at highway bridge, 0.2 mile upstream from Stony Creek, 1.5 miles downstream from Atlantic Coast Line Railroad bridge, 3 miles south of Goldsboro, Wayne County, 4.3 miles downstream from Little River, and at mile 135.  
DRAINAGE AREA.--2,390 square miles (approximately).  
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1955.  
REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 21, 1954	860	7.9	0.03	4.7	1.5	8.6	3.1	19	9.1	8.2	0.1	2.3	64	18	2	86.7	6.1	33
Nov. 18	253	15	.19	6.2	1.8	14	3.2	32	10	13	.0	1.2	86	23	0	128	6.8	27
Dec. 18	1,370	10	.02	4.0	2.2	8.5	1.9	13	12	9.8	.0	1.5	89	13	9	91.7	6.1	30
Jan. 15, 1955	1,030	7.1	.14	3.6	1.9	11	1.6	19	10	12	.0	.7	73	17	1	100	6.4	27
Feb. 1	1,950	--	--	3.6	1.5	--	--	13	12	9.0	--	.5	67	15	4	80.6	6.5	--
Feb. 15	5,800	7.1	.08	3.8	1.8	5.6	2.0	18	10	5.8	.0	.9	53	13	6	59.0	5.9	60
Mar. 15	2,720	10	.12	3.8	1.2	8.0	1.6	14	8.6	7.8	.1	1.0	61	14	3	73.9	6.4	25
Apr. 18	3,760	5.5	.09	3.9	1.1	6.2	1.4	17	6.0	6.0	.1	1.4	58	14	0	71.0	6.3	30
May 14	509	11	.07	5.4	1.6	15	2.3	30	4.1	16	.1	.9	83	20	0	127	7.2	25
June 15	315	9.9	.01	5.5	1.8	15	2.0	35	4.8	14	.0	.9	79	21	0	127	7.2	20
July 14	2,110	9.3	.16	3.6	1.1	8.0	2.0	17	5.6	7.0	.0	1.4	65	13	0	76.3	6.9	35
Aug. 15	2,510	9.7	.17	3.3	1.7	6.8	2.0	16	5.1	7.0	.1	.7	66	11	0	69.9	6.7	60
Sept. 9	22,500	--	--	3.1	.8	--	--	14	3.5	3.8	--	--	--	11	0	48.0	6.2	--
Sept. 14	5,300	11	.30	4.0	1.5	5.0	2.2	16	3.9	6.5	.0	1.1	69	16	3	64.2	5.9	70



NEUSE RIVER BASIN--Continued  
NEUSE RIVER AT KINSTON, N. C.

LOCATION --At bridge on State Highway 11, 600 feet upstream from gaging station at Kinston, Lenoir County.

DRAINAGE AREA --2,690 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1950, January to September 1955.

Water temperatures: October 1949 to September 1950, January to September 1955.

EXTREMES, 1955. --Dissolved solids: Maximum, 86 ppm May 11-20; minimum, 64 ppm Feb. 11-19.

Hardness: Maximum, 30 ppm Sept. 11-20; minimum, 13 ppm July 15-20.

Specific conductance: Maximum daily, 144 micromhos July 6; minimum daily, 33.9 micromhos Aug. 12.

Water temperatures: Maximum, 91°F July 5, 10; minimum, 36°F Jan. 18, Feb. 14.

EXTREMES, 1949-50, 1955. --Dissolved solids: Maximum, 86 ppm May 11-20, 1955; minimum, 52 ppm Mar. 11-20, 1950.

Hardness: Maximum, 30 ppm Apr. 21-30, 1950, Sept. 11-20, 1955; minimum, 13 ppm July 15-20, 1955.

Water temperatures: Maximum, 91°F July 5, 10, 1955; minimum, 36°F Jan. 18, Feb. 14, 1955.

REMARKS --Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, January to September 1955

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			
Jan. 1-10, 1955.....	828	8.7	0.05	5.6	1.7	10	1.8	17	13	11	0.1	2.8	76	21	7	105	6.4	16
Jan. 11-20.....	980	13	.12	5.2	1.7	11	2.1	17	12	12	.0	2.8	78	20	6	108	6.4	26
Jan. 21-31.....	1,780	13	.04	4.8	1.7	9.3	2.1	15	13	11	.1	1.8	76	19	7	99.2	6.3	17
Feb. 1-10.....	2,070	11	.10	4.2	1.7	8.5	1.3	12	13	9.5	.0	1.9	74	17	8	90.4	6.1	32
Feb. 11-19.....	4,640	7.9	.10	4.4	1.4	7.0	2.5	14	11	6.5	.0	1.0	64	17	5	75.4	6.1	37
Feb. 20-28.....	2,720	8.8	.06	4.8	1.5	8.5	2.1	13	14	8.0	.0	.4	67	18	7	86.2	6.3	23
Mar. 1-10.....	2,580	10	.07	4.8	1.5	7.5	.3	16	11	8.0	.0	1.3	70	18	5	82.9	6.2	23
Mar. 11-20.....	2,710	7.9	.30	4.4	1.7	7.3	1.7	14	12	7.5	.1	1.3	71	18	6	80.5	6.3	75
Mar. 21-31.....	2,850	11	.08	4.9	1.4	7.3	1.6	16	11	7.8	.0	1.5	67	18	5	83.2	6.5	21
Apr. 1-10.....	1,230	10	.15	4.4	1.4	8.8	1.0	19	9.4	9.2	.1	2.6	65	17	1	87.9	6.6	33
Apr. 11-19.....	1,810	7.3	.19	4.2	1.7	9.2	2.1	18	7.8	10	.0	2.3	67	17	2	89.9	6.6	40
Apr. 21-30.....	2,330	10	.12	5.4	1.6	7.9	1.9	20	8.9	8.5	.1	3.8	71	20	4	91.6	6.3	45
May 1-10.....	957	13	.04	5.2	1.8	9.8	2.1	23	8.1	9.5	.0	2.4	73	21	2	97.8	6.8	20
May 11-20.....	522	11	.40	5.7	1.8	12*	2.1	27	7.4	13	.0	2.2	85	21	3	93	6.7	31
May 21-31.....	564	9.0	.16	4.9	1.7	13	2.0	28	6.8	14	.1	2.3	82	20	0	114	6.7	33
June 1-10.....	319	11	.19	5.3	1.8	10	2.5	30	7.1	11	.2	2.8	82	23	0	109	6.4	45
June 11-20.....	333	6.7	.01	5.6	1.6	15	2.7	36	7.0	13	.2	2.6	82	25	0	133	6.6	14
June 21-30.....	486	7.1	.03	5.6	1.5	15	2.3	27	6.3	16	.2	2.5	78	20	0	122	6.5	16
July 1-10.....	304	8.4	.04	6.8	1.9	13	2.8	31	6.2	12	.2	4.9	92	25	0	125	5.2	13
July 11-14.....	768	8.4	.11	6.4	1.1	--	--	26	7.7	14	--	--	--	21	0	128	6.8	--
July 15-20.....	2,600	8.9	.16	4.0	1.7	7.7	2.1	19	5.4	7.2	.0	.9	75	13	0	78.8	6.7	36
July 21-31.....	739	14	.16	6.3	1.3	8.6	2.3	28	6.9	8.0	.0	1.2	77	21	0	99.5	6.4	30

NEUSE RIVER BASIN--Continued  
 NEUSE RIVER AT KINSTON, N. C.--Continued  
 Chemical analyses, in parts per million, January to September 1955--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			
Aug. 1-10, 1955	702	9.7	0.17	5.1	1.5	11	2.4	23	6.5	13	0.0	1.5	77	19	0	104	6.6	35
Aug. 11-20	3,270	8.1	.23	4.6	1.1	6.8	2.2	14	7.7	8.0	.0	2.2	77	16	5	80.2	6.6	35
Aug. 21-31	13,400	7.5	.16	5.9	1.0	3.7	3.0	18	7.0	4.2	.0	2.6	a75	19	4	68.4	6.5	160
Sept. 1-10	11,300	8.0	.14	5.2	1.7	4.4	2.9	21	5.3	5.2	.0	1.9	73	20	3	70.9	6.6	100
Sept. 11-20	12,100	8.2	.83	9.6	1.4	5.0	3.2	30	13	4.0	.0	1.7	80	30	5	89.0	6.5	110
Sept. 21-30	8,410	8.3	.32	5.2	1.7	5.4	2.4	19	7.6	7.0	.0	2.1	76	20	4	75.0	6.6	100
Average	3,080	9.5	0.16	5.4	1.5	9.0	2.1	21	8.9	9.6	0.1	2.0	75	20	3	96.0	--	45

a Organic matter present; sum of mineral constituents 44 parts per million.

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER AT KINSTON, N. C.--Continued

Temperature (°F) of water, January to September 1955

(Once-daily measurement at 3 p. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				54	45	58	62	70	80	85	88	80
2				58	55	56	60	68	78	90	89	81
3				57	44	58	64	69	78	90	88	76
4				68	42	56	64	72	80	89	86	79
5				51	48	60	65	75	77	91	85	75
6				63	54	55	62	78	87	89	87	77
7				52	54	58	64	72	82	90	88	77
8				54	49	58	60	75	82	79	89	76
9				54	48	58	64	78	71	83	89	79
10				47	50	60	65	70	73	91	86	82
11				45	49	62	65	79	78	88	68	77
12				48	45	60	68	80	82	88	74	81
13				45	42	61	72	72	80	82	79	72
14				45	36	58	70	76	85	85	82	74
15				49	45	62	71	76	82	82	84	83
16				45	48	62	71	75	80	83	83	75
17				39	50	62	72	78	85	85	76	78
18				36	--	60	73	75	78	86	82	--
19				39	45	58	72	79	80	82	85	75
20				45	50	57	72	82	82	84	84	75
21				45	48	60	72	82	85	85	82	75
22				48	55	62	73	79	84	89	83	76
23				42	55	58	78	75	89	84	81	75
24				42	56	62	75	79	82	82	80	74
25				44	48	60	71	81	85	82	75	76
26				45	51	64	70	83	78	82	79	75
27				46	55	55	68	83	82	87	88	--
28				54	58	54	69	85	81	90	84	78
29				42	--	58	72	83	80	89	89	74
30				42	--	52	75	82	85	--	84	74
31				38	--	60	--	80	--	--	86	--
Average				48	49	59	69	77	81	86	83	77

## 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, N. C.  
DRAINAGE AREA --4,000 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: September 1954 to August 1955.

Water temperatures: October 1954 to August 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 186 ppm Sept. 26-27; minimum, 63 ppm Feb. 11-19.

Hardness: Maximum, 171 ppm Oct. 12, 15; minimum, 15 ppm July 15-20.

Specific conductance: Maximum daily, 673 micromhos Aug. 21; minimum daily, 60.6 micromhos Aug. 24.

Water temperatures: Maximum, 87°F July 3, 5, 26; minimum, freezing point Jan. 13.

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, September 1954 to August 1955

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			
Sept. 23-25, 28-30, 1954		5.7	0.04	7.9	2.1	18	3.3	42	9.9	17	0.0	1.1	94	28	0	153	7.0	9
Sept. 28-27		11	.06	58	2.2	5.3	1.2	168	7.4	9.0		4.2	186	154	18	293	7.8	8
Oct. 1-6		8.2	.02	8.0	1.5	21	3.6	48	12	20		1.1	101	26	0	178	6.8	9
Oct. 9-11, 13-14, 16-21		5.4	.02	8.4	2.2	25	3.8	40	15	24		2.6	120	30	0	187	6.5	12
Oct. 12, 15		--	--	85	2.2	--	--	a204	1	9.0		--	--	171	9	357	8.4	--
Oct. 22-23		--	--	5.2	1.2	--	--	28	9	18		--	--	18	0	140	7.0	--
Oct. 24-31, Nov. 1-4		9.2	.04	6.8	1.6	13	3.6	28	10	14		4.4	82	24	1	128	6.4	26
Nov. 5-8		12	.10	9.6	1.7	16	4.0	40	9.5	16		3.1	92	31	0	154	6.9	13
Nov. 19-30		13	.08	6.8	1.7	17	3.3	32	10	16		1.1	87	24	0	147	6.6	15
Dec. 1-10		11	.06	6.6	1.9	12	3.2	27	12	13		2.2	86	24	2	125	7.0	19
Dec. 11-20		12	.03	5.4	1.6	10	2.6	17	13	11		2.3	78	20	6	106	6.7	27
Dec. 21-31		9.6	.04	6.0	1.8	10	2.4	17	15	12		1.8	80	22	8	109	6.7	22
Jan. 1-10, 1955		7.9	.05	6.0	1.7	9.8	1.8	18	14	11		2.4	77	22	7	107	6.4	23
Jan. 11-20		12	.10	6.4	1.8	10	1.8	19	15	11		2.6	81	23	8	112	6.6	22
Jan. 21-31		12	.03	6.0	1.9	9.7	1.8	14	17	11		1.8	83	23	12	110	6.5	18
Feb. 1-10		10	.03	5.2	1.8	9.1	1.7	12	16	9.2		1.9	76	20	11	96.9	6.9	16
Feb. 11-19		8.1	.08	4.3	1.3	7.0	2.0	10	12	7.2		.8	63	16	8	76.0	6.2	32
Feb. 20-28		10	.05	7.0	.4	7.5	.5	11	14	8.2		1.1	68	19	10	87.6	6.8	21
Mar. 1-10		11	.04	5.0	1.6	8.0	1.8	15	13	7.8		.9	66	19	7	88.6	6.8	24
Mar. 11-20		9.8	.04	4.8	1.3	7.3	1.5	14	10	6.2		2.3	68	17	6	85.7	6.3	45
Mar. 21-31		4.0	.22	5.4	1.0	7.9	1.4	14	11	6.0		1.2	72	18	6	90.1	6.3	40
Apr. 1-10		7.1	.28	5.9	1.8	9.1	1.9	19	11	9.5		1.3	72	22	8	100	6.7	34
Apr. 11-20		8.8	.10	6.2	.8	8.8	1.8	20	9.6	8.8		1.1	68	18	2	89.7	6.4	38
Apr. 21-30		14	.43	5.1	1.0	8.6	1.8	19	8.6	9.2		1.8	78	17	1	88.8	6.2	75

a Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

May 1-10, 1965.....	14	0.41	5.7	2.2	9.8	2.1	26	8.4	9.8	0.1	2.2	80	23	2	102	6.4	55
May 11-20.....	10	.14	7.5	1.3	12	2.1	31	8.4	13	.0	1.0	88	24	0	122	6.7	24
May 21-31.....	6.3	.16	8.5	1.3	13	2.4	32	8.4	13	.0	1.9	85	27	0	121	6.8	32
June 1-10.....	10.3	.21	6.2	2.0	10	2.4	27	7.5	11	.0	2.2	82	24	2	108	6.5	28
June 11-20.....	6.5	.05	6.8	1.6	13	2.8	31	5.5	14	.2	2.4	79	23	0	125	6.4	23
June 21-28, 28-30.....	6.8	.10	6.5	1.4	12	2.6	27	8.3	13	.1	1.2	78	22	0	117	6.5	35
June 27.....	--	--	8.5	4.0	--	--	31	17	53	--	--	--	38	13	260	7.3	--
July 1-10.....	7.4	.11	6.0	1.5	11	2.5	28	5.0	12	.2	1.9	75	21	0	109	6.3	30
July 11-14.....	--	--	6.5	1.2	--	--	28	7.7	16	--	--	--	21	0	126	6.9	--
July 15-20.....	9.1	.08	3.6	1.5	6.3	2.2	16	6.3	6.0	.0	1.2	87	15	2	70.2	7.0	38
July 21-31.....	9.5	.38	5.7	1.4	8.0	2.2	25	8.1	7.5	.0	1.6	74	20	0	89.3	6.4	30
Aug. 1-10.....	8.1	.17	6.3	.6	8.4	2.2	18	7.3	9.8	.0	2.2	69	18	3	94.1	6.4	60
Aug. 11-20.....	6.7	.07	6.4	1.4	5.4	2.8	14	11	7.0	.0	2.4	68	22	10	80.7	6.1	50
Aug. 21-25.....	7.7	.40	5.6	1.2	13	5.7	4	10	18	.0	2.0	108	19	16	175	5.0	110
Average.....	9.2	0.12	9.2	1.6	11	2.4	32	10	13	0.1	2.5	83	30	5	129	--	31

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR FORT BARNWELL, N. C.--Continued

Temperature (F°) of water, October 1954 to August 1955

(Once-daily measurement at 2 p.m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	58	49	52	43	49	58	71	86	82	79	
2	82	59	48	54	44	54	59	73	86	82	81	
3	82	55	48	52	42	51	60	69	84	87	81	
4	84	52	45	55	41	52	63	71	83	86	84	
5	85	53	47	52	40	50	62	72	80	87	85	
6	85	50	43	55	43	51	62	73	83	86	86	
7	75	50	40	51	46	48	64	74	82	81	86	
8	72	55	39	48	46	52	62	72	82	75	85	
9	75	--	43	49	48	53	64	73	77	80	83	
10	74	--	43	47	47	50	62	81	78	85	80	
11	78	--	42	45	43	49	60	82	80	84	78	
12	80	--	41	44	--	50	66	74	80	84	75	
13	80	--	41	32	41	51	69	76	79	80	72	
14	76	--	43	39	41	49	66	78	80	81	75	
15	78	--	43	42	42	52	68	--	78	79	77	
16	76	--	42	43	43	46	67	--	--	80	74	
17	70	--	44	42	44	44	69	76	80	83	71	
18	65	--	45	44	43	46	78	71	78	83	72	
19	85	65	44	39	44	45	--	80	78	84	76	
20	63	66	41	--	--	47	79	81	80	80	75	
21	62	64	38	40	44	49	78	82	84	82	76	
22	81	60	39	41	50	55	79	77	85	84	76	
23	60	55	40	42	50	49	72	82	83	85	74	
24	64	54	48	--	53	50	70	80	82	83	75	
25	64	54	43	41	50	52	74	83	84	82	73	
26	66	52	44	--	52	49	73	84	80	87	--	
27	68	50	45	44	51	47	72	86	80	82	--	
28	66	51	48	--	50	42	72	85	81	82	--	
29	68	54	57	40	--	43	70	83	81	84	--	
30	62	50	55	40	--	43	69	80	83	82	--	
31	61	--	54	40	--	--	--	82	--	82	--	
Average	72	--	45	45	45	49	68	78	81	82	78	

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (COWEN LANDING) VANCEBORO, N. C.

LOCATION.--At Cowen Landing about 6 miles southeast of Vanceboro, Craven County, N. C.  
RECORDS AVAILABLE.--Chemical analyses: September 1954 to September 1955.

Water temperatures: October 1954 to September 1955.  
EXTREMES, 1954-55.--Dissolved solids: Maximum, 6,670 ppm Oct. 15 (p.m.); minimum, 64 ppm Apr. 11-20.

Hardness: Maximum, 1,550 ppm Aug. 12 (p.m.); minimum, 12 ppm July 16 (p.m.), 17-20.  
Specific conductance: Maximum daily, 12,900 micromhos Aug. 12 (p.m.); minimum daily, 41.1 micromhos Sept. 20 (p.m.).

Water temperatures: Maximum, 89°F Aug. 8 (a.m.), 92°F July 28 (p.m.); minimum, 35°F Jan. 21 (a.m.), 38°F Feb. 4 (p.m.).

REMARKS.--Samples collected twice daily (8 a.m. and 6 p.m.). Samples collected in morning and afternoon were composited unless otherwise noted. Records of specific conductance of twice daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, September 1954 to September 1955

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			
Sept. 23-30, 1954																		
Oct. 1-6, 8 (a.m.), 9 (a.m.)	2.8		0.04	9.7	1.0	18	3.1	45	11	17	0.0	0.7	94	28	0	154	7.1	8
Oct. 7, 8 (p.m.)	3.0		.03	8.8	2.2	19	3.2	46	13	18	.0	1.0	94	31	0	158	7.1	10
Oct. 9 (p.m.), 10-14	4.4		.27	20	21	204	10	42	65	350	.0	1.4	702	135	100	1,310	6.8	11
Oct. 15 (a.m.), a	5.4		.03	8.7	2.3	22	3.4	50	3.5	24	.2	1.4	112	31	0	189	6.9	24
Oct. 15 (a.m.)	--		--	10	4.6	--	--	51	17	58	--	--	--	44	2	308	6.7	--
Oct. 15 (p.m.)	5.4		.10	76	239	1,940	70	56	465	3,450	--	1.1	6,670	1,170	1,130	10,000	6.8	11
Oct. 16 (a.m.), a	--		--	11	33	--	--	42	142	410	--	--	--	162	128	1,520	7.2	--
Oct. 16 (p.m.), 17 (p.m.) <sup>a</sup>	5.4		.05	18	16	146	7.9	42	44	250	--	2.2	541	112	78	1,010	7.4	14
Oct. 17 (a.m.), 18	6.3		.08	15	7.3	76	5.3	44	26	120	.2	1.0	306	66	30	534	7.4	16
Oct. 19-23	5.8		.04	8.4	4.1	35	4.0	46	15	45	--	2.1	161	38	0	283	7.5	18
Oct. 23 (a.m.)	--		--	6.4	24	--	--	31	8	33	--	--	--	113	88	182	6.6	--
Oct. 23 (p.m.), 24-27																		
Oct. 28 (a.m.)	8.5		.05	8.0	1.8	17	3.9	28	10	18	.0	4.3	104	22	0	141	6.4	15
Oct. 28 (p.m.)	--		--	8.0	4.4	--	--	28	14	66	--	--	--	38	15	330	6.4	--
Oct. 29-31	8.7		.06	6.8	2.2	16	3.6	28	11	20	.0	4.5	100	26	3	151	6.7	14
Nov. 1-5																		
Nov. 6-10	8.8		.03	8.0	2.1	14	3.5	32	11	16	.0	3.9	85	29	3	143	6.6	14
Nov. 11-16	10		.07	7.5	2.5	16	3.6	35	11	20	.1	3.9	95	29	0	160	6.7	17
Nov. 17-20	10.8		.07	7.4	2.3	16	3.4	35	10	20	.0	3.8	90	28	0	154	6.7	16
Nov. 21-28	11		.06	8.0	2.2	18	3.4	42	11	18	.0	2.8	96	28	0	153	6.8	17
Nov. 29 (a.m.)	11		.05	7.8	2.7	16	3.3	34	15	18	.0	2.2	95	28	0	155	6.6	13
	--		--	6.4	2.4	--	--	33	6	18	--	--	--	28	0	150	6.7	--
Dec. 4 (p.m.), 7-10	12		.02	7.0	2.1	14	2.9	26	12	18	.1	2.8	94	26	5	142	6.6	31
Dec. 16-20	11		.05	5.8	1.7	10	2.3	18	13	11	.2	2.1	82	21	8	109	7.7	23
Dec. 21-31	12		.09	6.3	1.9	9.2	2.0	18	15	11	.2	1.2	77	23	10	106	7.8	22

a Sample was not included in the mathematical average because of abnormal condition of the river due to hurricanes.

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (COWEN LANDING) VANCEBORO, N. C.--Continued

Chemical analyses, in parts per million, September 1954 to September 1955.--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			
Jan. 1-10, 1955		11	0.03	6.8	1.5	10	2.0	18	14	12	0.0	1.9	82	23	8	102	6.5	24
Jan. 11-20		12	.04	6.4	1.9	12	1.9	20	14	13	.1	2.6	84	24	8	120	6.7	18
Jan. 21-31		13	.05	8.9	.9	11	1.7	18	16	12	.1	1.6	87	26	11	109	6.6	19
Feb. 1-10		11	.17	5.8	1.7	10	1.7	13	16	10	.0	1.3	76	21	11	112	6.4	21
Feb. 11-19		8.1	.11	4.6	1.4	7.6	1.4	9	13	7.8	.0	.8	66	17	10	81.0	6.2	29
Feb. 20-28		8.8	.11	4.8	1.7	8.1	1.9	12	14	8.2	.0	.6	70	19	9	86.4	6.3	30
Mar. 1-10		8.8	.15	5.6	1.6	8.1	1.6	15	12	9.0	.0	.8	72	20	8	87.7	6.5	33
Mar. 11-20		13	.06	4.8	1.4	7.5	1.7	16	12	8.8	.1	1.1	77	18	5	85.7	6.4	50
Mar. 21-31		9.5	.07	5.2	1.2	7.3	1.4	16	9.5	8.5	.1	1.6	70	18	5	86.4	6.7	33
Apr. 1-10		11	.09	6.3	1.3	9.1	1.4	20	11	9.5	.1	2.4	81	21	4	98.5	6.3	32
Apr. 11-20		9.5	.13	6.4	1.0	9.5	1.5	23	11	10	.0	2.2	64	20	1	99.2	6.9	26
Apr. 21-30		10	.08	6.0	.7	7.7	1.7	20	7.7	8.2	.0	2.1	69	18	1	84.4	6.7	50
May 1-10		12	.52	5.9	1.5	9.3	2.0	24	7.8	10	.0	1.9	80	21	1	86.8	6.7	70
May 11-20		9.3	.19	6.9	2.0	11	2.2	29	7.7	11	.0	1.9	78	25	2	109	6.7	27
May 21-31		8.5	.15	6.8	.9	12	2.2	28	8.1	13	.0	1.6	77	21	0	114	6.7	35
June 1-10		8.3	.20	6.4	1.9	9.8	2.2	27	7.1	11	.1	.4	77	24	2	103	6.6	32
June 11-20		7.3	.08	6.8	1.8	11	2.6	28	8.4	12	.1	.8	78	24	1	112	6.4	23
June 21-30		4.0	.04	7.2	1.6	12	2.3	31	7.4	13	.1	1.2	77	25	0	116	6.5	25
July 1-10		6.4	.16	6.4	1.2	9.5	2.2	25	7.0	11	.1	.8	77	21	0	102	6.4	31
July 11-15, 10 (a.m.)		5.7	.07	7.2	1.2	12	2.4	29	6.4	13	.2	1.9	78	23	0	120	6.8	25
July 16 (p.m.), 17-20		8.6	.33	4.0	.5	7.2	2.1	29	5.6	7.2	.0	2.1	69	12	0	78.6	6.5	65
July 21 (p.m.)		8.3	.26	5.9	1.1	7.2	2.2	21	6.6	7.2	.0	1.2	71	19	2	85.6	6.5	40
Aug. 1-10 (a.m.)		9.1	.22	6.4	1.1	9.2	2.2	25	7.3	9.8	.0	1.7	70	20	0	99.2	6.6	50
Aug. 11 (p.m.)		--	--	10	8.4	--	--	26	21	122	--	--	--	60	39	478	6.3	--
Aug. 11 (a.m.), 13 (a.m.)		7.6	.03	30	48	415	15	25	109	760	.1	2.0	--	273	252	2,610	6.6	37
Aug. 11 (p.m.) <sup>a</sup>		--	--	65	147	--	--	42	356	2,470	--	--	--	766	732	7,500	6.3	--
Aug. 12 (a.m.), 14 (a.m.)		5.5	.16	11	3.9	43	3.7	16	13	78	.0	2.1	--	44	31	511	7.6	65
Aug. 12 (p.m.) <sup>a</sup>		--	--	111	309	--	--	44	644	4,570	--	--	--	1,550	1,510	12,700	6.2	--
Aug. 13 (p.m.) <sup>a</sup>		--	--	14	15	--	--	21	37	218	--	--	--	95	78	965	6.1	--
Aug. 14 (p.m.), 15, 16 (a.m.), 17 (a.m.)		5.6	.24	7.5	1.9	14	2.2	16	12	23	.0	.4	--	27	14	151	6.4	90
Aug. 16 (p.m.), 17 (p.m.)		6.3	.26	6.4	.9	6.5	2.0	15	8.7	9.2	.0	1.9	73	20	7	85.3	6.3	100
Aug. 21-31		7.2	.21	7.1	.7	5.2	2.8	19	7.8	7.2	.0	2.4	683	21	5	81.7	6.2	160

<sup>a</sup> Sample was not included in the mathematical average because of abnormal condition of the river due to hurricanes.

<sup>b</sup> Organic matter present; sum of mineral constituents 50 parts per million.



Sept. 1-10, 1955 .....	7.7	.47	7.3	1.7	5.1	3.0	24	9.2	6.5	.0	0.6	89	25	5	83.3	6.0	180
Sept. 11-20 .....	7.3	.42	6.5	1.5	4.4	3.4	23	7.9	6.0	.0	.6	c83	22	3	74.7	6.1	220
Sept. 21-30 .....	5.4	.46	4.6	1.4	3.5	3.3	18	5.8	4.5	.0	1.3	d72	17	2	63.7	6.1	220
Average .....	8.4	0.14	7.2	2.8	17	2.7	27	12	27	0.0	1.8	103	30	9	166	--	45

c Organic matter present; sum of mineral constituents 49 parts per million.

d Organic matter present; sum of mineral constituents 39 parts per million.

## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR (COWEN LANDING) VANCEBORO, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Twice-daily temperature measurement in morning and afternoon/

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.....	74	77	55	65	--	--	55	52	40	46	56	57	50	60	63	65	75	78	76	80	82	88	75	80
2.....	74	76	60	60	--	--	52	54	44	43	58	55	55	55	65	68	75	75	76	83	86	--	78	80
3.....	76	75	55	55	--	--	52	54	40	43	52	54	62	62	65	68	75	78	79	78	88	88	75	78
4.....	76	75	55	53	--	45	50	54	38	38	56	56	60	60	65	70	73	78	80	84	86	88	76	78
5.....	77	74	55	55	--	--	50	52	38	44	64	62	55	58	65	74	76	80	81	84	82	86	76	78
6.....	76	77	51	51	--	--	55	58	43	45	60	60	58	60	68	74	76	82	81	82	82	89	76	75
7.....	70	76	50	54	40	48	48	44	50	52	50	58	51	60	--	72	76	80	80	84	88	84	77	80
8.....	74	75	49	54	40	40	48	50	45	45	54	54	55	64	70	72	75	76	81	80	89	90	75	76
9.....	76	75	48	48	40	45	52	52	44	48	54	54	60	61	70	72	75	76	80	84	85	88	72	78
10.....	75	75	48	52	40	45	50	50	45	45	55	55	56	64	68	74	76	78	80	80	87	88	73	76
11.....	73	75	--	--	--	--	48	45	50	52	55	55	63	65	72	73	71	77	78	84	87	90	75	76
12.....	75	75	--	--	--	--	40	46	42	44	55	62	65	65	72	73	74	77	80	80	74	78	72	73
13.....	72	75	--	--	--	--	45	45	44	45	56	60	55	60	72	74	74	80	80	82	76	78	65	72
14.....	73	75	--	--	--	--	45	45	40	45	55	58	63	63	72	72	75	78	78	84	78	78	67	70
15.....	75	75	--	--	--	--	45	45	40	45	56	54	65	68	72	72	73	78	--	84	78	80	68	76
16.....	74	75	--	--	45	45	45	45	43	45	55	62	65	68	73	74	70	80	80	84	76	78	66	67
17.....	61	70	59	60	42	43	42	46	45	48	63	65	65	68	72	74	74	80	80	85	68	76	70	80
18.....	68	70	60	60	45	47	43	46	45	48	64	62	65	68	70	72	74	75	83	84	78	79	70	73
19.....	65	68	60	63	42	45	43	40	44	48	58	55	63	68	70	72	76	76	80	84	77	80	68	67
20.....	65	65	63	63	42	42	40	40	43	48	56	54	70	70	73	74	74	78	84	84	84	82	69	--
21.....	60	61	60	63	38	42	35	42	43	50	56	62	67	72	75	74	75	82	80	84	78	80	70	72
22.....	68	63	55	61	38	45	40	44	50	52	62	65	70	73	75	75	78	82	80	82	80	82	74	78
23.....	55	60	56	56	40	45	40	42	52	55	54	56	70	74	74	75	74	80	82	85	82	80	72	78
24.....	57	61	55	57	42	45	40	40	52	54	58	60	70	72	74	78	78	84	84	85	78	79	72	74
25.....	65	60	52	53	45	45	45	42	45	54	50	55	60	72	72	75	80	82	84	82	86	78	70	74
26.....	60	62	48	46	45	45	44	44	50	52	60	60	68	70	76	78	78	78	84	86	76	75	68	68
27.....	60	55	50	51	40	45	40	43	50	53	55	55	68	68	78	80	76	78	84	86	76	78	75	78
28.....	62	64	50	50	44	45	42	43	53	54	55	54	65	68	78	78	75	80	82	92	76	79	70	78
29.....	63	65	52	--	48	54	40	40	--	--	50	55	64	65	75	78	75	80	86	84	78	78	75	78
30.....	64	65	--	--	55	53	40	40	--	--	55	54	64	65	76	78	76	75	84	82	88	76	80	73
31.....	64	62	--	--	50	54	40	40	--	--	54	60	--	--	76	78	--	--	84	86	78	80	--	--
Average.....	59	70	--	--	--	--	45	49	45	49	56	59	53	65	72	74	75	79	81	84	80	82	72	75

NEUSE RIVER BASIN  
NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.

LOCATION. --At Streets Ferry about 1½ miles east of Lima, Craven County, N. C.  
DRAINAGE AREA. --4,040 square miles.

RECORDS AVAILABLE. --Chemical analyses: September 1954 to September 1955.  
Water temperatures: October 1954 to September 1955.

EXTREMES. 1954-55. --Dissolved solids: Maximum, 12,100 ppm Oct. 15 (m.); minimum, 69 ppm Feb. 11-19, Mar. 21-31, Apr. 1-10.  
Hardness: Maximum, 2,220 ppm Oct. 15 (m.); minimum, 15 ppm July 16 (p.m.), 17-20, Sept. 11-20, 1955.

Specific conductance: Maximum daily, 17,800 micromhos Oct. 15 (m.); minimum daily, 56.7 micromhos Sept. 14 (a.m.).

Water temperatures: Maximum, 90°F July 28 (p.m.); minimum, 39°F Dec. 8 (a.m.).

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 three times daily samples available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, September 1954 to September 1955

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.			
Sept. 23-25, 1954.....	3.0		0.08	27	45	388	16	40	99	660	0.0	1.4	1,260	248	215	2,390	6.7	17
Sept. 26-27, 28 (a.m.)..	1.7		.04	18	21	186	9.4	42	49	312	.0	1.4	655	130	96	1,210	6.7	17
Sept. 28 (m.), p.m.), 29 (m.).....	2.4		.18	24	37	315	16	45	88	550	.0	1.4	1,060	214	177	2,040	7.0	15
Sept. 29 (a.m., p.m.), 30 (p.m.).....	1.3		.04	15	18	168	8.6	43	47	272	.0	1.1	591	114	79	1,050	7.0	10
Sept. 30 (a.m., m.).....	1.6		.10	13	8.8	80	5.5	46	33	127	.0	1.0	300	68	30	555	7.2	14
Oct. 1 (a.m.), 2 (a.m., p.m.).....	1.3		.04	10	4.6	36	3.9	46	21	54	.0	.9	156	44	6	285	7.2	8
Oct. 1 (m.), 3 (m., p.m.), 4 (a.m., p.m.), 5 (a.m.), 6 (a.m.).....	2.2		.04	18	16	142	8.1	46	43	250	.0	1.0	532	108	70	972	7.0	8
Oct. 1 (p.m.), 2 (m.), 3 (a.m.), 4 (m.).....	1.6		.06	12	8.8	77	5.5	46	29	127	.0	1.0	301	66	28	549	7.1	10
Oct. 5 (m., p.m.), 6 (m., p.m.).....	2.5		.06	19	27	230	12	46	64	402	.0	1.0	804	156	118	1,470	7.0	12
Oct. 7, 8 (m., p.m.).....	3.3		.02	52	133	1,990	44	54	273	1,900	.0	.7	3,320	675	631	6,180	6.9	12
Oct. 8 (a.m.), 9 (a.m.)..	3.2		.07	32	62	510	20	46	145	895	.0	1.1	1,690	335	296	3,110	7.1	11
Oct. 9 (m., p.m.), 10-11, 12 (m., p.m.), 13, 14 (a.m.).....	4.7		.02	30	67	552	17	47	138	960	.1	1.1	1,790	353	314	3,250	6.9	16
Oct. 14 (a.m.), 14 (p.m.)	4.1		.04	24	43	360	8.5	53	92	620	--	2.0	1,180	235	198	2,150	7.1	18
Oct. 14 (m.).....	4.3		.03	43	116	--	--	53	211	1,480	--	--	--	520	477	4,860	6.7	--
Oct. 15 (a.m.).....	5.4		.03	60	260	2,070	75	58	542	3,750	--	3.2	6,810	1,270	1,220	10,800	6.5	9
Oct. 15 (m.).....	4.6		.04	128	463	3,730	125	72	946	6,630	--	1.2	12,100	2,220	2,160	17,800	6.8	11

NEUSE RIVER BASIN--Continued  
 NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued  
 Chemical analyses, in parts per million, September 1954 to September 1955--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			
Oct. 15 (p.m.) 1954	4.1	0.02	112	350	2,880	92	717	54	717	5,040	--	3.1	9,230	1,720	1,670	14,000	6.4	9
Oct. 16-18, 19 (m., p.m.), 20 (m., p.m.), 21 (p.m.), 22 (m.), 23 (p.m.), 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	5.4	.09	52	141	1,100	42	287	44	287	1,980	--	1.5	3,430	710	674	6,220	6.7	20
Oct. 19 (a.m.), 21 (m., p.m.), 22 (p.m.), 23 (m.), 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	5.1	.02	30	85	672	24	176	46	176	1,180	--	1.4	2,200	427	390	3,950	7.0	16
Oct. 20 (a.m.), 22 (p.m.), 23 (m.), 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	6.8	.04	24	58	490	15	440	52	440	3,050	--	3.1	1,570	1,300	263	2,820	6.6	14
Oct. 21 (a.m.), 23 (m.), 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	18	33	--	--	84	43	84	500	--	--	--	181	146	1,800	6.6	--
Oct. 22 (p.m.), 23 (p.m.), 24 (a.m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	11	15	--	--	28	35	28	215	--	--	--	87	58	852	6.6	--
Oct. 23 (a.m.), 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	8.4	7.1	--	--	15	34	15	108	--	--	--	50	22	488	6.6	--
Oct. 24 (m.), 25 (p.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	15	27	--	--	67	38	67	410	--	--	--	148	117	1,460	6.6	--
Oct. 25 (a.m.), 26 (p.m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	27	62	--	--	140	40	140	900	--	--	--	322	289	3,110	6.7	--
Oct. 26 (m.), 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	18	38	--	--	90	36	90	580	--	--	--	202	172	2,090	6.6	--
Oct. 27 (m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	23	47	--	--	107	36	107	700	--	--	--	250	220	2,450	6.6	--
Oct. 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	39	96	--	--	198	45	198	1,450	--	--	--	492	455	4,600	6.7	--
Oct. 29 (a.m.), 30 (p.m.), 31 (p.m.)	--	--	60	154	--	--	323	52	323	2,300	--	--	--	785	742	7,170	6.6	--
Oct. 30 (m.), 31 (p.m.)	--	--	21	39	--	--	94	39	94	600	--	--	--	214	182	2,230	6.6	--
Oct. 31 (a.m.), 1 (p.m.), 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (m.), 7 (p.m.), 8 (m.), 9 (p.m.), 10 (m.), 11 (p.m.), 12 (m.), 1 (p.m.), 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (m.), 7 (p.m.), 8 (m.), 9 (p.m.), 10 (m.), 11 (p.m.), 12 (m.)	--	--	56	146	--	--	301	50	301	1,300	--	--	--	456	419	4,320	6.7	--
Oct. 27 (m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	48	129	--	--	281	49	281	1,880	--	--	--	650	610	5,970	6.6	--
Oct. 27 (p.m.), 28 (p.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	100	280	--	--	572	60	572	4,150	--	--	--	1,400	1,350	12,100	6.6	--
Oct. 28 (a.m.), 29 (p.m.), 30 (p.m.), 31 (p.m.)	--	--	59	154	--	--	301	208	301	2,300	--	--	--	1,800	669	7,130	6.6	--
Oct. 29 (m.), 30 (p.m.), 31 (p.m.)	--	--	104	302	--	--	619	53	619	4,430	--	--	--	1,500	1,452	13,100	6.6	--
Oct. 30 (p.m.), 31 (p.m.)	--	--	164	126	--	--	249	58	249	2,700	--	--	--	530	483	6,500	6.7	--
Oct. 31 (a.m.), 1 (p.m.), 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (m.), 7 (p.m.), 8 (m.), 9 (p.m.), 10 (m.), 11 (p.m.), 12 (m.)	--	--	60	107	--	--	249	46	249	1,700	--	--	--	590	552	5,610	6.7	--
Oct. 29 (m.), 30 (p.m.), 31 (p.m.)	--	--	54	163	--	--	390	50	390	2,400	--	--	--	805	764	7,370	6.7	--
Oct. 30 (p.m.), 31 (p.m.)	--	--	29	197	--	--	404	54	404	2,850	--	--	--	980	936	8,700	6.5	--
Oct. 31 (a.m.), 1 (p.m.), 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (m.), 7 (p.m.), 8 (m.), 9 (p.m.), 10 (m.), 11 (p.m.), 12 (m.)	--	--	28	59	--	--	925	38	128	925	--	--	--	314	283	3,180	6.6	--
Oct. 30 (m.), 31 (p.m.), 1 (p.m.), 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (m.), 7 (p.m.), 8 (m.), 9 (p.m.), 10 (m.), 11 (p.m.), 12 (m.)	7.4	.05	45	104	--	--	116	39	116	1,550	0.1	3.6	2,700	538	506	5,090	6.8	12
Nov. 1, 2 (a.m., p.m.), 3 (a.m.), 4 (a.m.), 5 (a.m.), 6 (a.m.), 7 (a.m.), 8 (a.m.), 9 (a.m.), 10 (a.m.), 11 (a.m.), 12 (a.m.)	7.0	.07	42	109	--	--	125	41	125	1,550	.1	3.8	2,740	554	520	5,240	6.4	15
Nov. 2 (m.), 3 (p.m.), 4 (m.), 5 (p.m.), 6 (p.m.), 7 (p.m.), 8 (p.m.), 9 (p.m.), 10 (p.m.), 11 (p.m.), 12 (p.m.)	3.8	.06	29	68	--	--	74	37	74	975	.1	3.9	1,740	352	322	3,410	6.6	16
Nov. 5 (a.m.)	--	--	56	145	--	--	315	46	315	2,100	--	--	--	735	697	6,950	6.4	--

## NEUSE RIVER BASIN

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Nov. 5 (m.), 1954.....	--	--	54	139	--	--	45	307	1,550	--	--	--	705	608	6,690	6.3
Nov. 6 (a.m.), 7 (a.m.), 8 (m.).....	--	--	31	21	--	--	38	183	1,020	--	--	--	165	134	3,570	6.4
Nov. 6 (m.), p.m.), 7 (m., p.m.), 8 (p.m.), Nov. 8 (a.m.), 9 (m., p.m.), 10 (a.m., m.), Nov. 9 (a.m.), 10 p.m.), 11.....	7.4	0.06	32	136	995	43	46	133	1,800	0.1	3.1	3,170	640	602	5,890	6.8
Nov. 12 (a.m., m.), 13 (a.m., m.), 14 (a.m., m.).....	8.1	.10	36	90	704	29	43	98	1,280	.2	3.3	2,270	462	427	4,390	6.8
Nov. 12 (p.m.), 13 (m., p.m.), 14 (m.), 15 (m., p.m.), 16 (m.), 17 (a.m., p.m.), 18 (m.) Nov. 13 (p.m.), 14 (p.m.) Nov. 15 (a.m.).....	7.4	.03	59	200	1,470	58	51	200	2,700	.1	2.8	4,720	970	928	8,470	6.6
Nov. 16 (a.m., p.m.), 17 (m.), 18 (a.m., p.m.) Nov. 19.....	6.6	.04	98	298	2,270	85	61	311	4,250	.2	2.3	7,350	1,470	1,420	12,500	6.7
Nov. 20 (a.m., m.), 21, 22 (a.m., m.), Nov. 23 (a.m., m.), 24 (m., p.m.), 25 (a.m., p.m.), 26 (a.m., m.), Nov. 24 (a.m., m.), 25 (m., p.m.), 26 (a.m.).....	6.2	.11	104	311	2,480	102	62	328	4,600	.2	2.2	7,960	1,540	1,490	13,100	6.8
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	7.1	.01	76	231	1,800	75	55	241	3,300	.1	2.6	5,760	1,140	1,100	10,100	6.6
Nov. 20 (a.m., m.), 21, 22 (a.m., m.), Nov. 23 (a.m., m.), 24 (m., p.m.), 25 (a.m., p.m.), 26 (a.m., m.), Nov. 24 (a.m., m.), 25 (m., p.m.), 26 (a.m.).....	--	--	76	214	--	--	59	490	3,200	--	--	--	1,070	1,020	9,930	6.7
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	--	--	40	95	--	--	44	212	1,020	--	--	--	480	454	4,150	6.5
Nov. 20 (a.m., m.), 21, 22 (a.m., m.), Nov. 23 (a.m., m.), 24 (m., p.m.), 25 (a.m., p.m.), 26 (a.m., m.), Nov. 24 (a.m., m.), 25 (m., p.m.), 26 (a.m.).....	6.5	.07	108	362	2,740	106	65	373	5,140	.1	1.5	8,970	1,760	1,710	14,700	6.7
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	7.1	.01	132	343	2,880	95	66	739	4,940	.1	1.5	9,170	1,740	1,690	14,800	6.5
Nov. 20 (a.m., m.), 21, 22 (a.m., m.), Nov. 23 (a.m., m.), 24 (m., p.m.), 25 (a.m., p.m.), 26 (a.m., m.), Nov. 24 (a.m., m.), 25 (m., p.m.), 26 (a.m.).....	6.3	.06	120	345	2,840	95	64	714	5,040	.1	.7	9,190	1,720	1,670	14,500	6.6
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	--	--	22	43	--	--	39	96	620	--	--	--	230	198	2,280	6.6
Nov. 20 (a.m., m.), 21, 22 (a.m., m.), Nov. 23 (a.m., m.), 24 (m., p.m.), 25 (a.m., p.m.), 26 (a.m., m.), Nov. 24 (a.m., m.), 25 (m., p.m.), 26 (a.m.).....	8.2	.02	100	294	2,540	95	60	609	4,500	.1	2.8	8,180	1,460	1,410	12,600	6.7
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	7.9	.03	50	130	1,100	45	48	273	1,920	.1	1.0	3,550	660	620	6,330	6.7
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	--	--	--	--	--	--	40	102	640	--	--	--	--	--	2,360	6.5
Nov. 27 (m.), 28 (m., p.m.), 29 (a.m., m.), 30 (a.m., p.m.).....	10	.03	33	77	670	25	42	176	1,150	.0	.3	2,160	398	364	3,970	6.7
Nov. 29 (p.m.), 30 (m., p.m.).....	13	.11	15	24	214	9.5	34	64	350	.1	3.1	732	137	109	1,390	6.6

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued  
Chemical analyses, in parts per million, September 1954 to September 1955--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			
Dec. 1 (a.m.) 1954		--	--	10	9.0	--	--	32	31	112	--	--	--	62	36	552	6.8	--
Dec. 1 (m.)		--	--	13	20	--	--	33	49	290	--	--	--	114	87	1,090	6.6	--
Dec. 1 (p.m.)		--	--	7.6	4.9	--	--	30	11	46	--	--	--	39	14	259	6.9	--
Dec. 2 (a.m.)		--	--	28	62	--	--	40	139	950	--	--	--	326	263	3,170	6.6	--
Dec. 2 (m.)		--	--	17	30	--	--	34	70	430	--	--	--	167	139	1,650	6.7	--
Dec. 2 (p.m.)		--	--	14	21	--	--	31	53	310	--	--	--	122	97	1,210	6.5	--
Dec. 3 (a.m.)		--	--	19	37	--	--	36	86	430	--	--	--	198	168	1,920	6.5	--
Dec. 3 (m.)		--	--	19	37	--	--	35	83	530	--	--	--	200	171	1,940	6.3	--
Dec. 3 (p.m.)		--	--	37	121	--	--	44	197	1,320	--	--	--	591	555	4,420	6.5	--
Dec. 4 (a.m.)		--	--	13	21	--	--	33	54	290	--	--	--	120	93	1,190	6.4	--
Dec. 4 (m.)		--	--	23	72	--	--	39	113	730	--	--	--	352	320	2,590	6.5	--
Dec. 4 (p.m.)		--	--	60	124	--	--	47	370	2,500	--	--	--	660	621	7,880	6.4	--
Dec. 5 (a.m.)		--	--	26	208	--	--	54	373	2,650	--	--	4	920	876	8,250	6.5	--
Dec. 5 (m.)		--	--	34	55	--	--	41	139	875	--	--	--	310	276	3,120	6.6	--
Dec. 5 (p.m.)		--	--	8.8	5.8	--	--	33	15	76	--	--	--	46	19	412	6.6	--
Dec. 6 (a.m.)		--	--	84	231	--	--	59	524	3,480	--	--	--	1,160	1,110	10,300	6.6	--
Dec. 6 (m.)		--	--	70	192	--	--	52	423	2,900	--	--	--	965	922	8,730	6.6	--
Dec. 6 (p.m.)		--	--	100	297	--	--	62	629	4,250	--	--	--	1,470	1,420	12,600	6.7	--
Dec. 7 (a.m.)		--	--	26	62	--	--	36	138	900	--	--	--	322	282	3,270	6.6	--
Dec. 7 (m.)		--	--	30	71	--	--	39	163	1,020	--	--	--	366	334	3,530	6.7	--
Dec. 7 (p.m.)		--	--	44	137	--	--	42	504	1,950	--	--	--	875	641	6,180	6.6	--
Dec. 8 (a.m.)		--	--	10	9.2	--	--	27	40	135	--	--	--	64	42	673	6.5	--
Dec. 8 (m.)		--	--	--	--	--	--	34	123	790	--	--	--	--	--	2,760	6.7	--
Dec. 8 (p.m.)		--	--	--	--	--	--	40	225	1,550	--	--	--	--	--	5,170	6.6	--
Dec. 9 (a.m.)		--	--	28	66	--	--	36	143	925	--	--	--	340	310	3,350	6.6	--
Dec. 9 (m.)		--	--	8.4	3.2	--	--	28	11	43	--	--	--	34	11	284	6.6	--
Dec. 9 (p.m.)		--	--	8.6	2.2	--	--	28	11	21	--	--	--	29	6	156	6.6	--
Dec. 10 (a.m.)		--	--	13	18	--	--	28	55	259	--	--	--	108	84	995	6.7	--
Dec. 10 (m.)		--	--	7.6	1.9	--	--	28	13	17	--	--	--	27	4	153	6.7	--
Dec. 10 (p.m.)		--	--	7.2	3.2	--	--	27	13	30	--	--	--	31	9	184	6.6	--
Dec. 11 (a.m.)		--	--	9.2	6.1	--	--	26	14	81	--	--	--	48	27	373	6.6	--
Dec. 11 (m.)		--	--	--	--	--	--	24	15	88	--	--	--	--	--	402	6.6	--
Dec. 11 (p.m.)		--	--	--	--	--	--	24	23	107	--	--	--	--	--	466	6.6	--
Dec. 12-15		13	0.05	6.6	2.8	18	3.4	19	15	31	0.1	1.5	119	28	12	192	6.6	28

Dec. 16-20, 1954.....	13	.03	5.8	2.0	12	2.8	16	15	16	.1	2.1	87	23	10	126	6.6	23
Dec. 21-31.....	7.9	.07	5.8	2.1	10	2.2	15	15	12	.2	1.3	84	23	11	112	6.6	17
Jan. 1-7, 8 (a.m.), 9 1955 p.m., 10 (a.m.), 11 (a.m.).....	9.0	.07	6.4	2.2	12	2.0	18	15	16	.2	2.1	90	25	10	129	6.5	15
Jan. 8 (a.m.), 9 (a.m.).....	--	--	8.4	4.9	--	--	18	24	65	--	--	--	41	26	327	6.9	--
Jan. 9 (a.m.), 10 (a.m.), 11 (a.m.).....	--	--	9.6	9.2	--	--	22	31	132	--	--	--	62	44	546	6.4	--
Jan. 10 (a.m.).....	--	--	18	18	--	--	22	59	320	--	--	--	118	100	1,210	6.3	--
Jan. 10 (p.m.).....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 11 (a.m., m.).....	--	--	22	42	--	--	26	111	870	--	--	--	228	207	2,400	6.6	--
Jan. 11 (p.m.), 12 (a.m.) .....	--	--	15	28	--	--	22	65	380	--	--	--	152	134	1,390	6.4	--
Jan. 12 (a.m., p.m.).....	--	--	10	13	--	--	21	43	182	--	--	--	80	63	1,758	6.6	--
Jan. 13 (a.m., p.m.).....	10	.04	7.2	2.4	16	2.1	20	15	22	.2	2.6	99	23	12	151	6.6	17
Jan. 14-15.....	--	--	8.8	5.8	--	--	20	24	81	--	--	--	46	30	372	6.3	--
Jan. 16-18, 20 (m., p.m.) .....	12	.06	6.7	2.0	14	2.2	20	15	18	.1	2.4	94	25	9	140	6.6	23
Jan. 19.....	--	--	68	185	--	--	43	390	2,750	--	--	--	930	895	8,360	6.8	--
Jan. 20 (a.m.).....	--	--	8.0	5.4	--	--	18	22	78	--	--	--	42	27	361	6.4	--
Jan. 21-31.....	12	.04	6.9	1.8	12	1.8	16	16	16	.1	1.9	92	25	12	131	6.6	23
Feb. 1-10.....	10	.19	6.0	1.8	11	2.0	14	16	12	.0	.7	79	23	11	107	6.4	17
Feb. 11-19.....	10	.07	2.8	2.6	7.6	1.0	10	13	9.5	.1	1.3	69	18	10	88.2	6.1	25
Feb. 20-28.....	9.6	.08	5.4	1.5	7.7	.2	12	14	9.2	.1	.8	72	20	10	92.8	6.0	28
Mar. 1-10.....	10	.06	5.2	1.7	8.7	.2	14	13	9.8	.1	1.4	70	20	8	94.9	6.3	22
Mar. 11-20.....	6.3	.17	5.3	1.2	8.2	1.4	14	11	9.8	.1	1.5	72	18	7	96.2	6.3	40
Mar. 21-31.....	9.5	.07	5.6	1.0	9.2	1.6	16	12	9.2	.1	1.6	69	18	5	89.9	6.7	26
Apr. 1-10.....	13	.33	5.9	1.7	9.4	1.7	18	12	10	.1	1.9	89	21	7	100	6.4	40
Apr. 11-20.....	8.5	.07	5.6	1.5	10	1.6	21	10	11	.2	1.9	76	20	3	99.5	6.3	27
Apr. 21-30.....	9.6	.09	5.2	1.0	7.9	1.6	19	7.4	8.2	.1	1.7	76	17	1	85.3	6.6	65
May 1-10.....	12	.48	5.8	1.7	11	2.1	24	7.9	11	.0	1.9	83	21	2	104	6.5	70
May 11-20.....	10	.24	7.1	2.1	12	1.8	30	8.0	14	.0	1.7	85	26	2	119	6.6	24
May 21-31.....	4.3	.11	7.0	1.2	13	2.2	30	7.9	13	.1	.8	78	22	0	116	6.7	31
June 1-5, 6 (a.m., m.), 7 (a.m., p.m.), 8 (p.m.).....	8.8	.23	6.0	1.7	11	2.2	26	6.7	12	.1	1.5	82	22	1	109	6.5	39
June 6 (p.m.), 7 (m.), 9 (a.m.).....	--	--	8.1	5.7	--	--	31	17	81	--	--	--	44	18	358	7.2	--

NEUSE RIVER BASIN--Continued  
NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued  
Chemical analyses, in parts per million, September 1954 to September 1955--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			
June 8 (a.m., m.), 9 (p.m.), 1955.....		--	--	10	11	--	--	31	32	172	--	--	--	72	47	671	6.9	--
June 9 (m.).....		--	--	21	45	--	--	33	90	640	--	--	--	238	211	2,360	6.8	--
June 10.....		--	--	33	84	--	--	38	187	1,220	--	--	--	426	395	4,120	7.3	--
June 11 (a.m.), 13 (m.), 17 (m.), 18 (a.m., p.m.), 18 (a.m.).....		8.1	0.01	25	64	515	22	35	145	900	0.2	0.8	1,700	325	296	3,180	6.9	20
June 11 (m.), 13 (a.m.), 14 (p.m.), 15, 17 (p.m.), 20 (p.m.).....		7.9	.02	12	16	133	6.9	32	49	225	.2	1.0	473	95	69	884	6.5	18
June 11 (p.m.), 13 (p.m.), 20 (m.).....		--	--	17	30	--	--	34	55	440	--	--	--	166	138	1,620	8.0	--
June 12 (a.m.), 16 (a.m.).....		--	--	9.1	5.7	--	--	34	16	78	--	--	--	46	18	358	7.1	--
June 12 (m., p.m.), 14 (a.m., m.), 16 (m., p.m.), 17 (a.m.), 19, 20 (a.m.).....		7.3	.05	8.4	8.4	70	4.6	30	31	111	.2	1.3	258	56	31	484	7.0	26
June 18 (m.).....		--	--	55	161	--	--	a 49	333	2,360	--	--	--	799	759	7,320	8.7	--
June 21 (a.m.), 23 (a.m., m.), 24 (m., p.m.), 25 (p.m.), 26 (m.), 27 (a.m.).....		3.5	.04	8.1	4.6	41	3.4	33	12	64	.1	.5	167	39	12	303	6.6	18
June 21 (m., p.m.), 22 (a.m., m.).....		--	--	23	59	--	--	36	114	860	--	--	--	300	270	2,930	8.8	--
June 22 (p.m.).....		--	--	13	18	--	--	34	41	268	--	--	--	108	80	1,050	6.6	--
June 23 (p.m.), 24 (a.m., m.), 26 (m.), 27 (m., p.m.), 28-30 (a.m., m.).....		4.6	.04	7.4	2.1	19	2.5	32	8.4	24	.0	1.6	93	27	1	158	6.9	38
July 10.....		6.2	.12	5.2	2.5	13	2.3	25	7.3	15	.2	1.9	78	23	3	125	6.3	22
July 11-15, 16 (a.m., m.).....		5.3	.10	7.2	1.7	13	2.3	31	8.7	14	.0	2.1	81	25	0	126	6.8	40
July 16 (p.m.), 17-20 (a.m., m.).....		8.3	.15	4.0	1.1	7.9	2.2	16	6.0	8.2	.0	1.9	73	15	2	82.0	6.4	35
July 21-30 (a.m.), 31 (a.m.).....		9.3	.22	2.6	.9	7.5	2.2	24	6.9	8.0	.0	.8	78	18	1	88.7	6.7	60
July 30 (m.).....		--	--	8.6	8.0	--	--	24	22	109	--	--	--	54	35	457	6.5	--
July 30 (p.m.).....		--	--	12	19	--	--	26	47	260	--	--	--	107	86	1,020	6.6	--
July 31 (m., p.m.).....		--	--	7.4	3.6	--	--	26	11	44	--	--	--	33	12	221	6.9	--

a Includes equivalent of 7 parts per million of carbonate (CO<sub>3</sub>).





## NEUSE RIVER BASIN--Continued

## NEUSE RIVER NEAR (STREETS FERRY) VANCEBORO, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Average of three times daily measurement, morning, noon, and afternoon/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	62	51	52	41	56	56	67	79	80	86	77
2	78	62	51	54	43	55	58	66	78	83	86	76
3	78	60	50	52	44	55	59	66	77	83	85	76
4	79	58	50	52	44	57	61	68	76	84	86	76
5	79	57	50	52	42	58	60	71	77	85	87	76
6	79	54	51	53	44	61	61	71	78	84	86	75
7	76	56	45	53	47	60	63	71	79	85	87	75
8	74	56	43	52	47	59	61	73	79	87	87	75
9	72	57	41	51	47	58	61	72	77	83	86	75
10	72	57	43	50	47	57	63	73	77	84	85	74
11	74	57	43	49	51	60	63	74	78	83	83	73
12	75	57	43	48	47	62	62	74	80	83	79	74
13	74	57	44	45	45	61	66	73	77	82	77	72
14	74	56	45	45	43	59	68	73	77	82	77	72
15	75	55	43	44	44	59	69	74	77	82	77	73
16	70	57	43	44	44	62	70	72	78	83	78	73
17	70	56	43	43	45	62	70	72	77	85	77	73
18	66	56	45	43	45	62	71	72	76	84	78	73
19	67	60	45	43	46	59	72	71	76	84	78	73
20	67	59	43	40	46	60	72	74	76	84	79	73
21	66	58	42	40	47	58	71	75	78	83	79	73
22	62	59	41	41	49	62	71	76	79	83	80	74
23	61	58	40	41	53	59	72	77	81	84	80	74
24	61	57	42	41	51	57	73	76	81	85	78	75
25	62	57	42	42	50	58	73	76	82	85	77	74
26	63	58	42	44	50	61	71	79	79	87	76	73
27	65	56	42	43	52	57	66	82	80	87	75	73
28	65	54	44	42	54	55	67	81	79	88	76	73
29	64	53	47	41	--	53	67	82	79	86	76	73
30	64	51	50	43	--	53	66	81	81	86	76	73
31	63	--	51	41	--	55	--	79	--	86	77	--
Average	70	57	45	46	47	58	66	74	78	84	80	72

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, 2¼ miles downstream from Clayroot Swamp and 3½ miles northwest of Vanceboro, Craven County.

DRAINAGE AREA.--182 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1952, January to September 1955.

Water temperatures: October 1951 to September 1952, October 1954 to September 1955.

EXTREMES, 1955.--Hardness: Maximum, 96 ppm Jan. 1-10; minimum, 15 ppm Sept. 21-30.

Specific conductance: Maximum daily, 865 micromhos June 21; minimum daily, 29.5 micromhos Sept. 21.

Water temperatures: Maximum, 79°F July 7, 25-30; minimum, 36°F Dec. 23.

EXTREMES, 1951-52, 1955.--Hardness: Maximum, 96 ppm Jan. 1-10, 1955; minimum, 15 ppm Sept. 21-30, 1955.

Specific conductance: No record 1951-52.

Water temperatures: Maximum, 87°F July 29, 1952; minimum, 36°F Dec. 23, 1954.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, January to September 1955

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			
Jan. 1-10, 1955	2.7	6.3	0.08	33	3.2	24	3.2	62	56	36	0.1	0.9	215	96	45	342	6.9	23
Jan. 11-20	5.3	7.6	.06	34	1.7	33	3.2	64	55	45	.0	1.1	226	91	38	377	7.1	17
Jan. 21-31	25	8.5	.03	27	3.1	30	2.5	53	58	42	.0	3.6	215	81	54	336	6.5	12
Feb. 1-10	16	9.5	.06	27	3.1	26	2.3	50	61	36	.0	3.4	199	61	56	315	6.6	14
Feb. 11-19	24	3	.06	24	2.6	24	2.3	25	53	54	.0	2.1	180	70	48	283	6.7	23
Feb. 20-28	16	3.3	.05	25	2.5	24	2.2	35	51	52	.0	1.0	174	73	44	263	6.7	17
Mar. 1-10	16	3.2	.10	25	2.5	24	2.3	35	48	32	.0	.8	175	73	42	281	6.6	31
Mar. 11-20	26	4.3	.14	24	2.9	23	2.3	35	45	30	.0	1.7	175	69	42	289	6.5	35
Mar. 21-31	40	3.2	.21	24	2.5	16	2.1	25	45	20	.0	.2	160	62	42	230	6.5	50
Apr. 1-10	24	3.3	.27	24	2.7	21	2.2	43	44	27	.0	.2	160	71	36	268	7.0	33
Apr. 11-20	24	3.4	.13	25	2.2	27	1.8	49	38	35	.0	1.5	182	71	31	295	6.5	40
Apr. 21-30	10	5.5	.11	26	2.0	27	2.6	60	34	35	.1	1.5	183	72	23	295	6.9	30
May 1-10	4.8	8.8	.16	26	2.4	39	3.5	69	30	52	.2	2.5	216	76	19	359	7.0	40
May 11-20	12	8.2	.09	22	3.2	30	3.3	53	28	40	.1	1.7	181	67	24	297	7.6	37
May 21-24, 27-30	6.5	10	.07	18	1.4	29	3.5	43	24	40	.1	1.6	174	50	15	272	7.5	70
May 25-26, 31	9.5	--	--	21	1.7	--	--	a57	13	99	--	--	--	57	12	462	8.9	--
June 1-10	3.4	11	.24	22	2.3	80	4.2	63	16	123	.1	.4	308	64	12	553	6.9	45
June 11-20	2.4	6.6	.11	21	1.9	104	5.1	66	14	180	.2	2.6	349	60	4	662	6.3	20
June 21-22	22	--	--	21	1.4	--	--	b59	17	180	--	--	--	59	10	722	9.3	--
June 23-26, 28-30	26	8.1	.07	13	1.3	28	3.1	23	18	39	.0	.6	148	37	19	231	7.4	55
June 27	26	--	--	16	1.3	--	--	32	19	72	.0	--	--	45	19	352	7.5	--

a Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

b Includes equivalent of 9 parts per million of carbonate (CO<sub>3</sub>).

NEUSE RIVER BASIN--Continued  
 SWIFT CREEK NEAR VANCEBORO, N. C.--Continued  
 Chemical analyses, in parts per million, January to September 1955--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			
July 1-9, 1955	6.9	8.8	0.11	16	1.9	30	3.5	34	21	42	0.2	4.2	166	46	19	287	6.9	33
July 10	46	--	--	11	.9	--	--	22	25	26	--	--	--	31	13	167	6.3	--
July 11-20	76	9.3	.33	11	1.3	12	2.2	21	17	16	--	1.7	116	32	15	140	6.5	80
July 21-31	7.3	8.9	.09	14	1.6	16	2.6	42	13	21	.0	1.8	134	42	8	177	6.6	110
Aug. 1-3	11	8.2	.54	15	1.7	32	3.2	49	15	45	.0	1.5	--	45	5	272	6.7	85
Aug. 4-10	3.3	6.3	.23	11	.7	16	3.6	34	6.8	22	.0	2.4	109	29	2	157	7.3	45
Aug. 11-20	1,360	6.6	.27	7.8	.7	6.0	2.4	17	9.9	7.8	.0	2.8	c86	22	8	86.9	6.4	140
Aug. 21-31	874	11	.30	9.6	1.3	6.0	2.7	20	12	9.0	.0	3.5	d112	29	13	100	6.3	180
Aug. 25e	880	10	.28	10	1.6	3.4	3.1	36	5.1	6.0	.0	.1	--	32	3	*91.8	6.2	300
Sept. 1e	113	--	--	14	1.4	--	--	27	18	16	--	--	--	41	18	148	6.2	--
Sept. 1-3	189	12	.50	13	1.5	11	2.4	27	16	14	.0	1.4	--	39	17	144	6.4	100
Sept. 4-10	1,480	8.3	.56	7.2	.9	4.1	2.0	17	5.6	5.0	.0	.7	--	22	8	70.3	6.2	150
Sept. 11-20	1,030	10	.40	8.0	.6	6.7	1.8	18	9.3	10	.0	2.3	94	23	8	89.0	6.6	140
Sept. 21-30	3,040	6.6	.17	4.4	1.1	3.2	1.8	13	7.3	4.5	.0	2.5	f 68	15	5	49.4	6.2	200
Average	268	7.4	0.19	19	1.9	26	2.8	39	28	43	0.0	1.8	173	55	23	279	--	63

c Organic matter present; sum of mineral constituents 53 parts per million.

d Organic matter present; sum of mineral constituents 65 parts per million.

e Values are not included in averages.

f Organic matter present; sum of mineral constituents 38 parts per million.

## NEUSE RIVER BASIN--Continued

## SWIFT CREEK NEAR VANCEBORO, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/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	--	--	46	44	50	49	39	39	52	49	51	49	63	62	74	72	72	71	78	78	72	72
2.....	71	69	--	--	45	43	50	49	42	39	53	52	52	51	62	61	72	70	73	71	78	78	72	72
3.....	--	--	--	--	43	42	50	49	43	41	53	53	55	52	63	62	70	69	75	73	78	78	72	72
4.....	--	--	--	--	42	41	49	49	43	41	56	53	56	55	63	62	69	67	76	74	78	78	72	72
5.....	--	--	--	--	41	41	49	49	41	40	59	56	56	56	66	63	69	67	77	75	78	78	72	72
6.....	--	--	--	--	42	41	50	49	41	40	60	59	56	56	66	66	70	68	77	75	78	77	72	72
7.....	--	--	--	--	41	39	50	49	46	41	60	57	57	56	67	65	72	70	79	76	77	77	72	72
8.....	--	--	--	--	39	38	49	47	47	46	57	54	57	56	67	65	72	72	76	76	78	77	72	72
9.....	--	--	--	--	39	38	47	47	46	45	54	52	57	56	67	65	72	69	76	76	78	78	72	72
10.....	--	--	47	44	40	39	47	46	45	44	52	52	60	56	67	66	69	68	76	75	78	78	72	71
11.....	--	--	48	46	40	40	46	46	47	44	55	52	60	60	69	67	69	68	75	75	78	76	71	71
12.....	--	--	48	43	40	40	46	45	47	43	58	55	62	60	69	69	72	69	75	75	76	73	71	70
13.....	--	--	48	46	40	40	45	44	43	40	60	58	63	62	69	68	72	70	75	74	73	72	70	69
14.....	--	--	49	47	41	40	44	42	40	39	60	57	63	63	68	68	71	70	74	71	73	72	69	68
15.....	--	--	50	49	41	41	42	42	39	38	57	56	65	63	68	68	70	69	72	71	74	73	69	68
16.....	--	--	54	50	41	41	42	42	40	39	62	56	66	65	68	66	69	67	74	72	75	74	69	68
17.....	--	--	57	54	41	41	42	41	42	40	59	58	66	66	66	66	69	67	76	74	74	74	69	69
18.....	--	--	60	57	43	41	42	41	44	42	58	57	66	66	66	66	70	69	77	76	74	74	69	69
19.....	--	--	61	60	43	42	40	43	43	43	57	53	67	66	66	65	70	69	78	77	74	74	70	69
20.....	--	--	61	60	43	42	40	39	43	43	53	51	68	67	67	65	70	69	78	78	75	74	70	69
21.....	--	--	60	57	42	40	39	38	45	43	56	52	70	68	69	67	72	70	78	76	75	75	71	70
22.....	--	--	57	53	40	37	40	39	47	45	60	56	70	69	69	69	73	72	78	77	77	76	71	71
23.....	--	--	53	51	37	36	40	39	49	47	60	55	70	69	69	69	74	73	78	77	77	77	71	71
24.....	--	--	51	50	38	37	40	40	49	48	55	53	70	69	70	69	74	74	78	77	77	76	71	71
25.....	--	--	50	48	38	38	40	40	49	48	56	54	70	70	72	70	74	74	79	78	76	75	71	71
26.....	--	--	49	46	39	38	41	40	48	47	58	56	70	69	74	72	74	74	79	79	75	73	71	71
27.....	--	--	47	44	39	39	40	40	47	47	58	53	69	65	74	74	74	74	79	78	73	71	71	69
28.....	--	--	46	45	43	39	40	40	49	47	53	51	65	62	75	74	72	70	79	78	71	71	69	69
29.....	--	--	50	46	48	43	40	40	--	--	51	50	65	62	75	75	70	70	79	79	72	71	69	69
30.....	--	--	49	46	52	48	40	40	--	--	50	49	63	63	75	75	71	70	79	78	71	70	70	69
31.....	--	--	--	--	52	50	40	39	--	--	49	49	--	--	75	74	--	--	78	78	72	71	--	--
Average.....	--	--	--	--	42	41	44	43	44	43	56	54	63	62	69	68	71	70	77	76	76	75	71	70

## NEUSE RIVER BASIN--Continued

SWIFT CREEK AT VANCEBORO, N. C.

LOCATION --At bridge on county road in Vanceboro, Craven County, 50 feet southwest of U. S. Highway 17.

DRAINAGE AREA --226 square miles.

RECORDS AVAILABLE --Chemical analyses: January to September 1955.

Water temperatures: January to September 1955.

EXTREMES 1955 --Hardness: Maximum 114 ppm Jan. 11; minimum 17 ppm Sept. 21-20.

Specific conductance: Maximum daily, 608 micromhos Jan. 11; minimum daily, 44.6 micromhos Sept. 24.

Water temperatures: Maximum 80°F on many days during July and August; minimum 38°F several days during January and February.

REMARKS --Records of specific conductance of daily samples from January to September 1955 available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, January to September 1955

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-nessium	Non-carbonate			
Jan. 1-10, 1955.....		13	0.06	33	4.9	40	3.6	44	73	61	0.0	1.9	273	102	86	433	6.5	19
Jan. 11-20.....		13	0.06	32	8.3	29	2.3	51	67	115	0	0	224	114	72	603	6.8	--
Jan. 21-31.....		12	0.03	31	3.8	25	2.3	30	70	37	0	0	215	92	80	347	6.8	18
Feb. 1-10.....		10	0.03	26	3.8	21	1.7	19	72	32	0	1.1	198	91	65	330	6.4	18
Feb. 11-19.....		8.5	0.04	25	3.2	24	1.8	22	67	27	0	2.6	183	80	64	328	6.4	16
Feb. 20-28.....		7.3	0.06	24	3.2	24	1.8	25	58	31	1.1	0.3	174	73	52	278	6.6	17
Mar. 1-10.....		3.3	0.05	24	3.1	22	2.1	32	52	28	0	1.1	169	73	47	268	6.6	26
Mar. 11-20.....		9	0.07	24	2.5	21	2.0	33	46	28	0	4	169	69	42	268	6.6	37
Mar. 21-31.....		6.3	0.12	19	2.6	17	2.0	22	45	20	0	0.3	154	59	41	226	6.5	50
Apr. 1-10.....		4.6	0.09	21	1.8	17	1.5	30	43	21	0	0.8	144	59	35	217	6.6	37
Apr. 11-20.....		4.7	0.06	22	2.0	20	1.8	30	37	26	1	0.8	153	64	29	245	6.7	34
Apr. 21-30.....		4.7	0.02	22	2.3	23	2.1	52	31	31	1.1	0.8	164	65	23	259	7.4	55
May 1-10.....		4.3	0.02	22	2.7	22	2.1	59	27	30	1	1.3	164	67	18	256	7.0	50
May 11-20.....		4.7	0.18	24	2.1	25	2.5	61	24	32	0	1.0	174	68	18	263	6.8	50
May 21-31.....		4.1	0.20	22	2.0	23	2.5	57	24	39	0	1.5	176	64	18	278	7.1	50
June 1-10.....		7.3	0.24	20	2.2	23	2.6	52	23	31	0	2.2	161	59	16	249	6.8	55
June 11-20.....		5.9	0.09	21	2.2	25	2.7	59	21	34	1	1.0	158	62	14	264	6.8	28
June 21-30.....		7.6	0.14	20	2.0	20	3.2	58	13	59	0	0.8	197	59	12	328	7.3	60
July 1-10.....		8.7	0.16	17	1.4	29	2.8	31	24	43	1.1	1.9	166	46	22	280	6.5	70
July 11-20.....		11	0.13	13	1.5	13	2.2	24	20	16	1	2.0	127	37	18	149	6.3	120
July 21-31.....		12	0.23	13	1.5	14	2.2	39	11	17	1	2.0	132	39	7	155	6.4	120
Aug. 1-10.....		12	0.28	14	1.5	12	1.9	45	8.5	16	0	2.0	125	41	4	149	6.7	140
Aug. 11-20.....		6.7	0.28	6.5	1.9	4.5	2.4	15	9.5	6.2	0	2.4	75	20	8	73.6	6.4	140
Aug. 21-31.....		9.8	0.45	9.3	1.2	5.4	3.1	21	10	8.0	0	3.3	a108	28	11	95.3	6.3	140

a Organic matter present; sum of mineral constituents 61 parts per million.

Sept. 1, 1955 .....	--	--	1.3	--	--	33	11	12	--	--	--	36	9	129	6.3	--
Sept. 1-10 .....	8.9	0.46	6.8	5.8	2.4	21	7.1	8.2	0.0	2.1	88	24	7	63.9	6.2	140
Sept. 11-20 .....	8.9	.16	7.2	5.5	2.2	19	6.7	7.5	.0	2.1	77	23	7	81.8	6.3	120
Sept. 21-30 .....	5.6	.20	.6	4.1	2.5	17	4.4	5.8	.0	2.3	b70	17	3	59.5	6.3	200
Average .....	7.6	0.14	2.5	20	2.3	36	33	29	0.0	1.4	156	59	29	240	--	68

b Organic matter present; sum of mineral constituents 40 parts per million.

## NEUSE RIVER BASIN--Continued

## SWIFT CREEK AT VANCEBORO, N. C.--Continued

Temperature (°F) of water, January to September 1955  
 /Once-daily measurement at 12 m.7

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



## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR TRENTON, N. C.

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 to September 1955.

Water temperatures: October 1951 to September 1953, January to September 1955.

EXTREMES, 1955.--Dissolved solids: Maximum, 149 ppm Feb. 1-10; minimum, 84 ppm Aug. 11-20.

Hardness: Maximum, 79 ppm Feb. 1-10, Feb. 11-19, Feb. 20-28; minimum, 22 ppm Aug. 11-20.

Specific conductance: Maximum daily, 234 micromhos Feb. 10; minimum, 44.9 micromhos Aug. 12.

Water temperatures: Maximum, 81°F July 12; minimum, 33°F Feb. 13, 14.

EXTREMES, 1951-53, 1955.--Dissolved solids: Maximum, 149 ppm Feb. 1-10, 1955; minimum, 59 ppm Mar. 1-10, 1952.

Hardness: Maximum, 112 ppm Nov. 1-10, 1952; minimum, 22 ppm Aug. 11-20, 1955.

Water temperatures: Maximum, 85°F July 27, 1952; minimum, 33°F Feb. 13, 14, 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, January to September 1955

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.			
Jan. 1-10, 1955	8.4	6.3	0.06	22	1.7	7.7	1.3	42	30	7.0	0.1	0.5	118	63	29	179	7.0	18
Jan. 11-20	9.3	7.1	.04	23	2.5	7.2	1.0	43	34	10	.0	.5	119	67	32	182	6.9	22
Jan. 21-31	32	7.9	.05	26	2.2	7.6	.9	36	42	10	.0	.8	132	73	43	195	7.0	17
Feb. 1-10	36	5.1	.05	28	2.4	11	.9	31	51	12	.1	4.2	149	79	54	214	6.8	19
Feb. 11-19	34	4.0	.06	28	2.2	8.0	.8	34	48	12	.0	2.2	143	79	51	212	6.8	35
Feb. 20-28	25	2.4	.07	28	2.1	8.5	.8	36	45	12	.0	.0	137	79	49	211	6.7	33
Mar. 1-10	23	1.6	.08	26	2.3	7.3	.7	44	42	11	.0	.9	131	75	39	198	6.9	35
Mar. 11-20	46	4.9	.08	25	1.2	7.4	.7	34	36	11	.0	2.1	127	66	39	180	6.6	34
Mar. 21-31	40	7.9	.12	22	1.5	7.4	.8	32	35	11	.1	.6	123	62	36	174	6.7	40
Apr. 1-10	23	3.5	.15	25	1.5	7.4	.8	46	31	10	.4	.4	122	69	31	181	7.1	45
Apr. 11-20	29	4.0	.01	24	1.0	7.0	.7	45	28	11	.1	1.2	122	64	27	179	6.9	45
Apr. 21-30	18	3.8	.09	23	1.3	6.8	1.2	46	21	12	.0	.5	119	63	26	174	6.4	45
May 1-10	9.3	10	.12	28	1.3	7.0	1.2	65	21	11	.0	.8	135	74	21	192	7.1	55
May 11-20	33	5.7	.23	23	1.3	6.3	1.2	49	20	11	.0	.9	122	62	22	165	7.0	45
May 21-31	23	7.4	.38	20	1.1	6.3	.8	40	17	11	.0	1.3	118	53	21	146	6.8	60
June 1-10	8.7	4.9	.22	22	1.4	6.0	1.0	55	11	10	.0	.7	111	59	14	135	6.9	50
June 11-20	6.2	5.5	.14	19	1.9	6.7	1.0	72	11	9.5	.0	1.0	123	74	15	160	7.0	45
June 21-30	170	6.6	.14	15	1.4	4.7	1.2	25	19	7.2	.0	1.2	107	44	24	119	6.3	140
July 1-10	36	7.9	.09	22	1.5	5.6	.8	48	16	9.8	.1	2.2	122	60	21	155	6.8	45
July 11-20	132	7.5	.21	13	.9	4.7	.8	28	12	7.0	.0	.6	101	37	14	105	6.9	110
July 21-31	42	8.2	.25	20	.9	5.4	.7	49	7.7	8.6	.0	2.6	115	52	11	132	6.9	120

a Organic matter present; sum of mineral constituents 61 parts per million.

NEUSE RIVER BASIN--Continued  
TRENT RIVER NEAR TRENTON N. C.--Continued  
Chemical analyses, in parts per million, January to September 1955--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			
Aug. 1-10, 1955.....	112	7.5	0.34	14	1.0	4.3	0.8	34	7.5	7.5	0.0	1.0	99	38	10	101	6.7	150
Aug. 11-20 .....	3,250	4.3	.17	7.2	.9	2.7	1.0	18	3.6	4.5	.0	2.8	b84	22	7	57.7	6.1	240
Aug. 21-31 .....	1,420	5.5	.18	8.8	.6	3.1	1.2	22	3.2	4.8	.0	3.4	c93	24	6	66.0	6.4	240
Aug. 25 .....	1,120	5.2	.41	9.6	.5	2.9	1.4	27	4.7	4.0	.0	.2	--	26	4	69.4	6.8	140
Sept. 1-10 .....	1,030	5.9	.30	10	.6	3.9	1.0	26	3.4	6.2	.0	3.3	d92	28	6	70.7	7.2	200
Sept. 11-20 .....	1,210	8.3	.19	13	1.2	5.1	.8	37	7.0	7.0	.0	3.3	104	38	8	93.4	6.9	200
Sept. 21-30 .....	2,490	6.0	.16	9.6	.5	3.9	1.2	30	2.9	5.0	.0	3.3	d88	26	1	71.7	6.6	200
Average .....	393	5.9	0.15	20	1.4	6.3	0.9	40	22	9.2	0.0	1.6	117	57	24	151	--	80

b Organic matter present; sum of mineral constituents 36 parts per million.

c Organic matter present; sum of mineral constituents 42 parts per million.

d Organic matter present; sum of mineral constituents 43 parts per million.

## NEUSE RIVER BASIN--Continued

## TRENT RIVER NEAR TRENTON N. C.--Continued

Temperature (°F) of water, January to September 1955

/Once-daily measurement at 7 a.m./

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

## NEUSE RIVER BASIN--Continued

## TRENT RIVER AT POLLOCKSVILLE, N. C.

LOCATION--At bridge on U. S. Highway 17 in Pollocksville, Jones County, 0.4 mile upstream from Jones-Craven County line.  
DRAINAGE AREA (revised)--370 square miles.

RECORDS AVAILABLE--Chemical analysis January to September 1955.

WATER TEMPERATURE--January to September 1955.

EXTREMES--Maximum daily, 20.0° Jan. 19; minimum, 19° ppm Sept. 21-30.

SPECIFIC CONDUCTANCE--Maximum daily, 203 micromhos Jan. 19; minimum daily, 36.1 micromhos Sept. 22, 23.

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, January to September 1955

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			
Jan. 1-8, 1955		4.7	0.04	88	198	1,520	60	105	406	2,750	0.1	0.3	5,080	1,040	949	8,470	6.8	27
Jan. 9-10		--	--	72	109	--	--	105	54	1,650	--	--	--	630	544	5,400	7.6	--
Jan. 11-13		--	--	69	50	--	--	145	123	720	--	--	--	378	287	2,700	7.3	--
Jan. 14-18		8.1	.07	39	3.8	26	1.5	107	23	42	.0	.8	213	114	26	360	7.3	16
Jan. 19		--	--	60	255	--	--	100	453	3,050	--	--	--	1,200	1,120	9,250	6.7	--
Jan. 20		--	--	38	4.9	--	--	95	28	--	--	--	--	118	38	588	7.2	--
Jan. 21-31		6.0	.02	33	2.8	14	1.0	81	26	23	.0	.6	163	95	28	265	6.9	23
Feb. 11-19		2.7	.13	32	1.8	8.2	1.0	68	29	13	.0	2.1	143	86	31	222	7.0	32
Feb. 20-28		3.5	.10	33	1.9	9.8	.5	75	30	12	.0	1.2	142	90	29	225	7.0	55
Mar. 1-10		3.0	.10	32	4.7	11	1.0	54	26	18	.0	1.0	159	89	30	257	6.9	28
Mar. 11-20		7.1	.15	32	1.5	8.2	1.0	75	24	12	.1	.6	141	87	26	218	7.0	50
Mar. 21-31		3.3	.09	32	1.1	8.0	1.0	70	24	11	.0	1.5	141	84	27	211	7.0	37
Apr. 1-10		5.7	.06	32	1.3	7.6	.9	79	23	11	.1	.9	139	86	21	219	7.2	24
Apr. 11-20		5.7	.06	33	1.5	7.2	1.0	84	19	10	.0	.8	136	88	19	213	6.7	46
Apr. 21-30		4.7	.07	33	1.8	8.5	1.0	90	17	12	.1	1.3	144	89	16	239	6.9	50
May 1-10		8.1	.09	34	1.6	8.1	1.0	90	15	13	.0	1.3	147	91	17	239	7.0	49
May 11-20		7.3	.07	34	2.1	7.4	1.1	93	12	10	.0	1.8	137	93	16	231	7.1	37
May 21-31		6.5	.04	33	1.5	6.5	1.6	92	11	10	.0	.8	149	88	13	215	7.1	31
June 1-7		6.7	.06	32	1.5	7.2	1.8	90	12	10	.0	1.0	136	87	13	215	7.3	45
June 8-10		--	--	44	31	--	--	97	84	460	--	--	--	240	180	1,770	7.9	--
June 11-13		--	--	38	30	--	--	218	68	420	--	--	--	147	147	1,630	7.4	--
June 14-17		--	--	53	102	--	--	91	189	1,420	--	--	--	552	477	4,710	7.3	--
June 18-20		--	--	30	4.2	--	--	82	18	61	--	--	--	94	27	379	7.5	--
June 21-23		--	--	31	1.9	--	--	85	12	21	--	--	--	82	12	237	7.3	--
June 24-30		6.1	.18	18	.8	47	1.6	42	11	7.8	.0	1.2	100	49	15	130	6.7	90

July 15-20, 1955.....	7.0	0.16	17	1.0	4.5	0.9	41	10	7.5	0.0	1.7	106	47	13	124	6.7	100
July 21-26, 29.....	7.1	.31	20	.7	4.9	.9	52	10	8.2	.0	1.3	112	54	11	140	6.9	110
July 27-28.....	--	--	30	16	--	--	64	42	243	--	--	--	141	88	972	7.1	--
July 30.....	--	--	38	48	--	--	66	106	690	--	--	--	291	237	2,460	6.8	--
Aug. 17-18, 22, 24-25	4.2	.33	7.5	1.0	3.8	1.6	20	4.1	8.5	.0	.6	a86	23	7	71.5	6.4	220
27-28.....	4.8	.19	35	5.1	62	3.2	63	19	123	.0	1.7	--	109	57	555	6.5	160
Aug. 19-21, 23, 26....	5.5	.46	9.2	.7	4.2	1.4	25	4.3	6.0	.1	.8	b81	26	6	73.3	6.5	200
Sept. 1-10.....	6.1	.88	14	.9	5.2	1.1	36	6.0	8.0	.0	1.1	c101	37	8	98.7	6.5	180
Sept. 11-20.....	3.8	.45	6.2	.9	2.7	1.6	20	2.8	4.0	.0	.7	d66	19	3	50.8	6.5	180
Sept. 21-30.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Average.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Organic matter present; sum of mineral constituents 42 parts per million.

b Organic matter present; sum of mineral constituents 45 parts per million.

c Organic matter present; sum of mineral constituents 61 parts per million.

d Organic matter present; sum of mineral constituents 33 parts per million.

## NEUSE RIVER BASIN--Continued

## TRENT RIVER AT POLLOCKSVILLE, N. C.--Continued

Temperature (°F) of water, January to September 1955  
 /Once-daily measurement at 4 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				60	--	53	59	65	74	--	--	--
2				54	--	54	60	68	77	--	--	74
3				52	--	52	61	69	76	--	--	75
4				54	--	54	60	68	76	--	--	75
5				51	--	53	61	67	77	--	--	75
6				53	--	54	57	66	78	--	--	75
7				51	--	56	59	70	77	--	--	75
8				51	--	55	60	--	70	--	--	74
9				51	--	56	58	69	68	--	--	74
10				50	--	58	59	66	71	--	--	73
11				47	--	60	55	68	71	--	--	73
12				48	45	58	61	65	69	--	--	73
13				47	45	56	67	70	69	--	--	71
14				49	45	59	69	72	75	--	--	70
15				48	53	59	66	71	76	78	--	70
16				49	54	60	69	71	77	82	--	70
17				47	--	59	72	69	76	84	82	71
18				45	42	58	74	68	77	80	88	70
19				44	43	59	69	68	79	81	81	--
20				44	52	60	70	70	76	76	79	--
21				45	53	62	67	71	74	75	84	--
22				44	53	64	69	69	77	81	81	75
23				43	52	66	66	72	80	83	82	74
24				42	50	55	66	73	74	76	78	73
25				49	49	57	70	70	76	77	78	73
26				49	49	60	72	70	74	79	77	74
27				49	52	60	73	69	75	78	79	73
28				49	53	61	75	78	73	83	78	73
29				49	--	59	75	--	76	79	--	73
30				49	--	56	66	--	--	--	--	74
31				50	--	57	--	--	--	--	--	--
Average				49	--	58	66	69	75	--	--	73

## NEUSE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN NEUSE RIVER BASIN IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			

## ENO RIVER AT HILLSBORO

Jan. 31, 1955	--	15	0.07	4.8	1.5	4.7	0.7	22	5.8	3.5	0.0	0.3	52	18	0	69.7	7.0	10
May 6	18.8	--	--	6.0	1.7	--	--	32	4.1	4.8	--	2.2	78	22	0	79.1	6.8	--
Aug. 24	19	17	.06	6.0	2.2	9.4	1.6	29	6.2	8.8	.0	1.6	a67	24	0	103	6.7	18

## FLAT RIVER AT BAHAMA

May 6, 1955	37.9	15	0.01	4.2	1.6	4.1	1.5	25	6	4.2	0.0	0.3	a45	17	0	60.4	7.4	15
Aug. 29	47	--	--	4.5	1.4	--	--	25	2.1	3.8	--	--	--	17	0	60.7	7.0	--

## DIAL CREEK NEAR BAHAMA

May 3, 1955	1.90	21	0.14	3.4	1.2	5.4	1.4	22	8.4	6.0	0.1	1.5	66	13	0	66.8	7.2	23
Aug. 29	1.13	--	--	4.0	1.6	--	--	26	2.4	3.5	--	.1	a34	16	0	39.2	7.2	--

## FLAT RIVER AT DAM, NEAR BAHAMA

May 3, 1955	11	6.5	0.06	4.0	1.1	1.7	1.7	14	6.6	4.2	0.0	2.3	74	14	3	59.1	6.3	40
Aug. 29	50	--	--	3.1	.8	--	--	14	2.0	1.8	--	.3	a25	11	0	37.2	6.3	--

## NEUSE RIVER NEAR NORTHSIDE

May 3, 1955	126	12	0.22	6.6	1.8	8.6	2.4	27	7.0	7.2	0.1	6.0	80	24	2	101	6.5	40
Aug. 29	119	--	--	6.1	1.7	--	--	26	7.5	7.2	--	3.1	a62	22	1	98.0	6.6	--

## CRABTREE CREEK NEAR RALEIGH

Oct. 6, 1954	1.72	15	0.03	6.0	1.9	5.6	1.8	36	3	4.0	0.0	0.0	a58	23	0	77.4	6.6	6
June 9, 1955	5.02	--	--	6.0	2.4	--	--	38	3.2	4.2	.01	.5	--	25	0	78.7	6.9	--

## NEUSE RIVER NEAR CLAYTON

Feb. 1, 1955	569	16	0.06	4.8	1.7	.6	27	22	7	7.5	2.1	75	a101	19	1	89.5	6.5	28
Sept. 1	4,940	--	--	3.2	--	--	--	11	8.3	37	2.7	a101	--	11	2	226	6.1	--

a Sum of determined constituents.

## NEUSE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN NEUSE RIVER BASIN IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

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 (residue on evaporation at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
MIDDLE CREEK NEAR CLAYTON																		
Feb. 1, 1955 .....	77.2			2.2	1.1			12	7	5.0		0.0	53	10	0	50.5	6.5	
Sept. 1 .....	1,050	4.8		3.0	.8	3.0	2.5	7	4.0	6.2		1.1	29	11	5	87.8	5.6	
MIDDLE CREEK NEAR SMITHFIELD																		
Oct. 6, 1954 .....	0.225			4.0	1.5			23	1	5.5		1.5		16	0	82.6	7.0	
June 2, 1955 .....	36.0			3.4	.8	4.0		18	1	3.2		.1		12	0	52.5	6.8	
BLACK CREEK NEAR FOUR OAKS																		
June 2, 1955 .....				1.6	0.4	4.6		7	1	6.2		0.1		6	0	49.8	6.0	
July 27 .....	8.2	6.9	0.31	2.1	.7	5.8	1.7	15	.6	6.5	0.0	.0	32	8	0	59.1	6.2	180
LITTLE RIVER NEAR PRINCETON																		
Feb. 1, 1955 .....	178			2.0	1.0			11	6	5.2		0.0	62	9	0	54.4	6.5	
Aug. 23 .....	1,070	11	0.46	3.7	1.0	2.6	3.0	14	4.5	5.0	0.0	.7	39	13	2	56.7	5.9	120
STONY CREEK AT GOLDSBORO																		
Oct. 7, 1954 .....	0.18			3.2	1.2			6	16	5.2		1.4		13	6	62.0	5.7	
June 2, 1955 .....	.938			4.6	.7	6.7		8	12	6.8		.1	61	14	7	73.0	6.1	
June 6 .....	.39	9.5	0.37	4.3	.8	4.3	1.0	7	9.6	7.0	0.0	.8	31	14	8	65.1	6.0	29
FALLING CREEK AT FALLING CREEK																		
Oct. 8, 1954 .....	1.88			3.2	0.7			16	3	6.0		2.6		11	0	87.2	7.2	
Sept. 30, 1955 .....	94.2			3.2	2.2			6	8.0	4.2		.6		17	0	66.7	5.6	0

a Sum of determined constituents..



## NAHUNTA SWAMP NEAR SHINE

Feb. 1, 1955.....	34.1		8.2	1.4		7	26	11		1.3	88	26	20	112	6.1
Aug. 23.....	214	17	6.8	1.3	4.6	1.8	15	7.5	0.0	1.1	260	22	16	86.7	5.6
															80

## CONTENTNEA CREEK AT HOOKERTON

Feb. 3, 1955.....	384		5.5	1.6		9	21	9.8		2.1	85	20	13	101	6.2
Aug. 24.....	6,030	6.3	0.49	4.0	2.2	2.8	10	5.9	4.0	.1	231	13	5	48.6	5.8
				.7											160

## BATCHELDERS CREEK NEAR NEW BERN

Sept. 15, 1954.....						58	67	225				141	93	930	6.7
Oct. 1.....						80	77	468				224	157	1,740	6.8
Nov. 10.....			112	187		90	376	2,650				1,050	976	8,370	6.9
Dec. 1.....			128	292		103	584	4,300				1,520	1,440	12,500	6.4
Feb. 18, 1955.....			18	1.9		46	12	20				52	14	170	7.0

## UPPER BROAD CREEK AT OLYMPIA

Sept. 15, 1954.....						4	34					77	74	483	5.1
Nov. 5.....			164	165		6.08	368	2,550				1,140	1,140	8,010	3.5
Dec. 1.....			13	52		4	106	730				368	368	2,980	5.1
Feb. 18, 1955.....			3.6	1.7		5	7	10				16	12	79.1	5.6

## UPPER BROAD CREEK NEAR OLYMPIA

Sept. 15, 1954.....						51	830	5,930				1,950	1,910	15,900	6.5
Oct. 1.....						59	826	5,890				1,970	1,920	15,900	6.9
Nov. 5.....			187	562		60	1,270	8,220				2,780	2,730	21,900	6.8
Dec. 1.....			191	605		71	1,240	8,760				2,970	2,910	22,700	6.8
Feb. 18, 1955.....			26	67		16	181	1,000				338	325	3,360	6.3

a Sum of determined constituents.

b Acidity as H<sub>2</sub>.

NEUSE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN NEUSE RIVER BASIN IN NORTH CAROLINA--Continued  
Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

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 (residue on evap- oration at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium, mag- nesium	Non- carbon- ate			

GOOSE CREEK NEAR GRANTSBORO <sup>c</sup>

Sept. 15, 1954								2	705	4,540				1,680	1,680	13,100	4.8	
Oct. 1								10	502	3,500				1,380	1,370	10,100	5.7	
Nov. 5				204	403			19	811	6,790				2,170	2,150	16,400	5.6	
Feb. 18, 1955				5.2	2.2			3	15	21				22	20	140	5.4	

GOOSE CREEK NEAR GRANTSBORO <sup>d</sup>

Sept. 15, 1954								69	1,050	7,460				2,510	2,450	19,800	6.7	
Oct. 1								81	1,010	7,180				2,300	2,320	18,300	7.3	
Nov. 5				223	558			81	1,270	8,750				2,880	2,780	28,300	7.2	
Dec. 1				199	619			81	1,250	9,000				3,040	2,970	23,000	6.4	
Feb. 18, 1955				148	526			71	1,100	7,520				2,530	2,470	19,800	7.1	

NEW RIVER BASIN  
MISCELLANEOUS ANALYSES OF STREAMS IN NEW RIVER BASIN IN NORTH CAROLINA

NEW RIVER NEAR GUM BRANCH

Feb. 2, 1955	30			32	1.5			65	30	11		0.2	143	85	32	216	7.3	
Aug. 24	367	5.2	0.23	7.2	5.3	3.4	1.7	40	4.5	5.0	0.0	.6	a53	40	7	99.2	6.7	140

<sup>a</sup> Sum of determined constituents.

<sup>c</sup> Collected at bridge on county road, 2½ miles southwest of Grantsboro.

<sup>d</sup> Collected at Fuller, ¼ miles southwest of Grantsboro.

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.--Water temperatures: October 1952 to September 1953, July 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 80° F July 23, 28; minimum, freezing point Dec. 7-9.

EXTREMES, 1952-53, 1954-55.--Water temperatures: Maximum, 84° F Aug. 2, 1952; minimum, freezing point Dec. 7-9, 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955

/Continuous ethyl alcohol-actuated thermometer/

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	min	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	68	47	46	41	40	44	43	35	33	53	48	53	49	63	60	68	63	73	68	77	74	73	72
2.....	73	69	46	40	40	40	45	44	39	35	53	53	53	52	62	60	67	63	75	70	79	73	72	
3.....	72	67	46	43	40	36	45	44	39	38	53	51	56	52	62	59	67	63	76	71	79	75	68	
4.....	72	66	43	42	36	35	45	44	38	35	54	51	57	54	65	61	66	62	77	72	78	74	68	
5.....	72	66	45	43	36	36	47	45	35	33	59	54	54	53	66	63	68	62	74	72	78	75	69	
6.....	74	68	44	44	36	36	48	46	39	35	59	57	55	53	65	63	70	64	74	72	78	74	69	
7.....	71	56	44	42	36	32	49	44	43	39	57	52	61	55	64	60	71	68	76	73	78	75	70	
8.....	59	52	44	42	32	44	41	43	43	43	52	49	59	56	64	61	69	66	74	73	75	74	69	
9.....	60	54	44	42	35	32	42	41	43	40	50	48	59	54	65	61	66	63	76	73	75	74	68	
10.....	62	56	44	42	35	35	42	41	42	42	41	50	53	57	66	60	63	62	74	73	74	73	69	
11.....	64	58	44	42	35	34	42	41	44	44	54	51	61	60	67	63	66	63	74	73	74	73	69	
12.....	66	60	44	42	34	34	41	39	44	44	56	54	61	59	67	65	68	66	74	72	73	72	69	
13.....	87	61	46	44	36	34	39	38	36	34	59	58	63	59	66	62	68	65	72	71	73	71	68	
14.....	66	64	45	43	38	36	38	36	34	34	59	58	63	62	62	61	65	64	71	71	72	70	66	
15.....	66	60	45	44	38	38	38	36	38	34	58	55	65	63	62	61	65	63	72	71	71	70	65	
16.....	80	59	47	45	38	38	38	40	38	55	55	65	65	64	62	62	66	62	75	72	71	71	66	
17.....	59	56	49	46	39	38	36	44	40	53	55	62	62	62	62	62	68	63	76	74	71	71	67	
18.....	56	54	51	49	42	39	36	44	43	54	53	67	66	63	61	66	65	78	75	71	71	67		
19.....	55	54	54	51	42	40	36	34	43	42	54	48	67	64	64	61	66	65	79	75	71	71	67	
20.....	54	52	54	54	40	37	35	34	44	42	48	47	69	67	66	62	70	65	78	76	72	71	68	
21.....	52	51	54	51	37	34	34	44	43	43	51	48	69	68	67	65	72	67	78	74	73	72	69	
22.....	51	50	51	47	34	33	36	34	48	44	58	51	69	67	67	66	74	68	79	74	73	73	68	
23.....	51	49	47	45	33	33	36	36	51	48	58	52	68	66	67	66	70	68	80	75	74	74	68	
24.....	52	49	45	44	36	33	36	36	50	46	54	50	67	66	69	67	70	69	79	76	74	72	68	
25.....	52	50	44	44	36	35	36	38	46	43	54	51	67	64	69	69	72	70	78	75	72	71	68	
26.....	53	50	44	43	35	35	36	38	44	43	51	50	64	61	69	69	71	70	78	75	72	70	67	
27.....	56	52	43	41	37	35	37	36	46	44	50	45	59	51	69	69	70	68	78	75	71	68	65	
28.....	56	55	41	41	41	37	37	35	48	46	45	43	59	59	71	69	70	66	80	75	72	70	63	
29.....	56	55	42	42	48	41	35	35	--	--	46	44	60	58	72	70	70	66	79	76	73	71	66	
30.....	55	51	42	41	49	48	35	34	--	--	48	45	61	59	72	70	72	67	76	75	73	72	67	
31.....	51	47	--	--	48	44	34	33	--	--	50	47	--	--	70	67	--	--	76	74	73	73	--	
Average.....	61	57	46	44	38	36	40	38	42	40	54	51	62	60	66	64	68	65	76	73	74	72	68	

## CAPE FEAR RIVER BASIN--Continued

## CAPE FEAR RIVER AT LILLINGTON, N. C.

LOCATION.--At gaging station at bridge on U. S. Highway 15A, 1,800 feet downstream from Norfolk Southern Railway bridge, 0.5 mile north of Lillington, Harnett County, and 1 mile downstream from Neill Creek.

DRAINAGE AREA.--3,440 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1944 to October 1945, October 1954 to September 1955.

Water temperatures: November 1944 to October 1945, October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 176 ppm Oct. 11-15; minimum, 51 ppm Feb. 11-19.

Hardness: Maximum, 34 ppm Oct. 11-15; minimum, 10 ppm Oct. 21-31.

Specific conductance: Maximum daily, 272 microhos Oct. 11; minimum daily, 41.1 microhos Sept. 4.

Water temperatures: Maximum, 86°F July 29, Aug. 8; minimum, 34°F Jan. 20, 21, 25, 26, 31, Feb. 1.

EXTREMES, November 1944 to October 1945, 1954-55.--Dissolved solids: Maximum, 176 ppm Oct. 11-15, 1954; minimum, 48 ppm Feb. 20-28, Mar. 1-10, 1945.

Hardness: Maximum, 34 ppm Oct. 11-15, 1954; minimum, 10 ppm Oct. 21-31, 1954.

Water temperatures: Maximum, 86°F July 29, Aug. 8, 1955; minimum, 34°F Dec. 20, 1944, Jan. 20, 21, 25, 26, 31, Feb. 1, 1955.

REMARKS.--Records of specific conductance of daily samples and records of suspended matter of composite samples available in district office at Raleigh, N.C. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	67	2.2	0.03	6.2	3.2	44	4.0	83	14	28	1.2	0.8	151	29	0	288	7.7	18	6.9	5.2
Oct. 11-15	418	15	0.02	9.6	2.4	45	4.5	66	6.3	47	3	6.0	176	34	0	241	7.6	12	8.4	4.9
Oct. 16-20	28, 100	--	--	6.7	2.0	--	--	19	11	9.0	--	2.1	--	25	9	103	7.0	--	--	--
Oct. 21-31	701	6.9	0.07	4.0	1.4	6.3	2.7	15	8.8	5.5	1	6	59	10	4	69.2	6.2	28	11	8.5
Nov. 1-9	606	7.9	0.06	4.4	1.9	10	2.6	20	11	7.8	2	4	69	19	2	88.9	6.4	23	9.1	7.0
Nov. 10	870	--	--	4.8	2.9	--	--	43	15	15	--	2.8	--	24	0	176	6.7	--	--	--
Nov. 11-20	478	11	0.10	6.0	2.0	23	3.2	42	19	14	3	1.5	111	23	0	168	6.9	28	12	6.6
Nov. 21-23	2, 690	--	--	6.4	1.9	--	--	43	14	16	--	2.8	--	24	0	175	7.2	--	--	--
Nov. 24-30	1, 560	13	0.06	6.0	1.8	14	2.8	30	14	10	5	1.5	89	22	0	124	6.9	34	12	7.1
Dec. 1-6	2, 390	16	0.04	8.4	2.1	14	2.0	28	12	13	4	1.4	89	25	2	123	7.1	32	10	7.5
Dec. 7-10	5, 320	--	--	5.7	3.8	--	--	16	14	46	--	1.0	--	30	17	232	6.9	--	--	--
Dec. 11-20	6, 330	13	0.05	4.8	1.3	7.1	1.8	16	10	6.5	2	1.3	63	17	4	79.8	6.4	32	13	7.5
Dec. 21-31	1, 360	11	0.04	5.1	1.6	9.1	1.8	20	11	8.8	2	1.6	70	19	3	90.1	6.8	30	8.6	5.5
Jan. 1-10, 1955	862	13	0.1	5.2	2.6	12	1.6	27	11	10	2	1.6	78	24	2	113	6.9	40	10	4.8
Jan. 11-20	2, 500	8.2	0.20	5.5	2.3	15	1.6	32	13	12	2	1.1	85	23	3	123	7.1	32	9.1	5.4
Jan. 21-31	3, 300	11	0.09	4.8	1.9	11	1.0	23	10	9.0	3	1.0	69	20	1	102	7.2	18	8.8	5.8
Feb. 1-10	10, 300	5.5	0.04	4.4	1.7	7.8	1.1	17	9.2	6.5	2	2	81	18	4	74.7	7.1	22	11	7.9
Feb. 11-19	6, 760	8.2	0.07	3.4	1.3	5.9	1.2	14	8.8	5.0	1	1.1	51	14	2	57.7	6.5	30	14	7.3
Feb. 20-28	2, 880	8.7	0.03	4.1	1.3	12	1.5	28	9.4	7.2	1	1.9	64	16	0	80.3	6.7	18	11	6.9
Mar. 1-10	2, 430	13	0.02	5.5	1.6	9.5	1.2	21	9.7	7.0	3	1.1	67	20	3	95.2	6.8	12	10	4.4
Mar. 11-20	4, 550	8.5	0.07	4.9	1.7	8.8	1.3	21	8.4	7.0	2	1.5	60	19	2	85.9	7.3	25	10	6.2
Mar. 21-31	3, 060	9.3	0.09	4.8	1.9	8.7	1.2	24	8.0	7.2	2	1.6	62	20	0	83.7	7.3	20	9.3	6.7

Apr. 1-10, 1955.....	1,250	8.7	0.09	5.2	1.9	10	1.3	30	8.6	8.0	.3	0.7	71	21	0	102	6.9	18	8.9	3.7
Apr. 11-15.....	6,920	9.3	.02	5.1	1.7	13	1.5	37	8.6	9.0	.4	1.1	72	20	0	115	6.9	20	6.8	4.0
Apr. 16-20.....	9,510	11	.06	4.9	1.4	4.6	1.6	18	6.8	4.0	.1	1.3	55	18	3	63.0	6.3	33	12	7.3
Apr. 21-30.....	1,780	14	.07	4.6	2.1	8.6	1.5	28	6.2	6.2	.2	1.2	68	20	0	90.1	7.5	23	8.2	6.2
May 1-10.....	710	11	.01	6.4	2.2	10	1.5	36	6.5	7.2	.3	.2	72	25	0	106	7.3	20	5.4	4.6
May 11-20.....	668	6.7	.03	6.4	2.2	17	1.8	47	6.4	11	.3	1.7	85	25	0	134	6.9	10	6.8	4.4
May 21-23, 26-31.....	1,200	9.3	.02	5.9	2.1	17	2.0	44	8.6	10	.2	1.2	87	24	0	130	7.1	12	9.0	5.6
May 24-25.....	4,060	4.2	--	4.8	1.5	12	1.7	30	6.6	9.0	--	.2	--	16	0	90.3	7.1	--	--	--
June 1-10.....	305	12	.09	6.4	2.3	13	2.0	39	6.9	10	.4	1.3	85	26	0	132	7.2	32	4.8	4.6
June 11-20.....	340	16.7	.03	6.7	1.7	16	2.4	44	4.8	11	.5	1.2	92	26	0	137	7.2	26	7.6	5.1
June 21-22, 26-28.....	1,030	9.9	.03	6.8	2.2	22	2.2	55	8.7	14	.6	1.7	103	26	0	150	7.5	25	6.6	4.8
June 23-25, 29-30.....	1,550	7.6	.00	4.8	2.7	12	1.9	36	7.7	19.0	.3	1.5	73	23	0	111	7.6	20	6.2	4.9
July 1-8, 10.....	307	7.7	.19	5.2	1.5	17	2.3	39	6.0	12	.4	--	83	19	0	138	7.6	28	7.2	5.6
July 9.....	1,240	9.5	--	2.8	1.2	--	2.2	21	4.4	8.0	.4	--	--	12	0	70.7	7.5	--	--	--
July 11-13, 17-20.....	2,890	9.5	.02	7.2	1.6	14	2.2	37	6.6	9.0	.4	1.6	82	21	0	115	7.3	35	14	7.1
July 14-16.....	2,860	6.8	.04	3.6	1.2	7.8	1.6	22	4.5	4.8	.0	1.3	--	14	0	69.4	7.3	--	--	--
July 21-31.....	1,220	8.9	.06	4.8	1.0	6.6	1.7	22	4.3	5.5	.1	1.1	61	16	0	73.8	7.1	37	11	8.1
Aug. 1-2.....	2,080	11	--	3.7	1.2	--	--	18	6.7	5.5	--	.3	--	14	0	60.2	6.5	--	--	--
Aug. 3-10.....	2,494	9.1	.03	6.8	1.4	18	2.4	42	7.0	14	.1	1.6	89	23	0	135	7.2	27	8.9	6.7
Aug. 11-15.....	1,740	9.3	.01	5.7	1.9	23	2.8	49	8.3	16	.1	1.8	102	22	0	181	7.5	20	9.9	6.8
Aug. 16-20.....	20,600	7.9	.06	4.5	1.2	5.0	1.8	21	3.2	4.0	.1	2.1	55	16	0	65.5	7.2	35	19	10
Aug. 21-31.....	2,300	10	.12	4.3	1.1	4.1	1.8	18	4.6	3.8	.1	.8	56	15	0	60.0	7.0	50	13	10
Sept. 1-10.....	12,400	9.1	.10	4.1	1.2	4.1	1.7	18	4.9	4.0	.1	.4	54	15	0	58.3	7.0	55	14	11
Sept. 11-20.....	950	12	.07	4.4	1.7	5.9	1.6	22	4.3	5.0	.1	1.7	82	18	0	88.7	6.6	38	7.2	6.2
Sept. 21-30.....	680	12	.00	5.1	1.7	9.4	1.8	30	6.3	7.5	.2	1.0	89	20	0	92.3	6.9	30	6.0	5.7
Average.....	3,100	9.6	0.06	5.3	1.8	13	2.0	31	8.7	11	0.3	1.2	78	21	1	114	--	27	9.6	6.4

## CAPE FEAR RIVER BASIN--Continued

## CAPE FEAR RIVER AT LILLINGTON, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at 8 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	52	44	45	34	50	49	62	74	77	78	77
2	76	53	43	47	37	47	52	61	74	78	80	75
3	76	48	42	46	37	46	52	62	73	80	83	74
4	76	47	40	45	35	46	--	65	72	82	81	72
5	76	50	40	45	37	50	54	67	74	81	84	72
6	78	50	39	46	40	54	54	67	76	79	83	72
7	72	48	38	46	45	55	56	67	78	81	85	73
8	66	48	35	41	45	53	54	67	77	82	86	74
9	65	48	36	43	44	52	55	67	74	77	84	73
10	66	48	38	45	44	50	68	67	71	78	82	73
11	88	48	36	44	43	52	60	72	74	79	82	74
12	70	46	35	42	43	55	58	68	74	79	77	74
13	70	58	37	41	40	55	60	72	74	77	74	74
14	72	49	38	38	36	55	62	70	74	75	80	71
15	72	50	38	39	35	55	60	70	72	76	80	73
16	82	52	39	39	36	55	60	70	72	78	77	74
17	60	54	38	36	36	54	62	71	75	81	74	72
18	59	55	36	37	40	54	61	71	76	82	74	74
19	59	58	40	35	39	53	62	70	73	84	75	73
20	53	57	40	34	39	50	65	73	73	85	75	71
21	54	52	39	34	40	50	67	75	74	82	76	73
22	55	54	35	36	43	53	67	77	75	80	77	75
23	55	52	35	35	46	49	66	75	77	81	77	75
24	55	52	37	35	45	49	69	72	78	81	77	75
25	55	48	35	34	43	51	69	72	78	82	77	75
26	55	47	35	34	42	54	65	75	78	82	71	72
27	57	45	39	35	44	44	65	74	70	83	76	70
28	60	46	40	35	44	46	61	77	73	85	79	72
29	60	47	41	35	--	47	60	74	76	86	78	73
30	58	44	46	35	--	47	62	75	77	83	77	74
31	55	--	42	34	--	47	--	76	--	80	79	--
Average	64	50	39	39	40	51	61	70	75	81	79	73

## CAPE FEAR RIVER BASIN--Continued

## LITTLE RIVER AT LINDEN, N. C.

LOCATION.--At gaging station at bridge on U. S. Highway 15A, 1.6 miles west of Linden, Cumberland County, 2 miles upstream from Stewart Creek, and 4 1/2 miles upstream from mouth.

DRAINAGE AREA.--460 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 26, 1954	234	7.1	0.08	2.2	0.4	3.5	1.4	4	6.4	2.5	0.1	2.1	41	7	4	49.1	4.6	30
Nov. 19	254	6.8	.06	1.5	.8	3.8	1.1	4	4.8	4.5	.0	.9	36	7	4	65.9	5.2	37
Dec. 15	750	4.0	.06	2.2	.8	2.8	1.3	9	5.4	3.8	.0	.5	38	9	1	35.0	6.7	35
Jan. 21, 1955	579	5.5	.06	2.2	.4	3.0	.9	4	5.3	4.5	.0	.9	34	7	4	32.4	5.3	17
Feb. 1	579	--	--	1.2	.2	--	--	6	4	4.0	--	.5	36	4	0	33.8	6.0	--
Mar. 15	731	5.5	.03	1.4	.4	2.9	.6	5	2.9	3.5	.1	.7	30	5	1	37.7	6.0	22
Apr. 15	845	3.3	.11	1.1	.3	2.6	.8	3	3.2	3.5	.0	1.4	a31	4	2	35.1	5.2	20
May 15	1,150	4.1	.08	2.0	.3	2.2	.6	3	3.5	3.5	.0	1.4	b33	6	4	40.3	6.0	27
May 16	542	4.3	.12	1.0	.3	2.6	.8	2	2.9	4.0	.0	1.0	c33	4	2	37.5	5.3	32
June 21	185	3.3	.13	1.4	.4	3.0	1.2	5	2.6	4.0	.0	.9	29	5	1	35.9	6.2	23
July 15	789	5.0	.22	1.4	.4	2.3	.8	4	2.7	3.0	.0	.4	d44	5	2	32.8	5.5	65
Aug. 15	383	6.2	.13	1.6	.5	2.4	.6	4	3.3	3.8	.0	.9	e39	6	3	34.1	5.7	38
Sept. 15	693	7.1	.15	1.6	.4	2.7	.8	5	2.9	3.5	.0	.5	e41	6	2	30.0	5.6	50

a Organic matter present; sum of mineral constituents 17 parts per million.

b Organic matter present; sum of mineral constituents 19 parts per million.

c Organic matter present; sum of mineral constituents 18 parts per million.

d Organic matter present; sum of mineral constituents 21 parts per million.

e Organic matter present; sum of mineral constituents 22 parts per million.

## CAPE FEAR RIVER BASIN--Continued

CAPE FEAR RIVER AT LOCK 3, NEAR TARHEEL, N. C.

LOCATION.--At lock 3, 100 feet downstream from gaging station, 1 mile downstream from county line, 7 miles north of Tarheel, Bladen County, 9 miles upstream from Phillips Creek and at mile 95.

DRAINAGE AREA.--4,810 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1947, October 1954 to September 1955.

Water temperatures: October 1946 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 87 ppm Nov. 21-30; minimum, 48 ppm Feb. 11-19.

Hardness: Maximum, 21 ppm May 25-26; minimum, 10 ppm Sept. 21-30.

Specific conductance: Maximum daily, 165 microhos Nov. 25; minimum daily, 36.5 microhos Sept. 5.

Water temperatures: Maximum, 87°F July 21; minimum, 37°F Jan. 24.

EXTREMES, 1946-47, 1954-55.--Dissolved solids: Maximum, 87 ppm Nov. 21-30, 1954; minimum, 41 ppm Feb. 1-10, 1947.

Hardness: Maximum, 21 ppm July 1-10, 1947, May 25-26, 1955; minimum, 10 ppm Aug. 21-31, 1947, Sept. 21-30, 1955.

Water temperatures: Maximum, 87°F July 21, 1955; minimum, 37°F Jan. 24, 1955.

REMARKS.--Records of specific conductance of daily samples and records of suspended matter of composite samples available in district office at Raleigh, N.C.

Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	302	3.0	0.07	3.4	1.7	13	2.4	24	7.1	12	0.4	1.5	84	16	0	104	6.7	17	5.4	4.4
Oct. 11-20	14,700	1.6	.04	2.7	1.4	15	2.4	20	8.7	12	.4	2.0	68	13	0	114	6.7	14	10	5.0
Oct. 21-31	2,330	4.7	.11	5.0	1.6	2.7	2.1	9	6.8	4.8	.1	1.3	50	14	7	53.4	5.9	35	14	8.8
Nov. 1-10	1,200	6.5	.06	2.9	1.2	5.6	1.9	8	8.6	6.0	.0	1.2	51	12	5	59.0	6.2	20	14	7.8
Nov. 11-20	1,130	7.9	.12	3.0	1.5	8.9	1.9	14	10	7.8	.0	1.0	60	13	2	75.6	6.6	20	11	7.4
Nov. 21-30	2,410	11	.04	4.4	2.0	16	2.8	26	14	13	.5	1.4	87	19	0	124	7.1	37	12	7.3
Dec. 1-10	7,320	--	--	3.5	2.2	--	--	15	13	15	--	1.5	--	18	6	70.7	6.8	--	--	--
Dec. 11-20	3,740	13	.05	4.9	1.5	12	2.0	20	12	11	.4	1.2	74	18	2	105	6.7	35	11	7.1
Dec. 21-31	7,070	10	.04	4.0	1.2	6.5	1.6	12	9.4	6.0	.2	1.0	59	15	5	68.4	6.7	38	14	7.6
Jan. 1-10, 1955	2,490	11	.05	3.5	1.0	5.9	1.2	11	9.8	6.5	.1	.6	52	13	4	63.9	6.4	35	10	6.9
Jan. 11-20	1,840	7.3	.05	3.4	1.1	7.2	1.2	14	9.6	7.2	.1	1.1	54	13	2	74.6	7.6	32	11	5.5
Jan. 21-30	2,680	7.0	.08	3.9	1.4	9.8	1.3	18	9.6	9.0	.1	1.0	62	15	1	86.9	6.6	35	10	5.8
Jan. 31	5,240	6.3	.13	3.5	1.3	8.3	1.0	15	9.3	8.5	.1	1.1	58	14	2	75.0	6.5	45	11	6.4
Feb. 1-10	11,500	8.7	.10	3.0	1.3	6.2	.9	11	8.0	6.2	.1	.7	51	13	4	62.1	6.7	40	12	7.0
Feb. 11-10	10,100	7.9	.08	3.0	1.0	4.4	1.1	10	8.1	4.5	.0	.5	48	11	3	51.2	6.6	25	13	8.8
Feb. 20-28	4,090	7.9	.04	3.4	1.0	11	1.2	23	7.9	6.8	.1	.9	54	14	0	65.5	6.8	25	6.7	5.7
Mar. 1-10	3,740	7.3	.00	4.4	1.5	7.7	1.2	20	8.6	7.0	.2	1.5	59	17	1	67.3	6.7	25	--	4.7
Mar. 11-20	6,000	8.7	.09	3.8	1.2	8.0	1.4	16	7.7	6.0	.1	.5	54	14	1	72.2	7.4	23	9.3	7.3
Mar. 21-31	4,720	8.2	.09	3.8	1.4	6.8	1.0	16	7.3	6.0	.1	.7	52	15	2	72.4	7.0	25	8.1	6.7



	2,300	5.5	0.12	3.8	1.2	7.6	1.0	18	6.9	6.5	0.1	0.8	52	15	0	70.1	7.2	25	6.5	6.0
Apr. 1-10, 1955	10,200	8.7	.05	4.0	1.2	7.1	1.4	18	7.2	6.5	.1	1.1	56	15	0	73.1	6.3	25	10	6.0
Apr. 11-20	3,130	7.1	.08	3.2	1.0	5.2	1.4	13	6.1	5.0	.1	1.3	52	12	1	61.1	6.6	18	11	7.8
Apr. 21-30	1,460	11	.03	3.8	1.0	5.2	1.5	19	7.1	6.0	.1	1.6	57	14	0	76.6	6.6	18	12	6.6
May 1-10	1,460	6.2	.03	4.0	.8	7.6	1.6	19	6.9	6.5	.0	1.3	51	13	0	74.7	7.8	12	8.6	5.6
May 11-20	1,820	6.3	.04	4.7	.9	7.9	1.6	24	8.5	7.5	.2	2.1	56	15	0	82.5	7.4	25	8.8	5.4
May 21-31	4,240	5.4	--	5.5	1.7	21	2.2	347	9.7	13	--	.9	--	21	0	142	8.8	--	--	--
May 25-26																				
June 1-10	784	9.1	.09	4.8	1.5	9.7	1.5	26	5.6	7.0	.1	1.4	66	18	0	90.9	7.6	35	13	4.0
June 11-20	688	9.1	.01	3.9	1.6	10	1.2	23	5.0	7.5	.2	2.1	59	16	0	84.1	7.3	20	9.2	4.8
June 21-30	1,470	4.9	.07	4.5	1.0	13	2.1	32	7.9	10	.3	1.8	70	15	0	111	7.3	34	7.8	5.2
July 1-10	1,300	5.7	.03	3.8	.6	10	1.6	24	5.9	7.5	.2	1.8	55	12	0	81.6	7.2	33	9.6	6.0
July 11-20	5,110	6.9	.05	3.6	.7	7.0	1.4	17	3.7	6.0	.1	.9	63	12	0	84.8	7.0	45	13	8.4
July 21-31	1,880	7.9	.11	3.4	1.3	4.8	1.5	16	2.5	5.0	.1	1.5	57	14	1	82.7	6.9	45	13	9.3
Aug. 1-10	1,820	7.4	.10	3.9	1.0	5.0	1.4	14	3.7	5.2	.1	2.0	50	14	3	56.2	7.1	37	12	9.7
Aug. 11-16, 18-20	11,800	7.5	.08	4.8	.9	7.3	1.4	18	5.5	7.5	.1	.8	54	16	1	68.2	6.9	45	15	9.4
Aug. 17	13,100	--	--	5.0	1.6	--	--	40	--	12	--	--	--	19	0	133	6.6	--	--	--
Aug. 21-31	9,300	7.8	.12	3.6	1.0	3.2	1.6	13	4.4	3.2	.1	1.0	53	13	3	59.8	6.8	70	20	14
Sept. 1-10	21,200	7.7	.14	3.3	.7	3.5	1.4	13	4.1	3.8	.0	.6	49	11	1	46.4	6.5	55	16	11
Sept. 11-20	3,520	9.5	.09	3.0	.8	4.2	1.3	12	4.3	4.5	.0	1.9	49	11	1	48.1	6.6	50	11	9.3
Sept. 21-30	3,070	8.6	.13	2.8	.7	4.3	1.3	9	3.5	5.0	.1	2.1	54	10	3	46.1	6.1	50	11	9.5
Average	4,686	7.5	0.07	3.8	1.2	8.2	1.5	18	7.4	7.4	0.1	1.2	57	14	2	77.3	--	32	11	7.2

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

## CAPE FEAR RIVER BASIN--Continued

## CAPE FEAR RIVER AT LOCK 3, NEAR TARHEEL, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at 8 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	59	48	45	38	50	53	65	78	79	83	78
2	76	59	47	49	39	50	55	66	78	79	83	78
3	76	58	45	47	38	52	53	65	77	78	83	78
4	74	57	44	49	38	55	55	68	78	78	83	76
5	76	57	44	49	40	55	55	68	78	80	83	78
6	76	56	43	49	42	55	59	69	78	82	84	77
7	75	55	43	49	42	56	60	69	78	83	84	78
8	74	52	39	48	43	57	60	71	78	84	84	76
9	74	53	39	49	45	56	59	70	78	83	84	76
10	74	50	39	49	44	57	60	71	77	80	84	77
11	74	50	40	48	46	58	60	72	77	80	84	74
12	74	50	38	47	45	57	62	73	76	80	84	74
13	74	50	39	45	44	57	63	72	75	80	83	76
14	74	50	39	44	42	56	64	73	75	79	81	75
15	74	50	40	44	42	59	64	72	75	79	80	74
16	74	52	40	42	40	59	65	72	75	79	81	74
17	70	53	39	41	41	59	63	72	75	78	82	74
18	65	54	41	42	41	60	64	72	75	79	83	74
19	--	54	42	41	43	55	67	72	75	81	83	--
20	--	55	42	40	43	55	69	72	75	82	83	73
21	60	57	43	40	39	56	69	72	77	87	85	73
22	60	55	39	40	45	59	70	72	76	84	83	73
23	59	56	39	39	47	57	71	74	78	83	81	73
24	59	54	40	37	47	55	72	73	78	84	81	74
25	60	54	40	38	45	55	72	75	78	83	81	75
26	59	51	39	38	47	58	71	76	79	83	81	75
27	59	50	39	38	48	56	70	76	78	84	78	74
28	60	50	40	39	48	53	70	77	78	84	86	74
29	60	50	43	38	--	55	69	78	78	84	78	74
30	60	49	44	39	--	52	67	78	78	84	--	74
31	59	--	44	39	--	53	--	78	--	83	78	--
Average	68	53	41	43	43	56	64	72	77	81	82	75

CAPE FEAR RIVER BASIN--Continued  
SOUTH RIVER NEAR PARKERSBURG, N. C.

LOCATION.--At gaging station at highway bridge at Bladen-Sampson County line, and 1.9 miles southwest of Parkersburg, Sampson County.  
DRAINAGE AREA.--382 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.  
REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	7.8	2.4	0.12	1.2	0.5	2.7	1.2	2	5.2	3.8	0.0	0.0	29	5	4	42.5	5.1	40
Nov. 15	34	11	.11	1.9	.7	7.7	1.6	2	13	8.0	.0	.1	68	8	6	68.0	5.0	50
Dec. 15	162	12	.09	2.4	1.7	8.9	1.2	1	19	10	.0	1.1	80	13	12	93.4	4.6	45
Jan. 15, 1955	200	8.2	.10	2.0	1.0	8.0	1.1	1	13	10	.0	.2	68	9	8	75.8	4.6	45
Feb. 3	519	--	--	1.5	1.2	--	--	1	11	8.2	--	1.3	60	9	8	65.8	4.8	--
Feb. 15	636	4.4	.02	1.6	.5	6.8	1.0	1	8.6	8.0	.0	.3	433	6	5	62.4	4.4	35
Mar. 15	217	1.3	.07	.8	.3	3.6	.6	0	6.3	8.0	.0	.4	549	4	4	56.8	4.5	50
Apr. 15	281	2.3	.14	.6	.4	3.3	.8	1	4.0	7.5	.0	.4	531	3	3	50.9	4.7	60
May 15	85	5.7	.39	1.2	.2	6.3	1.0	2	4.0	9.0	.0	.3	464	4	2	49.7	5.0	80
June 15	23	2.6	.63	.8	.2	6.5	1.0	2	3.5	9.0	.0	.3	463	3	1	50.1	5.3	100
July 15	471	8.3	.40	1.2	.5	5.8	1.2	2	7.2	6.0	.0	.1	473	5	3	52.0	4.8	75
Aug. 15	260	10	.46	1.4	.4	5.3	1.2	3	3.1	6.8	.0	.1	172	5	3	45.9	4.9	125
Sept. 1	1,450	7.5	.91	1.2	.2	3.9	1.5	3	3.1	5.5	.0	.2	71	4	2	38.2	4.9	80
Sept. 20	1,200	7.0	.71	1.4	.3	3.7	1.4	2	3.2	6.5	.0	.2	671	5	3	36.4	4.9	200

a Organic matter present; sum of mineral constituents 32 parts per million.  
b Organic matter present; sum of mineral constituents 23 parts per million.  
c Organic matter present; sum of mineral constituents 20 parts per million.  
d Organic matter present; sum of mineral constituents 29 parts per million.  
e Organic matter present; sum of mineral constituents 26 parts per million.  
f Organic matter present; sum of mineral constituents 31 parts per million.  
g Organic matter present; sum of mineral constituents 25 parts per million.

## 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 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Hardness: Maximum, 516 ppm Oct. 15; minimum, 10 ppm Sept. 21-30.

Specific conductance: Maximum daily, 5,060 micromhos Oct. 23, minimum daily, 34.5 micromhos Sept. 25.

Water temperatures: Maximum, 86° F Aug. 2; minimum, 42° F Jan. 30, 31, Feb. 4.

REMARKS.--Records of specific conductance of daily samples and records of suspended matter of composite 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 1954 to September 1955

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
Oct. 1-6, 1954.....		3.0	0.19	12	4.4	42	2.5	20	19	75	0.1	0.7	203	49	33	6.3	100	19	15
Oct. 7.....				11	2.1		--	20	10	41	--	1.6	--	35	19	203	6.2	--	--
Oct. 8.....				15	12		--	20	32	182	--	1.3	--	86	70	731	6.3	--	--
Oct. 9-10.....				24	32		--	19	75	500	--	2.0	--	190	174	1,770	6.3	--	--
Oct. 11-13, 16, 20 ..				28	41		--	20	93	640	--	.4	--	238	222	2,280	6.8	--	--
Oct. 14, 19.....				20	20		--	18	49	330	--	1.0	--	134	119	1,220	6.9	--	--
Oct. 15.....				46	96		--	19	206	1,450	--	.5	--	316	500	4,750	6.2	--	--
Oct. 17, 18.....				17	14		--	18	36	250	--	1.0	--	99	84	637	6.8	--	--
Oct. 21, 22, 25-27, 29		2.4	.07	37	32	460	20	18	123	830	.0	.0	1,550	305	280	2,840	6.4	55	16
Oct. 24-28.....				49	95		--	18	205	1,450	--	1.0	--	514	489	4,720	6.7	--	12
Oct. 28, 30-31.....				25	28		--	19	62	450	--	.5	--	176	193	1,660	6.6	--	--
Nov. 1-2.....				23	23		--	19	55	360	--	1.2	--	150	134	1,370	6.2	--	--
Nov. 3-4.....				20	13		--	17	39	230	--	1.3	--	104	90	916	6.1	--	--
Nov. 5-7.....				24	25		--	19	63	400	--	1.0	--	162	146	1,500	6.2	--	--
Nov. 8-10.....				38	56		--	18	134	900	--	1.0	--	328	313	3,100	6.1	--	--
Nov. 11-12.....				33	46		--	19	105	720	--	.3	--	272	256	2,560	6.3	--	--
Nov. 13-18.....	3.2	13	23	23	22	194	8.2	19	57	360	.0	.1	748	148	132	1,270	6.4	70	18
Nov. 19-20.....				34	45		--	19	109	710	--	.8	--	268	252	2,440	6.2	--	14
Nov. 21-25.....				35	49		--	21	111	760	--	.3	--	289	272	2,750	6.6	--	--
Nov. 26.....				25	24		--	20	36	410	--	.3	--	162	146	1,470	6.2	--	--
Nov. 27-29.....				27	30		--	20	73	480	--	1.5	--	191	175	1,720	6.5	--	--
Nov. 30.....				15	11		--	19	23	162	--	.8	--	83	67	860	6.3	--	--
Dec. 1-2.....				16	10		--	21	39	165	--	.8	--	84	67	656	6.3	--	--
Dec. 3-4, 6-7.....				23	19		--	21	51	310	--	1.5	--	137	120	1,260	6.7	--	--
Dec. 5, 8-9.....				28	36		--	21	85	580	--	.5	--	220	203	1,980	6.0	--	--

Date	19	16	--	--	--	20	42	255	--	114	98	962	6.3	--	--
Dec. 10, 1954	--	19	16	--	--	20	42	255	--	114	98	962	6.3	--	--
Dec. 11	--	18	12	--	--	21	37	198	--	94	77	745	6.5	--	--
Dec. 12-20	4.7	0.16	13	46	2.1	23	18	84	0.0	224	38	374	6.8	80	22
Dec. 21-24	--	14	4.0	--	--	24	19	68	1.6	51	31	312	6.9	--	15
Dec. 25-31	6.2	1.9	13	18	.8	27	12	30	.5	119	40	18	6.9	90	21
Jan. 1-10, 1955	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 11-20	2.7	18	13	16	.8	30	11	28	.0	116	15	175	6.9	65	18
Jan. 21-31	4.1	23	12	2.1	1.2	31	12	24	.0	111	40	164	6.7	65	17
Feb. 1-10	6.2	20	13	14	.9	19	23	22	.0	120	42	27	6.7	60	14
Feb. 11-20	6.5	16	13	1.9	.9	12	27	17	.0	118	39	30	6.5	80	23
Feb. 21-31	4.9	14	12	1.6	1.1	11	28	18	.0	117	27	28	6.5	80	19
Mar. 1-10	4.0	13	11	1.8	1.0	11	24	15	.0	101	36	27	6.1	80	19
Mar. 11-20	3.6	13	11	11.9	1.0	11	24	16	.0	109	35	26	6.4	70	22
Mar. 21-31	1.6	12	12	1.4	.9	13	23	16	.0	106	36	25	6.7	90	18
Apr. 1-10	3.8	23	12	1.5	1.1	10	13	22	.0	107	36	25	6.8	90	20
Apr. 11-20	3.2	18	12	1.2	1.0	14	20	16	.0	104	34	23	6.9	90	20
Apr. 21-30	1.6	13	12	1.3	1.0	17	17	16	.0	105	35	21	6.5	75	21
May 1-10	4.8	21	11	1.5	1.0	20	13	17	.0	105	34	18	6.7	70	19
May 11-20	5.0	28	10	1.5	1.0	21	12	16	.0	102	32	15	6.5	100	20
May 21-31	5.6	28	9.9	1.3	9.5	21	9.2	15	.0	98	30	13	7.0	110	22
June 1-10	5.3	34	10	1.2	9.5	23	6.2	15	.0	99	30	11	6.8	110	24
June 11-20	5.9	42	11	1.3	10	27	5.7	17	.0	105	32	10	7.1	120	23
June 21-30	5.7	42	10	1.7	13	25	6.7	20	.0	109	33	12	6.9	110	--
July 1-10	5.5	33	10	1.2	10	24	4.4	18	.1	99	30	11	7.0	110	21
July 11-20	5.5	35	10	1.5	9.7	25	6.7	18	.0	99	29	8	6.9	120	22
July 21-31	6.1	41	9.3	1.4	10	22	5.1	18	.0	103	29	11	6.9	130	23
Aug. 1-10	7.9	47	7.6	1.0	8	13	6.3	14	.0	108	23	12	6.0	180	--
Aug. 11-20	8.3	61	6.8	9	8.0	12	4.6	16	.0	109	21	11	86.0	200	--
Aug. 21-31	6.0	74	4.6	3	5.6	14	3.7	10	.0	100	18	7	68.1	6.0	37
Sept. 1-10	5.4	84	4.8	7	4.2	9	3.9	9.5	.0	102	15	7	5.8	320	35
Sept. 11-20	6.4	84	4.8	1.0	4.8	12	3.1	10	.0	109	16	6	61.8	5.7	280
Sept. 21-30	5.3	88	4.8	3	3.7	8	2.0	9.0	.0	113	13	6	50.6	5.6	260
Average	3.5	67	3.0	1.2	2.6	1.2	1.8	4.5	.0	173	10	3	38.5	5.5	240

d Organic matter present; sum of mineral constituents 39 parts per million.  
e Organic matter present; sum of mineral constituents 32 parts per million.  
f Organic matter present; sum of mineral constituents 23 parts per million.

a Organic matter present; sum of mineral constituents 53 parts per million.  
b Organic matter present; sum of mineral constituents 41 parts per million.  
c Organic matter present; sum of mineral constituents 36 parts per million.

## CAPE FEAR RIVER BASIN--Continued

## NORTHEAST CAPE FEAR RIVER AT CASTLE HAYNE, N. C. --Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at 12 m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul'y	Aug.	Sept.
1	80	64	56	51	44	55	60	70	78	82	84	79
2	80	64	55	52	45	56	62	70	79	82	86	80
3	80	59	54	52	44	--	62	70	78	82	85	78
4	80	59	54	52	42	58	62	71	79	83	85	78
5	80	60	55	52	44	60	62	72	80	84	84	77
6	84	59	50	53	46	60	62	72	81	83	85	77
7	78	58	48	52	48	58	63	72	80	84	85	77
8	76	58	50	52	48	58	62	72	80	84	85	77
9	78	58	50	52	48	60	63	71	78	85	85	77
10	78	58	50	53	48	60	64	73	79	84	84	75
11	--	58	49	50	50	61	64	74	80	84	82	75
12	--	58	47	50	45	61	65	75	79	84	79	70
13	--	58	47	49	45	63	66	74	79	84	79	74
14	--	58	48	47	46	61	66	74	79	84	79	74
15	--	59	48	49	46	62	68	74	78	83	79	74
16	--	59	47	48	47	64	69	73	79	84	79	75
17	--	60	47	49	48	64	70	73	79	84	79	75
18	--	60	49	49	47	65	71	73	79	84	79	75
19	--	62	47	45	48	64	71	73	78	84	80	73
20	--	60	49	45	50	64	--	74	78	84	80	73
21	68	62	46	45	50	64	73	73	79	84	80	74
22	68	60	45	47	55	66	72	74	80	84	80	75
23	68	58	46	45	50	62	74	74	80	--	80	75
24	70	58	48	45	50	64	74	75	80	84	78	76
25	68	57	45	45	50	64	73	75	80	84	79	76
26	68	56	48	44	56	65	70	76	80	84	78	74
27	87	58	48	45	51	60	70	76	80	84	78	74
28	67	57	48	43	54	59	70	80	80	84	77	74
29	68	59	49	43	--	58	70	78	80	84	78	75
30	64	55	49	42	--	58	70	80	81	84	77	75
31	--	--	50	42	--	60	--	80	--	84	--	--
Average	--	59	49	48	48	61	61	74	79	84	81	75

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 1954 to September 1955

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			
HAW RIVER NEAR BENAJA																		
Mar. 10, 1955.....	118			3.8	1.7			23	3	3.0			51	16	0	56.6	7.0	
Aug. 25 .....	64.3	20	0.47	6.3	1.9	5.7	2.2	35	2.6	4.2	0.2	1.1	a61	24	0	73.2	6.9	40
HORSEPEN CREEK AT BATTLEGROUND																		
Mar. 8, 1955.....	8.52			8.0	3.3			45	4	4.5		0.9	78	34	0	95.5	7.2	
Aug. 24 .....	4.71	19	0.03	8.4	3.2	6.3	2.8	49	2.6	5.5	0.2	.9	a73	34	0	98.2	7.1	17
REEDY FORK NEAR GIBSONVILLE																		
Mar. 10, 1955.....	58.9			5.6	1.9			30	4	4.0		0.8	65	22	0	70.1	6.6	
Aug. 25 .....	29	14	0.05	5.5	2.0	4.0	2.7	30	2.6	3.5	0.0	1.4	a51	22	0	71.4	6.8	25
SOUTH BUFFALO CREEK NEAR GREENSBORO																		
Mar. 11, 1955.....	18.5			12	8.2			44	33	105		1.2	318	63	27	602	6.2	
Aug. 25 .....	9.73	5.0	0.10	24	8.9	135	4.9	16	40	240		5.6	a471	92	79	1,140	6.5	28
NORTH BUFFALO CREEK NEAR GREENSBORO																		
Mar. 11, 1955.....	21.8			14	1.9			b503	136	48		1.4	744	44	0	1,250	10.1	
Aug. 25 .....	28.2	56	0.64	13	.9	378	13	c915	88	12		.9	a1,000	36	0	2,180	11.1	
STONY CREEK NEAR BURLINGTON																		
Mar. 11, 1955.....	23.8			5.9	3.2			32	12	4.5		0.6	94	28	2	82.6	7.0	
Aug. 26 .....	1.75	20	0.01	10	2.5	5.2	1.6	46	4.3	4.0	0.0	.7	a71	36	0	98.7	7.0	16
HAW RIVER AT HAW RIVER																		
Mar. 11, 1955.....	398			7.3	2.3			50	17	15		0.8	122	28	0	176	7.0	
Aug. 25 .....	173	19	0.09	6.7	2.5	27	5.5	43	15	24	0.4	2.5	a127	27	0	395	6.5	95

a Sum of determined constituents.

b Includes equivalent of 153 parts per million of carbonate (CO<sub>3</sub>).

c Includes equivalent of 12 parts per million of OH, and 429 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 1964 to September 1955--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			
HAW RIVER NEAR PITTSBORO																		
May 6, 1955	457	15	0.04	6.8	2.2	18	3.4	54	13	10	0.3	2.0	104	26	0	156	7.2	11
Aug. 29	370			4.6	2.5			56	6.7	9.5		1.0	8.91	22	0	120	6.8	
NEW HOPE RIVER NEAR PITTSBORO																		
May 4, 1955	35.2			9.2	2.7	11	2.9	37	8.6	12		4.6	101	34	4	138	6.6	33
Aug. 29	20.8	15	0.04	9.5	2.5			40	8.8	10	0.5	1.9	8.82	34	1	133	6.8	
WEST FORK DEEP RIVER NEAR HIGH POINT																		
Apr. 11, 1955	17			6.4	2.5			39	5.1	3.0		1.0	70	26	0	80.6	7.8	10
Aug. 23	11.1	22	0.01	6.3	2.3	6.2	2.2	38	2.3	4.8	0.1	2.3	8.67	25	0	88.3	7.4	
EAST FORK DEEP RIVER NEAR HIGH POINT																		
Mar. 8, 1955	9.3			7.1	3.6			44	5	4.2		0.3	73	32	0	90.8	7.2	15
Aug. 23	5.61	26	0.05	7.8	2.6	5.3	1.8	48	3.7	3.0	0.0	.7	8.75	30	0	93.8	7.2	
DEEP RIVER NEAR RANDLEMAN																		
Mar. 8, 1955	134			7.3	2.6			31	8	6.8		2.5	73	29	4	97.5	6.8	23
Aug. 23	58	14	0.04	7.2	2.3	8.1	2.0	29	8.0	7.5	0.0	3.0	8.69	27	4	106	6.6	
DEEP RIVER AT RAMSEUR																		
Mar. 8, 1955	307			5.9	2.8			32	9	11		2.1	82	26	0	109	6.9	27
Aug. 23	175	12	0.03	6.2	1.8	6.8	2.5	24	7.0	7.0	0.0	2.0	8.97	23	3	91.0	6.4	
BRUSH CREEK NEAR COLERIDGE																		
Oct. 7, 1954	0.28			6.0	2.2			28	2	3.8		2.1		24	1	69.7	6.4	6.6
Aug. 24, 1955	12.6			4.4	1.4			22	1.7	3.5	•			17	0	54.6		
a Sum of determined constituents.																		

a Sum of determined constituents.



## FORK CREEK NEAR COLEHIDGE

Oct. 7, 1954.....	0.26		7.2	1.7		37	17	4.8		1.3		25	0	84.2	6.5
Aug. 24, 1955.....	8.69		4.7	1.0		24	.5	3.2				16	0	56.4	6.7

## BEAR CREEK AT ROBBINS

Feb. 24, 1955.....	72.5		1.9	0.8		11	2	3.8		0.0	40	8	0	37.4	6.6
Aug. 24.....	72	7.6	2.4	.8		1.2	12	1.6	4.5	.5	a 28	9	0	40.9	6.4

## DEEP RIVER AT MONCURE

June 13, 1955.....	72	9.5	5.2	1.6	6.9	2.0	26	4.2	6.2	0.1	2.4	20	0	84.6	6.4
Aug. 23.....	334	11	.06	3.8	1.0	3.5	1.5	16	4.5	3.8	.0	1.1	0	54.9	6.5

## CRANE CREEK NEAR VASS

Aug. 9, 1955.....	0.40	7.2	2.5	0.6	3.0	1.0	12	2.1	3.5	0.0	0.3	a 27	9	0	38.3
Aug. 24.....	210		2.4	.3			6	2.6	4.5				7	2	36.5

## ROCKFISH CREEK NEAR HOPE MILLS

Aug. 24, 1955.....	d 3,350	3.4	0.20	1.8	0.4	1.8	1.0	5	2.6	2.5	0.0	0.7	e 43	6	2	30.5
Sept. 24.....	d 447	6.3	.10	1.2	.3	2.1	.7	3	3.0	3.2	.0	.3	f 37	4	2	24.9

## HOOD CREEK NEAR LELAND

July 28, 1955.....	1.13	7.7	0.14	14	1.5	5.8	0.5	36	6.6	9.2	0.0	2.1	a 66	41	12	111
Sept. 16.....	53.0		7.2	.5			18	1.0	8.8					20	5	60.9

a Sum of determined constituents.

d Mean discharge.

e Organic matter present; sum of mineral constituents 17 parts per million.

f Organic matter present; sum of mineral constituents 19 parts per million.

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 1954 to September 1955--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			

## LITTLE COHARIE CREEK NEAR ROSEBORO

Feb. 3, 1955.....	135			1.8	2.1			4	15	9.0		1.2	66	13	10	75.8	5.3	
Sept. 1.....	179	9.3	0.77	1.0	.3	4.9	1.7	3	2.7	7.2	0.0	.3	a30	4	1	46.2	5.1	90

## BLACK RIVER NEAR TOMAHAWK

Feb. 3, 1955.....	592			4.3	1.9			3	21	7.5		1.0	70	19	17	80.5	5.6	
Sept. 1.....	1,910	9.8	0.94	3.6	.7	3.9	1.6	8	6.7	6.2	0.0	.4	a38	12	5	53.7	5.6	70

## COLLY CREEK NEAR KELLY

Feb. 2, 1955.....	30			3.7	2.2	4.1	3.0	0	5.2	12		1.5	158	18	18	123	4.1	
Aug. 31.....	605	9.7	0.76	1.8	.2					8.0		.8	a34	5	5	82.3	4.5	550

## NORTHEAST CAPE FEAR RIVER NEAR CHINGUAPIN

Feb. 2, 1955.....	275			17	3.2			5	29	25		0.6	158	56	52	219	6.3	
Aug. 24.....	2,910	8.1	0.83	4.8	1.0	6.2	1.8	10	5.6	10	0.0	.3	a44	16	8	71.2	5.7	200

WACCAMAW RIVER BASIN  
 MISCELLANEOUS ANALYSES OF STREAMS IN WACCAMAW RIVER BASIN IN NORTH CAROLINA

Feb. 2, 1955.....	43.2			10	1.2			6	24	14		2.4	128	31	26	133	5.8	
Aug. 31.....	1,710	9.5	2.1	4.6	1.3	7.3	2.0	5	5.0	15	0.0	.1	a52	17	10	53.3	5.3	130

a Sum of determined constituents.  
 g Acidity as H<sub>2</sub>.

## PEE DEE RIVER BASIN

## REDDIES RIVER AT NORTH WILKESBORO, N. C.

LOCATION.--At bridge on U. S. Highway 421, at city limits of North Wilkesboro, Wilkes County, a quarter of a mile downstream from North Wilkesboro municipal dam, 0.6 mile upstream from mouth and 1½ miles downstream from gaging station.

DRAINAGE AREA.--93.9 square miles (at gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1948, October 1953 to September 1955.

Water temperatures: October 1934 to September 1955.

EXTREMES, 1934-55.--Dissolved solids: Maximum, 36 ppm Sept. 1-10; minimum, 27 ppm Mar. 31.

Sardness: Maximum, 12 ppm Apr. 21-30; minimum, 7 ppm Feb. 11-19.

Specific conductance: Maximum, 241 micromhos, July 9; minimum daily, 25.0 micromhos Oct. 1.

Water temperatures: Maximum, 80°F May 30; minimum, freezing point Dec. 8.

REMARKS.--Records of specific conductance of daily samples and records of suspended matter of composite samples available in district office at Raleigh N. C.

Records of discharge for water year October 1954 to September 1955 given in WSP 1383. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954.....	29	11	0.08	2.7	1.1	2.1	1.2	16	2.1	2.0	0.1	0.5	33	11	0	39.4	7.2	5	3.4	2.2
Oct. 11-20.....	39	10	.02	2.0	1.2	2.2	1.4	14	2.2	1.8	.1	.3	33	10	0	34.5	7.3	7	3.0	2.2
Oct. 21-31.....	35	8.7	.06	2.6	1.2	2.0	1.2	16	2.2	1.2	.1	.2	32	11	0	35.3	6.8	8	2.8	2.3
Nov. 1-10.....	44	12	.00	2.2	.9	2.7	1.2	15	2.1	1.8	.0	.2	32	9	0	33.0	6.7	4	2.4	2.2
Nov. 11-20.....	70	8.7	.02	2.6	.7	3.6	1.4	13	2.8	3.8	.0	.0	37	9	0	32.6	6.5	27	3.5	2.7
Nov. 21-30.....	58	13	.02	2.7	.6	2.4	1.0	13	2.5	2.2	.1	.3	31	8	0	35.9	6.8	8	2.6	1.9
Dec. 1-10.....	62	11	.01	2.4	.6	2.4	1.0	13	2.7	2.0	.0	.3	30	8	0	31.7	7.0	10	3.0	2.0
Dec. 11-20.....	77	8.4	.01	2.6	.6	2.4	1.0	13	2.6	2.2	.1	.2	30	9	0	32.4	6.9	7	2.8	2.1
Dec. 21-31.....	136	8.7	.00	2.4	.6	3.0	1.7	13	2.9	2.2	.0	.5	30	8	0	34.7	6.6	7	4.2	2.2
Jan. 1-10, 1955.....	86	12	.01	2.2	.8	2.7	.7	13	2.2	2.2	.0	.7	32	9	0	31.7	6.8	8	3.5	2.0
Jan. 11-20.....	63	12	.00	2.1	.7	2.7	.6	12	2.7	2.0	.0	.1	30	8	0	31.3	6.8	5	1.9	1.7
Jan. 21-31.....	57	12	.00	2.0	.8	2.6	.4	13	1.7	2.0	.0	.2	29	8	0	31.8	6.9	4	1.8	1.8
Feb. 1-10.....	156	11	.00	2.1	.7	2.5	.7	12	2.4	1.5	.0	.3	32	8	0	29.4	6.9	7	3.0	2.2
Feb. 11-19.....	83	8.8	.03	2.0	.6	2.3	.6	12	2.2	1.5	.0	.3	29	7	0	29.3	6.9	2	3.1	2.0
Feb. 20-28.....	94	8.1	.01	2.2	.6	2.2	1.0	12	2.6	2.0	.1	.4	28	8	0	31.0	6.7	3	1.6	1.6
Mar. 1-10.....	85	8.5	.00	3.0	.6	2.5	1.2	14	3.1	2.0	.1	.3	31	10	0	36.8	7.7	6	2.7	1.8
Mar. 11-20.....	136	6.2	.01	2.6	.3	2.0	.8	11	2.5	1.3	.0	.4	30	8	0	39.2	7.2	8	2.7	1.6
Mar. 21-31.....	137	7.0	.01	2.6	.3	1.9	.8	9	2.5	1.3	.0	1.2	29	8	1	31.7	6.3	4	2.7	1.4
Mar. 31.....	--	--	--	2.6	.3	--	--	11	2.1	1.0	--	.4	27	8	0	25.9	7.0	--	--	--

PEE DEE RIVER BASIN--Continued  
 REDDIES RIVER AT NORTH WILKESBORO, N. C.--Continued  
 Chemical analyses, in parts per million, water year October 1954 to September 1955--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	Non-carbonate				Unfiltered	Filtered
Apr. 1-10, 1955.....	85	11	0.01	2.8	0.2	2.5	0.8	12	2.6	1.8	0.0	0.6	29	8	0	31.2	6.7	4	1.6	1.5
Apr. 11-20.....	337	12	.04	2.8	.3	2.2	1.2	11	3.1	1.5	.0	.7	34	8	0	33.7	6.7	4	6.4	2.2
Apr. 21-30.....	132	14	.01	2.4	1.5	2.1	.8	15	1.9	1.5	.0	.6	33	12	0	31.9	6.2	15	2.8	1.8
May 1-10.....	92	11	.03	2.5	.6	1.8	.8	14	1.7	1.2	.0	.4	29	9	0	30.0	6.5	8	2.8	1.9
May 11-20.....	87	11	.00	3.5	.3	2.2	.8	14	1.2	1.2	.1	.6	29	10	0	30.0	6.3	8	2.9	1.7
May 21-31.....	933	15	.01	2.4	.7	2.1	1.1	14	1.3	1.5	.1	.6	32	9	0	30.3	6.5	15	7.8	2.0
June 1-10.....	66	12	.00	2.4	1.2	2.0	.7	15	1.2	1.5	.1	.8	31	11	0	38.3	7.4	7	2.6	1.6
June 11-20.....	86	12	.00	2.4	1.0	2.0	.7	14	1.2	1.5	.0	.8	31	10	0	30.6	7.4	7	3.9	1.7
June 21-30.....	71	12	.02	2.4	1.7	2.6	1.5	16	2.5	1.2	.0	.5	32	10	0	33.8	6.9	10	6.3	2.0
July 1-10.....	74	8.9	.03	2.4	.8	1.8	1.3	12	1.5	1.5	.1	1.1	34	9	0	35.2	7.3	10	4.9	2.1
July 11-20.....	171	11	.00	2.8	.7	2.0	1.0	12	1.5	1.5	.1	1.1	31	10	0	36.2	7.0	15	4.4	2.4
July 21-31.....	85	12	.03	2.8	.7	2.2	1.1	16	1.3	1.5	.1	.9	36	10	0	36.2	7.0	15	4.4	2.4
Aug. 1-10.....	108	11	.04	2.7	1.0	2.3	1.1	18	1.7	1.2	.1	.7	32	11	0	35.1	7.7	13	4.4	2.2
Aug. 11-20.....	114	12	.01	2.5	.7	2.8	1.3	17	1.8	1.2	.1	.9	33	9	0	38.6	7.6	7	5.4	2.6
Aug. 21-31.....	80	12	.01	2.8	.5	2.2	1.2	17	1.0	1.6	.1	.6	32	9	0	35.2	7.3	3	2.8	1.7
Sept. 1-10.....	70	12	.01	2.7	.9	2.2	1.2	15	1.4	2.0	.0	1.1	33	10	0	34.3	6.8	3	3.6	2.7
Sept. 11-20.....	49	12	.01	2.4	.7	2.2	1.0	16	1.5	1.5	.1	1.1	30	9	0	32.9	6.9	5	2.4	1.6
Sept. 21-30.....	59	12	.01	2.4	.8	2.5	1.2	14	1.5	2.0	.1	1.0	30	9	0	34.5	6.1	4	2.7	2.2
Average.....	92.2	11	0.02	2.5	0.7	2.3	1.0	14	2.1	1.8	0.0	0.5	31	9	0	33.3	--	8	3.4	2.0

## PEE DEE RIVER BASIN--Continued

## REDDIES RIVER AT NORTH WILKESBORO, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at 8:30 a. m./

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

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.

LOCATION.--At bridge on U. S. Highway 64, 80 feet upstream from gaging station, 1½ miles south of Yadkin College, Davidson County, and 6¼ miles downstream from Reedy Creek.

DRAINAGE AREA.--2,280 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1943 to September 1944, October 1950 to September 1951.

Water temperatures: October 1943 to September 1944, October 1950 to September 1951. Sediment records: January 1951 to September 1955.

EXTREMES, 1954-55.--Sediment concentrations: Maximum daily, 2,800 ppm June 12; minimum daily, 6 ppm Oct. 1, 2.

Sediment loads: Maximum daily, 86,700 tons Apr. 15; minimum daily, 6 tons Oct. 1, 2. EXTREMES, 1951-55.--Sediment concentrations: Maximum, 2,970 ppm May 26, 1952; minimum, 1 ppm Dec. 3, 1953.

Sediment loads: Maximum daily, 108,000 tons Jan. 23, 1954; minimum daily, 3 tons Dec. 3, 1953.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

## Suspended sediment, water year October 1954 to September 1955

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.....	400	6	6	932	33	83	1,660	80	269
2.....	345	6	6	852	28	64	1,430	40	154
3.....	445	7	8	925	30	75	1,310	20	71
4.....	555	7	10	1,020	39	107	1,230	15	50
5.....	460	7	9	1,110	38	114	1,230	15	50
6.....	405	7	8	1,030	20	56	2,520	190	1,290
7.....	410	8	9	1,020	18	50	3,250	180	1,580
8.....	360	8	8	1,010	19	52	2,300	150	932
9.....	330	8	7	918	18	45	1,790	70	338
10.....	375	8	8	895	13	31	1,840	40	199
11.....	445	8	10	873	11	26	1,700	30	138
12.....	370	8	8	852	9	21	1,610	30	130
13.....	445	8	10	810	9	20	2,440	138	s 1,250
14.....	370	8	8	831	9	20	4,750	500	6,410
15.....	6,100	1,170	s 35,500	866	9	21	4,050	270	2,950
16.....	13,100	1,570	s 59,400	859	9	21	2,750	140	1,040
17.....	3,180	572	s 5,310	2,640	515	s 5,560	2,060	105	584
18.....	1,560	220	927	5,420	990	s 15,400	1,920	80	311
19.....	1,110	150	450	2,750	335	2,490	2,150	55	319
20.....	978	72	190	2,400	210	1,360	2,100	50	284
21.....	910	52	128	2,750	230	1,710	1,790	30	145
22.....	831	45	101	2,200	120	713	1,560	28	118
23.....	728	30	59	1,700	65	298	1,520	25	103
24.....	768	28	58	1,560	45	190	1,390	15	56
25.....	796	35	75	1,430	30	116	1,390	15	56
26.....	710	33	63	1,270	25	86	1,350	15	55
27.....	716	26	50	1,270	15	51	1,350	12	44
28.....	740	26	52	1,230	20	66	1,270	12	41
29.....	768	26	54	2,300	230	s 1,430	1,310	15	53
30.....	859	28	65	2,060	90	500	2,700	124	s 1,340
31.....	992	32	86	--	--	--	6,620	672	s 11,800
Total.	40,561	--	102,663	45,783	--	30,776	66,340	--	32,160

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	3,550	405	3,880	1,190	8	26	2,020	40	218
2.....	2,550	225	1,270	1,270	8	27	2,060	43	239
3.....	2,200	108	642	1,350	8	29	1,920	40	207
4.....	1,880	60	305	1,310	8	28	1,790	30	145
5.....	1,740	55	258	1,230	8	27	1,700	28	129
6.....	1,660	40	179	2,980	184	s 3,150	3,320	879	s 8,530
7.....	1,560	38	160	18,100	1,080	s 53,800	2,850	930	s 7,110
8.....	1,430	35	135	12,000	537	s 18,500	2,150	360	2,090
9.....	1,430	22	85	4,820	400	5,210	1,920	125	648
10.....	1,430	20	77	3,450	300	2,790	1,790	65	314
11.....	1,520	20	82	2,950	180	1,430	1,700	65	298
12.....	1,520	19	78	2,850	195	1,500	1,660	65	291
13.....	1,520	15	62	2,400	135	875	1,790	65	314
14.....	1,390	14	53	2,100	110	624	1,880	65	330
15.....	1,310	14	50	2,060	90	501	1,740	60	282
16.....	1,310	14	50	2,020	100	545	1,880	60	305
17.....	1,350	14	51	1,970	100	532	3,300	330	2,940
18.....	1,270	12	41	1,920	75	389	3,550	410	3,930
19.....	1,310	11	39	1,740	60	282	3,450	290	2,700
20.....	1,350	11	40	1,700	35	161	5,300	570	8,160
21.....	1,350	11	40	1,660	30	134	4,750	345	4,420
22.....	1,310	11	39	1,610	35	152	4,050	252	2,760
23.....	1,430	12	46	1,610	35	152	6,260	480	8,110
24.....	1,480	12	48	2,100	43	244	5,080	400	5,490
25.....	1,390	12	45	2,500	70	472	3,750	200	2,020
26.....	1,350	12	44	2,100	70	397	3,150	98	833
27.....	1,310	12	42	2,020	40	218	2,850	92	708
28.....	1,300	9	34	2,020	38	207	2,500	88	594
29.....	1,310	8	28	--	--	--	2,250	60	364
30.....	1,310	8	28	--	--	--	2,150	55	319
31.....	1,270	8	27	--	--	--	2,020	50	273
Total.	48,180	--	8,238	85,030	--	92,402	86,580	--	65,071
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.....	1,920	38	197	2,100	80	454	1,520	70	287
2.....	1,790	38	184	2,060	78	434	1,390	68	255
3.....	1,840	38	189	1,920	62	321	1,270	48	165
4.....	1,840	40	199	1,920	60	311	1,190	40	129
5.....	1,740	32	150	1,880	55	279	1,230	40	133
6.....	1,700	35	161	1,840	35	174	1,270	40	137
7.....	1,840	43	214	1,700	35	161	1,190	36	116
8.....	1,840	45	224	1,700	35	161	1,390	34	128
9.....	1,610	45	196	1,700	33	151	2,250	27	164
10.....	1,560	35	147	1,610	22	96	1,660	35	157
11.....	1,610	35	152	1,560	20	84	3,940	1,920	s 52,900
12.....	2,490	105	706	1,560	20	84	8,530	2,800	s 71,300
13.....	4,250	580	6,660	1,840	110	546	3,150	1,160	9,870
14.....	17,300	1,660	s 84,900	2,150	205	1,190	2,100	420	2,380
15.....	29,200	1,100	86,700	2,020	48	262	1,700	195	895
16.....	18,500	660	33,000	1,970	40	213	1,560	115	484
17.....	6,140	420	6,960	1,840	40	199	1,430	70	270
18.....	4,650	330	4,140	1,700	38	174	1,350	70	255
19.....	3,950	300	3,200	1,610	30	130	1,310	65	230
20.....	3,550	200	1,920	1,520	30	123	1,350	70	255
21.....	3,050	180	1,480	1,430	30	116	1,390	90	338
22.....	2,950	185	1,470	2,060	274	s 1,900	1,520	85	349
23.....	3,050	150	1,240	4,250	790	9,070	1,520	55	226
24.....	2,750	145	1,080	3,350	640	5,790	1,430	70	270
25.....	4,150	710	7,960	2,750	450	3,340	1,270	140	480
26.....	3,650	360	3,550	2,450	458	3,030	1,230	120	399
27.....	2,950	320	2,550	1,880	305	1,550	1,150	60	186
28.....	2,550	170	1,170	1,560	175	737	1,110	55	165
29.....	2,400	120	778	1,520	95	390	1,030	55	153
30.....	2,200	80	475	1,480	75	300	992	55	147
31.....	--	--	--	1,700	70	321	--	--	--
Total.	139,020	--	251,952	60,630	--	32,091	53,422	--	143,223

s Computed by subdividing day.

## SOUTH ATLANTIC SLOPE BASINS, JAMES RIVER TO SAVANNAH RIVER

## PEE DEE RIVER BASIN--Continued

## YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1954 to September 1955--Continued

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.....	978	30	79	1,270	140	480	810	42	92
2.....	978	35	92	1,560	165	695	824	42	93
3.....	940	45	114	1,270	150	514	880	46	109
4.....	992	50	134	1,150	120	373	895	63	152
5.....	1,190	50	161	1,070	105	303	1,070	65	166
6.....	1,190	58	186	1,070	70	202	992	62	166
7.....	1,190	90	289	1,070	70	202	970	43	113
8.....	1,390	120	450	1,000	70	189	1,030	40	111
9.....	1,700	160	734	1,520	150	616	902	36	86
10.....	1,790	370	1,790	1,680	205	919	775	26	54
11.....	2,020	765	4,170	1,840	305	1,520	754	26	53
12.....	2,650	1,190	8,510	1,310	190	672	754	26	53
13.....	8,510	1,950	s 35,400	1,110	110	330	704	24	46
14.....	4,700	1,120	14,200	1,070	115	332	704	24	46
15.....	2,650	390	2,790	1,350	240	875	698	23	43
16.....	2,020	150	818	1,480	240	959	674	19	35
17.....	1,660	135	605	2,200	368	2,190	650	18	32
18.....	1,430	75	290	4,350	775	9,100	632	17	29
19.....	1,350	75	273	2,850	595	4,580	600	15	24
20.....	1,270	75	257	1,670	305	1,380	605	14	23
21.....	1,390	75	281	1,270	140	480	585	15	24
22.....	1,740	80	376	1,110	95	285	530	14	20
23.....	1,230	120	399	1,070	95	274	555	8	12
24.....	1,110	115	345	1,110	85	255	575	11	17
25.....	1,840	542	s 4,030	1,190	50	161	674	22	40
26.....	1,790	820	3,960	1,020	48	132	781	23	47
27.....	1,230	490	1,630	910	45	111	845	25	57
28.....	1,030	175	467	895	38	92	796	25	54
29.....	970	185	465	845	35	80	716	21	41
30.....	1,390	260	975	817	35	77	692	20	37
31.....	1,270	130	446	810	37	81	--	--	--
Total.	53,588	--	84,756	42,917	--	28,459	22,652	--	1,899
Total discharge for year (cfs-days)									744,703
Total load for year (tons)									873,710

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 1954 to September 1955  
 (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	Discharge (cfs)	Water temperature per- 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	1.000
Oct. 16, 1954...	10:25 a.m.	15,900		2,250	1,890		35	40	56	82	94						BW
Nov. 18.....	11:00 a.m.	5,660		981	716		17	21	32	79	91						BN
Nov. 18.....	4:15 p.m.	4,950		1,070	640		19	26	31	85	96						BN
9:00 a.m.	6:140	6,140		606	485		35	52	63	71	82						BN
9:00 a.m.	6:140	6,140		556	465		41	55	66	76	84						BN
Dec. 14.....	5:30 p.m.	6,380		642	416		19	42	63	82	90						BN
Dec. 31.....	5:30 p.m.	6,380		703	528		15	28	48	72	82						BN
Feb. 7, 1955...	2:45 p.m.	15,800		1,260	5,390		14	23	33	46	76						BN
Feb. 7.....	5:00 p.m.	20,000		1,200	912		20	31	51	81							BN
Mar. 7.....	4:30 p.m.	2,550		609	493		51	70	87	95	96						BN
Mar. 23.....	2:25 p.m.	6,750		404	403		15	31	44	58	69						BN
Apr. 14.....	12:30 p.m.	18,700		2,170	1,380		30	48	57	72	79						BW
Apr. 14.....	2:30 p.m.	20,200		2,440	9,740		22	32	42	52	83						BW
Apr. 15.....	6:30 a.m.	27,800		1,010	3,940		25	37	52	68	88						BW
Apr. 25.....	6:30 p.m.	8,440		808	686		48	66	79	87	91						BW
July 13.....	2:00 p.m.	8,440		2,130	6,560		32	43	58	68	95						BW
July 14.....	9:00 a.m.	5,080		1,200	1,950		30	50	68	86	92						BW



PEE DEE RIVER BASIN--Continued  
DROWNING RIVER NEAR HOFFMAN, N. C.

LOCATION.--At gaging station on bridge on U. S. Highway 1, three-quarters of a mile downstream from Deep Creek, 1 mile upstream from Seaboard Airline Railway 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 1955.  
EXTREMES, 1954-55.--Water temperatures: Maximum, 77° F Aug. 21, 1955; minimum, 36° F Dec. 19-20, 1953, Feb. 14, 1955.  
EXTREMES, 1953-55.--Water temperatures: Maximum, 77° F Aug. 21, 1955; minimum, 36° F Dec. 19-20, 1953, Feb. 14, 1955.  
REMARKS.--Records of chemical analyses and once-daily temperature observations were obtained during water year October 1946 to September 1947 at site 4 miles downstream from gaging station. Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 15, 1954.....	161	5.5	0.11	0.8	0.5	1.7	0.4	4	1.8	2.0	0.0	0.0	22	4	1	16.6	5.4	40
Nov. 15.....	146	6.3	.17	.8	.4	1.9	.4	3	2.3	2.8	.0	.3	25	4	1	21.6	5.6	45
Dec. 15.....	292	5.4	.11	.8	.5	2.0	.4	2	2.6	2.8	.0	.2	a29	4	2	23.0	5.1	55
Jan. 15, 1955.....	265	4.7	.14	.4	.4	1.9	.1	2	2.6	2.0	.0	.1	b26	3	1	18.8	5.3	35
Feb. 15.....	324	1.9	.05	.8	.4	2.3	.3	2	3.2	3.2	.0	.1	b25	4	2	20.8	5.4	28
Mar. 15.....	302	3.5	.13	.8	.5	2.3	.4	2	3.5	3.0	.0	.1	c32	4	2	23.2	5.3	60
Apr. 15.....	692	4.0	.14	1.2	.2	1.8	.4	3	2.2	2.5	.0	.3	d40	4	2	30.6	5.2	80
May 15.....	504	4.6	.31	1.0	.3	1.8	.4	3	2.4	2.5	.0	.3	c40	4	2	24.3	5.3	60
June 15.....	65	3.8	.26	.8	.2	1.9	.3	3	2.1	2.5	.0	.4	23	3	1	16.1	6.0	35
July 5.....	60	4.2	.11	.8	.2	1.8	.6	3	1.1	2.0	.0	.5	--	3	1	21.5	5.5	35
July 15.....	246	6.1	.17	.8	.2	1.9	.5	4	1.3	2.5	.0	.3	a34	3	0	22.2	5.9	70
Aug. 15.....	134	6.1	.24	.8	.2	1.9	.4	4	.8	2.8	.0	.1	c34	3	0	20.3	5.5	60
Aug. 23.....	238	6.2	.19	.8	.2	2.1	.6	4	1.0	2.5	.0	.2	--	3	0	23.2	5.3	60
Sept. 15.....	134	6.1	.50	.4	.1	2.1	.5	3	.9	2.5	.0	.2	c31	2	0	18.0	5.6	60

a Organic matter present; sum of mineral constituents 16 parts per million.

b Organic matter present; sum of mineral constituents 13 parts per million.

c Organic matter present; sum of mineral constituents 15 parts per million.

d Organic matter present; sum of mineral constituents 14 parts per million.

## PEE DEE RIVER BASIN--Continued

## DROWNING CREEK NEAR HOFFMAN, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

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.....	70	69	54	52	46	44	49	48	52	49	63	62	69	68
2.....	70	69	52	51	45	44	49	48	53	63	62	67	65	70
3.....	69	68	51	49	44	42	49	48	54	63	62	66	64	72
4.....	69	68	49	48	42	41	48	47	53	65	63	66	64	73
5.....	70	69	49	48	42	41	48	47	53	65	67	65	74	73
6.....	71	70	49	49	42	42	50	48	56	67	66	68	74	73
7.....	71	64	49	48	42	39	50	48	56	66	65	69	73	74
8.....	64	62	48	47	39	38	48	48	56	66	65	69	76	74
9.....	62	60	48	47	39	38	46	46	52	67	66	68	73	71
10.....	61	60	48	47	40	39	46	46	52	67	64	66	74	70
11.....	62	61	48	47	40	39	46	46	55	68	66	67	72	76
12.....	64	62	48	48	39	39	46	43	55	68	68	68	73	71
13.....	64	64	49	48	40	39	43	42	56	63	67	68	73	70
14.....	66	64	50	49	42	40	42	40	56	63	67	66	74	70
15.....	66	64	52	50	43	42	41	40	55	67	65	74	73	68
16.....	64	61	54	52	42	41	41	42	59	64	65	68	75	68
17.....	58	56	55	54	42	40	42	40	58	66	65	68	73	69
18.....	58	57	56	55	44	42	40	40	57	67	66	68	73	69
19.....	57	57	57	56	44	43	40	39	54	70	68	68	75	74
20.....	57	55	57	57	43	42	39	39	54	68	66	69	76	69
21.....	56	54	57	55	42	39	38	46	53	68	67	70	75	70
22.....	54	53	55	53	39	38	40	38	62	69	68	71	78	71
23.....	54	53	53	50	38	37	40	39	72	69	69	71	76	71
24.....	53	52	50	49	38	37	39	51	54	70	69	71	73	74
25.....	54	53	49	47	39	38	40	48	52	69	70	75	74	72
26.....	54	53	47	46	39	38	40	45	70	69	72	70	74	71
27.....	56	54	46	45	41	39	40	48	65	71	70	76	73	72
28.....	58	56	46	45	45	40	52	48	64	69	69	76	75	70
29.....	59	58	47	46	49	45	40	49	62	71	69	68	72	68
30.....	59	57	47	46	51	49	39	48	60	72	71	69	74	73
31.....	57	54	--	--	51	48	39	--	--	71	69	68	75	--
Average.....	62	60	51	50	42	41	43	42	53	64	61	68	73	71

# PEE DEE RIVER BASIN

## LUMBER RIVER AT MAXTON, N. C.

LOCATION.--At bridge on county road, 1 mile east of Maxton, Robeson County, and 1.2 miles downstream from Atlantic Coast Line Railway bridge.

DRAINAGE AREA.--359 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 15, 1954	.....	4.6	0.09	1.4	0.4	2.0	0.6	2	4.5	3.0	0.0	0.7	25	5	4	27.9	5.4	28
Nov. 15	.....	5.5	.18	.8	.6	2.4	.4	2	4.2	3.0	.0	.2	29	4	3	23.2	5.4	50
Dec. 15	.....	7.9	.14	1.1	.5	2.5	.5	1	5.3	3.8	.0	.2	a42	5	4	33.6	4.9	80
Jan. 15, 1955	.....	4.0	.11	1.6	.2	2.5	.4	3	3.6	3.5	.0	.0	b35	5	3	24.9	5.3	65
Feb. 15	.....	4.0	.10	1.0	.2	2.3	.3	1	3.5	3.2	.0	.4	c36	4	3	33.3	4.9	45
Mar. 15	.....	1.3	.15	1.2	.2	2.8	.4	2	3.1	4.2	.0	.3	d32	4	2	36.7	5.2	55
Apr. 15	.....	2.3	.19	1.2	.5	3.0	.6	2	3.5	4.5	.0	.5	b42	5	3	40.4	5.1	45
May 15	.....	3.2	.28	1.0	.3	2.3	.4	2	2.5	3.5	.0	.6	e32	4	2	30.2	5.3	50
June 15	.....	4.0	.12	.8	.2	2.3	.3	4	1.5	3.0	.0	.3	d27	3	0	30.7	6.0	35
July 15	.....	7.3	.27	1.2	.3	2.8	.8	4	2.8	3.8	.0	.1	f51	4	1	31.4	5.8	60
Aug. 15	.....	5.4	.14	1.2	.2	2.3	.8	5	1.3	3.2	.0	.2	b29	4	0	23.0	5.8	50
Sept. 15	.....	7.1	.58	1.2	.2	2.7	.4	3	2.5	3.8	.0	.2	g46	4	1	26.9	5.1	120

a Organic matter present; sum of mineral constituents 22 parts per million.

b Organic matter present; sum of mineral constituents 17 parts per million.

c Organic matter present; sum of mineral constituents 16 parts per million.

d Organic matter present; sum of mineral constituents 15 parts per million.

e Organic matter present; sum of mineral constituents 13 parts per million.

f Organic matter present; sum of mineral constituents 21 parts per million.

g Organic matter present; sum of mineral constituents 20 parts per million.

PEE DEE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS IN PEE DEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA  
Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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	Non-carbon- ate				
MULBERRY CREEK NEAR NORTH WILKESBORO, N. C.																			
July 28, 1955	24.0			3.3	2.0			22	3.9	3.5					16	0	55.8	6.7	
Sept. 9	23.6			2.8	.2			20	1.3	.5					8	0	33.5	6.7	
FISHER RIVER NEAR COPELAND, N. C.																			
Mar. 23, 1955	292			1.8	0.8			9	3.7	1.5		1.0	34	8	1	26.2	6.8		
Sept. 13	443	11	0.02	2.0	.8	2.5	0.9	14	2.0	2.0	0.1	.3	a29	8	0	31.4	7.0	3	
FORBUSH CREEK NEAR YADKINVILLE, N. C.																			
Mar. 23, 1955	23.0			3.2	1.8			18	4.3	1.5		0.8	45	15	0	43.1	6.9		
Sept. 13	2.34	13	0.03	3.6	1.0	3.9	1.3	23	1.5	2.2	0.1	.2	a38	13	0	50.1	7.1	2	
MUDDY CREEK NEAR CLEMMONS, N. C.																			
Oct. 6, 1954	9.30			9.0	3.5			55	2	2.0		0.5		37	0	101	6.9		
Oct. 13	8.44			9.2	3.4			53	2	3.0		.6		37	0	102	7.0		
YADKIN RIVER AT YADKIN COLLEGE, N. C.																			
Feb. 7, 1955	b18,100	6.3	0.00	2.6	1.3	2.2	1.9	10	5.4	2.0	0.1	2.3	37	12	4	39.2	6.7	22	
Mar. 30	2,060	--	--	4.2	1.1	--	--	22	4.0	2.8	--	1.8	45	15	0	55.1	6.6	--	
Sept. 15	686	15	.01	5.0	1.5	7.1	2.2	31	2.9	6.0	.1	1.5	a56	19	0	77.4	6.5	7	
ROCKY RIVER AT TURNERSBURG, N. C.																			
Apr. 7, 1955	61.0			1.8	1.6			17	3.6	1.5		0.6	43	11	0	36.4	7.1		
Sept. 28	32.1	14	0.03	3.6	1.1	2.4	1.7	21	2.1	2.0	0.0	.5	a37	14	0	41.4	6.7	5	
a Sum of determined constituents. b Mean discharge.																			

a Sum of determined constituents.

b Mean discharge.

## SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.

May 27, 1955	164	15	0.01	3.4	1.1	2.9	1.5	21	2.3	2.0	0.0	0.8	a39	13	0	50.2	7.4	5
Sept. 23	77.5	16	.04	3.6	1.0	4.8	2.8	26	1.9	1.5	.2	.3	a45	13	0	50.4	7.1	27

## HUNTING CREEK NEAR HARMONY, N. C.

Apr. 7, 1955	128		2.2	0.5	2.2	2.6	1.5	12	2.7	1.5	0.6	0.6	29	8	0	28.6	7.0	
Sept. 23	46.2	13	0.02	3.3	1.0			17	1.6	2.0	0.0	.3	a34	12	0	37.5	6.6	6

## SOUTH YADKIN RIVER AT COOLEEMER, N. C.

Mar. 31, 1955		14	0.00	3.6	1.4	2.9	1.0	21	3.0	2.0	0.0	0.3	39	15	0	47.2	6.8	4
Apr. 7	414	--	--	3.9	1.8	--	--	c72	3.6	2.5	--	.9	99	17	0	142	9.9	--
Sept. 23	182	13	.09	3.8	1.1	20	2.9	62	12	3.0	.0	.3	a87	14	0	126	6.1	17

## THIRD CREEK AT CLEVELAND, N. C.

May 27, 1955	37.6	21	0.07	6.6	3.2	4.6	1.9	39	3.5	2.8	0.1	1.8	a65	29	0	85.3	7.0	22
Sept. 29	20.0	21	.14	7.4	3.1	5.5	2.5	40	5.3	4.5	.2	1.8	a71	31	0	96.6	7.0	21

## SECOND CREEK NEAR LIBERTY, N. C.

Oct. 2, 1954	0.85			14	5.8			86	2	5.8		0.3		58	0	158	7.2	
Sept. 9, 1955	3.95			11	4.8			68	3.1	3.5				48	0	127	7.1	

## ABBOTTS CREEK AT LEXINGTON, N. C.

Apr. 14, 1955		7.1	0.05	4.4	1.7	2.8	1.8	21	5.4	2.8	0.1	0.7	53	18	1	55.7	6.9	35
Apr. 22	101	22	.01	10	3.3	14	2.2	56	7.6	12	.4	3.0	a103	44	0	110	7.9	22
Sept. 15	19.8	21	.07	11	3.5	21	3.2	69	2.2	22	.2	3.1	a121	42	0	207	6.9	16

a Sum of determined constituents.

c Includes equivalent of 27 parts per million of carbonate (CO<sub>3</sub>).

## 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 1954 to September 1955--Continued

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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	Non- mag- carbon- ate			
YADKIN RIVER AT HIGH ROCK, N. C.																		
May 18, 1955.....	3,970	12	0.03	4.8	1.2	5.7	1.6	27	4.7	3.5	0.0	1.6	2.48	17	0	70.3	6.7	12
Sept. 21.....	4,870	13	.02	5.5	1.2	8.5	2.5	32	3.7	5.8	.1	2.4	2.59	19	0	86.7	6.6	4
LICK CREEK NEAR HEALING SPRINGS, N. C.																		
Oct. 2, 1954.....	0.59			7.0	1.5			46	3	7.2		1.2		24	0	108	7.5	
Sept. 9, 1955.....	1.54			6.3	2.5			30	6.6	4.5				26	1	84.3	6.6	
UMHARRIE RIVER NEAR ELDORADO, N. C.																		
Feb. 24, 1955.....	156			5.5	2.2	3.6	1.4	30	4	3.8		0.1	60	23	0	72.1	7.2	
Aug. 24.....	107	13	0.01	4.4	1.3			24	3.8	3.2	0.0	.8	2.44	16	0	74.7	7.2	15
MALLARD CREEK NEAR HARRISBURG, N. C.																		
Oct. 4, 1954.....	0.16			14	6.3			82	1	6.0		1.3		60	0	153	6.9	
Sept. 9, 1955.....	3.37			10	4.8			67	3.0	3.5				46	0	121	7.2	
REEDY CREEK AT ROCKY RIVER, N. C.																		
Oct. 4, 1954.....	0.39			13	6.7			88	3	4.2		1.1		59	0	155	8.0	
Sept. 9, 1955.....	3.88			12	5.2			76	2.8	3.5				50	0	134	7.3	
BIG BEAR CREEK NEAR RICHFIELD, N. C.																		
Feb. 24, 1955.....	21			3.6	1.9			16	4	5.8		0.0	44	17	4	62.0	7.1	
Apr. 1.....	15			3.3	1.3			20	2.0	4.9		.9	2.4	17	1	90.3	7.6	
Sept. 26.....	5.04	8.7	0.10	6.0	3.2	5.1	2.4	34	3.2	5.8	0.2	1.3	2.53	23	0	86.5	6.8	28

a Sum of determined constituents.



## ROCKY RIVER NEAR NORWOOD, N. C.

Feb. 23, 1955.....	597	6.4	0.04	5.9	3.0	2.3	42	7	10	0.0	82	27	0	125	7.2
Aug. 24.....	358			4.4	1.2	10	28	5.4	8.2	0.0	a53	16	0	92.2	6.6
Aug. 24.....															30

## BROWN CREEK NEAR POLKTON, N. C.

Feb. 23, 1955.....	19	9.5	0.43	3.4	1.8	5.8	14	4	8.8	0.3	57	16	5	75.3	7.1
Sept. 29.....	.26			6.6	2.5	5.8	34	4.2	6.5	0.1	a57	27	0	92.3	6.5
Sept. 29.....															60

## LITTLE RIVER NEAR STAR, N. C.

Feb. 24, 1955.....	60	17	0.03	3.0	1.4	3.8	21	3	2.5	0.0	45	13	0	47.9	7.3
Aug. 24.....	436			3.8	1.1	3.8	22	1.5	2.5	0.1	a42	14	0	48.0	6.9
Aug. 24.....															18

## PEE DEE RIVER NEAR ROCKINGHAM, N. C.

Feb. 23, 1955.....	8,080	8.7	0.03	4.1	1.7	7.6	23	5	5.2	1.1	54	17	0	69.7	7.0
Sept. 29.....	6,800			4.4	1.5	7.6	30	3.9	5.5	0.1	a50	17	0	71.5	6.9
Sept. 29.....															10

## LYNCHES RIVER NEAR BETHUNE, S. C.

May 4, 1955.....	59.1	6.0	0.50	2.0	0.7	3.5	12	3.2	1.5	0.0	37	8	0	39.5	6.6
June 23.....	96.3	7.9	.22	1.9	1.0	2.9	11	3.3	3.5	.0	37	9	0	34.7	6.4
June 23.....															33

## LITTLE LYNCHES RIVER NEAR BETHUNE, S. C.

May 4, 1955.....	45.2	5.5	0.66	1.9	0.6	3.6	6	6.8	3.2	0.0	39	7	2	36.8	5.9
June 23.....	65.4	8.7	.19	2.4	1.0	3.2	8	4.7	2.8	.0	41	10	3	36.7	6.4
June 23.....															27

## LUMBER RIVER AT BOARDMAN, N. C.

Feb. 1, 1955.....	1,240	8.9	0.67	2.4	0.7	3.8	1.1	4	4.2	0.5	54	9	7	61.4	5.0
Sept. 1.....	4,180			1.8	.4	3.8	4	4.2	5.3	0.0	a29	6	3	43.5	5.0
Sept. 1.....															190

a Sum of determined constituents.

## SANTÉE RIVER BASIN

## CATAMBA RIVER AT CATAMBA, N. C.

LOCATION --At gaging station at bridge on U. S. Highways 64 and 70, half a mile upstream from Lyle Creek, five-eighths of a mile upstream from Southern Railway bridge, one-half mile northeast of Catamba, Catawba County.

DRAINAGE AREA --535 square miles, including that of Lyle Creek.

RECORDS AVAILABLE --Chemical analyses, October 1945 to September 1955.

Water temperatures: October 1945 to September 1955.

EXTREMES 1954-55 --Dissolved solids: Maximum 47 ppm Feb. 20-28; minimum, 34 ppm May 1-10, 11-20.

Hardness: Maximum 15 ppm Aug. 11-20; minimum, 9 ppm May 1-10.

Specific conductance: Maximum daily, 156 microhos Feb. 11; minimum daily, 38.5 microhos June 17.

Water temperatures: Maximum 81°F July 18; minimum, 37°F Feb. 13.

EXTREMES 1945-46 1954-55 --Dissolved solids: Maximum, 47 ppm Feb. 20-28, 1955; minimum, 26 ppm Oct. 11-20, 1946, Jan. 21-31, Mar. 1-10, 11-20, 1947.

Hardness: Maximum, 17 ppm July 21-30, 1946; minimum, 9 ppm Oct. 11-20, 1945, Mar. 1-10, 11-20, 1946, May 1-10, 1955.

Water temperatures: Maximum, 81°F July 18, 1955; minimum, 37°F Feb. 13, 1955.

REMARKS --Records of specific conductance of daily samples and records of suspended matter of composite samples available in district office at Raleigh, N.C.

Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	242	7.0	0.01	3.3	1.5	4.8	1.4	21	3.5	4.5	0.1	0.5	39	14	0	56.5	6.9	15	2.7	2.4
Oct. 11-20	480	6.5	0.0	3.0	1.3	5.5	1.2	19	3.8	4.5	0	0.5	38	13	0	55.7	7.0	2	2.2	2.2
Oct. 21-31	730	8.7	0.1	3.1	1.5	4.8	1.4	20	4.0	4.5	0	0.6	39	14	0	56.2	6.9	20	3.0	2.2
Nov. 1-10	832	7.9	0.0	3.1	1.3	5.3	1.2	20	3.7	5.0	0	0.6	39	13	0	56.9	6.9	8	2.2	2.2
Nov. 11-20	677	7.1	0.0	3.4	1.2	5.3	1.2	20	4.0	4.8	0	0.4	43	14	0	57.4	7.0	7	2.6	2.2
Nov. 21-30	742	6.8	0.0	3.0	1.5	5.9	1.6	20	3.6	5.2	0	0.6	42	13	0	57.8	6.9	3	4.0	2.5
Dec. 1-10	887	8.5	0.0	3.2	1.2	5.7	1.6	19	3.5	5.2	0	0.6	41	13	0	56.0	6.9	5	4.3	2.2
Dec. 11-20	610	9.2	0.0	3.4	1.1	5.5	1.6	20	3.8	5.0	0	0.6	41	13	0	56.0	7.1	7	4.1	2.6
Dec. 21-31	1,080	7.0	0.3	3.0	1.2	5.8	1.5	20	3.9	5.5	0	0.6	42	13	0	60.6	7.0	5	---	---
Jan. 1-10, 1955	1,272	6.6	0.2	3.0	1.4	5.5	1.2	20	4.5	5.0	0	0.6	39	13	0	57.2	7.0	5	---	---
Jan. 11-20	657	8.8	0.0	2.9	1.4	5.5	1.2	22	4.4	5.5	0	0.6	42	13	0	56.6	7.0	5	3.6	2.6
Jan. 21-31	383	8.5	0.0	3.0	1.4	5.8	1.2	19	2.9	5.2	0	0.2	39	13	0	57.7	7.0	10	2.6	2.6
Feb. 1-10	1,200	7.0	0.2	3.2	1.1	5.9	1.0	20	4.7	5.2	0	0.4	42	12	0	54.5	7.0	8	---	3.0
Feb. 11-20	3,780	---	---	5.6	2.4	---	---	(b)	1	5.8	---	2.8	---	24	24	156	4.1	---	---	---
Feb. 21-31	1,850	---	---	7.4	1.4	---	---	37	1	4.5	---	3.4	---	24	0	37.3	7.2	---	---	---
Feb. 14-19	1,740	8.7	0.1	3.4	1.1	6.3	1.3	20	4.2	5.8	0	0.3	44	13	0	56.2	7.1	3	---	---
Feb. 20-28	948	6.3	0.1	3.4	0.9	6.4	1.2	20	4.3	5.5	0	0.5	47	12	0	56.5	6.9	2	0.9	2.9
Mar. 1-10	932	6.8	0.1	3.4	0.8	6.2	1.2	21	4.2	5.0	0	0.5	40	12	0	57.8	6.9	2	4.5	2.9
Mar. 11-20	958	8.7	0.0	3.0	0.9	5.1	1.4	17	3.9	4.3	0	1.0	37	11	0	58.3	6.7	3	2.3	2.3
Mar. 21-31	2,000	5.8	0.0	2.8	1.0	4.3	1.2	16	3.7	4.0	0	0.9	35	11	0	51.0	7.2	4	3.2	2.0

a Analyses for Feb. 11, 12-13 are not believed to be representative of the stream. Values are not included in the extremes and averages for the station.

b Contains 1.3 parts per million acidity as H<sup>+</sup>.

Apr. 1-10, 1955	723	4.0	.00	3.0	1.1	4.1	1.2	16	3.3	4.8	.1	0.8	36	12	0	51.3	6.8	6	2.7	1.8
Apr. 11-20	3,580	5.7	.00	3.0	1.1	4.1	1.4	15	3.9	4.0	.1	1.0	36	12	0	47.6	7.1	7	3.0	2.1
Apr. 21-30	1,580	9.3	.00	3.0	.6	3.9	1.3	15	3.7	3.5	.1	1.0	35	10	0	46.1	6.7	4	--	--
May 1-10	1,020	9.6	.00	2.8	.5	3.9	1.3	14	3.5	3.2	.1	1.9	34	9	0	44.9	7.1	5	--	--
May 3	1,810	--	--	2.9	.9	--	--	16	3.3	3.2	--	1.0	36	11	0	43.9	7.0	--	--	--
May 11-20	991	8.7	.00	3.0	.6	3.9	1.3	14	3.3	3.2	.1	.8	34	10	0	51.1	6.9	3	3.3	3.1
May 21-31	1,270	9.3	.02	3.7	1.0	3.7	1.4	17	3.5	3.0	.1	.9	36	13	0	46.6	7.4	7	3.7	2.4
June 1-10	954	9.5	.03	2.9	1.2	3.1	1.2	16	2.5	3.0	.1	1.2	36	12	0	45.5	7.3	15	2.7	2.0
June 11-20	1,120	8.7	.01	2.8	1.5	3.2	1.0	17	2.4	2.6	.0	1.1	35	13	0	45.5	7.4	16	2.2	2.2
June 21-31	1,600	8.7	.03	3.3	1.4	3.2	1.2	18	3.7	3.0	.1	.9	37	15	0	44.3	7.4	10	3.3	2.4
July 1-10	1,973	10.7	.03	3.0	1.1	3.0	1.5	16	3.2	2.5	.1	.8	36	12	0	45.4	7.6	14	3.3	2.9
July 11-20	1,800	10	.00	3.2	.9	3.5	1.4	17	3.6	3.0	.0	1.0	37	13	0	44.9	7.0	11	2.8	2.3
July 21-31	1,800	10	.00	3.6	1.0	3.4	1.2	18	2.9	3.5	.0	1.0	39	13	0	46.3	6.7	10	2.4	2.1
Aug. 1-10	2,050	9.9	.00	3.4	.9	3.7	1.4	18	3.5	3.5	.0	1.1	39	12	0	48.0	7.1	7	3.0	2.2
Aug. 11-20	1,810	12	.01	3.4	1.8	4.0	1.2	20	2.0	4.0	.1	.8	39	15	0	50.9	6.7	10	--	2.2
Aug. 21-31	1,930	9.9	.00	3.2	1.2	4.5	1.2	20	2.0	3.8	.0	.9	38	13	0	53.5	7.0	5	7.5	5.8
Sept. 1-10	1,480	9.3	.00	2.9	.6	4.7	1.2	18	2.3	4.2	.1	.7	39	11	0	54.2	6.8	3	--	2.3
Sept. 11-20	1,420	9.1	.00	3.2	1.2	5.1	1.2	20	3.7	4.0	.1	.4	40	13	0	55.1	6.7	3	2.4	2.2
Sept. 15	1,980	9.1	.02	2.8	1.3	6.8	2.0	20	2.5	6.5	.1	.8	--	12	0	67.2	6.4	7	--	--
Sept. 21-30	1,120	8.7	.00	3.2	1.2	5.3	1.3	20	2.4	5.0	.0	1.0	39	13	0	54.7	6.6	10	2.8	1.8
Average	1,205	8.4	0.01	3.1	1.1	4.8	1.3	18	3.5	4.3	0.1	0.7	39	12	0	53.0	--	7	3.4	2.5

## SANTEE RIVER BASIN--Continued

## CATAWBA RIVER AT CATAWBA, N. C.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at 7 a.m./

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

## SANTÉE RIVER BASIN

## INDIAN CREEK NEAR LABORATORY, N. C.

LOCATION. --Temperature recorder at gaging station on left bank 250 feet upstream from remains of Rudisill Mill Dam, half a mile upstream from highway bridge, 1½ miles upstream from mouth, 1½ miles south of Laboratory, Lincoln County, and 3½ miles south of Lincolnton.  
DRAINAGE AREA. --68.4 square miles.

RECORDS AVAILABLE. --Water temperatures: January 1953 to September 1955.

EXTREMES, 1954-55. --Water temperatures: Maximum, 82°F July 19, 28; minimum, 35°F Dec. 8, Jan. 19.

EXTREMES, 1953-55. --Water temperatures: Maximum, 84°F Aug. 1-2, 5, 1953; minimum, 33°F Jan. 13-15, 1954.

REMARKS. --Records of discharge for water year October 1954 to September 1955 given in WSP 1383.

Temperature (°F) of water, water year October 1954 to September 1955  
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.....	75	71	47	44	43	41	47	46	43	37	59	57	57	52	65	59	62	63	75	68	77	75	74	72
2.....	75	69	47	46	43	41	51	47	43	53	53	56	52	58	65	58	69	63	76	68	80	74	73	70
3.....	74	68	46	40	42	38	50	46	47	45	57	51	59	52	65	58	69	63	77	70	80	75	70	69
4.....	75	67	42	41	39	37	52	47	45	39	61	52	61	52	67	61	69	64	79	71	80	75	71	69
5.....	76	69	47	42	41	39	53	51	41	39	65	59	59	53	69	63	71	65	78	72	81	76	71	69
6.....	76	71	46	43	42	41	53	50	41	39	65	59	57	54	69	62	73	67	78	73	81	75	73	70
7.....	74	59	44	42	41	37	53	46	46	41	59	50	53	57	68	61	72	68	79	74	81	76	76	71
8.....	59	53	44	41	38	35	48	41	46	46	53	46	61	52	69	62	69	59	78	74	80	74	75	70
9.....	64	57	48	42	41	37	47	43	46	44	54	46	60	51	68	61	65	60	77	73	78	75	74	71
10.....	65	59	47	45	41	39	47	45	46	44	53	51	64	54	69	61	65	63	77	74	76	74	73	69
11.....	67	60	47	44	40	37	46	45	48	46	61	52	63	59	70	65	67	64	76	74	77	74	75	70
12.....	68	62	46	43	41	39	46	44	46	39	63	58	65	59	69	65	67	63	75	73	77	74	74	70
13.....	70	64	48	45	41	41	45	41	39	36	62	58	65	62	65	63	67	63	73	72	76	72	73	67
14.....	69	65	48	45	45	41	41	37	38	36	59	55	63	59	65	63	67	64	73	72	75	73	69	63
15.....	68	60	49	46	45	42	44	39	42	37	55	54	63	58	65	62	67	61	78	73	76	73	69	63
16.....	60	53	50	49	43	39	44	42	45	40	59	54	64	59	63	63	69	63	79	74	75	74	71	64
17.....	55	50	53	50	43	41	42	38	49	45	58	53	65	60	66	62	69	64	80	74	75	74	71	65
18.....	55	50	56	53	45	43	41	38	49	45	54	52	67	61	65	63	69	66	81	75	78	74	72	67
19.....	56	53	59	56	45	43	41	35	47	43	53	50	69	63	67	62	69	66	82	73	79	76	71	69
20.....	56	50	59	56	43	40	39	37	49	46	50	49	69	64	69	64	72	67	80	76	80	75	70	66
21.....	53	49	56	52	40	37	39	36	49	47	53	50	66	62	69	67	74	69	76	74	79	75	72	66
22.....	52	48	52	47	39	37	40	38	51	49	59	53	67	61	67	65	74	69	75	72	80	75	72	68
23.....	53	48	48	47	39	36	40	39	57	51	57	49	66	61	67	66	74	69	79	74	79	75	75	70
24.....	53	49	49	47	42	39	40	39	55	47	55	48	66	64	69	67	75	69	79	76	77	73	74	70
25.....	53	49	48	45	42	38	41	39	49	45	55	51	65	61	71	67	75	71	78	76	75	71	71	69
26.....	53	50	46	45	39	37	41	37	49	46	56	52	62	58	72	67	75	71	81	76	75	71	69	66
27.....	58	53	45	41	45	39	42	40	53	46	52	43	61	57	73	69	74	69	80	75	75	69	67	63
28.....	54	56	43	43	29	25	33	31	53	51	47	43	63	57	74	69	72	67	82	77	76	71	68	64
29.....	59	57	44	43	54	49	42	40	--	--	52	45	64	57	74	71	72	67	79	77	76	73	70	66
30.....	58	51	44	41	51	41	38	--	--	--	53	45	64	58	73	68	74	68	78	75	73	71	67	61
31.....	51	46	--	--	--	--	51	45	40	36	--	46	--	--	52	44	--	--	77	73	77	74	71	--
Average.....	62	57	48	45	43	40	44	41	47	43	57	51	63	58	68	64	70	65	78	74	78	74	72	68

## SANTEE RIVER BASIN--Continued

## MISCELLANEOUS ANALYSES OF STREAMS IN SANTEE RIVER BASIN IN NORTH CAROLINA AND SOUTH CAROLINA

Chemical analyses, in parts per million, water year October 1954 to September 1955

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (residue on evaporation at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium, mg-	Non- carbon- ate			
DAVIDSON CREEK NEAR CORNELIUS, N. C.																		
Oct. 4, 1954	1.27			8.5	2.6			48	1	3.2		1.0		32	0	96.8	7.0	
Sept. 21, 1955	2.19			9.5	2.7			54	4.1	2.0				35	0	101	7.1	
DUTCHMANS CREEK NEAR STANLEY, N. C.																		
Oct. 4, 1954	3.52			4.4	1.7			30	1	1.8		0.1		18	0	58.3	7.6	
Sept. 21, 1955	7.78			6.1	1.7			35	3.4	2.0				22	0	67.8	7.5	
FLOYD CREEK NEAR CLIFFSIDE, N. C.																		
Oct. 5, 1954	5.95			2.2	0.9			18	1	3.0		1.6		9	0	45.5	7.0	
Sept. 22, 1955	6.84			2.7	.8			20	1.5	2.5				10	0	48.6	6.8	
SECOND BROAD RIVER AT BOSTIC, N. C.																		
Oct. 5, 1954	42.9			3.2	1.5			54	12	26		3.3		14	0	204	6.8	
Sept. 22, 1955	44.9							28	8.5	35				19	0	203	6.6	
FIRST BROAD RIVER NEAR CASAR, N. C.																		
Oct. 5, 1954	15.2			2.3	1.5			19	1	1.5		1.0		12	0	37.6	6.7	
Sept. 21, 1955	14.5			3.3	1.6			22	1.3	1.0				15	0	41.7	7.0	
LITTLE RIVER NEAR SILVERSTREET, S. C.																		
Apr. 20, 1955	155	23	0.04	6.3	1.9	6.6	2.2	36	5.4	4.2	0.1	0.6	73	24	0	83.6	7.3	7
June 20	96.6	25	.03	5.5	2.8	7.6	2.0	39	4.3	4.2	.2	1.6	74	25	0	85.7	7.2	6
CONGAREE CREEK NEAR CAUCE, S. C.																		
May 10, 1955	73.2	0.5	0.18	1.0	0.4	0.9	0.0	4	0.7	1.5	0.0	0.0	15	4	1	12.9	5.9	35
June 17	90.0	4.0	.16	.5	.4	1.3	.1	3	1.2	1.8	.0	1.0	18	3	1	14.5	5.5	22

SAVANNAH RIVER BASIN  
MISCELLANEOUS ANALYSES OF STREAMS IN SAVANNAH RIVER BASIN IN SOUTH CAROLINA  
Chemical analyses, in parts per million, water year October 1954 to September 1955

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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			
Mar. 16, 1955, .....	99.2	11	0.00	2.1	1.3	2.1	0.8	16	1.6	2.0	0.0	0.2	30	11	0	32.3	6.9	5
May 25, .....	173	11	.06	2.9	.9	2.1	1.0	16	1.7	1.0	.1	.8	29	11	0	28.4	7.2	17

CHAUGA RIVER NEAR WESTMINSTER

## PART 2B. SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS, OGEECHEE RIVER TO PEARL RIVER

## ST. JOHNS RIVER BASIN

## JANE GREEN CREEK NEAR DEER PARK, FLA.

LOCATION.--At gaging station at highway bridge, 1½ miles southeast of Deer Park, Osceola County, and 2 miles downstream from confluence of Crabgrass and Bull Creeks.--248 square miles.

DRAINAGE AREA.--248 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Nov. 17, 1954.....	1,180	3.7	0.24	7.1	1.3	6.2		18	3.0	13		0.3	44	23	8	74.6	6.6	180
Dec. 15.....	116	12	.08	8.4	1.2	5.5		14	3.5	16		.1	54	26	14	88.5	6.6	150
Feb. 4, 1955.....	203	3.2	.08	9.4	1.2	7.4		20	2.5	18		.0	52	28	12	95.7	7.2	120
Mar. 16.....	18	5.3	.11	11	2.2	8.0		26	1.5	22		.1	63	36	15	123	6.6	120
Apr. 26.....	5.9	1.9	.05	11	1.1	8.5		24	.8	21		.4	57	32	12	125	6.4	150
June 7.....	0	19	.04	10	2.2	14		24	5.0	26		2.8	91	34	14	158	5.9	90
July 20.....	228	4.0	.12	8.5	.8	4.9		19	2.2	12		.6	43	24	9	79.1	6.4	340
Sept. 1.....	423	3.8	.14	6.1	.9	3.4		17	3.0	6.5		.1	32	19	5	62.4	6.8	270



## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR MELBOURNE, FLA.

LOCATION.--At gaging station, 10 feet upstream from bridge on U. S. Highway 192, 1.0 mile downstream from Sawgrass Lake, 1.8 miles upstream from Lake Washington, and 9.2 miles west of Melbourne, Brevard County.

DRAINAGE AREA.--874 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1955.

REMARKS.--Values reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to September 1955

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			
Nov. 18, 1954.....	1,000	2.5	0.15	7.1	1.3	10		22	2.0	18		0.2	52	23	5	91.3	8.6	100
Dec. 15.....	684	6.2	.07	8.8	2.4	8.6		17	2.5	24		.0	61	32	18	115	8.5	110
Feb. 1, 1955.....	602	1.4	.05	8.2	2.1	12		22	2.0	25		.0	62	29	11	119	7.3	70
Mar. 17.....	95	4.5	.09	9.4	2.3	13		24	2.0	28		.0	71	33	13	140	6.7	100
Apr. 28.....	a 0	2.3	.07	11	2.1	13		25	.8	30		.5	72	36	16	154	6.5	75
June 7.....	a 0	.3	.04	10	2.4	17		25	3.0	34		.0	79	35	14	172	6.6	90
July 20.....	1,000	3.9	.15	9.4	1.1	8.0		24	2.8	16		.3	54	28	8	103	8.6	260
Sept. 2.....	1,080	4.5	.11	8.7	1.5	6.6		23	3.5	14		.0	50	28	9	90.8	8.5	270

a Stage-discharge relation indefinite; discharge estimated on basis of records for nearby stations.

## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR COCOA, FLA.

LOCATION --At State Highway 570, approximately half a mile downstream from outlet of Lake Poinsett, 10½ miles west of Cocoa, Brevard County.

DRAINAGE AREA --1,247 square miles.

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

Water temperatures: October 1953 to September 1955.

EXTREMES 1954-55 --Dissolved solids: Maximum, 436 ppm June 11-20; minimum, 130 ppm Nov. 11-20.

Hardness: Maximum, 108 ppm June 11-20; minimum, 40 ppm Nov. 11-20.

Specific conductance: Maximum, 632 micromhos June 23; minimum daily, 161 micromhos Nov. 24.

Water temperatures: Maximum, 89°F Aug. 13; minimum, 48°F Feb. 15.

EXTREMES 1953-55 --Dissolved solids: Maximum, 436 ppm June 11-20, 1955; minimum, 103 ppm Oct. 21-31, 1953.

Hardness: Maximum, 108 ppm June 11-20, 1955; minimum, 30 ppm Oct. 21-31, 1953.

Specific conductance: Maximum, 632 micromhos June 23, 1955; minimum daily, 107 micromhos Oct. 10, 1953.

Water temperatures: Maximum, 89°F Aug. 13, 1955; minimum, 48°F Feb. 15, 1955.

REMARKS --Records of specific conductance of daily samples available in district office at Ocala, Fla. Values reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1954 to September 1955 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 1954 to September 1955

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./ml. at 180°C	Non-carbonate			
Oct. 1-10, 1954	2,134	6.2	0.19	15	5.6	31	0.5	29	12	62	0.1	0.1	211	60	37	286	6.6	100
Oct. 11-20	2,941	5.2	12	15	4.3	28	5	26	12	58	2	2	192	55	34	261	6.5	100
Oct. 21-31	2,399	5.4	11	12	3.9	21	4	26	8.2	41	0	0	154	46	25	201	6.7	120
Nov. 1-10	1,952	4.4	12	13	3.3	21	4	27	8.2	41	0	0	154	46	24	200	6.8	120
Nov. 11-20	1,970	3.4	11	11	3.1	18	2	25	6.5	35	0	0	130	40	20	173	6.7	120
Nov. 21-30	1,863	3.2	12	11	3.8	20	2	26	7.2	40	0	0	140	43	22	189	6.8	100
Dec. 1-10	1,590	15	29	13	3.5	21	4	21	7.5	47	1	3	165	47	30	204	6.7	130
Dec. 11-20	1,410	13	13	12	3.4	20	4	24	6.8	44	24	2	154	44	24	199	6.8	100
Dec. 21-31	1,213	3.7	13	12	3.8	22	4	23	8.0	46	0	3	147	46	27	210	6.9	100
Jan. 1-10, 1955	1,057	3.4	28	13	4.3	21	5	21	7.8	51	1	1	164	50	33	222	6.7	100
Jan. 11-20	885	1.8	0.00	10	3.9	23	5	24	8.2	51	1	1	161	48	29	225	7.0	100
Jan. 21-31	852	1.7	22	14	5.1	26	5	24	9.0	61	0	0	187	56	36	258	6.9	100
Feb. 1-10	788	3.6	48	18	5.7	30	7	20	12	78	1	1	250	68	52	317	6.7	90
Feb. 11-20	759	4.0	0.9	17	4.9	34	8	27	15	72	1	2	204	63	40	314	7.0	80
Feb. 21-28	748	11	07	17	5.1	36	8	28	14	71	1	1	216	63	40	323	7.1	75
Mar. 1-10	609	7.8	0.0	18	5.5	35	8	30	13	72	1	1	241	68	43	335	6.7	90
Mar. 11-20	455	7.2	07	18	4.9	33	6	30	11	70	1	3	213	65	40	318	7.0	80
Mar. 21-31	343	8.6	08	17	4.9	32	7	29	11	69	1	7	208	63	39	313	6.9	80

Apr. 1-10, 1955 .....	308	3.7	.06	18	5.5	33	.5	29	12	73	.1	.3	219	68	44	326	7.0	75
Apr. 11-20 .....	260	3.0	.06	20	6.3	41	.7	32	15	87	.1	.4	263	76	50	386	7.0	80
Apr. 21-30 .....	228	4.7	.06	22	6.6	47	.7	35	16	94	.1	.4	288	82	53	423	7.1	70
May 1-10 .....	186	2.6	.06	23	6.7	49	.8	32	17	103	.1	.6	296	85	59	446	7.1	80
May 11-20 .....	179	4.1	.04	24	7.3	56	.9	34	20	113	.1	.6	319	90	62	488	7.1	65
May 21-31 .....	166	2.4	.05	24	8.8	61	1.1	36	20	124	.1	.5	349	96	67	531	7.0	60
June 1-10 .....	145	2.5	.01	26	9.3	68	1.6	38	26	139	.1	.4	413	103	72	586	6.9	50
June 11-20 .....	130	4.3	.01	27	9.9	69	1.6	39	27	143	.1	.4	436	108	76	603	6.9	50
June 21-30 .....	180	2.3	.01	27	9.4	68	1.4	38	29	136	.1	.3	418	106	75	584	6.9	55
July 1-10 .....	380	4.2	.10	25	7.7	52	1.2	29	36	109	.1	.3	348	94	70	487	6.5	140
July 11-20 .....	710	6.0	.08	25	8.0	48	1.3	37	34	100	.1	.2	309	95	65	478	6.7	140
July 21-31 .....	925	5.4	.13	21	5.9	36	1.2	35	24	77	.1	.4	249	77	48	387	6.8	160
Aug. 1-10 .....	1,112	8.6	.15	18	4.2	25	1.1	38	13	56	.1	.4	201	62	31	276	6.9	180
Aug. 11-20 .....	1,160	7.7	.20	16	3.8	22	.9	37	10	48	.1	.4	182	56	25	240	6.9	190
Aug. 21-31 .....	1,354	7.5	.16	17	4.4	25	.9	37	12	54	.1	.4	201	60	30	267	7.0	180
Sept. 1-10 .....	1,479	6.0	.11	16	4.8	25	.5	36	12	49	.1	.4	182	60	30	248	7.0	150
Sept. 11-20 .....	1,758	8.3	.12	17	5.1	28	.6	38	13	54	.1	.3	199	63	32	274	7.2	150
Sept. 21-30 .....	2,091	8.8	.11	16	5.5	26	.4	38	12	50	.1	.2	182	62	31	254	7.1	140
Average .....	1,022	5.6	0.12	18	5.5	35	0.7	30	15	73	0.1	0.3	232	67	42	328	6.9	106

## ST. JOHNS RIVER BASIN--Continued

## ST. JOHNS RIVER NEAR COCOA, FLA.--Continued

Temperature (°F), of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	66	68	68	58	70	62	74	84	86	85	87
2	67	67	68	68	61	70	66	76	81	86	85	86
3	65	59	65	68	62	74	66	76	78	87	84	86
4	66	64	63	66	64	70	65	76	78	85	86	86
5	65	66	63	66	64	76	70	--	78	85	86	87
6	66	64	65	66	63	76	71	78	82	86	85	87
7	67	63	60	66	67	75	71	78	81	85	85	87
8	65	63	69	65	69	64	73	80	83	86	85	85
9	67	65	61	65	64	69	72	78	78	87	85	84
10	67	65	62	66	65	62	72	82	79	83	86	85
11	--	68	59	68	69	67	74	84	80	84	86	83
12	66	69	61	63	55	70	73	--	80	86	87	87
13	66	70	63	66	50	74	75	84	80	83	89	87
14	68	71	62	57	54	74	74	82	82	85	84	87
15	70	71	58	57	48	76	74	80	85	87	86	86
16	66	72	55	59	59	77	74	80	85	87	86	86
17	68	74	58	63	60	78	75	80	80	83	84	86
18	68	73	60	63	60	78	75	77	80	83	87	84
19	68	72	58	63	63	78	75	78	80	83	87	85
20	70	71	53	59	63	74	75	78	81	83	86	84
21	69	67	51	60	65	76	75	78	84	83	88	82
22	69	67	51	62	66	76	76	78	83	87	--	84
23	70	69	53	64	66	67	76	80	84	83	86	84
24	71	66	55	64	66	69	78	78	85	84	87	85
25	71	66	65	57	65	68	78	84	84	84	86	85
26	72	64	57	56	66	70	78	84	85	83	86	84
27	73	63	60	58	66	64	74	84	86	83	86	84
28	74	65	60	57	68	59	75	82	84	85	86	86
29	74	72	62	58	--	54	75	82	86	84	86	86
30	71	66	64	55	--	57	75	84	78	86	86	86
31	69	--	67	55	--	59	--	80	--	85	86	--
Average	68	67	60	62	62	70	73	80	82	85	86	85

## 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.--October 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, October 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Oct. 2, 1954.....	2,020	3.2	0.06	17	7.7	55		21	21	110		0.0	224	74	57	458	6.8	140
Nov. 8.....	2,020	4.1	.16	14	4.1	33		26	12	64		.1	144	52	31	274	6.9	140
Dec. 23.....	1,420	1.7	.05	15	6.7	46		21	17	92		.2	189	65	48	388	6.7	100
Jan. 31, 1955.....	934	1.0	.09	23	11	89		24	35	169		.5	341	102	83	662	7.1	80
Mar. 14.....	552	4.0	.01	21	7.7	55		34	21	109		.0	235	84	56	459	7.1	90
Apr. 26.....	277	.9	.05	23	9.9	64		32	25	131		1.1	271	98	72	559	6.8	65
May 11.....	202	3.3	.04	26	9.8	67		36	27	137		.3	288	106	76	551	6.7	90
June 6.....	144	4.1	.01	30	11	93		35	38	180		.0	373	120	92	734	6.7	55
July 18.....	692	2.6	.11	29	10	77		40	37	148		.1	324	114	80	651	6.9	180
Aug. 29.....	1,210	4.3	.09	23	9.4	74		34	35	136		.0	299	96	68	580	6.8	180

ST. JOHNS RIVER BASIN--Continued  
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 August 1955.

REMARKS ---Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, October 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Nov. 8, 1954	47	6.9	0.30	21	8.2	61	61	48	28	104		4.8	258	86	47	477	7.0	140
Dec. 20	105	12	.24	15	5.5	29	28	28	16	56		5.8	154	80	37	295	6.8	180
Jan. 31, 1955	102	6.0	.21	15	4.8	30	30	28	14	58		2.8	145	57	34	292	6.8	140
Mar. 14	33	8.5	.11	28	11	73	73	63	34	127		9.0	322	115	64	620	7.0	80
Apr. 26	23	6.3	.07	30	13	83	83	78	38	141		8.2	358	128	64	703	7.1	65
June 6	20	5.6	.04	30	11	85	85	79	41	139		1.7	352	120	56	677	7.0	90
July 18	137	6.9	.23	13	3.3	24	24	28	16	40		1.4	119	46	23	228	6.5	340
Aug. 29	220	6.1	.19	11	1.8	14	14	23	10	26		.5	81	35	16	155	6.5	270

ST. JOHNS RIVER BASIN--Continued  
ST. JOHNS RIVER ABOVE LAKE HARNEY, NEAR GENEVA, FLA.

LOCATION --At gaging station at bridge on State Highway 46, 1 mile upstream from Lake Harney, 5½ 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 August 1955.

REMARKS--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 are given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium, magnesium	Non-carbonate			
Nov. 9, 1954	2,130	2.7	0.17	18	7.8	69		28	22	128		0.2	77	54	513	6.9	160
Dec. 20	1,670	3.6	.09	20	9.5	70		27	22	139		.4	69	67	582	6.7	110
Feb. 1, 1955	1,080	1.0	.11	32	17	150		29	58	278		.3	150	126	1,040	7.2	100
Mar. 15	677	8.8	.08	32	17	135		36	53	254		.5	150	120	1,000	7.0	75
Apr. 27	309	1.2	.04	39	23	172		40	70	325		1.4	192	159	1,330	7.0	65
June 7	142	3.4	.02	77	43	365		48	199	680		.1	369	330	2,580	6.9	70
July 19	870	3.4	.09	43	21	181		48	96	318		.5	194	154	1,310	7.1	100
Aug. 31	1,380	3.9	.08	30	14	123		34	56	222		.1	132	104	905	6.7	270

## INDIAN RIVER BASIN

## ELLIS CANAL NEAR INDIAN RIVER CITY, FLA.

LOCATION.--At gaging station in Delapine Grant, Brevard County, near center of span on downstream side of bridge, 1 mile upstream from Indian River, and 1½ miles south of Indian River City.

RECORDS AVAILABLE.--Chemical analyses: September 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses in parts per million, September 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Sept. 27, 1954	11.2	9.5	0.71	120	27	409		136	199	700		3.1	1,530	410	308	1,840	7.1	160
Nov. 8	2.82	12	.32	196	39	310		260	280	595		2.6	1,540	650	436	2,680	7.6	50
Dec. 13	2.74	14	.04	197	40	296		236	231	610		3.6	1,510	656	462	2,750	7.4	55
Jan. 31, 1955	2.68	10	.06	196	49	316		233	273	637		3.6	1,600	690	500	2,750	7.6	45
Mar. 15	2.26	14	.04	194	44	319		241	247	640		2.9	1,580	665	468	2,760	7.4	45
Apr. 25	1.97	8.7	.01	182	42	311		253	231	605		2.3	1,510	626	419	2,670	7.3	55
June 6	1.68	9.8	.02	182	30	290		270	210	545		1.5	1,400	578	356	2,490	7.6	50
July 19	2.78	8.0	.01	194	35	332		258	272	606		1.8	1,580	628	416	2,720	7.3	55
Aug. 29	2.30	8.2	.03	193	39	330		246	278	615		1.6	1,590	642	440	2,740	7.4	80

## CLEAR LAKE NEAR COCOA, FLA.

LOCATION.--At staff gage on southeast shore of Clear Lake, 2½ miles northwest of Cocoa, Brevard County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 9, 1954		3.3	0.22	19	11	85		24	24	165		0.2	320	93	73	646	6.8	140
Dec. 14		13	.12	10	6.3	51		14	32	82		.3	202	51	39	352	6.3	90
Jan. 31, 1955		5.9	.08	8.0	3.8	29		14	9.0	54		1.3	118	36	24	229	6.4	80
Mar. 18		1.9	.21	8.2	5.2	36		12	9.0	72		.1	139	42	32	297	6.5	180
Apr. 28		2.4	.11	8.9	5.5	40		14	9.0	79		.1	152	45	33	320	6.2	170
June 6		3.3	.15	9.1	4.9	43		12	12	80		.2	159	43	33	327	6.2	180
July 19		3.3	.08	9.8	5.4	47		10	15	88		.1	174	47	38	352	6.3	180
Sept. 2		4.4	.08	16	8.8	72		17	24	137		.2	271	76	62	544	6.3	75



INDIAN 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  $2\frac{1}{2}$  miles northwest of Cocoa, Brevard County.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1955.  
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 9, 1954	24	5.6	0.41	4.6	2.6	16	12	12	1.0	32		0.2	68	22	12	147	6.3	400
Dec. 14	10	3.5	.07	3.3	2.6	15	8	8	2.5	30		.2	61	19	12	127	5.8	360
Jan. 31, 1955	7.8	1.4	.11	2.4	2.9	17	4	4	2.5	32		.1	60	15	12	126	5.4	280
Mar. 16	6.2	2.8	.15	2.8	2.7	20	5	5	1.5	40		.1	73	18	14	149	5.4	250
Apr. 28	5.1	1.1	.09	3.3	2.1	22	7	7	1.8	40		.1	74	17	11	163	5.3	260
June 6	4.0	3.0	.12	2.8	1.5	14	6	4	4.5	24		.1	54	13	8	110	5.4	250
July 19	5.1	3.5	.07	1.7	1.4	12	3	3	4.2	21		.3	46	10	8	106	5.0	180
Sept. 2	5.0	3.5	.13	3.5	2.2	8.3	6	6	6.5	17		.2	44	18	13	91.0	5.7	320

CRANE CREEK AT MELBOURNE, FLA.

LOCATION.--At gaging station, 24 feet upstream from bridge on U. S. Highway 192,  $1\frac{1}{2}$  miles west of city hall in Melbourne, Brevard County, and  $2\frac{1}{2}$  miles upstream from Indian River.  
DRAINAGE AREA.--12.6 square miles.  
RECORDS AVAILABLE.--Chemical analyses: November 1954 to September 1955.  
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 17, 1954	24	7.8	0.55	67	10	50	50	156	30	112		0.5	355	208	80	650	7.6	100
Dec. 14	10	13	.07	103	13	61	61	233	36	151		1.2	493	310	120	905	7.6	60
Feb. 3, 1955	7.8	14	.02	112	14	75	40	246	40	182		.6	559	337	136	1,090	7.8	45
Mar. 16	6.2	18	.02	126	24	96	96	251	61	250		1.3	700	413	208	1,300	7.7	45
Apr. 26	5.1	11	.16	126	18	86	86	276	46	214		.1	637	388	162	1,210	7.9	--
June 8	4.0	13	.00	126	25	87	87	278	51	230		.9	670	418	190	1,250	7.5	45
July 22	5.1	20	.02	120	15	94	94	279	45	205		.3	636	361	132	1,150	7.6	55
Sept. 1	5.0	13	.01	127	17	95	95	274	48	226		.2	661	387	162	1,210	7.6	55

## 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 August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses in parts per million, November 1954 to August 1955.

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 20, 1954.....	49	9.3	0.54	62	12	43		156	47	85		0.0	336	204	76	597	7.5	120
Jan. 1, 1955.....	10	14	.13	55	7.5	40	40	153	28	71		.1	291	168	42	492	7.6	70
Jan. 23.....	11	15	.03	56	11	44	44	160	34	80		.0	319	184	54	562	7.6	45
Mar. 8.....	9	10	.07	51	9.2	36		148	26	68		.1	273	165	44	515	7.5	50
Apr. 19.....	10	7.6	.23	47	8.7	29		137	18	60		.2	238	153	41	464	7.4	45
June 1.....	10	21	.01	65	14	55		189	22	114		.1	384	220	64	739	7.4	55
July 12.....	16	21	.19	77	16	62		208	50	120		.9	449	258	88	802	7.5	60
Aug. 26.....	51	15	.34	62	13	51		158	46	100		.5	366	208	78	659	7.6	120

## MAIN CANAL AT VERO BEACH, FLA.

LOCATION.--At gaging station, 8 feet upstream from dam and 0.6 miles northwest of Vero Beach, Indian River County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 20, 1954.....	144	8.6	0.49	49	8.7	33		121	35	66		0.1	261	158	59	462	7.6	140
Jan. 2, 1955.....	16	14	.07	88	16	67		227	54	134		.2	485	286	100	860	7.7	70
Jan. 23.....	8.6	19	.01	86	23	79		231	63	159		.3	545	309	120	937	7.7	40
Mar. 9.....	21	28	.03	90	18	69		234	58	140		.3	518	298	107	932	7.6	50
Apr. 19.....	19	11	.17	77	15	54		198	49	112		.9	417	254	92	778	7.4	50
June 1.....	13	17	.01	82	20	88		227	52	168		.3	539	286	100	985	7.5	50
July 14.....	13	11	.11	74	11	60		198	48	105		.6	408	230	68	730	7.4	75
Aug. 26.....	68	14	.25	62	13	59		152	56	107		.8	389	208	84	688	7.5	120

## 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 August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Nov. 20, 1954.....	68	10	0.36	63	12	45		161	50	85		0.0	344	206	74	616	7.6	100
Jan. 1, 1955.....	40	12	.10	86	19	74		220	61	148		.0	508	292	112	809	7.6	70
Jan. 23.....	40	18	.05	90	28	94		229	76	196		.1	615	340	152	1,100	7.5	30
Mar. 8.....	29	21	.06	85	19	68		218	57	142		.1	499	290	112	870	7.7	55
Apr. 19.....	27	16	.24	77	16	62		202	56	120		.4	448	258	92	818	7.7	45
June 1.....	45	17	.01	77	27	118		190	80	227		.4	640	303	148	1,180	7.3	45
July 14.....	46	15	.02	76	14	67		196	54	124		.8	448	247	86	1,808	7.5	80
Aug. 26.....	51	11	.15	55	15	68		138	48	130		.4	396	198	86	725	7.4	100

## ST. LUCIE RIVER BASIN

## NORTH FORK ST. LUCIE RIVER AT WHITE CITY, FLA.

LOCATION.--At gaging station, 10 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 Ft. Pierce.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Nov. 20, 1954.....	--	5.6	0.14	43	9.4	41		109	48	68		0.1	269	146	57	479	7.5	80
Jan. 2, 1955.....	--	15	.05	64	19	86		137	77	154		.1	482	238	109	876	7.6	30
Jan. 22.....	106	18	.01	87	29	114		201	104	220		.6	612	336	172	1,210	7.6	20
Mar. 10.....	74.6	12	.01	96	34	134		214	124	260		.3	765	360	204	1,410	7.7	20
Apr. 20.....	66.5	15	.05	91	26	111		206	112	205		.0	661	324	165	1,200	7.8	24
June 2.....	--	16	.00	96	23	116		208	124	203		.8	690	334	184	1,220	7.5	40
July 13.....	1,040	5.8	.16	25	3.3	19		64	24	34		.3	146	84	32	280	6.9	100
Aug. 23.....	1,850	4.7	.09	17	5.5	17		40	19	34		.6	118	65	32	236	7.0	75

## DIVERSION CANAL 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 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Nov. 20, 1954.....	--	2.9	0.17	23	5.0	21		57	15	47		0.1	143	82	35	283	7.1	120
Jan. 2, 1955.....	--	16	.15	67	16	83		169	63	148		.4	477	233	94	856	7.6	80
Jan. 22.....	5.82	16	.03	106	24	109		278	98	191		.3	681	363	135	1,190	7.6	45
Mar. 10.....	5.83	12	.04	106	38	171		275	130	310		1.4	906	428	202	1,640	7.7	90
Apr. 20.....	5.53	13	.01	110	37	186		262	143	332		.3	950	426	212	1,720	8.0	36
June 2.....	16.6	14	.05	70	25	101		133	68	210		.2	574	278	166	1,160	7.1	30
July 13.....	--	7.6	.27	25	8.4	24		73	18	50		1.0	170	87	37	324	6.8	260
Aug. 26.....	162	5.2	.08	26	6.1	26		64	24	49		.6	169	90	38	317	7.1	140

## LAKE OKEECHOBEE AND THE EVERGLADES

## HARNEY POND CANAL AT FLORIDA HIGHWAY 78, NEAR MOORE HAVEN, FLA.

LOCATION --At bridge on Florida Highway 78, approximately 14½ miles northeast of Moore Haven, Glades County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to July 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. 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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Nov. 10, 1954.....		5.8	0.68	43	4.7	23		116	28	38		0.5	201	127	32	347	7.6	160
Dec. 15.....		9.3	.59	32	4.7	23		94	39	31		.2	196	109	32	298	7.2	230
Jan. 27, 1955.....		9.3	.50	9.6	4.9	11		31	18	17		.6	80	44	19	123	6.0	200
Mar. 8.....		5.5	.62	40	5.6	12		110	18	28		.2	164	123	33	336	7.6	200
Apr. 26.....		9.6	.13	52	6.9	25		157	16	48		.0	235	158	29	439	7.5	90
June 1.....		9.4	.46	25	2.3	16		73	9.8	25		.5	124	72	22	219	6.8	110
July 16.....		9.0	.73	21	2.1	7.3		49	11	18		.0	165	61	21	179	6.6	440

## INDIAN PRAIRIE CANAL AT FLORIDA HIGHWAY 78, NEAR OKEECHOBEE, FLA.

LOCATION --At bridge on Florida Highway 78, approximately 16 miles southwest of Okeechobee, Okeechobee County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station.

Chemical analyses, in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Nov. 10, 1954.....		7.4	0.55	28	4.4	8.6		48	42	16		1.4	132	88	49	227	7.3	200
Dec. 15.....		4.9	.46	35	6.5	8.9		14	96	15		1.0	175	114	103	284	6.5	110
Jan. 27, 1955.....		4.0	.26	26	6.1	6.7		16	66	15		1.9	134	90	77	237	6.3	140
Mar. 8.....		8.8	.50	24	5.6	7.8		40	42	16		1.1	126	83	50	219	7.0	300
Apr. 26.....		5.5	.40	20	3.9	10		57	18	16		.8	103	66	19	195	7.0	110
June 1.....		4.3	.41	25	6.0	5.0		28	51	15		.9	122	87	64	221	6.4	130
July 18.....		7.2	.17	27	5.8	1.4		20	62	9.5		.0	125	91	75	235	6.0	520
Aug. 29.....		10	1.4	31	7.9	9.8		38	77	14		.0	208	110	79	266	6.5	520

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## ISTORPOGA 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 ¾ miles northwest of Cornwell Post Office, Highlands County.  
DRAINAGE AREA.--624 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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* (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mag-nesium	Non-carbonate			
Nov. 10, 1954.....	639	1.4	0.23	4.2	1.3	5.5		10	6.5	8.0		0.1	33	16	8	71.0	6.7	140
Dec. 14.....	355	8.0	.10	4.6	2.1	5.3		10	8.5	8.5		.1	45	20	12	67.4	6.4	110
Jan. 26, 1955.....	286	2.7	.10	8.4	5.4	1.3		13	20	10		.6	55	43	32	112	6.3	100
Mar. 7.....	262	4.1	.10	5.2	1.7	6.0		10	10	10		.3	42	20	12	77.0	6.6	100
Apr. 22.....	97	2.7	.06	6.1	3.8	5.8		13	12	14		.6	51	31	20	105	6.4	65
May 31.....	15	2.4	.05	6.3	2.8	6.6		12	12	12		.4	48	25	15	96.5	6.1	75
July 18.....	265	1.0	.10	6.5	2.8	4.8		13	12	10		.4	43	27	16	96.3	6.2	75
Aug. 29.....	233	1.3	.01	5.2	.7	5.0		12	6.0	7.5		.0	32	16	6	98.4	6.1	65

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
KISSIMEE RIVER NEAR OKEECHOBEE, FLA.

LOCATION (revised) --At gaging station at bridge on State Highway 70 bridge, 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 1955.

Water temperatures: October 1953 to September 1955.

EXTREMES, 1954-55 --Dissolved solids: Maximum, 115 ppm June 21-30; minimum, 54 ppm May 21-31.

Hardness: Maximum, 39 ppm June 21-30; minimum, 19 ppm Oct. 1-10, 11-20, Dec. 1-10.

Specific conductance: Maximum daily, 178 micromhos June 24; minimum daily, 56.8 micromhos Oct. 6.

Water temperatures: Maximum, 89°F Aug. 22-24; minimum 55°F Dec. 22.

EXTREMES, 1940-41, 1953-55 --Dissolved solids: Maximum, 115 ppm June 21-30, 1955; minimum, 51 ppm Oct. 21-31, 1953.

Hardness: Maximum, 39 ppm June 21-30, 1955; minimum, 12 ppm Oct. 11-20, 1953.

Specific conductance: Maximum daily, 178 micromhos June 24, 1954; minimum, 42.4 micromhos Oct. 18, 1953.

Water temperatures: Maximum, 89°F Aug. 22-24, 1955; minimum, 55°F Dec. 22, 1954.

REMARKS --Records of specific conductance of daily samples available in district office at Ocala, Fla. Values reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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-nessum	Non-carbonate			
Oct. 1-10, 1954	2,776	5.6	0.12	4.4	1.9	5.8	0.2	16	5.0	9.2	0.1	0.1	62	19	6	67.2	6.5	100
Oct. 11-20	2,927	5.8	0.11	4.2	2.3	5.4	0.2	14	4.2	9.8	0	0.1	61	19	8	66.9	6.3	100
Oct. 21-31	2,266	14	0.1	4.8	2.3	5.9	0.2	15	5.8	10	0	0.1	64	20	8	72.2	6.4	90
Nov. 1-10	1,889	13	0.17	4.8	2.2	6.5	0.4	16	6.0	11	0	0.3	66	21	8	75.5	6.5	100
Nov. 11-20	1,947	9.0	0.11	4.4	2.2	5.8	0.6	14	10	11	0	0.2	68	20	9	72.5	6.4	100
Nov. 21-30	1,914	7.9	0.11	4.2	2.2	6.0	0.5	12	5.5	11	0	0.1	60	20	10	71.0	6.4	100
Dec. 1-10	1,752	2.7	0.09	4.6	1.9	6.4	0.4	13	6.8	12	0	0.3	63	19	9	74.4	6.3	90
Dec. 11-20	1,610	2.8	0.09	4.6	2.3	6.5	0.6	14	6.8	12	0	0.3	61	19	10	77.9	6.4	90
Dec. 21-31	1,498	4.3	0.19	5.2	2.6	6.4	0.7	12	6.2	17	0	0.3	79	24	14	90.1	6.3	90
Jan. 1-10, 1955	1,385	3.4	0.14	5.6	2.6	6.6	0.6	16	6.5	15	0	0.3	78	25	12	89.1	6.6	90
Jan. 11-20	1,257	6.0	0.17	5.4	2.2	6.2	0.5	13	6.2	16	0	0.2	83	22	12	84.4	6.6	90
Jan. 21-31	1,383	2.1	0.12	5.0	1.8	6.7	1.0	14	6.2	15	0	0.2	68	20	8	83.9	6.6	90
Feb. 1-10	1,943	3.7	0.09	5.2	2.2	7.1	1.0	14	6.2	16	0	0.3	73	22	11	87.0	6.6	75
Feb. 11-20	1,193	5.1	0.10	5.4	2.2	6.6	0.7	14	6.8	14	0	0.3	73	22	11	83.6	6.8	75
Feb. 21-28	1,146	3.4	0.10	5.4	2.1	6.6	0.6	15	6.0	13	0	0.4	81	22	10	80.6	6.9	70
Mar. 1-10	1,059	2.5	0.04	5.7	2.1	6.4	0.4	16	7.0	12	0	0.8	67	23	10	84.6	6.5	55
Mar. 11-20	920	1.9	0.06	5.4	2.7	6.4	0.5	16	7.5	12	0	0.6	81	25	11	87.5	6.4	65
Mar. 21-31	808	3.3	0.06	6.3	2.4	6.5	0.6	18	6.5	14	0	0.8	66	26	11	92.2	6.6	60

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## KISSIMEE RIVER NEAR OKEECHOBEE, FLA.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--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			
Apr. 1-10, 1955.....	830	2.8	0.05	6.5	2.5	6.9	0.8	17	7.5	14	0.1	0.8	78	26	13	97.5	6.6	75
Apr. 11-20.....	734	2.9	.10	6.3	3.0	6.4	.6	16	6.0	16	.1	.7	59	28	15	98.1	6.3	55
Apr. 21-30.....	671	2.8	.09	7.2	2.4	6.7	.6	17	6.0	16	.1	.6	73	28	14	102	6.3	50
May 1-10.....	593	3.7	.06	7.2	2.9	6.9	.6	18	7.2	15	.1	1.0	56	30	15	100	6.3	50
May 11-20.....	469	3.5	.08	7.2	2.1	7.5	.6	20	6.2	14	.1	.7	60	27	10	104	6.3	50
May 21-31.....	421	2.5	.00	7.4	2.7	7.4	.6	21	6.2	15	.1	.7	54	30	12	104	6.3	55
June 1-10.....	357	3.3	.02	7.6	2.7	9.3	.8	22	8.8	15	.1	.7	90	30	12	108	6.6	50
June 11-20.....	383	4.3	.04	9.1	3.4	11	1.3	32	9.8	17	.1	.9	106	37	10	132	6.8	50
June 21-30.....	671	8.4	.11	10	3.5	12	2.8	39	12	18	.1	1.3	115	39	7	149	7.0	90
July 1-10.....	1,445	5.1	.21	7.6	2.9	7.7	2.1	23	9.5	16	.1	.4	89	31	12	113	6.4	180
July 11-20.....	986	4.6	.18	7.8	3.1	7.8	1.1	21	9.2	15	.1	.4	91	32	15	111	6.6	160
July 21-31.....	974	4.9	.09	7.2	2.9	7.6	.7	19	8.8	15	.1	.5	87	30	14	106	6.6	120
Aug. 1-10.....	1,296	4.6	.18	7.2	2.6	6.9	.9	20	9.0	12	.1	.3	84	29	12	97.8	6.6	180
Aug. 11-20.....	1,260	7.2	.16	6.3	2.5	6.9	.6	20	8.2	12	.1	.4	81	28	10	92.1	6.7	150
Aug. 21-31.....	850	4.8	.09	7.4	2.6	7.5	.4	19	10	14	.1	.6	82	29	14	102	6.5	110
Sept. 1-10.....	936	4.3	.12	6.3	2.7	7.0	.5	19	8.5	12	.1	.6	80	27	11	93.8	6.4	110
Sept. 11-20.....	1,207	7.0	.39	8.9	2.9	6.8	1.6	28	8.2	12	.1	.6	108	34	11	105	6.4	360
Sept. 21-30.....	1,230	6.4	.29	7.2	2.2	7.2	.8	23	6.2	13	.1	.4	96	27	8	94.1	6.5	240
Average.....	1,232	5.0	0.12	6.2	2.5	7.0	0.8	18	7.3	14	0.1	0.5	76	26	11	92.9	6.5	102



LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
 KISSIMMEE RIVER NEAR OKEECHOBEE, FLA.--Continued

Temperature (° F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	68	63	69	58	72	66	77	83	83	87	87
2	79	69	67	70	81	73	68	76	83	82	83	86
3	80	67	65	70	83	75	67	76	82	83	85	85
4	81	66	64	69	83	76	71	74	82	80	84	85
5	80	67	63	69	80	75	72	77	82	82	85	86
6	80	68	62	68	64	76	74	77	83	83	86	87
7	79	67	61	67	68	76	75	78	82	83	86	85
8	80	65	60	67	68	73	76	80	85	83	85	83
9	77	65	61	65	65	70	75	79	82	85	85	87
10	77	66	61	67	67	72	75	81	83	85	85	84
11	78	68	60	67	68	73	76	82	83	85	85	85
12	79	68	61	67	62	74	77	80	79	85	87	86
13	80	69	63	62	58	76	78	82	80	--	86	86
14	79	69	63	61	58	72	78	83	80	85	86	85
15	79	71	62	60	59	72	78	81	86	86	87	87
16	76	73	61	62	62	76	79	82	79	80	87	85
17	69	73	62	65	63	78	80	80	78	85	88	85
18	71	73	62	67	66	77	78	80	79	85	87	85
19	71	73	60	64	66	78	77	80	80	86	87	85
20	72	68	56	63	66	77	78	82	80	85	87	85
21	71	68	56	65	66	78	77	83	82	85	87	85
22	70	67	55	64	68	76	78	82	80	84	89	83
23	70	68	57	66	67	76	77	83	82	84	89	82
24	71	67	58	63	69	73	80	84	85	85	89	82
25	71	65	57	60	70	74	80	82	85	84	87	83
26	72	64	59	60	70	74	76	86	82	85	87	83
27	73	65	63	59	70	68	78	85	85	87	88	82
28	79	65	65	58	62	66	78	85	85	85	88	84
29	73	67	65	57	--	62	79	85	83	85	87	84
30	72	68	67	56	--	63	77	84	85	86	87	--
31	70	--	69	57	--	65	--	85	--	85	87	--
Average	75	68	62	64	65	73	76	81	82	84	87	85

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

ST. LUCIE CANAL AT LAKE OKEECHOBEE, FLA.  
(Formerly published as St. Lucie Canal at Port Mayaca, Fla.)

LOCATION.--At bridge on U. S. Highways 98 and 441, at outlet of Lake Okeechobee, three-quarters of a mile west of Port Mayaca, Martin County.  
RECORDS AVAILABLE.--Chemical analyses: March 1940 to February 1942; November 1954 to September 1955.

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, 582 micromhos Sept. 21, 1940; minimum daily, 253 micromhos Aug. 26, 1941.

REMARKS.--Records of specific conductance of daily samples available in district office, Ocala, Fla. Values reported for dissolved solids are sums of determined constituents. No records of discharge available for this station.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium-magnesium	Non-carbonate			
Nov. 18, 1954	.....	5.2	0.13	44	9.3	27		138	28	45		0.3	227	148	35	408	7.7	80
Dec. 28	.....	6.2	.64	46	11	24		134	26	54		.4	234	160	50	432	7.5	80
Jan. 26, 1955	.....	23	.08	41	11	21		162	26	38		.4	250	136	14	401	7.5	45
Mar. 9	.....	9.5	.08	36	9.3	19		123	22	32		.7	190	128	27	343	8.8	65
Apr. 20	.....	11	.06	34	8.5	20		120	22	29		.7	184	120	21	332	7.9	45
June 5	.....	14	.01	40	9.3	23		137	26	34		.3	214	138	26	385	7.6	45
July 17	.....	6.3	.28	32	3.7	19		98	16	28		.9	154	95	15	279	7.1	180
Sept. 3	.....	8.6	.02	56	5.4	33		170	26	48		.4	261	162	23	465	7.5	80

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

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 August 1955.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Fragmentary records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to August 1955

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> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25° C)	pH	Color
													Calcium	Non-carbonate			
Nov. 20, 1954.....		1.2	0.06	48	6.4	20		146	20	34		0.1	146	26	383	7.7	70
Jan. 2, 1955.....		10	.09	68	9.6	43		200	30	77		.1	209	45	602	7.6	80
Jan. 23.....		11	.01	73	16	66		221	39	121		.2	248	87	792	7.8	42
Mar 10.....		13	.05	78	19	75		218	47	148		.8	272	94	924	7.6	40
Apr. 24.....		15	.00	85	11	51		258	38	82		.8	257	46	741	8.0	28
June 3.....		14	.00	74	13	67		234	47	101		.5	238	46	763	7.6	40
July 14.....		9.4	.00	50	5.4	25		158	21	35		.8	147	18	399	7.3	65
Aug. 27.....		8.1	.01	57	7.2	32		174	23	53		.9	172	29	477	7.5	55

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.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 8, 1954	244	40	0.19	95	46	222	6.6	487	107	271	0.6	1.8	31.180	426	27	1,790	7.6	380
Nov. 18	235	18.9	.07	28	8.3	18		98	26	25		.1	162	104	24	311	7.7	70
Dec. 28	170	18	.08	36	8.8	19		116	24	34		.3	150	128	31	310	7.7	80
Jan. 20, 1955	205	29	.07	34	10	27		136	26	33		.4	226	120	14	314	8.1	60
Mar. 9	481	29	.08	34	9.5	17		116	22	30		.4	199	124	29	333	7.7	70
Apr. 20	445	15	.09	34	8.1	17		117	18	28		.5	179	118	22	326	8.0	55
June 5	382	25	1.0	35	8.7	27		126	28	36		.3	221	123	20	368	7.7	40
July 16	376	6.9	.02	37	8.7	19		120	24	32		.3	187	128	30	334	7.7	50
Sept. 3	0	4.1	.00	36	8.8	21		126	24	31		.1	187	126	23	337	7.4	35

<sup>a</sup> Residue on evaporation at 180°C.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
WEST PALM BEACH CANAL AT RANGELINE ROAD NEAR LOXAHATCHEE, FLA.

LOCATION.--At downstream side of State Highway 7 bridge, 5.3 miles east of Loxahatchee, Palm Beach County.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. No discharge records are available for this station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Oct. 2, 1954		13	0.15	45	12	76	2.1	177	24	103	0.3	1.6	3422	162	17	677	7.4	220
Nov. 19		13	.10	51	19	108		299	32	134		3.1	516	230	18	931	7.6	120
Dec. 20		15	.16	51	16	74		211	30	127		1.7	486	203	30	936	7.6	100
Jan. 2, 1955		22	.18	58	20	79		219	38	128		1.1	455	229	50	803	7.5	80
Jan. 26		18	.12	76	25	172		316	54	246		3.5	753	292	34	1,330	7.6	80
Mar. 10		19	.10	60	20		91	246	39	132		1.7	484	232	30	889	7.7	120
Apr. 21		15	.09	58	16	69		220	34	99		1.3	398	206	25	739	7.9	120
June 5		14	.02	48	13	83		202	37	106		1.0	402	174	8	721	7.7	55
July 17		27	.07	85	29	112		342	85	144		3.5	654	331	51	1,100	7.5	300
Sept. 4		22	.09	82	26	119		338	62	162		1.0	640	312	34	1,090	7.6	320

a Residue on evaporation at 180°C.

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## HILLSBORO CANAL AT BELLE GLADE, FLA.

LOCATION.--At gaging station at bridge on State Highway 717 in Belle Glade, Palm Beach County, 2 miles southeast of Lake Okeechobee.

RECORDS AVAILABLE.--November 1954 to September 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25 C)	pH	Color
														Calcium	Non-carbonate			
Nov. 18, 1954	188	8.3	0.04	40	12	27		146	31	39		0.4	230	149	30	409	7.7	60
Dec. 28	215	18	.01	43	12	27		152	28	43		.6	247	157	32	437	7.6	70
Jan. 26, 1955	223	84	.02	51	19	58		216	48	74		.8	441	205	28	651	8.1	50
Mar. 9	284	11	.02	39	12	21		138	26	36		.5	214	147	34	369	7.7	55
Apr. 20	161	9.5	.03	48	12	26		166	32	40		1.1	251	169	33	455	7.9	45
June 4	a210	10	.02	38	10	27		142	28	35		.5	219	138	20	387	7.7	35
July 17	340	25	.01	89	35	83		320	128	108		3.4	627	366	104	1,040	7.5	150
Sept. 3	229	39	.05	117	49	126		428	188	152		7.6	890	494	143	1,440	8.0	220

a No point velocity observations; discharge estimated by comparison with records for North New River Canal at South Bay.

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 September 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. Records of discharge for gaging station near Deerfield Beach for water year October 1954 to September 1955 given in WSP 1384. No appreciable inflow or outflow between gaging station and sampling point except during periods of heavy local rain.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 1, 1954	1,500	9.5	0.17	42	8.8	65	1.5	152	20	94	0.2	2.2	358	141	16	594	7.6	180
Nov. 18	149	21	.11	81	7.3	36	36	253	20	57		1.1	349	232	24	598	7.7	100
Dec. 8	--	15	.05	50	7.8	35	35	181	12	50		1.2	260	157	8	458	7.5	100
Jan. 20, 1955	--	9.7	.05	54	17	51	51	218	30	74		1.6	344	205	26	620	7.7	70
Mar. 9	--	15	.16	88	21	42	42	287	28	94		1.8	431	306	71	882	7.4	80
Apr. 20	--	15	.07	58	19	79	79	244	38	108		1.6	439	222	22	801	8.0	80
June 8	--	13	.02	67	17	106	106	276	38	143		1.0	521	237	11	944	7.5	75
July 27	725	21	.08	98	35	153	153	416	81	207		4.4	804	358	48	1,400	7.8	200
Sept. 7	--	13	.10	80	17	98	98	320	33	132		1.2	532	270	8	947	7.7	80

a Residue on evaporation at 180° C.

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## NORTH NEW RIVER CANAL AT SOUTH BAY, FLA.

LOCATION--At bridge on State Highway 80, 410 feet upstream from gaging station in South Bay, Palm Beach County, and 2.4 miles south of Lake Okeechobee. RECORDS AVAILABLE--Chemical analyses, October 1953 to September 1955.

REMARKS--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nestum	Non-carbonate			
Oct. 8, 1954	346	17	0.07	70	23	61	2.0	241	74	82	0.1	1.3	521	269	72	777	7.9	180
Nov. 18	438	7.6	.05	43	13	30		157	36	42		.3	249	161	32	436	7.7	80
Dec. 28	459	13	.02	40	12	25		143	31	38		.5	230	149	32	402	7.5	80
Jan. 27, 1955	503	8.3	.01	36	11	17		126	24	30		.5	169	135	32	338	7.7	35
Mar. 9	474	11	.04	40	11	21		142	24	34		.7	212	145	29	396	7.7	50
Apr. 20	376	9.8	.00	46	13	28		162	34	42		.8	254	168	35	461	8.0	45
June 4	376	18	.00	40	12	24		152	29	33		.5	232	149	25	411	7.5	45
July 16	290	18	.02	70	23	65		242	87	84		2.6	469	269	70	794	7.5	80
Sept. 3	272	22	.04	103	34	53		328	128	77		2.4	561	397	128	953	7.7	160

a Residue on evaporation at 180°C.



## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## 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 Ft. Lauderdale and approximately 10 miles upstream from Ft. Lauderdale, Broward County.

RECORDS AVAILABLE.--Chemical analyses: July 1950 to June 1952, October 1953 to August 1955.

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.--Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. No discharge records available for this station.

Chemical analyses in parts per million, October 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>			Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate				
Oct. 4, 1954	.....	8.8	0.14	50	7.1	21	0.7	166	12	30	0.2	1.3	257	154	18	383	7.4	170	
Nov. 1	.....	5.9	.09	54	8.6	22		188	12	35		1.2	232	170	16	416	7.5	100	
Dec. 13	.....	13	.05	55	5.0	19		180	5.0	32		1.0	219	158	10	388	7.5	45	
Jan. 17, 1955	.....	9.5	.03	54	6.4	16		180	3.0	32		1.3	211	161	14	394	7.5	60	
Mar. 9	.....	12	.19	52	7.1	20		172	5.0	40		.0	221	159	18	406	7.5	80	
Apr. 18	.....	14	.08	49	9.7	27		176	16	42		.9	246	162	18	438	8.2	65	
July 27	.....	8.0	.07	53	9.1	27		196	21	40		1.2	261	182	22	464	7.5	140	
Aug. 29	.....	9.7	.07	60	6.4	25		200	9.5	40		.8	250	176	12	456	7.6	100	

a Residue on evaporation at 180°C.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
SOUTH NEW RIVER CANAL AT DAVIE, FLA.

LOCATION.--At lock, 1½ miles west of Davie, Broward County.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, October 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 4, 1954		13	0.11	73	7.0	13	1.0	222	18	19	0.1	1.9	a 318	211	29	437	7.7	180
Nov. 1		6.0	.12	92	9.4	16		306	18	27		1.5	318	268	22	553	7.6	90
Dec. 13		11	.08	95	9.2	16		304	18	29		1.9	330	275	26	561	7.9	90
Jan. 17, 1955		16	.05	89	11	16		292	14	33		1.8	327	287	28	558	7.6	70
Apr. 18		12	.32	86	12	21		280	11	48		1.3	330	264	34	601	7.8	90
June 13		8.4	.19	71	4.1	22		194	37	28		5.1	272	194	35	474	7.3	180
July 27		11	.03	89	7.3	21		286	18	31		1.5	320	252	18	556	7.5	100
Aug. 29		11	.03	87	8.0	21		288	13	33		1.0	315	250	16	556	7.8	80

a Residue on evaporation at 180°C.

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 September 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 8, 1954		8.3	0.27	69	14	27	1.0	208	51	40	0.1	1.5	a 389	230	59	543	7.6	220
Nov. 18		1.8	.24	33	4.8	23	9.3	108	6.5	19		.4	128	102	14	228	7.4	200
Dec. 23		10	.33	39	11	23		135	28	37		.4	214	143	32	371	7.7	70
Jan. 27, 1955		14	.02	46	11	21		150	30	36		.4	232	160	37	402	7.6	50
Mar. 9		15	.06	40	12	22		143	28	36		.4	223	149	32	397	7.7	50
Apr. 20		14	.06	93	27	47		324	64	78		3.2	466	343	78	858	8.2	180
June 4		13	.00	37	21	25		134	28	58		.4	218	138	28	366	7.4	43
July 16		13	.13	11	25	52		342	96	78		2.0	547	360	100	917	7.5	200
Sept. 3		6.1	.12	50	11	19		164	30	33		.1	230	170	36	414	7.3	320

a Residue on evaporation at 180°C.

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

## 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 September 1955.  
 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 micromhos July 1, 1941; minimum daily, 405 micromhos Oct. 1, 1941.

REMARKS.--Values reported for dissolved solids are sums of determined constituents unless otherwise noted. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 5, 1954	1,090	7.3	0.05	61	6.0	11	0.5	206	3.2	14	0.1	0.6	242	177	8	366	7.8	80
Nov. 22	1,080	5.9	.09	68	5.4		9.5	224	7.5	15		.0	221	192	8	389	7.9	80
Dec. 21	870	13	.28	78	6.9	11		256	5.0	22		.0	262	223	13	448	7.6	90
Jan. 27, 1955	762	16	.05	77	9.9	7.7		264	4.0	20		.9	266	233	16	464	7.6	60
Mar. 10	701	15	.04	76	9.6	15		264	5.2	28		.7	280	229	12	494	7.8	70
Apr. 21	569	10	.00	74	11	17		270	4.5	28		.4	278	230	8	509	7.5	80
June 4	b220	8.1	.16	76	7.9	26		274	9.5	30		1.1	294	222	0	512	7.6	75
July 16	676	7.0	.14	77	9.7	11		260	14	20		1.1	268	232	19	487	7.5	80
Sept. 6	680	25	.03	79	6.5	16		268	9.0	20		.4	288	224	4	474	8.0	90

a Residue on evaporation at 180°C.

b Stage-discharge relation indefinite because of operation of N. W. 38th St. dam; discharge computed on basis of 3 discharge measurements and record of dam operation.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
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 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. No discharge records available for this station.

Chemical analyses in parts per million, October 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 1, 1954.....		11	0.07	16	12	5.9	0.2	108	1.5	7.0	0.0	0.2	135	89	1	196	7.4	55
Nov. 10.....		12	.03	31	2.6	7.7		106	5.0	9.0		.1	119	88	1	196	7.4	45
Dec. 16.....		10	.03	31	2.8	6.0		102	3.5	10		.6	114	89	5	194	7.5	40
Jan. 12, 1955.....		1.5	.02	42	6.6	.0		136	1.5	12		.3	131	132	20	258	7.1	25
Mar. 15.....		12	.02	61	4.8	9.8		188	2.5	24		3.3	210	172	18	385	7.5	50
Apr. 13.....		5.3	.18	74	5.7	11		218	2.0	26		17	248	208	29	469	7.5	45
June 15.....		35	.05	73	1.4	41		204	22	60		2.6	335	188	21	536	7.2	65
July 19.....		5.1	.01	54	2.2	11		169	5.0	17		.0	177	144	5	321	7.2	50
Aug. 31.....		9.3	.06	50	4.2	7.4		156	4.5	18		.1	171	142	14	309	7.6	80

a Residue on evaporation at 180°C.

## 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 August 1955.

EXTREMES, 1941-42 --Dissolved solids: Maximum, 256 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 --Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25 C)	pH	Color
														Calcium-magnesium	Non-carbonate			
Nov. 10, 1954.....	--	3.5	0.11	28	5.6	19		92	22	25		0.1	148	93	18	259	7.7	100
Dec. 15.....	--	6.8	.00	43	9.9	22		145	30	32		.3	215	148	29	376	7.5	70
Jan. 27, 1955.....	--	11	.04	54	12	19		168	35	36		1.1	251	184	46	438	7.6	50
Mar. 8.....	210	9.4	.05	30	7.8	21		100	19	36		.6	173	107	25	290	7.6	70
Apr. 28.....	--	8.7	.02	37	9.7	19		127	24	32		.2	164	132	28	356	7.1	24
June 1.....	--	3.1	.00	37	8.7	40		169	23	37		.8	233	128	0	366	7.2	45
July 18.....	3,110	6.6	.01	40	8.6	24		129	27	38		.0	208	135	29	389	7.2	55
Aug. 29.....	970	6.7	.04	33	9.9	25		113	32	36		.2	199	123	30	359	7.2	55

LAKE OKECHOBEE AND THE EVERGLADES--Continued  
CALOOSAHATCHEE CANAL AT ORTONA LOCK NEAR LABELLE, FLA.

LOCATION.--At gaging station, 350 feet upstream from upstream end of lock chamber, 1½ miles south of Ortona Station and 9.0 miles from LaBelle, Hendry County.

RECORDS AVAILABLE.--Chemical analyses: November 1954 to August 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station.

Chemical analyses in parts per million, November 1954 to August 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 10, 1954.....		11	0.02	30	7.3	17		102	20	26		0.4	162	105	21	279	7.4	110
Dec. 15.....		7.3	.06	43	9.4	11		140	10	32		.2	182	146	31	359	7.6	90
Jan. 27, 1955.....		6.9	.07	55	11	17		173	28	34		.7	237	162	41	429	7.6	60
Mar. 8.....		3.0	.06	30	7.1	15		95	21	26		.3	149	104	26	281	7.6	70
Apr. 26.....		11	.03	46	8.6	26		161	24	35		.4	230	180	18	411	7.6	33
June 1.....		4.1	.01	49	9.2	51		160	33	43		1.3	250	160	29	447	7.3	55
July 18.....		7.1	.04	38	11	25		131	34	36		.5	217	140	33	391	7.3	60
Aug. 29.....		6.2	.02	33	7.5	19		109	23	29		.2	171	113	24	318	7.2	50

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 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station.

Chemical analyses in parts per million, November 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Nov. 10, 1954.....		8.7	0.31	62	9.6	12		217	6.0	26		0.1	232	194	16	424	7.8	50
Jan. 11, 1955.....		10	.04	68	12	14		230	9.5	37		.0	264	219	30	498	7.7	30
July 26.....		4.8	.06	33	4.8	15		112	8.5	24		.3	145	102	10	266	7.2	60
Sept. 21.....		16	.04	30	2.2	6.7		95	3.5	12		.0	117	84	6	197	7.4	75

## 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.

RECORDS AVAILABLE.--Chemical analyses: January 1950 to December 1951, September 1954 to September 1955.

Water temperatures: January 1950 to December 1951.

EXTREMES, January 1950 to December 1951.--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.--Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

## Chemical analyses, in parts per million, September 1954 to September 1955

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			
Sept. 21, 1954	542	7.5	0.08	42	3.7	4.3	0.2	126	15	8.5	0.0	0.0	182	120	17	254	7.7	50
Nov. 6	500	4.1	.05	42	5.7	4.1		126	17	8.5	.0	.0	187	124	21	252	7.6	60
Dec. 6	472	5.0	.02	46	5.4	3.3		143	20	8.5	.0	.0	181	142	26	282	7.8	25
Jan. 24, 1955	520	5.3	.01	46	6.1	5.4		132	28	10	--	.2	180	140	32	293	7.5	20
Feb. 28	491	5.7	.01	47	6.7	4.6		136	28	10	--	.0	191	145	33	302	7.6	25
Apr. 13	331	5.3	.00	48	5.6	5.0	.3	131	32	8.5	.3	.1	185	143	35	315	7.6	15
May 27	258	6.5	.01	47	4.1	4.9	.2	135	23	7.2	.1	.3	188	134	24	290	7.5	10
July 14	336	7.9	.00	47	5.0	5.2	.2	130	31	7.0	.1	.2	200	138	31	294	7.6	20
Aug. 18	562	9.3	.17	37	3.3	5.9	.6	97	21	10	.2	.5	186	106	26	234	7.2	180
Sept. 30	1,210	6.0	.08	22	2.5	1.8	.4	60	5.2	4.8	.2	.1	133	65	16	136	6.9	360





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 1955.  
Water temperatures: Maximum, 224 ppm Dec. 11-20; minimum, 139 ppm Sept. 21-30.  
EXTREMES, 1954-55.--Dissolved solids: Maximum, 224 ppm Dec. 11-20; minimum, 63 ppm Sept. 21-30.  
Hardness: Maximum, 177 ppm Dec. 11-20, Jan. 1-10, 11-20; minimum, 84 ppm Aug. 11; minimum, 56 ppm Aug. 11.  
Specific conductance: Maximum, 435 micromhos Dec. 13; minimum daily, 99.4 micromhos Sept. 21.  
Water temperatures: Maximum, 84°F Aug. 11; minimum, 56°F Jan. 24.  
EXTREMES, January 1954 to September 1955.--Dissolved solids: Maximum, 224 ppm Aug. 11-20, Dec. 11-20, 1954; minimum, 88 ppm Jan. 8-20, 1954.  
Hardness: Maximum, 177 ppm Dec. 11-20, 1954; minimum, 37 ppm Jan. 8-20, 1954.  
Specific conductance: Maximum, 435 micromhos Dec. 13, 1954; minimum daily, 54.2 micromhos Jan. 10, 1954.  
Water temperatures: Maximum, 84°F, on several days during summer months; minimum, 52°F Jan. 12, 1954.  
REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Values reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1954 to September 1955 given in WSP 1384.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	1,955	14	0.01	48	11	4.0	0.4	170	23	5.8	0.1	0.6	207	165	26	318	7.8	15
Oct. 11-20	1,928	9.0	.00	48	12	3.8	.4	178	23	4.5	.1	.5	201	169	23	319	7.9	15
Oct. 21-31	1,845	12	.01	48	12	4.6	.4	181	22	5.2	.2	.5	214	169	21	330	7.8	10
Nov. 1-10	1,768	11	.20	50	11	3.9	.4	180	22	5.2	.2	.4	209	170	22	327	8.0	10
Nov. 11-20	1,753	9.9	.02	49	12	3.6	.4	182	22	5.2	.2	.8	210	172	22	330	7.9	10
Nov. 21-30	1,740	10	.03	50	11	3.6	.4	182	22	5.0	.2	.7	208	170	21	330	8.0	10
Dec. 1-10	1,708	15	.03	50	11	3.5	.3	181	21	5.5	.1	.6	204	170	22	331	7.9	12
Dec. 11-20	1,719	22	.07	51	12	4.0	.4	178	22	11	.1	.6	224	177	31	347	7.7	10
Dec. 21-31	1,675	15	.05	50	12	4.0	.4	174	22	13	.1	.8	220	174	32	346	7.7	17
Jan. 1-10, 1955	1,643	12	.07	51	12	4.3	.4	180	23	10	.2	.5	214	177	29	348	7.7	19
Jan. 11-20	1,637	11	.08	51	12	4.0	.4	181	22	10	.2	.3	216	177	28	349	7.9	18
Jan. 21-31	1,763	10	.12	49	13	4.2	.5	171	22	15	.2	.5	216	176	36	350	7.5	22
Feb. 1-10	1,807	14	.05	44	11	4.3	.4	160	22	7.2	.3	.8	191	155	24	308	7.8	30
Feb. 11-20	2,116	12	.10	36	9.7	5.9	.6	130	19	8.8	.4	.7	176	130	23	266	7.7	55
Feb. 21-28	2,272	11	.06	36	8.3	6.2	.4	130	18	9.5	.2	.4	169	124	17	269	7.4	50
Mar. 1-10	2,040	13	.03	39	9.5	5.8	.7	148	16	9.0	.2	.0	183	136	15	292	6.8	30
Mar. 11-20	1,892	13	.03	43	9.4	4.8	.5	151	18	8.8	.2	.7	179	146	22	305	7.5	25
Mar. 21-31	1,783	13	.04	45	10	4.3	.3	133	20	7.5	.2	.7	195	153	17	316	7.4	25
Apr. 1-10	1,788	11	.08	46	10	4.7	.8	170	21	10	.2	.5	197	156	17	334	7.5	25
Apr. 11-20	2,105	12	.07	44	10	5.3	.6	161	21	8.5	.3	.7	169	131	19	317	7.7	25
Apr. 21-30	3,196	10	.26	24	5.7	6.2	1.0	84	13	10	.3	.9	149	83	14	196	7.1	110

## SUWANNEE RIVER BASIN--Continued

## SUWANNEE RIVER AT BRANFORD, FLA.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--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			
May 1-10, 1955	2,301	10	0.18	35	7.8	4.9	0.8	129	16	7.8	0.2	1.0	164	119	14	257	7.4	65
May 11-20	1,959	10	.07	41	9.2	4.4	.8	152	17	6.8	.2	1.0	176	140	16	292	7.5	30
May 21-31	2,052	10	.05	43	8.6	4.7	.8	156	19	6.5	.2	.8	180	143	15	302	7.6	30
June 1-10	1,947	13	.06	39	8.9	5.9	.6	148	20	8.0	.3	.7	181	134	13	288	7.4	30
June 11-20	1,697	11	.02	44	11	4.8	.5	165	22	8.0	.3	.5	195	155	20	319	7.4	20
June 21-30	1,612	8.8	.01	46	11	4.3	.6	172	23	7.8	.1	.5	201	160	19	333	7.6	15
July 1-10	1,595	14	.01	47	11	4.6	.4	175	23	6.8	.1	.4	212	162	19	338	7.6	15
July 11-20	1,613	13	.01	47	11	4.2	.5	174	23	7.5	.2	.9	213	162	20	334	7.6	15
July 21-31	1,621	9.2	.02	47	11	4.2	.4	174	24	7.5	.2	1.4	203	162	20	337	7.4	15
Aug. 1-10	1,626	11	.01	46	11	4.6	.4	175	24	6.8	.2	.8	203	160	17	332	7.7	15
Aug. 11-20	1,670	12	.01	46	12	4.8	.5	172	24	7.5	.2	.6	207	164	23	331	7.6	20
Aug. 21-31	1,733	13	.05	45	11	4.7	.4	168	24	7.2	.1	.3	201	158	20	321	7.7	20
Sept. 1-10	1,937	9.8	.05	42	10	4.8	.4	158	22	7.8	.1	.6	189	146	16	306	7.8	35
Sept. 11-20	2,851	10	.17	32	7.8	5.2	.5	118	18	5.2	.1	.8	164	112	15	236	7.6	180
Sept. 21-30	4,022	7.8	.36	18	4.3	4.2	1.0	65	10	5.2	.1	.5	139	63	9	133	7.3	450
Average	1,950	12	0.07	44	10	4.6	0.5	159	21	7.8	0.2	0.6	194	151	20	308	7.6	41

## SUWANNEE RIVER BASIN--Continued

## SUWANNEE RIVER AT BRANFORD, FLA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	68	67	68	62	71	63	73	78	80	80	80
2	78	68	76	68	64	69	65	72	76	79	80	80
3	79	67	64	68	65	69	65	73	77	82	80	80
4	80	66	64	69	62	70	67	74	77	80	83	78
5	80	64	64	69	64	70	67	74	78	81	83	80
6	80	63	60	69	65	--	67	75	78	82	82	83
7	78	64	59	69	66	68	72	76	77	81	83	80
8	79	65	62	68	65	67	70	78	77	82	82	82
9	79	66	62	68	64	66	70	77	76	79	82	80
10	76	65	60	69	65	66	71	78	78	79	82	79
11	79	65	60	65	64	68	71	78	77	79	84	80
12	78	67	62	65	59	69	72	78	77	78	82	80
13	78	65	62	60	57	72	73	77	77	79	--	79
14	78	69	60	62	60	71	73	78	77	83	83	79
15	75	70	60	62	62	72	72	75	77	81	81	80
16	73	70	60	64	63	73	73	75	76	81	81	79
17	71	73	61	62	64	73	75	75	75	81	81	78
18	71	72	59	62	65	73	74	75	75	82	82	78
19	70	70	60	62	65	74	74	73	76	82	82	78
20	70	75	59	60	67	73	75	77	76	82	82	79
21	70	78	59	62	67	75	75	77	79	83	81	79
22	70	68	59	63	68	73	74	76	80	81	82	81
23	70	85	82	59	68	69	75	78	80	80	82	79
24	70	85	82	56	67	70	75	79	80	80	82	79
25	70	63	62	59	--	71	76	79	79	79	81	80
26	70	60	64	59	--	70	73	79	82	80	79	80
27	70	64	70	60	68	78	70	79	78	79	80	79
28	74	68	68	60	--	62	73	80	80	83	80	78
29	74	68	69	59	--	62	74	80	78	80	80	80
30	69	68	68	60	--	63	73	79	78	80	83	79
31	68	--	68	60	--	61	--	78	--	80	81	--
Average	74	67	63	63	64	70	72	77	78	81	82	80

# 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.--3,617 square miles (revised).

RECORDS AVAILABLE.--Chemical analyses: January 1952 to December 1953, September 1954 to August 1955.

Water temperatures: January 1952 to December 1953.

EXTREMES: January 1952 to December 1953.--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.--Values reported for dissolved solids are residues on evaporation at 180°C. Records of discharge for water year October 1954 to September 1955 are given in WSP 1384.

Chemical analyses, in parts per million, September 1954 to August 1955

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			
Sept. 21, 1954	762	7.5	0.09	12	1.7	10	0.4	35	2.2	22	0.0	0.0	86	88	37	8	133	7.3	10
Nov. 2	666	6.5	.09	10	1.2	6.0	.4	34	3.0	13	.1	.3	59	30	2	2	94.2	7.1	14
Jan. 25, 1955	2,480	10	.27	9.0	1.6	3.3		14	8.5	11	--	.6	75	29	18	18	92.8	7.3	45
Mar. 8	2,060		.35	8.8	1.7	4.9		26	7.2	7.5	--	.3	66	29	8	8	76.0	7.1	45
Apr. 20	27,000	7.9	.39	4.7	1.0	1.1	1.6	16	4.0	3.2	.2	.2	69	69	16	3	48.0	6.5	50
May 31	8,190	7.7	.84	7.4	.7	3.0	1.4	23	2.8	5.8	.6	1.1	72	21	2	2	66.0	6.5	100
July 12	2,520	7.3	.15	8.9	.6	5.0	.8	28	4.0	8.5	.1	.4	63	25	2	2	79.9	6.8	45
Aug. 26	1,780	9.6	.59	9.6	1.1	3.8	.8	32	3.2	7.2	.2	.4	62	28	2	2	81.3	7.1	45

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 4.0 miles northeast of Barth, Escambia County.  
 DRAINAGE AREA --75.3 square miles (revised).  
 RECORDS AVAILABLE --Chemical analyses: October 1952 to September 1954, November 1954 to August 1955.  
 Water temperatures: March 1953 to April 1955.  
 EXTREMES, October 1954 to April 1955 --Water temperatures: Minimum 45°F Feb. 13-14.  
 EXTREMES, 1953-55 --Water temperatures: Maximum, 78°F Aug. 6-7, 9-10, 1954; minimum, 45°F Feb. 13-14, 1955.  
 REMARKS --Values reported for dissolved solids are residues on evaporation at 180°C. Temperature record not reliable after recorder was flooded on Apr. 16. Records of discharge for water year October 1954 to September 1955 are given in WSP 1564.

Chemical analyses, in parts per million, November 1954 to August 1955

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			
Nov. 2, 1954.....	65	6.7	0.18	0.6	0.5	1.5	0.0	4	1.2	3.2	0.0	0.6	16	4	0	18.4	6.1	21
Dec. 15.....	83	7.0	.11	.8	.4	1.8	.2	4	2.0	3.2	.1	.3	17	4	0	18.7	6.0	17
Jan. 26, 1955.....	65	8.2	.15	.8	.4	1.8	.2	4	2.0	3.2	.1	.4	18	4	0	18.6	5.9	12
Mar. 6.....	65	8.2	.37	.8	1.0	1.8	.2	5	.5	3.0	.1	.1	20	6	2	17.9	6.6	25
Apr. 19.....	130	6.9	.25	.8	.4	2.2	.8	5	1.5	2.5	.2	.0	27	4	0	20.7	6.1	45
May 31.....	83	8.8	.47	.9	.3	2.0	.4	6	.5	4.5	.0	.3	23	4	0	19.0	5.9	35
July 13.....	321	6.4	.04	1.1	.3	2.1	.4	3	.5	2.8	.1	.4	28	4	2	21.4	5.1	35
Aug. 26.....	66	7.0	.27	.4	.5	1.8	.3	6	.8	3.2	.0	.4	17	3	0	21.6	6.1	15



## PEARL RIVER BASIN--Continued

## PEARL RIVER AT JACKSON, MISS.--Continued

LOCATION.--Temperature recorder at gaging station at bridge on U. S. Highway 80 (old) at eastern city limits of Jackson, Hinds County, 0.2 mile upstream from Illinois Central Railroad bridge, a quarter of a mile upstream from Town Creek, and 4½ miles upstream from Richland Creek.

DRAINAGE AREA--3,100 square miles (approximately).

RECORDS AVAILABLE--Water temperatures: January 1954 to September 1955.

EXTREMES, 1954-1955.--Water temperatures: Maximum, 89°F Oct. 5; minimum, 43°F Jan. 29-30.

EXTREMES, January 1954-September 1955.--Water temperatures: Maximum, 92°F Aug. 17-18, 1954; minimum, 43°F Jan. 29-30, 1955.

REMARKS.--Records of discharge for water years 1954 and 1955 given in WSP 1334 and 1384.

Temperature (°F) of water, January to September 1954

/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.....							--	--	49	48	54	53	59	58	72	70	82	80	89	87	88	84	87	81
2.....							--	--	49	48	53	53	58	58	71	70	83	81	89	87	88	84	85	79
3.....							--	--	49	49	54	53	59	58	71	68	82	81	89	88	88	85	87	79
4.....							--	--	49	49	53	51	59	59	68	66	81	79	89	87	88	86	87	79
5.....							--	--	49	49	51	50	59	59	66	65	79	77	87	85	89	87	80	
6.....							--	--	49	49	51	51	60	59	65	64	79	77	87	85	89	87	86	81
7.....							--	--	49	49	51	50	61	60	64	64	81	76	87	86	89	87	86	81
8.....							--	--	49	49	51	50	64	61	64	64	83	80	89	86	89	87	86	81
9.....							--	--	49	48	51	50	65	62	64	64	85	81	89	86	89	87	86	81
10.....							--	--	49	48	53	51	66	63	64	64	87	83	89	86	89	86	87	82
11.....							--	--	49	48	56	53	68	66	64	63	86	84	88	86	89	86	86	77
12.....							--	--	50	49	59	56	68	68	63	63	88	85	88	85	90	86	85	75
13.....							--	--	50	49	60	59	69	68	63	63	88	85	85	84	90	86	87	73
14.....							--	--	50	50	59	57	70	69	63	63	87	85	86	85	90	86	86	76
15.....							--	--	50	50	57	54	70	69	63	62	86	84	87	86	91	87	87	77
16.....							--	--	51	50	55	53	70	67	62	62	85	83	86	87	91	87	81	78
17.....							--	--	51	50	54	53	68	66	62	62	86	84	89	87	92	87	80	78
18.....							--	--	51	51	54	53	67	66	63	62	86	84	90	87	92	87	88	79
19.....							--	--	51	51	54	53	65	65	63	63	86	84	88	87	91	87	90	81
20.....							--	--	52	51	60	57	85	85	63	63	86	84	89	86	90	86	89	81
21.....							--	--	52	52	60	58	85	85	66	63	86	85	89	87	88	86	84	79
22.....							--	--	53	52	59	58	85	85	68	66	86	85	90	88	88	86	81	76
23.....							--	--	53	52	60	59	85	85	70	68	87	86	90	88	86	84	82	72
24.....							--	--	53	53	62	59	87	86	71	70	87	85	90	88	87	84	83	72
25.....							--	--	49	49	53	52	68	67	72	71	88	86	90	88	86	86	84	76
26.....							49	49	53	53	62	61	68	67	73	72	80	87	90	88	86	86	88	76
27.....							50	49	54	53	62	60	69	68	73	72	80	87	90	88	87	87	87	77
28.....							50	50	54	53	60	59	71	69	74	72	80	88	90	88	88	87	87	77
29.....							50	50	54	53	60	59	71	69	74	72	80	88	90	88	88	87	87	77
30.....							49	49	--	--	60	60	72	70	77	74	90	88	87	85	90	88	84	80
31.....							49	49	--	--	60	60	72	71	80	76	90	88	85	84	90	88	80	80
Average.....							--	--	51	50	57	55	66	65	68	67	86	83	88	86	89	86	86	78

PEARL RIVER BASIN--Continued  
PEARL RIVER AT JACKSON, MISS.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	86	80	80	51	52	51	54	54	45	44	55	55	56	56	66	65	74	74	82	80	80	80	81	80
2.....	87	79	56	49	52	51	54	54	47	45	58	58	56	56	65	65	74	74	82	81	80	79	80	79
3.....	84	76	53	47	52	51	54	54	47	47	58	58	55	55	65	65	74	74	83	81	79	78	80	79
4.....	88	76	53	51	51	50	54	54	47	47	58	55	55	55	65	64	74	74	83	81	78	78	80	79
5.....	89	79	54	50	54	51	55	54	49	47	57	56	56	55	64	64	74	74	83	79	78	78	80	80
6.....	88	80	55	50	54	51	58	55	50	49	58	58	56	56	64	64	74	74	80	79	79	78	80	79
7.....	82	75	56	50	51	49	55	55	50	50	59	58	57	56	64	64	74	73	83	80	79	79	79	79
8.....	77	74	56	52	49	49	55	55	50	50	60	59	58	57	65	64	73	73	84	82	79	79	80	79
9.....	83	71	56	53	50	49	55	55	50	50	59	58	58	58	65	65	73	73	84	83	79	79	80	79
10.....	85	74	56	55	50	49	55	55	51	50	58	58	59	59	66	65	73	73	83	82	79	79	80	79
11.....	84	78	57	56	49	49	55	54	52	51	58	58	59	59	67	66	73	73	84	83	79	79	80	79
12.....	79	76	57	56	50	49	54	52	52	52	59	58	59	59	67	67	73	73	84	83	80	80	80	78
13.....	79	78	58	57	50	49	52	51	52	52	60	59	60	59	68	67	73	73	83	82	80	80	79	77
14.....	83	78	59	58	49	47	51	49	52	51	60	59	60	60	68	68	74	73	82	80	80	80	78	78
15.....	76	68	59	53	48	47	49	48	52	52	62	60	60	60	68	68	74	74	80	79	80	80	78	77
16.....	70	63	59	58	48	46	48	48	52	52	62	62	61	60	68	68	76	74	79	79	80	80	78	76
17.....	71	60	59	58	48	47	48	47	52	52	62	61	62	61	69	68	77	76	79	78	80	80	77	77
18.....	72	62	59	58	48	47	48	48	52	52	62	62	62	62	69	69	78	76	78	78	80	80	78	77
19.....	68	63	59	58	47	46	48	47	53	52	62	62	62	62	70	69	78	77	79	78	81	80	78	77
20.....	66	62	59	58	46	45	47	47	54	53	62	61	63	62	70	70	78	77	79	79	81	80	78	77
21.....	65	63	58	55	46	44	47	47	54	54	63	61	63	63	70	70	79	78	79	79	82	81	79	77
22.....	65	63	55	54	47	45	47	45	54	54	63	62	64	63	70	70	79	78	79	78	82	81	79	77
23.....	66	63	54	52	47	46	45	45	54	54	62	61	64	64	71	70	80	78	78	77	82	82	79	78
24.....	67	64	52	51	48	47	45	44	54	53	61	60	65	64	71	71	79	78	78	77	82	82	78	77
25.....	69	66	51	50	49	47	44	44	54	54	60	59	65	65	71	70	82	78	78	78	82	81	78	77
26.....	71	68	50	49	50	48	44	44	54	54	60	60	66	65	71	70	82	80	80	78	82	81	78	76
27.....	70	68	51	50	52	50	44	44	54	54	60	58	66	72	71	82	81	80	80	82	81	78	77	
28.....	69	66	53	51	56	52	44	44	55	54	58	57	66	66	73	72	82	81	80	80	81	81	78	77
29.....	65	60	53	52	58	53	44	43	---	---	57	57	66	66	74	73	82	81	81	81	80	82	81	77
30.....	60	55	53	51	55	54	44	43	---	---	57	56	66	66	74	74	82	81	81	80	82	81	79	77
31.....	62	53	---	---	54	53	44	44	---	---	56	56	66	66	74	74	---	---	80	80	81	81	---	---
Average.....	75	69	56	53	50	49	50	49	52	51	59	59	61	60	69	69	77	76	81	80	80	80	79	78







Jan. 1-10, 1955.....	7,140	5.4	.16	11	2.4	11	1.0	21	15	21	.1	1.9	96	38	21	144	6.8	17	6.5	2.6
Jan. 11-17.....	2,340	5.4	--	17	3.4	20	31	41	18	58	.1	2.0	149	57	29	228	7.3	10	3.0	1.9
Jan. 18-20.....	1,300	--	--	--	--	--	--	44	17	--	--	2.0	--	71	35	306	7.2	--	--	--
Jan. 21-20.....	--	--	.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 21-29.....	974	5.9	27	--	5.1	34	48	52	21	74	.1	2.2	247	90	47	374	7.2	10	2.4	2.0
Jan. 30-31.....	710	--	--	--	--	--	--	58	22	95	--	2.5	--	101	54	458	7.2	--	--	--
Jan. 21-31.....	--	--	.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 1-10.....	742	10	.20	33	7.1	51	1.6	66	23	104	.3	.2	316	114	39	489	6.3	14	8.7	2.8
Feb. 11.....	1,650	--	--	--	--	--	54	44	23	104	--	2.8	--	92	56	447	7.1	--	--	--
Feb. 12-20.....	1,400	12	--	23	4.5	31	1.3	42	20	65	.1	2.4	223	76	42	329	7.1	9	3.7	2.1
Feb. 21-20.....	--	--	.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 21.....	1,970	--	--	--	--	--	39	39	18	71	--	7.8	--	--	--	344	7.0	--	--	--
Feb. 22-28.....	5,280	4.3	--	13	2.6	15	--	21	17	31	.1	2.3	119	44	27	178	6.9	12	9.0	2.1
Feb. 21-28.....	--	--	.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 1-10.....	15,300	4.0	.21	8.7	1.4	6.2	1.0	13	15	13	.0	1.9	75	29	18	101	6.8	16	12	2.5
Mar. 11-14.....	12,200	--	--	--	--	--	7.3	16	13	13	--	1.2	--	30	17	101	6.6	4	--	--
Mar. 15-20.....	5,640	3.1	--	12	2.4	12	1.1	27	14	23	.0	1.5	89	41	19	155	6.9	3	2.9	1.8
Mar. 21-20.....	--	--	.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 21-28.....	6,860	3.0	--	11	1.9	11	1.1	23	14	20	.0	.6	86	37	18	138	6.8	5	3.2	1.9
Mar. 29-31.....	3,910	--	--	--	--	--	17	32	15	30	--	1.7	--	48	22	187	7.0	3	--	--
Mar. 21-31.....	--	--	.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 1-10.....	3,160	2.6	.14	16	2.9	17	1.1	34	15	--	.0	1.1	119	55	27	207	7.1	3	--	--
Apr. 11-20.....	3,000	1.9	.17	18	3.2	20	1.4	41	17	41	.0	1.0	142	59	25	243	7.4	5	2.8	2.0
Apr. 21-28.....	2,420	1.7	--	18	3.0	21	1.3	39	14	42	.0	.9	153	58	26	240	7.3	5	3.2	2.2
Apr. 27-30.....	3,400	--	--	--	--	--	18	31	14	34	--	.8	--	49	24	197	7.2	5	--	--
Apr. 21-30.....	--	--	.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 1-4.....	2,120	--	--	--	--	--	20	37	15	38	--	.7	--	56	26	222	7.4	5	--	--
May 5-10.....	1,460	1.9	--	22	4.0	26	1.4	49	15	55	.0	.6	184	72	32	294	7.5	4	2.7	2.4
May 11-10.....	--	--	.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 11-18.....	1,020	2.5	--	28	5.1	39	.1	58	18	78	.2	1.0	221	91	44	380	7.6	5	3.1	2.0
May 19-20.....	850	--	--	--	--	--	53	66	20	98	--	.8	--	99	45	467	7.7	4	--	--
May 11-20.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 21-23, 25, 26-29, 31.....	766	2.9	--	33	6.4	50	1.5	88	19	105	.1	1.5	274	110	54	481	7.4	5	3.6	2.3

OHIO RIVER MAIN STEM--Continued  
ALLEGHENY RIVER AT RED HOUSE, N. Y.--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	
														Total	Non-carbonate			Unfiltered	Filtered
May 24, 26, 30, 1955	831	--	--	--	--	48	--	69	22	130	--	1.5	--	160	104	583	5	--	--
May 21-31	--	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 1-9	451	2.8	--	37	6.9	62	1.6	76	21	124	0.1	1.8	306	121	59	562	5	4.4	2.8
June 10	450	--	--	--	--	102	--	80	20	201	--	2.5	--	159	94	849	7.3	7	--
June 13	480	--	--	--	--	91	--	74	20	181	--	1.8	--	140	80	760	7.1	7	--
June 11-12, 14-20	453	3.6	--	37	6.7	62	1.7	71	21	125	.3	1.8	318	120	62	569	7.8	5	4.2
June 11-20	--	--	.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 21-30	274	7.4	.22	43	8.5	7.3	2.0	78	25	150	.2	1.0	390	142	78	700	7.2	2	2.3
July 1-10	214	54	.22	45	11	99	2.4	a106	30	184	.2	1.0	520	158	78	855	8.3	5	4.6
July 11-12, 17-20	204	11	--	52	11	112	2.5	93	31	220	.2	1.0	566	175	99	983	7.3	5	3.0
July 13-16	188	6.8	--	42	11	70	2.3	85	24	143	--	1.0	390	150	80	689	7.3	5	--
July 17-20	--	--	.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
July 21-24	267	54	--	44	11	96	2.7	b110	28	174	.4	1.4	518	155	76	854	8.6	5	4.4
July 25-26	268	--	--	56	18	152	3.1	102	40	292	--	1.0	--	214	130	1,220	8.2	5	--
July 21-31	--	--	.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 1-4	233	6.7	--	51	8.9	94	2.4	80	29	189	--	.8	470	164	98	838	7.2	7	4.4
Aug. 5-10	481	--	--	53	14	132	3.2	86	37	255	--	.6	--	190	119	1,060	7.5	5	--
Aug. 6-9	341	7.0	--	41	8.2	72	2.5	74	27	146	--	.6	391	136	76	681	7.3	7	4.6
Aug. 1-10	--	--	.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 11-14	916	5.7	--	46	6.3	84	2.5	69	28	174	--	1.0	442	141	84	768	7.3	7	8.1
Aug. 15-17	1,200	7.4	--	22	2.8	31	2.1	37	22	61	--	1.2	200	66	36	329	7.0	10	--
Aug. 18-20	651	7.8	--	32	5.2	48	2.2	51	26	98	--	.6	288	101	59	481	7.1	10	--
Aug. 11-20	--	--	.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 21-30	395	3.0	.22	36	9.3	68	2.2	67	25	143	.2	.9	387	128	73	654	7.3	7	4.7
Sept. 1-10	254	4.4	.14	48	9.7	97	2.3	99	28	185	.1	1.2	470	160	79	822	7.6	3	3.1
Sept. 11-20	173	4.4	.12	54	9.4	103	2.4	93	31	206	.1	1.4	492	174	97	886	7.5	3	3.7
Sept. 21-25, 27-30	200	3.3	--	54	10	106	2.4	92	30	214	.1	1.2	518	176	101	935	7.4	2	3.2
Sept. 26	255	--	--	--	--	--	--	99	49	376	--	2.1	--	277	196	1,510	7.5	--	2.9
Sept. 21-30	--	--	.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Average	2,030	7.5	0.19	33	6.6	55	1.9	58	22	111	0.2	1.5	296	107	60	515	--	7	4.3

a Includes equivalent of 3 parts per million of carbonate (CO<sub>3</sub>).b Includes equivalent of 7 parts per million of carbonate (CO<sub>3</sub>).

## OHIO RIVER MAIN STEM--Continued

## ALLEGHENY RIVER AT RED HOUSE, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 3 p. m./

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

## MONONGAHELA RIVER BASIN

## TYGART RIVER AT ELKINS, W. VA.

LOCATION.--At city water plant, at Elkins, Randolph County, 2½ miles upstream from gaging station near Elkins, and 4 miles upstream from Leading Creek.

DRAINAGE AREA.--268 square miles above water plant, 272 square miles above gaging station.

RECORDS AVAILABLE.--Water temperatures: January 1947 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 82°F on several days during July and August; minimum, freezing point Dec. 26, Jan. 29.

EXTREMES, 1947-55.--Water temperatures: Maximum, 92°F July 22, 1952; minimum, freezing point on many days during winter months.

REMARKS.--No appreciable inflow between water plant and gaging station except during periods of heavy local rains. During flood periods part of flow is diverted around the water plant in a flood by-pass channel. Records of discharge for gaging station near Elkins for water year October 1954 to September 1955 given in WSP 1375.

Temperature (°F) of water, water year October 1954 to September 1955												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	45	39	41	34	47	52	61	68	76	82	77
2	68	43	38	40	36	49	51	63	69	80	82	72
3	66	42	38	40	34	46	53	67	70	78	81	72
4	70	40	37	40	36	49	55	70	72	78	82	74
5	70	40	38	40	36	45	54	71	74	82	82	74
6	66	42	36	41	38	43	53	68	76	80	81	76
7	62	41	35	40	39	41	48	70	74	80	78	76
8	57	40	37	38	40	41	50	68	69	82	76	77
9	56	40	36	40	42	44	54	67	68	81	76	74
10	58	39	35	38	43	47	56	69	68	74	80	76
11	60	41	34	37	36	51	57	62	67	76	79	72
12	62	43	36	36	34	54	60	68	65	77	78	70
13	65	43	37	34	33	53	61	62	62	78	76	72
14	67	44	36	34	33	53	62	58	60	80	76	74
15	57	47	38	34	34	50	60	60	63	80	78	76
16	57	47	37	36	36	48	64	64	64	81	78	77
17	50	50	37	34	34	48	64	65	66	79	77	77
18	54	52	38	33	36	43	65	66	70	80	78	72
19	52	54	36	34	40	41	66	66	74	79	79	70
20	52	52	35	34	40	47	68	67	76	80	80	72
21	50	51	34	34	38	50	64	70	77	80	78	72
22	51	50	35	33	44	49	65	71	77	81	76	72
23	50	47	35	34	44	50	65	71	78	82	79	70
24	51	46	34	33	42	51	64	70	76	78	79	66
25	52	42	34	34	44	47	61	71	75	76	78	66
26	52	40	--	34	43	42	55	73	74	78	79	65
27	52	40	34	33	45	37	52	76	74	80	78	66
28	51	46	36	33	45	38	55	77	75	79	77	67
29	50	40	40	32	--	41	60	74	73	80	78	67
30	48	36	39	33	--	42	62	70	76	81	79	66
31	44	--	39	33	--	42	--	66	--	80	78	--
Average	57	44	36	36	39	46	59	68	71	79	79	72

a Includes estimated temperature, 32°F, on Dec. 26.

## 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 (at gaging station).

RECORDS AVAILABLE.--Sediment records: October 1954 to September 1955, periodic.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385. Flow partially regulated by 4 detention reservoirs.

## Periodic determinations of suspended-sediment discharge, water year October 1954 to September 1955

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
Oct. 5, 1954	6.8	44	0.8
Oct. 6	6.1	24	.4
Oct. 11	1.1	27	.1
Oct. 13	.6	17	(t)
Oct. 15	16	168	7.2
Oct. 15	46	684	85
Oct. 15	238	707	454
Oct. 15	375	1,730	1,750
Oct. 15	515	1,090	1,520
Oct. 15	622	809	1,360
Oct. 15	720	745	1,450
Oct. 15	622	382	641
Oct. 15	362	193	189
Oct. 16	165	131	58
Oct. 16	70	58	11
Oct. 18	6.8	20	.4
Oct. 22	2.3	12	.1
Oct. 25	1.1	17	.1
Oct. 27	72	847	165
Oct. 27	87	641	150
Oct. 27	87	333	78
Oct. 27	62	89	15
Oct. 28	33	44	3.9
Oct. 28	20	36	1.9
Dec. 14	--	834	--
Dec. 15	--	48	--
Dec. 29	--	2,680	--
Dec. 30	--	721	--
Jan. 6, 1955	49	93	12
Jan. 17	9.4	9	.2
Feb. 2	89	429	103
Feb. 2	77	232	48
Feb. 3	28	24	1.8
Feb. 6	541	1,800	2,630
Feb. 6	515	797	1,110
Feb. 7	112	71	21
Feb. 17	77	52	11
Feb. 27	130	133	47
Feb. 27	112	80	24
Feb. 28	59	31	4.9
Mar. 1	268	1,420	1,030
Mar. 1	338	1,670	1,520
Mar. 1	325	1,190	1,040
Mar. 1	268	620	449
Mar. 2	30	22	1.8
Mar. 8	19	5	.2
Mar. 11	98	1,270	336
Mar. 11	108	706	206
Mar. 15	11	2	.1
Mar. 18	18	9	.4
Mar. 22	118	508	162
Mar. 25	6.4	10	.2
Mar. 29	4.6	2	(t)
Apr. 5	2.2	4	(t)
Apr. 8	5.1	9	.1
Apr. 12	4.0	10	.1
Apr. 15	36	46	4.5
Apr. 18	7.4	8	.2
Apr. 21	118	326	104
Apr. 21	108	218	64

t Less than 0.05 ton.

## MONONGAHELA RIVER BASIN--Continued

## SALEM FORK AT SALEM, W. VA.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1954 to September 1955--Continued

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
Apr. 21, 1955	98	157	42
Apr. 26	58	72	11
Apr. 29	9.0	12	.3
May 3	3.0	8	.1
May 6	2.0	9	(t)
May 10	.9	11	(t)
May 13	16	122	5.3
May 17	2.8	23	.2
May 20	1.8	24	.1
June 1	.04	44	(t)
June 7	150	5,980	2,420
June 10	1.1	40	.1
June 15	3.3	64	.6
June 18	.9	337	.8
June 21	.8	44	.1
June 24	.1	31	(t)
June 28	.1	21	(t)
July 1	.02	24	(t)
July 5	.01	34	(t)
July 8	.2	23	(t)
July 9	38	164	17
July 12	.9	18	(t)
July 15	.5	22	(t)
July 17	80	454	98
July 17	72	3,260	634
July 19	1.3	162	.6
July 22	.2	20	(t)
July 26	3.0	29	.2
July 29	1.0	27	.1
Aug. 2	.2	20	(t)
Aug. 5	.08	23	(t)
Aug. 9	.06	22	(t)
Aug. 16	.2	15	(t)
Aug. 19	.5	12	(t)
Aug. 22	1,890	2,060	10,500
Aug. 22	1,890	806	4,110
Aug. 22	280	188	142
Aug. 23	118	75	24
Aug. 23	64	34	5.9
Aug. 26	1.4	4	.2
Aug. 30	.4	31	(t)
Sept. 3	.09	22	(t)
Sept. 6	.10	14	(t)
Sept. 13	.09	19	(t)
Sept. 20	.08	20	(t)
Sept. 23	.09	19	(t)
Sept. 23	.09	30	(t)
Sept. 27	.3	13	(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 1954 to September 1955  
(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	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
Oct. 15, 1954 . . . . .	2:45 p.m.	375		1,730	3,860	32	46	62	77	89	94	98	--		--		BSWCM
Dec. 29 . . . . .	11:00 a.m.	--		2,680	1,110	34	46	52	67	77	84	92	100		--		BSWCM
Dec. 30 . . . . .	6:30 a.m.	--		721	1,240	32	41	53	67	74	81	90	98		100		BSWCM
Feb. 6, 1955 . . . . .	6:30 p.m.	515		797	1,390	28	36	49	61	71	81	90	98		100		BSWCM
Mar. 1 . . . . .	12:00 p.m.	288		620	1,260	29	39	52	66	76	87	93	99		100		BSWCM
Mar. 11 . . . . .	9:25 a.m.	98		1,270	1,200	52	70	85	96	99	100	--	--		--		BSWCM
Mar. 22 . . . . .	9:40 a.m.	118		508	731	44	59	77	91	97	100	--	--		--		BSWCM
June 7 . . . . .	2:30 p.m.	150		5,980	3,970	44	58	75	90	97	100	--	--		--		BSWCM
June 7 . . . . .	2:30 p.m.	150		5,980	3,760	29	44	63	83	88	99	100	--		--		BSNM
July 17 . . . . .	3:10 p.m.	80		454	694	47	65	82	91	98	99	100	--		--		BSWCM
July 17 . . . . .	4:15 p.m.	72		3,260	2,300	41	56	77	94	98	100	--	--		--		BSWCM
July 17 . . . . .	4:15 p.m.	72		3,260	2,760	30	49	70	93	99	100	--	--		--		BSNM



## MONONGAHELA RIVER BASIN--Continued

## CHEAT RIVER AT LAKE LYNN, PA.

LOCATION.--At the Lake Lynn hydroelectric plant of the West Penn Power Company at Lake Lynn, Fayette County, 3 miles upstream from mouth, and 13.8 miles downstream from gaging station near Pisgah, W. Va.

DRAINAGE AREA.--1,411 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 85°F Aug. 6; minimum, 33°F Feb. 2.

EXTREMES, 1948-55.--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. Measurements are made as water passes through hydroelectric plant. Records of discharge for Cheat River near Pisgah for water year October 1954 to September 1955 given in WSP 138.

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	51	45	42	35	38	48	60	70	73	84	77
2	72	51	45	43	33	44	48	58	70	75	84	75
3	72	49	45	40	35	46	50	68	70	77	84	75
4	71	49	45	40	35	47	48	65	70	77	84	75
5	72	48	45	40	35	45	46	66	70	77	84	76
6	71	48	43	42	34	47	48	65	73	78	85	78
7	69	48	42	42	34	47	47	64	73	79	84	77
8	69	47	41	42	34	47	47	65	73	79	83	76
9	68	47	41	42	34	45	47	63	70	80	80	74
10	68	45	40	42	35	46	50	64	70	81	80	75
11	68	45	41	42	36	46	51	64	71	80	81	75
12	70	45	36	42	35	44	52	64	70	80	80	76
13	70	47	37	42	35	46	54	66	69	80	79	73
14	69	47	36	41	36	48	54	64	67	80	79	72
15	69	45	37	37	34	48	54	65	66	82	78	74
16	--	44	36	37	34	51	54	65	66	83	78	75
17	56	44	36	37	34	49	55	65	68	83	78	74
18	56	46	36	37	34	48	56	63	70	83	78	77
19	56	47	36	37	34	48	56	66	70	83	77	76
20	55	48	36	37	34	50	59	65	72	82	77	74
21	55	46	36	35	34	48	60	66	75	81	77	72
22	52	46	36	35	34	47	62	66	75	81	76	74
23	54	46	36	35	34	46	62	68	74	83	76	74
24	54	46	36	34	34	47	62	69	73	83	73	73
25	54	46	36	34	40	48	63	70	73	81	76	73
26	55	46	36	34	42	48	63	69	72	82	75	71
27	55	46	36	34	42	48	61	69	72	82	77	71
28	53	46	36	34	38	49	60	69	73	82	78	70
29	53	46	37	34	--	49	59	70	73	83	78	70
30	52	45	38	34	--	49	60	72	73	83	80	70
31	52	--	42	34	--	49	--	72	--	82	77	--
Average	62	47	39	38	35	47	55	66	71	80	79	74

## BEAVER RIVER BASIN

## MAHONING RIVER AT LEAVITTSBURG, OHIO

LOCATION.--Temperature recorder at gaging station on right bank at upstream side of highway bridge at Leavittsburg, Trumbull County, 300 feet downstream from Duck Creek and 14 miles downstream from Eagle Creek.

DRAINAGE AREA.--580 square miles.

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

Water temperatures: April 1943 to December 1945, October 1946 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 80° F Aug. 2; minimum, freezing point Feb. 10, 19-20, 23.

EXTREMES, 1948-55.--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 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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

## BEAVER RIVER BASIN--Continued

## MAHONING RIVER AT LOWELLVILLE, OHIO

LOCATION.--Temperature recorder at gaging station on left bank 200 feet upstream from Washington Street Bridge at Lowellville, Mahoning County, 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.

Water temperatures: October 1943 to November 1944, incomplete, October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 112°F Aug. 19; minimum, 34°F Feb. 12.

EXTREMES, 1949-55.--Water temperatures: Maximum, 112°F Aug. 19, 1955; minimum, freezing point Dec. 5, 1950

REMARKS.--Water temperatures affected by cooling water from steel mills. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

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.....	105	100	64	60	67	63	51	44	--	--	48	42	63	50	83	70	99	87	--	102	90	102	99	92
	2.....	108	98	69	65	68	65	52	47	--	--	44	40	68	57	88	74	101	89	--	107	93	101	92	93
	3.....	101	90	69	62	68	63	51	45	--	--	46	39	64	62	92	81	104	92	--	104	95	102	93	95
	4.....	93	81	72	68	67	66	56	51	--	--	47	45	73	60	98	85	101	92	--	103	95	101	94	96
	5.....	83	78	72	69	67	60	58	54	68	64	47	45	78	66	98	81	98	90	--	108	97	105	96	96
	6.....																								
	7.....	83	74	75	69	65	59	58	43	69	57	46	45	83	76	96	87	102	91	--	104	94	107	98	96
	8.....	81	71	72	68	65	60	43	41	63	57	45	41	76	71	97	86	97	91	--	96	87	104	97	94
	9.....	81	72	74	65	70	62	47	42	63	59	42	40	80	69	91	80	92	78	--	99	86	102	94	97
	10.....	87	78	74	67	72	69	49	45	67	59	48	41	87	76	89	79	83	79	--	99	91	101	94	97
	11.....	87	83	81	73	70	68	52	49	59	49	50	44	87	79	86	82	85	76	--	104	89	104	97	97
	12.....	93	83	82	72	70	66	61	52	49	35	51	46	86	79	94	83	90	82	--	96	85	97	92	92
	13.....	94	83	80	75	67	63	61	57	37	34	52	43	92	82	99	85	91	85	--	104	95	101	92	95
	14.....	91	84	79	71	69	66	60	59	43	35	49	45	90	81	94	89	87	78	--	99	86	101	91	93
	15.....	93	87	75	68	72	66	62	59	49	39	53	44	88	80	96	87	78	77	--	90	85	103	93	93
	16.....	87	57	73	65	69	62	63	59	57	48	52	48	80	70	95	84	86	74	--	101	88	108	97	97
	17.....	58	53	76	66	70	63	59	55	60	56	51	45	71	65	98	83	97	81	--	108	95	109	100	98
	18.....	54	51	86	76	69	65	57	54	57	51	48	42	73	65	92	83	105	89	--	109	99	109	98	96
	19.....	56	50	86	80	66	52	--	--	56	49	50	46	76	66	96	84	109	88	--	108	99	105	97	96
	20.....	64	56	87	81	52	44	--	--	56	48	56	46	80	65	96	88	106	97	106	95	112	100	105	96
	21.....	64	59	85	75	50	45	--	--	49	44	57	49	71	63	102	90	106	97	106	93	110	100	103	95
	22.....	70	62	76	70	56	49	--	--	44	40	56	52	66	64	104	90	--	--	107	94	103	101	93	93
	23.....	73	65	74	70	61	55	--	--	40	37	52	43	72	62	99	85	--	--	106	95	99	95	101	93
	24.....	72	65	76	71	67	59	--	--	40	36	47	42	79	69	99	84	--	--	104	96	101	94	98	88
	25.....	72	64	77	73	63	53	--	--	45	35	49	44	77	71	95	84	--	--	96	89	102	93	96	91
	26.....	72	63	75	72	53	49	65	60	46	41	52	47	71	62	91	81	--	--	100	87	103	94	99	93
	27.....																								
	28.....	73	68	77	72	52	45	71	61	42	41	50	45	82	57	86	79	--	--	103	89	106	94	98	93
	29.....	75	68	72	68	61	51	62	57	43	41	49	45	80	55	97	82	--	--	101	95	102	98	101	93
	30.....	74	67	72	67	68	59	--	--	46	42	53	46	69	56	100	92	--	--	104	93	99	97	101	92
	31.....	72	69	70	62	63	50	--	--	--	--	55	48	75	62	97	88	--	--	106	95	103	96	103	97
	32.....	70	64	65	61	51	45	--	--	--	--	57	47	80	70	91	85	--	--	108	95	102	96	104	97
	33.....	65	62	--	--	48	45	--	--	--	--	56	47	--	--	93	85	--	--	101	92	102	93	--	--
	Average.....	79	71	76	69	64	58	--	--	52	46	50	45	76	67	95	84	--	--	--	103	93	102	94	94

Temperature (°F) of water, water year October 1954 to September 1955  
 Recorder with temperature attachment, seven-day gas-actuated thermograph

## 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 Mucknoes Run.

DRAINAGE AREA.--23,500 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES. 1954-55.--Dissolved solids: Maximum, 380 ppm Sept. 21-30; minimum, 113 ppm Jan. 1-10.

Hardness: Maximum, 186 ppm July 21-31; minimum, 66 ppm Jan. 1-10.

Specific conductance: Maximum daily, 691 micromhos Sept. 21; minimum daily, 169 micromhos Jan. 2.

Water temperatures: Maximum, 88°F July 31; minimum, freezing point Jan. 29.

REMARKS.--Acidity determined to phenolphthalein end point. 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 1954 to September 1955

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 100°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. 1-10, 1954.....	10		0.2	0.00	1.0	43	13	27	3.7	6	168	24	0.4	5.9	317	160	156	--	--	471	5.9	4
Oct. 11-20.....	9.0		--	.05	.79	31	10	15	3.1	8	118	16	.1	2.4	217	120	112	--	--	331	5.8	3
Oct. 21-31.....	7.7		--	.01	.95	24	8.3	9.9	3.2	3	101	8.6	.2	2.3	176	95	92	--	--	269	5.2	2
Nov. 1-10.....	7.4		--	.01	1.1	29	9.1	12	2.5	4	120	10	.2	2.0	205	110	106	--	--	313	5.8	1
Nov. 11-20.....	6.0		--	.02	.72	29	8.2	15	1.9	12	108	14	.2	1.5	197	107	96	--	--	317	6.3	1
Nov. 21-30.....	5.3		--	.01	.95	33	9.3	17	2.9	8	125	16	.3	2.5	224	121	114	--	--	336	6.1	1
Dec. 1-10.....	5.0		--	.01	.72	28	8.5	15	2.3	10	107	15	.2	1.3	194	105	97	--	--	313	6.2	1
Dec. 11-20.....	4.3		--	.03	.70	26	7.5	13	1.8	12	94	14	.2	1.5	173	95	86	--	--	285	6.3	1
Dec. 21-31.....	6.4		0	.02	.52	23	6.2	8.8	1.5	10	82	8.7	.1	2.2	143	82	75	--	--	233	6.3	1
Jan. 1-10, 1955.....	6.0		0	.08	.43	18	5.3	5.6	1.4	7	63	6.4	.1	2.2	113	66	61	--	--	187	6.2	1
Jan. 11-20.....	6.3		--	.04	.70	24	8.4	9.2	1.8	8	86	7.0	.2	2.0	151	87	80	--	--	255	6.3	3
Jan. 21-31.....	6.6		--	.03	.87	31	8.6	15	2.4	7	118	12	.2	2.1	211	115	108	--	--	332	6.1	3
Feb. 1-10.....	7.0		3	.01	.84	35	10	17	2.5	5	141	18	.3	2.1	242	129	124	--	--	321	5.6	5
Feb. 11-20.....	6.1		1	.00	.56	24	7.1	8.2	1.5	4	91	10	.1	2.4	164	89	86	--	--	254	5.9	3
Feb. 21-28.....	5.6		3	.03	.62	22	6.8	6.9	1.8	7	79	8.2	.1	3.4	148	85	78	--	--	196	5.8	4
Mar. 1-10.....	5.7		1	.03	.60	19	6.8	4.8	1.3	5	69	6.0	.1	2.5	125	75	71	--	--	186	5.8	4
Mar. 11-20.....	5.8		1	.06	.54	20	6.8	6.8	1.5	4	82	6.8	.2	1.4	140	78	75	--	--	224	5.5	2
Mar. 21-31.....	5.3		3	.05	.62	22	6.9	7.2	1.3	4	88	7.2	.2	1.6	149	83	80	--	--	238	5.5	2
Apr. 1-10.....	5.9		2	.04	.71	27	8.3	12	1.8	8	106	12	.2	1.1	187	101	95	--	--	299	6.0	2
Apr. 11-20.....	8.0		--	.03	.99	34	10	17	2.6	10	137	14	.3	1.6	237	106	118	--	--	370	6.3	2
Apr. 21-30.....	6.3		--	.13	.97	28	8.6	13	1.8	6	115	9.8	.2	1.3	176	106	100	--	--	309	6.0	2
May 1-10.....	5.6		--	.02	.61	26	7.5	11	2.0	9	98	8.0	.2	2.2	195	96	88	0.1	0.1	275	6.2	3
May 11-20.....	6.0		--	.01	.57	36	11	19	2.6	4	149	14	.2	2.6	250	135	132	.1	.2	395	5.5	2
May 21-31.....	6.2		--	.01	1.2	42	12	22	2.9	4	173	17	.3	2.7	287	153	151	.2	.2	448	5.3	2

a Includes 0.11 parts per million zinc.

June 1-10, 1955...	7.7	--	.01	.21	40	12	22	2.8	12	180	19	.3	3.5	280	152	142	.2	1	434	6.1	3
June 11-20.....	6.6	--	.01	.93	31	8.9	16	2.1	4	121	12	.3	2.6	222	114	111	.2	.1	343	5.7	2
June 21-30.....	7.4	--	.00	.28	34	9.3	16	2.3	9	124	13	.3	4.2	239	122	115	.1	.2	361	6.7	2
July 1-10.....	7.2	--	.00	.05	41	12	22	2.8	13	150	18	.3	5.7	279	153	142	.2	.2	434	6.4	2
July 11-20.....	8.8	--	.00	.15	46	14	31	4.6	15	182	20	.4	4.3	349	177	165	.1	.1	516	6.4	4
July 21-31.....	8.2	--	.00	1.6	49	15	30	3.9	10	198	21	.5	3.9	357	186	178	.1	.1	530	6.1	1
Aug. 1-10.....	8.1	--	.01	.57	43	13	27	4.5	14	178	21	.5	6.5	323	173	162	.1	.0	495	6.4	3
Aug. 11-20.....	8.6	--	.03	1.7	46	15	20	4.7	12	178	22	.6	4.4	353	174	174	.1	.2	523	6.1	1
Aug. 21-31.....	7.4	--	.01	1.0	36	12	21	3.2	9	129	22	.5	3.2	277	147	140	.2	.1	423	6.0	1
Sept. 1-10.....	7.4	--	.00	.93	42	13	23	3.6	10	156	26	.6	5.2	293	158	150	.1	.1	453	6.2	1
Sept. 11-20.....	8.2	--	.01	.64	47	14	29	4.4	12	177	24	.5	6.4	329	177	167	.1	.1	504	6.2	8
Sept. 21-30.....	8.2	0.2	.01	.85	51	14	35	5.4	12	203	31	.6	5.3	380	185	175	.0	.0	567	6.1	6
Time-weighted average .....	6.9	--	0.02	0.74	33	9.9	17	2.7	8	128	14	0.3	3.0	231	123	116	--	--	358	--	2

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 8, AT NEWELL, W. VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at varying hours/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	53	45	45	36	46	55	60	72	78	87	78
2	74	54	47	46	36	44	48	64	74	80	87	78
3	74	52	43	44	38	48	46	66	75	80	82	78
4	74	49	43	42	35	49	49	65	75	81	82	79
5	74	49	42	42	37	46	51	68	76	81	82	78
6	72	49	40	43	38	49	53	68	75	82	87	79
7	69	48	39	43	36	48	50	69	76	82	--	78
8	67	50	39	44	37	49	51	65	71	82	84	77
9	67	47	38	44	39	48	51	65	65	81	85	78
10	66	48	39	38	39	48	55	66	70	80	86	78
11	68	46	39	38	38	48	55	66	68	80	70	77
12	68	47	38	42	34	48	57	68	69	82	70	75
13	65	49	39	38	34	51	58	67	67	85	69	77
14	70	49	39	37	35	50	59	68	67	85	82	76
15	67	48	39	36	37	48	59	70	68	85	79	77
16	60	48	40	36	36	47	60	70	69	85	79	77
17	58	49	40	36	37	42	64	68	70	86	79	79
18	56	50	38	36	37	47	65	70	74	84	81	78
19	56	51	39	37	40	47	65	68	76	83	81	78
20	55	50	38	36	40	45	65	71	75	83	83	78
21	54	50	37	36	42	45	64	72	75	85	80	77
22	55	50	35	37	41	50	65	72	74	83	--	78
23	56	50	38	37	40	45	65	72	75	83	80	70
24	57	51	37	38	36	47	66	73	75	84	79	74
25	55	51	37	38	38	46	64	75	74	84	79	74
26	55	47	38	38	39	41	63	76	76	84	79	74
27	55	47	38	35	42	40	80	76	75	84	79	--
28	57	47	40	34	46	46	80	75	75	84	80	73
29	55	46	45	32	--	44	61	74	77	86	81	73
30	55	46	45	33	--	39	64	71	78	--	85	73
31	55	--	42	34	--	38	--	71	--	88	76	--
Average	63	49	40	39	38	46	58	69	73	83	80	77



## MUSKINGUM RIVER BASIN

## WALHONDING RIVER BELOW MOHAWK DAM, AT NELLIE, OHIO

LOCATION.--At gaging station at bridge on State Highway 79 at Nellie, Coshocton County, half a mile upstream from Mohawk Creek and 1½ miles downstream from Mohawk Dam.

DRAINAGE AREA.--1,502 square miles.

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

Water temperatures: October 1953 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 316 ppm Oct. 21-31; minimum, 144 ppm Mar. 22-28.

Hardness: Maximum, 231 ppm Nov. 22-30; minimum, 107 ppm Mar. 22-28.

Specific conductance: Maximum daily, 321 microhos Feb. 1; minimum, freezing point on many days during December, January, and February.

Water temperatures: Maximum, 89°F Aug. 1-3; minimum, freezing point on many days during December, January, and February.

EXTREMES, 1953-55.--Dissolved solids: Maximum, 325 ppm Jan. 11-28, 1954; minimum, 144 ppm Mar. 22-28, 1955.

Hardness: Maximum, 233 ppm Jan. 11-28, 1954; minimum, 107 ppm Mar. 22-28, 1955.

Specific conductance: Maximum daily, 367 microhos Jan. 15, 1954; minimum, 192 microhos Mar. 23, 1955.

Water temperatures: Maximum, 89°F Aug. 1-3, 1955; minimum, freezing point on many 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 1954

20 September 1955 given in WSP 1385. Flow regulated by Mohicanville, Charles Mill, Pleasant Hill, and Mohawk Reservoirs. Flow affected by ice Dec. 8-9,

20 September 1955 given in WSP 1385. Flow regulated by Mohicanville, Charles Mill, Pleasant Hill, and Mohawk Reservoirs. Flow affected by ice Dec. 8-9,

20 September 1955 given in WSP 1385. Flow regulated by Mohicanville, Charles Mill, Pleasant Hill, and Mohawk Reservoirs. Flow affected by ice Dec. 8-9,

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	231	13	0.02	54	18	16	3.4	186	63	16	0.4	2.7	282	210	56	459	8.1	7
Oct. 11-20	762	17	.02	51	14	12	3.3	160	59	14	.2	4.4	280	186	54	415	7.9	7
Oct. 21-31	324	30	.02	58	17	17	2.9	198	68	13	.3	4.5	316	213	52	471	8.1	4
Nov. 1-3, 5-10	244	8.5	.01	61	18	15	2.5	207	67	14	.3	2.7	302	228	57	487	8.0	4
Nov. 11-17	215	2.8	.01	61	19	14	2.4	204	67	15	.2	2.4	291	228	63	483	8.0	4
Nov. 22-30	267	4.5	.02	62	19	14	2.6	207	66	15	.3	2.9	293	231	63	486	8.1	5
Dec. 1-10	297	1.0	.02	61	18	13	2.4	193	76	14	.3	2.5	295	227	68	483	8.2	5
Dec. 11-20	265	3.1	.07	56	18	14	2.4	194	62	16	.3	3.6	273	220	60	478	8.2	8
Dec. 21-31	200	7.3	.05	57	19	14	1.6	187	69	16	.2	3.6	268	220	67	478	8.2	9
Dec. 28-31	1,870	8.2	.03	43	13	9.2	2.1	132	53	13	.2	8.8	238	177	63	368	8.2	6
Jan. 1-10, 1955	2,020	8.2	.02	46	13	7.1	1.8	128	59	13	.2	8.7	250	176	63	368	8.1	6
Jan. 11-20	964	7.0	.03	56	15	9.2	1.8	132	70	13	.2	6.7	267	202	77	429	8.1	6
Jan. 21-26, 28, 31	456	8.2	.04	61	18	11	2.3	182	73	14	.3	5.2	290	227	77	480	7.8	5
Feb. 1-8	526	7.3	.08	60	17	13	2.4	165	69	16	.3	4.4	288	221	68	484	7.7	5
Feb. 9-20	1,830	7.2	.08	46	12	8.5	2.2	123	55	13	.2	8.2	218	164	63	368	7.6	7
Feb. 21-24	5,702	9.0	.08	33	8.4	4.9	2.3	49	40	6.5	.3	8.8	163	118	50	265	7.5	17
Feb. 25-28	3,940	8.9	.04	41	10	5.6	2.3	100	51	8.0	.3	9.6	194	143	61	317	7.5	17
Mar. 1-7	3,448	8.2	.10	37	10	5.3	2.6	109	39	7.8	.3	6.8	180	137	44	292	7.3	20

MUSKINGUM RIVER BASIN--Continued  
WALHONDING RIVER BELOW MOHAWK DAM, AT NELLIE, OHIO--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--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			
Mar. 8-13, 1955	5,315	11	0.15	30	8.7	3.4	1.9	66	34	6.5	0.3	6.9	153	111	40	248	7.3	20
Mar. 14-21	5,555	8.8	.11	38	11	4.5	2.3	99	47	8.0	.3	6.6	182	139	59	298	7.3	20
Mar. 22-28	5,414	8.0	.11	28	8.7	3.4	2.3	82	34	5.8	.3	5.8	144	107	38	235	7.3	25
Mar. 29-Apr. 10	2,770	8.4	.06	43	13	5.5	1.8	128	49	8.5	.3	5.1	205	162	56	340	7.6	15
Apr. 11-20	1,184	7.0	.06	47	15	7.1	1.8	148	52	9.5	.2	3.8	220	178	58	372	7.7	5
Apr. 21-30	1,635	8.2	.01	43	13	6.4	1.5	138	46	8.5	.2	2.0	213	162	48	344	7.8	3
May 1-10	738	8.4	.01	50	15	8.5	1.6	158	57	10	.2	1.0	236	187	57	394	7.9	3
May 11-31	479	5.0	.00	54	18	9.9	1.6	177	58	13	.3	2.5	256	210	65	431	7.7	3
June 1-15	326	6.6	.00	58	19	12	1.5	190	63	14	.4	3.1	277	224	68	460	7.7	2
June 16-30	254	11	.00	56	20	12	1.7	190	64	13	.4	2.6	279	223	67	462	7.8	3
July 1-15	545	9.9	.10	51	17	10	2.2	169	54	12	.4	3.6	247	198	60	411	7.7	6
July 16-31	435	10	.01	50	17	9.6	2.5	172	50	12	.4	2.9	242	192	51	409	7.8	3
Aug. 1-15	356	9.8	.01	52	16	12	2.8	173	59	13	.4	2.4	258	198	56	432	7.8	4
Aug. 16-31	231	10	.04	51	19	13	2.7	182	63	13	.4	2.8	271	205	56	444	7.4	7
Sept. 1-15	170	7.7	.13	55	20	15	2.6	188	72	14	.3	2.6	287	220	65	476	7.8	4
Sept. 16-30	176	8.7	.02	56	20	15	2.7	188	70	16	.4	2.7	285	222	68	475	7.8	6
Time-weighted average <sup>a</sup>	a 1,096	8.8	0.04	52	16	11	2.3	165	59	12	0.3	4.0	254	196	60	420	--	7

<sup>a</sup> Represents 98 percent of days and 99 percent of runoff.

## MUSKINGUM RIVER BASIN--Continued

## WALHONDING RIVER BELOW MOHAWK DAM, AT NELLIE, OHIO--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 5 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	44	40	--	32	45	50	67	76	82	89	71
2	76	44	40	--	32	44	52	68	74	84	89	72
3	72	43	38	--	33	43	51	71	75	78	89	75
4	73	43	38	--	32	47	51	74	74	83	88	77
5	68	43	38	--	32	48	54	72	78	85	87	78
6	64	44	38	--	32	42	57	70	75	79	87	77
7	60	44	32	--	33	42	51	69	74	81	84	76
8	60	46	32	--	32	45	52	66	74	83	81	76
9	62	46	32	--	33	44	56	64	69	80	78	76
10	65	45	34	--	35	44	57	63	71	79	81	75
11	68	44	34	43	32	45	59	66	72	82	81	74
12	70	46	--	34	33	49	60	67	69	80	82	74
13	70	45	35	35	33	49	62	66	64	81	80	73
14	70	47	38	34	33	48	61	67	77	80	75	72
15	61	45	38	36	33	49	58	70	77	77	77	75
16	57	44	38	35	33	47	61	72	78	81	81	77
17	56	44	39	34	34	45	64	74	79	82	82	78
18	53	--	40	32	34	45	63	70	81	83	84	78
19	53	--	39	33	35	44	64	68	81	83	87	78
20	52	--	32	33	34	50	66	73	80	83	85	76
21	54	--	32	33	38	49	62	74	79	84	83	71
22	55	45	--	33	38	48	64	75	79	84	77	72
23	55	45	--	32	38	46	63	76	76	--	77	71
24	56	44	--	33	39	44	64	74	77	--	78	70
25	55	45	--	32	39	46	60	70	71	--	79	68
26	56	43	--	33	42	43	56	74	73	--	79	64
27	57	39	--	32	44	40	58	77	75	--	79	69
28	54	41	--	32	44	39	60	76	78	--	77	67
29	53	40	--	--	--	41	64	75	80	--	81	68
30	45	40	--	--	--	43	61	69	77	--	77	69
31	47	--	--	--	--	48	--	68	--	--	77	--
Aver- age	60	44	a 35	--	35	45	59	70	75	--	82	73

a Includes estimated temperature, 32° F, Dec. 22-27.

## 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 Wakatonika Creek.

DRAINAGE AREA.--5,982 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 88°F Aug. 4; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 531 ppm Mar. 4; minimum daily, 1 ppm Nov. 11-12, 17.

Sediment loads: Maximum daily, 34,300 tons Mar. 4; minimum daily, 3 tons Nov. 12, 17.

EXTREMES, 1952-55.--Water temperatures: Maximum, 88°F Aug. 4, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 531 ppm Mar. 4, 1955; minimum daily, 1 ppm

Dec. 26-27, 1952, Nov. 11-12, 17, 1954.

Sediment loads: Maximum daily, 34,300 tons Mar. 4, 1955; minimum daily, 3 tons

Dec. 26-27, 1952, Nov. 7, 1953, Nov. 12, 17, 1954.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385. Flow regulated by 14 flood-control reservoirs. Flow affected by ice Jan. 27-Feb. 10.

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 11 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	47	40	39	--	40	49	61	65	74	82	72
2	75	44	39	40	--	46	50	60	65	75	84	72
3	73	44	37	39	--	41	49	62	66	76	82	72
4	72	42	37	41	--	44	52	64	67	76	88	73
5	70	43	38	43	--	--	49	67	68	78	85	73
6	65	44	35	42	--	44	53	66	73	77	83	75
7	60	44	32	42	--	38	51	65	72	76	83	74
8	57	45	34	39	--	34	53	64	70	77	80	71
9	59	46	34	39	35	41	55	62	68	77	78	71
10	62	45	33	38	34	46	52	62	66	76	78	74
11	65	45	32	39	32	48	55	62	68	75	80	72
12	65	47	34	37	--	48	57	65	67	75	78	67
13	67	46	34	34	--	48	61	63	65	76	75	66
14	68	46	36	34	--	49	61	62	65	78	74	67
15	64	47	37	35	--	49	60	62	64	78	71	69
16	57	44	37	36	32	47	59	64	67	76	72	69
17	55	48	36	35	34	46	60	63	--	78	75	71
18	52	51	37	34	36	44	60	63	72	70	77	72
19	52	51	34	33	37	44	62	--	76	77	77	72
20	52	51	--	33	37	45	63	66	73	78	79	72
21	51	49	33	34	38	48	62	66	73	76	79	68
22	53	46	32	34	37	47	63	69	73	76	77	69
23	51	40	34	33	38	45	62	69	72	81	75	69
24	52	40	35	34	37	47	62	70	70	79	72	68
25	51	42	37	33	39	45	61	70	72	76	72	66
26	52	42	36	33	38	41	58	68	68	77	72	64
27	52	41	38	--	41	36	56	70	70	79	74	65
28	52	42	39	--	42	40	56	71	69	--	74	65
29	52	40	39	--	--	39	58	72	69	77	73	63
30	50	41	38	--	--	42	58	69	72	77	75	65
31	47	--	39	--	--	43	--	67	--	78	74	--
Average	59	45	36	a36	a35	44	57	65	69	77	77	70

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

## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	468	26	33	1,870	11	55	2,280	--	
2.....	484	28	36	1,740	8	38	2,350	--	
3.....	725	23	45	1,620	2	9	2,220	--	
4.....	860	22	51	1,620	2	9	2,100	--	
5.....	860	20	46	1,560	2	8	1,980	--	e 25
6.....	1,320	44	157	1,510	2	8	1,860	--	
7.....	1,860	48	241	1,510	2	8	1,680	--	
8.....	1,680	27	122	1,460	2	8	1,560	--	
9.....	1,370	17	63	1,400	3	11	1,560	--	
10.....	1,180	18	57	1,360	2	7	1,560	5	21
11.....	1,070	20	58	1,310	1	4	1,560	2	8
12.....	1,010	16	44	1,260	1	3	1,560	2	8
13.....	1,040	15	42	1,220	3	10	1,560	2	8
14.....	1,340	19	69	1,190	4	13	1,560	2	8
15.....	2,420	64	s 494	1,160	2	6	1,620	2	9
16.....	6,940	382	s 7,640	1,140	2	6	2,040	5	28
17.....	10,600	288	8,240	1,120	1	3	2,540	10	68
18.....	10,400	162	4,550	1,100	2	6	3,020	16	130
19.....	9,700	139	3,640	1,100	8	24	4,830	56	730
20.....	10,100	170	4,640	1,100	8	24	6,200	77	1,290
21.....	9,480	128	3,280	1,160	8	25	5,660	53	810
22.....	7,940	93	1,990	1,190	6	19	4,350	34	399
23.....	6,200	91	1,520	1,220	4	13	3,900	23	242
24.....	5,490	71	1,050	1,270	4	14	3,750	20	202
25.....	4,510	57	694	1,290	4	14	3,450	15	140
26.....	3,520	44	418	1,360	--		3,300	13	116
27.....	2,740	38	281	1,400	--		3,160	10	85
28.....	2,420	32	209	1,510	--	e 20	3,160	15	128
29.....	2,220	25	150	1,680	--		5,840	90	s 1,520
30.....	2,100	20	113	1,920	--		11,600	222	s 7,260
31.....	1,980	12	64	--	--	--	15,600	252	10,600
Total.	114,027	--	40,037	41,340	--	445	109,310	--	24,035
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.....	15,100	192	7,830	1,800	--		15,900	127	5,450
2.....	14,100	147	5,600	2,200	--		19,300	433	22,600
3.....	12,700	90	3,090	2,100	--	e 300	20,200	265	14,400
4.....	10,800	58	1,690	2,000	--		23,900	531	34,300
5.....	9,040	44	1,070	2,000	--		24,500	452	29,900
6.....	9,260	56	1,400	2,800	--		13,100	260	a 9,200
7.....	13,400	136	4,920	5,000	--	e 800	10,800	200	a 5,800
8.....	14,300	142	5,480	7,500	--		10,100	186	5,070
9.....	12,700	87	2,980	9,000	78	1,900	19,300	202	10,500
10.....	10,400	53	1,490	12,000	152	4,920	23,600	171	10,900
11.....	8,820	41	976	15,100	226	9,210	24,500	196	13,000
12.....	7,540	32	651	17,400	--	e 10,000	24,500	355	23,500
13.....	6,560	28	496	15,100	--	e 7,000	24,500	178	11,800
14.....	5,840	28	442	11,500	--	e 4,000	24,800	143	9,580
15.....	5,150	23	320	8,600	--	e 2,000	25,100	114	7,720
16.....	4,510	20	244	7,340	42	832	24,500	106	7,140
17.....	4,200	15	170	7,740	35	731	21,900	113	6,680
18.....	3,680	10	99	9,260	42	1,050	20,500	103	5,700
19.....	3,450	7	65	10,600	55	1,570	18,200	108	5,310
20.....	3,230	8	70	11,700	85	2,680	16,400	83	3,680
21.....	3,020	8	65	14,300	123	4,750	14,600	80	3,150
22.....	2,950	9	72	20,700	334	18,700	20,500	288	15,900
23.....	2,810	8	61	24,500	298	19,700	23,900	240	15,500
24.....	2,740	6	44	24,200	156	10,200	24,200	165	10,800
25.....	2,740	5	37	23,000	125	7,700	22,700	134	8,210
26.....	2,540	9	62	20,500	105	5,810	21,600	132	7,700
27.....	2,300	40	248	17,200	86	3,990	20,500	101	5,590
28.....	2,100	--		15,600	84	3,540	19,900	83	4,560
29.....	1,900	--		--	--	--	17,700	80	3,820
30.....	1,700	--		--	--	--	15,600	80	3,370
31.....	1,700	--		--	--	--	12,900	87	3,030
Total.	201,280	--	40,672	320,740	--	124,183	619,700	--	323,860

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.



## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT DRESDEN, OHIO.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
 (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	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. 30, 1954, . . .	3:30 p. m.	12,700		308	1,230	47	56	71	84	91	95	97	98		100	BSWCM
Dec. 31 . . . . .	10:00 a. m.	15,600		292	996	57	64	77	87	93	96	97	99		100	BSWCM
Feb. 23, 1955, . . .	10:45 a. m.	24,800		310	497	49	62	70	84	89	90	93	95		100	BSWCM
Mar. 4 . . . . .	4:05 p. m.	26,300		800	1,310	49	64	75	88	96	98	99	99		100	BSWCM
Mar. 4 . . . . .	4:05 p. m.	26,300		800	1,260	34	48	68	85	97	99	99	100		100	BSNM
Mar. 4 . . . . .	6:50 p. m.	27,200		704	668	52	66	80	90	97	99	99	100	--	--	BSWCM

## MUSKINGUM RIVER BASIN--Continued

## MUSKINGUM RIVER AT McCONNELLSVILLE, OHIO

LOCATION.--At bridge on State Highway 37 at McConnelsville, Morgan County, 0.5 mile upstream from gaging station and Dam No. 7, and 3 miles downstream from Oil Spring Run.

DRAINAGE AREA.--7,411 square miles (at gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1954 to September 1955.

Water temperatures: October 1950 to September 1951, August 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 2,070 ppm Oct. 13-15; minimum, 195 ppm Mar. 5-10.

Hardness: Maximum, 916 ppm Oct. 13-15; minimum, 130 ppm Mar. 5-10.

Specific conductance: Maximum daily, 3,410 micromhos Oct. 14; minimum daily, 294 micromhos Mar. 10.

Water temperatures: Maximum, 94° F Aug. 4, 1955; minimum, freezing point Feb. 10-11, 1955.

EXTREMES, 1950-51, 1954-55.--Dissolved solids: Maximum, 2,070 ppm Oct. 13-15, 1954; minimum, 188 ppm Feb. 21-28, 1951.

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 1954 to September 1955 given in WSP 1385. Flow regulated by 14 flood-control reservoirs.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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> )	Boiron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO <sub>3</sub>		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-12, 1954	1,236	2.7	0.02	236	25	213	6.1	96	169	830	0.9	3.0		1,564	5,219	682	613			2,420	7.0	2
Oct. 13-15	1,620	0.0	0.02	325	25	274	9.6	108	180	866	1.0	8.4		2,070	9,054	916	825			3,170	7.2	6
Oct. 17-18	9,400	5.9	0.1	132	15	83	5.6	83	133	252	--	4.2		795	20,180	300	323			1,310	7.2	--
Oct. 19-22	8,680	8.1	0.4	65	10	24	4.3	72	97	64	4	8.2		349	8,085	204	144			545	7.1	5
Oct. 23-28	4,262	9.8	0.6	83	10	34	4.0	73	117	101	4	7.9		422	4,855	250	188			688	7.2	7
Oct. 29-Nov. 3	2,223	9.4	0.22	116	15	55	4.1	100	143	162	4	6.4		583	3,499	350	269			957	7.3	5
Nov. 4-10	1,724	9.0	0.1	159	15	92	4.5	122	153	275	5	5.2		796	3,705	458	358			1,330	7.4	10
Nov. 11-23	1,435	9.2	0.1	168	17	104	4.4	134	156	312	6	6.2		1,134	3,371	489	379			1,480	7.3	7
Nov. 17-23	1,481	7.5	0.1	218	22	143	5.4	138	156	479	7	6.9		941	4,535	637	521			1,980	7.5	6
Nov. 24-Dec. 1	1,970	6.0	0.03	173	23	116	5.2	134	172	350	7	6.4			5,005	525	416			1,610	7.6	6
Dec. 2-4	2,650	6.3	0.09	155	21	101	4.2	130	164	300	6	5.4		840	6,010	475	367			1,450	7.6	7
Dec. 5-6	2,400	6.3	0.07	184	20	122	4.2	126	159	388	6	4.5		992	6,428	541	438			1,690	7.6	8
Dec. 7-18	2,385	6.2	0.07	153	20	97	4.0	119	151	296	6	6.2		830	5,121	465	366			1,400	7.5	6
Dec. 19-20	5,360	6.3	0.10	128	17	96	3.8	99	144	268	6	5.4		737	10,670	392	308			1,270	7.4	6
Dec. 21-29	4,489	7.2	0.11	92	13	50	3.1	80	114	149	4	5.8		483	5,897	285	217			839	7.5	5
Dec. 30-31	15,500	7.7	0.2	63	12	25	2.9	68	107	66	3	6.1		313	13,100	208	175			556	7.5	6
Jan. 1-2, 1955	15,000	8.0	0.03	82	13	41	2.3	60	88	132	--	8.1		451	18,270	258	209			736	7.7	7
Jan. 3-5	11,270	8.0	0.03	51	8.7	18	2.2	64	85	48	3	6.7		273	8,307	164	111			470	7.6	8
Jan. 6-9	12,660	6.9	0.04	67	13	26	2.1	80	92	77	3	7.0		347	11,860	220	155			587	7.6	8
Jan. 10-12	9,293	7.1	0.04	56	11	16	2.1	77	86	40	4	8.1		394	6,875	186	122			480	7.7	12
Jan. 13-17	5,394	7.8	0.03	78	13	31	2.5	88	103	95	2	6.9		394	5,738	248	176			659	7.7	8



Jan. 18-24, 1955.	3,453	9.7	10	98	16	51	3.0	103	118	151	4	6.2	581	5,417	313	226	894	7.4	5
Jan. 25-31.....	2,384	8.5	.09	90	23	51	3.0	115	127	142	.5	6.0	524	3,373	320	225	892	7.3	5
Feb. 1-6.....	2,933	9.4	.07	142	19	80	3.0	126	143	262	5	7.3	759	5,806	432	329	1,250	7.4	5
Feb. 7-8.....	8,540	7.3	.04	69	13	54	2.5	66	101	104	4	4.2	378	8,716	227	172	1,847	7.0	--
Feb. 9-10.....	12,420	7.0	.06	90	10	52	2.9	76	102	154	--	5.0	494	16,560	268	203	811	8.1	3
Feb. 11-22.....	14,790	7.5	.15	59	11	24	2.2	71	82	68	2	3.3	302	12,060	191	134	514	7.1	5
Feb. 23-28.....	23,880	7.8	.15	45	11	12	2.5	65	73	31	3	6.0	227	14,640	156	102	378	7.1	9
Mar. 1-4.....	21,920	8.7	.07	49	11	16	2.6	70	81	41	3	6.1	255	15,080	168	110	423	7.0	7
Mar. 5-10.....	22,520	8.1	.14	37	9.3	8.2	2.6	59	76	17	3	3.9	195	11,860	130	82	306	7.1	25
Mar. 11-20.....	22,350	7.7	.07	52	9.5	16	2.4	65	78	44	2	4.0	245	14,780	168	115	447	7.1	10
Mar. 21-31.....	21,390	8.4	.02	51	10	17	2.5	70	76	45	2	3.6	256	14,780	169	111	443	7.2	5
Apr. 1-7.....	8,741	8.5	.01	63	14	24	2.6	94	96	60	2	3.6	329	7,765	214	138	563	7.3	3
Apr. 8-13, 15-17.	6,952	8.3	.13	84	16	38	2.6	96	113	107	3	3.8	468	8,785	273	197	746	7.1	3
Apr. 18-30.....	10,660	8.9	.02	64	13	26	2.3	84	93	73	3	3.2	340	9,786	215	144	564	7.2	4
May 1-6.....	5,698	7.5	.01	77	14	32	2.1	96	101	94	4	2.7	427	6,569	252	171	677	7.3	5
May 7-18.....	3,645	5.0	.01	100	19	50	2.6	110	126	147	5	2.4	560	5,511	327	237	912	7.3	4
May 19-23.....	2,810	3.1	.02	126	19	68	3.2	124	133	210	4	1.9	696	5,281	394	291	1,130	7.5	3
May 24-31.....	2,838	2.9	.01	100	20	53	3.4	129	144	132	5	2.9	541	4,145	332	226	931	7.4	5
June 1-12.....	2,111	3.7	.03	116	22	68	3.4	134	147	176	7	5.3	694	3,899	380	270	1,080	7.5	3
June 13-23.....	1,894	2.6	.01	161	26	110	4.0	118	159	335	7	4.6	966	4,940	508	411	1,560	7.6	1
June 24-28.....	1,602	1.4	.00	193	26	143	4.3	104	163	442	7	3.6	1,220	5,277	590	505	1,890	7.6	3
June 29-July 15..	2,028	2.0	.03	140	22	94	6.2	92	153	280	6	2.1	832	4,556	442	397	1,370	6.9	5
July 16-20.....	1,976	5.3	.00	103	20	65	4.7	109	117	188	6	3.3	600	3,201	341	252	1,030	7.3	2
July 21-25.....	1,504	8.6	.00	95	19	43	4.3	123	121	108	6	2.6	457	1,856	289	168	791	7.4	2
July 26-Aug. 10..	1,309	6.3	.00	95	22	56	4.5	120	147	136	8	3.6	546	1,930	329	231	926	7.5	4
Aug. 11-26.....	1,294	3.6	.01	93	21	59	5.1	118	139	141	9	1.9	535	1,969	320	223	931	7.4	5
Aug. 27-Sept. 5..	885	2.9	.03	91	22	58	4.6	109	159	130	9	2.6	552	1,319	318	228	918	7.1	5
Sept. 6-16.....	683	2.6	.01	103	24	67	4.0	126	167	156	1	0.5	624	1,151	356	252	1,030	7.2	5
Sept. 17-30.....	689	2.3	.00	96	27	69	5.5	128	156	166	9	2.7	608	1,131	350	246	1,050	7.2	5
Time-weighted average <sup>a</sup> .....	5,793	6.0	0.04	109	18	66	3.8	103	129	188	0.6	4.3	617	6,230	346	262	1,030	--	5

<sup>a</sup> Represents 99 percent of days and 99 percent of runoff.

MUSKINGUM RIVER BASIN--Continued  
MUSKINGUM RIVER AT McCONNELLSVILLE, OHIO--Continued  
Temperature (°F) of water, August to September 1954  
/Continuous ethyl alcohol-actuated thermograph/

Day	August			September			August			September			August			September		
	max	min	Day	max	min	Day	max	min	Day	max	min	Day	max	min	Day	max	min	Day
1	86	84	82	83	82	13	82	77	79	76	19	82	79	77	25	86	83	74
2	85	84	81	83	81	14	79	77	77	76	20	81	79	77	26	84	82	74
3	84	83	81	83	80	15	80	77	79	77	21	81	78	76	27	86	82	76
4	85	83	81	82	80	16	80	77	80	77	22	82	79	76	28	85	83	75
5	84	82	84	79	11	81	78	81	78	81	77	23	85	82	77	86	83	75
6	83	81	84	80	12	79	80	78	79	77	24	86	84	83	30	84	83	74
Average													83			81		
													83			79		
																77		

MUSKINGUM RIVER BASIN--Continued  
 MUSKINGUM RIVER AT McCONNELLSVILLE, OHIO--Continued  
 Temperature (°F) of water, water year October 1954 to September 1955  
 /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.....	75	74	52	44	43	39	39	34	34	43	40	43	41	60	59	73	72	85	81	93	87	82	81	
2.....	77	75	49	43	43	39	39	36	34	43	43	45	43	62	60	74	72	86	82	91	88	82	79	
3.....	76	75	49	43	42	39	39	36	36	43	43	48	45	65	62	76	72	87	84	93	88	83	79	
4.....	75	74	48	42	41	39	39	36	35	44	43	49	48	67	64	75	73	89	84	94	89	82	79	
5.....	76	75	48	41	41	40	40	35	35	46	44	51	49	69	67	79	73	90	87	93	90	82	79	
6.....	75	74	47	46	41	39	42	40	35	35	46	44	52	51	69	67	79	74	89	86	92	90	83	
7.....	74	71	48	46	39	38	42	42	35	33	44	41	52	52	69	68	77	75	88	85	92	90	80	
8.....	71	69	48	46	38	37	42	40	33	33	41	39	52	52	69	69	76	74	88	86	90	88	81	
9.....	70	69	47	46	38	37	40	39	34	33	39	52	51	69	67	75	74	86	84	89	88	79	77	
10.....	70	68	46	45	38	38	39	39	34	32	42	39	52	51	67	66	75	74	85	82	90	88	79	
11.....	70	68	47	45	38	37	39	39	34	32	44	42	52	52	67	66	77	74	84	82	88	85	78	
12.....	70	68	47	46	38	37	39	38	34	34	45	42	55	52	66	66	76	75	84	82	86	84	78	
13.....	70	68	46	47	37	37	38	37	33	33	46	45	56	55	66	65	75	72	86	82	85	82	77	
14.....	69	68	48	47	37	37	38	37	33	33	46	46	58	56	65	65	72	71	85	83	83	82	78	
15.....	69	68	50	47	37	37	37	37	33	33	46	46	58	57	65	63	73	70	85	83	82	81	81	
16.....	69	63	49	48	38	37	37	36	33	33	46	46	57	57	65	64	76	72	85	83	87	81	80	
17.....	63	57	50	48	38	38	36	36	33	33	46	45	58	57	67	65	76	73	86	84	86	83	81	
18.....	57	55	50	49	39	38	36	35	34	33	45	44	60	59	67	67	80	74	88	85	85	83	84	
19.....	55	53	53	49	39	38	36	35	34	34	44	43	60	60	68	67	83	76	88	85	88	83	82	
20.....	53	52	51	38	36	35	35	35	34	34	43	43	61	61	71	68	81	78	86	83	87	84	80	
21.....	52	52	51	36	36	35	35	35	36	34	44	43	62	61	74	69	82	78	87	83	88	86	79	
22.....	52	51	51	36	35	35	37	36	37	46	44	62	62	75	72	79	78	89	85	86	84	79	77	
23.....	53	52	51	35	34	35	35	37	37	48	44	62	62	74	73	81	79	88	86	84	83	78	77	
24.....	54	53	51	49	35	34	35	35	37	47	43	62	62	75	74	82	80	87	86	86	83	77		
25.....	54	54	49	49	35	35	35	35	37	44	44	62	61	75	73	82	80	90	86	87	82	76		
26.....	55	54	49	49	35	35	36	35	37	44	42	61	59	78	74	81	79	90	87	87	82	75		
27.....	55	55	47	45	37	35	35	35	38	42	40	59	57	77	75	82	79	89	87	87	84	73		
28.....	56	55	47	45	37	35	35	35	40	38	40	59	57	76	75	84	79	87	86	85	83	75		
29.....	56	56	45	44	39	37	35	35	37	38	38	57	56	76	75	84	79	88	84	86	83	75		
30.....	56	54	44	44	39	39	35	35	35	39	39	59	57	76	74	83	79	90	86	86	83	75		
31.....	54	54	--	--	39	39	35	35	--	41	40	--	--	74	73	--	--	91	87	87	83	82	--	
Average.....	64	62	49	48	38	38	37	37	35	34	44	42	56	55	70	68	78	75	87	84	88	85	79	

## LITTLE KANAWHA RIVER BASIN

## LITTLE KANAWHA RIVER AT GLENVILLE, W. VA.

LOCATION.--At water plant, at Glenville, Gilmer County, 0.7 mile upstream from Sycamore Run and half a mile upstream from gaging station at Glenville.

DRAINAGE AREA.--386 square miles (above gaging station).

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 86°F on several days during July and August; minimum, 33°F Jan. 30 to Feb. 1.

EXTREMES, 1946-55.--Water temperatures: Maximum, 86°F on several days during August 1947, July and August 1955; minimum, freezing point on many days during winter months.

REMARKS.--Temperature records furnished by West Virginia Service Company. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.
1	71	47	41	43	33	45	46	62	74	87	86	78
2	70	46	40	44	34	47	48	64	73	87	86	78
3	70	43	40	44	35	47	50	66	73	87	86	76
4	72	44	40	44	35	48	52	68	75	87	86	74
5	74	44	40	44	36	48	53	69	76	87	86	73
6	70	44	40	46	37	47	54	69	78	87	86	72
7	66	44	39	44	38	46	52	69	66	87	80	71
8	60	44	38	42	39	47	53	69	65	77	81	71
9	61	44	37	40	38	49	54	69	64	77	79	70
10	61	45	36	40	38	50	56	69	65	77	79	69
11	63	45	36	39	36	49	57	69	65	80	72	69
12	64	44	36	39	34	48	59	69	64	81	73	68
13	65	44	36	38	34	49	61	67	62	82	72	68
14	66	44	38	37	35	49	61	64	63	82	74	70
15	60	44	40	36	36	50	62	65	66	82	76	71
16	58	46	40	36	36	51	63	66	69	82	79	70
17	57	47	40	36	37	51	65	65	72	82	78	69
18	56	49	41	34	38	51	65	64	73	82	76	70
19	54	50	38	34	39	52	66	64	74	83	77	71
20	53	50	35	35	41	52	67	66	74	83	78	71
21	53	51	34	35	42	52	66	67	75	83	79	70
22	53	50	34	36	43	53	66	67	76	83	78	69
23	54	48	34	36	42	49	66	68	76	83	75	69
24	54	48	34	35	42	46	67	70	76	83	76	68
25	54	46	35	34	42	42	64	71	75	84	76	68
26	55	45	35	34	42	42	62	72	73	84	77	69
27	56	43	37	34	43	41	60	74	74	84	78	69
28	55	43	39	34	44	42	60	76	74	84	79	69
29	54	42	42	34	--	44	61	75	76	85	80	70
30	52	41	45	33	--	46	62	74	78	85	79	70
31	49	--	42	33	--	47	--	74	--	86	79	--
Average	60	46	38	38	38	48	59	68	71	82	79	71

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.--844 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 1,089 ppm July 29; minimum, 94 ppm Feb. 7-8.

Hardness: Maximum, 580 ppm July 29; minimum, 94 ppm Feb. 7-8.

Specific conductance: Maximum daily, 1,350 microhmhos July 29; minimum daily, 221 microhmhos Feb. 7.

Water temperatures: Maximum, 84°F Aug. 7; minimum, freezing point on several days during December, January, and February.

REMARKS.--Acidity determined to phenolphthalein end point. Specific conductance of daily samples available in district office at Columbus, Ohio.

Records of discharge for water year October 1954 to September 1955

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (microhmhos at 25°C)	pH	Color
															Calcium	Non-carbonate			
Oct. 1-14, 1954.....	70.5	9.9	0.03	--	92	35	52	5.1	122	276	66	0.4	3.3	630	376	274	923	7.3	3
Oct. 15-20.....	233	12	0.05	--	71	30	36	5.0	53	250	47	3	3.3	512	300	257	746	7.2	5
Oct. 21-23, 25-27.....	118	13	0.12	--	85	31	39	4.3	68	281	49	3	4.5	576	340	284	811	7.3	5
Oct. 28-30, Nov. 1-10.....	108	9.5	0.01	--	97	34	53	3.8	103	297	67	3	3.5	639	380	297	936	7.5	3
Nov. 11-20.....	84.0	9.6	0.02	--	91	35	52	2.0	117	286	63	3	4.9	628	373	275	905	7.6	2
Nov. 21-30.....	171	9.7	0.14	--	55	21	21	2.5	57	168	28	2	4.6	352	284	177	551	7.5	8
Dec. 1-10.....	157	10	0.02	--	52	23	21	2.8	56	173	29	2	4.8	366	223	178	549	7.4	6
Dec. 11-20.....	618	7.4	0.11	--	59	23	22	2.8	48	194	27	2	5.2	394	242	202	579	7.6	9
Dec. 21-27, 31.....	662	11	0.02	--	60	23	21	3.1	50	205	24	2	4.1	409	244	203	583	7.5	6
Jan. 11-20, 1955.....	601	10	0.02	--	55	21	21	2.2	83	157	25	2	2.5	356	222	156	537	7.7	4
Jan. 26-31.....	186	12	0.06	--	72	28	31	1.6	93	224	38	1	4.3	489	297	219	714	7.4	4
Feb. 1-4.....	304	9.3	0.20	--	72	28	31	1.8	104	211	41	2	4.3	481	284	210	709	7.3	5
Feb. 5-6.....	1,160	7.4	0.15	--	47	17	18	3.8	58	143	24	--	5.5	304	188	140	479	7.0	10
Feb. 7-8.....	5,600	5.6	0.20	--	24	8.3	5.3	1.5	40	62	7.0	--	3.6	150	94	61	241	7.1	18
Feb. 11-16.....	1,029	8.7	0.17	--	48	19	15	5.8	151	151	20	--	4.1	309	201	150	478	7.2	4
Feb. 17-23.....	3,587	8.3	0.04	--	34	11	8.4	2.2	40	96	10	2	3.6	197	132	97	316	7.0	6
Feb. 24-27.....	2,475	9.2	0.01	--	40	14	10	1.7	46	117	13	2	4.5	241	158	120	376	6.7	6
Feb. 28-Mar. 3.....	5,332	8.7	0.08	--	30	12	7.2	2.3	35	94	9.5	2	3.1	191	127	96	297	6.7	11
Mar. 5, 7-8.....	6,073	9.3	0.15	--	31	12	6.4	1.9	34	100	8.0	4	3.0	203	128	99	305	6.9	16
Mar. 9-20.....	1,535	9.8	0.16	--	50	21	14	2.6	45	175	18	2	1.8	333	213	174	490	7.0	0
Mar. 21-24.....	4,988	9.0	0.02	--	31	12	6.8	1.9	38	93	8.0	2	3.2	185	124	96	300	6.8	8
Mar. 25-31.....	1,222	9.6	0.02	--	52	20	14	2.1	50	174	18	2	3.3	330	214	171	501	7.2	3

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--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, neslum	Non-carbonate			
Apr. 1-13, 1955.....	656	9.8	0.01	1.7	64	24	20	2.0	56	214	22	0.2	2.7	410	260	212	607	7.3	3
Apr. 14-20.....	2,371	9.0	.03	--	40	16	13	1.9	33	142	12	.2	1.5	284	186	139	411	7.0	4
Apr. 21-28.....	2,169	9.5	.01	--	37	17	12	1.9	26	142	12	.2	1.6	289	160	141	392	7.2	4
Apr. 29-May 3.....	857	9.4	.02	--	53	22	17	2.1	40	195	17	.1	1.9	353	222	190	525	7.5	4
May 4-10.....	399	11	.01	--	67	31	24	2.3	49	263	23	.2	1.8	472	296	254	681	7.4	3
May 11-15, 17-20.....	533	11	.29	.07	67	28	23	2.5	43	231	22	.2	2.1	472	283	247	666	7.2	3
May 21-31.....	260	12	.02	2.2	80	35	33	2.7	47	306	32	.2	2.0	567	344	305	804	7.0	2
June 1-17.....	184	12	.01	--	91	43	39	2.4	43	362	42	.2	1.8	668	405	370	910	7.4	2
June 18-July 5.....	146	11	.01	--	90	45	36	3.2	56	360	42	.2	2.1	662	410	364	924	7.7	2
July 6.....	473	12	.01	--	110	56	54	3.3	8	325	42	--	.8	ab849	404	397	1,110	5.4	--
July 7-15.....	408	10	.00	1.2	80	43	36	3.3	20	383	36	.3	2.0	577	242	227	568	6.6	8
July 16-24.....	513	12	.03	.00	86	25	17	3.0	20	322	28	.3	2.4	609	377	323	948	7.2	2
July 25-28.....	131	11	.01	.82	108	46	46	3.6	52	421	50	.3	1.8	768	466	423	1,040	7.8	1
July 29.....	668	17	.12	8.0	120	68	78	7.6	2	685	54	--	.8	a1,089	580	578	1,350	4.6	--
July 30-Aug. 2.....	200	10	.06	.00	56	24	21	3.2	44	195	28	.3	2.1	384	238	202	867	7.6	1
Aug. 3-12.....	179	9.9	.02	.15	90	37	26	4.3	52	339	42	.3	1.2	628	378	335	874	7.4	1
Aug. 13-17.....	144	12	.02	2.9	69	53	29	3.6	16	298	31	.3	1.1	519	308	295	723	7.0	1
Aug. 18-22.....	109	12	.00	.13	98	43	46	3.4	44	390	46	.3	1.4	706	420	384	968	7.2	1
Aug. 23-Sept. 4.....	180	10	.01	.33	59	24	23	4.2	50	211	24	.3	1.4	705	248	205	581	7.1	5
Sept. 5-16.....	54	10	.00	.03	101	43	46	3.6	94	363	49	.3	.7	705	429	352	968	7.6	2
Sept. 17-30.....	52	4.1	.01	.00	106	46	56	3.3	112	372	63	.3	.2	759	454	362	1,070	7.3	3
Time-weighted average c.....	728	10	0.05	--	71	30	30	2.9	61	252	34	0.2	2.6	493	300	250	703	--	4

a Immediate acidity (H<sup>+</sup>), pH 7.0; July 6, 7.0 parts per million; July 29, 22 parts per million.b Potential free acidity (H<sup>+</sup>), pH 7.0; July 6, 11 parts per million.

c Represents 93 percent of days and 86 percent of runoff.

## HOCKING RIVER BASIN--Continued

## HOCKING RIVER AT ATHENS, OHIO--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at varying hours/

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

## 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 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 409 ppm Aug. 1-3, 5-10; minimum, 120 ppm Mar. 1-10.

Hardness: Maximum, 219 ppm Aug. 1-3, 5-10; minimum, 69 ppm Mar. 1-10.

Specific conductance: Maximum daily, 711 micromhos July 10; minimum daily, 109 micromhos Feb. 28.

Water temperatures: Maximum, 87°F Aug. 5-8; minimum, freezing point Jan. 30.

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 1954 to September 1955

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color	
																	Calcium, mg./nestum	Non-carbonate					
Oct. 1-10, 1954...			8.0	0.2	0.00	0.32	49	13	34	3.8	11	165	46	0.4	5.4	348	174	167		536	6.3	4	
Oct. 11-20.....			8.2	--	--	0.31	43	11	26	4.3	18	127	41	.3	4.0	289	154	138		454	6.2	2	
Oct. 21-31.....			7.2	--	--	0.28	28	7.7	11	3.1	16	88	16	.2	3.7	176	103	88		286	6.5	1	
Nov. 1-10.....			6.8	--	--	0.2	31	8.9	14	2.7	14	110	12	.2	3.1	209	115	102		327	6.6	1	
Nov. 11-20.....			7.9	--	--	0.5	39	10	20	2.6	17	128	28	.2	1.8	258	140	124		405	6.7	1	
Nov. 21-30.....			6.7	--	--	0.1	38	42	20	2.5	27	114	39	.3	3.6	265	145	124		429	6.7	1	
Dec. 1-10.....			5.2	--	--	0.4	55	41	9.5	24	23	117	38	.2	3.5	263	142	122		423	6.7	1	
Dec. 11-20.....			6.2	0	0.05	0.07	34	7.8	18	1.9	25	107	14	.2	3.3	211	116	96		346	6.6	1	
Dec. 21-30.....			6.6	--	--	0.1	30	29	6.4	12	2.0	24	71	.2	3.5	167	99	79		285	6.7	5	
Jan. 1-10, 1955..			7.7	--	--	0.2	40	27	6.3	7.1	1.8	33	58	12	5.1	142	93	66		242	6.9	6	
Jan. 11-20.....			6.4	--	--	0.5	16	27	6.6	9.5	1.8	25	71	15	.2	3.3	158	95	74		264	6.8	5
Jan. 21-31.....			7.9	.1	.01	.30	36	8.5	16	2.0	29	98	26	.2	3.9	a220	124	101		355	6.8	3	
Feb. 1-10.....			6.1	.1	.09	.27	31	7.3	15	2.0	26	96	22	.2	4.1	b190	107	86		311	6.7	2	
Feb. 11-20.....			6.2	0	1.6	.52	31	7.2	13	2.1	32	80	21	.2	1.5	c182	108	81		301	6.7	55	
Feb. 21-28.....			5.8	.1	.17	.20	20	5.4	7.2	1.6	27	54	9.2	.1	2.7	d125	73	50		201	6.8	30	
Mar. 1-10.....			6.2	0	.48	.32	20	4.9	4.9	1.6	26	48	8.0	.1	4.5	120	69	49		185	6.8	27	
Mar. 11-20.....			7.4	0	.07	.30	24	6.8	6.6	1.6	20	66	10	.1	1.1	154	86	69		226	6.8	19	
Mar. 21-31.....			7.4	--	--	.05	.03	28	7.0	9.2	1.5	29	72	12	.2	3.8	165	98	75		261	6.8	4
Apr. 1-10.....			7.3	--	--	.05	.20	34	9.0	14	1.1	30	100	18	.2	3.5	210	122		333	6.8	3	
Apr. 11-20.....			6.5	--	--	.01	.13	39	9.4	17	1.8	34	105	26	.2	3.0	236	136	108		378	6.8	4
Apr. 21, 22, 24-30			7.9	--	--	.04	.03	33	8.6	14	2.0	28	97	21	.2	2.8	208	118	95		327	6.9	4

a Includes 0.01 parts per million of zinc (Zn).

c Includes 0.07 parts per million of zinc (Zn).

b Includes 0.13 parts per million of zinc (Zn).

d Includes 0.04 parts per million of zinc (Zn).



May 1-10, 1955...	6.5	--	.02	0.03	32	7.8	13	1.9	28	86	18	.2	2.5	194	112	89	312	6.9	2
May 11-16, 15-20...	5.3	--	.04	.00	41	6.6	19	2.3	40	102	33	.2	2.1	238	143	109	386	6.9	3
May 21-31, 10-15...	7.2	--	.00	.00	46	10	24	2.7	36	122	32	.3	2.7	230	154	121	436	6.9	2
June 1-16, 10-15...	6.9	--	.00	.00	46	13	28	2.6	30	152	24	.3	2.7	333	182	137	501	6.9	3
June 17-18, 20...	6.9	--	.00	.06	46	12	28	2.8	23	156	24	.3	3.2	322	166	147	489	6.7	1
June 21-30, 10-15...	6.9	--	.00	.00	44	12	23	2.0	22	134	34	.3	3.0	286	160	142	461	6.9	2
July 1-10, 10-15...	7.0	--	.00	.00	52	13	33	2.3	30	131	65	.3	2.5	348	183	158	560	7.0	3
July 11-13, 15-20...	6.2	--	.00	.00	57	14	38	3.5	32	150	87	.4	2.9	378	200	174	585	7.0	3
July 21-31, 10-15...	3.8	--	.00	.00	60	16	39	3.9	36	167	62	.4	3.1	389	216	186	617	6.9	2
Aug. 1-3, 5-10...	5.1	--	.01	.00	62	15	43	4.1	29	201	52	.5	3.8	409	219	195	648	6.9	3
Aug. 11-20, 10-15...	3.9	--	.00	.03	54	15	34	4.3	19	191	33	.7	5.7	382	196	180	574	6.6	1
Aug. 21-31, 10-15...	11	--	.01	.43	55	16	34	3.8	16	207	31	.3	4.7	382	204	191	575	6.4	5
Sept. 1-10, 10-15...	9.0	--	.01	.00	56	17	31	3.8	24	194	32	.3	3.6	370	208	188	560	6.7	3
Sept. 11-20, 10-15...	7.7	--	.01	.03	52	14	32	3.1	24	177	35	.4	2.8	350	187	168	543	6.6	3
Sept. 21-30, 10-15...	4.3	--	.00	.02	51	15	36	3.5	26	167	45	.5	2.3	353	189	168	557	6.7	4
Time-weighted average e	6.7	--	0.08	0.18	40	10	21	2.6	26	120	29	0.3	3.3	259	141	120	409	--	6

e Represents 98 percent of days.

## OHIO RIVER MAIN STEM--Continued

OHIO RIVER AT LOCK AND DAM 22, AT RAVENSWOOD, W. VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
/Once-daily measurement at approximately 6 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	51	46	--	33	40	47	58	70	74	84	78
2	74	49	46	40	33	40	47	58	70	76	84	78
3	74	50	44	40	33	40	47	60	72	75	84	78
4	74	50	44	40	33	47	46	62	72	75	--	78
5	74	48	44	40	33	47	50	64	72	76	87	78
6	73	50	42	45	36	47	50	65	72	78	87	78
7	70	48	40	43	33	47	50	63	72	77	87	78
8	66	47	40	43	36	47	49	66	72	80	87	78
9	67	48	41	41	36	47	50	65	72	80	85	78
10	68	49	40	40	36	47	50	65	73	82	83	78
11	68	47	40	40	36	47	50	67	73	82	83	78
12	68	49	38	40	--	47	52	65	73	81	80	78
13	69	47	38	40	--	49	53	65	73	81	80	78
14	69	48	39	38	--	49	56	65	72	--	80	78
15	69	48	41	38	--	49	58	63	72	83	80	78
16	64	48	40	38	--	48	57	65	72	82	79	78
17	59	49	40	38	--	48	60	63	70	83	80	78
18	59	49	40	35	--	46	59	63	71	83	81	75
19	59	50	40	36	43	46	61	63	--	83	80	75
20	58	50	40	35	40	47	62	63	71	84	80	75
21	59	49	36	35	41	48	63	63	71	83	81	75
22	54	50	36	36	41	48	63	63	72	81	81	74
23	54	50	37	36	41	48	--	63	72	82	80	75
24	54	48	37	37	40	--	63	63	73	83	77	75
25	54	48	36	36	38	48	64	66	73	84	77	74
26	55	47	36	36	38	48	63	68	73	84	80	74
27	56	47	38	34	37	42	60	66	73	84	80	74
28	56	47	39	33	39	40	60	68	73	84	80	74
29	55	46	40	33	--	40	60	70	73	83	80	72
30	55	47	41	32	--	41	60	70	73	83	80	72
31	51	--	--	33	--	42	--	70	--	84	78	--
Average	63	48	40	38	--	46	56	65	72	81	82	76

## KANAWHA RIVER BASIN

## NEW RIVER AT EGLESTON, VA.

LOCATION --At gaging station at highway bridge at Eggleston, Giles County, 1.9 miles downstream from Spruce Run, and 7.8 miles upstream from Walker Creek.

DRAINAGE AREA --2,941 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1950, December 1952 to September 1955.

Water temperatures: December 1955: Maximum, 74 ppm Oct. 1-10; minimum, 49 ppm Mar. 1-10, Apr. 11-20.

EXTREMES: 1954-55 --Hardness: Maximum, 74 ppm Oct. 1-10; minimum, 49 ppm Mar. 1-10, Apr. 11-20.

Specific conductance: Maximum daily, 193 microhos Nov. 11; minimum daily, 95.9 microhos Apr. 15.

Water temperatures: Maximum, 80°F Aug. 1, 7; minimum, freezing point Jan. 28, 30, 31, Feb. 14.

EXTREMES, December 1952 to September 1955 --Hardness: Maximum, 114 ppm Aug. 21-31, 1953; minimum, 43 ppm Feb. 21-28, 1953.

Specific conductance: Maximum daily, 267 microhos Oct. 15, 1953; minimum daily, 83.8 microhos Mar. 14, 1953; Feb. 23, 1954.

Water temperatures: Maximum, 82°F July 15, 1954; minimum, freezing point Jan. 13, 1954, Jan. 28, 30, 31, Feb. 14, 1955.

REMARKS --Records of specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	1,149	7.7	0.00	21	5.3	2.8	1.6	66	18	2.4	0.1	6.2	106	74	20	162	7.3	5
Oct. 11-20	2,027	--	--	17	5.1	--	--	54	13	--	--	--	--	63	19	141	7.3	15
Oct. 21-31	1,252	--	0.00	19	5.9	--	--	60	15	--	--	--	--	72	22	164	7.5	7
Nov. 1-10	1,357	--	0.08	19	5.2	--	--	60	16	--	--	--	--	69	20	164	7.5	7
Nov. 11-20	1,275	--	0.00	18	5.4	--	--	60	16	--	--	--	--	67	18	177	7.4	5
Nov. 21-30	1,757	--	0.00	16	5.0	--	--	57	12	--	--	--	--	60	14	152	7.3	6
Dec. 1-10	2,320	--	0.00	16	5.0	--	--	56	12	--	--	--	--	60	15	149	7.5	5
Dec. 11-20	3,237	--	0.04	13	5.1	--	--	54	13	--	--	--	--	53	9	132	7.5	5
Dec. 21-31	3,423	--	0.00	16	5.2	--	--	60	10	--	--	--	--	61	12	136	7.8	5
Jan. 1-10, 1955	3,710	7.7	0.1	13	4.3	2.7	1.4	55	9.0	2.6	1	2.7	74	50	5	123	7.4	7
Jan. 11-20	2,333	--	0.00	16	4.8	--	--	55	10	--	--	--	--	60	15	127	7.6	7
Jan. 21-31	1,973	--	0.00	16	4.6	--	--	53	11	--	--	--	--	59	15	127	7.6	15
Feb. 1-10	6,276	--	0.00	16	4.7	--	--	51	11	--	--	--	--	59	17	125	7.7	8
Feb. 11-20	4,020	--	0.01	14	4.8	--	--	55	7.9	--	--	--	--	55	10	121	7.8	10
Feb. 21-28	5,229	--	0.03	14	4.5	--	--	53	7.8	--	--	--	--	53	10	119	7.7	20
Mar. 1-10	11,220	--	0.10	15	2.8	--	--	52	6.5	--	--	--	--	49	6	111	7.6	20
Mar. 11-20	10,470	--	0.10	15	3.9	--	--	59	6.8	--	--	--	--	54	5	125	7.6	100
Mar. 21-31	10,290	--	0.08	17	4.1	--	--	57	6.7	--	--	--	--	59	13	116	7.6	29
Apr. 1-10	3,979	8.5	0.02	18	3.8	1.8	1.1	63	7.5	2.1	1	4.4	85	60	9	133	7.5	15
Apr. 11-20	9,907	--	0.06	13	4.0	--	--	53	8.0	--	--	--	--	49	5	109	7.6	25
Apr. 21-31	5,746	--	0.04	14	4.8	--	--	51	12	--	--	--	--	55	13	108	7.3	20
May 1-10	2,579	--	0.02	17	5.4	--	--	59	9.6	--	--	--	--	65	16	131	7.6	10
May 11-20	3,065	--	0.01	16	4.9	--	--	53	7.7	--	--	--	--	60	17	117	7.6	15
May 21-31	3,064	--	0.00	15	4.5	--	--	54	8.0	--	--	--	--	56	12	121	7.7	10

KANAWHA RIVER BASIN—Continued  
NEW RIVER AT EGGLESTON, VA.—Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.—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			
June 1-10, 1955	2,705	--	0.00	15	4.7	--	--	56	7.1	--	--	--	--	57	11	117	7.7	10
June 11-20	3,017	--	.00	15	4.7	--	--	56	11	--	--	--	--	57	11	126	7.6	5
June 21-30	2,177	--	.00	16	4.8	--	--	56	13	--	--	--	--	60	14	132	7.7	8
July 1-10	2,188	8.5	.04	15	4.8	2.7	1.3	57	11	2.1	0.0	4.9	98	57	10	132	7.8	5
July 11-20	3,908	--	.00	13	4.3	--	--	54	7.0	--	--	--	--	50	8	112	7.6	5
July 21-31	1,709	--	.00	17	5.1	--	--	59	18	--	--	--	--	63	15	136	7.7	7
Aug. 1-10	2,897	--	.01	16	4.8	--	--	57	12	--	--	--	--	60	13	130	7.7	7
Aug. 11-20	3,253	--	.03	13	4.7	--	--	53	12	--	--	--	--	52	8	121	7.5	8
Aug. 21-31	1,638	--	.00	16	5.0	--	--	55	19	--	--	--	--	60	15	140	7.6	5
Sept. 1-10	1,890	--	.00	15	5.1	--	--	54	16	--	--	--	--	58	14	130	7.7	4
Sept. 11-20	1,339	--	.00	18	5.3	--	--	55	21	--	--	--	--	67	22	149	7.7	4
Sept. 21-30	1,469	--	.00	18	5.2	--	--	56	21	--	--	--	--	66	20	146	7.8	3
Average	3,504	--	0.02	16	4.8	--	--	56	12	--	--	--	--	59	13	132	--	12

## KANAWHA RIVER BASIN--Continued

## NEW RIVER AT EGGLESTON, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

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

## KANAWHA RIVER BASIN--Continued

## NEW RIVER AT GLENLYN, VA.

LOCATION.--At gaging station at bridge on U. S. Highway 460 at Glenlyn, Giles County, 0.3 mile upstream from East River, and 6.3 miles downstream from Wolf Creek.

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

August 1955.

EXTREMES, 1930-31.--Dissolved solids: Maximum, 94 ppm Oct. 21-31; minimum, 58 ppm Mar. 21-31.

Hardness: Maximum, 80 ppm July 11-20, 21-31; minimum, 42 ppm Dec. 11-20.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

## Chemical analyses, in parts per million, October 1954 to August 1955

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. 12, 1954	1,350	5.0	0.02	23	7.4	5.1	1.6	81	20	2.4	0.1	8.4	113	88	22	199	7.5	5
Nov. 10	1,980	6.3	.00	20	6.1	4.6	1.6	71	16	5.2	.1	3.2	98	73	17	179	7.4	8
Jan. 15, 1955	10,500	7.2	.04	17	3.2	2.8	1.1	63	8.0	2.4	.1	3.6	78	60	8	133	7.2	10
Apr. 15	33,200	6.4	.03	13	3.1	1.9	1.3	47	5.7	2.3	.1	4.2	60	45	7	104	7.4	10
May 9	2,100	6.0	.03	20	6.0	2.1	1.2	74	13	1.9	.1	5.0	93	75	14	160	7.5	5
June 21	2,920	6.0	.00	19	6.3	2.4	1.1	72	16	2.0	.1	4.8	95	80	14	163	7.8	3
July 13	6,980	5.6	.03	14	3.9	2.7	1.4	55	9.0	2.2	.1	3.2	83	51	6	123	7.9	5
Aug. 4	2,130	7.5	.00	17	5.8	3.8	1.3	67	14	2.7	.1	4.4	98	68	11	152	7.8	3

## KANAWHA RIVER BASIN--Continued

## NEW RIVER AT GLENLYN, VA.--Continued

LOCATION.--On the right bank at the Glenlyn steam electric plant of the Appalachian Electric Power Company at Glenlyn, Giles County.

DRAINAGE AREA.--3,768 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 80°F July 29; minimum, freezing point on several days during January and February.

EXTREMES, 1951-55.--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 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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

## KANAWHA RIVER BASIN--Continued

NEW RIVER AT BLUESTONE DAM STILLING BASIN, NEAR HINTON, W. VA.

LOCATION.--Temperature recorder on right bank 1,000 feet upstream from gaging station, 0.9 mile upstream from Greenbrier River, and 2.2 miles upstream from Hinton, Summers County.

DRAINAGE AREA.--4,604 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1953 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 82° F Aug. 1-2, 4-5, 7; minimum, 34° F Dec. 25-27.

EXTREMES, 1953-55.--Water temperatures: Maximum, 83° F Aug. 5, 1953; minimum, 34° F on several days during December 1953 and December 1954.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	73	72	56	56	47	46	46	44					49	47	60	58	71	71	72	72	82	80	77	76
2.....	73	73	55	55	45	44	43	43					52	49	62	60	71	69	74	72	82	81	76	75
3.....	75	73	55	54	45	44	43	43					52	51	63	62	69	68	76	74	81	80	75	75
4.....	75	73	54	51	44	43	43	43					54	52	65	63	69	68	76	75	82	80	77	76
5.....	76	74	51	50	43	43	44	43					54	54	65	65	69	69	76	75	82	81	76	75
6.....	76	73	50	49	43	42	45	44					53	53	66	64	71	69	77	76	81	81	75	74
7.....	74	73	49	48	42	42	46	45					53	53	68	65	71	70	77	76	82	81	74	74
8.....	73	72	48	47	42	40	46	46					53	53	68	66	70	70	78	77	81	81	75	73
9.....	72	72	47	46	40	40	46	45					53	52	66	66	70	69	78	78	81	80	75	74
10.....	72	72	47	46	40	40	45	44					54	52	68	66	69	69	78	77	80	79	75	74
11.....	72	70	47	47	40	38	44	42					54	53	68	67	69	69	77	76	79	75	75	74
12.....	71	70	47	47	38	38	42	41					55	53	68	67	69	68	76	75	75	74	74	73
13.....	71	70	47	47	38	38	41	41					57	56	68	68	68	66	76	76	75	74	73	72
14.....	71	70	49	47	39	38	41	40					57	56	68	67	66	65	76	74	75	74	73	72
15.....	71	69	49	48	37	37	40	39					57	54	65	65	64	63	74	73	75	74	73	73
16.....	69	67	49	48	38	37	39	39					56	54	65	64	63	63	75	73	74	74	73	72
17.....	67	62	50	49	39	38	39	38					57	54	65	63	64	63	74	74	74	74	73	72
18.....	62	60	50	49	39	38	38	38					58	57	65	63	65	64	74	74	74	74	73	73
19.....	60	56	52	50	39	38	38	38					60	58	66	65	67	65	74	74	74	73	73	72
20.....	56	56	52	52	39	38	37	37					61	60	67	65	67	67	77	75	74	72	72	72
21.....	58	58	52	51	39	39	37	37					62	61	69	67	68	67	78	77	75	74	72	72
22.....	56	56	52	52	39	38	37	37					63	62	69	68	72	68	78	77	75	74	72	72
23.....	58	57	52	52	37	35	--	--					63	63	70	69	73	70	78	76	75	74	73	72
24.....	57	57	52	52	35	35	37	35					63	63	71	68	73	72	78	78	75	74	72	72
25.....	57	57	52	52	35	34	--	--					63	61	71	69	72	71	78	78	76	75	72	72
26.....	57	57	52	50	34	34	37	36					61	60	71	70	72	71	79	78	76	75	74	74
27.....	57	57	50	49	35	34	--	--					60	59	70	70	71	71	79	78	76	75	73	73
28.....	57	57	49	48	35	35	--	--					58	58	73	70	71	71	80	79	76	75	73	73
29.....	57	57	48	48	36	35	--	--					56	56	74	72	72	71	80	80	77	76	74	73
30.....	57	57	48	47	41	38	--	--					58	57	75	74	72	71	80	80	78	77	72	71
31.....	57	56	--	--	47	44	--	--			47	44	58	57	72	71	74	72	80	80	78	77	72	71
Average.....	66	65	50	50	40	39	--	--			--	--	57	56	68	66	69	68	77	76	77	76	74	73



## KANAWHA RIVER BASIN--Continued

## KNAPP CREEK AT MARLINTON, W. VA.

LOCATION.--At city water plant, at Marlinton, Pocahontas County, 1 mile upstream from mouth and 2 miles downstream from gaging station.

DRAINAGE AREA.--108 square miles (at gaging station).

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 77°F July 16-17, 19, 21; minimum, freezing point on many days during November to March.

EXTREMES, 1946-55.--Water temperatures: Maximum, 82°F July 24, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Discharge records for gaging station near Marlinton, W. Va. for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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

a Includes estimated temperature, 32° on missing days.

## KANAWHA RIVER BASIN--Continued

## KANAWHA RIVER AT CABIN CREEK, W. VA.

LOCATION.--On left bank at the Cabin Creek steam electric plant of the Appalachian Electric Power Company at Cabin Creek, Kanawha County.

DRAINAGE AREA.--8,661 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 92°F Aug. 1-4, 6; minimum, 34°F Feb. 13.

EXTREMES, 1950-55.--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. Measurements are made at the cooling water intake of the steam-driven electric generating plant

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	47	43	44	35	48	47	60	78	82	92	86
2	77	47	43	45	36	49	46	63	75	82	92	85
3	77	46	42	44	35	48	52	63	76	83	92	84
4	78	44	42	44	35	48	54	63	74	83	92	83
5	79	45	41	44	35	48	54	67	75	85	91	83
6	78	44	40	46	37	49	54	68	76	85	92	83
7	77	44	39	45	39	46	54	71	77	85	91	83
8	77	45	38	45	40	44	54	71	75	85	90	83
9	75	45	38	42	40	44	54	71	74	84	89	81
10	76	45	38	42	41	46	56	70	74	83	88	83
11	76	46	38	42	40	50	56	70	73	84	87	81
12	76	46	37	42	37	50	57	70	72	84	83	81
13	77	46	37	40	34	50	59	70	70	84	82	82
14	77	47	37	40	35	50	60	66	69	83	83	82
15	71	47	38	40	39	51	59	62	69	83	85	82
16	58	48	39	38	37	52	59	65	69	83	87	83
17	57	48	39	37	37	50	59	65	70	83	84	83
18	58	50	39	37	38	50	60	66	71	84	83	83
19	58	50	39	37	38	48	62	68	74	86	84	82
20	56	51	38	37	41	48	64	69	77	87	84	82
21	55	51	37	37	42	50	65	69	78	88	92	83
22	55	52	37	37	44	51	65	71	78	88	83	83
23	56	51	36	36	42	51	64	71	78	89	85	83
24	56	50	36	37	42	49	65	73	81	87	86	82
25	56	48	37	37	43	48	63	74	79	88	84	81
26	58	46	37	38	43	47	61	75	79	69	84	81
27	58	47	38	38	44	44	58	75	79	89	85	81
28	58	47	38	36	45	43	57	76	79	90	85	81
29	58	45	41	38	--	43	58	78	80	90	86	81
30	56	43	43	35	--	44	60	77	80	90	85	82
31	52	--	43	35	--	44	--	77	--	90	87	--
Average	66	47	39	40	39	48	58	69	75	86	87	82

KANAWHA RIVER BASIN--Continued  
KANAWHA RIVER AT CHARLESTON, W. VA.

LOCATION.--Temperature recorder at gaging station on left bank at old lock 6, at Charleston, Kanawha County, 1.0 mile upstream from Davis Creek, 1½ miles downstream from Twonile Creek, and 3.5 miles downstream from Elk River.

DRAINAGE AREA.--10,419 square miles.

RECORDS AVAILABLE.--Water temperatures: March 1953 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 93°F Aug. 7; minimum, 36°F Feb. 1, 1955.

EXTREMES, 1953-55.--Water temperatures: Maximum, 93°F Aug. 7, 1955; minimum, 36°F Feb. 1, 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
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.....	76	74	57	55	50	48	46	43	41	38	49	46	49	48	64	61	79	75	82	80	90	88	88	85
2.....	78	76	56	54	48	47	46	41	37	50	49	51	49	63	61	79	75	84	81	92	89	86	82	
3.....	79	76	54	52	48	47	48	47	40	39	50	50	53	51	64	63	79	77	84	81	92	90	84	82
4.....	79	77	52	50	48	47	48	48	39	38	51	50	54	53	66	63	80	78	84	82	92	89	86	82
5.....	79	78	51	49	48	47	48	47	39	38	51	51	55	53	67	66	78	75	86	83	92	90	87	86
6.....	77	75	50	49	48	47	48	47	39	39	51	51	57	55	67	67	80	78	86	83	92	90	86	84
7.....	78	74	50	49	48	46	49	48	39	38	51	48	57	55	68	67	81	75	87	83	93	90	85	83
8.....	75	73	51	50	48	46	48	48	39	39	48	47	57	55	70	68	77	74	87	85	91	87	84	82
9.....	73	71	51	49	47	45	48	46	41	40	48	47	57	55	72	69	76	74	87	83	87	83	84	80
10.....	72	71	52	50	47	42	47	46	43	41	49	48	57	55	74	70	76	74	85	84	86	84	85	81
11.....	75	72	52	49	45	43	47	47	44	43	51	49	59	57	71	70	76	74	85	84	88	86	85	81
12.....	76	72	52	50	44	42	47	47	44	43	52	51	59	57	73	70	76	74	86	83	87	85	83	81
13.....	74	74	51	49	44	42	47	46	43	40	52	52	61	58	73	71	74	72	86	84	86	84	82	81
14.....	77	74	52	50	44	43	46	44	40	40	52	52	61	59	72	70	72	70	86	85	84	82	83	80
15.....	76	71	53	50	43	42	45	44	41	40	54	52	62	61	70	67	70	69	85	84	85	83	82	80
16.....	74	64	53	50	42	42	45	45	41	40	53	53	62	61	87	64	70	69	86	84	86	84	81	79
17.....	64	59	52	50	43	42	44	44	41	41	54	52	61	59	68	65	72	70	87	84	86	84	82	80
18.....	60	59	52	50	43	43	44	41	41	41	52	51	61	59	69	68	72	71	86	84	86	84	81	80
19.....	61	60	54	51	43	43	44	43	42	41	51	50	64	61	88	66	76	72	86	84	85	85	81	80
20.....	61	57	54	53	43	42	44	42	44	42	50	49	66	64	69	67	76	74	88	84	86	84	82	80
21.....	60	57	56	53	43	43	44	43	47	44	52	50	66	65	70	69	77	75	88	85	85	83	82	81
22.....	59	57	55	53	43	42	44	42	48	47	52	52	68	66	71	70	80	78	89	86	85	83	83	81
23.....	59	57	55	54	43	42	44	42	48	46	52	52	67	66	73	71	81	78	90	87	85	83	85	80
24.....	58	57	56	54	43	42	44	41	48	46	52	52	67	66	73	72	81	79	90	87	86	84	83	80
25.....	59	57	55	52	44	43	44	40	47	46	52	52	65	65	74	72	81	79	87	86	85	83	80	79
26.....	59	58	54	51	43	42	44	40	47	46	51	50	66	65	76	74	80	78	89	86	86	84	80	80
27.....	61	59	52	50	44	43	45	40	47	46	50	48	65	62	76	75	81	79	90	87	86	85	80	78
28.....	60	59	50	49	45	41	44	41	46	45	48	47	62	61	77	76	82	79	90	85	87	85	82	78
29.....	61	60	51	49	46	42	44	40	44	40	48	47	61	60	78	77	82	78	89	87	88	85	83	79
30.....	61	59	51	50	44	41	44	40	44	40	48	47	61	60	77	76	82	79	89	87	88	85	81	78
31.....	59	57	--	--	44	41	44	40	--	--	48	47	--	--	77	76	--	--	90	88	87	85	--	--
Average.....	68	66	53	51	45	44	46	44	43	42	51	50	60	59	71	69	78	75	87	84	88	85	83	81



BIG SANDY RIVER BASIN  
JOHNS CREEK NEAR VAN LEAR, KY.

LOCATION --Temperature recorder at gaging station on right bank 100 feet upstream from Long Branch, 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 1955.  
EXTREMES 1954-55 --Water temperatures: Maximum 73°F June 24, 1954, minimum 34°F Feb. 2, 6, 1955.  
REMARKS --Flow regulated by Dewey Reservoir. Records of discharges for water year October 1954 to September 1955 given in WSP 1385.  
REVISIONS --WSP 1350. Revised water temperatures for water year 1953-54 are given herewith: Apr. 19, minimum, 36°F; Apr. 30, maximum 60°F.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	61	60	a 55	--	a 47	--	--	--	35	35	45	45	51	50	58	57	65	65	64	64	63	60	65	
2.....	62	61	--	--	--	--	--	--	35	34	45	45	51	50	60	57	65	65	65	65	62	65	64	
3.....	62	61	--	--	--	--	a 37	--	38	37	46	45	52	50	60	58	65	64	66	65	67	61	64	
4.....	62	61	--	--	--	--	--	--	36	38	46	46	51	49	64	57	64	66	65	63	62	65	63	
5.....	61	61	--	--	--	--	--	--	39	35	47	46	51	50	60	60	64	64	70	65	63	61	65	
6.....	61	60	--	--	a 42	--	--	--	39	34	47	46	51	51	63	60	67	64	65	62	61	64	62	
7.....	61	60	--	--	--	--	--	--	37	36	46	44	51	50	66	61	67	66	65	65	64	61	64	
8.....	61	60	a 52	--	--	--	--	--	37	35	45	45	51	48	63	61	66	65	66	65	63	61	63	
9.....	60	60	--	--	--	--	--	--	37	35	47	45	51	49	65	61	65	66	66	66	63	61	63	
10.....	60	60	--	--	--	--	45	42	38	37	47	47	51	48	64	61	65	66	65	66	63	61	62	
11.....	60	60	--	--	--	--	42	41	39	37	47	47	52	51	61	61	66	65	66	66	63	61	62	
12.....	60	60	--	--	--	--	41	40	39	37	48	47	52	51	61	61	66	66	66	65	64	61	60	
13.....	61	60	--	--	a 42	--	43	40	37	37	48	48	53	52	65	61	66	65	65	65	63	61	60	
14.....	61	60	--	--	--	--	43	42	38	35	49	48	53	52	62	61	66	65	65	64	62	61	60	
15.....	61	60	a 52	--	--	--	43	40	38	37	49	49	57	52	61	61	66	65	65	64	62	61	61	
16.....	60	59	--	--	--	--	40	40	38	37	49	49	54	54	61	61	66	66	64	63	63	61	59	
17.....	60	59	--	--	--	--	42	40	39	36	49	48	54	54	61	61	66	66	63	63	64	61	59	
18.....	--	--	52	51	--	--	40	40	40	38	49	48	55	54	61	61	66	66	64	63	65	63	61	
19.....	--	--	52	51	--	--	40	39	41	40	49	49	60	55	61	59	67	66	63	63	65	63	61	
20.....	--	--	51	51	a 41	--	39	39	41	40	49	49	56	56	61	60	67	67	63	62	65	64	60	
21.....	--	--	51	51	--	--	40	39	40	40	50	49	60	55	68	61	71	67	63	62	66	64	61	
22.....	--	--	51	51	--	--	39	38	41	39	50	50	56	56	69	62	67	63	63	62	67	64	61	
23.....	--	--	--	--	--	--	38	38	41	39	50	50	56	56	64	62	64	64	63	62	70	65	61	
24.....	--	--	--	--	--	--	41	38	42	42	50	50	57	56	69	62	65	64	63	62	65	61	61	
25.....	a 59	--	--	--	--	--	41	40	43	42	50	50	58	56	64	62	69	65	63	63	65	63	61	
26.....	--	--	--	--	--	--	42	39	43	43	50	50	56	57	62	62	66	65	63	63	65	64	61	
27.....	--	--	--	--	a 42	--	40	38	44	43	50	50	60	57	63	62	66	66	63	62	65	64	61	
28.....	--	--	--	--	43	41	40	37	45	43	50	49	56	58	65	63	66	66	63	62	65	64	62	
29.....	--	--	a 47	--	42	41	37	36	--	--	50	50	57	57	65	64	66	64	63	62	66	64	61	
30.....	--	--	--	--	44	41	36	36	--	--	50	49	56	57	65	65	64	64	64	63	62	66	61	
31.....	--	--	--	--	--	--	39	35	--	--	51	50	--	--	65	65	--	--	62	66	66	64	--	
Average.....	--	--	--	--	--	--	--	--	40	38	48	48	55	53	63	61	66	65	64	64	65	62	62	

a Recorder stopped Oct. 18 to Nov. 17, Nov. 23 to Dec. 27, Dec. 31 to Jan. 9, once-weekly measurements shown.

## BIG SANDY RIVER BASIN--Continued

## TUG FORK AT KERMIT, W. VA.

LOCATION.--At city water plant, at Kermit, Mingo County, three quarters of a mile downstream from Wolf Creek, and 3 miles downstream from gaging station.

DRAINAGE AREA.--1,274 square miles at water plant, 1,185 square miles at gaging station.

RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 85°F July 3; minimum, 35°F Feb. 13-14.

EXTREMES, 1946-55.--Water temperatures: Maximum, 90°F July 29, 1949; minimum, freezing point Feb. 5, 1947, Nov. 26, 1950, Jan. 10, Feb. 8-9, 1951.

REMARKS.--Discharge records for Tug Fork near Kermit, W. Va. for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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

SCIOTO RIVER BASIN  
OLENTANGY RIVER NEAR DELAWARE, OHIO

LOCATION.--Temperature recorder at gaging station on left bank, 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 78° F Aug. 11; minimum, 33° F Feb. 22-27.

EXTREMES, 1946-55.--Water temperatures: Maximum, 83° F June 29, 1952; minimum, freezing point on several days during some winter months.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/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	68	50	43	41	36	36	37	35	62	61	70	67	74
2.....	67	67	50	43	40	36	37	36	32	53	40	65	70	73
3.....	66	66	49	48	39	36	37	36	32	55	46	65	70	71
4.....	66	66	48	47	39	36	37	36	32	55	46	65	70	71
5.....	66	65	47	46	39	36	37	36	32	55	46	65	70	71
6.....	65	63	47	46	38	36	37	36	32	57	49	68	75	72
7.....	64	63	47	46	38	36	37	36	32	63	61	70	68	71
8.....	63	62	47	46	37	36	38	36	36	61	67	65	70	71
9.....	63	62	47	46	37	36	38	36	34	64	61	68	74	73
10.....	63	62	47	46	36	36	38	35	34	62	67	65	71	71
11.....	64	62	47	46	36	36	38	37	36	64	63	67	78	73
12.....	64	63	47	46	36	36	37	37	36	64	65	71	77	71
13.....	64	63	47	46	36	36	37	36	36	64	63	71	76	71
14.....	64	63	47	46	36	36	36	36	36	63	65	71	75	71
15.....	63	59	47	46	36	36	35	36	35	67	65	69	76	72
16.....	60	59	47	46	36	36	35	36	36	50	50	68	76	72
17.....	59	58	46	45	36	36	35	36	35	60	52	68	76	72
18.....	58	57	46	45	36	36	35	35	37	59	53	68	76	72
19.....	57	56	46	45	36	35	35	35	46	56	54	67	76	69
20.....	57	56	46	45	35	35	35	34	46	56	54	68	73	69
21.....	56	55	46	46	36	35	35	34	46	57	56	68	75	68
22.....	57	55	46	45	36	35	35	34	45	57	57	69	73	70
23.....	56	54	45	45	36	36	35	33	45	60	58	70	74	69
24.....	56	54	45	45	36	36	35	33	45	60	59	70	75	69
25.....	56	54	45	44	36	36	36	33	45	60	59	70	75	68
26.....	55	55	44	44	36	37	35	33	43	53	53	71	75	59
27.....	55	54	44	43	36	37	36	35	41	60	60	74	75	57
28.....	54	53	43	42	36	36	36	35	34	66	65	71	73	67
29.....	54	53	42	42	36	36	36	35	39	60	66	71	73	68
30.....	53	52	42	41	36	36	37	36	62	60	65	73	72	66
31.....	52	50	--	--	36	36	37	36	--	69	65	75	74	--
Average.....	60	59	46	45	37	36	36	35	44	65	63	71	75	69

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT CHILLICOTHE, OHIO

LOCATION.--Temperature recorder at gaging station on right bank at north end of Chillicothe, Ross County, 450 feet downstream from Bridge Street Bridge.

DRAINAGE AREA 13,847 square miles.

RECORDS AVAILABLE.--Observations: October 1950 to September 1951.

Water temperatures: October 1950 to September 1951.

EXTREMES 1954-55.--Water temperatures: Maximum, 88°F Aug 2, 3; minimum, 33°F on several days during January and February.

EXTREMES 1950-51.--Water temperatures: Maximum, 88°F July 14, 1954, Aug. 2, 3, 1955; minimum, freezing point on several days during December 1950, January and February 1951.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

/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.....	74	72	50	49	41	41	39	39	33	33	47	45	48	46	64	61	73	68	81	76	88	82	76	72
2.....	75	73	49	47	41	41	39	39	33	33	47	46	50	48	66	62	74	69	83	77	89	84	74	70
3.....	77	74	47	45	41	40	39	39	33	33	46	45	53	50	68	63	75	70	84	80	89	84	75	70
4.....	78	75	46	45	40	39	40	39	33	33	48	45	54	52	70	65	74	71	83	79	88	85	76	71
5.....	78	76	45	45	40	39	42	40	34	34	50	48	55	52	71	67	76	70	84	80	88	86	77	73
6.....	76	69	46	45	39	38	43	42	34	34	50	47	57	55	71	67	77	73	84	80	88	83	77	73
7.....	69	64	47	45	38	36	43	42	35	34	47	45	57	54	70	66	75	72	80	76	87	85	76	72
8.....	64	62	47	46	36	35	42	40	35	35	45	44	54	52	69	66	72	70	82	78	85	80	74	70
9.....	65	63	48	47	36	35	40	40	36	35	45	44	55	51	67	64	71	70	81	77	83	80	75	70
10.....	68	65	48	47	36	36	40	39	37	36	47	44	57	53	65	63	70	69	78	75	84	80	76	73
11.....	71	67	47	46	36	35	39	39	37	36	50	47	57	56	66	64	70	68	78	75	83	80	75	71
12.....	72	69	48	47	36	36	39	39	36	35	51	50	60	56	65	64	69	67	79	76	81	77	72	68
13.....	73	71	48	46	36	36	39	38	35	35	51	48	60	58	64	64	68	66	80	76	80	77	71	67
14.....	74	72	48	46	37	36	38	38	35	34	48	47	60	60	64	63	67	65	82	78	78	75	73	68
15.....	73	66	48	47	37	37	38	37	36	35	49	47	60	59	68	63	70	65	82	79	77	74	75	70
16.....	66	63	46	47	37	37	37	36	36	36	51	49	61	57	71	66	73	67	82	78	80	76	77	72
17.....	63	61	50	48	38	37	37	36	37	36	50	49	64	60	71	67	75	70	81	79	81	73	77	73
18.....	61	59	50	48	38	36	36	35	37	36	49	46	64	61	70	65	77	72	82	79	82	77	77	73
19.....	60	57	52	50	38	36	36	35	36	36	48	47	63	63	71	65	79	74	78	75	81	76	77	73
20.....	57	55	52	51	38	37	39	38	36	36	47	45	62	62	73	68	76	75	83	77	83	78	76	73
21.....	56	55	51	49	37	36	35	34	39	38	50	47	64	63	73	69	80	75	83	78	83	79	74	72
22.....	57	54	49	48	36	35	35	34	39	38	52	49	65	61	72	71	79	75	84	80	80	77	75	71
23.....	57	54	48	47	36	35	35	34	39	38	49	46	65	64	74	71	78	75	85	81	78	75	74	73
24.....	58	55	47	46	36	35	35	34	38	38	47	46	64	63	73	72	77	73	84	82	78	74	73	71
25.....	58	56	46	45	37	36	35	35	40	39	46	46	63	61	73	71	76	73	84	80	78	74	71	68
26.....	58	58	45	43	37	36	35	34	40	40	46	43	61	59	75	70	73	71	85	81	77	73	69	67
27.....	60	58	43	42	38	37	35	34	40	43	41	59	57	76	72	74	71	84	82	77	74	67	65	62
28.....	58	56	42	41	40	38	33	33	45	43	41	40	59	56	76	74	75	71	82	79	77	75	70	66
29.....	57	55	41	41	41	40	33	33	--	--	44	41	62	57	75	73	77	72	82	77	80	75	69	67
30.....	55	52	41	41	41	41	33	33	--	--	44	42	64	60	73	69	80	75	84	80	79	78	69	68
31.....	52	50	--	--	41	39	33	33	--	--	46	44	--	--	72	67	--	--	86	81	77	73	--	--
Average.....	65	62	47	46	38	37	37	37	37	36	48	46	59	57	70	67	74	71	82	78	82	78	74	70



## 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  $1\frac{1}{4}$  miles north of Higby, Ross County.

DRAINAGE AREA.--5,129 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1953 to September 1955.

Sediment records: October 1953 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 83°F on several days during August; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 1,400 ppm Mar. 22; minimum daily, 1 ppm Sept. 3-10.

Sediment loads: Maximum daily, 112,000 tons Mar. 22; minimum daily, 1 ton Sept. 3-10.

EXTREMES, 1953-55.--Water temperatures: Maximum, 83°F on several days during August 1955; minimum, freezing point on many days during most winter months.

Sediment concentrations: Maximum daily, 2,130 ppm July 21, 1954; minimum daily, 1 ppm Sept. 3-10, 1955.

Sediment loads: Maximum daily, 112,000 tons Mar. 22, 1955; minimum daily, 1 ton Sept. 3-10, 1955.

REMARKS.--Flow slightly regulated by O'Shaughnessy, Griggs, and Delaware Reservoirs.

Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

(Once-daily measurement at approximately 7 a.m.)

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

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	309	6	5	451	14	17	581	2	3
2.....	362	10	10	451	10	12	588	3	5
3.....	346	7	6	425	16	18	581	2	3
4.....	430	7	8	451	16	19	554	5	7
5.....	609	9	15	456	16	20	534	3	4
6.....	560	10	15	490	18	24	502	3	4
7.....	502	12	16	490	13	17	473	3	4
8.....	554	12	18	468	12	15	446	9	11
9.....	502	8	11	468	5	6	446	6	7
10.....	456	11	14	462	7	9	456	2	2
11.....	410	12	13	484	3	4	462	3	4
12.....	490	11	14	484	2	3	456	7	9
13.....	495	11	15	478	4	5	440	5	6
14.....	587	9	14	468	6	8	456	3	4
15.....	708	12	23	451	4	5	484	10	13
16.....	940	18	46	456	3	4	508	5	7
17.....	908	17	42	456	4	5	534	7	10
18.....	958	15	39	488	4	5	820	45	100
19.....	780	11	23	502	7	9	780	21	44
20.....	686	13	24	508	8	11	740	8	16
21.....	616	12	20	514	8	11	724	10	20
22.....	581	12	19	502	10	14	637	13	22
23.....	554	12	18	484	13	17	602	15	24
24.....	521	5	7	478	15	19	602	10	16
25.....	468	8	10	495	14	19	560	8	12
26.....	456	4	5	521	10	14	521	3	4
27.....	468	3	4	534	6	9	502	6	8
28.....	478	12	15	534	2	3	574	--	e 65
29.....	502	7	9	567	4	6	1,650	274	s 1,570
30.....	478	6	8	588	2	3	5,250	440	6,240
31.....	462	9	11	--	--	--	7,710	450	9,370
Total.	17,156	--	497	14,584	--	331	30,173	--	17,614
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.....	7,280	195	3,830	700	11	21	23,600	517	32,900
2.....	5,250	94	1,330	1,260	--	e 350	20,300	415	22,700
3.....	4,040	57	622	1,820	148	728	18,400	265	13,200
4.....	3,590	52	504	1,210	80	261	15,800	224	9,560
5.....	4,310	99	1,150	1,190	48	154	26,400	1,200	s 90,400
6.....	5,060	211	2,880	10,700	1,300	s 47,700	31,400	651	55,200
7.....	6,650	196	3,520	20,000	998	s 58,400	29,400	411	32,600
8.....	9,050	250	6,110	10,900	306	9,000	17,900	292	14,100
9.....	7,490	154	3,110	7,240	183	3,580	10,900	233	6,860
10.....	5,840	83	1,310	6,290	141	2,390	8,190	210	4,640
11.....	4,400	77	915	9,140	232	5,720	8,570	234	5,410
12.....	3,420	55	508	9,940	174	4,670	10,900	318	9,360
13.....	2,820	40	304	9,140	78	1,920	13,200	293	10,400
14.....	2,490	35	235	7,240	54	1,060	10,900	189	5,560
15.....	2,170	33	193	5,530	54	806	10,100	159	4,340
16.....	1,850	21	105	5,720	141	s 2,570	9,540	171	4,400
17.....	1,660	12	54	10,300	535	14,900	6,670	152	2,740
18.....	1,430	13	50	10,300	175	4,870	5,340	103	1,480
19.....	1,280	11	38	9,140	117	2,890	6,290	102	1,730
20.....	1,190	7	22	8,190	83	1,840	4,960	98	1,310
21.....	1,120	7	21	8,760	72	1,700	12,600	972	s 37,000
22.....	1,080	8	23	17,700	536	s 27,700	29,600	1,400	112,000
23.....	1,060	6	17	22,000	531	31,500	34,200	552	51,000
24.....	1,000	7	19	23,900	346	22,300	32,200	319	27,700
25.....	924	8	20	21,500	197	11,400	23,900	232	15,000
26.....	932	10	25	13,200	144	5,130	15,600	224	9,400
27.....	900	7	17	16,300	1,010	s 49,100	10,900	188	5,530
28.....	780	5	10	18,100	508	24,800	7,810	137	2,890
29.....	732	5	10	--	--	--	6,480	102	1,780
30.....	732	3	6	--	--	--	6,860	92	1,700
31.....	630	3	5	--	--	--	6,100	92	1,520
Total.	91,160	--	26,963	287,410	--	337,460	475,010	--	594,410

e Estimated.

s Computed by subdividing day.

## SCIOTO RIVER BASIN--Continued

## SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	6,100	95	1,560	2,280	30	185	789	10	21
2.....	6,100	107	1,760	1,990	33	177	740	9	18
3.....	4,780	89	1,150	1,770	29	138	702	9	17
4.....	4,150	68	762	1,640	27	120	673	13	24
5.....	3,610	58	565	1,480	26	104	652	16	28
6.....	3,520	45	428	1,330	20	72	631	16	27
7.....	3,700	53	529	1,240	13	44	652	12	21
8.....	3,340	47	424	1,180	9	28	806	10	22
9.....	2,980	46	370	1,120	11	33	1,640	16	71
10.....	2,620	35	248	1,110	10	30	1,210	8	26
11.....	2,450	38	251	1,100	9	27	1,070	7	20
12.....	2,450	39	258	1,560	15	63	1,180	7	22
13.....	2,540	42	288	1,690	13	59	1,250	8	27
14.....	2,540	37	254	1,840	51	253	1,160	8	25
15.....	2,360	37	236	1,770	32	153	1,050	8	23
16.....	2,360	43	274	1,510	27	110	995	10	27
17.....	2,540	40	274	1,200	18	58	870	12	28
18.....	2,140	31	179	1,050	18	51	798	8	17
19.....	2,360	--	e 550	962	21	54	740	5	10
20.....	3,070	168	1,390	900	17	41	695	6	11
21.....	3,340	--	e 1,700	840	15	34	725	12	23
22.....	3,880	152	1,590	806	9	20	1,380	15	56
23.....	3,610	83	809	814	8	18	962	6	16
24.....	4,780	134	1,730	823	8	18	814	6	13
25.....	5,910	229	3,650	860	7	16	890	18	43
26.....	5,720	138	2,130	1,030	8	22	1,450	22	86
27.....	4,780	94	1,210	962	9	23	1,290	35	122
28.....	3,700	59	589	823	8	18	940	21	53
29.....	3,160	43	367	814	8	18	798	27	58
30.....	2,710	34	249	940	8	20	755	22	45
31.....	--	--	--	910	10	24	--	--	--
Total.	107,300	--	25,774	38,314	--	2,031	28,287	--	1,000
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.....	710	14	27	880	17	40	380	2	2
2.....	873	9	16	772	14	29	366	2	2
3.....	659	13	23	702	12	23	352	1	1
4.....	680	11	20	702	10	19	348	1	1
5.....	860	11	26	652	5	9	326	1	1
6.....	1,590	480	sa 2,500	617	4	7	320	1	1
7.....	2,360	430	sa 3,000	578	5	8	316	1	1
8.....	2,980	--	e 5,800	552	5	7	302	1	1
9.....	2,620	395	2,790	497	5	7	306	1	1
10.....	5,310	1,180	16,900	479	6	8	306	1	1
11.....	3,790	570	5,830	590	8	13	309	2	2
12.....	2,980	213	1,710	962	10	26	425	7	8
13.....	2,250	93	565	772	13	27	564	9	14
14.....	1,640	41	182	610	10	16	449	6	7
15.....	1,300	34	119	558	7	10	390	7	7
16.....	1,120	34	103	503	5	7	348	5	5
17.....	995	25	67	467	5	6	339	8	7
18.....	920	25	62	461	7	9	330	7	6
19.....	1,110	35	105	455	5	6	323	5	4
20.....	1,120	34	103	431	8	9	306	5	4
21.....	1,120	45	136	437	9	11	292	6	5
22.....	1,010	44	120	564	17	26	306	7	6
23.....	823	26	58	772	43	90	455	7	8
24.....	850	--	e 210	995	27	72	431	6	7
25.....	823	85	s 200	710	18	34	443	10	12
26.....	702	18	34	571	10	15	491	3	4
27.....	873	19	34	503	6	8	395	9	10
28.....	772	30	62	467	6	8	390	6	6
29.....	1,210	21	69	437	2	2	484	--	e 35
30.....	1,260	25	85	410	2	2	740	76	sa 170
31.....	973	20	52	385	3	3	--	--	--
Total.	45,883	--	41,008	18,491	--	557	11,532	--	339

Total discharge for year (cfs-days)..... 1,165,300  
 Total load for year (tons)..... 1,047,984

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

SCIOTO RIVER BASIN--Continued  
SCIOTO RIVER AT HIGBY, OHIO--Continued

Particle size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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. 31, 1954	8:20 a. m.	7,710		475	1,600	43	60	76	86	95	98	100	--		--		BSWCM
Feb. 6, 1955	9:00 a. m.	17,280		1,090	1,420	28	39	53	77	96	99	100	--		--		BSWCM
Feb. 6	3:00 p. m.	13,460		1,040	1,420	28	38	54	74	88	99	100	--		--		BSWCM
Feb. 6	7:00 p. m.	24,300		1,440	1,070	42	54	66	83	93	97	99	100		--		BSWCM
Feb. 22	7:30 a. m.	21,800		746	1,970	30	43	58	75	86	94	97	99	100	100		BSWCM
Feb. 23	4:00 p. m.	22,300		519	2,230	43	57	69	83	88	94	96	98	100	100		BSWCM
Feb. 23	9:00 p. m.	22,800		457	1,210	50	58	72	83	92	95	97	99	100	100		BSWCM
Mar. 5	8:45 a. m.	26,100		1,410	2,840	46	60	70	84	95	98	99	100		--		BSWCM
Mar. 5	8:45 a. m.	26,100		1,410	3,060	19	30	50	77	96	98	99	100		--		BSNW
Mar. 7	11:00 a. m.	29,800		1,432	2,080	68	76	82	88	93	95	96	97	100			BSWCM
Mar. 22	5:00 p. m.	33,700		1,310	2,680	47	60	71	83	94	97	99	100		--		BSWCM
Mar. 22	5:00 p. m.	33,700		1,310	2,820	29	39	58	78	93	97	98	99	100	100		BSNM
Mar. 23	7:00 a. m.	35,200		1,573	1,060	58	70	79	90	96	99	100	--		--		BSWCM
July 10	7:30 a. m.	7,620		1,800	3,080	43	59	80	95	99	100	--	--		--		BSWCM

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 1955.

Water temperatures: August 1952 to September 1955.

Sediment records: September 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 81°F Aug. 18-19; minimum, freezing point on several days during January and February.

Sediment concentrations: Maximum daily, 472 ppm Mar. 22; minimum daily, 1 ppm Dec. 5.

Sediment loads: Maximum daily, 1,100 tons Mar. 22; minimum daily, less than 0.05 ton on several days during December and September.

EXTREMES, 1952-55.--Water temperatures: Maximum, 81°F Aug. 18-19, 1955; minimum, freezing point on several days during January and February 1955.

Sediment concentrations: Maximum daily, 472 ppm Mar. 22, 1955; minimum daily, 1 ppm on several days during May 1953, February and December 1954.

Sediment loads: Maximum daily, 1,100 tons Mar. 22, 1955; minimum daily, less than 0.05 ton on many days during October 1952, January, May, October to December, 1953, January, February, July to September, December, 1954, and September 1955.

REMARKS.--Flow affected by ice Jan. 23 to Feb. 3, Feb. 6, 13, Mar. 27. Temperature recorder located on left bank on downstream side of bridge. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph.

Mar. 14 to July 14, 1955, once-daily measurement at approximately 8 a. m.

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	69	47	46	39	38	40	36	34	33	42	41	46		59		62		71		79	77	76	71
2.....	72	70	46	44	39	37	40	40	33	32	42	40	48		58		64		73		79	77	74	70
3.....	72	71	44	42	37	36	40	39	33	33	41	40	52		59		64		72		80	78	73	70
4.....	71	70	43	42	37	35	41	40	33	32	44	41	46		61		65		79		79	78	73	73
5.....	71	70	44	42	37	34	45	41	32	32	44	43	50		63		69		75		79	78	74	73
6.....	71	66	44	43	34	33	45	41	32	31	43	41	55		58		73		77		79	78	74	73
7.....	66	62	45	43	36	34	41	38	32	32	40	38	47		61		66		74		79	78	74	73
8.....	62	60	46	44	36	35	38	36	33	32	40	38	48		56		63		74		79	74	74	68
9.....	62	60	47	45	35	33	38	38	34	33	40	38	49		53		73		75		77	74	76	70
10.....	65	62	46	45	33	33	38	38	34	33	42	40	53		55		64		74		76	75	75	73
11.....	66	65	45	43	35	33	38	36	34	34	45	42	52		56		60		70		78	76	73	69
12.....	66	65	47	45	35	33	37	36	34	32	45	44	54		58		64		69		79	75	70	64
13.....	66	66	46	44	35	33	37	34	34	34	45	44	58		60		63		72		--	--	69	64
14.....	66	67	45	43	35	33	35	35	34	34	42		59		58		65		76		--	--	70	66
15.....	67	62	47	44	35	34	35	35	34	34	50		55		57		62		73		--	--	72	70
16.....	62	58	46	44	35	34	35	34	34	32	45		51		62		--		73		72	--	74	72
17.....	58	55	48	45	35	34	36	35	34	32	38		57		59		68		74		73	80	75	73
18.....	56	55	50	48	35	34	37	36	34	34	39		55		56		70		74		73	81	75	73
19.....	55	54	50	49	35	34	37	35	34	33	38		58		61		71		74		73	81	79	78
20.....	56	54	50	48	35	34	35	35	36	34	45		60		65		72		75		73	80	79	77
21.....	55	53	48	45	35	34	35	34	37	36	35		59		59		--		75		73	80	79	75
22.....	55	53	45	44	35	34	34	33	37	36	36		57		68		67		75		74	80	79	75
23.....	56	53	44	43	33	32	34	33	37	37	37		56		68		67		76		76	78	71	70
24.....	58	54	46	42	35	34	34	34	38	39	43		59		68		69		75		74	79	74	70
25.....	56	53	42	40	36	35	34	32	38	36	41		55		65		68		75		73	78	75	70

LITTLE MIAMI RIVER BASIN--Continued  
LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Temperature (° F) of water, water year October 1954 to September 1955--Continued  
/Recorder with sample and water continuous ethyl alcohol actuated the micrograph.  
Mar. 14 to July 14, 1955, once-daily measurement at approximately 8 a. m./

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.....	56	56	40	39	36	34	34	34	38	38	33	52	52	63	63	70	70	76	74	77	76	85	85	62
27.....	56	55	39	38	39	36	34	32	40	36	39	49	49	67	67	67	67	78	75	77	76	85	85	62
28.....	56	53	39	38	42	39	34	41	40	34	34	48	48	70	66	66	66	76	76	77	77	85	84	64
29.....	53	52	39	31	42	37	34	34	--	--	36	53	53	66	66	66	66	76	75	77	77	86	83	63
30.....	52	49	36	37	35	34	34	34	--	--	38	55	55	61	61	66	66	77	75	77	77	86	84	64
31.....	49	47	--	--	36	35	34	34	--	--	43	--	--	57	57	--	--	78	76	77	74	--	--	--
Average.....	61	59	45	43	36	35	37	36	35	34	--	53	53	61	61	67	--	--	--	79	77	72	69	69

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	2.1	25	0.1	4.9	19	0.2	7.1	5	0.1
2.....	1.8	13	.1	5.3	30	.4	6.6	5	.1
3.....	5.3	48	.7	5.3	14	.2	6.2	9	.2
4.....	5.3	52	.7	5.3	21	.3	6.2	2	(t)
5.....	4.5	22	.3	5.3	15	.2	6.2	1	(t)
6.....	13	44	s1.6	4.9	20	.3	5.7	7	.1
7.....	8.5	20	.4	4.5	18	.2	4.9	6	.1
8.....	5.3	14	.2	4.5	7	.1	4.9	14	.2
9.....	4.5	32	.4	4.1	12	.1	5.7	10	.2
10.....	3.7	27	.3	4.1	12	.1	5.7	9	.1
11.....	13	45	sa3	4.1	12	.1	5.3	12	.2
12.....	35	77	7.3	4.1	19	.2	5.3	15	.2
13.....	16	39	1.7	4.1	16	.2	6.2	6	.1
14.....	11	18	.5	4.5	25	.3	6.6	7	.1
15.....	14	24	.9	4.1	12	.1	7.5	6	.1
16.....	13	10	.4	4.5	10	.1	7.5	5	.1
17.....	15	9	.4	4.5	12	.1	7.5	5	.1
18.....	11	10	.3	4.5	15	.2	9.1	10	.2
19.....	9.1	10	.2	4.5	20	.2	9.1	2	(t)
20.....	8.0	25	.5	4.5	15	.2	8.0	2	(t)
21.....	7.5	30	.6	4.5	6	.1	7.5	8	.2
22.....	6.6	21	.4	4.1	6	.1	7.1	5	.1
23.....	6.2	20	.3	4.1	8	.1	7.5	5	.1
24.....	5.3	12	.2	5.3	9	.1	7.5	6	.1
25.....	5.3	24	.3	5.7	5	.1	7.1	7	.1
26.....	5.3	25	.4	5.3	5	.1	7.1	5	.1
27.....	5.7	25	.4	6.2	4	.1	7.1	7	.1
28.....	5.3	28	.4	7.5	4	.1	41	86	s16
29.....	5.3	29	.4	8.0	7	.2	83	89	20
30.....	5.3	21	.3	7.1	8	.2	90	112	27
31.....	4.9	23	.3	--	--	--	63	23	3.9
Total..	261.8	--	24.0	149.4	--	5.0	459.2	--	70.0
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.....	53	12	1.7	13	9	0.3	189	110	sa65
2.....	54	16	2.3	19	6	.3	115	41	13
3.....	47	21	2.7	17	6	.3	86	22	5.1
4.....	62	21	3.5	15	10	.4	280	--	e600
5.....	81	33	7.2	16	9	.4	516	390	s689
6.....	127	131	45	60	109	s30	169	66	30
7.....	83	40	9.0	132	58	s23	108	36	10
8.....	65	27	4.7	84	28	6.4	82	24	5.3
9.....	56	27	4.1	172	--	e220	73	22	4.3
10.....	48	25	3.2	164	136	s76	67	20	3.6
11.....	42	23	2.6	111	35	10	94	114	s33
12.....	37	25	2.5	60	11	1.8	81	50	11
13.....	34	22	2.0	50	9	1.2	64	28	4.8
14.....	31	21	1.8	43	2	.2	56	25	3.8
15.....	31	18	1.5	37	2	.2	54	30	4.4
16.....	27	12	.9	93	--	e50	50	23	3.1
17.....	25	8	.5	126	--	e25	43	9	1.0
18.....	23	9	.6	84	37	s9.2	42	10	1.1
19.....	21	5	.3	66	16	2.8	38	7	.7
20.....	21	6	.3	67	19	3.4	38	7	.7
21.....	20	6	.3	256	220	s164	355	329	s395
22.....	21	12	.7	429	252	s347	717	472	s1100
23.....	18	12	.6	156	42	18	171	92	42
24.....	16	12	.5	107	22	6.4	118	42	13
25.....	15	11	.4	84	16	3.6	93	32	8.0
26.....	14	7	.3	76	15	3.1	81	22	4.8
27.....	13	16	.6	202	132	s89	70	42	7.9
28.....	13	16	.6	129	44	15	65	21	3.7
29.....	12	14	.4	--	--	--	72	35	6.8
30.....	12	17	b.6	--	--	--	67	35	6.3
31.....	12	18	.6	--	--	--	61	32	5.3
Total..	1,134	--	102.0	2,868	--	1,107.0	4,115	--	1,081.7

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

## LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	54	25	3.6	18	21	1.0	7.2	19	0.4
2.....	50	22	3.0	17	11	.5	6.3	16	.3
3.....	45	15	1.8	16	12	.5	5.5	19	.3
4.....	39	16	1.7	15	25	1.0	5.5	10	.1
5.....	36	14	1.4	14	23	.9	5.5	8	.1
6.....	41	15	1.7	13	10	.4	5.9	7	.1
7.....	37	8	.8	14	17	.6	6.8	6	.1
8.....	32	10	.9	13	24	.8	7.6	7	.1
9.....	30	10	.8	12	15	.5	7.6	10	.2
10.....	27	9	.6	12	15	.5	7.6	27	.6
11.....	30	6	.5	12	25	.8	9.1	23	.6
12.....	39	7	.7	11	15	.4	11	30	.9
13.....	40	13	1.4	12	24	.8	9.1	30	.7
14.....	35	10	.9	14	19	.7	8.1	34	.7
15.....	32	16	1.4	11	18	.5	7.6	30	.6
16.....	28	19	1.4	10	7	.2	6.3	27	.4
17.....	25	19	1.3	9.1	5	.1	6.3	27	.4
18.....	24	21	1.4	8.6	7	.2	5.9	27	.4
19.....	26	17	1.2	8.6	10	.2	5.9	21	.3
20.....	28	12	.9	8.6	14	.3	5.5	13	.2
21.....	29	15	1.2	8.1	13	b.3	6.3	13	.2
22.....	26	9	.6	8.6	14	.3	6.8	15	.3
23.....	24	10	.6	11	25	.7	11	10	.3
24.....	31	21	1.8	9.1	34	.8	11	8	.2
25.....	33	8	.7	8.6	27	.6	10	10	.3
26.....	26	6	.4	8.1	26	.6	9.1	6	.1
27.....	24	5	.3	7.6	20	.4	7.2	5	.1
28.....	21	5	.3	7.6	21	.4	6.3	7	.1
29.....	20	15	.8	10	20	.5	5.5	8	.1
30.....	18	20	1.0	8.1	20	.4	5.1	10	.1
31.....	--	--	--	7.6	17	.3	--	--	--
Total.	950	--	35.1	343.3	--	16.2	218.6	--	9.3
	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.....	4.7	28	0.4	4.4	30	0.4	1.0	27	0.1
2.....	4.4	25	.3	4.0	16	.2	1.0	23	.1
3.....	6.3	30	.5	3.6	30	.3	.9	33	.1
4.....	7.2	40	.8	3.6	40	.4	.9	34	.1
5.....	4.7	33	.4	3.6	29	.3	.9	38	.1
6.....	4.4	41	.5	3.3	38	.3	.8	35	.1
7.....	6.8	28	.5	4.4	40	.5	.9	35	.1
8.....	30	31	2.5	4.0	35	.4	.8	35	.1
9.....	39	--	e 30	3.0	35	b.3	.8	36	.1
10.....	78	210	sa 30	2.7	34	.2	1.0	46	.1
11.....	35	59	5.6	2.7	24	.2	5.4	44	.6
12.....	21	37	2.1	2.4	26	.2	3.0	32	.2
13.....	14	39	1.5	2.1	27	.2	2.1	35	.2
14.....	11	48	1.4	2.1	45	.2	1.7	34	.2
15.....	9.1	33	.8	2.7	23	.2	1.4	44	.2
16.....	8.1	35	.8	1.9	92	.5	1.2	42	.1
17.....	7.2	32	.6	1.9	106	.5	1.0	39	.1
18.....	6.8	27	.5	1.7	86	.4	1.0	29	.1
19.....	7.2	31	.6	1.4	85	.3	.9	21	.1
20.....	6.3	25	.4	1.2	73	.2	.9	10	(t)
21.....	5.1	12	.2	1.2	78	.2	1.0	10	(t)
22.....	4.7	20	.2	2.1	47	.3	1.7	10	(t)
23.....	4.7	26	.3	4.4	60	b.7	3.6	10	.1
24.....	4.7	25	.3	2.4	80	.5	5.1	11	.2
25.....	5.1	19	.3	1.7	70	b.3	2.7	16	.1
26.....	4.4	61	.7	1.7	48	.2	1.9	15	.1
27.....	4.0	82	.9	1.4	25	.1	2.1	46	.3
28.....	11	100	sa 4	1.2	25	.1	3.0	55	.4
29.....	12	71	s 2.5	1.4	35	.1	2.7	37	.3
30.....	5.9	34	.5	1.2	32	.1	4.0	39	.4
31.....	4.7	25	.3	1.2	30	.1	--	--	--
Total.	377.5	--	110.4	78.6	--	8.9	55.4	--	4.8

Total discharge for year (cfs-days) ..... 11,008.8

Total load for year (tons) ..... 4,574.4

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.



LITTLE MIAMI RIVER BASIN--Continued  
LITTLE MIAMI RIVER NEAR SELMA, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(Methods of analysis: B, bottom withdrawal tube; D, decantation; F, pipette; G, sieve; H, in native water;  
W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Dis-charge (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. 10, 1955.....	1:10 a.m.	302		434	1,540	51	63	75	86	97	98	99	100				BSWCM
Feb. 21.....	11:35 a.m.	335		274	1,030	57	66	76	88	97	99	100	--				BSWCM
Mar. 21.....	11:45 p.m.	790		1,110	1,860	49	61	68	81	92	99	100	--				BSWCM
Mar. 22.....	3:40 a.m.	1,160		890	1,160	49	61	71	85	94	98	99	100				BSWCM
Mar. 22.....	3:40 a.m.	1,160		890	1,090	40	54	70	85	94	97	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 1955.

Sediment records: August 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 89°F Aug. 5; minimum, freezing point on several days during December, January, and February.

Sediment concentrations: Maximum daily, 325 ppm Mar. 22; minimum daily, 2 ppm on many days during November to January, and April.

Sediment loads: Maximum daily, 242 tons Mar. 22; minimum daily, less than 0.05 ton on many days during October to December, August and September.

EXTREMES, 1952-55.--Water temperatures: Maximum, 89°F Aug. 5, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 669 ppm June 10, 1953; minimum daily, 1 ppm Feb. 9-10, Dec. 30, 1953.

Sediment loads: Maximum daily, 242 tons Mar. 22, 1955; minimum daily, less than

0.05 ton on many days during October to December 1952, February, September to December 1953, January to March, September to December 1954, August and September 1955.

REMARKS.--Flow affected by ice Jan. 24-30, Feb. 6-7, Mar. 27. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at varying hours/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	40	37	40	38	--	58	57	64	80	78	68
2	70	40	36	45	32	50	60	56	62	80	75	69
3	70	40	34	48	32	45	50	60	62	75	75	79
4	70	40	40	45	32	55	50	61	65	80	80	79
5	70	42	35	50	35	48	65	55	68	81	89	79
6	60	46	36	45	33	45	60	58	73	76	77	69
7	50	40	34	38	--	34	--	60	65	80	76	71
8	--	40	35	40	--	40	50	60	65	75	77	71
9	--	43	36	40	35	45	55	62	61	75	76	75
10	60	43	35	40	40	--	62	62	62	72	75	68
11	65	40	37	36	--	55	55	65	65	78	80	68
12	70	48	37	33	--	60	70	64	65	69	78	64
13	65	45	38	33	32	46	60	60	62	74	69	71
14	68	48	40	32	32	45	60	70	62	74	65	73
15	50	44	36	35	35	56	58	60	65	72	65	76
16	55	45	40	40	36	48	70	60	62	73	75	80
17	48	50	40	35	35	45	70	58	63	73	82	68
18	48	54	36	40	46	48	55	68	68	75	82	--
19	60	58	35	32	45	52	60	70	65	76	74	68
20	60	50	32	32	45	49	60	75	71	76	75	78
21	--	50	33	35	40	54	70	66	72	--	72	82
22	--	40	33	35	38	45	60	70	74	69	74	77
23	50	40	35	32	45	40	58	75	67	70	74	66
24	50	40	42	34	40	46	62	70	65	79	68	70
25	--	40	40	35	40	33	55	65	68	71	66	66
26	58	40	38	32	44	33	55	75	61	--	80	58
27	58	40	42	32	45	35	65	73	--	--	83	65
28	46	40	48	--	55	48	55	75	70	79	79	71
29	40	35	52	32	--	50	70	66	70	72	78	60
30	50	--	48	32	--	53	69	59	72	84	75	66
31	46	--	45	32	--	46	--	56	--	76	71	--
Average	58	43	38	37	39	47	60	64	66	76	76	71

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	1.0	27	0.1	3.8	2	(t)	4.2	8	0.1
2.....	1.0	28	.1	3.8	2	(t)	4.0	9	.1
3.....	1.8	24	.1	3.6	5	(t)	3.8	7	.1
4.....	3.8	10	.1	3.8	7	0.1	3.6	7	.1
5.....	2.6	10	.1	3.8	13	.1	3.5	8	a.1
6.....	3.8	11	.1	3.8	18	.2	3.1	8	.1
7.....	2.9	12	.1	3.8	13	.1	3.1	2	
8.....	2.4	23	.1	3.5	19	.2	3.1	2	
9.....	2.2	27	.2	3.5	22	.2	3.3	2	
10.....	1.9	20	.1	3.3	24	.2	3.1	2	
11.....	4.2	22	.2	3.3	26	.2	2.7	3	(t)
12.....	14	46	1.7	2.9	23	.2	2.9	3	
13.....	8.6	19	.4	2.9	17	.1	2.9	3	
14.....	6.6	13	.2	2.9	14	.1	3.1	4	
15.....	8.6	15	.3	2.9	11	.1	3.5	8	.1
16.....	9.0	12	.3	2.9	8	.1	3.6	7	.1
17.....	9.9	15	.4	2.9	3		3.6	5	(t)
18.....	9.0	12	.3	2.9	5		4.0	7	.1
19.....	6.6	10	.2	2.9	5		4.4	14	.2
20.....	6.6	12	.2	2.9	6	(t)	4.0	11	a.1
21.....	5.4	12	.2	2.9	6		3.6	10	.1
22.....	5.2	11	.2	2.9	7	a.1	3.5	24	.2
23.....	5.0	9	.1	2.9	8	a.1	3.6	6	.1
24.....	4.8	8	.1	3.1	8	.1	3.8	7	.1
25.....	4.0	7	.1	3.3	7	.1	3.5	7	.1
26.....	4.0	11	.1	3.3	12	.1	3.5	5	(t)
27.....	4.2	10	.1	3.6	13	.1	3.5	5	(t)
28.....	3.8	8	.1	4.2	6	.1	16	79	s5.9
29.....	4.2	8	.1	4.4	5	.1	44	103	s13
30.....	4.0	4	(t)	4.4	7	a.1	46	77	9.6
31.....	3.8	3	(t)	--	--	--	31	23	1.9
Total.	154.9	--	6.5	101.1	--	3.1	231.5	--	32.5
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.....	24	24	1.6	8.3	18	0.4	94	125	32
2.....	24	23	1.5	11	28	.8	72	60	12
3.....	20	15	.8	9.7	23	.6	51	31	4.3
4.....	27	100	b7	8.6	16	.4	58	70	sb13
5.....	39	143	15	8.1	10	.2	116	180	b50
6.....	66	182	s34	30	64	s8.5	68	24	4.4
7.....	51	41	5.6	80	105	s18	49	20	2.6
8.....	36	22	2.1	44	28	3.3	41	17	1.9
9.....	30	14	1.1	46	127	s29	39	18	1.9
10.....	25	14	.9	122	154	s60	35	19	a2
11.....	22	13	.8	68	33	s6.6	49	120	s18
12.....	20	12	.6	40	38	4.1	47	124	16
13.....	19	13	.7	30	52	4.2	36	119	12
14.....	17	6	.3	23	27	1.7	31	112	9.4
15.....	17	5	.2	20	17	.9	29	113	8.8
16.....	15	3	.1	41	65	sb12	26	121	8.5
17.....	14	2	.1	81	85	sb20	23	120	7.4
18.....	13	3	.1	49	30	4.0	23	108	6.7
19.....	12	4	.1	36	18	1.7	20	55	a3
20.....	12	4	.1	35	10	.9	20	9	.5
21.....	11	3	a.1	122	147	48	120	277	s99
22.....	12	3	.1	177	92	44	263	325	s242
23.....	10	3	.1	100	38	10	112	64	19
24.....	9	3	.1	65	30	5.3	70	28	5.3
25.....	8	3	.1	51	27	3.7	55	22	3.3
26.....	8	7	a.2	45	23	2.8	51	23	3.2
27.....	7	10	.2	93	99	s27	40	33	3.6
28.....	7	20	a.4	78	118	25	39	33	3.5
29.....	7	27	.5	--	--	--	43	17	2.0
30.....	7	22	.4	--	--	--	41	11	1.2
31.....	7.5	14	.3	--	--	--	36	13	1.3
Total.	596.5	--	75.2	1,501.7	--	343.1	1,797	--	597.8

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 LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	32	7	0.6	11	17	0.5	4.8	32	0.4
2.....	29	3	.2	10	23	.6	4.6	21	.3
3.....	26	3	.2	10	17	.4	4.5	20	.2
4.....	23	3	.2	9.4	25	.6	4.3	20	.2
5.....	22	2	.1	8.8	30	.7	4.3	22	.2
6.....	24	5	.3	8.3	27	.6	4.6	17	.2
7.....	22	4	a .2	8.3	13	.3	5.3	15	.2
8.....	19	2	.1	8.8	13	.3	5.6	14	.2
9.....	18	2	.1	8.1	17	.4	5.1	15	.2
10.....	17	3	.1	7.8	15	.3	5.3	42	.6
11.....	18	10	.5	7.8	18	.4	6.2	43	.7
12.....	21	6	.3	7.6	13	.3	6.2	42	.7
13.....	22	8	.5	7.8	8	.2	5.8	28	.4
14.....	20	5	.3	9.2	7	.2	5.6	44	.6
15.....	18	7	.3	7.8	8	.2	5.1	49	.7
16.....	16	2	.1	7.0	9	.2	4.6	53	.6
17.....	15	2	.1	6.8	8	.1	4.3	55	.6
18.....	14	3	.1	6.6	9	.2	4.0	47	.5
19.....	15	2	.1	6.4	8	.1	4.0	50	.5
20.....	16	2	.1	6.4	7	.1	4.0	71	.8
21.....	16	2	a .1	6.0	14	.2	4.5	63	.8
22.....	15	2	a .1	6.0	30	.5	4.0	58	.6
23.....	14	2	.1	6.4	31	.5	5.6	62	.9
24.....	17	6	.3	6.0	28	.4	5.6	35	.5
25.....	23	4	.2	5.8	35	.5	5.3	45	.6
26.....	19	3	.2	5.8	32	.5	5.0	43	.6
27.....	16	3	.1	5.3	27	.4	4.3	52	.6
28.....	14	4	.2	5.4	18	.3	3.9	62	.6
29.....	13	7	.2	5.8	23	.4	3.7	53	.5
30.....	12	9	.3	5.3	27	.4	3.5	44	.4
31.....	--	--	--	5.1	25	.3	--	--	--
Total..	566	--	6.3	226.8	--	11.1	143.6	--	14.9
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.....	3.2	80	0.7	2.6	57	0.4	0.7	13	(t)
2.....	3.1	98	.8	2.5	53	.4	.7	18	(t)
3.....	3.6	97	.9	2.4	49	.3	.7	34	0.1
4.....	4.3	113	1.3	2.2	47	.3	.7	42	.1
5.....	3.4	123	1.1	2.0	52	.3	.6	53	.1
6.....	3.2	98	.8	1.9	48	.2	.6	38	.1
7.....	6.8	83	1.5	2.5	43	.3	.6	38	.1
8.....	5.1	86	1.2	2.4	32	.2	.5	36	(t)
9.....	4.5	74	.9	2.0	30	.2	.5	47	.1
10.....	6.0	87	1.4	1.8	31	.2	.6	14	
11.....	5.3	79	1.1	1.8	32	.2	1.0	5	(t)
12.....	4.0	71	.8	1.6	24	.1	.8	12	
13.....	3.5	63	.6	1.4	23	.1	.7	11	
14.....	3.4	63	.6	1.4	19	.1	.7	26	
15.....	3.5	64	.6	1.3	21	.1	.6	48	.1
16.....	4.0	58	.6	1.3	33	.1	.6	32	.1
17.....	3.6	53	.5	1.3	47	.2	.5	18	
18.....	3.5	53	.5	1.2	53	.2	.4	11	
19.....	4.0	50	.5	1.1	52	.2	.5	6	
20.....	5.0	51	.7	1.0	42	.1	.5	9	(t)
21.....	4.0	60	a .6	1.0	33	.1	.5	17	
22.....	3.7	67	.7	1.3	30	.1	.8	11	
23.....	3.9	61	.6	1.5	32	.1	1.2	12	
24.....	4.5	43	.5	1.3	33	.1	1.9	12	.1
25.....	4.5	49	.6	1.1	36	.1	1.7	3	
26.....	3.7	67	.7	1.0	42	.1	1.3	3	
27.....	3.4	62	.6	.9	38	.1	1.3	8	(t)
28.....	3.9	63	.7	.8	32	.1	1.3	8	
29.....	5.4	77	1.1	.8	45	.1	1.4	8	
30.....	4.0	63	.7	.8	41	.1	2.4	7	
31.....	3.1	53	.4	.8	20	(t)	--	--	--
Total..	127.1	--	24.3	47.0	--	5.2	26.3	--	1.4
Total discharge for year (cfs-days).....									5,519.5
Total load for year (tons).....									1,121.4

t Less than 0.05 ton.

a Computed from estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
NORTH FORK LITTLE MIAMI RIVER NEAR PITCHIN, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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. 10, 1955 . . . . .	12:35 a. m.	140		502	1,140	56	78	87	95	98	99	100				BSWCM
Feb. 21 . . . . .	3:15 p. m.	163		184	489	89	93	97	98	99	99	100				BSWCM
Mar. 22 . . . . .	10:05 a. m.	368		449	809	83	84	89	96	97	99	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, Greene 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 1955.

Sediment records: August 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 81°F July 28; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 608 ppm Mar. 22; minimum daily, 2 ppm on several days during November to January.

Sediment loads: Maximum daily, 2,440 tons Mar. 22; minimum daily, 0.1 ton Nov. 3, Dec. 1-2, 16-17.

EXTREMES, 1952-55.--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 October to December 1952, December 1953, and January 1954.

REMARKS.--Flow affected by ice Jan. 24 to Feb. 6, Feb. 13-15. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 7 a.m./

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

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955.

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.....	12	12	0.4	20	5	0.3	24	2	0.1
2.....	13	11	.4	21	4	.2	23	2	.1
3.....	14	14	.5	21	2	.1	23	4	.2
4.....	28	16	1.2	21	3	.2	23	5	.3
5.....	21	13	.7	22	3	.2	22	4	.2
6.....	33	18	1.6	21	6	.3	21	11	.6
7.....	29	19	1.5	21	8	.4	19	3	.2
8.....	21	11	.6	21	8	.4	19	--	--
9.....	18	10	.5	20	--	--	21	--	--
10.....	16	10	.4	20	--	--	22	--	--
11.....	20	19	a 1.4	19	--	--	20	--	e .2
12.....	71	72	14	18	--	--	20	--	--
13.....	49	37	4.9	18	--	--	22	--	--
14.....	45	50	sa 8	18	--	--	24	--	--
15.....	81	94	s 22	18	4	e .2	25	--	--
16.....	54	43	6.3	18	--	--	25	2	.1
17.....	57	23	3.5	18	--	--	25	2	.1
18.....	45	18	2.2	18	--	--	27	4	.3
19.....	36	22	2.1	18	--	--	28	12	.9
20.....	31	23	1.9	18	--	--	26	11	.8
21.....	28	23	1.7	17	--	--	23	12	.7
22.....	26	25	1.8	16	5	.2	22	10	.6
23.....	24	25	1.6	16	6	.2	25	13	.9
24.....	24	22	1.4	19	6	.3	25	13	.9
25.....	21	21	1.2	21	5	.3	24	12	.8
26.....	21	19	1.1	20	4	.2	23	15	.9
27.....	22	15	.9	21	5	.3	24	16	1.0
28.....	21	19	1.1	24	7	.4	91	48	s 21
29.....	22	13	.8	26	15	1.0	231	90	56
30.....	22	10	.6	25	5	.3	244	65	43
31.....	21	9	.5	--	--	--	167	31	14
Total.	946	--	86.8	594	--	7.9	1,358	--	145.3
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.....	131	15	5.3	41	3	0.3	381	--	e 180
2.....	130	20	7.0	50	3	.4	312	133	s 118
3.....	110	25	7.4	45	3	.4	221	50	30
4.....	136	23	8.4	40	3	.3	456	--	e 700
5.....	192	36	19	35	7	.7	932	581	s 1,630
6.....	295	115	92	200	110	sa 90	408	101	s 120
7.....	244	88	58	394	201	211	275	48	36
8.....	167	33	15	248	55	s 41	211	42	24
9.....	139	34	13	236	58	s 52	188	40	20
10.....	117	28	8.8	450	281	s 376	167	47	21
11.....	101	18	4.9	288	56	44	215	116	s 74
12.....	90	13	3.2	139	30	11	221	110	66
13.....	85	5	1.1	130	14	4.9	167	63	28
14.....	74	5	1.0	100	15	4.0	143	48	18
15.....	72	2	.4	90	11	2.7	136	39	14
16.....	65	2	.4	198	55	sa 45	126	39	13
17.....	62	2	.3	317	81	s 75	110	27	8.0
18.....	55	2	.3	223	38	23	107	15	4.3
19.....	53	2	.3	165	22	9.8	101	18	4.9
20.....	49	3	.4	151	30	12	98	19	5.0
21.....	49	5	.6	536	242	350	607	326	s 591
22.....	49	2	.3	880	237	563	1,490	608	2,440
23.....	47	2	.2	450	91	110	513	140	s 209
24.....	40	4	.4	284	56	43	317	60	51
25.....	35	2	.2	221	37	22	246	40	26
26.....	35	2	.2	194	37	19	221	23	14
27.....	30	3	.2	414	118	s 139	168	11	5.0
28.....	30	4	.3	355	103	99	172	10	4.6
29.....	30	4	.3	--	--	--	184	23	11
30.....	30	3	.2	--	--	--	174	25	12
31.....	30	3	.2	--	--	--	156	25	10
Total.	2,771	--	249.3	6,874	--	2,348.5	9,223	--	6,487.8

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

## LITTLE MIAMI RIVER BASIN--Continued

## LITTLE MIAMI RIVER NEAR OLDTOWN, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	144	30	12	57	20	3.1	28	25	1.9
2.....	133	30	11	56	26	3.9	28	22	1.7
3.....	123	27	9.0	54	23	3.4	26	22	1.5
4.....	110	27	8.0	53	17	2.4	25	22	1.5
5.....	100	23	6.2	50	17	2.3	25	21	1.4
6.....	112	34	10	47	12	1.5	25	18	1.2
7.....	104	24	6.7	47	15	1.9	28	18	1.4
8.....	101	12	3.3	48	13	1.7	31	23	1.9
9.....	88	12	2.8	46	11	1.4	29	20	1.6
10.....	83	18	4.0	46	10	1.2	29	29	2.3
11.....	85	18	4.1	46	10	1.2	33	34	3.0
12.....	115	22	6.8	44	13	1.5	33	30	2.7
13.....	101	38	10	45	13	1.6	34	27	2.5
14.....	94	35	8.9	48	12	1.6	33	33	2.9
15.....	88	32	7.6	46	14	1.7	31	28	2.3
16.....	81	32	7.0	41	13	1.4	27	32	2.3
17.....	76	27	5.5	39	15	1.6	25	28	1.9
18.....	71	21	4.0	38	15	1.5	24	25	1.6
19.....	72	18	3.5	37	23	2.3	23	27	1.7
20.....	78	27	5.7	37	25	2.5	22	30	1.8
21.....	79	22	4.7	36	20	1.9	27	27	2.0
22.....	74	17	3.4	37	35	3.5	24	27	1.7
23.....	70	17	3.2	37	30	3.0	31	26	2.2
24.....	81	18	3.9	36	29	2.8	34	27	2.5
25.....	94	18	4.6	35	29	2.7	32	32	2.8
26.....	83	12	2.7	34	27	2.5	34	30	2.8
27.....	74	8	1.6	33	30	2.7	28	27	2.0
28.....	68	10	1.8	31	27	2.2	25	28	1.9
29.....	63	28	4.8	33	27	2.4	23	35	2.2
30.....	60	25	4.0	33	27	2.4	21	29	1.6
31.....	--	--	--	30	27	2.2	--	--	--
Total.	2,705	--	170.8	1,300	--	68.0	838	--	60.8
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.....	21	27	1.5	16	34	1.5	8.3	33	0.7
2.....	20	35	1.9	15	41	1.7	8.0	30	.6
3.....	22	37	2.2	14	38	1.4	7.6	28	.6
4.....	34	37	3.4	13	32	1.1	8.3	20	.4
5.....	26	37	2.6	13	31	1.1	8.0	18	.4
6.....	23	40	2.5	13	33	1.2	8.0	17	.4
7.....	22	57	3.4	12	27	.9	8.3	16	.4
8.....	28	33	2.5	12	25	.8	8.0	18	.4
9.....	57	--	e 30	12	35	1.1	7.3	13	.2
10.....	75	170	a 35	13	28	1.0	7.3	10	.2
11.....	54	83	12	13	28	1.0	8.7	16	.4
12.....	38	95	9.7	12	24	.8	10	27	.7
13.....	31	56	4.7	10	20	.5	10	27	.7
14.....	26	48	3.4	10	20	.5	9.8	17	.4
15.....	24	40	2.6	9.8	22	.6	8.7	11	.2
16.....	23	38	2.4	9.8	31	.8	8.3	12	.3
17.....	22	36	2.1	9.8	32	.8	8.0	12	.2
18.....	20	31	1.7	9.8	28	.7	7.6	11	.2
19.....	22	38	2.2	9.1	28	.7	6.9	13	.2
20.....	20	34	1.8	8.3	30	.7	6.9	14	.3
21.....	20	34	1.8	9.7	41	1.1	7.3	12	.2
22.....	18	33	1.6	14	60	2.4	9.1	16	.4
23.....	17	29	1.3	13	47	1.6	12	22	.7
24.....	18	34	1.6	12	37	1.2	18	20	1.0
25.....	18	31	1.5	11	35	1.0	15	17	.7
26.....	17	43	2.0	10	30	.8	11	9	.3
27.....	16	42	1.8	9.8	32	.8	12	11	.4
28.....	20	53	2.9	9.4	30	.8	13	13	.4
29.....	25	54	3.6	9.4	36	.9	12	15	.5
30.....	23	49	3.0	9.1	33	.8	17	25	1.1
31.....	18	42	2.0	8.7	33	.8	--	--	--
Total.	818	--	150.7	350.7	--	31.1	290.4	--	13.6

e Estimated.

a 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 1954 to September 1955  
(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	Dis-charge (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	
Feb. 21, 1955.....	2:30 p.m.	635		307	858	48	58	70	84	94	97	99	100		BSWCM
Mar. 22.....	4:50 a.m.	1,440		613	1,450	46	53	61	75	91	97	99	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, 1.0 mile upstream from confluence with South Fork, and 1.0 mile northeast of Cedarville, Greene County.

DRAINAGE AREA.--25.6 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1955.

Sediment records: July 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 87°F July 22, 27, Aug. 6, 1955; minimum, freezing point on several days during December to February.

Sediment concentrations: Maximum daily, 688 ppm Mar. 4; 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; minimum daily, 0 tons on many days during July to September 1954, and August to September 1955.

REMARKS.--Flow affected by ice Jan. 21 to Feb. 6, Feb. 11-13, Mar. 27. Records of discharge for period July 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, July to September 1954

/Once-daily measurement at varying hours/

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	
1	81	--	64	11	73	70	--	21	77	69	87	
2	74	72	--	12	--	66	--	22	71	74	68	
3	79	72	--	13	82	72	--	23	--	77	56	
4	78	72	--	14	78	69	--	24	69	73	65	
5	79	72	--	15	75	78	--	25	79	82	74	
6	72	70	--	16	84	77	--	26	73	--	77	
7	72	72	--	17	76	--	--	27	74	72	78	
8	69	71	--	18	76	78	--	28	75	80	79	
9	67	72	--	19	77	80	--	29	--	74	70	
10	73	72	--	20	82	72	67	30	--	72	72	
								31	--	74	--	
Average .....										76	74	--

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at varying hours/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	39	40	42	34	--	57	75	73	80	85	--
2	72	38	38	--	40	--	61	76	76	80	86	--
3	74	38	34	46	--	--	--	78	74	78	86	--
4	72	39	36	48	--	53	46	71	76	83	--	--
5	73	45	32	52	33	46	63	72	74	--	85	70
6	58	46	36	43	33	42	--	--	76	82	87	--
7	59	47	32	44	--	--	47	--	68	--	80	--
8	49	--	32	--	38	45	55	68	--	72	79	--
9	58	50	34	41	43	--	52	--	66	76	80	--
10	65	42	34	40	44	--	52	70	66	67	78	--
11	66	50	33	42	--	59	58	69	64	81	81	67
12	66	--	34	38	32	56	60	69	63	75	--	--
13	68	--	34	33	--	50	64	70	61	--	72	71
14	70	52	38	--	35	--	61	69	62	75	75	72
15	56	48	34	--	--	58	57	66	66	77	--	71
16	49	50	36	36	38	48	69	77	68	--	83	72
17	49	52	35	--	--	--	70	76	--	--	78	--
18	49	54	35	35	--	--	68	74	--	77	81	--
19	52	58	33	--	--	52	76	75	82	77	83	--
20	54	50	--	33	--	52	68	--	78	76	83	--
21	50	44	--	32	--	52	68	73	71	84	--	--
22	--	--	32	--	36	--	--	73	72	87	--	--
23	--	44	--	32	39	--	--	78	--	82	74	70
24	60	40	33	32	45	--	64	75	78	78	83	--
25	60	37	35	32	40	--	58	76	68	84	83	64
26	58	39	38	32	46	--	--	80	62	85	85	64
27	--	36	47	32	47	--	64	78	78	87	83	66
28	36	--	50	32	--	40	70	--	81	82	--	69
29	48	38	40	32	--	--	70	--	82	84	79	66
30	41	35	39	32	--	--	73	61	82	84	--	70
31	--	--	44	32	--	54	--	--	--	85	--	--
Average	59	44	36	--	--	--	62	--	72	80	--	--

## LITTLE MIAMI RIVER BASIN--Continued

## NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO--Continued

Suspended sediment, July to September 1954

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.....	1.9	33	0.2	0	--	0	0.1	3	(t)
2.....	1.6	38	.2	0	--	0	0	--	0
3.....	1.8	37	.2	.1	7	(t)	0	--	0
4.....	2.7	29	.2	0	--	0	0	--	0
5.....	2.7	24	.2	1.2	18	.1	0	--	0
6.....	1.6	13	.1	1.3	17	.1	0	--	0
7.....	1.8	13	.1	.4	8	(t)	0	--	0
8.....	1.8	25	.1	0	--	0	0	--	0
9.....	1.4	9	0	0	--	0	0	--	0
10.....	1.1	3		.2	7		0	--	0
11.....	1.0	3		.1	6		0	--	0
12.....	.9	2		.1	5		0	--	0
13.....	.8	2		.2	4		0	--	0
14.....	.6	2		.1	4		0	--	0
15.....	.4	2		.3	7		0	--	0
16.....	.3	1		.3	5		0	--	0
17.....	.3	2		.2	5		0	--	0
18.....	.2	5	(t)	.2	7		0	--	0
19.....	.7	9		.2	3		0	--	0
20.....	.5	14		.2	2	(t)	1.4	37	.1
21.....	1.2	12		.2	3		1.3	11	
22.....	1.1	10		.2	2		.6	7	
23.....	.3	10		.2	3		.4	4	
24.....	.3	11		.2	6		.3	3	
25.....	.1	14		.3	7		.3	3	
26.....	.1	14		.3	6		.2	5	(t)
27.....	.1	7		.4	32		.2	7	
28.....	.2	6		.6	5		.2	9	
29.....	0	--	0	.3	3		.2	12	
30.....	0	--	0	.2	6		.2	13	
31.....	0	--	0	.2	5		--	--	--
Total.	27.5	--	1.5	8.2	--	0.3	5.4	--	0.2

Total discharge for July to September 1954 (cfs-days)..... 41.1

Total load for July to September 1954 (tons) ..... 2.0

## LITTLE MIAMI RIVER BASIN--Continued

NORTH FORK MASSIE CREEK AT CEDARVILLE, OHIO.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	0.3	3		2.4	7	(t)	2.7	22	0.2
2.....	.4	3		2.6	7	(t)	2.6	22	.2
3.....	.5	7	(t)	2.2	7	(t)	2.4	20	a.1
4.....	.9	13		2.5	6	(t)	2.4	20	.1
5.....	1.5	5		2.5	9	0.1	2.3	15	.1
6.....	5.7	107	s 2.1	2.4	13	.1	1.8	34	.2
7.....	5.8	33	.5	2.2	13	.1	1.9	30	a.2
8.....	3.2	12	.1	2.1	13	.1	2.0	18	.1
9.....	2.2	7	(t)	2.0	11	.1	2.5	21	.1
10.....	1.8	10	(t)	1.9	12	.1	2.0	20	.1
11.....	1.8	8	(t)	1.8	7		2.0	14	.1
12.....	3.3	9	.1	1.8	5		2.2	10	.1
13.....	3.3	5	(t)	1.8	7		2.4	11	.1
14.....	2.9	6	(t)	1.7	9		2.9	10	.1
15.....	3.8	8	.1	1.7	9		3.5	7	.1
16.....	4.3	18	.2	1.7	6		3.5	5	(t)
17.....	4.3	18	.2	1.7	6		3.5	7	a.1
18.....	3.6	17	.2	1.6	4		4.1	24	.3
19.....	3.2	18	.2	1.7	2	(t)	4.3	54	.6
20.....	2.8	16	.1	1.7	2		3.2	49	.4
21.....	2.5	17	.1	1.6	2		3.2	46	.4
22.....	2.2	17	a.1	1.5	2		2.9	50	.4
23.....	2.0	16	.1	1.5	1		3.3	42	.4
24.....	1.8	14	.1	2.0	1		3.4	27	.2
25.....	1.8	12	.1	2.1	1		2.9	31	.2
26.....	2.2	8	(t)	1.9	1		2.8	23	.2
27.....	2.5	7	(t)	2.2	2		2.9	24	.2
28.....	2.2	8	(t)	3.0	10	.1	19	90	s 6.8
29.....	2.5	8	.1	3.2	19	.2	43	110	13
30.....	2.4	9	.1	2.8	16	.1	50	90	s 13
31.....	2.2	8	(t)	--	--	--	29	42	3.3
Total.	79.9	--	5.0	61.8	--	1.5	215.6	--	41.4
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.....	22	28	1.7	5	27	0.4	109	--	e 40
2.....	24	30	1.9	6	41	.7	82	62	14
3.....	20	37	2.0	5	63	.8	58	55	a 9
4.....	26	46	3.2	5	37	.5	120	688	s 460
5.....	38	48	4.9	6	25	.4	323	680	s 653
6.....	63	119	s 21	50	132	s 34	135	95	s 37
7.....	50	51	s 7.2	128	250	s a 90	82	50	a 12
8.....	33	28	2.5	87	92	s 18	62	50	8.4
9.....	26	47	3.3	87	179	s 80	56	50	a 8
10.....	20	44	2.4	128	149	s 61	51	40	a 6
11.....	16	44	1.9	80	60	a 13	55	75	11
12.....	15	53	2.1	40	56	6.0	50	69	9.3
13.....	14	62	2.3	35	45	a 4	40	45	4.9
14.....	11	51	1.5	28	30	2.3	34	40	a 4
15.....	11	49	1.4	23	20	a 1	32	37	3.2
16.....	9.8	52	1.4	50	67	s 13	29	41	3.2
17.....	9.2	50	a 1	79	122	26	24	31	2.0
18.....	8.2	41	.9	57	60	a 9	24	25	a 2
19.....	6.8	40	a.7	41	25	2.5	21	24	1.4
20.....	6.9	37	.7	42	18	a 2	21	16	.9
21.....	6	35	.6	129	159	55	167	190	sb 90
22.....	6	30	a.5	208	294	s 178	379	292	s 311
23.....	5	23	.3	117	70	s 24	144	--	e 30
24.....	5	19	.2	82	43	9.5	92	--	e 7
25.....	5	18	.2	61	40	a 7	68	--	e 6
26.....	4	17	.2	52	35	4.9	54	--	e 4
27.....	4	18	.2	116	136	s 48	45	--	e 4
28.....	4	18	.2	95	80	a 20	40	32	3.4
29.....	4	23	.2	--	--	--	45	25	a 3
30.....	4	33	.4	--	--	--	30	25	2.4
31.....	4	26	.2	--	--	--	33	20	1.8
Total.	480.9	--	67.3	1,822	--	711.0	2,514	--	1,751.9

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 1954 to September 1955--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.....	29	12	0.9	7.9	7	0.1	5.6	18	0.3
2.....	26	7	.5	7.9	18	.4	5.2	18	.2
3.....	23	7	a.4	7.6	19	.4	4.9	32	.4
4.....	20	7	.4	7.4	17	.3	4.8	38	.5
5.....	19	5	.2	7.3	15	.3	4.6	38	.5
6.....	21	4	a.2	7.0	15	a.3	5.0	25	.3
7.....	19	5	.2	7.0	14	a.3	6.1	8	.1
8.....	17	5	.2	7.2	13	.2	7.0	7	a.1
9.....	16	4	.2	6.7	13	a.2	6.3	14	.2
10.....	15	4	.2	6.8	12	.2	6.3	19	.3
11.....	16	5	.2	6.8	13	.2	8.2	20	.4
12.....	16	10	.4	6.4	11	.2	9.6	30	.8
13.....	16	17	.7	6.8	12	.2	7.9	24	.5
14.....	15	17	.7	7.4	17	.3	7.2	18	.3
15.....	14	23	.9	6.3	18	.3	6.6	30	.5
16.....	12	17	.6	6.1	15	.2	5.9	26	.4
17.....	12	14	.4	5.9	8	.1	5.4	20	a.3
18.....	11	13	.4	5.4	6	.1	5.0	17	a.2
19.....	12	20	.6	5.4	12	.2	4.8	13	.2
20.....	11	22	.6	5.6	15	a.2	4.6	18	.2
21.....	11	14	.4	5.2	18	.2	5.0	20	.3
22.....	10	12	a.3	5.3	20	.3	4.5	13	.2
23.....	10	11	a.3	6.7	15	.3	5.9	9	a.1
24.....	12	15	.5	6.1	24	.4	11	10	.3
25.....	12	9	.3	5.7	20	.3	11	12	.4
26.....	10	9	a.2	5.4	17	.2	14	12	.4
27.....	9.6	13	.3	5.0	21	.3	9.9	8	.2
28.....	9.2	16	.4	5.3	20	a.3	7.4	9	.2
29.....	8.7	15	.4	9.2	16	.4	6.4	12	.2
30.....	8.4	11	.2	7.2	19	.4	5.9	12	.2
31.....	--	--	--	6.1	20	a.3	--	--	--
Total.	440.9	--	12.2	202.1	--	8.1	202.0	--	9.2
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.....	5.3	18	0.2	3.6	40	0.4	0	--	0
2.....	5.2	27	.4	3.0	19	.2	0	--	0
3.....	7.0	40	b.8	2.6	12	.1	0	--	0
4.....	11	55	b.2	2.1	12	a.1	0	--	0
5.....	5.3	25	.4	1.7	12	.1	.1	3	(t)
6.....	4.3	23	.3	1.4	12		0	--	0
7.....	4.6	27	.3	1.4	12		0	--	0
8.....	48	220	sb 30	1.2	12	(t)	0	--	0
9.....	26	47	s 3.6	.9	11		0	--	0
10.....	72	150	sb 30	.7	12		.1	10	(t)
11.....	34	84	7.7	2.6	12	.1	1.4	25	.1
12.....	22	45	2.7	1.6	12	.1	1.6	17	a.1
13.....	14	35	a.1	.6	15		.3	3	(t)
14.....	9.7	33	.9	.4	17		.2	5	(t)
15.....	7.4	42	.8	.3	13		.1	7	(t)
16.....	6.6	50	a.9	.3	15		.1	3	(t)
17.....	5.4	55	a.8	.3	9		0	--	0
18.....	4.6	60	.7	.2	12		0	--	0
19.....	4.6	47	.6	.2	17		0	--	0
20.....	3.9	47	.5	.2	18		0	--	0
21.....	3.4	46	.4	.2	14	(t)	0	--	0
22.....	3.0	38	.3	.6	12		.2	2	
23.....	2.8	23	.2	1.0	11		.6	2	
24.....	2.8	15	.1	.5	10		1.5	2	
25.....	2.6	16	.1	.2	13		.7	3	
26.....	2.4	28	.2	.2	12		.4	5	(t)
27.....	1.9	31	.2	.2	12		.4	6	
28.....	6.3	60	b.1	.1	12		1.2	6	
29.....	18	65	b.3	.1	11		1.2	9	
30.....	7.9	38	.8	.1	10		4.6	7	.1
31.....	4.8	42	.5	0	--	0	--	--	--
Total.	356.8	--	91.4	28.5	--	1.4	14.7	--	0.4
Total discharge for year (cfs-days).....									6 419.2
Total load for year (tons).....									2 700.8

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

Particle size analyses of suspended sediment, water year October 1954 to September 1955  
(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	Discharge (cfs)	Water temperature per- centage (° 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, 1955 . . . .	10:10 p. m.	217		736	555	--	82	87	91	94	98	99	100			BSWCM
Mar. 4 . . . . .	8:30 p. m.	287		1,980	3,060	62	77	88	95	98	99	100	100			BSWCM
Mar. 22 . . . . .	3:10 a. m.	358		360	847	66	76	81	89	96	99	100				BSWCM

## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO

LOCATION.--At gaging station at bridge on Weimer Road, 2.4 miles upstream from confluence with North Fork, and 2.3 miles east of Cedarville, Greene County.

DRAINAGE AREA.--20.2 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1955.

Sediment records: July 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 80°F Aug. 7; minimum, freezing point on many days during December to February.

Sediment concentrations: Maximum daily, 559 ppm Mar. 22, 1955; minimum daily, 1 ppm Dec. 16, May 9, 16, 18, 19.

Sediment loads: Maximum daily, 598 tons Mar. 22, 1955; minimum daily, less than 0.05 ton on many days.

EXTREMES, July 1954 to September 1955.--Water temperatures: Maximum, 86°F July 1, 1954; minimum, freezing point on several days during December 1954 to February 1955.

Sediment concentrations: Maximum daily, 559 ppm Mar. 22, 1955; minimum daily, no flow on many days during August and September 1954.

Sediment loads: Maximum daily, 598 tons Mar. 22, 1955; minimum daily, 0 tons on many days during August and September 1954.

REMARKS.--Flow affected by ice Jan. 16 to Feb. 6; Feb. 11-14, Mar. 26-27. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, July to September 1954

/Once-daily measurement at approximately 7 a. m. /

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	86	70	78	9	62	72	--	17	65	--	--	25	69	--	--
2	83	72	75	10	64	--	--	18	75	--	--	26	62	--	--
3	74	80	--	11	69	--	--	19	70	--	74	27	67	69	--
4	71	70	--	12	70	--	--	20	70	--	72	28	70	72	--
5	74	70	--	13	73	--	--	21	73	--	59	29	73	72	--
6	65	65	--	14	69	--	--	22	82	--	--	30	72	70	--
7	70	65	--	15	69	73	--	23	64	--	--	31	72	60	--
8	64	70	--	16	63	--	--	24	65	--	--				
Average .....													70	--	--

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at varying hours /

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

## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Suspended sediment, water year July to September 1954

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.....	1.1	80	0.2	0.1	82		0.1	14	(t)
2.....	.8	110	.2	.1	74		.1	14	(t)
3.....	.9	166	.4	.2	47	(t)	0	--	0
4.....	.9	176	.4	.1	70		0	--	0
5.....	.9	175	.4	.2	77		0	--	0
6.....	.9	198	.5	.6	51	0.1	0	--	0
7.....	1.1	168	.5	.5	45	.1	0	--	0
8.....	.8	142	.3	.2	43	(t)	0	--	0
9.....	.9	143	.3	.2	52	(t)	0	--	0
10.....	.8	203	.4	0	--	0	0	--	0
11.....	.6	177	.3	0	--	0	0	--	0
12.....	.4	198	.2	0	--	0	0	--	0
13.....	.4	143	.2	0	--	0	0	--	0
14.....	.4	155	.2	0	--	0	0	--	0
15.....	.3	155	.1	.3	58	(t)	0	--	0
16.....	.3	115	.1	0	--	0	0	--	0
17.....	.3	110	.1	0	--	0	0	--	0
18.....	.3	115	.1	0	--	0	0	--	0
19.....	.7	133	.2	0	--	0	.6	66	.1
20.....	.5	122	.2	0	--	0	.4	32	(t)
21.....	.9	153	.4	0	--	0	.2	20	(t)
22.....	.9	112	.3	0	--	0	.1	29	(t)
23.....	.5	89	.1	0	--	0	0	--	0
24.....	.3	75	.1	0	--	0	0	--	0
25.....	.2	56	(t)	0	--	0	0	--	0
26.....	.1	68	(t)	0	--	0	0	--	0
27.....	.1	107	(t)	1.1	103	.3	0	--	0
28.....	.1	112	(t)	.3	40	(t)	0	--	0
29.....	.2	121	.1	.3	32	(t)	0	--	0
30.....	.1	112	(t)	.2	37	(t)	0	--	0
31.....	.1	98	(t)	.2	32	(t)	--	--	--
Total	16.8	--	6.5	4.6	--	0.8	1.5	--	0.2
Total discharge for period (cfs-days).....									22.9
Total load for period (tons).....									7.5

t Less than 0.05 ton.



## LITTLE MIAMI RIVER BASIN--Continued

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	0.1	57		0.8	8		0.8	12	
2.....	.1	32		.8	5		.8	10	
3.....	.2	26	(t)	.8	5		.8	9	
4.....	.3	35		.8	5		.8	10	
5.....	.3	47		.8	7		.8	15	
6.....	.5	117	0.2	.8	18	(t)	.9	11	
7.....	1.1	60	.2	.8	20		.8	10	
8.....	1.2	32	.1	.8	22		.8	16	
9.....	.9	14		.8	13		.8	10	
10.....	.8	11		.8	10		.9	15	(t)
11.....	.7	11		.7	17		.8	6	
12.....	.9	12		.7	27	0.1	.8	3	
13.....	1.2	14		.6	16		.8	3	
14.....	1.2	15	(t)	.6	12		.9	3	
15.....	1.2	7		.6	14		1.0	3	
16.....	1.2	7		.6	13		1.1	1	
17.....	1.2	4		.6	17		1.1	5	
18.....	1.2	4		.6	15		1.2	22	0.1
19.....	1.2	8		.6	14		1.5	32	.1
20.....	1.1	28	.1	.6	9		1.7	24	.1
21.....	1.0	27	.1	.6	12	(t)	1.6	27	.1
22.....	.9	14		.6	5		1.6	35	.2
23.....	.9	20		.6	5		1.8	30	.1
24.....	.9	20		.7	6		1.8	21	.1
25.....	.8	16		.7	5		1.8	27	.1
26.....	.8	15	(t)	.7	6		1.6	24	.1
27.....	.8	14		.7	2		1.4	30	.1
28.....	.8	5		.8	2		2.4	39	.2
29.....	.8	9		.8	11		10	38	1.0
30.....	.8	6		.8	15		21	43	2.4
31.....	.8	5		--	--	--	16	15	.6
Total.	25.9	--	1.4	21.2	--	0.7	80.1	--	5.6
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.....	13	13	0.4	3	25	0.2	86	110	sa 30
2.....	12	13	.4	4	26	.3	54	36	5.2
3.....	12	30	1.0	3	14	.1	40	20	2.2
4.....	12	30	1.0	3	8	.1	84	300	sa 170
5.....	20	10	.5	4	10	.1	223	430	sa 330
6.....	32	48	s 4.6	40	38	s 7.4	90	106	26
7.....	31	16	1.3	124	37	12	53	37	5.3
8.....	22	13	.8	54	37	s 5.8	38	36	3.7
9.....	18	10	.5	59	92	s 32	33	26	2.3
10.....	14	11	.4	69	33	s 7.0	27	37	2.7
11.....	12	5	.2	50	17	2.3	29	59	4.6
12.....	10	2	.1	30	12	1.0	26	22	1.5
13.....	9.5	25	.6	25	5	.3	20	21	1.1
14.....	9.2	7	.2	20	5	.3	18	12	.6
15.....	7.5	3	.1	16	22	1.0	18	12	.6
16.....	7	2	(t)	27	26	s 2.3	16	11	.5
17.....	6	4	.1	42	20	s 2.5	13	7	.2
18.....	5	2	(t)	33	12	1.1	13	6	.2
19.....	5	2	(t)	26	11	.8	12	10	.3
20.....	4	3	(t)	28	13	1.0	12	13	.4
21.....	4	2	(t)	106	100	sa 30	161	350	sa 210
22.....	4	7	.1	183	190	sa 110	315	559	s 598
23.....	4	10	.1	85	44	10	97	95	25
24.....	3	9	.1	56	25	3.8	60	54	8.7
25.....	3	8	.1	41	18	2.0	44	36	4.3
26.....	2.7	7	.1	36	20	b 2	35	50	s 5.4
27.....	2.6	8	b 1	122	160	s 64	30	108	s 7.9
28.....	2.5	10	b 1	76	53	11	26	20	1.4
29.....	2.3	11	.1	--	--	--	29	18	1.4
30.....	2.2	13	.1	--	--	--	26	14	1.0
31.....	2.1	10	.1	--	--	--	22	12	.7
Total.	293.6	--	13.4	1,365	--	310.4	1,750	--	1,451.2

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

## SOUTH FORK MASSIE CREEK NEAR CEDARVILLE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	19	14	0.7	5.7	9	0.1	4.6	14	0.2
2.....	18	8	.4	5.4	7	.1	3.9	5	.1
3.....	16	5	.2	5.4	10	.1	3.3	10	.1
4.....	13	5	.2	5.1	5	.1	2.9	11	.1
5.....	12	6	.2	4.9	6	.1	2.6	9	.1
6.....	13	11	.4	4.5	7	.1	2.5	11	.1
7.....	12	8	.2	4.3	6	.1	2.5	16	.1
8.....	9.7	6	.2	4.8	8	.1	2.6	15	.1
9.....	8.8	10	.2	4.3	1	(t)	3.9	27	.3
10.....	8.8	5	.1	4.6	2	(t)	4.3	31	.4
11.....	9.0	5	.1	8.1	10	.2	4.8	35	.4
12.....	8.8	5	.1	6.8	5	.1	7.5	37	.7
13.....	8.1	9	.2	6.0	5	.1	5.6	31	.5
14.....	8.1	9	.2	6.4	5	.1	4.5	38	.5
15.....	7.7	9	.2	5.9	2		3.7	41	.4
16.....	6.4	10	.2	5.6	1		3.0	28	.2
17.....	6.4	11	.2	5.2	2		2.5	24	.2
18.....	6.2	6	.1	4.9	1	(t)	2.2	18	.1
19.....	7.0	8	.2	4.6	1		2.0	14	.1
20.....	7.1	5	.1	4.5	2		2.0	12	.1
21.....	7.1	4	.1	4.2	2		3.6	32	.3
22.....	6.8	5	.1	4.1	10	.1	3.5	18	.2
23.....	6.8	5	.1	4.6	11	.1	4.2	34	.4
24.....	7.9	6	.1	4.3	5	.1	14	4C	1.5
25.....	7.9	5	.1	3.8	5	.1	14	2C	.8
26.....	7.3	5	.1	3.7	7	.1	24	21	1.4
27.....	6.6	2	(t)	3.2	5	(t)	15	21	.8
28.....	6.2	4	.1	3.4	13	.1	9.0	33	.8
29.....	6.2	6	.1	11	20	.6	6.6	19	.3
30.....	5.9	10	.2	7.0	10	.2	5.4	16	.3
31.....	--	--	--	5.4	8	.1	--	--	--
Total.	273.8	--	5.4	161.7	--	3.0	170.2	--	11.6
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.....	4.5	48	0.6	3.0	40	0.3	0.5	29	(t)
2.....	3.9	45	.5	2.3	35	.2	.4	30	(t)
3.....	3.9	45	.5	1.9	40	.2	.4	41	(t)
4.....	4.3	40	.5	1.7	40	.2	.3	81	0.1
5.....	3.5	30	.3	1.4	50	.2	.3	63	.1
6.....	3.2	26	.2	1.2	55	.2	.3	73	.1
7.....	3.6	35	.3	1.2	46	.1	.2	83	(t)
8.....	7.0	34	.6	.9	40	.1	.1	84	(t)
9.....	5.6	41	.6	.9	37	.1	.1	64	(t)
10.....	23	145	s 10	3.0	51	.4	.2	53	(t)
11.....	16	38	1.6	55	103	s 20	1.6	24	.1
12.....	8.6	40	.9	14	29	1.1	1.4	34	.1
13.....	5.7	42	.6	6.2	25	.4	.6	19	
14.....	4.5	30	.4	3.7	14	.1	.4	37	
15.....	3.5	34	.3	2.7	22	.2	.3	52	
16.....	3.3	29	.2	2.1	47	.3	.3	42	
17.....	2.7	30	.2	1.8	37	.2	.2	46	
18.....	2.3	40	.2	1.5	42	.2	.2	44	(t)
19.....	2.3	31	.2	1.3	35	.1	.1	60	
20.....	2.0	39	.2	1.2	40	.1	.1	66	
21.....	1.7	15	.1	.9	44	.1	.1	40	
22.....	1.4	11	(t)	1.2	40	.1	.3	46	
23.....	1.3	12	(t)	2.5	26	.2	.5	48	.1
24.....	1.2	8	(t)	1.7	20	.1	.8	30	.1
25.....	1.2	20	.1	1.3	22	.1	.6	14	(t)
26.....	.9	71	.2	1.0	35	.1	.4	27	(t)
27.....	.9	78	.2	.9	44	.1	.4	34	(t)
28.....	3.5	80	a .8	.9	40	.1	.6	42	.1
29.....	17	70	sa 4	.8	35	.1	.8	41	.1
30.....	8.1	32	.7	.7	46	.1	1.7	35	.2
31.....	4.6	53	.6	.6	35	.1	--	--	--
Total.	155.2	--	25.7	119.5	--	25.9	14.2	--	1.7
Total discharge for years (cfs-days).....									4,430.4
Total load for year (tons).....									1,856.0

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 1954 to September 1955  
(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	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
Mar. 4, 1955	6:00 p. m.	94		285	589	78	84	86	93	98	100	--				BSWCM
Mar. 22	1:00 a. m.	494		1,740	2,110	47	57	67	80	93	98	99	100			BSWCM
Mar. 22	2:35 a. m.	508		1,260	1,640	62	66	73	85	91	99	100				BSWCM
Mar. 22	2:35 a. m.	508		1,260	1,400	41	51	65	78	92	98	100				BSNM
July 10	7:15 a. m.	29		346	656	84	93	94	96	98	99	100				BSWCM

## 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 1955.

Sediment records: September 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 78°F Aug. 21; minimum, freezing point on several days during December, January, February, and March.

Sediment concentrations: Maximum daily, 596 ppm Mar. 5; minimum daily, 1 ppm Nov. 29-30, Dec. 18, Apr. 8-9.

Sediment loads: Maximum daily, 1,140 tons Mar. 5; minimum daily, less than 0.05 ton on several days during November, December, and September.

EXTREMES, 1952-55.--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 October 1952, April, November, December, 1953, March, November, December, 1954, and April 1955.

Sediment loads: Maximum daily, 1,140 tons Mar. 5, 1955; minimum daily, less than 0.05 ton on many days during October 1952, July 1953 to February 1954, July to September, November, December, 1954, and September 1955.

REMARKS.--Flow affected by ice Jan. 24 to Feb. 6, Feb. 13. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

(Once-daily measurement at approximately 8:30 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	--	--	38	--	--	--	54	60	73	75	61
2	68	37	40	39	32	36	60	57	63	--	--	--
3	68	38	38	--	--	38	70	--	63	73	75	55
4	--	40	32	42	--	49	--	54	--	71	74	--
5	--	46	37	45	--	48	--	62	68	74	75	58
6	--	46	--	--	31	--	41	--	70	--	--	58
7	--	--	--	39	32	--	45	--	--	--	72	--
8	--	39	--	37	32	--	49	52	66	71	72	57
9	57	40	35	--	--	41	--	--	61	73	--	55
10	62	41	35	38	--	41	48	52	61	73	72	60
11	61	41	--	--	--	52	--	57	64	--	71	--
12	66	--	--	36	--	--	--	56	64	70	67	--
13	67	41	35	--	--	41	53	58	60	70	--	47
14	69	43	31	--	--	41	53	58	60	76	66	51
15	60	43	35	32	--	--	50	--	--	75	65	55
16	--	42	35	32	--	--	45	--	64	73	70	--
17	48	43	--	--	33	56	53	57	64	--	--	58
18	47	44	33	--	34	--	53	--	--	73	74	--
19	40	53	--	--	36	48	53	--	--	73	--	54
20	45	--	--	32	40	40	55	58	70	71	73	55
21	46	46	--	32	--	49	--	64	70	71	78	56
22	47	46	--	31	36	52	52	--	68	73	72	--
23	--	39	--	--	--	34	54	--	67	--	70	58
24	48	--	32	32	37	--	51	67	--	--	66	55
25	58	41	--	--	37	35	51	67	60	75	87	--
26	55	41	33	31	--	--	--	62	61	70	65	--
27	57	38	32	--	42	--	46	68	65	73	66	--
28	55	38	--	--	47	32	44	71	65	--	--	51
29	49	39	37	--	--	--	48	--	66	--	69	50
30	44	37	38	--	--	50	54	60	70	73	66	--
31	--	--	37	--	--	45	--	60	--	75	60	--
Average	--	42	--	--	--	--	--	--	65	--	--	--

## LITTLE MIAMI RIVER BASIN--Continued

## MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

Suspended sediment, water year October 1954 to September 1955									
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.....	1.3	15	0.1	4.8	20	a 0.3	6.0	2	(t)
2.....	1.4	17	.1	5.0	21	.3	6.0	4	0.1
3.....	1.8	16	.1	4.8	10	.1	5.5	8	.1
4.....	2.2	17	.1	4.8	15	.2	5.5	11	.2
5.....	1.9	19	.1	5.0	11	.1	5.3	11	.2
6.....	14	--	e 10	5.0	14	.2	4.8	11	a.1
7.....	8.7	43	1.0	4.8	11	.1	4.2	11	a.1
8.....	6.3	19	.3	4.6	10	.1	4.4	11	a.1
9.....	4.1	25	.3	4.4	8	.1	5.0	10	.1
10.....	3.2	29	.2	4.2	3	(t)	5.0	6	.1
11.....	4.6	55	b.7	4.1	8	.1	4.6	6	a.1
12.....	6.8	78	1.4	4.1	16	a.2	4.8	5	a.1
13.....	4.8	48	.6	4.1	20	.2	6.0	5	.1
14.....	5.7	46	.7	4.1	18	.2	6.8	5	.1
15.....	8.4	30	.7	4.1	6	.1	7.7	5	.1
16.....	8.1	20	a.4	4.1	2	(t)	7.7	4	.1
17.....	8.4	35	.8	4.2	7	.1	8.1	2	(t)
18.....	6.5	37	.6	4.4	6	.1	8.4	1	(t)
19.....	5.5	33	.5	4.4	16	.2	8.7	--	
20.....	4.8	40	.5	4.4	15	.2	8.1	--	
21.....	4.4	31	.4	4.2	6	.1	7.7	--	e.1
22.....	4.1	41	.4	4.1	11	.1	6.5	--	
23.....	3.9	45	a.5	4.2	10	.1	7.1	--	
24.....	3.5	38	.4	5.3	10	a.1	8.1	--	
25.....	3.4	26	.2	5.5	10	.1	7.1	--	
26.....	3.9	33	.3	5.0	9	.1	7.1	11	.2
27.....	5.5	59	.9	5.5	5	.1	7.7	12	.2
28.....	5.0	40	.5	6.3	2	(t)	27	42	s 4.5
29.....	5.3	25	.4	6.5	1	(t)	67	85	15
30.....	5.0	20	.3	6.3	1	(t)	83	104	23
31.....	4.6	20	a.2	--	--	--	58	27	4.2
Total.	157.1	--	23.7	142.3	--	3.7	408.9	--	49.5
January			February			March			
1.....	47	7	0.9	11	19	0.6	225	190	a 120
2.....	48	3	.4	15	66	2.7	161	59	26
3.....	42	2	a.2	13	55	a 2	122	37	12
4.....	50	6	a.8	12	46	a 1	267	--	e 650
5.....	69	29	5.4	13	40	a 1	643	596	s 1,140
6.....	105	117	s 35	100	82	s 35	273	120	a 90
7.....	94	50	13	216	390	227	161	60	a 25
8.....	67	27	4.9	134	140	51	122	40	a 13
9.....	54	117	17	162	--	e 160	108	35	10
10.....	45	132	16	229	308	sb 220	91	38	9.3
11.....	38	120	a 12	158	--	e 30	96	48	12
12.....	34	115	10	84	--	e 35	90	40	a 10
13.....	32	120	a 10	70	--	e 30	73	28	5.5
14.....	27	120	a 9	64	--	e 14	62	19	3.2
15.....	27	128	9.3	52	--	e 8	60	16	a 3
16.....	26	120	8.4	94	--	e 40	55	14	a 2
17.....	23	110	a 7	139	88	33	45	12	1.4
18.....	18	114	5.5	107	31	9.0	45	10	1.2
19.....	17	110	a 5	85	22	5.0	39	9	.9
20.....	18	105	5.1	84	33	7.5	39	16	s 2.2
21.....	16	126	5.4	270	220	160	408	370	sb 550
22.....	19	158	8.1	457	350	432	850	413	s 1,020
23.....	14	150	a 6	235	110	a 70	306	63	s 55
24.....	13	133	4.7	153	50	21	177	40	a 19
25.....	12	--		121	35	11	133	38	14
26.....	11	--		108	20	a 6	117	35	a 11
27.....	10	--	e 2	280	229	s 186	90	30	a 7
28.....	10	--		202	318	173	89	12	2.9
29.....	10	--		--	--	--	98	12	a 3
30.....	10	--		--	--	--	89	12	2.9
31.....	10	--		--	--	--	77	10	2.1
Total.	1,016	--	213.1	3,668	--	1,970.8	5,211	--	3,823.6

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

## MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	68	9	1.6	18	2	0.1	13	33	1.1
2.....	60	4	.6	18	2	.1	10	39	1.0
3.....	54	2	.3	17	2	a.1	9.2	20	.5
4.....	45	2	a.2	16	5	.2	8.5	25	a.6
5.....	42	2	.2	16	8	.3	8.2	32	.7
6.....	48	2	.2	15	6	a.2	9.8	--	e2
7.....	42	2	.2	15	5	a.2	13	--	e2
8.....	36	1	.1	15	2	.1	13	47	1.6
9.....	33	1	a.1	14	3	a.1	11	22	.6
10.....	31	2	.2	17	--	e2	13	15	.5
11.....	33	4	a.4	24	45	sb3	16	18	.8
12.....	34	6	.6	18	6	.3	19	20	1.0
13.....	33	19	1.7	18	9	.4	18	19	.9
14.....	32	19	1.6	20	7	.4	16	16	.7
15.....	30	15	1.2	16	7	a.3	14	25	a.9
16.....	26	20	1.4	14	9	.3	10	29	.8
17.....	25	16	1.1	13	8	.3	8.8	20	.5
18.....	23	17	1.0	12	7	a.2	7.6	20	a.4
19.....	36	--	e7	12	6	a.2	7.0	25	a.5
20.....	34	19	1.7	11	5	.1	6.8	25	.4
21.....	32	12	a.1	11	7	.2	7.0	20	.4
22.....	28	8	.6	11	7	a.2	8.5	18	.4
23.....	25	2	.1	16	--	e3	14	--	e3
24.....	34	21	1.9	13	15	.5	21	--	e4
25.....	34	18	1.6	13	12	.4	32	85	b7
26.....	30	7	a.6	11	15	.4	37	36	3.6
27.....	26	2	.1	9.2	15	.4	29	30	2.3
28.....	24	5	.3	12	38	s1.3	19	20	1.0
29.....	22	2	.1	23	20	a.1	15	17	.7
30.....	19	2	.1	19	16	.8	12	19	.6
31.....	--	--	--	15	13	.5	--	--	--
Total.	1,041	--	27.8	472.2	--	17.6	426.4	--	40.5
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.....	9.5	23	0.6	6.8	25	0.4	2.2	32	0.2
2.....	8.8	25	a.6	5.4	25	a.4	2.1	30	a.2
3.....	16	--	e8	4.5	24	.3	2.0	20	.1
4.....	20	168	9.1	3.8	20	.2	1.8	20	a.1
5.....	9.9	78	2.1	3.8	20	.2	1.8	23	.1
6.....	7.3	70	a.1	3.3	20	a.2	1.7	13	.1
7.....	13	--	e10	3.2	24	.2	1.7	13	a.1
8.....	55	580	sb100	3.0	12	.1	1.6	12	.1
9.....	35	163	15	2.8	9	a.1	1.5	10	(t)
10.....	81	144	31	2.8	10	.1	4.5	--	e.3
11.....	57	140	a20	40	--	e18	9.2	--	e2
12.....	33	111	9.9	24	66	4.3	4.1	--	e.3
13.....	22	57	3.4	9.9	60	a2	3.7	25	.2
14.....	16	53	2.3	6.0	55	.9	2.7	15	.1
15.....	13	58	2.0	4.6	15	.2	2.3	18	.1
16.....	11	55	1.6	4.1	10	.1	2.1	15	a.1
17.....	8.8	50	a.1	3.8	11	a.1	2.0	11	.1
18.....	7.6	45	.9	3.4	11	.1	1.8	11	a.1
19.....	8.5	34	.8	3.2	11	a.1	1.8	12	a.1
20.....	7.0	25	.5	3.2	12	.1	1.8	15	.1
21.....	5.8	27	.4	14	--	e25	2.0	16	.1
22.....	5.0	36	.5	22	302	s29	2.6	19	a.1
23.....	4.8	30	a.4	5.9	82	1.3	5.6	50	b.8
24.....	4.8	25	a.3	5.0	51	.7	6.8	44	.8
25.....	4.5	19	.2	4.5	50	a.6	4.8	25	a.3
26.....	4.1	20	.2	3.3	41	.4	4.3	8	.1
27.....	3.7	20	.2	2.8	23	.2	4.5	13	a.2
28.....	8.9	71	e2	2.7	30	a.2	5.0	20	.3
29.....	26	82	e6	2.6	30	.2	6.8	--	e.5
30.....	20	34	1.8	2.3	25	.2	13	--	e2
31.....	10	22	.6	2.3	28	.2	--	--	--
Total.	537.0	--	232.4	209.0	--	86.1	107.8	--	9.7

Total discharge for year (cfs-days) ..... 13,396.7

Total load for year (tons) ..... 6,498.5

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated graph.

LITTLE MIAMI RIVER BASIN--Continued  
MASSIE CREEK AT WILBERFORCE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	Dis-charge (cfs)	Water tem- per- 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	
Feb. 9, 1955 . . . . .	11:30 p. m.	346		476	1, 120	33	42	53	70	90	96	98	99		100	BSWCM
Mar. 5 . . . . .	2:30 p. m.	627		560	926	76	79	84	87	90	92	94	96		99	BSWCM
Mar. 22 . . . . .	1:40 a. m.	798		635	1, 370	54	60	70	73	90	96	98	99		100	BSWCM
Mar. 22 . . . . .	8:50 a. m.	1, 090		771	1, 240	60	69	75	86	90	96	97	99		100	BSWCM
July 8 . . . . .	8:00 a. m.	72		1,260	2, 010	58	73	90	96	98	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 southwest of Morrow, and 4 miles upstream from mouth.

DRAINAGE AREA.--234 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1952 to September 1954.

Water temperatures: September 1952 to September 1955.

Sediment records: September 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 92°F July 27; minimum, freezing point on several days during December to February.

Sediment concentrations: Maximum daily, 1,650 ppm Feb. 27; minimum daily, 1 ppm on several days during November and December.

Sediment loads: Maximum daily, 21,800 tons Mar. 22; minimum daily, less than 0.05 ton on many days during November, December, and September.

EXTREMES, 1952-55.--Water temperatures: Maximum, 92°F July 31, 1953, July 27, 1955; minimum, freezing point on several days during winter months.

Sediment concentrations: Minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 53,000 tons (estimated) July 21, 1954; minimum daily, less than 0.05 ton on many days.

REMARKS.--Flow affected by ice Jan. 26-28, Feb. 2, 13-14. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

(Once-daily measurement at varying hours)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	43	42	40	--	46	55	70	75	81	90	--
2	73	39	39	44	32	46	59	--	--	88	89	--
3	76	42	35	44	32	44	58	75	78	85	91	77
4	80	42	39	44	33	53	--	76	77	--	88	85
5	75	42	--	48	33	47	61	77	79	86	90	80
6	65	44	34	46	34	42	61	74	75	87	89	77
7	61	45	35	40	35	32	54	--	72	82	86	80
8	63	47	34	40	35	41	55	69	69	83	84	77
9	67	46	36	--	40	45	56	69	69	--	84	81
10	70	46	35	--	40	--	63	69	--	79	85	77
11	77	45	36	39	32	55	61	70	68	84	82	--
12	73	48	35	36	--	--	64	68	--	81	83	72
13	72	49	35	32	--	--	--	65	64	87	80	71
14	71	50	35	32	33	63	64	65	70	--	--	75
15	61	51	35	36	35	55	63	71	71	81	83	79
16	--	50	35	36	34	49	66	75	80	--	82	77
17	57	53	36	34	--	45	68	71	83	83	88	81
18	55	55	36	35	--	47	69	--	--	80	--	--
19	53	53	33	33	41	50	69	--	77	84	85	80
20	54	50	32	35	43	--	68	81	82	86	87	79
21	53	47	34	34	40	52	67	75	--	87	--	82
22	55	46	34	34	37	54	68	74	81	--	--	73
23	56	46	36	32	41	47	64	77	77	82	--	71
24	56	42	36	34	41	50	65	75	82	83	79	71
25	58	40	36	--	42	44	58	72	71	88	80	70
26	57	41	37	33	40	--	57	78	75	89	--	68
27	59	--	38	--	47	34	59	77	79	92	--	67
28	54	41	44	--	40	40	65	76	--	80	83	74
29	--	39	42	--	--	44	67	--	81	81	--	70
30	35	39	36	--	--	--	67	82	82	86	--	66
31	44	--	38	--	--	52	--	73	--	87	--	--
Average	62	46	36	--	37	47	62	73	76	84	--	75



## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROACHESTER, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	2.6	22	0.2	12	5	0.2	32	2	0.2
2.....	3.3	27	.2	12	4	.1	24	2	.1
3.....	4.0	27	.3	11	2	.1	19	3	.2
4.....	3.8	24	.2	12	1	(t)	16	2	.1
5.....	4.0	21	.2	11	1	(t)	15	2	.1
6.....	3.8	18	.2	11	2	.1	14	2	.1
7.....	3.2	16	.1	11	2	.1	13	2	.1
8.....	2.5	20	.1	10	2	.1	10	2	.1
9.....	2.4	23	.1	9.9	2	.1	10	1	(t)
10.....	2.6	18	.1	8.4	2	(t)	11	1	(t)
11.....	2.6	17	.1	7.1	2	(t)	12	1	(t)
12.....	4.1	13	.1	6.9	2	(t)	12	1	(t)
13.....	15	27	s 1.3	6.1	2	(t)	18	5	.2
14.....	22	20	1.2	5.7	2	(t)	90	18	4.4
15.....	24	20	1.3	5.9	10	.2	115	18	5.6
16.....	19	20	1.0	6.1	5	.1	100	14	3.8
17.....	16	15	.6	5.9	2	(t)	93	8	1.8
18.....	12	11	.4	5.9	2	(t)	126	6	2.0
19.....	9.9	6	.2	6.1	2	(t)	126	6	2.0
20.....	8.7	7	.2	6.4	2	(t)	98	5	1.3
21.....	7.9	9	.2	6.1	2	(t)	66	5	.9
22.....	6.9	7	.1	6.1	2	(t)	54	2	.3
23.....	6.4	6	.1	6.4	2	(t)	54	2	.3
24.....	5.7	6	.1	7.6	2	(t)	60	2	.3
25.....	4.8	7	.1	11	1	(t)	52	2	.3
26.....	5.2	9	.1	19	1	.1	45	2	.2
27.....	7.4	10	.2	19	2	.1	43	2	.2
28.....	15	12	.5	29	3	.2	507	410	sa 1,000
29.....	24	11	.7	54	4	.6	1,180	900	sa 3,400
30.....	17	9	.4	43	2	.2	955	--	e 1,500
31.....	15	7	.3	--	--	--	398	61	s 71
Total.	280.8	--	10.9	371.6	--	2.8	4,358	--	5,995.7
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.....	296	28	22	53	6	0.8	2,710	1,170	s 11,000
2.....	332	38	34	350	324	s 353	1,080	262	s 890
3.....	232	15	9.4	304	73	60	542	70	102
4.....	670	87	s 208	272	29	21	1,700	1,090	s 10,800
5.....	922	88	219	234	23	s 20	2,640	1,320	s 12,800
6.....	1,280	170	s 624	3,180	785	s 7,620	890	117	s 302
7.....	552	60	s 97	1,590	317	s 1,760	465	55	69
8.....	328	22	19	608	69	113	320	36	31
9.....	288	21	16	348	55	52	260	32	22
10.....	253	18	12	505	86	117	218	27	16
11.....	222	14	8.4	490	95	126	272	55	s 50
12.....	197	10	5.3	250	50	b 35	268	123	89
13.....	190	9	4.6	210	30	b 17	197	85	45
14.....	169	11	5.0	170	18	8.3	160	40	17
15.....	166	10	4.5	143	15	5.8	197	45	24
16.....	166	10	4.5	1,020	234	s 1,230	300	93	75
17.....	146	10	3.9	1,280	198	s 794	204	45	25
18.....	126	10	3.4	647	59	103	184	23	11
19.....	113	8	2.4	425	33	38	175	15	7.1
20.....	110	8	2.4	500	32	43	163	18	7.9
21.....	95	6	1.5	1,600	--	e 1,200	2,150	900	sa 6,100
22.....	103	6	1.7	2,890	640	sa 5,500	4,660	1,410	s 21,800
23.....	100	5	1.4	955	102	s 289	1,020	166	s 541
24.....	93	4	1.0	485	27	35	474	50	64
25.....	86	3	b.7	332	12	11	327	34	30
26.....	70	3	.6	328	19	17	315	25	b 20
27.....	55	--	--	3,130	1,650	s 15,800	237	22	14
28.....	50	--	--	1,420	180	690	230	25	16
29.....	49	--	e.4	--	--	--	269	32	23
30.....	49	--	--	--	--	--	240	30	19
31.....	38	--	--	--	--	--	202	22	12
Total.	7,546	--	1,313.7	23,719	--	36,058.9	23,069	--	65,022.0

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.

## LITTLE MIAMI RIVER BASIN--Continued

## TODD FORK NEAR ROACHESTER, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	171	17	7.8	75	6	1.2	16	10	0.4
2.....	154	11	4.6	68	5	b.9	12	10	b.3
3.....	138	12	4.5	59	4	.6	10	11	.3
4.....	117	13	4.1	52	3	.4	8.8	14	.3
5.....	102	14	3.8	47	4	.5	8.1	12	.3
6.....	105	11	3.1	37	3	.3	7.9	15	.3
7.....	114	8	2.5	33	3	.3	9.2	14	.3
8.....	91	8	2.0	33	3	.3	13	15	.5
9.....	80	9	1.9	32	3	.2	32	20	1.7
10.....	73	10	2.0	29	5	.4	34	13	1.2
11.....	80	6	1.3	26	5	.4	31	11	.9
12.....	181	25	a15	27	8	.6	30	7	.6
13.....	181	30	b15	31	11	.9	27	7	.5
14.....	126	18	6.1	54	13	1.9	21	7	.4
15.....	105	12	3.4	49	13	1.7	17	7	.3
16.....	88	9	2.1	32	12	1.0	14	8	.3
17.....	78	10	2.1	23	12	.7	12	8	.2
18.....	66	9	1.6	21	15	.8	9.8	7	b.2
19.....	68	10	1.8	18	14	b.7	8.1	8	.2
20.....	188	29	15	16	12	.5	7.2	8	.2
21.....	132	17	6.0	14	16	.6	6.4	10	.2
22.....	108	15	4.4	16	19	.8	7.7	15	.3
23.....	88	5	1.2	19	20	1.0	7.0	12	.2
24.....	300	38	a50	22	20	1.2	5.7	9	.1
25.....	389	68	71	26	20	1.4	9.7	24	.6
26.....	251	28	19	26	20	1.4	11	35	1.0
27.....	178	10	4.8	22	19	1.1	13	25	.9
28.....	138	7	2.6	19	16	.8	9.8	25	b.7
29.....	111	7	2.1	22	15	b.9	7.4	22	.4
30.....	91	6	b1	32	12	1.0	5.1	32	.4
31.....	--	--	--	24	12	.8	--	--	--
Total.	4,092	--	261.8	1,004	--	25.3	410.9	--	14.2
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.....	4.3	35	0.4	54	24	3.5	1.1	15	15
2.....	3.8	24	.2	25	17	1.1	.9	15	15
3.....	3.4	32	.3	16	11	.5	.8	11	11
4.....	4.0	30	b.3	12	14	.4	.8	5	5
5.....	7.6	30	.6	9.0	14	.3	.8	5	5
6.....	7.2	22	.4	7.2	13	.2	.8	5	(t)
7.....	89	33	s8.8	5.9	13	.2	.8	5	5
8.....	78	35	7.4	8.8	15	.4	.8	7	7
9.....	156	--	e700	5.9	15	.2	.7	8	8
10.....	266	--	e800	7.7	22	.4	.7	8	8
11.....	117	420	133	30	127	10	1.3	8	8
12.....	49	185	24	16	62	2.7	20	25	1.4
13.....	24	72	4.7	8.4	27	.6	16	22	1.0
14.....	14	30	1.1	4.9	20	b.3	8.5	7	.2
15.....	11	25	.7	3.4	22	.2	4.1	5	.1
16.....	8.8	25	b.6	2.6	23	.2	2.5	6	6
17.....	7.4	25	.5	2.1	20	.1	1.8	4	4
18.....	23	--	e10	1.8	25	b.1	1.5	2	2
19.....	14	158	6.0	1.5	29	.1	1.2	2	(t)
20.....	7.4	66	1.3	1.2	26	.1	1.0	7	7
21.....	6.6	35	.6	1.2	20	b.1	1.4	8	8
22.....	8.3	30	b.7	1.9	31	.2	98	43	11
23.....	6.6	25	.4	30	32	s4.0	60	169	s24
24.....	6.0	20	.3	29	40	3.1	27	199	14
25.....	7.9	21	.4	9.8	25	.7	23	185	11
26.....	8.3	19	.4	5.2	17	b.2	14	85	3.2
27.....	7.2	20	.4	3.5	16	b.2	11	60	1.8
28.....	380	--	s1,300	2.6	16	.1	36	60	5.8
29.....	893	396	s1,470	2.0	15	b.1	40	57	s6.9
30.....	240	54	35	1.6	15	b.1	202	142	77
31.....	117	30	9.5	1.3	15	b.1	--	--	--
Total.	2,575.8	--	4,518.0	311.5	--	30.5	578.5	--	157.8
Total discharge for year (cfs-days).....									68,317.1
Total load for year (tons).....									113,411.6

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

b Computed from estimated concentration graph.

LITTLE MIAMI RIVER BASIN--Continued  
TODD FORK NEAR ROCHESTER, OHIO--Continued

Particle size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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. 29, 1954 . . .	2:30 p. m.	1,350		1,100	1,580	42	50	60	76	91	97	99	99		100	BSWCM
Feb. 6, 1955 . . .	4:45 p. m.	4,390		1,150	1,260	21	28	40	56	71	80	82	86		96	BSWCM
Feb. 27 . . . . .	12:20 p. m.	4,170		1,320	2,140	49	59	59	74	89	93	95	96		96	BSWCM
Feb. 27 . . . . .	12:20 p. m.	4,170		1,320	1,970	28	39	54	73	92	94	96	98		99	BSNM
Feb. 27 . . . . .	5:00 p. m.	3,050		836	704	43	53	61	76	85	91	92	94		95	BSWCM
Mar. 1 . . . . .	10:35 a. m.	4,610		2,740	3,640	42	51	64	79	91	98	99	100		--	BSWCM
Mar. 1 . . . . .	10:35 a. m.	4,610		2,740	3,690	16	26	43	63	83	97	99	100		--	BSNW
Mar. 1 . . . . .	5:45 p. m.	2,950		950	941	51	62	70	80	85	98	99	100		--	BSWCM
Mar. 21 . . . . .	4:20 p. m.	1,600		525	1,410	58	70	78	88	93	99	100	--		--	BSWCM
Mar. 22 . . . . .	7:20 a. m.	6,480		1,460	2,040	41	47	56	66	71	90	92	95		98	BSWCM
Mar. 22 . . . . .	7:20 a. m.	6,480		1,460	1,930	26	36	48	60	68	86	89	92		96	BSNM
July 10 . . . . .	7:45 p. m.	181		779	993	66	93	99	100	--	--	--	--		--	BWCM
July 28 . . . . .	3:35 a. m.	1,900		779	1,240	53	68	84	95	98	100	--	--		--	BSWCM

## LICKING RIVER BASIN

## LICKING RIVER AT FARMERS, KY.

LOCATION.--Temperature recorder at gaging station at bridge on U. S. Highway 60, 300 feet upstream from Chesapeake & Ohio Railway bridge, three-quarters of a mile west of Farmers, Rowan County, and 1.1 miles upstream from Triplett Creek.  
 RECORD AREA.--826 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1949 to August 1950.

EXTREMES.--1954 temperatures: October 1949 to September 1953.

EXTREMES.--1954 temperatures: August, 84° F.; minimum, 35° F. on several days during December and February.

EXTREMES.--1949-53.--Water temperatures: Maximum, 82° F. July 19, 1951; minimum, freezing point on several days during winter months during most years.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

REVISIONS.--WSP 1350: Revised water temperatures for water year 1953-54 are given herewith: Dec. 16, minimum, 38° F.; May 5, minimum, 56° F.

Temperature (°F) of water, water year October 1954 to September 1955

//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.....	70	69	50	49	42	42	45	44	37	37	48	46	48	45	59	57	69	65	76	73	82	80	75	73	
2.....	70	70	49	47	42	42	44	44	37	37	49	48	49	48	60	58	69	66	77	74	82	80	75	71	
3.....	71	70	47	45	42	40	44	44	37	37	49	49	51	49	62	60	70	67	79	76	84	82	75	71	
4.....	71	71	45	44	42	40	45	44	37	37	49	49	52	51	63	61	70	67	79	76	84	83	75	72	
5.....	72	71	44	41	40	40	47	45	37	37	49	49	53	52	65	63	72	68	79	77	84	83	75	72	
6.....	72	69	44	44	40	39	49	47	39	37	50	49	54	53	65	63	72	71	79	79	84	83	75	71	
7.....	69	64	44	44	39	37	49	49	41	39	50	48	54	54	65	63	72	69	79	78	84	83	74	71	
8.....	64	62	44	44	44	37	35	49	47	41	41	48	47	54	52	66	64	69	66	79	78	83	81	74	71
9.....	64	62	44	44	44	35	35	47	45	41	40	47	46	54	52	66	63	66	65	76	73	81	79	76	71
10.....	65	64	44	44	44	35	35	45	43	40	40	48	46	55	53	65	65	74	70	80	79	76	73	70	68
11.....	66	65	44	44	36	35	43	42	40	40	49	48	56	55	65	64	65	64	73	70	79	79	75	73	70
12.....	68	66	45	44	36	36	42	41	40	38	52	49	56	56	64	63	64	64	75	73	79	77	73	70	
13.....	68	66	45	45	36	36	41	40	38	36	52	52	56	56	63	63	64	63	77	75	78	76	71	67	
14.....	68	66	46	45	38	36	40	39	36	35	52	52	56	56	63	59	63	62	78	77	77	75	72	68	
15.....	68	64	46	46	39	38	39	36	35	32	52	56	57	59	65	63	78	76	77	76	77	76	71	68	
16.....	64	60	47	46	39	39	39	36	36	32	52	52	58	58	61	59	67	65	78	77	78	76	73	69	
17.....	60	53	49	47	40	39	39	38	37	36	52	51	60	58	63	61	69	66	79	77	79	76	73	69	
18.....	58	58	50	49	41	40	38	38	37	37	51	50	60	60	63	62	71	68	79	78	80	78	72	69	
19.....	58	56	50	50	43	41	38	37	38	37	50	48	62	60	63	62	71	71	79	78	80	79	71	69	
20.....	56	55	50	50	43	42	37	37	40	38	49	47	63	62	64	63	73	70	79	78	80	80	72	69	
21.....	55	54	50	50	42	40	37	36	42	40	49	47	63	63	65	64	75	72	79	78	80	79	72	70	
22.....	54	53	50	50	40	39	37	36	43	42	50	49	63	62	68	65	77	74	80	78	79	79	72	71	
23.....	54	53	49	48	39	38	37	37	43	43	50	49	62	62	67	66	77	74	81	79	79	78	72	71	
24.....	54	53	48	46	38	38	37	37	43	43	48	48	61	61	67	67	75	73	81	80	79	77	72	71	
25.....	54	53	48	46	38	38	37	37	43	43	48	48	61	59	69	67	73	73	90	78	78	74	71	70	
26.....	55	54	46	46	38	38	37	37	43	42	48	47	59	57	70	68	72	71	81	79	76	74	70	69	
27.....	56	55	46	44	38	38	37	37	43	42	47	44	57	55	71	69	81	79	81	81	76	74	70	68	
28.....	56	56	44	44	40	38	37	37	46	43	44	43	55	54	73	70	70	69	81	79	76	73	71	69	
29.....	56	55	44	43	43	40	38	37	--	--	43	42	55	54	72	71	72	69	79	78	77	73	71	68	
30.....	55	52	43	42	45	43	37	37	--	--	43	42	56	55	72	68	74	71	80	78	77	77	70	70	
31.....	52	50	--	--	45	45	37	37	--	--	45	43	57	--	68	65	--	--	81	79	80	77	75	--	
Average.....	62	61	47	46	40	39	41	40	40	39	49	48	57	56	65	64	70	68	79	77	80	78	73	70	

LICKING RIVER BASIN--Continued  
LICKING RIVER AT MCKINNEYSBURG, KY.

LOCATION.--At gaging station at 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 1955.

Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 177 ppm July 15-26; minimum, 71 ppm Mar. 8-12.

Hardness: Maximum, 130 ppm Nov. 22-30; minimum, 42 ppm Mar. 8-12.

Specific conductance: Maximum daily, 308 microhos Sept. 1; minimum daily, 91.4 microhos Mar. 10.

Water temperatures: Maximum, 84°F Aug. 5; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 3,400 ppm July 8; minimum daily, 1 ppm Sept. 17.

Loadings: Maximum daily, 132,000 tons Feb. 27; minimum daily, less than 0.5 ton Sept. 16-22, 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 177 ppm July 15-26, 1955; minimum, 57 ppm Apr. 16-17, 1953.

Hardness: Maximum, 134 ppm Oct. 14-26, Nov. 9-21, Dec. 14-22, 1953; minimum, 42 ppm Mar. 8-12, 1955.

Specific conductance: Maximum daily, 308 microhos Sept. 1, 1955; minimum daily, 90.2 microhos Mar. 9, 1953.

Water temperatures: Maximum, 87°F July 31 to Aug. 1, 1955; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 4,200 ppm Aug. 20, 1954; minimum daily, 1 ppm on many days during November 1952, December 1953, January 1954, and September 1955.

Loadings: Maximum daily, 132,000 tons Feb. 27, 1955; minimum daily, less than 0.5 ton on many days during October, November, 1952, September to December, 1953, January 1954, and September 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1954 to September 1955 given in WSF 1385.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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	Non-carbonate			
Oct. 1-10, 1954	189	6.8	0.01	24	4.2	2.9	3.4	78	15	4.1	0.2	3.2	107	78	13	174	7.4	8
Oct. 11-20	61.7	8.2	.05	31	4.7	2.8	3.4	98	16	3.4	.2	3.9	128	98	16	206	7.6	7
Oct. 21-31	94.4	7.7	.01	30	5.4	4.3	3.5	98	20	7.5	.2	2.0	133	98	17	224	7.4	13
Nov. 1-10	131	8.3	.08	31	4.8	5.2	3.5	99	20	8.5	.2	1.4	138	98	16	231	7.5	17
Nov. 11-21	274	6.4	.08	33	3.1	4.7	3.7	96	20	7.0	.2	1.3	129	96	16	223	7.5	15
Nov. 22-30	683	5.8	.05	41	6.5	3.4	3.5	128	26	5.0	.3	4.5	164	130	24	272	7.7	20
Dec. 1-8	700	7.2	.01	40	5.9	5.0	2.1	116	27	7.0	.3	3.9	162	125	29	275	7.7	6
Dec. 9-14	1,128	6.7	.04	30	5.7	5.0	1.8	87	26	6.5	.1	2.8	132	100	27	236	7.6	8
Dec. 15-20	3,088	7.2	.05	37	7.0	3.7	1.9	108	27	5.0	.2	6.5	155	122	33	259	7.7	16
Dec. 21-27	2,071	7.9	.10	34	5.1	3.4	2.2	63	25	5.5	.2	4.7	111	81	29	177	7.6	18
Dec. 28-31	5,388	7.2	.28	35	5.2	3.0	2.1	100	23	3.8	.4	7.7	122	109	27	230	7.7	45
Jan. 1-4, 1955	5,905	7.8	.04	20	4.7	3.1	3.0	58	18	3.5	.2	7.5	104	69	22	159	7.1	25
Jan. 5-14	4,442	9.0	.05	30	6.0	3.2	1.2	90	22	5.0	.2	8.5	130	100	26	217	7.5	20
Jan. 15-25	2,205	8.0	.07	32	7.1	3.6	.6	98	24	5.8	.1	6.8	136	110	29	230	7.7	8
Jan. 26-28	2,277	7.7	.08	23	5.4	3.2	.9	72	21	4.2	.7	4.7	105	81	21	183	7.5	6
Feb. 1-8	7,552	7.6	.07	27	4.5	2.5	1.6	73	20	3.5	.1	5.2	116	86	26	186	7.2	30

LICKING RIVER BASIN--Continued  
 LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--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-magnesium carbonate			
Feb. 9-11, 1955.....	13,470	6.6	0.09	15	3.7	2.0	1.6	41	17	1.8	0.1	4.5	83	53	19	120	6.9	25
Feb. 12-18.....	5,063	7.7	.04	27	5.5	2.4	1.6	77	21	4.5	.1	6.9	115	90	27	195	7.1	20
Feb. 19-28.....	11,330	7.3	.06	23	4.5	2.1	1.6	72	16	2.5	.0	5.4	112	92	22	173	7.1	23
Mar. 1-2.....	21,350	5.5	.05	23	3.6	1.9	1.8	46	13	2.2	--	6.3	186	73	16	174	7.1	--
Mar. 3-12.....	22,240	6.5	.08	18	2.9	1.3	2.1	52	11	1.4	.1	3.5	86	53	13	127	7.0	6
Mar. 13-19.....	21,640	6.7	.08	12	2.9	1.3	2.1	37	12	1.4	.1	2.4	71	45	12	101	7.1	8
Mar. 20-27.....	11,890	7.0	.05	23	3.4	2.3	1.8	70	14	3.2	.1	3.8	105	73	14	159	7.1	11
Mar. 28-31.....	12,620	5.6	.03	16	3.1	1.4	1.4	56	12	1.5	.1	2.5	85	57	12	133	7.2	15
Mar. 22-23.....	21,250	6.3	.03	24	3.9	1.4	1.4	74	12	1.2	.1	3.5	102	75	15	162	7.1	6
Mar. 24-27.....	13,520	5.6	.03	16	3.0	1.4	1.2	50	13	1.6	.1	1.6	86	52	11	120	7.1	10
Mar. 28-Apr. 10.....	2,145	6.7	.02	26	5.3	2.4	1.3	82	20	3.0	.1	2.1	117	88	19	192	7.5	4
Apr. 12-17.....	1,560	7.8	.03	33	6.1	3.4	1.8	105	24	3.5	.2	2	141	108	21	227	7.7	18
Apr. 18-30.....	1,952	8.2	.04	23	4.6	3.1	1.5	66	23	3.2	.1	5	98	73	20	161	7.4	9
May 1-13.....	1,858	8.9	.03	20	4.6	3.0	1.4	62	18	3.3	.1	5	94	69	18	154	7.2	4
May 14-15.....	4,505	7.4	.06	36	4.9	2.1	1.6	106	20	3.9	.1	3.5	130	109	22	221	7.0	11
May 16-20.....	3,276	7.9	.12	21	4.5	2.4	1.2	64	17	2.5	.1	1.6	98	72	20	153	7.0	7
May 21-June 1.....	1,143	7.9	.16	27	5.4	2.8	2.0	85	18	5.0	.2	2.4	116	90	20	193	7.3	15
June 2-16.....	1,264	8.1	.13	33	7.4	3.1	2.6	108	20	4.0	.2	3.6	138	112	24	231	7.3	10
June 17-July 8.....	6,692	8.9	.05	27	6.9	4.0	2.3	94	17	6.0	.2	1.6	123	96	19	207	7.6	5
July 9-14.....	6,177	7.1	.07	23	5.1	1.7	2.3	78	12	2.5	.2	2.1	111	111	14	163	7.2	7
July 15-26.....	2,141	8.5	.00	35	6.5	2.7	2.4	114	14	--	.2	2.4	177	113	20	225	7.4	7
July 27-Aug. 9, 11-19.....	7,795	8.4	.02	30	6.6	2.4	2.8	104	15	2.5	.1	2.6	127	102	17	210	7.4	10
Aug. 20-Sept. 5.....	108	8.5	.01	38	8.1	3.0	3.4	134	16	3.6	.2	1.8	153	127	17	252	7.5	3
Sept. 6-30.....	76.3	7.9	.01	36	7.9	3.3	3.5	132	16	3.8	.2	1.8	149	123	15	247	7.5	6
Time-weighted average.....	3,133	7.7	0.05	29	5.7	3.1	2.3	93	19	4.2	0.2	3.0	126	96	20	205	--	11

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

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
/Once-daily measurement at varying hours/

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

## LICKING RIVER BASIN--Continued

## LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	154	98	41	70	43	8	1,160	100	313
2.....	359	123	119	65	36	6	968	81	211
3.....	197	82	44	72	31	6	810	58	127
4.....	154	82	34	104	31	9	698	38	71
5.....	260	83	58	128	28	10	608	32	52
6.....	230	78	48	134	25	9	518	24	33
7.....	176	61	29	144	24	9	447	15	18
8.....	144	57	22	164	23	10	403	17	18
9.....	122	58	19	188	22	11	510	17	23
10.....	104	65	18	245	22	14	720	16	31
11.....	91	77	19	260	29	20	828	18	40
12.....	83	88	20	250	19	13	1,000	21	57
13.....	74	96	19	225	16	10	1,570	62	263
14.....	72	99	19	193	17	9	2,140	65	376
15.....	68	93	17	171	15	7	1,890	98	500
16.....	52	63	9	154	11	4	1,700	100	459
17.....	49	55	7	141	11	4	1,690	93	424
18.....	44	47	6	128	13	4	3,000	280	sa 2,900
19.....	43	42	5	125	15	5	4,650	660	8,290
20.....	41	37	4	128	23	8	5,600	747	11,300
21.....	57	40	6	1,240	411	sa 1,780	4,710	520	6,610
22.....	128	41	14	816	248	546	3,060	184	1,520
23.....	119	40	13	552	164	274	2,000	137	740
24.....	101	44	12	630	187	318	1,510	76	310
25.....	88	53	12	612	135	223	1,230	63	209
26.....	78	52	11	708	67	128	1,060	43	123
27.....	101	55	15	720	58	113	930	38	95
28.....	116	64	20	780	47	99	1,870	250	sa 2,100
29.....	99	70	19	1,460	173	682	4,320	606	7,070
30.....	81	46	10	1,490	153	616	7,030	502	9,530
31.....	70	42	8	--	--	--	8,330	668	15,000
Total.	3,555	--	697	12,097	--	4,955	66,952	--	68,813
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.....	8,500	588	13,500	1,680	12	54	22,200	1,200	71,900
2.....	6,590	330	b 5,900	1,530	9	37	20,900	630	35,600
3.....	4,510	244	2,970	1,440	8	31	18,900	397	20,200
4.....	4,020	300	a 3,300	1,710	8	37	17,400	362	17,000
5.....	7,140	560	10,800	2,560	23	159	22,600	1,570	95,800
6.....	7,900	419	8,940	14,300	540	20,800	25,800	1,350	94,000
7.....	7,910	302	6,450	18,200	985	48,400	26,500	810	58,000
8.....	5,770	155	2,410	17,400	735	34,500	26,400	615	38,700
9.....	3,880	102	1,070	15,700	490	20,800	25,300	335	22,900
10.....	2,900	70	548	13,600	303	11,100	22,800	238	14,600
11.....	2,440	50	329	11,100	192	5,750	19,500	190	10,000
12.....	2,230	39	235	7,610	115	2,360	15,700	197	8,350
13.....	2,160	27	157	4,350	97	1,140	9,810	225	5,960
14.....	2,090	28	158	3,060	68	562	5,440	288	4,230
15.....	2,020	23	125	2,640	55	392	11,300	1,620	a 64,600
16.....	2,140	21	121	3,380	76	s 749	17,400	2,530	119,000
17.....	2,250	20	122	6,680	246	4,440	15,400	1,040	43,200
18.....	2,330	20	126	7,860	232	4,920	12,600	400	13,600
19.....	2,110	17	97	7,270	140	2,750	10,400	240	6,740
20.....	1,810	16	78	5,430	86	1,260	9,460	185	4,720
21.....	1,570	13	55	4,960	114	sa 1,870	18,000	872	42,400
22.....	1,510	13	53	13,800	811	30,200	22,500	466	28,300
23.....	2,090	20	113	13,200	590	21,000	20,000	394	21,300
24.....	3,160	53	452	12,500	310	10,500	16,700	298	13,400
25.....	3,270	80	706	9,090	125	3,070	14,500	250	9,780
26.....	2,730	43	317	7,450	394	sa 8,950	12,700	163	5,590
27.....	2,300	25	155	19,800	2,460	132,000	10,200	134	3,690
28.....	1,800	20	97	19,800	1,470	78,600	6,300	112	1,900
29.....	1,800	18	b 85	--	--	--	3,870	82	857
30.....	1,620	16	b 70	--	--	--	3,060	66	544
31.....	1,650	14	b 60	--	--	--	2,560	52	359
Total.	104,200	--	59,599	248,100	--	446,231	486,190	--	875,220

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 1954 to September 1955--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.....	2,210	41	245	1,750	50	236	1,060	210	601
2.....	1,920	41	212	1,450	36	141	726	205	402
3.....	1,700	30	138	1,230	27	90	522	127	179
4.....	1,540	22	91	1,060	17	49	392	78	82
5.....	1,390	24	90	912	13	32	315	70	60
6.....	1,290	20	70	786	13	28	260	57	40
7.....	1,210	19	62	684	13	24	245	53	35
8.....	1,080	12	35	600	14	23	870	180	sa 500
9.....	990	10	27	534	16	23	1,540	311	1,290
10.....	918	15	37	480	18	23	1,820	382	1,880
11.....	924	--	e 1,400	447	19	23	1,690	258	1,180
12.....	1,860	--	e 1,900	408	15	16	3,110	470	3,950
13.....	1,510	184	755	810	485	sa 2,200	2,960	465	3,720
14.....	1,320	68	240	4,900	--	e 32,000	1,770	232	1,110
15.....	1,250	43	145	4,110	1,140	12,600	1,520	163	751
16.....	1,370	43	159	6,340	640	11,000	1,220	94	310
17.....	2,170	70	410	4,500	214	2,600	978	68	180
18.....	1,980	52	278	2,540	97	665	798	54	116
19.....	1,610	52	226	1,720	82	381	636	42	72
20.....	1,360	52	191	1,280	55	190	492	32	42
21.....	1,210	42	137	1,040	42	118	366	25	26
22.....	1,120	31	94	1,160	750	sa 2,600	337	25	23
23.....	1,160	34	106	1,630	700	sa 3,200	337	27	24
24.....	1,450	44	172	1,180	740	sa 2,480	298	23	18
25.....	1,760	53	252	1,030	240	667	260	20	14
26.....	2,830	112	856	1,100	155	460	266	16	11
27.....	3,020	143	1,170	1,030	127	353	293	27	21
28.....	3,160	98	836	726	82	161	642	43	74
29.....	2,590	68	476	780	80	sa 210	828	42	94
30.....	2,120	60	343	1,440	260	sa 1,100	618	30	50
31.....	--	--	--	1,540	437	1,820	--	--	--
Total.	50,022	--	9,893	49,197	--	75,513	27,189	--	16,855

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.....	447	28	34	1,060	136	389	72	29	6
2.....	320	25	22	732	88	174	63	26	4
3.....	240	23	15	522	63	89	52	26	4
4.....	201	23	12	381	53	54	47	25	3
5.....	193	22	11	288	47	36	41	24	3
6.....	288	20	18	225	43	26	37	21	2
7.....	1,100	--	e 6,600	215	51	30	32	17	1
8.....	5,260	3,400	sa 51,000	332	68	61	30	14	1
9.....	5,010	3,320	sa 52,600	726	--	e 400	28	12	1
10.....	6,680	2,410	43,500	1,270	--	e 2,500	28	15	1
11.....	9,880	1,620	43,200	1,280	560	1,940	28	15	1
12.....	10,500	850	24,100	618	130	217	26	15	1
13.....	3,770	370	3,770	386	106	110	24	15	1
14.....	1,220	192	632	310	100	84	22	18	1
15.....	864	94	219	255	103	71	20	10	1
16.....	654	67	118	197	111	59	18	2	
17.....	1,710	--	e 9,800	164	69	30	18	1	
18.....	6,890	3,200	59,500	144	53	21	18	3	
19.....	4,490	1,980	24,000	119	45	14	16	5	
20.....	2,270	1,150	7,050	101	39	11	16	9	(t)
21.....	1,450	390	1,530	91	35	8	16	9	
22.....	1,070	203	566	94	36	9	20	9	
23.....	780	142	299	101	40	11	38	40	4
24.....	1,370	--	e 2,800	210	40	23	51	22	3
25.....	2,060	710	3,950	220	38	22	65	17	3
26.....	2,080	805	4,520	144	43	17	47	31	4
27.....	1,430	265	1,020	131	43	15	36	45	4
28.....	2,130	270	1,550	157	49	21	28	27	2
29.....	2,720	900	6,610	131	40	14	30	47	4
30.....	2,380	677	4,350	101	35	10	1,190	1,310	4,210
31.....	1,680	322	1,460	83	32	7	--	--	--
Total.	81,137	--	354,874	10,788	--	6,473	2,157	--	4,267

Total discharge for year (cfs-days) ..... 1,141,584

Total load for year (tons) ..... 1,923,390

e Estimated.

t Less than 0.5 ton.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

LICKING RIVER BASIN--Continued  
LICKING RIVER AT MCKINNEYSBURG, KY.--Continued

Particle size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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. 20, 1954 . . .	7:20 p.m.	5,690		823	1,580	42	61	69	88	95	99	99	100			BSWCM
Dec. 21 . . . . .	3:40 p.m.	4,470		438	996	41	58	75	87	91	95	97	100			BSWCM
Dec. 29 . . . . .	12:05 p.m.	3,330		571	1,180	63	77	83	93	96	98	99	100			BSWCM
Dec. 30 . . . . .	2:10 p.m.	7,380		535	1,160	48	62	73	89	94	95	97	99			BSWCM
Jan. 1, 1955 . . . .	9:00 a.m.	8,710		653	528	28	50	68	82	91	95	97	100			BSWCM
Jan. 5 . . . . .	9:00 a.m.	6,100		346	617	58	68	77	86	93	96	97	100			BSWCM
Jan. 5 . . . . .	3:45 p.m.	8,670		808	765	59	64	76	85	93	96	98	100			BSWCM
Feb. 7 . . . . .	8:00 a.m.	18,600		1,020	957	42	56	72	88	96	99	100	--			BSWCM
Feb. 7 . . . . .	4:00 p.m.	17,900		963	2,370	45	57	71	85	96	99	100	--			BSWCM
Feb. 10 . . . . .	11:15 a.m.	13,700		309	879	55	70	82	89	98	99	100	--			BSWCM
Feb. 22 . . . . .	7:30 a.m.	14,800		1,120	1,290	44	54	65	80	95	99	100	--			BSWCM
Feb. 27 . . . . .	7:40 a.m.	21,600		3,140	2,870	46	57	72	85	95	99	100	--			BSWCM
Mar. 1 . . . . .	11:50 p.m.	22,000		791	1,250	54	66	78	88	95	99	100	--			BSWCM
Mar. 1 . . . . .	11:50 p.m.	22,000		791	1,280	52	58	75	88	96	99	100	--			BSNM
Mar. 2 . . . . .	5:00 p.m.	20,700		557	974	46	63	78	88	96	99	99	100			BSWCM
Mar. 5 . . . . .	4:30 p.m.	23,200		1,440	2,260	44	54	68	81	94	99	100	--			BSWCM
Mar. 7 . . . . .	6:30 a.m.	26,700		851	1,510	57	72	81	89	97	99	100	--			BSWCM
Mar. 15 . . . . .	5:00 p.m.	17,100		2,740	2,060	40	51	63	81	95	99	100	--			BSWCM
Mar. 15 . . . . .	5:00 p.m.	17,100		2,740	2,240	29	44	59	76	95	99	100	--			BSNM
Mar. 16 . . . . .	6:30 a.m.	18,600		2,760	2,220	44	53	68	81	93	99	100	--			BSWCM
Mar. 21 . . . . .	5:00 p.m.	18,500		943	1,580	45	60	72	86	97	99	100	--			BSWCM
May 13 . . . . .	6:00 p.m.	1,180		1,300	1,350	51	64	78	91	98	99	100	--			BSWCM
May 22 . . . . .	7:00 a.m.	1,310		1,270	2,280	64	84	97	98	99	100	--	--			BSWCM
July 8 . . . . .	8:40 p.m.	3,510		2,680	1,400	47	64	82	93	99	100	--	--			BSWCM
July 9 . . . . .	3:55 p.m.	8,040		3,310	1,620	38	50	64	83	97	100	--	--			BSWCM
July 9 <sup>a</sup> . . . . .	5:25 p.m.	8,470		3,790	--	45	55	70	86	96	100	--	--			BSWCM
July 11 . . . . .	6:30 a.m.	9,060		1,880	1,240	50	55	71	86	97	100	--	--			BSWCM
July 18 . . . . .	7:00 a.m.	7,530		3,420	2,620	44	56	70	88	98	100	--	--			BSWCM
July 29 . . . . .	6:00 a.m.	2,690		911	1,440	46	59	74	92	98	100	--	--			BSWCM

<sup>a</sup> 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 83°F July 14; minimum, 33°F on several days during January and February.

EXTREMES, 1949-55.--Water temperatures: Maximum, 87°F June 30, 1952, July 14, 1954; minimum, freezing point on several days during December 1953.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements.

The data reported under extremes are the individual maximum and minimum measurements.

Records of discharge for water year October 1954 to September 1955 given in WS 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/Twice-daily measurements at approximately 6:30 a.m. and 6 p.m./

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

## 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.

RECORDS AVAILABLE.--82,910 square miles.

WATER TEMPERATURES.--October 1954 to September 1955.

WATER TEMPERATURES.--October 1954 to September 1955.

WATER TEMPERATURES.--October 1954 to September 1955.

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## Chemical analyses, in parts per million, water year October 1954 to September 1955

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color
																	Calcium	Non-carbonate			
Oct. 1-10, 1954	4.8		19	0.1	0.01	0.00	37	10	23	3.0	42	98	32	0.4	5.4	244	134	99	401	7.2	3
Oct. 11-15, 17-20	19		10	0.0	0.00	0.00	47	11	33	3.5	42	129	47	.5	5.5	333	165	128	508	7.4	5
Oct. 21-31	10		10	0.0	0.03	0.28	30	7.2	13	3.2	31	82	19	.2	4.4	188	106	79	298	6.9	3
Nov. 1-10	13		13	--	0.05	0.08	31	8.6	15	2.8	40	85	19	.2	5.3	197	114	80	317	7.1	3
Nov. 11-20	6.6		6.6	--	0.02	0.05	31	8.6	16	2.4	32	94	18	.2	5.1	198	114	86	325	6.8	2
Nov. 21-30	6.7		6.7	--	0.03	.13	35	9.6	18	2.4	33	103	23	.2	4.8	220	127	100	362	6.9	2
Dec. 1-10	15		15	0	0.03	0.00	39	9.7	23	2.4	48	99	33	.2	4.8	249	137	98	407	7.1	1
Dec. 11-20	6.1		6.1	0	0.03	0.00	34	8.6	18	1.9	34	92	26	.2	4.7	215	120	92	351	6.7	1
Dec. 21-31	6.2		6.2	0	0.03	0.00	29	7.0	12	1.7	34	73	19	.1	4.5	170	101	73	285	6.9	1
Jan. 1-8, 10, 1955	7.7		7.7	--	0.02	0.00	28	6.2	7.0	2.1	39	59	12	.1	4.8	148	95	63	250	7.0	5
Jan. 11-14, 20	7.5		7.5	--	0.03	0.00	29	7.6	7.8	1.9	45	61	13	.1	5.1	157	104	67	266	7.2	5
Jan. 21-31	6.6		6.6	--	0.04	0.00	33	8.2	12	1.8	56	67	16	.1	4.4	177	116	70	304	7.4	5
Feb. 1-10	7.5		7.5	.1	.15	.06	31	8.1	13	1.6	61	65	17	.2	4.6	177	110	61	292	7.2	10
Feb. 11-20	6.3		6.3	0	0.12	0.00	30	7.6	10	1.5	47	67	16	.2	4.5	169	107	88	281	7.2	8
Feb. 21-28	13		13	--	0.08	0.00	33	7.4	9.0	2.0	64	58	12	.2	5.3	174	113	60	288	7.1	10
Mar. 1-10	8.8		8.8	--	0.12	0.00	23	6.6	5.3	1.8	40	49	7.0	.2	3.8	129	85	52	212	6.9	15
Mar. 11-15, 17-20	6.4		6.4	--	0.02	.02	24	6.9	5.1	1.8	39	52	7.0	.1	4.0	132	88	56	220	6.9	20
Mar. 21, 26-27				--	0.02	0.00	27	7.8	6.9	1.3	50	57	9.2	.2	3.5	150	100	58	246	7.1	7
Mar. 28-31	7.8		7.8	--	0.02	0.00	38	11	11	1.6	73	77	15	.2	5.0	205	138	80	338	7.2	4
Apr. 1-10	7.6		7.6	--	0.01	0.02	40	12	13	1.9	82	81	16	.2	5.4	220	150	82	361	7.3	3
Apr. 11-20	6.5		6.5	--	0.01	0.04	33	8.9	12	1.9	48	79	15	.2	3.7	189	118	80	309	7.1	3
Apr. 21-29	6.6		6.6	--	0.02	0.00	34	8.4	12	2.2	52	76	16	.2	3.7	186	120	77	312	6.9	2
May 1-2, 4, 8-10	6.8		6.8	--	0.02	0.00	34	8.4	12	2.2	52	76	16	.2	3.7	186	120	77	312	6.9	2
May 11-20	6.8		6.8	--	0.03	0.00	33	8.3	13	2.2	58	69	19	.2	4.3	188	117	69	310	7.1	4
May 21-22, 28-29	7.5		7.5	--	0.01	--	34	10	14	1.9	65	68	18	.2	4.0	206	127	74	336	7.2	6

a Includes 0.03 parts per million of zinc (Zn).

June 4-5, 1955 ....	7.4	--	.00	.00	41	12	18	2.5	72	88	23	.3	4.8	263	150	91	382	7.2	6
June 11-12, 20 ....	7.6	--	.00	.00	50	14	24	2.5	66	124	30	.3	4.1	239	180	126	475	7.2	4
June 21-30 .....	6.3	--	.00	.00	47	13	23	2.8	70	116	25	.3	5.0	231	170	113	460	7.4	3
July 1-10 .....	5.2	--	.00	.00	43	13	21	2.8	74	107	22	.3	4.4	232	162	101	431	7.4	4
July 11-20 .....	6.4	--	.00	.00	42	12	19	2.8	80	109	25	.3	5.2	241	134	88	480	7.3	6
July 21-30 .....	6.2	--	.04	.00	47	11	22	2.9	82	82	37	.2	5.3	234	163	96	436	7.4	5
Aug. 1-10 .....	2.8	--	.04	.00	48	13	24	3.1	84	92	40	.3	5.9	277	175	106	474	7.2	5
Aug. 11-20 .....	2.3	--	.00	.01	58	15	34	3.3	62	120	49	.6	4.5	330	188	137	547	7.2	1
Aug. 21-31 .....	2.9	--	.01	.00	57	15	38	3.6	44	174	41	.4	6.4	374	205	169	583	6.9	3
Sept. 1-10 .....	4.9	--	.02	.00	54	15	30	4.4	52	161	29	.4	8.3	339	195	152	533	6.9	6
Sept. 11-20 .....	2.5	--	.00	.00	52	15	33	3.9	62	153	31	.4	5.2	337	191	141	539	7.0	5
Sept. 21-30 .....	3.5	--	.01	.03	54	14	32	3.8	74	146	33	.4	6.8	339	192	132	546	7.0	6
Time-weighted average b .....	7.1	--	0.03	0.02	38	10	18	2.5	54	92	23	0.3	4.9	229	136	92	373	--	5

b Represents 90 percent of days.

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT LOCK AND DAM 39, NEAR FLORENCE, IND.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at approximately 1:30 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	52	47	43	35	50	50	64	--	80	86	82
2	76	50	46	43	35	50	48	65	--	80	87	82
3	76	51	46	42	35	49	50	--	--	79	87	82
4	78	50	--	43	35	51	52	62	76	83	--	82
5	79	50	46	43	35	49	51	68	74	85	89	84
6	75	52	43	44	--	51	50	--	--	84	--	80
7	72	52	41	44	--	52	50	--	--	84	89	80
8	72	52	40	43	--	50	56	65	--	84	89	79
9	73	52	43	--	--	50	56	68	--	84	90	80
10	74	51	42	43	--	50	57	68	--	83	90	80
11	73	52	45	43	36	51	57	68	71	83	88	80
12	72	52	43	--	38	50	60	67	70	83	88	80
13	74	52	41	--	38	52	58	68	--	84	87	78
14	74	55	44	44	38	50	61	68	--	84	88	78
15	70	51	43	42	37	49	60	68	--	84	86	79
16	--	51	42	38	38	49	63	69	--	83	85	80
17	65	53	41	36	38	49	67	68	--	83	84	80
18	64	52	39	37	39	49	69	69	--	85	84	78
19	65	52	43	36	38	48	69	69	--	84	85	80
20	64	52	41	39	43	51	69	70	79	87	87	79
21	61	52	40	38	39	52	64	72	79	86	87	80
22	60	50	41	37	40	--	64	68	79	87	86	80
23	59	49	49	34	41	--	63	--	79	87	85	81
24	60	48	44	32	47	--	64	--	79	88	85	76
25	58	48	42	36	46	--	62	--	78	88	84	76
26	58	48	45	37	44	47	62	--	76	87	--	77
27	58	47	43	38	46	46	63	--	78	86	--	76
28	57	47	43	37	46	--	62	75	75	87	86	76
29	57	48	41	35	--	49	63	75	75	88	83	76
30	54	48	43	40	--	47	64	--	80	87	84	70
31	53	--	40	35	--	51	--	--	--	--	84	--
Average	67	51	43	39	40	50	60	--	--	85	86	79

## 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 Lotts Creek.

DRAINAGE AREA.--466 square miles (revised).

RECORDS AVAILABLE.--Chemical analyses: November 1949 to August 1950.

Water temperatures: October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 89°F July 27, Aug. 6-7; minimum, freezing point Jan. 29.

EXTREMES, 1949-55.--Water temperatures: Maximum, 93°F Aug. 1, 1953; minimum, freezing point Dec. 17, 1953, Jan. 29, 1955.

REMARKS.--Daily water temperatures are averages of twice-daily measurements. Data reported under extremes are the individual maximum and minimum measurements. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/Twice-daily measurements at approximately 7 a.m. and 5 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	46	42	42	35	50	50	63	72	80	84	77
2	72	44	42	46	37	50	53	65	73	81	85	76
3	72	41	40	45	38	48	54	66	73	84	84	75
4	75	40	39	46	37	52	56	68	74	82	86	78
5	78	40	39	49	38	55	57	68	75	84	86	78
6	75	42	38	51	40	51	58	69	78	83	86	78
7	68	44	36	48	43	46	56	69	75	85	87	78
8	64	46	34	48	42	46	54	70	71	85	84	77
9	65	46	38	44	42	48	56	68	67	80	82	78
10	65	46	38	44	42	52	57	68	68	80	82	78
11	68	46	37	42	40	52	62	69	70	84	82	76
12	70	48	38	40	34	58	62	68	70	84	80	75
13	72	48	38	39	33	57	64	68	68	81	78	74
14	72	48	42	38	33	58	62	69	67	81	77	75
15	69	50	41	38	36	57	63	70	68	82	78	76
16	64	50	41	38	36	56	63	70	72	82	79	76
17	59	52	41	37	40	56	67	70	75	84	80	76
18	56	53	41	36	40	54	67	70	78	84	81	76
19	58	54	40	34	42	50	68	71	76	84	82	76
20	56	54	38	34	45	50	68	72	76	85	82	74
21	56	51	36	34	48	52	68	72	78	86	84	75
22	56	49	37	36	48	48	67	74	80	86	83	75
23	56	48	37	38	48	46	65	75	80	86	82	76
24	56	48	38	37	44	50	64	74	79	86	82	75
25	58	46	36	37	40	50	62	73	76	86	80	74
26	59	44	36	38	38	50	56	74	75	84	80	74
27	60	42	37	38	46	46	55	76	74	86	80	74
28	60	42	39	36	49	42	54	80	74	88	81	74
29	58	42	44	32	--	42	57	80	76	86	81	74
30	54	40	46	34	--	46	62	76	78	84	82	74
31	48	--	44	34	--	49	--	73	--	84	78	--
Average	64	46	39	40	40	51	60	71	74	84	82	76

## 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 (revised) including that of Benson Creek.

RECORDS AVAILABLE --Chemical analyses: October 1949 to September 1955.

Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 195 ppm Dec. 7-18; minimum, 67 ppm Mar. 25-26.

Hardness: Maximum, 126 ppm June 4 to July 3; minimum, 42 ppm Mar. 3.

Specific conductance: Maximum daily, 420 micromhos Dec. 15; minimum daily, 86.9 micromhos Mar. 25.

Water temperatures: Maximum, 81°F on several days during August; minimum, 37°F on several days during January and February.

Sediment concentrations: Maximum daily, 1,790 ppm July 10; minimum daily, 2 ppm on several days during September.

Sediment loads: Maximum daily, 208,000 tons Mar. 1; minimum daily, 1 ton on several days during September.

EXTREMES, 1949-55.--Dissolved solids: Maximum, 224 ppm Nov. 21-30, 1949; minimum, 67 ppm Mar. 25-26, 1955.

Hardness: Maximum, 130 ppm Jan. 1, 3, 5, 7-9, 11, 1954; minimum, 42 ppm May 10-13, 1953, Mar. 3, 1955.

Specific conductance: Maximum daily, 555 micromhos Dec. 7, 1952; minimum daily, 79.8 micromhos Feb. 4, 1951.

Water temperatures: Maximum, 86°F Aug. 3-4, 1953; minimum, 34°F Feb. 8, 1951.

Sediment concentrations (1952-55): Maximum daily, 1,790 ppm July 10, 1955; minimum daily, 1 ppm on several days during November 1952, November, December 1953, and August 1954.

Sediment loads (1952-55): Maximum daily, 208,000 tons Mar. 1, 1955; minimum daily, 1 ton on several days during November 1952, November 1953, August,

September 1954, and September 1955.

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 1954 to September 1955 given in WSP 1385. Flow regulated by Harrington Lake and by hydroelectric plant at lock 7 on Kentucky River.

REVISIONS.--WSP 1350: Revised water temperatures for water year 1953-54 are given herewith:

## Temperature (°F) of water

Date		Max	Min	Date		Max	Min
Oct. 7	70			Mar. 17	46	Aug. 18	80
Feb. 15	44			July 21	82	Aug. 26	82
Feb. 16	--	44		Aug. 10	80	Sept. 19	78

## Chemical analyses in parts per million, water year October 1954 to September 1955

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. 1-14, 1954	744	8.4	0.01	28	5.3	7.1	3.3	76	29	9.6	0.2	3.3	133	92	99	223	7.3	8
Oct. 15-20	640	8.2	.02	29	5.4	7.4	3.1	86	26	11	.2	3.9	143	96	24	231	7.6	8
Oct. 21-31	403	6.8	.02	32	6.4	9.9	3.2	88	30	17	.2	3.3	156	106	34	257	7.8	8
Nov. 1-10	531	5.5	.01	33	6.5	9.9	2.9	97	26	18	.1	2.8	157	108	30	264	7.8	8
Nov. 11-20	565	6.0	.01	37	6.0	7.8	2.7	110	23	14	.2	3.8	152	118	27	274	7.5	5
Nov. 21-30	1,394	5.1	.01	36	6.5	7.4	2.6	108	22	14	.2	3.5	146	116	28	264	7.6	5



Dec. 1-6, 1954 .....	2,353	6.4	.01	34	6.4	10	3.0	95	26	18	.2	3.3	154	110	33	274	7.6	5
Dec. 7-12 .....	4,870	6.8	.04	35	5.8	20	3.0	92	42	38	.2	2.8	195	114	34	347	7.5	7
Dec. 13-18 .....	10,350	7.6	.14	24	5.0	6.7	1.7	54	36	12	.4	5.8	120	91	36	219	7.5	14
Dec. 19-24 .....	7,679	7.0	.10	19	6.9	5.5	1.5	56	25	8.0	.2	5.2	107	76	18	176	7.5	17
Jan. 2-5, 1955 .....	11,900	5.9	.10	13	3.2	2.9	1.6	34	18	2.5	.3	4.7	79	46	18	117	7.3	18
Jan. 6-9 .....	7,050	6.2	.07	23	4.5	2.5	1.6	59	22	7.5	.2	5.2	112	77	28	195	7.6	14
Jan. 10-14, 1955 .....	5,388	8.1	.02	27	6.1	4.8	1.7	74	27	8.0	.1	5.6	127	92	32	215	7.6	6
Jan. 15-20 .....	5,614	6.3	.01	26	7.0	5.4	1.2	74	29	9.0	.1	4.9	128	94	33	218	7.5	6
Jan. 21-31 .....	15,570	8.1	.04	26	5.2	5.4	1.9	68	26	7.6	.2	3.3	120	86	31	202	7.2	5
Feb. 1-8 .....	9,866	7.2	.30	26	3.9	2.9	1.3	68	21	4.3	.2	4.6	106	80	25	178	7.3	3
Feb. 12-18 .....	20,380	8.6	.17	28	5.2	3.5	1.2	76	23	4.6	.1	5.2	120	90	29	199	7.4	6
Feb. 19-25 .....	41,670	7.0	.11	21	4.3	2.6	1.3	61	17	3.1	.1	3.3	90	71	20	155	7.1	4
Mar. 3 .....	76,900	5.9	.33	11	3.3	4.4	1.8	34	16	1.7	--	2.1	79	42	13	99.6	7.0	--
Mar. 5-8 .....	73,000	6.4	.19	21	4.3	2.1	2.0	62	20	2.9	.1	3.0	104	70	19	155	7.2	6
Mar. 11-14, 1955 .....	26,310	6.6	.08	23	5.1	2.9	1.5	63	24	3.4	.3	4.3	104	78	27	177	7.1	15
Mar. 20-21 .....	55,500	8.1	.11	16	2.8	2.4	1.3	37	18	2.0	--	3.8	80	52	21	115	6.9	--
Mar. 22-24 .....	64,670	7.2	.13	21	3.4	2.4	1.3	58	18	2.5	.3	4.6	90	87	19	153	7.0	20
Mar. 25-28 .....	49,550	6.0	--	13	2.4	2.0	1.5	31	15	1.8	--	2.7	67	43	17	102	6.9	17
Mar. 27-31 .....	12,280	7.2	.08	25	2.9	2.8	1.2	63	19	3.2	.3	3.5	99	74	23	167	7.2	20
Apr. 1-10 .....	5,016	7.2	.07	25	5.0	3.9	1.8	66	28	3.8	.2	5.3	113	84	29	195	7.3	7
Apr. 11-24 .....	4,315	7.4	.03	24	6.1	5.2	1.5	60	36	5.6	.2	3.3	127	84	36	204	7.4	8
Apr. 25-30 .....	8,848	6.5	.05	20	5.3	6.9	1.7	48	36	7.5	.2	1.7	112	72	32	190	7.4	12
May 1-20 .....	3,363	7.1	.09	17	6.1	4.3	1.4	52	26	5.2	.2	1.8	100	68	25	165	7.1	6
May 21-June 3 .....	2,197	7.5	.09	26	5.2	4.7	1.8	75	24	6.0	.2	2.5	118	87	26	201	7.4	5
June 4-July 3 .....	1,620	6.6	.04	41	5.6	4.8	2.1	117	23	7.0	.2	4.2	159	126	30	268	7.5	5
July 4-31 .....	4,770	6.5	.00	32	5.5	5.8	1.8	96	19	10	.2	2.8	143	102	23	234	7.3	3
Aug. 1-5, 9-21 .....	1,287	8.7	.00	33	6.1	4.0	1.9	102	18	6.2	.2	3.8	137	107	23	225	7.3	7
Aug. 22-Sept. 10 .....	508	5.9	.00	38	6.4	4.3	2.5	114	19	5.8	.2	3.1	144	115	22	243	7.4	4
Sept. 11-30 .....	286	2.6	.00	35	7.3	5.0	2.0	116	21	6.5	.2	1.7	143	119	24	247	7.5	4
Time-weighted average a .....	6,798	6.7	0.05	29	5.8	5.9	2.0	84	25	8.9	0.2	3.5	133	96	27	224	--	7

a Represents 95 percent of days and 82 percent of runoff.

KENTUCKY RIVER BASIN--Continued  
KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued  
Temperature (°F) of water, water year October 1954 to September 1955  
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.....	74	72	61	41	49	48	44	41	37	37	48	47	47	47	64	64	72	71	77	76	77	76	78	77
2.....	74	73	61	39	48	48	43	41	38	37	48	48	48	48	47	64	71	70	77	76	77	76	77	77
3.....	74	74	58	37	46	46	47	46	45	38	49	48	48	49	48	66	70	70	77	77	77	77	77	78
4.....	73	75	57	46	47	47	46	45	37	37	51	49	49	49	48	66	73	70	78	77	78	77	77	78
5.....	73	75	56	46	47	47	46	46	37	37	52	50	51	49	66	66	73	80	80	78	79	78	76	76
6.....	75	74	55	47	46	47	46	46	38	37	52	52	52	51	66	66	74	73	80	79	80	79	76	75
7.....	74	72	54	46	46	47	46	46	40	38	52	52	52	52	66	66	74	73	80	79	81	80	76	76
8.....	72	70	54	46	44	46	46	46	40	40	51	50	52	51	67	66	73	72	80	72	81	80	77	75
9.....	71	71	54	44	44	44	46	46	41	40	50	48	52	52	67	66	72	72	78	72	81	80	76	75
10.....	71	71	55	44	44	44	46	46	42	41	48	48	54	52	67	66	71	71	76	73	81	79	76	75
11.....	72	71	56	45	44	46	45	45	42	42	48	48	54	54	66	66	71	69	75	74	80	77	75	74
12.....	72	71	56	45	44	43	45	44	42	42	48	48	55	54	66	66	69	68	75	74	78	77	74	73
13.....	73	72	56	43	43	43	44	44	42	41	49	49	56	55	67	66	68	68	75	74	77	76	73	72
14.....	73	72	58	43	43	43	44	43	41	40	49	49	56	56	67	67	66	66	78	75	76	76	73	73
15.....	73	71	55	43	43	43	43	43	40	40	50	49	57	56	67	65	68	66	76	76	76	76	73	73
16.....	71	69	55	43	42	42	43	42	40	40	52	50	58	57	65	65	70	68	76	75	76	76	73	73
17.....	69	68	54	42	42	42	42	41	40	53	52	58	57	65	65	70	68	75	74	77	76	74	73	73
18.....	68	67	54	42	42	42	42	41	40	53	53	59	58	66	65	70	70	74	74	78	77	74	72	72
19.....	67	66	54	42	40	42	40	42	40	40	53	52	60	59	68	66	71	70	75	74	78	78	74	72
20.....	66	66	54	40	40	40	42	40	40	40	52	51	61	60	68	67	71	71	76	75	80	78	72	72
21.....	66	65	54	40	40	40	42	41	40	40	51	50	63	61	69	68	72	71	76	75	80	80	72	72
22.....	65	65	54	40	40	41	41	41	41	41	52	50	63	62	69	69	72	72	76	76	81	80	72	72
23.....	65	65	54	40	40	40	41	41	43	41	52	51	62	62	71	69	74	72	76	76	81	80	72	72
24.....	65	64	54	40	40	40	41	40	43	43	51	51	63	62	70	70	74	74	76	76	80	80	72	72
25.....	64	64	54	40	40	40	40	40	44	43	52	51	63	63	72	70	74	74	76	75	80	80	72	71
26.....	65	64	52	41	40	40	40	39	44	44	51	50	63	62	75	72	74	74	76	76	80	79	71	70
27.....	65	65	51	50	40	40	40	39	45	44	50	48	62	62	74	73	76	74	76	76	79	78	70	70
28.....	65	65	50	50	42	40	39	38	47	45	48	47	62	62	74	74	76	75	76	76	78	78	70	70
29.....	65	63	50	49	43	42	39	38	--	--	47	46	63	62	74	73	75	74	76	76	78	78	70	69
30.....	63	62	49	43	43	43	38	38	--	--	47	46	64	63	73	71	76	75	76	76	79	78	70	69
31.....	62	61	--	--	44	43	38	37	--	--	47	47	--	--	72	71	--	--	77	76	79	78	--	--
Average.....	69	69	55	54	43	43	43	42	41	40	50	49	57	56	68	67	72	71	77	75	79	78	74	73

## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	987	28	75	316	--	e 45	1,880	12	61
2.....	1,080	28	82	340	--	e 45	2,860	5	39
3.....	924	46	115	353	52	50	2,650	7	50
4.....	945	57	145	353	44	42	1,980	4	21
5.....	924	57	142	488	44	58	1,850	7	35
6.....	764	53	109	470	52	66	2,900	15	117
7.....	578	52	81	578	37	58	3,980	7	75
8.....	745	51	102	669	43	78	4,630	4	50
9.....	840	44	100	840	87	197	4,460	4	48
10.....	688	45	84	903	81	197	3,740	4	40
11.....	542	47	69	840	104	236	3,860	13	135
12.....	418	36	41	707	30	57	4,420	23	274
13.....	444	42	50	632	26	44	4,800	31	402
14.....	542	57	83	560	26	39	4,500	16	194
15.....	1,150	950	sa 3,200	560	25	38	5,170	11	154
16.....	688	272	505	488	8	10	6,780	42	769
17.....	418	152	172	444	12	14	6,120	74	1,220
18.....	340	114	105	405	15	16	5,980	56	904
19.....	578	82	128	418	23	26	10,700	158	s 4,820
20.....	669	53	96	596	60	sa 110	13,700	315	11,600
21.....	578	39	61	1,150	139	432	10,500	268	7,600
22.....	488	47	62	945	50	128	6,490	176	3,080
23.....	431	49	57	1,050	19	54	4,670	140	1,760
24.....	488	35	46	1,410	8	30	3,580	113	1,090
25.....	332	27	24	1,500	5	b 20	2,940	87	691
26.....	379	30	b 30	1,470	5	20	2,510	64	434
27.....	353	32	30	1,470	14	b 55	2,170	75	439
28.....	392	40	42	1,520	33	135	3,510	98	s 987
29.....	366	52	51	1,640	30	b 130	6,820	77	s 1,740
30.....	340	45	41	1,790	27	130	14,900	213	8,570
31.....	284	--	e 35	--	--	--	25,000	870	58,700
Total.	18,695	--	5,963	24,905	--	2,560	180,050	--	106,099
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.....	30,300	1,480	121,000	3,090	10	83	66,300	1,160	208,000
2.....	23,300	1,100	69,200	3,280	9	80	73,500	1,020	202,000
3.....	10,400	354	s 10,500	3,980	8	86	76,900	855	178,000
4.....	6,950	172	3,230	5,220	7	99	77,200	670	140,000
5.....	6,950	143	2,680	7,480	15	s 359	81,800	565	125,000
6.....	7,390	122	2,430	24,100	330	s 23,300	81,400	575	126,000
7.....	7,390	117	2,330	38,500	890	92,500	68,900	588	109,000
8.....	7,130	106	2,040	38,900	750	78,800	59,900	565	91,400
9.....	6,290	83	1,410	40,300	710	77,300	57,200	450	69,500
10.....	5,980	53	856	32,100	675	58,500	49,600	488	65,400
11.....	5,810	50	784	16,500	605	27,000	26,200	300	21,200
12.....	5,550	44	659	11,700	224	7,080	13,400	308	11,100
13.....	5,550	35	524	9,860	90	2,400	11,300	198	6,040
14.....	5,720	30	463	8,400	77	1,750	10,100	142	3,870
15.....	5,550	27	404	7,710	60	1,250	13,400	270	b 9,800
16.....	5,430	22	322	7,890	57	1,210	29,800	488	s 40,800
17.....	5,340	22	317	10,800	54	1,570	44,600	1,330	160,000
18.....	5,220	19	268	12,700	45	1,540	48,800	1,060	140,000
19.....	4,800	17	220	13,000	57	2,000	54,300	820	120,000
20.....	4,460	14	168	11,800	43	1,370	53,700	578	83,800
21.....	4,100	14	155	12,000	46	1,490	57,300	355	54,900
22.....	4,220	9	102	26,200	270	19,100	71,500	415	80,100
23.....	5,590	8	121	26,000	522	40,900	64,100	502	86,900
24.....	7,570	12	245	24,100	238	15,500	58,400	482	72,800
25.....	8,640	17	396	26,400	170	12,100	56,700	640	98,000
26.....	8,030	19	412	26,400	141	10,000	42,400	425	48,600
27.....	6,470	12	210	32,300	352	s 34,000	17,800	364	17,500
28.....	5,260	10	142	54,400	1,410	207,000	12,800	241	8,330
29.....	4,460	12	144	--	--	--	11,600	157	4,920
30.....	3,900	13	137	--	--	--	10,200	102	2,810
31.....	3,510	12	114	--	--	--	9,020	86	2,090
Total.	227,260	--	221,983	538,110	--	718,367	1,410,120	--	2,387,860

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	7,940	52	1,110	7,040	22	418	1,580	32	136
2.....	7,080	38	726	5,510	17	253	1,080	29	84
3.....	6,510	25	439	4,460	17	205	924	34	85
4.....	5,900	23	366	3,740	19	192	802	30	65
5.....	4,670	24	303	3,090	19	158	726	25	b 50
6.....	4,500	35	425	2,610	16	113	614	22	36
7.....	4,220	22	251	2,300	15	93	783	21	s 47
8.....	3,240	17	149	1,820	14	69	1,700	97	445
9.....	3,240	12	105	1,700	18	83	1,940	92	482
10.....	2,860	14	108	1,550	16	67	2,200	106	630
11.....	2,900	14	110	1,470	12	48	3,900	138	1,450
12.....	3,360	15	136	1,220	7	23	4,670	133	1,680
13.....	3,470	17	159	2,170	--	e 800	3,620	83	811
14.....	3,130	15	127	4,340	250	a 2,900	3,050	65	535
15.....	3,620	19	186	4,180	208	2,350	2,900	60	470
16.....	4,880	23	303	5,430	82	1,200	2,340	40	253
17.....	6,820	23	424	5,470	30	443	1,850	31	155
18.....	6,640	21	376	4,060	20	219	1,440	30	117
19.....	5,720	15	232	2,900	22	172	1,120	32	97
20.....	4,540	12	147	2,200	24	142	987	90	240
21.....	3,900	12	126	1,730	25	117	987	75	200
22.....	3,430	10	93	1,730	18	84	802	44	95
23.....	3,740	10	101	1,730	14	65	882	24	57
24.....	4,260	7	80	1,700	13	60	506	26	36
25.....	4,630	7	88	2,540	14	96	1,050	25	71
26.....	7,080	15	287	2,170	13	76	1,700	23	106
27.....	9,510	49	1,260	1,700	18	83	1,360	23	84
28.....	11,300	53	1,620	1,550	18	75	1,380	19	71
29.....	11,400	47	1,450	4,960	21	281	1,280	17	59
30.....	9,170	25	619	5,090	32	440	1,220	15	49
31.....	--	--	--	2,270	28	172	--	--	--
Total.	163,660	--	11,906	94,430	--	11,497	49,393	--	8,696
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.....	1,080	16	47	1,380	72	268	340	28	26
2.....	945	17	43	1,380	48	179	332	25	22
3.....	764	17	35	1,250	60	202	225	25	15
4.....	1,300	17	60	945	46	117	260	--	e 15
5.....	2,100	17	96	945	46	117	260	--	e 13
6.....	1,550	17	b 70	1,120	50	b 150	225	--	e 10
7.....	966	18	b 45	861	50	b 120	260	--	e 10
8.....	9,150	383	s 18,800	1,700	49	225	260	14	10
9.....	16,800	658	s 35,000	1,640	42	186	260	18	13
10.....	25,300	1,790	122,000	3,470	47	440	260	18	13
11.....	20,400	1,760	96,900	2,400	52	337	260	15	10
12.....	11,800	641	20,400	2,010	47	255	260	17	12
13.....	5,300	425	6,080	1,330	45	162	260	11	8
14.....	3,130	468	3,960	764	64	132	260	6	4
15.....	2,340	595	3,760	688	41	76	260	5	4
16.....	2,140	575	3,320	745	24	48	260	6	4
17.....	1,470	405	1,610	745	12	24	260	7	5
18.....	2,420	373	2,440	650	8	14	260	11	8
19.....	2,230	319	1,920	783	17	36	260	5	4
20.....	2,100	246	1,390	821	18	40	276	2	1
21.....	1,880	236	1,200	861	18	42	405	2	b 2
22.....	1,700	162	744	861	20	46	444	2	2
23.....	1,360	138	507	1,200	11	36	405	2	2
24.....	1,380	--	e 600	861	10	23	306	2	2
25.....	2,510	--	e 1,300	783	15	32	292	2	2
26.....	2,540	132	905	764	23	47	260	2	1
27.....	2,010	95	b 500	726	15	29	253	2	1
28.....	2,830	83	634	392	13	14	239	6	4
29.....	2,860	81	625	470	14	18	190	7	4
30.....	2,270	69	423	945	22	56	308	10	8
31.....	1,730	77	360	470	28	36	--	--	--
Total.	136,355	--	325,774	33,960	--	3,507	8,402	--	235

Total discharge for year (cfs-days).....

2,885,340

Total load for year (tons).....

3,804,447

e Estimated.

a Computed from partly estimated concentration graph.

s Computed by subdividing day.

b Computed from estimated concentration graph.

## KENTUCKY RIVER BASIN--Continued

## KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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	
Oct. 15, 1954.....	2:00 p.m.	1,030		1,060	1,210	49	62	74	85	95	96	97	100			BSWCM
5:30 p.m.		13,400		420	670	53	62	74	85	94	98	99	100			BSWCM
Dec. 20.....		23,400		668	1,060	43	54	62	76	88	94	98	100			BSWCM
8:00 a.m.		25,000		799	1,270	38	53	67	79	91	96	98	99			BSWCM
Dec. 31.....		25,000		799	1,170	25	40	55	74	90	94	97	99			BSNM
Dec. 31.....		25,000		799	1,170	25	40	55	74	90	94	97	99			BSNM
Jan. 1, 1955.....		31,000		1,490	1,210	51	57	72	85	92	97	99	100			BSWCM
11:00 a.m.		33,300		675	39	39	53	69	83	93	98	99	100			BSWCM
Feb. 10.....		28,800		614	1,100	41	51	67	81	94	99	100	--			BSWCM
Feb. 23.....		54,700		1,590	2,290	39	42	60	78	94	99	99	100			BSWCM
Feb. 28.....		73,500		944	1,440	39	53	67	82	93	97	99	100			BSWCM
Mar. 2.....		77,000		876	1,860	39	53	67	83	94	97	99	100			BSWCM
Mar. 3.....		77,000		876	1,940	37	49	65	80	93	97	98	100			BSNM
Mar. 3.....		77,000		727	1,230	40	53	68	81	93	98	99	100			BSWCM
Mar. 4.....		44,700		1,480	2,110	40	55	70	88	97	98	99	100			BSWCM
Mar. 17.....		15,900		1,260	1,780	40	49	57	75	90	99	100	--			BSWCM
July 9.....		20,000		1,800	1,750	42	56	72	86	98	100	--	--			BSWCM
July 11.....		20,000		1,800	1,750	42	56	72	86	98	100	--	--			BSWCM

a Average of individual analyses of samples from 4 verticals in stream cross section.

## KENTUCKY RIVER BASIN--Continued

## EAGLE CREEK AT GLENCOE, 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 Tenmile Creek, and 22 miles upstream from mouth.

DRAINAGE AREA.--438 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 90°F Aug. 20; minimum, freezing point on several days during December to February.

EXTREMES, 1949-55.--Water temperatures: Maximum, 93°F Sept. 1-2, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Daily water temperatures are averages of twice-daily measurements. Data reported under extremes are the individual maximum and minimum measurements. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
Twice-daily measurements at approximately 8 a. m. and 6 p. m.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	--	39	46	34	--	48	64	68	79	84	74
2	74	40	38	48	32	--	50	66	68	82	86	72
3	76	40	36	47	31	--	55	64	67	82	85	78
4	76	41	37	50	31	--	51	67	68	80	83	82
5	77	42	36	56	32	--	59	68	70	81	86	84
6	67	42	32	47	36	--	55	68	70	81	85	84
7	57	43	32	44	34	--	52	68	66	82	85	76
8	62	43	33	45	36	--	54	59	66	79	84	82
9	65	43	35	44	44	--	56	58	65	80	85	82
10	70	42	34	40	48	--	60	64	64	82	84	80
11	71	40	36	40	--	--	53	62	--	78	78	77
12	72	42	34	34	--	--	59	62	62	83	81	74
13	74	43	33	32	--	--	62	66	61	86	72	74
14	73	42	35	32	--	--	61	62	63	84	70	76
15	59	42	36	34	--	--	62	64	64	78	70	78
16	56	46	35	34	--	--	62	64	64	77	74	78
17	60	48	36	34	--	--	65	60	66	77	84	80
18	57	50	34	33	--	--	65	58	70	77	85	80
19	52	48	32	32	--	--	68	58	76	77	86	80
20	51	46	33	32	--	--	70	67	78	80	88	81
21	49	45	35	33	--	56	62	69	73	81	86	82
22	51	44	38	33	--	53	65	71	74	81	84	78
23	54	42	42	32	--	43	66	70	73	80	82	70
24	58	42	46	31	--	46	60	70	75	80	78	74
25	--	40	--	31	--	44	58	67	77	78	77	74
26	--	40	46	31	--	43	54	69	70	82	78	71
27	--	39	48	31	--	41	52	72	72	82	78	74
28	--	40	50	31	--	40	54	69	72	82	78	72
29	--	36	44	31	--	--	58	68	74	82	78	72
30	--	38	40	31	--	41	61	66	76	82	78	67
31	--	--	41	31	--	46	--	64	--	82	79	--
Average	--	42	38	37	--	--	59	65	69	81	81	77

## 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 Salt River.

DRAINAGE AREA.--31.9 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1955.

Sediment records: October 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 90°F July 15, 16; minimum, freezing point on several days during January and February.

Sediment concentrations: Maximum daily, 2,290 ppm July 16; minimum daily, no flow on many days during August and September.

Sediment loads: Maximum daily, 6,030 tons Feb. 27; minimum daily, no flow on many days during August and September.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385. Flow affected by ice Jan. 28.

Temperature (°F) of water, water year October 1954 to September 1955

Once-daily measurement at varying hours/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	42	44	45	43	48	48	71	82	84	89	
2	80	38	38	45	39	47	48	72	82	84	89	
3	80	45	38	40	34	48	48	72	82	85	89	
4	--	44	34	40	39	48	49	73	82	85	89	
5	72	46	40	40	41	48	49	73	82	85	89	
6	70	40	36	45	44	47	49	73	83	85	88	
7	52	50	--	40	46	47	49	74	84	83	85	
8	66	52	35	44	--	47	51	73	83	84	85	
9	--	55	--	46	44	48	54	73	83	85	86	
10	75	54	40	44	--	49	56	73	83	85	86	
11	76	54	40	34	33	49	59	73	82	88	86	
12	78	55	38	34	32	49	59	74	82	89	86	
13	70	--	32	32	33	47	--	74	83	89	87	
14	72	57	40	32	34	49	60	73	80	89	86	
15	59	55	39	34	40	49	60	73	79	90	86	
16	58	55	40	41	46	48	61	79	82	90	87	
17	60	60	40	38	44	48	61	79	82	82	86	
18	60	60	39	32	46	48	62	79	82	86	87	
19	58	55	35	34	45	49	70	81	82	86	87	
20	57	45	34	34	47	49	70	81	83	88	--	
21	57	49	--	40	45	49	69	81	83	88	--	
22	59	45	35	36	46	46	71	79	83	88	87	
23	--	45	40	32	47	47	72	81	83	86	86	
24	65	45	35	40	47	48	70	81	83	87	86	
25	--	40	40	40	47	48	69	80	82	85	--	
26	64	--	40	42	45	37	69	81	84	87	--	
27	60	40	40	34	48	46	70	81	84	88	--	
28	55	40	40	34	48	47	71	81	84	87	--	
29	50	38	--	32	--	47	71	81	83	88	--	
30	40	--	40	32	--	48	70	81	84	87	--	87
31	46	--	40	43	--	48	--	81	--	88	--	
Average	63	48	38	38	42	48	61	77	83	86	--	--

## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

Suspended sediment, water year October 1954 to September 1955									
Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean con-centration (ppm)	Tons per day		Mean con-centration (ppm)	Tons per day		Mean con-centration (ppm)	Tons per day
1.....	0.9	--		1.4	5		2.8	9	0.1
2.....	.7	5		2.1	4		2.4	7	
3.....	.6	7	(t)	1.6	2		2.1	5	(t)
4.....	.4	9		1.6	2		1.8	8	
5.....	.3	8		1.4	1		8.3	46	s1.9
6.....	35	1,030	s137	1.2	5		5.2	27	.4
7.....	2.1	418	s2.6	1.2	2		3.1	--	e.2
8.....	1.0	154	.4	1.0	2		8.9	--	e3
9.....	.7	83	.2	.9	1		35	--	e9
10.....	.6	40	.1	.8	1	(t)	15	15	.6
11.....	.5	30	(t)	.8	1		9.8	10	.3
12.....	3.5	--	e10	.8	1		42	--	e30
13.....	11	550	sa19	.8	1		108	--	e70
14.....	46	--	e170	.8	2		29	25	s2.1
15.....	59	300	sa80	.8	5		20	11	.6
16.....	11	87	2.6	.8	3		14	12	.4
17.....	7.0	36	.7	.7	--		17	17	.8
18.....	3.4	17	.2	.6	--		16	5	.2
19.....	2.4	6		4.4	46	0.5	14	5	.2
20.....	1.8	2		3.8	20	.2	10	3	.1
21.....	1.4	2		2.4	3		8.4	3	.1
22.....	1.1	4	(t)	1.6	--	(t)	6.8	7	.1
23.....	1.0	7		1.4	--		7.3	5	.1
24.....	.9	12		2.8	--	e.1	6.4	2	
25.....	.8	--		2.4	23	.1	4.7	2	(t)
26.....	1.4	13		2.1	20	.1	4.2	2	
27.....	5.4	--	e1	12	--	e2	7.6	17	s1.0
28.....	2.6	31	.2	8.4	20	.4	507	1,300	s2,730
29.....	2.6	24	.2	4.7	18	.2	406	--	e1,700
30.....	1.8	23	.1	3.1	10	.1	76	179	s43
31.....	1.4	9	(t)	--	--	--	40	60	b7
Total.	208.3	--	424.6	68.4	--	3.9	1,438.8	--	4,601.4



## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	14	8	0.3	16	5	0.2	5.5	18	0.3
2.....	13	5	.2	14	5	.2	4.5	18	.2
3.....	11	5	.1	11	5	.1	3.5	20	b.2
4.....	9.1	2	(t)	8.4	5	.1	2.5	18	.1
5.....	8.4	2	(t)	5.8	5	.1	2	12	.1
6.....	48	111	s 168	3.8	5	.1	3	8	.1
7.....	17	156	7.2	2.8	3	(t)	160	830	358
8.....	11	48	1.4	2.4	8	.1	80	222	48
9.....	10	13	.4	1.6	16	.1	35	40	3.8
10.....	9.1	12	.3	1.4	19	.1	30	30	2.4
11.....	48	96	s 17	2.4	20	b.1	30	165	13
12.....	36	100	sa 14	3.1	20	.2	100	285	77
13.....	50	--	e 50	175	600	sa 950	60	37	6.0
14.....	27	70	5.1	177	360	sa 650	30	17	1.4
15.....	20	17	.9	32	25	2.2	22	22	1.3
16.....	18	15	.7	20	8	.4	18	10	.5
17.....	15	13	.5	18	4	.2	15	7	.3
18.....	12	22	.7	9.8	4	.1	12	5	.2
19.....	9.8	15	.4	6.4	7	.1	10	5	.1
20.....	7.7	12	.2	4.2	3	(t)	8	5	.1
21.....	13	13	.4	4.9	2	(t)	4.5	6	.1
22.....	10	11	.3	14	108	s 8.0	2.5	13	.1
23.....	177	--	e 1,600	13	89	s 4.0	1.1	10	(t)
24.....	655	963	s 3,770	117	--	e 900	2.1	10	.1
25.....	78	76	16	148	--	e 900	8.0	--	e 2
26.....	63	33	5.6	20	127	s 7.4	5.8	--	e 1
27.....	43	18	2.1	12	21	.7	2.4	13	.1
28.....	31	13	1.1	32	--	e 45	1.2	11	(t)
29.....	25	9	.6	28	350	sa 30	.9	14	(t)
30.....	19	8	.4	11	150	4.4	.6	19	--
31.....	--	--	--	7.0	57	1.1	--	--	--
Total.	1,508.1	--	5,664.0	922.0	--	3,505.1	660.1	--	516.6
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.....	0.4	17	(t)	5.2	8	0.1	0		0
2.....	.3	16		3.1	7	.1	0		0
3.....	.2	32		2.1	14	.1	0		0
4.....	.2	43		1.2	7		0		0
5.....	.5	52	0.1	.9	6		0		0
6.....	.5	30	(t)	.8	7		0		0
7.....	21	962	s 66	.8	14	(t)	0		0
8.....	16	612	s 30	.9	15		0		0
9.....	14	--	e 50	.4	15		0		0
10.....	26	--	e 80	.4	30		0		0
11.....	3.5	325	3.1	6.4	--	e 2	0		0
12.....	1.2	175	1.0	2.1	13	.1	0		0
13.....	.8	68	.1	.8	18		0		0
14.....	.7	66	.1	.4	15		0		0
15.....	7.0	138	2.6	.3	15		0		0
16.....	50	2,290	s 923	.3	10	(t)	0		0
17.....	21	1,040	s 83	.4	10		0		0
18.....	159	1,950	s 3,170	.2	22		0		0
19.....	88	1,700	sa 600	.1	31		0		0
20.....	41	992	s 183	0	--	0	0		0
21.....	17	479	s 27	0	--	0	0		0
22.....	90	1,530	s 1,160	.1	14		0		0
23.....	24	520	s 43	.2	15	(t)	0		0
24.....	257	--	e 2,800	.1	24		0		0
25.....	40	343	s 60	0	--	0	0		0
26.....	195	1,060	s 2,000	0	--	0	0		0
27.....	27	143	s 11	0	--	0	0		0
28.....	133	950	sa 1,100	0	--	0	0		0
29.....	33	115	s 12	0	--	0	9.7		e 14
30.....	17	46	2.1	0	--	0	35	200	e 24
31.....	9.1	--	.5	0	--	0	--	--	--
Total.	1,293.4	--	12,407.7	27.2	--	2.7	44.7	--	38
Total discharge for year (cfs-days)									15,263.8
Total load for years (tons)									53,840.4

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.

## SALT RIVER BASIN--Continued

## PLUM CREEK AT WATERFORD, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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		0.500
Oct. 6, 1954	5:00 a. m.	70		1,520	1,530	65	83	93	--	--	99	100	--	BSWCM	
	5:00 a. m.	70		1,520	1,570	41	61	84	98	99	99	100	--	BSNM	
	1:00 p. m.	13		839	898	89	95	97	98	99	99	99	--	BSWCM	
	6:00 a. m.	16		649	1,310	86	95	97	99	99	99	100	--	BSWCM	
	4:30 a. m.	88		359	698	75	89	96	98	98	98	99	--	BSWCM	
Dec. 28	7:00 a. m.	174		687	1,140	54	64	76	87	93	98	100	--	BSWCM	
	6:00 p. m.	596		939	1,580	67	75	87	95	99	100	99	--	BSWCM	
	4:30 a. m.	134		322	1,388	60	81	94	98	99	99	100	--	BSWCM	
	1:00 p. m.	700		626	1,260	52	63	74	88	96	99	100	--	BSWCM	
	1:00 p. m.	1,310			1,150									BSWCM	
Feb. 5	6:00 p. m.	1,350		2,040	1,350	37	49	60	77	93	99	99	100	BSWCM	
	6:00 p. m.	1,310		2,040	1,390	25	41	57	75	94	98	99	100	BSNM	
	6:00 p. m.	390		878	914	42	53	65	80	96	100	--	BSWCM		
	1:30 p. m.	129		345	707	70	77	86	95	99	100	--	BSWCM		
	4:00 p. m.	189		444	918	62	71	82	92	98	100	--	BSWCM		
Feb. 21	4:00 a. m.	804		1,610	1,260	44	53	64	81	95	98	99	100	BSWCM	
	4:00 a. m.	804		1,610	1,340	31	47	60	77	93	99	100	--	BSNM	
	9:00 a. m.	1,030		1,400	1,170	41	51	62	80	95	98	99	100	BSWCM	
	12:05 p. m.	320		1,320	2,250	39	49	59	71	90	99	99	99	BSWCM	
	3:00 p. m.	1,090		1,480	1,170	54	60	70	82	96	99	100	--	BSWCM	
Feb. 28	7:30 a. m.	955		2,620	2,030	45	54	66	81	95	100	--	--	BSWCM	
	7:30 a. m.	955		2,620	2,480	34	43	57	74	91	100	--	--	BSNM	
	10:00 a. m.	756		2,340	1,880	43	51	61	79	92	100	--	--	BSWCM	
	6:00 a. m.	1,400		6,100	4,600	41	49	65	80	90	100	--	--	BSWCM	
	6:30 p. m.	171		2,350	4,000	49	62	76	89	98	100	--	--	BSWCM	

Mar. 4, 1955.....	8:00 p. m.	177	1,920	1,650	52	67	80	93	99	100	--	--	ESWCM
Mar. 5.....	4:00 p. m.	407	2,740	1,970	43	54	68	84	96	100	--	--	ESWCM
Mar. 5.....	6:30 p. m.	344	1,480	1,260	50	64	74	89	98	100	--	--	ESWCM
Mar. 15.....	8:00 a. m.	349	2,390	1,940	42	53	65	80	93	100	100	100	ESWCM
Mar. 15.....	8:00 a. m.	349	2,390	2,010	11	20	41	70	93	99	100	100	ESNM
Mar. 15.....	10:00 a. m.	498	1,220	1,250	56	65	72	85	97	100	--	--	ESWCM
Apr. 6.....	7:30 a. m.	48	1,320	1,920	69	82	94	97	98	99	100	100	ESWCM
Apr. 23.....	5:00 p. m.	126	775	1,460	70	77	87	96	100	--	--	--	ESWCM
Apr. 24.....	4:00 a. m.	2,680	2,840	2,160	47	58	72	86	98	100	--	--	ESWCM
Apr. 24.....	11:00 a. m.	223	786	1,050	55	66	79	91	98	100	--	--	ESWCM
May 13.....	5:00 p. m.	129	767	1,470	68	80	91	97	99	100	--	--	ESWCM
May 25.....	9:00 a. m.	72	751	839	74	86	96	99	99	100	--	--	ESWCM
June 7.....	2:00 p. m.	75	1,010	1,860	77	89	94	98	99	100	--	--	ESWCM
July 1.....	5:00 p. m.	25	1,440	1,020	66	96	100	--	--	--	--	--	ESWCM
July 16.....	5:00 p. m.	542	7,310	2,580	38	49	65	85	97	100	--	--	ESWCM
July 18.....	8:00 p. m.	1,150	9,130	3,160	39	48	59	81	95	100	--	--	ESWCM
July 22.....	7:00 p. m.	349	4,840	2,780	34	46	54	71	86	99	100	100	ESWCM
July 24.....	5:00 p. m.	340	1,920	1,260	55	64	78	94	96	100	--	--	ESWCM
July 26.....	9:15 a. m.	1,920	5,500	4,060	28	37	49	70	92	100	--	--	ESWCM
July 28.....	11:00 a. m.	282	1,840	1,200	51	60	76	91	99	100	--	--	ESWCM

## 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, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1955.

Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 287 ppm Dec. 21-27; minimum, 135 ppm Mar. 16-17.

Specific conductance: Maximum, 253 ppm Dec. 21-27; minimum, 100 ppm Mar. 16-17.

Hardness: Maximum daily, 508 micromhos Dec. 27; minimum daily, 175 micromhos Feb. 7.

Water temperatures: Maximum, 88°F Aug. 26; minimum, 35°F on several days in January and February.

Sediment concentrations: Maximum daily, 2,860 ppm May 14.

Sediment loads: Maximum daily, 84,400 tons Mar. 16; minimum daily, less than 0.5 ton on many days during August and September.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 287 ppm Dec. 21-27, 1954; minimum, 95 ppm Sept. 20-21, 1954.

Specific conductance: Maximum daily, 529 micromhos Dec. 23, 1955; minimum daily, 146 micromhos Mar. 5, 1953.

Hardness: Maximum daily, 529 micromhos Dec. 23, 1955; minimum daily, 146 micromhos Mar. 5, 1953.

Water temperatures: Maximum, 92°F June 21, 1954; minimum, 35°F on several days during January 1953, January and February 1955.

Sediment concentrations: Maximum daily, 2,860 ppm May 14, 1955; minimum daily, no flow on many days during September, November, 1953, and September 1954.

Sediment loads: Maximum daily, 103,000 tons Mar. 4, 1953; minimum daily, tons on many days during September to November 1953, and September 1954.

REMARKS.--Records of specific conductance of daily samples for discharge were not available in 1953. Records of discharge for water year October 1954

REVISIONS.--Temp. 1955 given for discharge year 1954. Revised water temperatures for discharge year 1953-54 are given herewith: Nov. 26, minimum, 50°F; Mar. 5, minimum, 46°F; Mar. 29, maximum,

60°F; Sept. 21, maximum, 74°F; Sept. 24, maximum, 72°F.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 1-7, 1954	141	7.0	0.02	45	5.2	2.5	4.3	137	18	3.8	0.2	5.5	189	135	21	275	7.5	19
Oct. 8-13	174	6.9	.01	37	5.4	1.8	3.8	120	14	3.1	.3	4.7	145	115	16	237	7.4	20
Oct. 14-17	863	6.8	.05	37	5.1	2.1	3.8	115	15	3.4	.4	4.1	145	113	19	230	7.4	20
Oct. 18-20	188	8.0	.04	44	6.6	2.0	3.8	137	19	3.4	.4	4.8	172	137	25	276	7.6	27
Oct. 21-31	49.4	7.7	.04	54	7.3	2.8	3.8	170	27	4.0	.3	4.4	200	166	25	329	7.6	15
Nov. 1-10	31.9	7.2	.02	63	11	6.0	3.6	210	28	12	.3	3.0	245	203	30	409	7.6	15
Nov. 11-20	22.0	4.3	.03	74	9.5	5.7	3.8	234	30	11	.3	2.0	265	225	32	450	7.4	20
Dec. 1-6	176	3.4	.03	75	9.0	4.5	4.1	232	34	7.3	.3	.7	394	236	34	444	7.6	23
Dec. 7-9	255	5.2	.01	65	9.1	5.6	3.7	204	37	5.5	.1	.6	242	199	32	401	7.5	30
Dec. 10-20	504	6.8	.03	55	7.8	3.5	3.0	160	32	4.5	.1	4.2	204	169	38	341	7.7	17
Dec. 11-20	730	8.5	.30	68	10	4.0	2.7	202	38	5.6	.2	8.1	248	213	45	415	7.6	10
Dec. 21-31	267	7.3	.23	83	11	3.8	2.5	42	42	5.9	.2	8.4	287	253	56	484	8.0	12
Dec. 29-31	6,327	6.5	.05	44	7.5	3.3	2.1	132	21	3.2	.2	8.8	167	142	32	279	7.6	35
Jan. 1-31, 1955	2,033	7.4	.01	62	9.6	3.3	1.6	166	28	4.8	.1	15	225	194	42	385	7.8	9
Jan. 20-31	1,044	8.1	.00	74	12	4.1	1.3	221	34	6.2	.2	14	264	232	46	432	8.0	7
Jan. 21-31	607	8.2	.01	75	11	3.6	1.2	229	35	5.8	.2	12	266	234	45	454	8.0	6

Feb. 1-3, 1955	1,023	5.8	.02	79	12	4.2	1.2	233	40	7.2	.1	15	.277	246	56	468	7.8	7
Feb. 4-5	1,005	5.8	.03	63	7.6	4.1	1.4	176	32	5.0		9.3	220	189	44	369	7.4	--
Feb. 6-9	15,280	6.6	.10	35	4.4	2.7	2.0	98	19	3.0	0	11	146	105	25	219	7.3	30
Feb. 10-21	2,421	7.9	.03	65	9.9	3.4	1.4	188	30	6.0	1	15	228	203	49	334	7.7	7
Feb. 22-24	15,300	6.4	.11	42	1.9	3.0	1.7	105	18	3.0	1	9.7	149	113	27	229	7.3	30
Feb. 25-26	3,600	8.7	.03	63	6.8	3.8	1.7	172	27	5.0	--	18	214	186	44	366	7.6	--
Feb. 27-Mar. 2	16,680	5.8	.08	34	4.9	3.6	1.6	99	19	2.0	.1	9.5	147	104	24	217	7.2	--
Mar. 3-5	6,453	5.8	.02	48	7.6	2.1	1.7	148	17	2.5	.3	12	186	152	30	305	7.4	--
Mar. 6-8	7,480	4.5	.04	38	5.2	3.6	1.3	114	18	1.8	.3	9.0	152	117	23	238	7.3	17
Mar. 9-13	1,618	9.6	.02	58	8.6	3.2	1.2	176	23	3.5	--	13	222	180	36	353	7.8	7
Mar. 14-15	3,515	11	.02	62	9.7	15	1.5	195	27	5.0	--	12	268	195	35	391	7.7	--
Mar. 16-17	11,180	7.6	.09	32	5.0	1.9	2.9	110	13	4.0	--	5.9	135	100	10	226	7.2	--
Mar. 18-20	3,010	7.8	.04	39	16	3.3	1.5	163	23	3.5	.2	10	207	162	30	327	7.5	17
Mar. 21-25	10,988	6.2	.05	42	5.8	2.0	1.7	132	16	2.0	.2	8.2	150	129	20	257	7.8	17
Mar. 26-Apr. 10	a,976	4.6	.01	66	10	3.3	1.4	210	28	4.4	.3	5.5	240	207	34	404	7.7	5
Apr. 11-13	1,125	4.9	.01	60	13	4.4	1.9	208	35	5.0	.3	4.0	244	202	33	398	7.8	--
Apr. 14-19	729	4.3	.00	57	9.5	3.4	1.9	188	28	4.0	.2	2.7	215	181	27	361	7.8	15
Apr. 20-23	514	6.6	.00	66	13	3.9	2.0	226	34	4.5	.3	2.3	258	218	33	420	7.8	8
Apr. 24-26	5,373	8.2	.00	43	8.2	2.6	2.0	144	22	2.5	.3	4.5	167	142	23	279	7.6	--
Apr. 27-30	110	7.3	.00	65	11	3.2	1.7	214	27	4.0	.3	7.2	239	208	32	398	8.0	8
May 1-12	265	6.6	.02	71	14	4.1	1.4	238	30	4.9	.2	3.3	262	235	40	341	7.6	3
May 14-15	a5,005	6.3	.02	40	6.6	2.2	1.7	129	14	1.8	.2	5.3	148	128	22	255	7.6	9
May 16-20	647	8.5	.03	60	9.6	3.1	2.1	196	24	3.6	.2	8.0	216	190	29	374	6.8	5
May 21-25	809	8.1	.01	67	13	3.9	1.7	224	29	4.8	.2	4.2	252	220	36	419	7.6	7
May 26-28	1,052	5.8	.02	41	8.0	2.7	1.7	136	20	2.0	.3	2.0	168	136	25	254	7.3	20
May 29-June 24	a,898	7.5	.02	57	9.8	3.3	2.0	184	24	4.5	.3	5.8	211	182	31	352	7.6	8
June 25-June 6	208	8.2	.01	58	11	3.6	2.0	198	24	4.8	.3	2.7	218	190	28	368	7.4	8
July 7-29	a1,390	6.0	.00	36	6.5	2.1	3.1	122	12	3.2	.2	4.0	146	117	17	231	7.3	7
July 30-Aug. 18	275	7.2	.04	50	8.1	2.6	3.5	170	15	3.5	.3	3.0	186	159	20	312	7.5	10
Aug. 19-Sept. 3	18.9	9.4	.01	44	7.4	2.6	4.0	151	14	4.4	.2	3.0	166	141	17	280	7.8	6
Sept. 4-30	11.7	9.2	.01	54	9.7	5.0	4.3	193	13	6.5	.3	2.5	207	176	18	346	7.5	6
Time-weighted average <sup>b</sup>	1,623	7.0	0.03	57	9.1	3.6	2.6	182	24	4.9	0.2	6.0	212	180	30	353	--	11

a Revised discharge.

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

SALT RIVER BASIN--Continued  
 SALT RIVER AT SHEPHERDSVILLE, KY.--Continued  
 Temperature (°F) of water, water year October 1954 to September 1955  
 /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.....	75	74	52	50	44	43	44	44	36	35	32	30	50	48	65	64	70	69	78	75	83	81	82	73
2.....	74	71	50	49	43	43	44	44	35	35	32	32	52	50	66	65	72	69	80	76	84	81	83	71
3.....	74	73	51	46	43	43	44	44	35	35	32	31	54	52	68	66	74	69	83	78	86	82	82	69
4.....	75	73	49	46	43	43	46	44	36	35	32	31	56	54	69	68	72	70	83	79	86	83	82	70
5.....	76	74	48	46	43	43	50	46	36	35	32	32	56	56	70	69	73	71	81	79	86	83	82	70
6.....	75	72	49	47	43	41	52	50	36	36	34	53	60	58	71	70	72	72	80	79	84	82	81	69
7.....	72	69	49	46	41	40	52	49	38	36	34	52	60	60	71	70	72	71	79	78	84	82	82	68
8.....	69	67	49	46	40	38	49	46	38	38	38	52	49	60	58	71	70	71	64	78	77	84	80	69
9.....	68	66	49	46	38	38	46	46	39	38	49	48	58	58	70	69	64	64	80	78	83	81	80	70
10.....	68	66	49	46	38	38	46	44	42	39	48	48	59	58	70	69	64	64	78	76	84	81	81	73
11.....	70	67	49	46	38	38	44	42	42	41	49	48	60	59	69	68	64	64	78	77	81	80	75	70
12.....	68	66	50	47	38	38	42	40	41	38	51	49	62	60	68	66	64	64	79	77	80	80	75	64
13.....	69	68	50	47	40	38	40	40	38	36	54	51	65	62	66	64	64	64	80	78	80	79	78	61
14.....	70	69	50	47	40	40	40	38	36	35	56	54	65	64	64	62	64	63	81	79	80	78	80	70
15.....	70	65	50	47	40	40	38	38	36	35	56	55	65	64	62	62	66	64	81	80	80	78	81	70
16.....	65	62	52	50	40	40	39	38	37	36	56	55	65	65	64	62	68	66	81	80	80	78	82	69
17.....	62	60	54	50	40	40	39	38	38	37	56	55	67	65	66	64	70	68	81	80	81	78	82	69
18.....	60	59	53	51	41	40	38	38	40	38	55	52	68	67	68	66	72	70	80	76	82	78	80	68
19.....	59	58	52	52	41	41	38	38	41	40	52	50	70	68	68	67	73	72	77	76	84	78	80	68
20.....	58	56	52	50	41	40	38	38	44	41	50	50	70	70	70	68	75	73	76	76	83	78	78	68
21.....	56	56	50	50	40	39	38	37	45	44	53	50	70	70	70	69	76	74	78	76	84	80	81	71
22.....	56	55	50	50	39	38	38	37	44	43	54	53	70	70	71	70	77	75	78	78	83	80	83	72
23.....	56	54	50	50	38	37	38	38	43	42	54	51	70	67	72	71	77	76	79	78	86	79	76	74
24.....	56	54	50	50	37	37	38	37	44	43	51	50	67	64	73	72	76	72	79	78	87	78	76	74
25.....	56	54	50	48	37	37	37	36	44	44	50	50	64	62	73	71	72	70	79	77	87	76	76	72
26.....	56	54	48	48	37	37	36	36	44	44	50	49	62	60	71	70	72	70	79	78	88	76	77	71
27.....	55	55	48	46	37	37	36	46	44	44	49	46	60	60	72	70	73	71	80	78	87	77	72	71
28.....	55	55	46	45	46	45	37	36	50	46	46	43	61	60	73	72	75	72	80	79	86	76	80	69
29.....	55	54	45	44	48	48	36	36	--	--	44	43	62	61	73	72	75	73	80	77	85	77	80	69
30.....	54	52	44	44	48	47	36	36	--	--	46	44	64	62	71	76	74	74	80	79	82	77	73	68
31.....	52	52	--	--	47	44	36	35	--	--	48	46	--	--	71	70	--	--	81	79	82	74	--	--
Average.....	64	62	50	48	41	40	41	40	40	39	52	50	62	61	69	68	71	69	80	78	84	79	80	70

## SALT RIVER BASIN--Continued

## SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	158	47	20	34	44	4	165	35	16
2.....	188	54	27	30	35	3	144	45	17
3.....	83	46	10	30	40	3	127	37	13
4.....	53	31	4	32	37	3	118	26	8
5.....	42	32	4	34	36	3	172	30	b14
6.....	282	36	27	35	30	3	804	102	221
7.....	180	170	s 74	34	32	3	622	247	415
8.....	72	300	58	32	23	2	480	317	411
9.....	48	177	23	30	17	b1	410	200	221
10.....	42	92	10	28	16	1	517	140	b200
11.....	36	75	7	27	25	b2	420	97	110
12.....	190	103	s 64	24	37	2	330	62	55
13.....	658	231	410	23	33	2	1,270	85	s 316
14.....	291	188	148	23	26	2	1,550	196	820
15.....	1,620	850	sa 4,600	21	--	--	1,050	102	289
16.....	1,100	870	s 2,720	18	--	e1	730	72	142
17.....	440	430	511	16	--	--	559	56	84
18.....	273	252	186	19	14	1	504	38	52
19.....	172	168	78	22	14	1	462	42	52
20.....	118	132	42	27	16	b1	425	35	40
21.....	86	112	26	67	19	3	380	27	28
22.....	67	76	14	169	28	13	330	17	15
23.....	56	67	10	130	45	16	273	22	16
24.....	47	73	9	121	29	8	255	23	16
25.....	41	64	7	144	20	--	235	33	21
26.....	36	62	6	185	13	6	207	27	15
27.....	36	55	5	151	19	8	192	12	6
28.....	46	47	6	284	29	21	3,090	1,090	s17,100
29.....	48	48	6	335	36	32	11,000	1,560	46,300
30.....	42	41	5	215	41	24	9,740	740	19,500
31.....	38	39	4	--	--	--	4,240	392	4,490
Total.	6,589	--	9,121	2,300	--	180	40,801	--	91,003
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.....	1,880	269	1,360	360	7	7	18,000	1,070	52,000
2.....	1,450	194	525	1,210	34	s 143	11,400	760	23,400
3.....	1,220	96	283	1,500	197	798	5,560	255	s 4,240
4.....	1,090	68	s 225	1,140	152	468	4,200	226	s 3,240
5.....	3,650	691	6,810	2,870	303	s 4,670	9,660	1,700	44,300
6.....	3,740	228	2,300	17,300	1,530	71,500	11,900	1,760	56,500
7.....	2,470	125	834	21,500	1,050	61,000	7,890	776	s18,100
8.....	1,550	71	297	15,800	479	s 22,100	2,650	202	1,440
9.....	1,250	46	155	6,450	246	4,280	1,770	73	349
10.....	1,040	37	104	2,700	119	868	1,600	60	259
11.....	978	27	71	2,360	67	427	1,270	45	154
12.....	970	22	58	1,920	65	337	2,250	32	194
13.....	994	22	59	1,270	56	192	1,200	23	74
14.....	898	14	34	1,310	49	173	1,400	22	83
15.....	978	10	ab 30	1,200	38	123	5,630	296	s 6,560
16.....	1,360	40	147	1,520	56	s 277	13,600	2,300	84,400
17.....	1,370	43	159	3,500	372	3,520	8,760	1,600	37,800
18.....	1,130	42	128	2,560	206	1,420	3,620	335	3,270
19.....	954	30	77	1,760	99	470	2,950	170	1,350
20.....	818	21	46	1,460	68	268	2,460	262	s1,950
21.....	810	18	s 43	7,490	950	sa25,000	14,800	1,650	65,900
22.....	1,490	71	286	20,900	1,290	72,800	19,800	1,110	59,300
23.....	1,510	59	240	17,100	790	36,500	11,800	475	15,100
24.....	1,230	37	123	7,910	265	s 6,150	5,670	216	3,310
25.....	1,000	24	65	3,340	131	1,180	2,870	61	628
26.....	818	17	38	3,860	170	s 2,230	2,240	48	290
27.....	573	15	23	17,500	1,300	sa64,000	2,120	48	275
28.....	450	9	11	19,800	1,440	77,000	2,090	68	384
29.....	370	6	6	--	--	--	1,770	78	373
30.....	330	7	6	--	--	--	1,140	103	317
31.....	300	8	6	--	--	--	874	87	134
Total.	38,671	--	14,549	187,590	--	457,901	182,944	--	485,674

e Estimated.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

b Computed from estimated concentration graph.

## SALT RIVER BASIN--Continued

## SALT RIVER AT SHEPHERDSVILLE, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	746	39	78	545	47	69	425	121	139
2.....	650	38	67	440	42	50	282	110	84
3.....	587	40	63	365	42	41	207	81	45
4.....	510	36	50	315	40	34	158	67	28
5.....	445	35	42	268	32	23	124	48	16
6.....	608	50	82	231	27	17	100	38	10
7.....	658	48	85	196	24	13	196	251	s 202
8.....	468	47	59	165	34	15	3,630	2,180	21,400
9.....	375	53	54	140	40	15	1,580	433	s 1,980
10.....	330	42	37	134	38	14	1,270	138	473
11.....	474	47	60	192	37	19	1,920	--	e 1,700
12.....	922	72	179	188	46	23	2,490	368	2,470
13.....	1,980	200	sa 1,100	1,050	--	e 3,400	1,800	225	1,090
14.....	1,470	295	1,170	6,950	2,860	53,700	1,390	123	462
15.....	914	181	447	3,060	751	s 7,870	1,150	87	270
16.....	658	73	130	1,210	188	614	1,150	80	248
17.....	517	58	81	794	98	210	770	77	160
18.....	440	50	59	531	74	106	504	61	83
19.....	375	43	44	395	65	69	365	52	51
20.....	325	36	32	305	55	45	300	55	44
21.....	320	40	34	251	48	32	435	65	76
22.....	370	47	47	300	41	33	330	73	65
23.....	1,040	600	sa 3,100	310	42	35	192	46	24
24.....	7,770	2,620	55,000	305	48	40	560	180	sa 240
25.....	6,110	1,530	s 27,400	2,880	--	e 7,600	410	227	251
26.....	2,240	430	2,600	1,960	871	s 5,210	400	117	126
27.....	1,560	145	611	746	238	479	340	98	90
28.....	1,190	76	244	450	128	156	227	65	40
29.....	938	53	134	1,240	200	sa 700	151	39	16
30.....	706	42	80	818	243	537	118	25	8
31.....	--	--	--	858	145	336	--	--	--
Total.	35,696	--	93,169	27,592	--	81,505	22,974	--	31,891
	July			August			September		
1.....	86	33	8	305	125	103	13	--	--
2.....	87	22	4	211	95	54	9.6	--	--
3.....	54	23	3	140	58	22	7.2	--	--
4.....	80	30	6	111	43	13	6.4	--	--
5.....	336	--	e 100	232	--	e 90	4.9	--	--
6.....	231	83	52	310	130	sa 120	3.6	--	--
7.....	165	122	54	144	102	40	3.0	8	(et)
8.....	235	207	131	118	106	34	2.5	--	--
9.....	945	--	e 1,700	91	79	19	2.0	--	--
10.....	1,810	--	e 3,800	124	--	e 30	1.2	--	--
11.....	1,380	766	s 3,050	420	114	129	1.2	--	--
12.....	468	362	457	486	102	134	1.0	--	--
13.....	278	220	165	400	98	106	4.2	18	(t)
14.....	180	121	59	231	90	56	9.6	43	1
15.....	158	90	38	130	75	26	8.0	--	--
16.....	124	85	28	104	60	s 18	6.4	--	--
17.....	1,010	--	e 2,600	214	80	sa 50	4.2	--	--
18.....	2,300	800	sa 5,800	69	61	11	3.0	--	--
19.....	4,500	1,520	18,500	47	56	7	1.5	--	--
20.....	4,130	1,350	15,000	36	36	3	1.0	--	--
21.....	2,390	562	s 3,940	29	33	2	.8	--	--
22.....	1,190	255	819	24	32	2	3.0	--	--
23.....	1,010	195	532	21	20	1	16	23	--
24.....	1,240	308	s 1,550	16	--	--	38	--	--
25.....	2,680	1,400	s 11,200	14	--	--	32	--	--
26.....	1,150	345	1,070	13	--	--	25	--	e 1
27.....	1,920	540	2,800	11	--	(et)	19	--	--
28.....	1,230	350	sa 1,400	15	--	--	13	--	--
29.....	1,490	441	1,770	16	--	--	99	--	--
30.....	1,160	207	s 694	15	--	--	2,860	1,300	s 10,800
31.....	504	117	159	15	--	--	--	--	--
Total.	34,501	--	77,489	4,112	--	1,073	3,199.3	--	10,881

Total discharge for year (cfs-days)..... 586,969.3

Total load for year (tons)..... 1,354,536

e Estimated.

t Less than 0.5 ton.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.



SALT RIVER BASIN--Continued  
SALT RIVER AT SHEPHERDVILLE, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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. 16, 1954	8:00 a.m.	1,370		976	1,610	69	85	94	99	100	--	--	--	--	BSWCM
Dec. 28	3:00 p.m.	4,530		2,230	1,860	45	58	70	83	96	99	99	100	100	BSWCM
Dec. 29	7:00 a.m.	10,200		1,320	1,110	61	67	78	90	97	99	99	100	100	BSWCM
Dec. 29	2:05 p.m.	11,500		1,770	1,280	60	63	78	91	98	100	--	--	--	BSWCM
Dec. 30	8:30 a.m.	10,600		792	626	61	70	60	91	97	98	99	100	100	BSWCM
Feb. 6, 1955	9:00 a.m.	16,800		1,660	1,450	43	55	67	85	96	99	100	--	100	BSWCM
Feb. 7	10:00 a.m.	22,300		1,140	1,030	55	64	77	88	97	99	99	99	100	BSWCM
Feb. 22	7:00 a.m.	21,000		1,270	1,630	45	53	66	80	95	99	100	--	--	BSWCM
Feb. 22	3:00 p.m.	21,700		1,340	1,950	48	57	69	83	94	100	--	--	--	BSWCM
Feb. 28	7:00 a.m.	20,100		1,710	1,490	54	65	77	89	99	100	--	--	--	BSWCM
Feb. 28	7:00 a.m.	20,100		1,710	1,390	48	50	68	87	98	99	100	--	--	BSNM
Mar. 1	7:00 a.m.	18,300		1,160	931	51	70	80	94	99	100	--	--	--	BSWCM
Mar. 2	5:00 a.m.	13,900		854	2,470	60	74	86	96	99	100	--	--	--	BSWCM
Mar. 5	3:00 p.m.	10,800		1,720	1,200	52	60	76	91	99	100	--	--	--	BSWCM
Apr. 24	7:00 a.m.	4,910		3,110	4,880	37	46	57	74	94	100	--	--	--	BSWCM
May 14	7:00 a.m.	5,200		3,290	2,330	41	53	65	81	95	99	100	--	--	BSWCM
May 26	7:00 a.m.	2,560		1,230	1,110	62	74	87	95	99	100	--	--	--	BSWCM
July 11	6:00 a.m.	1,750		887	1,320	56	76	86	98	99	100	--	--	--	BSWCM
July 20	6:00 a.m.	5,800		1,680	2,560	42	55	68	85	97	100	--	--	--	BSWCM
July 25	6:00 a.m.	4,300		1,780	1,460	45	56	67	86	98	100	--	--	--	BSWCM

## SALT RIVER BASIN--Continued

## ROLLING FORK NEAR BOSTON, KY.

LOCATION.--At gaging station 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 86°F Aug. 4, 6; minimum, freezing point on many days during December to February.

EXTREMES, 1949-55.--Water temperatures: Maximum, 87°F July 4, 1950, June 22, 25, 28, 1954; minimum, freezing point on many days during winter months.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements. The data reported under extremes are the individual maximum and minimum measurement. Records of discharge for water year October 1954 to September 1955 given in WSP 1375.

Temperature (°F) of water, water year October 1954 to September 1955

Twice-daily measurements at approximately 8 a. m. and 4:30 p. m.

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

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 86°F July 15; minimum, freezing point on several days during January to March.

EXTREMES, 1949-55.--Water temperatures: Maximum, 89°F July 1-2, 23, Aug. 4, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Daily water temperatures are averages of twice-daily measurements. Data reported under extremes are the individual maximum and minimum measurements. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
[Twice-daily measurements at approximately 7 a.m. and 5 p.m.]

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

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.

LOCATION--At gaging station at bridge on U. S. Highway 31W, at Munfordville, Hart County.

DRAINAGE AREA--1,790 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: October 1949 to September 1955.

Water temperatures: October 1950 to September 1955.

Sediment records: April 1951 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 178 ppm Nov. 11-22; minimum, 74 ppm Mar. 23-25.

Hardness: Maximum, 156 ppm Sept. 6-30; minimum, 45 ppm Mar. 23-25.

Specific conductance: Maximum daily, 332 microhmhos Sept. 23; minimum daily, 82.9 microhmhos Mar. 24.

Water temperatures: Maximum, 80°F Aug. 7; minimum, 33°F Jan. 28-31.

Sediment concentrations: Maximum daily, 1,430 ppm Mar. 16; minimum daily, 1 ppm several days during September.

Sediment loads: Maximum daily, 35,200 tons Mar. 17; minimum daily, less than 0.5 ton on several days during September.

EXTREMES, 1950-55.--Dissolved solids: Maximum, 200 ppm Nov. 1-10, 1952; minimum, 74 ppm Mar. 23-25, 1955.

Hardness: Maximum, 163 ppm Oct. 14-26, 1953; minimum, 45 ppm Mar. 23-25, 1955.

Specific conductance: Maximum daily, 363 microhmhos Nov. 16, 1953; minimum daily, 58.9 microhmhos Mar. 25, 1952.

Water temperatures: Maximum, 80°F June 28-29, 1952; Aug. 7, 1955; minimum, 33°F Jan. 28-31, 1955.

Sediment concentrations (1951-55): Maximum daily, 3,180 ppm June 14, 1952; minimum daily, 1 ppm on several days during December 1952, January, December 1953, January 1954, and September 1955.

Sediment loads (1951-55): Maximum daily, 153,000 tons Mar. 23-24, 1952; minimum daily, less than 0.5 ton on many days during October to December 1953, January 1954, and September 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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, 1954	159	10	0.01	42	7.0	5.1	2.0	146	12	8.0	0.1	2.6	163	134	14	275	7.7	5
Oct. 11-20	208	8.2	.01	43	6.6	5.2	2.1	146	12	8.6	.1	2.5	168	134	15	278	7.6	6
Oct. 21-31	110	8.1	.01	48	7.0	7.4	2.1	147	13	9.7	.1	2.2	177	148	11	321	7.8	2
Nov. 1-10	104	7.0	.01	48	7.3	6.3	2.1	162	15	12	.1	1.9	177	148	12	321	7.7	3
Nov. 11-20	294	6.8	.02	47	7.3	6.3	2.1	164	15	12	.1	1.1	178	148	13	308	7.6	6
Nov. 21-30	382	6.0	.02	56	6.0	3.9	2.7	115	19	6.5	.1	1.8	140	115	20	240	7.5	20
Dec. 1-6	530	7.9	.03	45	7.0	4.8	2.0	138	23	5.0	.2	2.4	166	140	28	291	7.7	10
Dec. 7-20	1,672	7.0	.04	33	5.6	3.5	1.6	101	20	5.0	.2	4.3	130	107	23	228	7.5	20
Dec. 21-25	1,148	10	.26	30	5.7	3.3	1.8	93	19	4.8	.2	6.6	125	99	22	213	7.7	13
Dec. 26-29	2,445	7.0	.36	35	5.9	3.4	1.1	100	18	12	.2	6.6	128	112	30	244	7.5	22
Dec. 31	7,770	6.1	.06	19	6.3	2.9	1.3	70	16	3.8	.3	5.8	96	74	16	160	7.6	32
Jan. 2-14, 1955	1,559	8.7	.01	34	6.5	3.0	1.0	106	18	5.5	.1	5.8	136	111	25	225	7.8	6
Jan. 15-24	1,392	6.8	.02	34	6.0	3.1	.8	108	18	6.0	.1	3.9	138	110	21	230	7.7	6
Jan. 25-31	1,336	6.3	.01	28	7.7	2.8	.5	100	16	5.0	.1	4.7	126	101	20	215	7.7	7
Feb. 1-6	2,798	6.9	.04	35	6.2	3.2	1.0	111	20	4.5	.1	3.5	135	113	22	234	7.5	3
Feb. 7-10	18,100	7.1	.11	21	3.4	2.3	1.7	64	12	2.3	.1	4.5	96	66	14	139	7.2	20
Feb. 11-22	4,068	8.3	.05	32	4.9	2.2	1.2	98	13	3.6	.1	4.8	119	99	20	201	7.6	12
Feb. 23-28	16,160	7.7	.18	22	4.0	2.3	1.5	70	10	3.7	.1	4.1	98	71	14	145	7.3	8

Mar. 1-4, 1955	22,750	11	.05	18	2.9	2.7	1.4	55	10	2.2	.1	4.1	94	56	12	118	7.0	5
Mar. 5-8	13,650	7.5	.03	21	3.9	3.1	1.3	71	11	2.2	.1	2.5	100	59	10	145	7.1	5
Mar. 9-11	7,043	8.1	.03	24	4.1	1.7	1.3	60	13.9	2.4	.1	4.1	102	73	11	166	7.2	5
Mar. 12-16	3,426	15	.02	31	3.5	3.6	1.2	107	13	3.5	.1	1.2	136	100	12	212	7.9	7
Mar. 17-20	13,460	8.4	.04	21	5.2	1.8	1.3	99	9.1	1.9	.1	1.3	93	95	16	141	7.2	4
Mar. 21-22	17,770	7.5	.06	21	2.3	1.2	.8	71	6.7	.5	.2	1.8	97	74	17	138	7.1	10
Mar. 23-25	31,770	7.5	.12	14	3.2	1.2	.8	41	6.2	.5	.2	1.8	77	45	17	138	7.1	10
Mar. 26-Apr. 1	4,993	9.2	.10	31	3.7	1.9	.8	96	12	2.9	.1	4.9	115	93	14	186	7.4	10
Apr. 2-10	1,713	7.0	.06	34	4.5	2.2	9	106	13	3.0	.1	3.8	122	104	16	216	7.6	10
Apr. 11-26	1,774	6.6	.03	34	5.6	2.6	1.2	116	14	3.3	.1	1.9	131	109	13	225	7.6	8
Apr. 27-30	2,025	7.0	.04	28	4.9	2.2	1.1	95	13	2.6	.2	1.5	110	89	12	188	7.8	17
May 1-15	2,897	5.4	.04	37	6.9	2.9	1.2	125	13	4.5	.1	1.4	141	120	18	244	7.5	2
May 16-21	1,614	7.5	.03	28	6.6	2.4	1.0	100	12	3.2	.2	2.3	120	97	15	198	7.5	10
May 22-31	1,028	8.4	.02	34	7.1	3.3	1.0	120	13	4.5	.2	2.4	139	114	16	230	7.6	7
June 1-11	2,166	8.5	1.0	35	7.2	3.5	1.7	125	12	4.5	.1	2.4	139	117	15	241	7.3	5
June 12-15	9,310	10	.02	24	5.0	2.1	1.3	84	9.0	2.0	.1	4.1	101	80	11	169	7.1	8
June 16-26	1,594	9.8	.13	35	7.2	3.3	1.3	122	12	5.0	.1	3.5	137	118	18	238	7.2	5
June 27-29	2,157	8.5	.02	24	5.1	2.3	2.1	84	11	3.8	.2	3.5	101	80	11	166	7.0	9
June 30-July 9	2,687	10	.00	36	6.5	3.2	1.0	128	11	4.5	.1	2.3	149	116	11	240	7.5	5
July 10-13	1,913	11	.10	26	6.0	5.3	1.6	94	9.9	--	.2	2.6	173	89	12	186	7.6	3
July 14-Aug. 8	1,713	9.7	.01	36	6.8	3.3	1.6	126	10	5.2	.2	2.4	146	118	15	234	7.6	5
Aug. 9-14	986	7.3	.01	30	5.4	3.4	2.1	106	10	4.4	.2	3.0	124	98	11	200	7.4	6
Aug. 15-Sept. 5	278	9.3	.00	41	7.8	4.2	1.7	146	11	6.9	.2	2.2	158	134	14	269	7.6	4
Sept. 6-30	223	7.5	.00	47	9.3	5.5	1.6	170	11	9.9	.1	1.7	177	156	17	312	7.7	2
Time-weighted average <sup>a</sup>	2,664	8.1	0.07	36	6.4	3.7	1.4	121	13	5.8	0.1	2.9	141	116	17	236	--	7

<sup>a</sup> Represents 100 percent of days and 99 percent of runoff.

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 7 a.m./

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

## GREEN RIVER BASIN--Continued

## GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	128	17	6	86	15	4	450	22	27
2.....	220	17	10	92	16	4	428	11	13
3.....	296	14	11	92	12	3	362	7	7
4.....	215	24	14	96	15	4	318	8	7
5.....	163	22	10	105	17	5	324	12	10
6.....	144	20	8	109	16	5	1,300	--	e 1,000
7.....	122	22	7	109	17	5	1,740	276	1,300
8.....	105	20	6	114	15	5	1,360	152	558
9.....	96	20	5	114	15	5	1,000	67	181
10.....	92	16	4	122	17	6	1,010	43	117
11.....	88	18	4	126	14	5	1,030	25	70
12.....	114	23	7	122	13	4	944	22	56
13.....	114	22	7	118	13	4	1,800	--	e 1,500
14.....	175	--	e 65	114	11	3	3,140	295	2,500
15.....	396	215	230	114	6	2	2,720	190	1,400
16.....	275	55	41	114	7	2	2,070	136	760
17.....	280	156	118	118	8	2	1,470	102	405
18.....	225	36	22	126	8	3	1,240	75	251
19.....	215	39	23	144	7	3	1,660	68	305
20.....	181	27	13	167	7	3	2,220	97	551
21.....	153	17	7	1,120	370	sa 1,800	1,830	78	385
22.....	135	15	5	1,140	248	763	1,280	38	131
23.....	122	17	6	716	127	246	1,020	24	66
24.....	114	31	10	467	50	63	860	17	b 40
25.....	105	30	8	362	33	32	752	10	20
26.....	96	30	8	296	19	15	662	8	14
27.....	96	27	7	265	13	9	590	8	13
28.....	96	27	7	260	13	9	632	18	31
29.....	96	22	6	275	12	9	3,240	517	sa 5,920
30.....	101	18	5	412	17	19	7,100	740	14,200
31.....	92	16	4	--	--	--	7,770	490	10,300
Total.....	4,848	--	684	7,617	--	2,842	52,322	--	42,168
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.....	5,730	193	s 3,140	788	3	6	19,900	398	21,400
2.....	3,100	88	736	1,020	42	s 133	24,000	342	22,200
3.....	2,170	60	352	1,910	116	598	25,100	280	19,000
4.....	1,660	33	148	2,160	250	1,480	22,000	204	12,100
5.....	1,370	26	96	2,160	95	555	13,800	208	7,750
6.....	1,210	24	78	8,720	707	s 18,900	11,400	436	13,400
7.....	1,130	30	92	17,700	670	32,000	14,500	330	12,900
8.....	1,100	50	148	20,200	411	22,400	14,900	230	9,250
9.....	1,070	27	78	20,300	258	14,100	11,300	88	2,680
10.....	1,010	18	49	14,200	72	s 2,930	5,820	68	1,070
11.....	1,060	19	54	5,140	61	846	4,010	50	541
12.....	1,680	70	318	3,560	56	538	3,280	45	398
13.....	1,910	38	196	2,960	20	160	2,780	37	278
14.....	1,800	27	131	2,510	17	115	2,360	31	198
15.....	1,530	23	95	2,450	13	86	2,240	117	708
16.....	1,390	13	49	2,610	15	106	6,470	1,430	s 28,500
17.....	1,270	10	34	3,370	28	255	12,800	1,020	35,200
18.....	1,140	5	15	3,870	41	428	13,900	330	12,400
19.....	1,050	3	8	3,790	27	276	14,800	206	8,230
20.....	962	3	8	3,240	19	166	12,400	88	2,950
21.....	890	10	24	3,310	37	s 364	13,500	228	s 8,850
22.....	1,180	31	99	12,000	566	s 19,800	21,900	469	27,700
23.....	2,130	57	328	19,200	400	20,700	31,000	359	30,900
24.....	2,380	81	520	20,800	316	17,700	34,600	358	33,400
25.....	2,260	53	323	20,300	172	9,430	29,700	201	16,100
26.....	1,810	26	127	11,900	54	1,740	16,100	235	s 10,700
27.....	1,430	9	35	8,760	300	s 7,960	5,550	60	899
28.....	1,200	7	23	16,000	580	25,000	3,570	40	386
29.....	1,020	6	16	--	--	--	2,980	28	225
30.....	848	6	16	--	--	--	2,570	24	166
31.....	782	5	b 10	--	--	--	2,220	20	120
Total.....	49,272	--	7,344	234,958	--	198,772	401,450	--	340,599

e Estimated.

s Computed by subdividing day.

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 1954 to September 1955--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.....	1,980	20	106	1,230	25	83	728	100	196
2.....	1,780	18	86	1,060	18	51	632	45	77
3.....	1,680	17	76	920	12	30	548	33	49
4.....	1,590	16	69	824	8	18	484	32	42
5.....	1,480	15	59	740	7	14	445	22	26
6.....	1,340	14	51	668	6	11	434	31	36
7.....	2,180	29	171	808	7	11	1,480	523	s 2,280
8.....	2,180	39	230	572	9	14	2,720	570	4,190
9.....	1,790	26	126	530	10	14	3,100	338	2,830
10.....	1,480	34	134	489	9	12	4,730	348	4,440
11.....	1,340	37	134	472	9	11	8,520	339	7,800
12.....	1,400	46	174	464	9	12	11,800	368	11,500
13.....	1,970	147	782	602	18	s 31	12,000	223	7,220
14.....	2,640	138	984	1,950	52	260	8,070	90	2,110
15.....	2,050	38	210	2,410	84	546	4,970	77	1,030
16.....	1,730	21	98	2,870	119	858	3,060	63	520
17.....	1,500	13	53	2,180	--	e 1,700	2,230	51	307
18.....	1,300	12	42	1,740	242	1,140	1,720	50	232
19.....	1,180	11	35	1,270	78	267	1,380	34	127
20.....	1,060	9	26	992	51	136	1,150	36	112
21.....	1,000	12	32	830	27	60	986	65	173
22.....	962	12	31	938	30	76	872	22	52
23.....	944	8	20	980	51	135	770	17	35
24.....	2,430	121	s 952	782	60	127	716	15	29
25.....	3,530	405	3,860	872	130	306	1,220	146	s 585
26.....	3,350	115	1,040	968	152	397	3,430	744	6,890
27.....	2,650	59	422	1,180	86	210	3,390	574	s 5,500
28.....	2,180	37	218	1,090	63	185	1,880	160	812
29.....	1,800	25	122	1,210	--	e 750	1,200	83	269
30.....	1,470	25	99	1,400	510	1,930	908	48	118
31.....	--	--	--	860	355	824	--	--	--
Total.	53,866	--	10,442	33,411	--	10,219	85,973	--	59,587
	July			August			September		
1.....	746	34	68	644	43	75	181	6	3
2.....	638	28	48	478	30	39	172	8	4
3.....	566	23	35	396	31	33	163	12	5
4.....	572	17	26	346	32	30	158	5	2
5.....	484	13	17	340	27	25	144	7	3
6.....	506	16	22	324	31	27	140	7	3
7.....	638	44	76	357	33	32	135	3	1
8.....	950	83	213	1,660	600	s 3,100	126	7	2
9.....	2,860	950	s 10,000	974	446	1,170	118	5	2
10.....	4,280	1,270	s 15,500	1,030	278	773	114	2	1
11.....	1,610	418	s 1,940	1,430	230	888	109	4	1
12.....	1,010	188	513	1,060	198	567	105	3	1
13.....	752	86	175	770	131	272	101	3	1
14.....	608	67	110	650	74	130	96	3	1
15.....	536	41	59	500	39	53	96	2	1
16.....	518	32	45	418	30	34	92	2	(t)
17.....	489	32	42	357	26	25	92		
18.....	445	27	32	318	27	23	92		
19.....	401	28	30	280	23	17	88		
20.....	1,440	--	e 5,400	255	21	14	88		
21.....	872	691	s 1,810	235	18	11	88	1	(t)
22.....	644	130	226	230	17	10	88		
23.....	746	92	185	423	21	24	92		
24.....	704	79	150	512	22	30	114		
25.....	1,940	--	e 8,400	335	25	23	114		
26.....	1,240	848	s 3,160	291	13	10	114		
27.....	710	210	402	275	10	7	114	2	1
28.....	548	97	144	250	7	5	118	6	2
29.....	596	65	104	220	7	4	114	4	1
30.....	698	90	170	206	7	4	3,020	--	e 15,000
31.....	860	88	158	196	3	2	--	--	--
Total.	29,607	--	49,260	15,760	--	7,457	6,386	--	15,038
Total discharge for year (cfs-days).....									975,470
Total load for year (tons).....									744,412

e Estimated.

t Less than 0.5 ton.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.



GREEN RIVER BASIN--Continued  
GREEN RIVER AT MUMFORDVILLE, KY.--Continued

Particle size analyses of suspended sediment, water year October 1954 to September 1955  
(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	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, 1954 . . . . .	7:00 a.m.	3,260		352	578	51	64	72	88	96	98	99	--		--		BSWCM
Dec. 31 . . . . .	6:15 a.m.	7,940		663	548	60	69	80	92	97	99	100	--		--		BSWCM
Feb. 9, 1955 . . . . .	4:10 p.m.	20,200		237	789	98	69	82	92	97	99	99	100		--		BSWCM
Feb. 22 . . . . .	10:50 a.m.	11,900		717	1,240	30	45	59	78	96	99	100	--		--		BSWCM
Feb. 23 . . . . .	10:30 a.m.	19,300		377	696	49	55	71	87	96	99	100	--		--		BSWCM
Feb. 28 . . . . .	10:20 a.m.	16,000		663	1,130	46	60	74	88	98	99	100	--		--		BSWCM
Mar. 2 . . . . .	10:10 a.m.	24,000		354	1,040	64	70	84	92	98	99	100	--		--		BSWCM
Mar. 3 . . . . .	7:00 a.m.	25,300		476	494	53	69	81	88	96	98	99	100		--		BSWCM
Mar. 6 . . . . .	3:30 p.m.	12,200		280	844	46	63	79	93	99	99	100	--		--		BSWCM
Mar. 17 . . . . .	10:40 a.m.	13,000		752	1,430	38	60	75	89	96	100	--	--		100		BSWCM
Mar. 22 . . . . .	7:00 a.m.	20,200		422	749	48	54	71	87	96	98	99	--		--		BSWCM
Mar. 24 . . . . .	11:15 a.m.	34,900		350	1,160	49	70	85	94	99	99	100	--		--		BSWCM
May 30 . . . . .	7:00 a.m.	1,690		501	925	42	56	73	90	98	100	--	--		--		BSWCM
June 7 . . . . .	7:00 a.m.	1,190		531	945	46	63	83	95	98	99	99	--		100		BSWCM
June 26 . . . . .	7:00 a.m.	3,220		711	1,200	52	66	79	98	100	--	--	--		--		BSWCM
July 10 . . . . .	7:00 a.m.	5,330		1,510	2,650	45	58	77	92	99	100	--	--		--		BSWCM
July 21 . . . . .	7:00 a.m.	920		844	1,460	65	77	91	98	99	100	--	--		--		BSWCM
July 26 . . . . .	7:00 a.m.	1,340		1,060	1,750	52	67	83	94	98	100	--	--		--		BSWCM

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.

LOCATION (revised).--At bridge on U. S. Highway 31W and 68, 600 feet upstream from gage and old bridge, at Bowling Green, Warren County, 6 miles downstream from Drakes Creek, and 9.0 miles upstream from Jennings Creek.

DRAINAGE AREA.--1,680 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.

Water temperatures: October 1949 to September 1955.

Sediment records: November 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 85°F on several days during July; minimum, 39°F Jan. 31 to Feb. 1.

Sediment concentrations: Maximum daily, 928 ppm Apr. 24; minimum daily, 2 ppm Jan. 31.

Sediment loads: Maximum daily, 91,300 tons Mar. 23; minimum daily, 1 ton Sept. 15-18.

EXTREMES, 1949-55.--Water temperatures: Maximum, 87°F July 1, 2, 22, 29, 1952; minimum, freezing point Feb. 2-3, 1951.

Sediment concentrations (1952-55): Maximum daily, 1,880 ppm June 17, 1953; minimum daily, 1 ppm on several days during November, December 1952, October, November 1953.

Sediment loads (1952-55): Maximum daily, 91,300 tons Mar. 23, 1955; minimum daily, less than 0.5 ton Oct. 20-23, Nov. 15, 1953.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

REVISIONS.--WSP 1350: Revised water temperatures for water year 1953-54 are given herewith:

		Temperature (°F) of water					
Date		Max	Min	Date	Max	Min	
Oct. 8	66	--	Nov. 20	--	46	Apr. 26	64
Oct. 18	60	Mar. 2	52	May 23	64		
Oct. 30	54	Mar. 8	48	July 23	84		

Temperature (°F) of water, water year October 1954 to September 1955

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	52	50	46	45	52	50	40	39	56	53	52	51	66	65	71	71	80	79	84	83	79	78
2.....	71	70	50	48	45	45	50	50	41	40	56	56	53	52	67	66	71	71	81	81	80	84	83	78
3.....	72	70	48	47	45	44	50	50	42	41	56	56	55	53	68	67	71	71	82	80	84	83	78	75
4.....	72	72	47	46	44	44	50	50	42	42	56	56	56	55	68	68	72	71	83	82	84	83	75	74
5.....	72	72	46	44	44	44	53	50	42	42	56	56	56	56	70	68	72	71	84	83	84	83	75	75
6.....	72	72	44	44	44	42	54	53	46	42	57	56	60	58	70	69	73	72	84	84	84	83	75	75
7.....	72	69	44	44	42	42	54	54	46	46	57	58	61	60	70	70	74	72	84	84	84	83	75	75
8.....	69	67	44	44	43	42	54	52	46	46	53	50	60	59	71	70	72	69	84	84	83	82	75	75
9.....	67	67	44	44	43	43	52	52	46	46	50	50	59	59	71	70	69	68	84	84	82	82	76	75
10.....	97	67	47	44	43	41	52	50	47	46	51	50	59	59	70	70	68	67	85	84	82	82	77	76
11.....	87	67	47	47	41	41	50	49	48	46	52	51	60	59	70	70	67	66	84	84	82	82	77	76
12.....	88	67	46	47	41	41	49	48	46	44	53	52	62	60	70	70	66	66	84	84	82	82	77	77
13.....	88	68	46	48	42	41	48	46	44	42	54	53	63	62	70	70	66	66	84	84	80	80	75	73
14.....	70	68	46	48	44	42	46	44	42	41	55	54	63	63	70	70	66	66	85	84	79	79	74	74
15.....	66	65	46	48	44	44	44	44	41	41	55	55	64	63	69	69	66	64	84	84	79	79	74	74

16.....	65	53	49	48	44	44	44	44	43	41	56	55	64	64	69	69	68	67	84	84	79	78	74	74
17.....	63	60	50	49	44	44	44	44	44	43	56	56	66	64	69	68	71	68	84	84	78	78	74	74
18.....	60	60	51	50	44	44	44	44	44	44	56	54	67	66	68	68	72	71	84	83	79	78	75	74
19.....	60	59	51	51	44	44	44	44	45	44	54	52	68	67	69	68	73	72	83	83	80	79	75	74
20.....	59	58	52	51	44	44	44	43	48	45	52	52	68	68	69	69	73	73	84	83	80	80	75	74
21.....	58	57	52	51	43	42	43	43	49	49	54	52	68	68	70	69	74	72	85	84	82	80	76	74
22.....	57	56	51	50	42	42	43	43	48	48	55	54	68	68	70	70	76	74	85	84	82	81	76	75
23.....	56	56	51	50	42	42	43	43	47	47	54	54	68	68	70	70	76	78	84	83	82	81	76	76
24.....	55	54	50	50	43	42	43	43	47	47	54	53	69	67	70	70	76	78	84	83	82	81	76	75
25.....	54	54	50	49	43	43	43	43	42	48	53	53	67	65	70	70	76	76	83	83	82	81	75	74
26.....	55	54	49	48	43	43	42	42	49	48	53	52	65	64	71	70	76	76	84	83	81	80	74	73
27.....	56	55	48	48	43	43	43	42	50	49	52	50	64	63	72	71	77	76	84	84	80	80	74	74
28.....	56	56	48	48	45	43	42	42	53	50	50	48	63	63	73	73	77	77	85	84	80	80	74	74
29.....	56	56	48	47	50	45	42	40	--	--	48	48	64	63	73	72	78	77	85	84	80	80	74	74
30.....	56	53	47	46	51	50	40	40	--	--	49	48	65	64	73	72	79	78	84	84	80	80	74	74
31.....	53	52	--	--	51	51	40	39	--	--	51	49	--	--	72	71	--	--	84	84	80	79	--	--
Average.....	63	62	48	48	44	43	47	46	46	44	54	53	63	62	70	69	72	71	84	83	81	81	75	75

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	297	58	5	152	28	11	528	103	147
2.....	725	54	106	149	18	7	476	100	a 130
3.....	2,400	265	s 1,840	146	14	6	394	54	57
4.....	1,330	308	1,110	142	18	7	349	12	11
5.....	623	156	262	144	20	8	352	5	b 5
6.....	433	115	134	149	17	7	1,540	89	s 572
7.....	335	68	62	159	8	3	4,240	782	8,950
8.....	269	50	36	166	10	4	2,390	259	s 1,620
9.....	236	30	19	174	13	6	1,370	78	288
10.....	225	36	22	174	5	2	1,050	38	108
11.....	208	38	21	172	4	2	1,130	27	82
12.....	195	44	23	162	5	2	1,020	28	77
13.....	195	42	22	156	4	2	1,660	46	s 230
14.....	179	37	18	149	13	5	3,500	158	1,490
15.....	425	110	sb 140	142	10	4	2,940	100	794
16.....	750	122	247	142	12	5	2,090	47	265
17.....	755	108	220	156	15	6	1,550	28	117
18.....	536	51	74	154	14	6	1,220	14	46
19.....	384	33	34	162	13	6	1,300	12	42
20.....	314	22	19	182	32	16	1,430	14	54
21.....	269	19	14	282	90	sb 85	1,170	8	25
22.....	236	22	14	825	--	e 374	948	8	20
23.....	214	22	13	600	95	154	815	6	13
24.....	198	21	11	430	65	75	735	4	8
25.....	185	29	14	349	--	e 50	660	3	5
26.....	172	51	24	302	--	e 35	587	3	5
27.....	159	36	15	280	--	e 18	540	4	6
28.....	154	17	7	263	--	e 10	592	17	s 29
29.....	154	21	9	260	--	e 6	3,860	277	s 3,040
30.....	156	33	14	299	14	11	8,370	542	12,200
31.....	154	34	14	--	--	--	8,610	336	7,810
Total.	12,867	--	4,563	7,022	--	933	57,416	--	38,446
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.....	4,940	113	s 1,620	770	3	6	13,800	196	7,300
2.....	3,140	58	492	805	5	11	16,600	415	18,600
3.....	2,370	34	218	1,530	9	37	15,400	272	11,300
4.....	1,880	25	127	1,790	14	68	10,200	101	2,780
5.....	1,570	20	85	1,640	25	111	6,620	128	2,290
6.....	1,380	17	63	6,570	364	s 8,480	6,730	182	3,310
7.....	1,230	13	43	18,700	594	30,000	10,600	375	10,700
8.....	1,090	10	29	20,400	348	19,200	11,000	205	6,090
9.....	964	9	23	17,500	127	6,000	7,660	55	1,140
10.....	910	7	17	8,170	57	1,260	5,110	48	662
11.....	976	7	18	4,600	37	460	4,130	42	468
12.....	1,370	8	30	3,900	35	368	3,800	51	523
13.....	1,590	14	60	3,620	23	225	5,000	358	4,810
14.....	1,490	24	96	2,650	16	114	4,440	209	2,500
15.....	1,310	15	53	2,600	13	91	3,520	94	893
16.....	1,190	10	32	2,740	19	140	4,950	387	s 6,030
17.....	1,120	7	21	3,130	31	282	9,750	719	19,900
18.....	1,000	4	11	3,240	27	236	10,300	201	5,590
19.....	898	4	10	2,960	16	128	16,300	292	12,800
20.....	832	4	9	2,660	13	93	15,900	155	6,650
21.....	795	6	13	3,120	67	s 713	18,400	205	10,200
22.....	880	8	19	13,500	540	s 21,400	31,800	358	30,700
23.....	2,060	20	111	23,800	368	23,600	51,700	654	91,300
24.....	2,300	32	199	23,200	226	14,200	36,800	358	s 38,800
25.....	1,940	17	89	18,200	66	s 3,400	20,700	63	3,520
26.....	1,620	13	57	8,090	76	1,660	9,860	72	1,920
27.....	1,350	10	36	6,170	104	1,730	5,630	58	882
28.....	1,170	4	13	11,700	372	11,800	4,200	39	442
29.....	1,040	3	8	--	--	--	3,650	35	345
30.....	916	3	7	--	--	--	3,100	26	218
31.....	820	2	4	--	--	--	2,740	22	163
Total.	46,141	--	3,613	217,755	--	145,793	370,390	--	301,826

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## GREEN RIVER BASIN--Continued

## BARREN RIVER AT BOWLING GREEN, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	2,450	21	139	1,420	31	119	655	30	53
2.....	2,250	21	128	1,230	21	70	588	30	48
3.....	2,130	18	104	1,100	22	65	534	22	32
4.....	2,030	18	99	976	19	50	490	23	30
5.....	1,850	21	105	862	24	56	462	22	27
6.....	1,790	22	106	790	25	53	466	26	33
7.....	2,430	35	230	720	16	31	1,610	214	s 1,150
8.....	2,860	56	432	670	15	27	2,530	343	2,340
9.....	2,250	37	225	620	11	18	4,050	512	5,600
10.....	1,950	27	142	588	8	13	4,350	320	3,760
11.....	1,810	17	83	562	13	20	5,000	209	2,820
12.....	1,810	16	78	562	6	9	6,680	448	8,080
13.....	2,280	26	160	725	13	25	4,970	230	3,090
14.....	4,260	85	978	2,140	86	s 583	3,020	84	685
15.....	4,000	120	1,300	2,200	151	897	2,240	69	417
16.....	2,880	53	412	2,240	247	1,490	1,800	57	277
17.....	2,330	31	195	2,540	680	4,700	1,470	47	186
18.....	2,020	24	131	2,270	215	1,320	1,230	43	143
19.....	1,780	20	96	1,590	240	1,030	1,050	45	128
20.....	1,580	18	77	1,180	98	312	934	45	113
21.....	1,460	17	67	1,010	55	150	850	66	151
22.....	1,440	19	74	1,950	133	s 799	730	30	59
23.....	1,670	33	s 216	4,020	308	3,340	660	25	44
24.....	6,800	928	17,000	2,660	206	1,480	602	23	37
25.....	7,660	565	11,700	1,890	93	474	645	29	50
26.....	4,960	289	s 4,000	1,530	64	264	886	43	103
27.....	3,230	78	680	1,280	50	173	976	36	95
28.....	2,440	52	342	1,040	44	124	725	26	51
29.....	2,010	38	206	897	42	102	575	21	33
30.....	1,680	34	154	856	35	81	498	23	31
31.....	--	--	--	750	33	67	--	--	--
Total.	80,090	--	39,659	42,889	--	17,942	51,276	--	29,666
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.....	458	27	33	320	37	32	156	14	6
2.....	422	35	40	314	34	29	149	13	5
3.....	400	28	30	347	26	24	144	17	7
4.....	375	21	21	557	22	33	144	16	6
5.....	340	16	15	502	22	30	142	14	
6.....	320	22	19	446	19	23	139	13	5
7.....	557	28	42	358	21	20	132	15	5
8.....	710	26	50	324	19	17	126	17	6
9.....	502	29	39	269	20	16	114	22	7
10.....	430	43	50	317	29	25	107	11	3
11.....	372	72	72	602	42	68	102	10	3
12.....	304	64	52	602	84	136	95	10	2
13.....	271	38	28	446	80	96	89	9	2
14.....	280	35	26	354	42	40	87	7	2
15.....	280	24	18	307	32	26	83	3	1
16.....	283	20	15	271	30	22	85	3	1
17.....	320	26	22	249	25	17	85	3	1
18.....	327	33	29	230	22	14	85	4	1
19.....	304	22	18	217	22	13	83	7	2
20.....	386	25	26	206	15	8	81	19	4
21.....	403	14	15	195	14	7	79	18	4
22.....	392	15	16	185	13	6	77	18	4
23.....	1,050	64	s 193	174	12	6	75	10	2
24.....	810	58	127	169	10	4	74	13	2
25.....	534	60	a 85	203	10	5	74	9	2
26.....	442	71	85	263	12	8	74	8	2
27.....	378	60	61	238	13	8	83	8	2
28.....	333	43	39	214	15	9	114	12	4
29.....	327	41	38	195	10	5	134	10	4
30.....	400	42	45	172	5	2	344	27	s 36
31.....	358	42	40	162	10	4	--	--	--
Total.	13,068	--	1,387	9,428	--	753	3,356	--	136

Total discharge for year (cfs-days) ..... 911,698

Total load for year (tons) ..... 584,717

s Computed by subdividing day.

a Computed from estimated concentration graph.

## GREEN RIVER BASIN--Continued

## BAREN RIVER AT BOWLING GREEN, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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. 7, 1954 . . . . .	6:30 a. m.	4,300		578	1,220	52	56	75	93	98	99	100	--		--		BSWCM
Dec. 7, 1954 . . . . .	5:30 p. m.	4,450		998	1,360	50	64	81	93	99	99	100	--		--		BSWCM
Dec. 8, 1954 . . . . .	6:30 a. m.	2,740		308	646	48	62	75	91	97	98	99	--		--		BSWCM
Dec. 30, 1954 . . . . .	1:00 p. m.	8,780		534	1,120	47	61	73	90	98	100	--	--		--		BSWCM
Feb. 7, 1955 . . . . .	6:30 a. m.	693		693	1,350	34	46	65	85	96	97	99	99		100		BSWCM
Feb. 22, 1955 . . . . .	5:00 p. m.	17,800		678	1,020	36	48	63	83	96	99	100	--		--		BSWCM
Mar. 2, 1955 . . . . .	7:20 a. m.	16,700		461	843	48	62	79	89	96	97	98	99		100		BSWCM
Mar. 2, 1955 . . . . .	7:20 a. m.	16,700		461	864	39	52	70	89	96	97	98	99		100		BSNM
Mar. 7, 1955 . . . . .	5:00 p. m.	11,500		336	605	52	56	74	90	96	97	98	99		100		BSWCM
Mar. 21, 1955 . . . . .	5:00 p. m.	19,500		257	484	38	51	65	89	96	98	99	100		--		BSWCM
Mar. 22, 1955 . . . . .	10:30 a. m.	23,800		296	801	46	63	78	92	98	99	100	--		--		BSWCM
Mar. 24, 1955 . . . . .	6:30 a. m.	42,100		631	1,150	46	64	80	96	99	99	100	--		--		BSWCM
Apr. 24, 1955 . . . . .	8:30 a. m.	7,080		1,240	1,890	48	64	78	91	97	99	100	--		--		BSWCM
Apr. 26, 1955 . . . . .	6:30 a. m.	5,530		358	623	55	73	81	92	97	100	--	--		--		BSWCM
May 17, 1955 . . . . .	6:30 a. m.	2,470		920	1,360	57	78	90	96	98	99	99	100		--		BSWCM
June 8, 1955 . . . . .	6:30 a. m.	2,610		398	843	54	74	86	93	98	99	99	100		--		BSWCM

## GREEN RIVER BASIN--Continued

## ROUGH RIVER AT FALLS OF ROUGH, KY.

LOCATION.--At bridge on State Highway 110 at Falls of Rough, Grayson County, 150 feet upstream from gage, 50 feet upstream from Mill Dam, 1,850 feet upstream from Pleasant Run, and 3.0 miles downstream from Rock Lick Creek.

DRAINAGE AREA.--500 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 79°F Aug. 6; minimum, freezing point Jan. 29-31, Feb. 3.

Sediment concentrations: Maximum daily, 2,460 ppm Mar. 16; minimum daily, 2 ppm on several days during November.

Sediment loads: Maximum daily, 24,100 tons Mar. 21; minimum daily, less than 0.5 ton on many days during November, December, and September.

EXTREMES, 1952-55.--Water temperatures: Maximum, 79°F June 17, 1954, Aug. 6, 1955; minimum, freezing point Jan. 29-31, Feb. 3, 1955.

Sediment concentrations: Maximum daily, 2,460 ppm Mar. 16, 1955; minimum daily, 2 ppm on several days during November 1952, January and July, 1954, and November 1955.

Sediment loads: Maximum daily, 24,100 tons Mar. 21, 1955; minimum daily, less than 0.5 ton on many days each year.

REMARKS.--Low flow regulated by small gristmill 50 feet downstream from station. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

(Once-daily measurement at approximately 5:30 a.m.)

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

## GREEN RIVER BASIN--Continued

## ROUGH RIVER AT FALLS OF ROUGH, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	29	23	2	20	30	2	24	7	
2.....	38	22	2	22	28	2	25	5	(t)
3.....	34	20	2	21	25	1	30	5	
4.....	41	18	2	20	22	1	24	5	
5.....	35	18	2	22	17	1	96	3	1
6.....	31	19	2	21	21	1	235	16	10
7.....	29	20	2	21	23	1	259	70	49
8.....	26	20	1	21	17	1	213	63	36
9.....	22	16	1	21	17	1	121	35	11
10.....	19	21	1	21	17	1	84	37	8
11.....	18	24	1	21	13	1	75	35	7
12.....	23	10	1	21	13	1	91	37	9
13.....	56	10	2	36	12	1	426	40	46
14.....	177	--	e 110	17	8	1	471	57	72
15.....	642	549	952	24	8	1	404	51	56
16.....	498	361	485	18	8		274	33	24
17.....	211	112	64	15	8		194	27	14
18.....	94	88	22	15	6		154	23	10
19.....	68	78	14	19	5		129	15	5
20.....	30	62	5	17	4	(t)	112	13	4
21.....	28	59	4	14	2		102	13	4
22.....	29	58	4	28	2		80	8	2
23.....	28	56	4	13	2		68	9	2
24.....	28	48	4	16	2		54	8	1
25.....	35	47	4	19	2		58	8	1
26.....	19	38	2	20	2		56	11	2
27.....	21	33	2	21	2		56	8	1
28.....	21	38	2	22	2		1,130	303	s 1,520
29.....	21	30	2	22	4		2,570	866	6,010
30.....	22	32	2	28	7	1	2,830	566	4,320
31.....	20	32	2	--	--	--	1,790	252	s 1,300
Total.	2,393	--	1,705	616	--	20	12,235	--	13,526
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.....	672	76	138	129	4	1	6,490	511	8,950
2.....	540	44	64	326	4	4	5,880	250	3,970
3.....	429	35	40	434	39	46	4,270	140	1,610
4.....	338	25	23	364	19	19	2,000	70	378
5.....	297	20	16	1,520	227	s 1,780	1,990	432	s 2,770
6.....	320	18	16	4,480	784	9,480	2,560	895	6,190
7.....	350	17	16	5,850	682	10,800	1,990	628	s 3,710
8.....	308	12	10	6,420	233	4,040	931	144	362
9.....	268	8	6	5,480	78	1,150	754	54	110
10.....	252	7	5	2,830	33	252	630	34	58
11.....	254	5	3	1,080	34	100	544	28	41
12.....	297	4	3	703	38	72	482	22	29
13.....	386	4	4	511	22	30	418	22	25
14.....	373	4	4	430	21	24	368	27	27
15.....	326	3	3	425	10	11	1,030	388	s 1,600
16.....	350	5	5	572	10	s 32	2,780	2,460	18,500
17.....	334	7	6	764	44	91	3,300	1,860	16,600
18.....	290	7	5	657	35	58	2,830	450	3,480
19.....	248	5	3	513	25	35	1,160	170	532
20.....	214	4	2	612	36	s 101	1,610	227	s 1,700
21.....	226	5	3	3,710	620	6,210	5,190	1,760	s 24,100
22.....	430	13	15	5,760	591	9,190	6,820	620	11,400
23.....	478	25	32	6,710	497	9,000	6,890	316	5,690
24.....	379	33	34	6,390	201	3,470	5,660	115	1,760
25.....	290	26	20	4,380	62	733	2,950	72	s 547
26.....	238	18	12	2,100	68	385	1,200	130	421
27.....	203	12	6	4,260	918	s 11,200	811	62	136
28.....	171	7	3	5,940	966	15,500	624	47	79
29.....	140	8	3	--	--	--	544	34	50
30.....	121	8	3	--	--	--	481	24	31
31.....	105	5	1	--	--	--	423	20	23
Total.	9,627	--	504	73,360	--	83,814	73,410	--	114,879

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.



## GREEN RIVER BASIN--Continued

## ROUGH RIVER AT FALLS OF ROUGH, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	385	18	19	265	18	13	214	97	56
2.....	357	21	20	228	18	11	156	72	30
3.....	334	17	15	204	22	12	136	47	17
4.....	313	16	14	182	18	9	115	35	11
5.....	289	15	12	164	20	9	95	30	8
6.....	442	29	35	146	20	8	98	28	7
7.....	399	148	159	134	18	6	278	51	23
8.....	333	33	30	127	20	7	875	217	s 922
9.....	277	34	25	113	16	5	1,710	1,120	5,170
10.....	250	44	30	105	13	4	1,020	471	1,300
11.....	442	125	s 233	99	13	3	1,260	245	833
12.....	645	217	s 399	113	14	4	1,170	168	531
13.....	1,600	433	s 2,090	927	422	s 2,380	858	98	227
14.....	1,060	307	s 936	1,510	1,410	5,750	590	61	97
15.....	689	52	97	865	298	s 776	415	42	47
16.....	505	28	38	520	72	101	310	37	31
17.....	406	19	21	365	82	61	242	32	21
18.....	346	13	12	279	42	32	198	34	18
19.....	302	11	9	222	31	18	166	33	15
20.....	261	12	8	180	32	16	144	33	13
21.....	261	8	6	345	215	s 278	122	28	9
22.....	304	10	8	2,160	948	s 6,150	114	25	8
23.....	521	52	s 94	1,700	600	s 2,950	96	23	6
24.....	1,110	250	s 820	691	180	s 351	731	311	s 1,340
25.....	1,280	172	594	470	85	82	1,560	1,620	6,820
26.....	828	135	302	368	50	50	1,250	1,460	4,930
27.....	594	66	106	282	40	30	505	560	s 799
28.....	455	40	49	744	420	s 1,890	246	238	158
29.....	369	29	29	1,000	861	s 2,550	176	151	72
30.....	309	22	18	512	368	s 538	135	109	40
31.....	--	--	--	308	116	96	--	--	--
Total.	15,666	--	6,228	15,328	--	24,190	14,985	--	23,559
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.....	110	75	22	64	48	8	20	18	1
2.....	93	48	12	41	62	7	21	20	1
3.....	77	34	7	38	38	4	21	22	1
4.....	81	26	6	92	28	7	20	29	2
5.....	96	36	9	135	26	9	20	28	2
6.....	232	--	e 130	101	26	7	20	28	2
7.....	250	186	126	110	31	s 10	23	25	2
8.....	167	90	40	468	227	s 256	21	24	1
9.....	123	89	30	268	359	260	15	25	1
10.....	108	72	21	127	189	65	15	17	1
11.....	136	38	14	88	84	20	16	17	1
12.....	137	56	21	83	92	21	22	19	1
13.....	90	42	10	166	78	35	15	28	1
14.....	76	42	9	108	60	17	20	25	1
15.....	74	43	8	83	59	13	15	37	1
16.....	63	38	6	91	61	15	14	32	1
17.....	75	33	7	177	51	24	15	32	1
18.....	239	54	s 60	66	62	11	15	34	2
19.....	396	784	s 784	54	56	8	22	27	2
20.....	189	468	s 326	50	43	6	15	14	1
21.....	79	176	s 46	45	51	6	15	14	1
22.....	72	338	66	47	35	4	14	17	1
23.....	87	183	43	32	29	2	16	16	1
24.....	280	133	s 116	32	28	2	19	12	1
25.....	206	324	s 195	30	22	2	15	13	1
26.....	91	221	54	29	25	2	15	7	
27.....	67	164	30	32	23	2	14	8	
28.....	53	70	10	25	19	1	14	6	(t)
29.....	125	--	e 40	27	24	2	19	9	
30.....	128	39	13	26	16	1	904	516	s 1,400
31.....	99	33	9	19	22	1	--	--	--
Total.	4,099	--	2,270	2,754	--	828	1,410	--	1,432
Total discharge for year (cfs-days)									225,883
Total load for year (tons)									272,955

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

## GREEN RIVER BASIN--Continued

## ROUGH RIVER AT FALLS OF ROUGH, KY.--Continued

Particle size analysis of suspended sediment, water year October 1954 to September 1955

(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	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	
Oct. 15, 1954 ...	5:45 p.m.	612		726	981	70	83	94	99	99	100	--	--			BSWCM
Dec. 28 ...	4:30 p.m.	1,850		766	987	65	76	82	93	98	99	99	100			BSWCM
Dec. 29 ...	8:15 a.m.	2,540		976	1,250	47	57	68	84	97	100	--	--			BSWCM
Dec. 30 ...	4:55 a.m.	2,940		786	971	51	65	74	85	95	99	100	--			BSWCM
Feb. 6, 1955 ...	12:05 p.m.	4,560		858	1,320	42	52	66	83	96	99	99	100			BSWCM
Feb. 7 ...	5:30 p.m.	6,060		651	886	51	60	74	86	97	99	99	100			BSWCM
Feb. 21 ...	4:20 p.m.	4,050		591	754	41	49	64	83	97	99	99	100			BSWCM
Feb. 23 ...	12:45 p.m.	6,730		608	790	48	64	75	89	98	99	99	99		100	BSWCM
Feb. 27 ...	2:20 p.m.	4,560		1,170	1,380	51	67	74	89	99	100	--	--			BSWCM
Feb. 28 ...	6:10 a.m.	5,700		1,060	1,270	52	66	82	93	98	100	--	--			BSWCM
Feb. 28 ...	4:15 p.m.	6,140		1,120	1,400	54	72	78	92	99	99	99	100			BSWCM
Mar. 1 ...	5:10 p.m.	6,550		1,390	1,590	63	86	88	97	99	99	100	--			BSWCM
Mar. 6 ...	6:20 a.m.	2,530		825	1,270	41	59	65	87	97	99	99	100			BSWCM
Mar. 7 ...	5:10 a.m.	2,390		1,050	1,860	52	69	77	96	99	100	--	--			BSWCM
Mar. 16 ...	12:10 p.m.	2,910		3,170	2,040	37	46	62	82	98	100	--	--			BSWCM
Mar. 16 ...	12:10 p.m.	2,910		3,170	1,850	16	30	51	76	99	100	--	--			BSNM
Mar. 18 ...	5:10 a.m.	3,400		735	1,907	64	78	88	96	98	99	100	--			BSWCM
Mar. 21 ...	5:30 a.m.	4,920		2,460	1,540	33	41	58	79	95	99	100	--			BSWCM
Mar. 21 ...	4:30 p.m.	4,990		1,280	1,710	43	51	72	86	96	99	100	--			BSWCM
Mar. 22 ...	1:15 a.m.	6,320		876	1,430	45	58	73	89	98	100	--	--			BSWCM
Mar. 22 ...	5:45 p.m.	7,020		511	1,580	47	62	74	88	98	100	--	--			BSWCM
Apr. 24 ...	12:05 p.m.	1,080		660	1,090	58	72	83	96	97	100	--	--			BSWCM
May 14 ...	5:10 a.m.	1,420		2,160	1,820	56	59	72	90	100	--	--	--			BWCM
May 22 ...	11:55 a.m.	2,690		1,250	1,020	45	56	67	84	97	100	--	--			BSWCM
May 22 ...	11:55 a.m.	2,690		1,250	989	26	40	60	82	95	100	--	--			BSNM
May 22 ...	6:10 p.m.	2,600		1,280	1,010	34	42	52	73	94	100	--	--			BSWCM
June 25 ...	2:10 p.m.	2,070		1,640	1,940	39	45	62	82	95	100	--	--			BSWCM
June 25 ...	6:20 p.m.	1,820		2,120	1,390	37	51	67	88	98	100	--	--			BSWCM
June 26 ...	12:30 p.m.	1,260		1,310	2,130	47	61	75	91	100	--	--	--			BWCM
July 19 ...	12:50 p.m.	305		1,130	1,840	70	88	93	99	100	--	--	--			BWCM

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 89°F Aug. 3; minimum, freezing point on many days during December to February.

EXTREMES, 1949-55.--Water temperatures: Maximum, 89°F Aug. 3, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements. The data reported under extremes are the individual maximum and minimum measurements.

Records of discharge for gaging station near Dundee, for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/Twice-daily measurements at approximately 6:30 a.m. and 6 p.m./

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

## GREEN RIVER BASIN--Continued

## POND RIVER AT JEWEL CITY, KY.

LOCATION.--At Jewel City, Hopkins County, 200 feet upstream from Cypress Creek and three quarters of a mile upstream from mouth.  
DRAINAGE AREA.--790 square miles (approximately).

RECORDS AVAILABLE.--Chemical analyses: April 1950 to August 1955.

REMARKS.--Acidity determined to phenolphthalein end point. No discharge records available for this station.

Chemical analyses, in parts per million October 1954 to August 1955

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. 13, 1954 ...		5.5		0.21	2.6	44	17	12	3.7	1	207	3.4	0.2	0.0	320	180	179	0.3	0.6	487	4.7	1
Nov. 17 ...		4.9		.21	2.2	48	23	16	3.6	44	208	6.1	.2	.5	358	217	178	.0	.1	516	6.4	4
Dec. 28 ...		8.9		.31	2.2	62	19	15	2.6	38	220	4.8	.2	1.1	370	233	202	.1	.1	534	7.4	0
Jan. 26, 1955 ...		7.3		.35	2.4	60	21	18	1.4	32	223	8.0	.2	1.4	382	234	210	.2	.1	544	6.8	7
May 11 ...		8.9		.01	.07	68	25	15	2.6	13	268	3.8	.2	1.7	439	273	262	.2	.3	606	6.1	3
June 8 ...		7.3		.18	1.00	54	8.3	4.5	1.7	68	46	4.2	.3	3.6	163	118	47	.2	.2	288	7.3	6
July 27 ...		6.3		.51	3.8	56	22	17	5.4	18	232	5.0	.3	1.9	380	230	215	.2	.2	541	6.3	5
Aug. 24 ...		6.2		1.2	.00	45	13	10	2.3	23	196	3.5	.3	1.6	284	176	191	.1	.2	416	6.9	3

WABASH RIVER BASIN  
WABASH RIVER AT LAFAYETTE, IND.

LOCATION.--Temperature recorder at gaging station on right bank 20 feet downstream from Brown Street Bridge in Lafayette, 5.1 miles downstream from Wildcat Creek and at mile 31.9.

DRAINAGE AREA.--7 247 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1955

EXTREMES, 1954-55.--Water temperatures: Maximum, 90° F July 30-31, 1954; minimum, freezing point on many days during winter months.

REMARKS.--Some regulation at low stages caused by power plants above station. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
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.....	70	69	51	52	38	37	32	31	31	31	38	37	41	41	54	66	66	66	66	66	66	66	66	66
2.....	70	69	51	48	37	37	31	31	32	32	40	38	42	42	54	67	66	66	66	66	66	66	66	
3.....	72	69	48	46	36	35	31	31	32	32	40	40	42	42	55	64	67	67	67	67	67	67	67	
4.....	72	71	46	46	35	35	31	31	32	32	40	39	43	43	57	56	69	67	67	67	67	67	67	
5.....	71	68	46	46	35	35	31	31	32	32	40	40	43	43	57	57	70	69	69	69	69	69	69	
6.....	68	66	46	46	35	35	32	31	32	32	40	40	45	44	57	57	70	70	70	70	70	70	70	
7.....	66	64	46	46	35	34	--	--	--	--	38	45	45	45	58	58	70	69	69	69	69	69	69	
8.....	64	63	46	46	34	32	33	32	32	32	38	38	45	45	58	58	70	69	69	69	69	69	69	
9.....	63	62	47	46	32	32	33	33	32	32	38	38	46	45	58	58	69	68	68	68	68	68	68	
10.....	63	62	47	47	32	32	33	33	32	32	38	38	46	46	58	57	69	68	68	68	68	68	68	
11.....	63	63	47	46	32	31	33	33	32	32	39	38	47	46	57	57	68	68	68	68	68	68	68	
12.....	63	63	46	46	31	31	33	33	32	32	39	38	48	48	58	58	68	67	67	67	67	67		
13.....	63	63	46	45	31	31	33	33	32	31	42	41	50	48	58	58	67	66	66	66	66	66		
14.....	63	63	45	45	31	31	33	32	31	31	42	42	51	50	58	58	67	66	66	66	66	66		
15.....	64	63	45	45	32	31	33	33	31	31	42	41	52	51	58	58	66	65	65	65	65	65		
16.....	63	63	45	44	32	32	33	33	31	31	41	41	52	52	58	58	67	66	66	66	66	66		
17.....	63	61	44	44	32	32	33	33	32	31	41	41	53	52	59	58	66	67	67	67	67	67		
18.....	61	60	44	44	32	32	33	32	32	32	41	41	53	53	60	60	69	68	68	68	68	68		
19.....	60	59	45	44	32	32	32	32	32	32	41	41	53	53	60	60	71	69	69	69	69	69		
20.....	59	59	45	45	32	31	32	32	32	33	41	40	54	53	62	60	71	71	71	71	71	71		
21.....	59	58	45	44	31	31	32	32	33	32	41	40	56	54	63	62	74	72	72	72	72	72		
22.....	58	57	44	44	32	32	32	32	32	33	42	41	57	56	63	63	74	73	73	73	73	73		
23.....	57	57	44	42	32	32	32	32	33	33	42	40	57	56	64	63	74	73	73	73	73	73		
24.....	57	57	42	41	32	32	32	32	32	34	40	40	56	56	64	64	74	74	74	74	74	74		
25.....	57	57	41	40	32	32	32	32	32	35	34	40	56	56	65	65	74	73	73	73	73	73		
26.....	57	58	40	40	32	32	33	33	38	35	40	40	56	54	65	64	73	73	73	73	73	73		
27.....	56	56	40	39	32	32	33	33	38	36	40	40	54	54	64	64	73	73	73	73	73	73		
28.....	55	55	39	39	32	31	33	33	37	35	41	40	54	53	63	63	75	75	75	75	75	75		
29.....	56	55	38	38	32	32	33	33	--	--	41	41	54	54	66	66	--	--	--	--	--	--		
30.....	55	54	38	36	32	32	33	33	--	--	41	41	54	54	66	66	--	--	--	--	--	--		
31.....	54	53	--	--	32	32	33	32	--	--	41	41	--	--	66	66	--	--	--	--	--	--		
Average.....	62	61	45	44	33	32	32	32	33	32	40	40	50	50	60	60	70	69	69	69	69	69	69	

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 2 1/2 miles northwest of Catlin, Vermillion County.

DRAINAGE AREA.--959 square miles.

RECORDS AVAILABLE.--Water temperatures: December 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 94° F July 30; minimum, freezing point Feb. 6-10.

EXTREMES, 1952-55.--Water temperatures: Maximum, 95° F July 14, 1954; minimum, freezing point Jan. 13, 1953, Feb. 6-10, 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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.....	74	69	42	38	38	37	37	35	33	33	44	43	52	48	66	61	70	64	84	78	91	85	77	73
2.....	74	71	38	38	36	37	35	33	33	33	43	41	55	51	67	63	73	67	87	79	90	84	76	69
3.....	79	71	40	38	37	36	38	36	33	33	46	43	58	53	70	64	75	69	88	80	93	84	77	69
4.....	76	73	42	39	37	36	40	38	33	33	47	46	56	53	73	67	78	70	88	82	93	84	79	71
5.....	73	67	42	39	37	36	45	40	33	33	46	44	58	52	71	67	77	73	88	81	93	85	80	70
6.....	87	60	44	40	36	36	44	43	33	33	44	41	58	54	70	66	74	70	85	80	91	85	80	70
7.....	60	57	44	41	36	36	43	42	32	32	41	37	54	51	68	65	70	69	85	81	91	84	77	71
8.....	61	56	45	42	38	35	42	41	32	32	39	36	56	49	67	63	69	67	88	81	86	80	77	68
9.....	66	60	46	43	35	35	41	40	32	32	44	39	59	51	63	59	67	65	88	82	86	78	82	70
10.....	70	66	47	44	35	35	40	39	33	32	50	44	62	54	60	59	66	62	90	82	83	80	82	74
11.....	68	67	48	43	35	35	39	37	33	33	54	50	60	58	60	57	62	61	88	82	86	76	78	68
12.....	69	66	48	45	35	35	37	34	33	34	54	52	63	58	60	58	61	59	88	79	84	75	74	64
13.....	69	66	48	44	36	35	37	36	34	34	53	49	62	61	59	59	59	58	88	78	84	75	71	63
14.....	68	62	48	45	35	35	36	35	34	33	51	47	61	59	63	58	60	57	84	80	80	75	70	65
15.....	62	57	46	43	35	35	35	34	33	33	53	50	59	56	67	61	63	56	83	78	84	73	79	67
16.....	57	54	47	43	35	35	35	35	33	33	51	47	60	55	70	63	65	63	81	78	84	75	82	70
17.....	55	52	48	44	36	35	35	35	33	33	47	44	62	59	69	64	69	65	83	78	87	77	81	72
18.....	53	50	50	46	36	35	35	35	33	33	45	42	62	60	68	63	74	68	82	80	89	80	82	72
19.....	53	49	50	48	36	35	35	35	33	33	46	42	64	62	71	63	75	71	82	78	89	80	81	71
20.....	52	48	48	46	35	35	35	35	33	33	46	44	64	63	74	66	77	72	84	79	90	81	81	74
21.....	52	48	46	43	35	35	35	35	33	33	46	46	66	63	72	69	78	73	85	80	90	82	80	71
22.....	53	48	45	43	35	35	35	34	33	33	48	46	66	63	72	69	77	73	86	81	90	83	78	74
23.....	53	49	43	42	35	35	34	34	33	33	44	41	65	62	71	70	76	72	86	80	86	76	73	73
24.....	53	49	42	40	35	35	34	34	33	33	44	43	62	61	73	72	72	71	83	79	93	85	76	71
25.....	51	50	40	39	35	35	34	34	33	33	43	40	61	55	73	68	73	70	83	75	94	79	71	59
26.....	56	52	39	39	35	35	34	34	33	33	40	37	59	54	73	67	74	69	86	80	86	76	69	66
27.....	56	51	40	39	37	35	34	34	40	40	33	36	62	58	78	70	76	69	91	84	87	77	69	67
28.....	51	49	41	40	37	37	34	34	44	40	39	36	62	60	74	71	78	70	93	86	88	79	72	65
29.....	50	46	40	38	37	37	34	34	---	---	41	38	65	61	71	67	78	72	93	86	88	80	69	67
30.....	46	45	38	37	37	36	34	33	---	---	45	41	65	61	87	65	82	75	94	86	83	77	69	66
31.....	45	42	---	---	36	35	33	33	---	---	49	45	---	---	68	64	---	---	92	86	82	74	---	---
Average.....	60	56	44	42	38	35	37	36	34	33	45	43	61	57	69	64	72	67	87	81	87	79	76	69

WABASH RIVER BASIN--Continued  
WABASH RIVER AT RIVERTON, IND.

LOCATION.--Temperature recorder at gaging station on left bank at downstream side of Illinois Central Railroad bridge at Riverton, Sullivan County, 0.6 mile downstream from Turtle Creek and at mile 162.0.  
DRAINAGE AREA.--13,100 square miles, approximately.  
RECORDS AVAILABLE.--Water temperatures: July 1954 to August 1955.  
EXTREMES, 1954-55.--Water temperatures: Maximum, 91°F July 20, Aug. 29, 1954; minimum, 33°F Feb. 12-15, 1955.  
REMARKS.--Records of discharge for water year October 1954 to September 1955 given in MSP 1385.

Temperature (°F) of water, October 1954 to August 1955

/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.....	--	--	52	50	44	40	38	34	44	43	62	68	76	75
2.....	--	--	50	48	44	40	38	34	44	44	65	68	76	--
3.....	--	--	48	48	43	38	38	36	44	44	65	68	80	78
4.....	--	--	48	48	42	40	38	36	44	44	67	71	81	80
5.....	--	--	49	48	42	40	38	36	44	44	69	72	81	--
6.....	--	--	48	50	40	39	43	43	44	44	70	72	81	81
7.....	--	--	52	49	39	43	43	36	44	44	70	72	80	80
8.....	--	--	52	50	38	43	42	37	44	44	70	72	80	--
9.....	70	68	55	53	38	42	41	38	42	41	68	71	82	80
10.....	70	69	56	54	38	42	40	38	42	41	68	70	83	82
11.....	70	70	57	55	38	40	38	34	46	42	66	64	83	83
12.....	70	70	58	56	39	40	38	34	48	46	65	64	83	80
13.....	70	70	58	56	39	38	38	33	49	48	64	63	82	80
14.....	70	70	57	56	39	38	36	33	49	49	63	62	82	79
15.....	70	68	56	55	39	36	36	33	49	49	63	62	82	79
16.....	68	65	55	54	40	39	36	36	49	49	65	62	82	80
17.....	65	64	57	55	41	40	36	36	48	46	65	64	80	80
18.....	64	62	58	56	41	41	36	36	48	46	67	65	80	82
19.....	62	60	58	58	41	40	36	36	46	46	68	69	80	82
20.....	60	59	58	58	40	39	36	36	64	64	71	69	84	83
21.....	59	58	56	54	39	39	36	36	66	64	71	73	85	84
22.....	58	57	54	53	39	35	36	36	66	66	71	70	85	84
23.....	57	57	53	52	40	38	35	36	66	66	72	70	84	--
24.....	58	57	52	48	40	39	35	36	66	65	72	74	84	--
25.....	57	57	48	46	40	40	35	34	64	64	72	72	84	--
26.....	58	57	46	46	40	34	34	37	44	42	73	74	73	--
27.....	59	59	46	46	42	40	34	40	61	60	72	74	73	--
28.....	58	58	46	46	42	42	34	40	61	61	72	71	74	--
29.....	58	56	46	44	42	42	34	34	--	--	68	74	74	--
30.....	56	54	44	--	42	42	34	34	60	60	68	75	74	--
31.....	54	52	--	--	42	40	34	34	--	--	68	--	--	--
Average.....	--	--	52	51	40	38	37	36	45	44	69	68	70	69





## WABASH RIVER BASIN--Continued

**WHITE RIVER AT NOBLESVILLE, IND.**

LOCATION.--Temperature recorder at gaging station on right bank at downstream side of Logan Street Bridge in Noblesville, Hamilton County, 1½ miles upstream from Cicero Creek and 3½ miles below dam at Clare.

DRAINAGE AREA.--837 square miles.  
RECORDS AVAILABLE.--Water temperatures: November 1952 to September 1955.

RECORDS AVAILABLE:--	Water temperatures:	November 1952 to September 1955.
EXTREMES, 1954-55.--	Water temperatures:	Maximum, 93° F Aug. 5; minimum, 40° F Aug. 1.
EXTREMES, 1952-55.	Water temperatures:	Maximum, 93° F Aug. 5; minimum, 40° F Aug. 1.

EXTREMES, 1952-55.--Water temperatures: Maximum, 94° F Aug. 1, 1953; minimum, freezing point on several days during January and February, 1955.

REMARKS.--Flow regulated by power plant above station. Records of discharge for water year October 1954 to September 1955 given in WSP 1385. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

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.....	83	76	43	42	40	39	38	38	34	34	45	44	52	47	68	62	74	65	83	79	88	83	78	76
2.....	83	80	43	41	40	38	40	38	37	32	44	43	55	50	71	64	76	68	83	80	92	87	76	
3.....	80	76	43	41	39	38	42	40	36	32	46	43	55	53	73	66	79	70	85	78	90	88	73	
4.....	79	76	43	41	39	38	44	42	39	33	49	46	56	53	75	70	78	74	84	79	92	88	76	
5.....	77	73	43	42	39	37	46	44	42	39	32	49	48	59	53	74	69	77	72	86	78	93	89	
6.....	73	69	43	42	40	35	46	45	34	32	48	44	61	56	73	67	77	73	--	92	90	82	76	
7.....	69	64	43	41	40	36	45	42	38	32	44	41	58	55	71	67	76	71	--	90	83	78	74	
8.....	65	63	47	42	39	35	42	40	38	34	42	38	57	50	89	64	72	67	--	84	80	77	73	
9.....	66	64	48	46	40	35	40	40	39	34	46	41	56	52	85	62	68	65	--	83	78	80	75	
10.....	66	63	48	47	40	36	41	40	38	34	50	46	59	53	85	60	67	64	--	84	82	82	78	
11.....	68	65	50	48	39	37	41	39	35	32	53	50	62	57	66	60	66	62	--	84	82	79	74	
12.....	68	66	50	48	39	36	40	39	33	32	53	51	64	57	66	62	62	60	--	82	78	74	69	
13.....	69	66	49	48	39	36	39	37	33	32	52	50	63	61	66	61	60	59	--	81	77	75	69	
14.....	69	67	48	47	40	38	38	36	35	32	50	47	62	58	64	60	62	58	--	78	74	75	73	
15.....	67	63	48	46	39	37	36	35	37	32	54	49	60	59	66	60	65	59	--	81	73	81	74	
16.....	63	58	49	48	39	38	36	35	36	32	54	51	61	56	74	62	69	64	--	81	78	80	76	
17.....	58	55	51	49	42	38	37	35	34	31	52	48	63	60	73	66	73	67	--	84	80	81	76	
18.....	55	54	52	51	41	38	36	35	34	32	48	45	65	61	73	64	73	69	--	86	83	83	77	
19.....	54	51	54	52	38	36	35	36	34	32	47	44	65	62	75	65	75	71	--	88	83	82	78	
20.....	53	50	54	50	37	35	36	34	39	36	46	45	65	62	78	69	79	73	--	78	89	86	83	
21.....	53	50	50	48	38	35	36	34	40	39	49	46	68	62	76	71	82	74	86	79	90	85	82	
22.....	55	51	48	47	37	35	36	34	40	38	48	46	67	64	74	70	80	75	88	80	88	83	81	
23.....	55	54	48	45	39	37	35	34	40	37	48	43	67	62	79	69	79	74	87	85	86	81	75	
24.....	54	50	46	44	39	35	35	35	34	31	58	48	63	60	78	74	77	72	85	81	82	76	73	
25.....	56	51	44	42	35	33	35	33	32	39	48	45	60	57	77	71	76	72	87	82	77	73	69	
26.....	56	54	42	41	37	34	35	33	41	40	45	40	57	55	78	69	74	68	87	79	82	79	72	
27.....	56	54	42	40	41	37	34	33	43	41	40	36	60	56	80	72	77	68	92	84	82	78	66	
28.....	54	52	40	42	41	36	33	43	43	40	37	42	58	58	79	73	79	71	90	86	82	77	73	
29.....	53	51	40	39	42	40	36	33	--	--	43	39	64	59	75	68	80	73	90	84	82	79	67	
30.....	51	48	40	38	41	40	33	32	--	--	45	42	65	61	68	64	82	76	89	85	83	80	69	
31.....	46	43	--	--	40	38	38	32	--	--	48	45	--	--	71	62	--	--	--	88	84	80	--	
Average.....	63	60	46	45	39	37	38	37	38	35	47	44	61	57	72	66	74	68	--	85	81	81	77	

WABASH RIVER BASIN--Continued  
WHITE RIVER NEAR NORA, IND.

LOCATION.--Temperature recorder at gaging station on downstream side of center pier of bridge 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 88° F Aug. 5, 6; minimum, freezing point Feb. 2.

EXTREMES, 1954-55.--Water temperatures: Maximum, 89° F July 14, 1954; minimum, freezing point Feb. 2, 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955

/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	max	min	max	min	max	max	min	max	min	max	min	max	
1.....	74	71	46	43	38	38	39	33	33	46	46	51	50	68	64	71	66	80	77	86	83	76	73	
2.....	75	72	43	42	38	37	40	39	33	32	46	44	56	52	69	66	72	69	81	78	85	82	76	71
3.....	76	73	42	42	37	37	40	34	33	46	44	58	55	72	68	74	71	84	79	84	83	76	71	
4.....	75	74	42	42	37	36	43	40	34	34	47	46	57	55	74	69	76	73	83	80	87	83	76	72
5.....	74	72	43	42	37	36	46	43	34	34	48	47	58	55	74	71	77	75	81	79	88	83	77	73
6.....	72	68	44	43	36	35	46	45	36	34	47	44	59	57	73	70	76	74	83	80	88	84	79	73
7.....	68	65	44	44	35	34	45	42	36	35	44	41	58	55	72	70	74	72	82	80	87	84	78	73
8.....	65	63	44	44	34	33	42	41	35	35	41	41	56	52	71	67	72	70	82	80	85	83	76	72
9.....	63	61	45	44	34	34	41	41	38	35	44	41	58	53	69	65	70	67	84	82	83	80	76	72
10.....	66	63	46	45	34	34	41	41	38	34	48	44	60	56	66	64	67	66	84	81	81	80	77	74
11.....	66	66	46	45	34	34	41	40	34	34	54	48	60	59	66	64	66	63	84	82	82	79	77	73
12.....	66	66	47	46	36	34	40	39	34	33	54	52	63	59	66	63	63	62	83	80	81	78	75	70
13.....	66	66	47	46	36	36	39	37	35	33	52	50	64	62	63	62	62	61	82	78	80	77	73	68
14.....	67	66	48	47	36	35	37	36	34	33	50	48	63	61	64	62	62	61	81	79	77	72	69	69
15.....	66	62	48	47	35	35	36	35	33	33	52	49	61	59	66	62	64	61	80	76	79	75	74	70
16.....	62	59	47	46	35	35	36	35	36	35	52	50	61	58	69	63	68	64	76	76	78	76	72	72
17.....	59	57	48	47	36	36	36	36	35	34	50	47	65	61	69	65	71	68	78	76	79	76	77	73
18.....	57	54	48	47	36	36	38	38	36	35	47	46	64	63	69	65	74	70	77	76	82	78	73	73
19.....	54	53	51	49	36	36	39	35	37	35	47	46	65	64	70	66	75	71	78	76	84	79	73	73
20.....	54	53	50	36	35	35	34	38	37	35	47	46	65	64	72	69	74	73	80	77	84	80	78	74
21.....	53	53	50	48	35	34	35	35	38	38	48	46	68	64	73	72	76	73	82	78	86	81	78	73
22.....	54	53	48	47	35	34	35	35	40	38	48	46	68	66	72	72	76	74	82	79	84	82	78	74
23.....	55	53	47	45	34	33	35	34	40	40	48	43	67	65	74	71	75	74	82	81	82	79	76	75
24.....	56	54	45	44	36	34	34	34	40	40	46	44	65	63	74	73	75	73	81	79	80	78	76	74
25.....	55	54	44	43	36	36	34	34	42	40	46	44	63	57	73	71	73	72	80	79	80	77	74	72
26.....	54	54	43	41	36	36	34	33	42	41	44	40	58	56	73	70	74	71	83	79	79	76	72	70
27.....	54	54	41	40	39	37	34	33	44	42	40	38	60	58	75	73	74	71	84	82	80	77	71	70
28.....	54	53	40	40	40	39	34	33	46	44	41	39	62	60	74	72	75	72	84	84	81	78	71	70
29.....	53	51	40	38	40	40	34	33	--	--	43	41	65	62	72	70	76	73	85	83	82	79	71	70
30.....	51	48	38	37	40	39	34	33	--	--	45	43	66	63	70	66	79	75	86	83	82	79	70	69
31.....	48	47	--	--	39	38	34	33	--	--	50	46	--	--	69	64	--	--	86	83	79	75	--	--
Average.....	62	60	45	44	36	36	38	37	37	36	47	45	61	59	70	67	72	70	82	79	82	79	75	72

WABASH RIVER BASIN--Continued  
WHITE RIVER NEAR CENTERTON, IND.

LOCATION --Temperature recorder at gaging station on right bank three-eighths of a mile downstream from highway bridge, 1 mile south of Centerton, Morgan County, 2.465 miles downstream from White Lick Creek, and at mile 202.6.  
DRAINAGE AREA 2,465 square miles.

RECORDS AVAILABLE: September 1953 to September 1955.

Water temperatures: Maximum, 87° F July 27-28; minimum, freezing point Feb. 13, 14.

EXTREMES, 1954-55:--Water temperatures: Maximum, 89° F July 14, 1954; minimum, freezing point Feb. 13, 14, 1955.

REMARKS:--Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	--	--	51	48	46	44	41	41	36	34	46	45	49	47	64	63	70	67	80	78	96	84	78	74
2.....	--	--	48	46	46	44	41	41	37	37	45	43	50	49	66	64	71	69	82	79	95	84	77	73
3.....	--	--	48	46	46	45	41	41	37	37	43	43	53	51	59	66	73	70	82	80	96	84	76	82
4.....	--	--	48	46	45	44	43	41	37	36	44	43	53	53	70	69	74	72	82	79	96	83	78	73
5.....	--	--	51	48	44	44	47	43	36	36	45	44	57	53	71	70	75	73	81	79	86	84	81	81
6.....	70	66	52	50	44	42	47	47	37	36	45	43	58	57	71	70	75	74	81	78	86	85	81	73
7.....	69	65	52	50	42	40	47	45	37	37	42	42	58	58	70	69	74	71	82	80	86	85	79	73
8.....	65	63	54	52	40	40	45	43	37	37	42	40	58	55	69	68	71	69	82	80	85	81	78	73
9.....	67	63	54	53	40	40	43	42	38	38	41	40	58	56	68	65	69	69	83	81	82	79	80	74
10.....	72	68	55	54	42	40	42	42	38	37	44	41	59	58	65	65	69	67	83	81	81	81	81	76
11.....	72	70	55	53	42	42	42	41	37	35	48	44	59	59	65	64	67	67	84	82	83	80	80	75
12.....	70	70	57	55	43	42	41	41	35	33	48	48	62	59	65	65	67	65	83	83	80	82	78	69
13.....	71	70	56	54	43	43	40	40	33	32	48	48	62	61	65	64	65	63	83	80	81	77	75	66
14.....	71	69	58	55	43	43	40	39	33	32	48	46	61	61	64	64	63	62	83	82	79	77	74	68
15.....	69	64	56	54	43	43	39	39	35	33	47	46	61	61	66	64	64	62	82	79	75	79	72	72
16.....	64	62	55	53	44	43	39	38	35	34	48	47	61	60	67	66	66	64	79	78	79	77	80	74
17.....	62	60	56	54	44	44	39	38	34	34	48	46	63	61	69	67	68	66	78	78	82	77	81	75
18.....	60	58	56	54	44	44	38	38	36	34	46	44	63	63	69	66	71	68	78	77	84	80	82	75
19.....	58	56	60	58	44	43	38	38	36	35	45	44	64	63	68	67	72	70	78	78	85	81	83	74
20.....	58	56	60	58	43	40	38	38	37	36	45	45	64	64	70	68	72	72	79	78	85	82	80	76
21.....	58	56	58	55	40	40	38	38	37	37	45	45	66	64	70	70	74	72	81	79	86	83	81	74
22.....	58	57	55	53	40	39	38	38	37	37	47	45	66	65	70	70	75	72	82	81	85	83	80	77
23.....	59	57	53	51	41	39	38	38	38	38	45	42	65	65	71	70	76	73	83	82	84	81	80	76
24.....	60	58	51	50	42	41	38	37	39	38	44	43	65	64	71	71	75	73	82	81	82	78	76	76
25.....	60	58	50	50	43	42	37	37	39	39	43	43	64	59	71	71	73	72	82	80	81	77	76	72
26.....	58	58	50	49	44	43	37	37	39	39	44	44	60	59	71	69	73	71	85	81	81	79	73	72
27.....	60	58	49	48	46	44	37	35	41	39	44	42	60	60	74	71	74	71	87	84	82	79	72	72
28.....	58	57	48	47	46	46	35	35	44	42	42	41	61	60	74	71	76	72	87	85	83	80	75	72
29.....	57	56	48	46	46	44	35	34	--	--	43	42	63	61	71	69	76	74	86	84	83	81	75	69
30.....	57	54	46	44	44	42	34	34	--	--	44	43	64	63	69	67	79	76	85	83	84	81	70	69
31.....	54	52	--	--	42	41	34	34	--	--	47	45	--	--	68	66	--	--	86	84	81	76	--	--
Average.....	63	61	53	51	43	42	40	39	37	36	45	44	60	59	69	67	72	70	82	80	83	80	78	73



## 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 1/2 miles northeast of Princeton.

DRAINAGE AREA --255 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1949 to August 1950, October 1951 to September 1955.

Water temperatures: October 1952 to September 1955.

Sediment records: October 1952 to September 1955.

EXTREMES, 1954-55 --Dissolved solids: Maximum, 402 ppm May 11-13; minimum, 33 ppm Aug. 14-17.

Hardness: Maximum, 256 ppm May 11-13; minimum, 33 ppm Aug. 14-17.

Specific conductance: Maximum daily, 624 microhos June 30; minimum daily, 79.1 microhos Feb. 22.

Water temperatures: Maximum, 85 F Aug. 4; minimum, freezing point Jan. 27-29, Feb. 13.

Sediment concentrations: Maximum daily, 396 ppm Mar. 16; minimum daily, no flow on several days during September.

Sediment loads: Maximum daily, 1,310 tons Apr. 24; minimum daily, no flow on several days during September.

EXTREMES, 1951-55 --Dissolved solids: Maximum, 347 ppm Jan. 13-20, 1954; minimum, 54 ppm Sept. 21-30, 1954.

Hardness: Maximum, 343 ppm Jan. 13-20, 1954; minimum, 31 ppm Sept. 21-30, 1954.

Specific conductance: Maximum daily, 1,230 microhos Jan. 19, 1954; minimum point on several days during December 1951, December 1952, January 1954.

Water temperatures: Maximum, 87 F June 26, 29, 1952; minimum, freezing point on several days during December 1951, December 1952, January 1954.

Sediment concentrations (1952-55): Maximum daily, 764 ppm June 5, 1954; minimum daily, no flow on many days during October, November 1952, August to December 1953.

Sediment loads (1952-55): Maximum daily, 370 tons Mar. 6, 1953; minimum daily, no flow on many days during October, November 1952, August to December 1953.

REMARKS --Acidity determined to phenolphthalein end point. Records of specific conductance of daily samples available in district office at Columbus, Ohio.

Records of discharge for water year October 1954 to September 1955 given in WSP 1955. No flow Sept. 15-23, 25-30.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (microhos at 25° C)	pH	Color
																Calcium	Non-carbonate			
Oct. 1-5, 1954	20.8	5.1		0.02		9.9	2.9	1.9	3.0	30	15	1.6	0.3	1.0	60	37	12	94.0	6.7	6
Oct. 6-11	14.0	4.3		.03		14	3.6	2.7	3.2	23	33	2.0	.3	1.8	83	51	33	131	6.6	6
Oct. 12-18	8.33	5.7		.01		19	5.5	4.1	3.3	18	62	1.6	.2	.5	116	70	55	181	6.7	6
Oct. 19-23	8.70	6.4		.02		33	11	4.8	4.0	20	116	3.2	.3	.6	203	129	111	307	7.1	6
Oct. 24-Nov. 2	6.78	6.6		.07		35	12	4.8	4.0	22	130	3.4	.1	.5	217	138	119	316	7.1	5
Nov. 3-13	.94	7.9		.03		42	17	5.0	3.8	10	177	2.5	.3	.2	278	175	166	391	6.7	5
Nov. 14-24	.40	8.3		.13		49	14	5.7	4.1	12	181	3.0	.4	.3	291	183	170	411	6.2	8
Nov. 25-Dec. 4	1.01	8.3		.03		47	16	6.0	3.9	15	179	2.8	.2	.2	291	182	171	411	6.3	5
Dec. 5-6	39.2	8.9		.01	4.0	44	16	7.0	3.8	16	161	4.2	.2	.2	270	175	162	404	6.4	8
Dec. 7-9	213	6.1		.06	.48	24	6.8	4.9	3.3	26	69	3.0	.2	.6	133	93	97	325	5.4	7
Dec. 10-14	149	6.3		.01	2.3	29	11	3.6	3.5	10	113	3.5	.2	.8	189	119	109	280	6.2	7
Dec. 15-17	268	8.2		.02	1.4	25	10	3.8	2.2	9	95	4.0	.2	.9	158	103	96	249	6.1	10

TRADEWATER RIVER BASIN--Continued  
TRADEWATER RIVER AT OLNEY, KY.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--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, mag-nesium	Non-carbonate	Immediate	Potential free			
Dec. 18-28, 1954	57.0	10		0.01	3.2	38	17	6.4	2.2	2	170	4.5	0.2	0.6	261	168	186	0.2	0.4	386	5.0	3
Dec. 28-31	1,092	7.3		.31	27	16	6.2	2.8	2.3	24	45	3.0	--	1.8	118	66	46	.1	.1	182	7.0	35
Jan. 7-15, 1955	272	10		.13	2.7	31	15	5.0	1.9	6	143	2.6	--	2	226	140	136	.2	.2	332	5.5	5
Jan. 16-25	86.7	12		.08	3.5	40	17	6.8	1.4	6	174	6.0	--	7	280	178	173	.2	.3	403	6.0	4
Jan. 26-28	58.0	10		.07	2.2	35	17	6.4	1.4	18	143	4.2	--	2	241	157	142	.1	.1	357	6.9	7
Jan. 29-Feb. 5	111	11		.02	2.7	41	20	8.9	1.4	12	175	4.0	.3	1.0	292	187	175	.1	.1	434	6.6	7
Feb. 6-8	1,370	6.3		.10	32	9.3	2.5	2.2	1.9	16	31	2.0	--	1.1	232	148	130	.2	.1	343	6.9	7
Feb. 9-10	1,450	7.4		.10	63	14	5.6	2.8	1.9	8	55	2.1	--	1.7	78	34	20	.2	.2	96.8	6.5	--
Feb. 11-16	1,447	9.4		.01	1.0	23	9.9	4.4	1.5	11	94	3.1	--	1.1	102	58	51	.2	.2	158	6.2	--
Feb. 17-20	210	10		.03	1.9	31	12	5.5	1.2	15	120	3.9	--	1.2	156	99	89	.2	.2	244	6.4	6
Feb. 21	1,170	7.5		.09	.27	14	5.8	3.7	1.5	21	49	2.0	--	1.5	114	80	42	.1	.2	303	6.7	6
Feb. 22-23	1,520	6.8		.11	44	9.3	2.3	2.4	1.7	19	28	1.2	--	1.1	63	33	17	.1	.2	160	7.1	--
Feb. 24-26	1,863	7.4		.10	18	14	5.5	3.1	1.7	7	52	2.3	--	1.1	112	59	52	.1	.2	96.3	6.8	--
Feb. 27	1,580	7.9		.04	75	17	9.0	3.8	1.7	11	70	4.0	--	.9	124	80	70	.7	.7	197	6.3	5
Feb. 28-Mar. 2	1,683	6.9		.03	16	12	5.2	2.2	1.8	14	38	3.2	--	1.2	79	50	40	.4	.4	134	6.8	--
Mar. 3-6	1,231	9.1		.10	1.5	17	8.2	3.1	1.7	12	69	3.0	.3	.9	131	75	66	.2	.2	194	6.6	8
Mar. 7-9	362	10		.13	1.5	25	12	4.7	1.1	12	102	3.5	.3	1.2	168	110	102	.2	.2	260	6.7	5
Mar. 10-15	129	12		.03	2.3	32	14	5.5	1.3	10	132	3.2	.1	.5	219	138	129	.1	.1	324	6.1	3
Mar. 16-19	864	15		.09	78	24	8.9	4.3	1.6	14	84	3.2	--	2.5	166	96	85	.1	.1	230	6.3	8
Mar. 20-21	1,680	8.7		.13	27	14	5.2	3.0	1.3	11	49	1.5	--	.5	89	58	47	.1	.2	142	6.2	--
Mar. 22-24	3,310	6.6		.18	16	9.6	6.3	2.0	1.4	11	30	.5	--	.5	60	38	28	.1	.1	95.2	6.3	15
Mar. 25-26	2,510	8.2		.11	67	14	6.8	3.0	1.6	8	60	2.5	--	.4	118	63	56	.1	.2	158	6.1	--
Mar. 27-28	1,132	9.5		.02	1.1	21	9.1	3.8	1.8	6	85	2.0	--	.5	150	90	85	.1	.2	220	5.8	--
Mar. 29-Apr. 2	282	11		.03	2.3	30	13	4.3	1.0	6	134	2.5	--	1.1	212	131	123	.1	.1	322	6.3	5
Apr. 3-6	176	11		.03	3.0	36	17	5.4	1.2	6	167	2.8	.2	.5	283	165	151	.1	.1	387	6.2	3
Apr. 9-12	340	9.0		.14	1.8	27	10	4.2	1.2	20	102	2.2	.1	.5	175	110	92	.1	.1	272	6.8	10
Apr. 13-16	1,402	9.4		.09	1.5	17	4.4	2.9	1.7	17	50	1.2	.2	.5	103	80	47	.1	.1	154	6.7	20
Apr. 17-21	715	11		.03	.89	22	9.8	4.1	1.6	14	86	2.1	.2	.4	152	95	84	.1	.2	233	6.6	5
Apr. 25-26	1,580	7.4		.07	.30	9.9	4.2	2.1	1.7	16	32	.8	--	.4	84	42	29	.1	.2	105	6.5	3
Apr. 27-29	1,340	9.8		.03	.83	19	8.8	3.1	1.7	8	78	1.5	.2	.1	130	84	77	.1	.1	210	6.4	12
Apr. 30-May 2	1,309	12		.02	2.2	28	14	4.8	1.6	12	122	2.1	.3	.1	200	127	118	.1	.1	300	6.6	3



## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

(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	70	46	46	43	44	44	44	37	--	55	55	48	50	62	65	65	67	72	76	82	84	69	73
2.....	69	71	44	44	42	43	43	45	33	--	52	54	50	52	62	66	66	68	75	78	82	84	69	73
3.....	69	71	42	45	41	43	43	45	36	--	54	56	51	55	63	67	66	69	76	79	82	82	69	72
4.....	70	73	44	44	40	44	47	48	33	--	57	58	54	58	66	69	68	70	77	79	83	85	69	72
5.....	71	74	42	45	44	42	49	51	34	--	58	57	58	62	67	70	69	70	78	80	82	84	69	72
6.....	72	69	43	46	40	40	51	50	37	--	52	53	60	61	67	68	69	70	78	80	82	84	69	72
7.....	65	66	43	46	38	40	46	46	37	37	49	50	56	59	67	69	68	68	78	80	82	83	69	72
8.....	63	67	43	46	39	40	44	45	35	38	48	49	56	60	67	68	67	67	79	82	79	81	69	72
9.....	64	67	44	47	40	40	45	46	38	40	48	51	57	60	65	68	66	66	81	83	79	82	70	73
10.....	65	69	45	48	38	39	44	43	42	41	52	54	58	60	65	68	65	64	80	82	80	81	73	74
11.....	67	69	45	48	39	39	41	42	36	35	55	58	60	66	66	66	62	64	81	82	79	81	72	73
12.....	68	69	45	49	39	39	40	40	33	34	58	59	60	61	66	66	62	64	80	83	77	79	69	70
13.....	68	71	46	51	39	39	37	36	32	33	56	56	60	61	65	66	62	62	81	82	73	74	66	70
14.....	69	68	46	50	38	39	34	36	34	37	53	56	60	61	64	64	61	63	80	81	72	73	69	72
15.....	63	64	47	50	40	40	36	37	36	39	56	59	60	62	64	65	62	64	80	81	71	74	--	--
16.....	61	61	50	52	35	38	36	38	39	40	57	58	68	65	64	66	63	66	80	81	72	73	--	--
17.....	58	61	51	55	40	40	36	37	39	40	54	53	65	68	65	66	65	68	80	81	72	75	--	--
18.....	58	59	54	58	39	39	36	37	38	40	50	49	66	69	64	66	67	70	80	83	74	77	--	--
19.....	56	57	54	55	38	37	32	37	36	41	47	49	67	69	63	67	68	72	81	84	75	77	--	--
20.....	54	55	50	50	36	36	35	36	45	45	49	51	68	69	66	67	70	71	81	82	76	78	--	--
21.....	--	--	48	49	35	--	35	36	43	42	49	49	66	66	66	68	70	73	80	83	76	78	--	--
22.....	--	--	48	49	36	--	35	36	41	41	49	50	65	64	68	68	71	75	81	82	76	79	--	--
23.....	--	--	46	48	36	--	34	35	40	40	48	51	64	64	68	69	72	74	79	82	75	--	--	--
24.....	51	55	47	47	36	--	33	35	40	42	49	50	63	62	68	70	72	75	79	82	74	78	--	--
25.....	53	56	45	46	33	--	33	35	41	43	49	49	61	59	70	71	73	73	79	81	74	76	69	71
26.....	56	58	43	45	37	--	34	36	43	46	41	42	57	61	70	72	69	71	79	82	73	76	--	--
27.....	55	55	45	47	41	--	32	32	47	50	39	41	60	62	70	73	69	71	81	83	74	77	--	--
28.....	53	53	46	47	39	--	32	32	54	55	41	43	61	62	72	--	69	72	82	83	74	77	--	--
29.....	52	52	44	44	49	46	32	34	--	--	41	44	62	63	70	71	71	74	81	83	75	78	--	--
30.....	49	49	42	43	45	46	34	34	--	--	43	46	64	62	64	68	68	73	74	82	84	76	77	--
31.....	47	48	--	--	43	45	34	36	--	--	46	48	--	--	66	67	--	--	82	84	72	75	--	--
Average.....	61	63	45	48	39	--	39	39	39	--	59	59	60	62	64	68	69	70	79	82	77	79	--	--



## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	3.2	60	0.5	8.8	8	0.2	0.8	1	
2.....	12	56	1.8	5.6	5	.1	1.5	2	
3.....	32	46	4.0	2.6	10	.1	1.7	3	(t)
4.....	30	27	2.2	2.0	12	.1	2.3	6	
5.....	27	23	1.7	1.3	9		8.4	3	0.1
6.....	20	16	.9	1.0	7		70	10	s 2.4
7.....	16	24	1.0	.8	7		353	60	57
8.....	12	32	1.0	.5	3		207	162	s 100
9.....	10	19	.5	.5	2		80	23	5.0
10.....	14	21	.8	.5	3		51	9	1.2
11.....	12	8	.2	.4	4		38	8	.8
12.....	12	--	e 3	.4	8		36	6	.6
13.....	10	160	4.3	.4	5		126	14	s 3.4
14.....	6.8	135	2.5	.4	--		496	53	s 78
15.....	6.4	72	1.2	.4	--		474	66	s 95
16.....	3.2	47	.4	.4	--		225	2	1.2
17.....	1.9	31	.2	.4	--	(t)	107	--	
18.....	18	19	.9	.4	1		75	--	
19.....	18	17	.8	.4	2		57	--	
20.....	12	16	.5	.4	4		48	--	
21.....	7.2	13	.2	.4	4		41	--	e .1
22.....	4.0	10	.1	.4	4		35	--	
23.....	2.3	13	.1	.4	4		30	--	
24.....	1.1	11		.4	1		27	--	
25.....	.8	8		.5	5		24	1	.1
26.....	1.0	10	(t)	.5	5		22	2	.1
27.....	.8	10		.7	--		20	2	.1
28.....	.7	11		.7	--		248	204	s 143
29.....	15	15	.6	.7	2		1,020	276	s 714
30.....	20	17	.9	.7	2		1,050	228	646
31.....	14	13	.5	--	--		937	54	137
Total.	343.4	--	30.9	33.0	--	0.7	5,911.7	--	1,985.9
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.....	679	7	13	36	5	0.5	1,720	143	664
2.....	418	5	5.6	61	16	2.6	1,720	68	316
3.....	197	3	1.6	186	26	13	1,650	47	209
4.....	134	3	1.1	228	9	5.5	1,490	20	80
5.....	109	--	e .9	259	61	s 56	1,040	17	48
6.....	97	3	.8	1,150	214	664	743	13	26
7.....	90	--		1,360	174	639	538	10	14
8.....	79	--		1,380	120	447	349	9	8.5
9.....	72	--	e .2	1,440	56	218	199	3	1.6
10.....	64	--		1,460	26	102	161	5	2.2
11.....	63	1	.2	1,160	15	47	140	7	2.6
12.....	70	2	.4	663	5	9.0	128	7	2.4
13.....	90	3	.7	421	4	4.5	115	7	2.2
14.....	122	4	1.3	161	4	1.7	104	5	1.4
15.....	130	5	1.8	138	5	1.9	127	11	s 7.0
16.....	115	5	1.6	140	5	1.9	625	398	s 708
17.....	111	5	1.5	173	4	1.9	651	124	218
18.....	111	4	1.2	230	4	2.5	1,060	114	326
19.....	95	2	.5	212	4	2.3	1,120	122	369
20.....	79	5	1.1	225	10	s 8.9	1,410	105	400
21.....	70	8	1.5	1,170	205	648	1,970	182	968
22.....	66	11	2.0	1,480	155	619	3,100	130	1,090
23.....	69	6	1.1	1,560	103	434	3,460	108	1,010
24.....	79	2	.4	1,800	68	330	3,370	92	837
25.....	78	1	.2	2,020	47	256	2,840	30	230
26.....	68	1	.2	1,770	16	76	2,180	10	59
27.....	57	5	.8	1,580	67	286	1,480	7	28
28.....	49	6	.8	1,640	158	700	785	5	11
29.....	40	7	.8	--	--	--	566	9	14
30.....	40	4	.4	--	--	--	346	5	4.7
31.....	35	4	.4	--	--	--	195	3	1.6
Total.	3,576	--	42.7	24,103	--	5,578.2	35,382	--	7,659.2

e Estimated.

s Computed by subdividing day.

t Less than 0.05 ton.

## OHIO RIVER BASIN EXCEPT CUMBERLAND AND TENNESSEE RIVER BASINS

## TRADEWATER RIVER BASIN--Continued

## TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	159	6	2.6	242	8	5.2	129	22	7.7
2.....	144	2	.8	122	11	3.6	80	19	4.1
3.....	156	1	.4	97	11	2.9	59	22	3.5
4.....	171	4	1.8	80	13	2.8	48	20	2.6
5.....	158	4	1.7	74	34	6.8	38	16	1.6
6.....	144	3	1.2	66	22	3.9	33	15	1.3
7.....	173	1	.5	61	19	3.1	29	17	1.3
8.....	256	2	1.4	55	15	2.2	69	18	3.4
9.....	182	1	.5	52	13	1.8	213	12	6.9
10.....	140	3	1.1	78	11	2.3	334	28	25
11.....	259	26	18	56	3	.4	177	27	13
12.....	781	51	108	50	5	.7	330	13	12
13.....	1,400	113	427	257	36	s 38	407	14	15
14.....	1,440	123	478	770	74	154	314	15	13
15.....	1,430	90	347	695	35	66	146	16	6.3
16.....	1,340	30	108	506	8	11	93	12	3.0
17.....	936	15	38	414	9	10	68	13	2.4
18.....	638	12	21	282	4	3.0	52	15	2.1
19.....	389	7	7.4	134	4	1.4	41	17	1.9
20.....	182	5	2.4	90	5	1.2	33	20	1.8
21.....	404	53	s 69	77	13	2.7	27	19	1.4
22.....	680	54	99	225	25	s 19	23	17	1.0
23.....	1,010	115	314	821	263	s 642	21	16	.9
24.....	1,480	328	1,310	892	136	328	18	18	.9
25.....	1,480	215	859	644	17	30	85	202	s 58
26.....	1,680	82	372	368	7	7.0	148	187	75
27.....	1,780	26	125	150	15	6.1	128	55	19
28.....	1,470	15	60	98	13	3.4	80	27	5.8
29.....	770	9	19	158	14	s 7.3	48	6	.4
30.....	564	3	4.6	489	60	79	34	5	.4
31.....	--	--	--	341	108	99	--	--	--
Total.	21,796	--	4,798.4	8,444	--	1,543.8	3,305	--	291.1
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.....	24	3	0.2	2.6	3		0.2	11	
2.....	18	2	.1	1.7	1		.1	4	
3.....	14	2	.1	1.3	5		.1	7	
4.....	10	2	.1	.9	8	(t)	.1	7	
5.....	7.5	5	1.0	.6	9		.1	11	
6.....	5.6	2	(t)	.4	5		.1	8	
7.....	4.2	7	.1	2.4	10	0.1	.1	5	
8.....	3.1	11	.1	3.6	10	.1	.1	5	(t)
9.....	2.7	32	.2	2.7	8	.1	.1	3	
10.....	2.6	27	.2	5.2	2	(t)	.1	2	
11.....	2.0	11	.1	12	5	.2	.1	2	
12.....	1.6	5		15	5	.2	.1	7	
13.....	1.3	5	(t)	312	129	109	.1	7	
14.....	.9	6		118	325	104	.1	6	
15.....	1.2	11		42	245	28	0	--	0
16.....	1.4	28	.1	24	185	12	0	--	0
17.....	1.4	14	.1	15	141	5.7	0	--	0
18.....	1.3	8	(t)	9.8	113	3.0	0	--	0
19.....	1.3	10	(t)	6.2	116	1.9	0	--	0
20.....	1.7	12	.1	3.9	64	.7	0	--	0
21.....	1.9	11	.1	2.7	51	.4	0	--	0
22.....	2.2	11	.1	2.4	40	.3	0	--	0
23.....	2.2	10	.1	1.9	40	.2	0	--	0
24.....	12	8	.2	1.3	32	.1	.1	28	(t)
25.....	53	8	1.1	.8	28	.1	0	--	0
26.....	35	7	.7	.6	26		0	--	0
27.....	22	5	.3	.5	25		0	--	0
28.....	14	2	.1	.4	22		0	--	0
29.....	9.2	2		.3	20	(t)	0	--	0
30.....	5.2	2	(t)	.3	18		0	--	0
31.....	3.4	3		.2	17		--	--	--
Total.	265.9	--	5.5	590.7	--	266.4	1.6	--	(t)

Total discharge for year (cfs-days) ..... 103,752.3

Total load for year (tons) ..... 22,202.8

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 1954 to September 1955  
(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	Discharge (cfs)	Water tem- per- 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. 28, 1954 . . . .	11:00 a. m.	214		706	1,030	67	80	92	97	99	99	100				BSWCM
Dec. 29 . . . . .	7:30 a. m.	777		413	710	69	77	87	96	99	100	--				BSWCM
Mar. 16, 1955 . . . .	11:15 a. m.	651		694	1,030	65	81	89	97	99	100	--				BSWCM
Apr. 24 . . . . .	5:00 p. m.	1,470		552	943	63	76	87	96	98	99	100				BSWCM
May 23 . . . . .	6:00 p. m.	903		480	976	65	83	90	99	100	--	--				BWCM
June 25 . . . . .	12:55 p. m.	93		310	466	74	90	99	100	--	--	--				BWCM

## OHIO RIVER MAIN STEM

## OHIO RIVER AT LOCK AND DAM 51, AT GOLCONDA, ILL.

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 (at gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 327 ppm Sept. 21-30; minimum, 144 ppm Mar. 1-10, 12, 15-17, 19-20.

Hardness: Maximum, 208 ppm Sept. 11-20; minimum, 93 ppm Mar. 12, 15-17, 19-20.

Specific conductance: Maximum daily, 547 micromhos Sept. 28-30; minimum daily, 197 micromhos Mar. 9.

Water temperatures: Maximum, 89°F July 31 to Aug. 3, 5; minimum, freezing point Jan. 28.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color
																	Calcium	Non-carbonate				
Oct. 1-10, 1954 ..	--		3.7	0.1	0.00	0.00	43	12	23	3.3	76	93	32	0.3	3.4	260	157	94		429	7.7	6
Oct. 11-20 .....	--		4.1	--	.03	.01	43	11	21	3.8	78	87	31	.3	4.1	257	152	87		419	7.3	6
Oct. 21-31 .....	175,200		7.7	--	.04	.07	40	9.6	19	3.3	48	96	30	.3	6.1	238	138	100		386	7.1	4
Nov. 1-10 .....	--		7.5	--	.04	.04	36	8.6	14	3.2	52	81	23	.3	5.0	209	126	83		340	7.3	6
Nov. 11-20 .....	--		7.9	--	.02	.00	37	8.9	12	2.9	56	80	18	.2	5.0	200	128	83		336	7.2	2
Nov. 21-30 .....	--		11	--	.01	.05	38	9.6	15	2.0	67	81	21	.2	5.1	218	135	79		355	7.4	1
Dec. 1-10 .....	--		7.9	--	.01	.00	39	11	17	2.8	60	94	22	.2	4.9	228	142	93		374	7.3	1
Dec. 11-19 .....	--		8.5	0	.02	.00	42	10	19	2.3	66	91	29	.2	5.1	244	148	92		403	7.2	1
Dec. 21-31 .....	137,300		6.9	0	.04	.00	37	8.8	17	2.1	56	80	26	.1	4.2	214	128	83		357	7.1	1
Jan. 1-10, 1955 ..	277,800		7.1	0	.06	.00	33	7.9	13	2.1	62	81	20	.3	4.7	182	115	64		303	7.3	2
Jan. 11-20 .....	256,400		7.7	--	.04	.00	36	7.8	7.0	2.3	70	55	12	.1	7.0	172	121	64		280	7.5	8
Jan. 21-31 .....	--		7.9	--	.03	.00	39	10	9.7	2.0	84	63	15	.2	6.2	199	140	70		335	7.4	5
Feb. 1-10 .....	--		7.7	1	.06	.02	40	10	12	1.6	94	65	17	.2	6.2	207	143	64		344	7.4	6
Feb. 11-20 .....	335,400		6.3	1	.11	.03	30	6.5	8.7	1.8	65	51	12	.2	5.3	152	103	48		257	7.3	12
Feb. 21-28 .....	339,500		8.6	0	.09	.03	35	8.1	6.6	1.8	72	58	14	.2	2.9	163	121	62		300	7.2	16
Mar. 1-10 .....	565,200		6.4	1	.08	.15	28	6.6	5.7	1.6	66	42	9.5	.2	5.3	144	97	43		236	7.0	21
Mar. 12, 15-17, 19-20 .....	708,500		10	1	.08	.12	26	6.6	4.9	1.5	57	42	7.5	.2	4.2	144	93	45		220	7.2	15
Mar. 21-31 .....	649,200		7.8	1	.08	.10	29	6.7	5.7	2.3	57	44	9.0	.1	3.9	135	98	42		231	7.3	23
Apr. 1-10 .....	385,000		7.5	--	.01	.00	32	8.8	6.8	1.3	81	47	9.5	.2	5.2	170	118	50		277	7.3	6
Apr. 11-20 .....	162,300		7.3	--	.00	.00	37	10	10	1.6	92	59	14	.2	3.5	203	136	58		324	7.4	7
Apr. 21-30 .....	235,100		7.3	--	.01	.04	36	11	12	1.8	91	58	13	.2	4.5	186	134	60		324	7.3	7

May 1-10, 1955.....	--	7.7	--	.02	.00	43	9.4	12	2.2	87	73	20	.2	4.3	216	147	75	353	7.4	5
May 11-20.....	--	7.2	--	.04	.00	43	11	12	2.1	96	73	18	.2	4.1	219	153	74	383	7.4	5
May 21-31.....	--	8.4	--	.01	.00	39	12	12	1.9	102	58	16	.3	3.5	208	149	65	347	7.6	4
June 1-10.....	--	7.3	--	.01	.00	42	12	12	1.9	113	56	18	.2	3.7	222	155	62	360	7.7	6
June 11-20.....	--	6.9	--	.01	.00	45	12	13	1.7	121	60	18	.3	3.6	226	163	64	378	7.7	6
June 21-30.....	--	5.0	--	.00	.00	54	16	16	1.3	138	85	21	.3	5.8	260	203	90	465	7.9	4
July 1-10.....	--	6.2	--	.00	.00	51	16	18	2.2	124	86	23	.3	2.9	261	193	91	458	7.6	3
July 11-20.....	--	5.6	--	.01	.00	49	15	21	2.6	102	100	25	.3	3.7	278	182	98	460	7.4	3
July 21-31.....	--	7.2	--	.01	.00	47	9.7	13	2.7	113	59	20	.2	5.5	220	158	65	373	7.5	5
Aug. 1-10.....	--	6.1	--	.03	.00	48	12	13	2.8	126	56	23	.2	4.4	229	170	67	395	7.6	5
Aug. 11-20.....	--	2.9	--	.00	.02	49	14	16	2.5	127	62	29	.5	3.3	251	179	75	430	7.5	1
Aug. 21-30.....	--	5.0	--	.01	.01	52	14	21	2.7	115	79	34	.3	3.7	272	186	92	459	7.5	5
Sept. 1-10.....	--	4.0	--	.01	.00	50	16	25	2.8	107	93	38	.3	2.3	268	192	104	487	7.4	6
Sept. 11-20.....	--	4.8	--	.01	.01	53	18	27	3.3	118	102	38	.3	2.1	316	208	111	524	7.5	5
Sept. 21-30.....	--	3.7	--	.00	.00	54	17	29	3.1	114	108	43	.5	2.3	327	205	111	539	7.5	2
Time-weighted average a.....	--	6.8	--	.03	.02	41	11	15	2.3	88	72	21	0.2	4.4	223	148	76	369	--	6

a Represents 98 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 1954 to September 1955

Once-daily measurement at varying hours/

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	53	48	43	37	45	49	64	70	71	89	81
2	74	51	46	44	36	46	52	64	71	71	89	80
3	76	48	45	44	35	44	48	65	74	79	89	80
4	75	49	47	45	37	48	50	66	74	81	88	83
5	77	48	46	45	38	50	52	67	71	81	89	80
6	76	47	42	45	36	46	52	66	72	79	88	81
7	73	51	42	42	37	46	54	68	72	83	88	78
8	71	50	44	45	37	46	52	68	73	81	88	80
9	72	52	44	45	39	46	52	67	71	82	86	78
10	72	54	42	44	40	46	55	67	71	84	87	78
11	71	52	40	44	37	52	55	68	70	85	87	80
12	71	54	42	44	37	52	56	68	70	83	82	76
13	72	53	43	44	37	50	58	68	68	84	83	76
14	72	54	45	41	38	52	58	66	64	84	82	78
15	69	54	40	41	37	51	58	67	69	82	--	78
16	67	56	43	42	40	52	58	66	68	84	83	77
17	64	56	44	41	39	50	61	67	70	84	80	78
18	63	54	42	41	39	48	62	69	71	83	--	75
19	61	53	42	40	40	48	64	68	72	83	82	78
20	61	52	--	40	41	49	64	69	74	--	81	75
21	61	52	39	40	42	51	64	69	74	82	88	78
22	62	52	41	38	41	50	64	69	74	84	82	78
23	63	52	41	40	40	48	64	70	75	85	85	80
24	--	50	39	40	40	49	64	72	77	80	84	79
25	64	50	39	38	44	48	62	71	77	81	84	75
26	61	50	43	38	43	48	61	73	75	82	83	72
27	60	49	41	39	44	45	62	74	76	85	82	76
28	59	49	43	32	44	45	63	--	76	85	84	75
29	57	45	43	34	--	45	63	73	78	88	84	77
30	56	46	41	37	--	47	64	70	78	85	85	76
31	54	--	43	34	--	47	--	--	--	89	--	--
Average	67	51	43	41	39	48	58	68	72	82	80	78

May 1-10, 1955.....	--	7.7	--	.02	.00	43	9.4	12	2.2	87	73	20	.2	4.3	216	147	75	353	7.4	5
May 11-20.....	--	7.2	--	.04	.00	43	11	12	2.1	96	73	18	.2	4.1	219	153	74	383	7.4	5
May 21-31.....	--	8.4	--	.01	.00	39	12	12	1.9	102	58	16	.3	3.5	208	149	65	347	7.6	4
June 1-10.....	--	7.3	--	.01	.00	42	12	12	1.9	113	56	18	.2	3.7	222	155	62	360	7.7	6
June 11-20.....	--	6.9	--	.01	.00	45	12	13	1.7	121	60	18	.3	3.6	226	163	64	378	7.7	6
June 21-30.....	--	5.0	--	.00	.00	54	16	16	1.3	138	85	21	.3	5.8	260	203	90	465	7.9	4
July 1-10.....	--	6.2	--	.00	.00	51	16	18	2.2	124	86	23	.3	2.9	261	193	91	458	7.6	3
July 11-20.....	--	5.6	--	.01	.00	49	15	21	2.6	102	100	25	.3	3.7	278	182	98	460	7.4	3
July 21-31.....	--	7.2	--	.01	.00	47	9.7	13	2.7	113	59	20	.2	5.5	220	158	65	373	7.5	5
Aug. 1-10.....	--	6.1	--	.03	.00	48	12	13	2.8	126	56	23	.2	4.4	229	170	67	395	7.6	5
Aug. 11-20.....	--	2.9	--	.00	.02	49	14	16	2.5	127	62	29	.5	3.3	251	179	75	430	7.5	1
Aug. 21-30.....	--	5.0	--	.01	.01	52	14	21	2.7	115	79	34	.3	3.7	272	186	92	459	7.5	5
Sept. 1-10.....	--	4.0	--	.01	.00	50	16	25	2.8	107	93	38	.3	2.3	268	192	104	487	7.4	6
Sept. 11-20.....	--	4.8	--	.01	.01	53	18	27	3.3	118	102	38	.3	2.1	316	208	111	524	7.5	5
Sept. 21-30.....	--	3.7	--	.00	.00	54	17	29	3.1	114	108	43	.5	2.3	327	205	111	539	7.5	2
Time-weighted average a.....	--	6.8	--	.03	.02	41	11	15	2.3	88	72	21	0.2	4.4	223	148	76	369	--	6

a Represents 98 percent of days.

## PART 3B. CUMBERLAND AND TENNESSE RIVER BASINS

## CUMBERLAND RIVER BASIN

## CUMBERLAND RIVER AT BARBOURVILLE, KY.

LOCATION.--At gaging station at bridge on State Highway 11, at Barbourville, Knox County, 0.4 mile upstream from Richland Creek.

DRAINAGE AREA.--972 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to August 1950.

Water temperatures: October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 88°F Aug. 5; minimum, freezing point on several days during January and February.

EXTREMES, 1949-55.--Water temperatures: Maximum, 91°F June 28, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements.

The data reported under extremes are the individual maximum and minimum measurements.

Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Temperature (°F) of water, water year October 1954 to September 1955

/Twice-daily measurements at approximately 8 a.m. and 6 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	50	44	46	34	49	52	60	72	78	84	78
2	74	46	43	47	36	50	52	64	74	80	86	78
3	75	43	43	48	34	48	52	66	74	80	84	--
4	74	44	42	46	34	51	56	66	74	79	84	--
5	75	46	42	46	36	54	55	69	75	80	86	--
6	74	45	40	46	38	52	58	68	76	82	85	80
7	68	47	38	46	42	48	55	70	72	82	84	78
8	70	46	38	42	42	46	54	70	70	80	84	76
9	69	47	38	43	40	47	54	66	70	79	79	78
10	69	48	38	40	40	50	56	69	70	80	80	76
11	68	48	38	37	35	54	58	70	68	80	80	74
12	70	48	38	36	--	56	59	70	68	80	77	75
13	70	50	38	36	--	56	62	68	68	81	81	74
14	71	46	40	36	--	56	60	68	66	80	78	74
15	66	48	40	38	34	57	60	70	68	80	80	75
16	62	48	40	34	38	54	61	69	69	78	82	76
17	62	52	40	36	45	51	62	68	73	80	80	74
18	60	54	42	34	48	50	66	71	74	81	81	74
19	56	54	42	32	50	49	68	72	73	82	82	74
20	56	56	38	32	54	51	66	73	77	82	84	74
21	56	52	38	32	41	52	66	74	78	84	83	74
22	54	52	38	34	40	50	66	74	78	83	82	76
23	56	48	37	34	38	50	66	74	80	84	82	76
24	58	49	40	34	38	50	62	74	76	82	84	74
25	56	46	36	34	36	50	60	74	78	78	82	74
26	56	46	38	33	43	45	58	76	74	80	80	72
27	59	46	39	33	46	42	61	76	72	83	82	73
28	58	44	44	32	48	44	60	78	74	84	81	74
29	58	44	49	32	--	46	60	79	76	84	82	74
30	52	42	47	--	--	46	62	77	77	83	80	72
31	50	--	44	--	--	50	--	72	--	84	80	--
Average	64	48	40	38	40	50	60	71	73	81	82	75



## OHIO RIVER MAIN STEM--Continued

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 Bledso Creek, and 29.7 miles downstream from the Tennessee River.

DRAINAGE AREA.--203,100 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 229 ppm Oct. 21-31; minimum, 84 ppm Mar. 11-20.

Hardness: Maximum, 138 ppm July 11-20; minimum, 84 ppm Mar. 11-20.

Specific conductance: Maximum, 527 micromhos Oct. 26; minimum daily, 182 micromhos Mar. 17.

Water temperatures: Maximum, 87°F Aug. 5; minimum, 34°F Feb. 11, 13, 18.

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 1954 to September 1955

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color
																	Calcium	Non-carbonates				
Oct. 1-10, 1954....			4.6	0.1	0.01	0.00	33	8.2	15	2.3	73	57	20	0.3	2.3	184	115	56		312	7.7	3
Oct. 11-20.....			4.0	--	.04	.01	35	9.1	16	3.2	75	62	21	.3	3.6	197	124	63		331	7.3	6
Oct. 21-31.....			5.8	--	.03	.03	39	9.0	19	3.2	52	93	28	.3	5.9	229	134	92		379	7.1	4
Nov. 1-10.....			6.5	--	.02	.17	29	8.1	11	2.2	60	56	18	.2	3.3	163	105	56		285	7.4	2
Nov. 11-20.....			7.2	--	.03	.00	31	7.5	10	2.0	63	59	14	.2	3.0	167	109	57		281	7.5	1
Nov. 21-30.....			6.0	--	.02	.03	31	8.1	11	1.9	67	55	16	.2	2.7	167	111	56		287	7.4	2
Dec. 1-10.....			6.1	--	.01	.02	31	7.5	11	1.9	66	53	17	.2	3.0	164	107	54		275	7.5	1
Dec. 11-20.....			4.1	--	.02	.02	34	7.6	13	2.1	72	53	21	.2	2.7	191	116	57		297	7.5	4
Dec. 21-31.....			5.5	.0	.03	.00	34	7.3	14	1.6	62	63	22	.2	3.3	183	115	64		310	7.2	1
Jan. 1-9, 1955....			7.0	--	.01	.01	33	7.4	11	2.0	66	53	18	.1	4.7	169	113	59		292	7.3	8
Jan. 27-31.....			6.1	.1	.06	.00	32	6.6	7.0	1.3	84	37	11	.1	4.4	150	108	38		255	7.6	8
Feb. 1-10.....			5.6	.0	.05	.00	30	5.9	7.4	1.2	81	33	11	.2	3.6	140	100	33		241	7.5	8
Feb. 11-20.....			6.2	.1	.10	.11	30	7.0	7.5	1.8	67	45	12	.2	2.1	154	104	49		257	7.2	10
Feb. 21-28.....			10	.1	.15	.08	33	7.2	7.9	1.8	66	55	12	.2	5.5	172	112	58		279	7.1	7
Mar. 1-10.....			6.7	.1	.10	.30	29	6.5	5.3	1.4	66	42	9.5	.2	4.9	143	98	45		236	7.2	20
Mar. 11-20.....			6.9	--	.06	.05	24	5.9	4.4	1.8	53	39	6.5	.2	1.8	128	84	41		202	7.2	15
Mar. 21-31.....			6.9	--	.12	.15	27	6.6	5.2	2.5	65	39	7.5	.1	1.9	147	95	41		225	7.3	35
Apr. 1-10.....			8.5	--	.03	.00	30	7.9	6.0	1.3	73	49	8.0	.2	4.7	153	108	48		253	7.2	8
Apr. 11-20.....			7.1	--	.01	.03	35	8.9	5.2	1.5	93	49	11	.2	2.5	157	135	54		290	7.2	7
Apr. 21-30.....			7.0	--	.02	.00	36	9.7	9.6	2.0	86	55	13	.2	4.2	165	135	56		307	7.3	7
May 1-10.....			6.4	--	.00	.02	36	7.6	11	1.6	79	70	15	.2	3.3	168	136	70		326	7.2	7
May 11-20.....			6.9	--	.02	.00	36	7.7	8.3	1.8	82	60	12	.1	3.3	169	120	54		283	7.3	5
May 21-31.....			7.3	--	.03	.00	37	6.6	8.6	1.8	89	46	13	.1	3.8	172	121	46		284	7.4	5

## 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 1954 to September 1955--Continued<sup>a</sup>

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 <sub>2</sub> SO <sub>4</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color
																	Calcium, mg./l.	Non-carbonate				
June 1-10, 1955	...		6.6	--	0.00	0.00	29	7.9	6.9	1.7	93	32	10	0.2	2.6	147	106	30		250	7.8	4
June 11-20	...		7.3	--	.00	.00	36	9.8	9.8	2.2	106	45	13	.3	3.2	182	131	44		308	7.8	3
June 21-30	...		6.0	--	.00	.00	36	8.7	8.4	1.3	106	41	11	.2	3.6	175	126	39		296	7.9	3
July 1-10	...		3.3	--	.01	.00	36	8.6	9.8	1.6	94	48	14	.2	2.5	173	124	47		302	7.4	5
July 11-20	...		5.3	--	.01	.00	40	9.4	14	1.9	91	66	19	.2	2.5	207	138	63		352	7.4	4
July 21-31	...		6.5	--	.03	.00	35	8.4	9.8	1.9	95	42	14	.2	3.2	170	122	44		292	7.5	7
Aug. 1-10	...		5.8	--	.01	.00	34	7.1	8.6	2.0	95	31	14	.2	2.7	154	114	36		266	7.3	5
Aug. 11-20	...		2.3	--	.00	.00	36	10	10	1.8	104	38	16	.4	2.3	177	134	49		299	7.5	2
Aug. 21-31	...		3.9	--	.03	.01	37	8.4	13	2.1	88	43	19	.2	2.2	181	127	47		315	7.4	7
Sept. 1-10	...		4.9	--	.03	.00	30	7.2	11	2.6	86	34	16	.2	.9	152	104	34		263	7.3	4
Sept. 11-20	...		7.4	--	.00	.01	29	7.2	11	1.7	84	34	15	.3	1.0	151	102	33		257	7.5	3
Sept. 21-30	...		3.9	--	.00	.00	32	8.6	13	2.2	86	46	18	.3	1.3	171	115	45		298	7.4	2
Time-weighted average <sup>a</sup>			6.1	--	0.03	0.03	33	7.9	10	1.9	79	49	15	0.2	3.2	170	115	50		286	--	6

<sup>a</sup> Represents 95 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 1954 to September 1955

/Once-daily measurement at approximately 7:30 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	55	48	46	37	44	45	65	74	76	87	81
2	75	52	47	43	38	45	48	65	74	78	87	81
3	75	53	47	43	36	45	49	65	75	78	87	81
4	75	53	46	45	37	46	49	67	74	81	87	80
5	76	56	47	45	36	46	51	67	75	81	87	80
6	75	54	43	45	39	46	52	68	74	82	85	80
7	71	51	43	44	36	45	50	68	74	82	85	80
8	71	55	44	43	38	46	54	72	72	84	87	80
9	72	52	44	46	39	47	54	69	71	84	87	82
10	72	51	43	44	--	48	54	69	70	80	85	80
11	72	52	44	--	34	49	55	68	70	82	84	80
12	72	52	44	44	35	51	55	69	71	79	83	77
13	71	54	43	40	34	54	56	68	68	80	83	76
14	72	54	43	40	37	52	58	66	--	80	82	76
15	69	53	43	40	36	52	60	66	69	84	82	76
16	65	54	42	40	38	52	60	67	70	--	80	78
17	65	54	43	41	36	50	62	68	70	80	82	78
18	64	54	41	40	34	50	64	68	71	81	82	78
19	63	55	40	40	38	48	64	68	70	82	83	78
20	62	53	40	40	38	48	64	70	71	83	84	78
21	61	53	38	40	36	50	64	71	72	84	83	80
22	62	52	40	39	38	50	65	72	74	82	85	80
23	64	51	40	39	38	48	65	71	74	82	84	78
24	63	51	40	--	40	48	65	71	74	83	82	77
25	62	50	38	38	38	48	64	73	74	83	84	76
26	61	48	40	40	38	46	64	74	74	84	84	76
27	62	48	42	38	42	45	62	74	78	84	84	78
28	58	49	42	37	42	--	63	75	80	82	83	75
29	56	48	42	37	--	45	63	76	75	83	84	77
30	56	48	38	36	--	46	63	71	76	83	83	76
31	55	--	44	36	--	46	--	71	--	83	83	--
Average	67	52	43	41	37	48	58	69	73	82	84	78

## OHIO RIVER MAIN STEM--Continued

## OHIO RIVER AT METROPOLIS, ILL.

LOCATION.--Temperature recorder at gaging station at Paducah & 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 88°F Aug. 3-6, 1955; minimum, 36°F on several days during January and February 1955.

REMARKS.--Flow regulated by many dams and reservoirs. Records of discharge for water year October 1954 to September 1955 given in WSP 1385.

REVISIONS.--WSP 1350: Revised water temperatures for water year 1953-54 are given herewith:

Temperature (°F) of water									
Date	Max	Min	Date	Max	Min	Date	Max	Min	Date
Mar. 12			44 Apr. 12	56	Apr. 29	64	June 23	84	
Mar. 23			44 Apr. 17	60	May 23	64	Aug. 9	82	
Apr. 6			52 Apr. 23	64	June 8	72			

Average minimum for August, 82°F

Temperature (°F) of water, water year October 1954 to September 1955

/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.....	73	73	54	54	47	46	42	42	36	36	43	42	48	48	65	64	73	73	79	79	87	87	84	82
2.....	73	73	54	52	46	46	42	42	36	36	44	43	48	48	65	65	74	73	80	79	87	87	82	82
3.....	73	73	52	50	46	45	42	42	36	36	45	44	49	48	66	65	74	74	81	80	88	87	82	81
4.....	74	74	50	50	45	45	43	42	36	36	46	45	50	49	66	66	74	74	82	80	88	87	82	81
5.....	75	74	50	49	45	45	44	43	36	36	47	46	51	50	67	66	74	74	82	81	88	87	81	80
6.....	75	74	49	49	46	45	44	44	36	36	48	47	52	51	67	67	74	74	82	82	88	87	80	80
7.....	74	72	48	49	45	45	44	44	36	36	48	48	53	52	68	67	74	74	82	81	87	87	80	80
8.....	72	72	49	49	45	44	44	44	36	36	48	48	54	53	68	68	74	73	82	82	87	87	81	81
9.....	72	72	49	49	44	44	44	44	36	36	48	48	54	54	68	68	73	73	84	82	87	86	81	81
10.....	72	71	49	49	44	43	44	44	37	36	50	48	54	54	68	68	73	72	85	84	86	86	81	81
11.....	71	71	49	49	43	43	44	44	37	37	51	50	56	56	68	67	72	71	85	85	86	86	81	81
12.....	71	71	49	49	43	43	44	44	37	37	52	51	56	56	67	67	71	70	85	85	86	84	81	81
13.....	71	71	50	49	43	42	44	44	37	36	52	52	58	58	67	67	70	70	85	85	84	84	81	80
14.....	71	71	50	50	43	42	44	44	37	36	52	52	58	58	67	67	70	70	85	84	84	84	80	79
15.....	71	69	50	50	42	42	43	43	37	37	52	51	60	58	67	67	70	70	84	84	84	84	79	78
16.....	69	66	50	50	42	41	43	42	37	37	52	52	61	60	67	67	71	70	84	84	84	84	79	78
17.....	66	66	51	50	41	41	42	42	37	37	52	52	62	61	68	67	72	71	84	84	82	82	79	79
18.....	66	65	51	51	41	41	42	42	38	37	52	51	63	62	69	68	72	72	84	84	82	82	79	79
19.....	65	64	51	51	41	41	42	42	38	38	51	50	64	63	70	69	74	74	84	84	83	83	80	79
20.....	64	62	51	51	41	41	42	41	38	38	50	50	64	64	70	70	74	74	84	84	84	84	80	80
21.....	62	62	51	51	41	40	41	40	38	38	50	50	64	64	70	70	75	74	85	84	84	84	80	80
22.....	62	62	51	51	41	41	41	40	40	38	38	51	50	64	71	70	76	75	85	84	84	84	80	80
23.....	62	62	51	51	41	41	41	40	40	38	38	51	51	64	72	71	76	76	84	84	84	84	80	79
24.....	62	62	51	50	41	41	41	40	40	38	38	51	51	64	72	72	77	76	84	84	84	84	79	79
25.....	62	62	50	49	41	41	41	40	40	38	38	51	51	64	73	72	77	77	84	84	84	84	79	78

26.....	62	61	49	49	41	41	400	39	40	39	51	50	64	64	74	73	77	77	85	84	84	78	77
27.....	61	60	49	48	41	41	39	39	41	40	50	48	64	64	74	74	77	77	86	85	84	77	77
28.....	60	58	48	48	41	41	39	38	42	41	48	47	64	64	74	74	78	77	86	86	84	77	76
29.....	58	56	48	48	41	41	38	37	--	--	47	47	64	64	74	74	78	78	86	86	84	77	76
30.....	56	55	48	47	42	41	37	37	--	--	47	47	64	64	74	73	79	78	87	86	84	77	77
31.....	55	54	--	--	42	42	37	36	--	--	48	47	--	--	73	73	--	--	87	87	84	--	--
Average.....	67	66	50	50	43	42	42	41	37	37	49	49	58	58	69	69	74	74	84	83	85	80	79

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.

LOCATION.--At gaging station at bridge on State Highway 92, at Williamsburg, Whitley County, and 2.1 miles downstream from Clear Fork.

DRAINAGE AREA.--1,673 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1955.

Water temperatures: October 1951 to September 1955.

Sediment records: October 1953 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 281 ppm Nov. 11-24; minimum, 55 ppm Jan. 1-2.

Hardness: Maximum, 104 ppm Nov. 11-24; minimum, 28 ppm Feb. 7-10.

Specific conductance: Maximum daily, 541 microhos Nov. 14, 15; minimum daily, 76.1 microhos Mar. 19.

Water temperatures: Maximum, 89°F Aug. 3-7; minimum, 33°F Jan. 31, Feb. 15.

Sediment concentrations: Maximum daily, 855 ppm Mar. 23; minimum daily, 1 ppm on many days during October, November, May, June, August and September.

Sediment loads: Maximum daily, 68,100 tons Mar. 23; minimum daily, less than 0.5 ton on many days during October, November, June, August, and September.

EXTREMES, 1951-55.--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, 28 ppm Feb. 7-10, 1955.

Specific conductance: Maximum daily, 754 microhos Dec. 11, 1953; minimum daily, 60.3 microhos Mar. 24-25, 1952.

Water temperatures: Maximum, 91°F on several days during June and July 1952; minimum, 33°F Jan. 13, 1954, Jan. 31, Feb. 15, 1955.

Sediment concentrations (1953-55): Maximum daily, 855 ppm Mar. 23, 1955; minimum daily, 1 ppm on many days during October, November, 1954, May, June, August, and September 1955.

Sediment loads (1953-55): Maximum daily, 68,100 tons Mar. 23, 1955; minimum daily, less than 0.5 ton on many days during October to December 1953, January, July to November 1954, June, August and September 1955.

REMARKS.--Records of specific conductance of daily samples available in district office at Columbus, Ohio. Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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	Non-carbonate			
Oct. 1-10, 1954.....	110	4.0	0.03	20	11	48	3.3	104	97	11	0.2	0.2	242	95	10	400	7.8	2
Oct. 11-20.....	98.6	5.3	.04	22	9.8	42	3.6	96	97	12	.1	.4	240	95	17	387	8.1	8
Oct. 21-31.....	80.0	5.2	.04	21	9.3	49	3.5	113	94	11	.1	.3	243	92	0	406	7.8	7
Nov. 1-10.....	86.2	6.0	.01	20	9.1	48	3.2	115	89	12	.2	.2	238	87	0	404	7.7	4
Nov. 11-24.....	136	3.4	.03	24	11	56	3.7	121	108	16	.2	.1	251	104	3	476	7.7	6
Nov. 25-Dec. 5.....	420	4.8	.05	21	8.6	44	3.2	104	61	12	.2	2.0	243	88	3	381	7.6	15
Dec. 6-12.....	1,072	7.0	.07	16	5.2	22	2.3	96	45	6.0	.2	3.7	142	54	17	256	7.4	12
Dec. 13-16.....	2,232	7.0	.09	13	5.2	14	1.9	36	42	5.0	.3	3.7	109	54	23	177	7.4	18
Dec. 19-29.....	2,875	6.5	.08	10	4.5	7.9	1.2	28	33	4.2	.2	3.3	90	43	22	138	7.4	8
Dec. 30-31.....	21,700	5.0	.05	6.1	3.5	4.9	1.5	18	20	2.5	.2	2.5	66	30	16	92.6	7.1	19
Jan. 1-2, 1955.....	13,750	5.5	.06	8.3	1.6	3.4	1.5	18	19	2.5	.2	3.7	55	30	17	87.1	7.0	26
Jan. 3-5.....	3,450	6.3	.05	11	5.1	7.2	1.6	20	31	4.2	.1	5.0	85	47	32	129	7.0	22
Jan. 6-18.....	1,664	5.7	.03	12	4.8	12	1.6	31	44	4.2	.1	3.4	104	49	24	166	7.2	8
Jan. 19-31.....	1,647	5.9	.01	9.7	4.8	11	1.3	30	37	4.0	.1	1.7	95	44	19	150	7.3	5
Feb. 1-6.....	2,739	5.7	.12	9.8	4.7	12	1.3	32	38	4.0	.1	3.9	96	44	18	158	7.0	3
Feb. 7-10.....	13,000	6.1	.09	6.2	2.9	4.1	1.8	17	21	1.2	.2	2.0	61	28	13	89.3	6.8	20

CUMBERLAND RIVER BASIN--Continued  
CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--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			
Feb. 11-20, 1955.....	3,756	6.5	0.06	9.6	4.1	9.6	1.2	25	37	3.2	0.1	4.0	85	41	20	142	7.0	3
Feb. 21-23.....	5,430	8.0	.03	8.6	3.5	7.8	1.3	22	30	2.0	.2	2.1	74	36	18	119	6.8	10
Feb. 24-Mar. 4.....	13,950	6.8	.04	7.4	3.2	5.5	1.2	17	24	2.5	.2	2.1	62	32	18	102	6.6	10
Mar. 5-7.....	10,970	6.8	.08	8.6	3.9	7.2	1.5	22	28	2.0	.2	2.2	73	38	19	123	6.8	17
Mar. 8-10.....	13,120	6.9	.03	7.3	3.6	5.5	1.2	20	23	2.0	.1	1.7	63	33	17	106	6.7	20
Mar. 11-16.....	5,347	7.1	.03	11	4.9	11	1.3	29	40	2.2	.1	2.2	93	46	24	158	6.8	12
Mar. 17-20.....	26,150	7.3	.05	7.8	3.3	4.2	1.6	16	23	2.0	.1	1.8	66	33	20	89.0	6.7	25
Mar. 21-26.....	23,320	6.3	.03	8.0	3.7	4.5	1.4	16	27	2.5	.1	1.6	64	35	22	91.5	6.6	4
Mar. 27-31.....	5,648	6.6	.04	9.8	5.6	10	1.0	28	42	2.8	.1	2.1	92	48	24	153	7.9	5
Apr. 1-8.....	2,592	7.7	.06	13	6.8	15	1.2	38	54	3.5	.1	2.2	121	60	29	201	6.8	4
Apr. 9-16.....	3,610	6.3	.07	10	4.9	12	1.6	33	40	2.4	.1	1.5	94	46	18	156	6.9	6
Apr. 17-22.....	2,907	6.7	.08	8.6	4.8	10	1.1	30	34	2.6	.1	1.4	82	41	17	139	6.8	5
Apr. 23-27.....	3,476	6.3	.11	12	5.3	13	1.3	42	43	3.5	.1	1.9	105	52	17	172	7.0	5
Apr. 28-May 4.....	3,184	8.1	.08	8.8	4.5	9.7	1.2	32	32	2.3	.1	1.0	83	40	14	136	7.0	5
May 5-10.....	502	4.0	.05	13	6.0	16	1.9	46	46	3.0	.1	.6	119	57	18	203	7.2	3
May 11-26.....	535	4.0	.02	17	6.3	26	2.2	71	68	5.0	.1	.5	168	76	18	281	7.3	2
May 27-June 15.....	353	5.5	.06	20	9.9	37	2.7	94	81	6.0	.2	.6	207	90	13	347	7.5	5
June 16-30.....	400	4.3	.14	19	8.8	37	2.7	96	71	9.0	.1	.8	198	82	13	340	7.2	5
July 1-15.....	341	6.6	.01	17	7.8	24	2.4	78	56	7.0	.1	1.3	159	75	14	272	7.2	5
July 16-19.....	496	6.4	.02	15	7.6	43	3.0	113	65	6.5	.2	1.5	207	78	0	345	7.4	10
July 20-Aug. 4.....	285	5.8	.01	15	5.5	21	2.5	66	45	4.8	.2	1.3	135	61	7	237	7.3	6
Aug. 5-13.....	390	6.6	.03	18	7.3	31	2.7	88	61	8.0	.1	.8	173	74	2	293	7.5	5
Aug. 14-Sept. 3.....	138	5.5	.05	15	6.2	18	2.4	63	43	6.0	.2	.7	129	62	10	216	7.4	8
Sept. 4-18.....	39.3	4.7	.02	17	7.9	31	2.3	90	60	9.5	.2	.6	175	75	1	300	7.4	4
Sept. 19-30.....	23.2	7.2	.01	17	8.8	32	2.5	89	64	9.5	.2	.5	182	79	6	307	7.5	4
Time-weighted average.....	2,634	5.7	0.05	15	6.8	24	2.2	64	57	6.4	0.2	1.4	150	65	18	249	--	7

CUMBERLAND RIVER BASIN--Continued  
CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
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.....	73	76	48	50	43	45	46	48	35	39	50	52	47	52	59	64	70	76	76	82	83	88	77	80
2.....	73	74	46	46	43	44	45	46	38	39	51	54	50	52	61	65	72	77	77	84	83	88	74	79
3.....	72	74	43	44	42	43	45	47	37	40	52	54	51	55	62	68	72	77	80	85	83	89	74	81
4.....	72	76	43	44	40	43	47	48	37	40	52	54	52	57	65	70	72	78	80	85	84	89	75	83
5.....	74	78	43	45	43	44	48	50	39	40	53	55	55	58	65	74	79	83	83	84	89	77	82	
6.....	75	74	43	47	40	41	50	51	39	40	55	55	56	59*	56	59	76	78	79	83	85	89	76	82
7.....	68	69	43	47	38	41	48	50	41	44	50	51	56	57	56	57	75	75	81	83	85	89	76	81
8.....	64	66	45	47	37	38	47	48	43	45	47	47	54	56	54	57	68	72	79	82	83	86	75	82
9.....	64	67	46	50	39	40	47	47	42	43	46	48	53	57	53	57	68	72	79	82	83	86	76	81
10.....	64	70	47	50	37	39	45	45	42	43	48	50	53	58	53	58	70	70	79	85	84	84	76	83
11.....	65	71	46	50	37	40	43	44	41	42	51	54	58	59	58	59	68	72	81	84	81	80	77	79
12.....	68	73	47	51	37	38	42	43	38	39	54	56	58	62	58	62	67	70	81	83	79	80	75	79
13.....	70	75	47	52	38	40	41	41	35	36	55	56	61	61	61	61	67	68	80	85	78	82	73	79
14.....	70	74	48	52	39	41	39	40	34	35	54	58	60	61	60	61	66	70	81	82	77	81	74	80
15.....	69	67	48	52	40	41	38	41	33	37	56	58	59	62	59	62	67	72	80	81	77	81	73	81
16.....	62	63	50	54	40	42	38	40	36	38	57	58	59	61	59	61	68	74	79	83	78	83	74	81
17.....	59	62	52	57	40	42	37	40	38	41	53	53	60	62	68	72	69	76	80	85	79	84	73	81
18.....	60	62	53	56	41	43	37	40	39	42	53	54	62	65	68	74	71	77	80	85	80	84	73	81
19.....	57	59	55	56	42	42	36	38	42	45	50	50	64	68	70	74	74	77	81	85	81	86	73	80
20.....	55	58	55	54	41	41	36	38	43	46	50	51	65	68	71	75	74	80	82	86	82	87	71	80
21.....	54	--	51	51	39	40	36	38	45	47	51	53	66	67	72	76	77	82	81	87	83	84	73	80
22.....	54	--	49	50	38	39	36	39	46	47	53	53	65	69	73	76	78	82	82	87	81	84	74	81
23.....	54	--	48	49	37	40	37	40	46	47	50	53	65	68	73	76	77	79	83	84	81	84	75	81
24.....	55	60	48	48	38	40	36	39	45	47	50	52	65	66	74	75	76	81	81	84	80	84	76	77
25.....	54	61	46	46	36	40	37	39	44	47	50	53	64	63	73	76	77	78	81	86	79	84	74	76
26.....	57	62	45	46	37	40	37	40	45	46	50	50	60	60	74	78	75	80	83	86	78	85	72	76
27.....	60	62	44	45	38	42	37	39	45	47	46	46	57	59	76	80	75	78	83	88	75	83	77	77
28.....	59	62	44	44	42	44	36	38	48	50	43	45	56	58	76	81	74	80	84	85	79	85	74	76
29.....	59	58	43	45	46	50	35	37	--	--	43	46	57	60	76	80	75	80	82	86	79	86	73	78
30.....	50	50	--	--	44	46	49	35	36	--	44	48	58	62	74	79	77	81	83	88	80	82	73	77
31.....	50	50	--	--	47	48	33	36	--	--	46	50	--	--	71	76	--	--	83	87	79	83	--	--
Average.....	63	66	47	49	40	42	40	42	41	43	50	52	58	61	65	69	72	76	81	85	81	85	74	80



## CUMBERLAND AND TENNESSEE RIVER BASINS

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	67	2	(t)	57	1		670	34	62
2.....	160	2	1	65	1		595	12	19
3.....	256	5	3	71	1		470	4	5
4.....	155	10	4	86	1		368	3	3
5.....	113	17	5	90	1	(t)	334	2	2
6.....	100	16	4	93	1		1,000	42	s 144
7.....	84	10	2	98	1		1,250	73	246
8.....	65	8	1	106	1		1,010	25	68
9.....	55	8	1	110	2	1	912	12	30
10.....	49	4	1	106	3	1	1,060	11	31
11.....	44	2		100	3	a 1	1,150	12	37
12.....	38	3		90	3	1	1,120	17	51
13.....	33	4	(t)	82	3	1	1,290	18	63
14.....	30	2		75	3	1	1,930	37	193
15.....	86	15	3	69	2	(t)	2,600	59	414
16.....	263	12	8	69	3	1	2,260	45	274
17.....	185	20	10	71	3	1	1,630	24	106
18.....	129	30	10	84	3	1	3,680	69	s 872
19.....	98	22	6	106	2	1	7,410	23	4,260
20.....	80	12	2	124	3	1	5,270	152	2,160
21.....	65	7	1	218	4	2	2,900	42	329
22.....	64	5	a 1	252	2	1	1,920	23	119
23.....	60	4	1	298	3	2	1,440	10	39
24.....	55	3		294	5	4	1,170	3	9
25.....	49	2		263	5	4	1,010	2	5
26.....	45	2		238	5	3	906	2	a 5
27.....	41	2		210	4	2	816	2	a 4
28.....	40	1	(t)	214	4	2	828	22	s 61
29.....	40	1		505	36	s 61	7,950	23	s 5,980
30.....	42	1		756	53	108	20,800	52	28,900
31.....	49	1		--	--	--	22,600	540	33,000
Total.	2,640	--	87	5,000	--	202	98,349	--	77,491
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.....	17,400	232	10,900	993	5	13	14,200	298	11,400
2.....	10,100	53	s 1,530	1,160	7	22	18,700	28	11,000
3.....	3,420	35	323	2,270	25	153	18,000	207	10,100
4.....	2,190	24	142	4,080	51	562	14,300	77	2,970
5.....	1,740	15	70	3,520	55	523	7,820	50	1,060
6.....	1,620	12	52	4,410	99	s 1,440	8,900	33	s 8,980
7.....	1,650	12	53	13,300	436	s 15,000	16,200	372	16,300
8.....	1,660	11	49	16,700	480	21,600	17,100	437	21,600
9.....	1,630	10	44	14,300	145	s 5,770	14,600	101	3,980
10.....	1,550	12	50	7,700	42	882	7,660	36	744
11.....	1,510	12	49	4,290	33	382	4,220	31	353
12.....	1,720	11	51	3,930	28	297	3,830	78	807
13.....	1,950	13	68	3,310	25	223	4,460	105	1,260
14.....	2,000	14	76	2,920	16	126	3,830	38	393
15.....	1,810	15	73	2,940	15	119	3,740	84	s 904
16.....	1,630	12	53	3,000	15	122	12,000	474	s 14,100
17.....	1,470	12	48	3,370	18	164	22,900	63	42,400
18.....	1,300	11	39	4,490	30	364	25,500	430	31,000
19.....	1,210	10	33	5,100	43	592	29,500	239	20,200
20.....	1,180	6	19	4,210	28	318	26,700	195	14,000
21.....	1,100	2	6	3,330	19	171	22,200	100	5,990
22.....	1,350	9	33	3,430	37	s 366	26,600	474	34,000
23.....	2,390	24	156	9,530	175	s 4,980	29,500	83	68,100
24.....	2,900	24	188	16,100	335	14,600	25,400	335	27,100
25.....	2,520	15	102	15,100	248	10,100	21,200	191	10,900
26.....	2,000	8	43	9,890	50	1,340	15,000	124	5,020
27.....	1,610	7	30	6,360	55	944	8,660	135	3,160
28.....	1,430	7	27	12,900	221	7,700	6,790	52	953
29.....	1,330	7	25	--	--	--	5,340	37	533
30.....	1,260	6	20	--	--	--	4,160	24	270
31.....	1,130	5	15	--	--	--	3,290	21	186
Total.	77,760	--	14,366	182,633	--	88,873	442,300	--	369,763

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

## CUMBERLAND RIVER BASIN--Continued

## CUMBERLAND RIVER AT WILLIAMSBURG, KY.--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	2,720	17	125	2,660	15	108	226	10	6
2.....	2,360	7	45	2,150	10	58	205	10	6
3.....	2,110	6	34	1,760	7	33	190	6	3
4.....	1,900	5	26	1,480	5	20	175	5	2
5.....	1,670	5	22	1,240	5	17	163	2	1
6.....	1,940	42	s 236	1,070	2	6	151	2	1
7.....	3,750	108	1,090	930	3	8	157	1	(t)
8.....	4,290	85	984	822	2	4	175	1	(t)
9.....	3,560	29	279	714	3	6	262	2	2
10.....	2,910	13	102	635	1	2	500	3	4
11.....	2,530	18	123	590	1	2	545	6	9
12.....	2,410	18	117	555	1	1	870	41	96
13.....	2,400	29	188	575	1	a 1	750	48	97
14.....	3,260	37	326	655	2	4	570	13	20
15.....	5,520	67	998	798	4	a 9	455	7	8
16.....	6,290	92	1,560	786	5	11	372	5	5
17.....	4,850	36	471	660	5	9	303	3	2
18.....	3,580	17	164	590	5	8	261	4	3
19.....	2,840	11	84	495	5	7	230	2	1
20.....	2,360	11	70	422	5	6	205	2	1
21.....	2,000	7	38	377	5	5	196	2	1
22.....	1,810	3	15	364	2	2	550	3	4
23.....	1,690	2	9	386	2	2	460	6	7
24.....	1,870	28	141	395	3	3	350	14	13
25.....	2,950	41	326	440	2	2	306	4	3
26.....	4,590	83	1,030	470	3	4	408	17	19
27.....	6,280	53	899	436	5	6	870	40	94
28.....	6,120	39	644	364	4	4	670	24	43
29.....	4,720	54	688	314	6	5	475	9	12
30.....	3,470	23	215	282	8	6	338	7	6
31.....	--	--	--	250	10	7	--	--	--
Total.	98,750	--	11,049	23,665	--	366	11,408	--	470
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.....	264	10	7	306	23	19	84	2	(t)
2.....	216	10	6	314	12	10	76	2	(t)
3.....	184	5	2	244	5	3	80	5	1
4.....	160	3	1	258	2	1	73	4	1
5.....	148	2	1	236	2	1	64	6	1
6.....	154	3	1	190	3	2	56	7	1
7.....	142	4	2	172	3	1	48	5	1
8.....	172	4	2	166	4	2	42	2	
9.....	338	16	15	267	21	s 19	38	2	
10.....	372	22	22	590	172	274	35	3	
11.....	530	24	34	565	62	94	35	3	
12.....	382	6	6	732	70	138	31	3	
13.....	303	5	4	670	55	99	37	2	
14.....	747	15	s 38	475	28	36	35	2	
15.....	1,010	30	82	300	19	15	30	2	
16.....	630	12	20	222	15	9	26	2	
17.....	475	7	9	187	6	3	21	3	
18.....	455	10	12	160	4	2	18	2	(t)
19.....	426	35	40	140	2	1	16	2	
20.....	334	106	96	128	2	1	17	3	
21.....	303	78	64	120	2	1	15	2	
22.....	292	23	18	113	1	(t)	13	3	
23.....	282	15	11	113	1	(t)	13	3	
24.....	254	20	14	128	3	1	14	5	
25.....	303	20	16	118	3	1	18	2	
26.....	515	19	26	94	3	1	19	2	
27.....	326	11	10	92	3	1	35	2	
28.....	254	11	8	84	3	1	30	1	
29.....	212	9	5	67	4	1	24	2	
30.....	181	12	6	50	5	1	64	34	6
31.....	181	19	9	71	4	1	--	--	--
Total.	10,545	--	587	7,372	--	740	1,107	--	15

Total discharge for year (cfs-days) .....

961,529

Total load for year (tons) .....

563,989

s Computed by subdividing day.

a Computed from 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 1954 to September 1955  
(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	Discharge (cfs)	Water- tem- per- 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. 31, 1954 . . .	7:30 a.m.	23,700		592	916	50	63	79	93	98	100	--	--			BSWCM
Feb. 24, 1955 . . .	2:10 p.m.	16,400		336	962	40	53	69	84	95	97	99	100			BSWCM
Mar. 1 . . . . .	7:30 a.m.	16,200		313	458	40	55	71	86	95	98	99	100			BSWCM
Mar. 23 . . . . .	7:30 a.m.	29,700		1,030	1,360	42	56	73	87	95	98	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 Burkessville, Cumberland County, and about 37 miles downstream from gaging station near Rowena.

DRAINAGE AREA.--6,050 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1952 to September 1954.

Water temperatures: October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 75°F July 26; minimum, 39°F Feb.12-15,18.

EXTREMES, 1949-55.--Maximum, 81°F June 30 to July 1, 1951; minimum, 34°F Feb.2-4,1951.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements. The data reported under extremes are the individual maximum and minimum measurements. No discharge records available at this station.

Temperature (°F) of water, water year October 1954 to September 1955  
/Twice-daily measurements at approximately 7 a.m. and 3 p.m./

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

## CUMBERLAND AND TENNESSEE RIVER BASINS

## 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 1950.

Water temperatures: October 1949 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 90°F Aug. 3; minimum, 37°F Jan. 27.

EXTREMES, 1949-55.--Water temperatures: Maximum, 90°F Aug. 3, 1955; minimum, 34°F Feb. 3-5, 7, 1951.

REMARKS.--Daily water temperatures reported are averages of twice-daily measurements. Data reported under extremes are the individual maximum and minimum measurements. Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Temperature (°F) of water, water year October 1954 to September 1955

/Twice-daily measurements at approximately 8 a. m. and 5 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	58	50	49	42	52	50	60	68	76	86	82
2	74	56	49	50	40	52	50	60	66	76	86	82
3	75	54	49	50	39	54	51	60	67	78	88	80
4	75	54	48	52	40	55	52	62	68	78	88	82
5	75	54	48	52	41	54	54	62	66	78	88	80
6	74	54	46	51	42	53	54	63	66	78	88	80
7	71	55	46	50	42	54	54	64	66	79	87	80
8	72	54	46	50	42	54	54	64	66	80	86	80
9	72	53	46	50	45	54	56	65	67	81	86	80
10	72	53	46	49	45	54	56	66	66	82	86	80
11	72	53	46	48	42	54	56	67	66	82	85	80
12	72	53	45	48	41	54	56	66	66	82	84	78
13	72	52	45	44	42	54	56	67	65	82	84	78
14	71	54	45	45	44	54	56	66	64	82	84	78
15	68	54	45	46	44	55	58	67	64	81	84	78
16	67	54	44	46	44	54	58	68	66	82	82	78
17	66	54	45	46	44	52	59	68	67	82	82	78
18	67	54	43	44	43	52	59	68	68	82	84	78
19	65	55	42	43	44	52	60	70	70	83	84	78
20	65	53	42	42	44	52	60	70	70	82	84	78
21	64	53	43	44	42	52	59	70	72	84	85	78
22	64	53	43	42	43	49	60	70	72	82	84	79
23	64	52	44	41	43	51	60	70	72	83	84	78
24	64	52	44	42	44	52	59	70	72	83	84	77
25	64	50	44	42	46	52	58	70	73	84	84	76
26	64	50	44	42	47	48	59	71	72	85	84	76
27	63	50	45	38	49	48	58	71	72	85	84	75
28	61	50	46	40	50	48	59	72	72	84	84	75
29	61	50	47	38	--	48	59	70	74	85	84	75
30	58	49	46	40	--	49	60	68	74	86	84	74
31	58	--	46	40	--	49	--	68	--	86	83	--
Average	68	53	45	45	43	52	57	67	69	82	85	78

## TENNESSEE RIVER BASIN

## EAST FORK PIGEON RIVER NEAR CANTON, N. C.

LOCATION.--Temperature recorder at gaging station on right bank 800 feet upstream from U. S. Highway 276, 0.4 mile downstream from Dix Creek, 1.7 miles upstream from confluence with West Fork Pigeon River, and 5.2 miles southwest of Canton, Haywood County.

DRAINAGE AREA.--51.5 square miles.

RECORDS AVAILABLE.--July 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 70°F July 27-28; minimum, 33°F on many days during December, January, and February.

EXTREMES, 1954-55.--Water temperatures: Maximum, 84°F July 15, 20, 30, Aug. 16, 1954; minimum, 33°F on many days during December 1954, January, February 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	69	64	48	43	41	38	46	43	38	33	53	49	53	43	63	50	66	53	74	61	67	63	70	63
2.....	73	63	48	40	42	38	47	45	42	38	52	45	51	48	64	51	66	54	75	62	71	62	71	64
3.....	73	62	43	37	38	33	45	41	43	38	51	44	58	48	65	52	66	55	75	66	71	63	72	65
4.....	72	62	43	40	38	33	49	42	39	33	52	49	58	47	67	53	68	56	73	65	71	62	70	65
5.....	74	64	43	42	38	36	51	47	35	33	58	51	55	50	68	55	69	58	72	65	71	63	69	64
6.....	70	64	46	41	38	34	51	48	40	35	52	47	53	50	65	55	67	60	71	64	70	63	70	64
7.....	69	58	48	41	34	33	48	39	42	40	47	40	57	49	62	55	67	61	75	65	71	63	73	62
8.....	60	51	50	42	33	33	41	36	43	40	47	37	54	43	64	54	58	56	71	65	68	64	72	63
9.....	62	55	52	44	42	33	45	41	42	37	50	39	55	44	67	53	63	56	71	64	71	63	75	64
10.....	66	55	52	45	38	34	45	42	44	38	49	43	56	47	66	55	62	57	74	65	72	63	70	65
11.....	66	57	50	44	37	33	42	39	43	35	56	49	56	51	64	58	68	59	71	66	74	65	72	65
12.....	68	59	51	44	39	36	41	38	35	33	57	52	59	49	64	58	62	58	68	63	70	66	71	65
13.....	69	62	52	44	41	39	40	34	34	33	54	51	55	54	63	60	66	57	67	63	72	63	66	64
14.....	70	64	52	45	41	40	34	33	34	33	54	49	57	51	66	58	66	59	68	63	69	63	70	58
15.....	68	54	49	45	40	37	41	34	34	34	56	48	59	49	63	58	67	56	69	63	65	63	70	59
16.....	56	50	52	49	38	34	40	37	40	37	54	51	59	49	58	57	68	57	75	63	69	62	71	60
17.....	57	48	52	50	40	38	39	34	45	40	51	46	60	49	63	55	69	59	72	64	66	63	71	60
18.....	57	49	55	52	40	39	37	33	45	37	52	49	60	51	67	55	64	59	72	64	73	63	71	63
19.....	56	49	55	53	39	35	34	33	43	38	50	49	62	53	67	56	64	60	74	63	72	64	71	62
20.....	55	47	54	50	35	34	34	33	48	40	53	48	60	54	64	57	68	59	71	65	74	64	70	62
21.....	55	48	50	47	34	34	36	33	46	45	55	50	57	52	64	59	69	62	71	64	74	64	70	62
22.....	55	46	49	44	34	34	40	35	46	45	55	44	62	53	59	57	71	61	73	63	73	65	70	64
23.....	56	47	49	44	35	34	37	34	48	45	50	41	59	54	64	57	67	60	71	65	69	64	72	63
24.....	57	47	45	43	38	35	35	33	45	43	52	42	60	57	61	57	72	59	73	66	73	63	68	65
25.....	57	48	43	40	37	34	35	33	46	39	50	45	58	53	65	57	65	61	77	67	73	64	66	64
26.....	57	49	40	36	39	33	37	33	46	38	50	42	53	50	66	57	73	62	77	67	72	63	66	63
27.....	60	53	40	35	41	36	38	35	48	43	44	35	61	50	64	56	68	63	79	67	70	63	67	61
28.....	60	55	42	38	47	41	36	33	51	46	43	37	61	48	69	58	70	61	79	68	74	63	67	61
29.....	59	54	42	39	46	45	35	33	--	--	48	39	60	49	64	60	69	62	73	65	73	65	71	63
30.....	55	48	41	37	46	44	35	33	--	--	51	39	62	50	65	57	69	62	69	66	74	65	68	65
31.....	48	43	--	--	44	41	34	33	--	--	53	41	--	--	65	55	--	--	68	64	70	66	--	--
Average.....	62	54	48	43	39	36	40	37	43	38	52	45	58	50	64	56	67	59	73	65	71	64	70	63

TENNESSEE RIVER BASIN--Continued  
DOE RIVER AT ELIZABETHTON, TENN.

LOCATION.--Temperature recorder at gaging station on left bank 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 1955.

EXTREMES, 1954-55.--water temperatures: Maximum, 81°F July 19, 28; minimum, 32°F Dec. 8.

EXTREMES, (February 1954 to September 1955).--water temperatures: Maximum, 82°F July 14, 1954; minimum, 32°F Dec. 8, 1954.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Temperature (°F) of water, water year October 1954 to September 1955

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

TENNESSEE RIVER BASIN--Continued  
NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA.

LOCATION.--At gaging station 0.5 mile upstream from Cedar Branch bridge, 1.5 miles northeast of Saltville, Smyth County, and 7.8 miles downstream from Laurel Creek.

DRAINAGE AREA.--222 square miles.

RECORDS AVAILABLE.--Chemical analyses: June 1930 to March 1931, October 1949 to September 1950, October 1954 to September 1955.

EXTREMES, 1930-31.--Dissolved solids: Maximum, 170 ppm Oct. 11-20; minimum, 68 ppm Mar. 21-31.

Hardness: Maximum, 164 ppm Oct. 11-20; minimum, 58 ppm Mar. 21-31.

REMARKS.--1930-31 samples collected at Cedar Branch bridge. Records of discharge for water year October 1954 to September given in WSP 1386.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 29, 1954	49	3.2	0.04	31	13	1.3	1.6	148	11	1.9	0.0	1.7	138	65	131	10	281	7.9	8
Dec. 30	1,500	4.8	.03	15	2.1	.9	1.1	45	6.8	1.2	.1	3.5	88	98	46	9	105	7.2	30
Jan. 28, 1955	123	3.6	.01	24	6.8	1.4	.8	96	10	1.7	.0	2.8	98	88	88	9	180	7.9	5
Feb. 28	2,500	4.8	.06	15	2.4	1.1	1.1	47	7.0	1.4	.1	3.6	61	61	47	9	105	7.7	25
Apr. 1	352	3.4	.02	22	6.3	1.2	.9	90	7.3	1.5	.0	3.3	102	81	81	7	164	8.0	5
May 30	92	4.8	.00	30	10	1.3	1.1	131	9.5	1.8	.0	2.9	134	134	116	9	225	8.3	1
June 30	50	4.1	.04	31	13	1.3	1.0	148	8.2	1.5	.1	1.7	129	129	131	10	249	8.1	5
Aug. 31	36	4.3	.00	30	13	1.5	1.5	150	13	3.2	--	1.9	134	134	128	5	253	8.2	5
Sept. 30	29	1.0	.02	30	17	1.3	1.7	159	12	2.1	.0	.7	140	140	145	14	259	7.8	3



## TENNESSEE RIVER BASIN--Continued

## NORTH FORK HOLSTON RIVER AT HOLSTON, VA.

LOCATION.--At gaging station at bridge on U. S. Highway 19, 100 feet downstream from Greendale Creek, 0.4 mile upstream from Garrett Creek, 0.5 mile east of Holston, Washington County, and 0.6 mile upstream from Little Moccasin Creek.

DRAINAGE AREA.--402 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1955.

Water temperatures: October 1951 to September 1955.

EXTREMES, 1954-55.--Hardness: Maximum, 4,640 ppm Sept. 21, 22, 25-30; minimum, 325 ppm Mar. 1-10, 11-20.

Specific conductance: Maximum daily, 16,000 micromhos Sept. 21; minimum daily, 323 micromhos Mar. 18.

Water temperatures: Maximum, 85°F July 20-22, Aug. 3, 6; minimum, freezing point Feb. 13.

EXTREMES, 1951-55.--Dissolved solids (1951-53): Maximum, 8,780 ppm Oct. 11-15, 17-20, 1952; minimum, 200 ppm (calculated) Jan. 27, 1953.

Hardness (1951-55): Maximum, 4,870 ppm Oct. 11-15, 17-20, 1952; minimum, 109 ppm Jan. 27, 1953.

Specific conductance: Maximum daily, 16,400 micromhos Sept. 14, 1951; Oct. 11, 12, 1952; minimum daily, 323 micromhos Mar. 18, 1955.

Water temperatures: Maximum, 82°F July 5, 1954; minimum, freezing point on several days during March, April, and December 1953 and Feb. 13, 1955.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Record specific conductance of daily samples available in district office at Raleigh, N. C. Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (sum)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 1-10, 1954	75.2	--	0.04	1,410	29	940	6.8	53	105	3,900			6,430	3,640	3,590	11,200	7.1	3
Oct. 11-20	111	--	.00	1,500	30	1,020	6.5	47	95	4,290			--	3,870	3,830	12,400	7.0	--
Oct. 21-31	72.5	--	.00	1,420	28	888	6.0	53	93	3,900			--	3,660	3,610	11,400	7.1	--
Nov. 1-10	99.0	--	.00	953	19	618	5.0	59	68	2,630			--	2,460	2,410	7,960	6.8	--
Nov. 11-20	100	--	.00	1,010	20	612	5.2	47	69	2,670			--	2,600	2,560	8,070	6.8	--
Nov. 21-30	234	--	.00	488	10	284	3.1	62	38	1,260			--	1,260	1,210	4,050	7.2	--
Dec. 1-10	466	--	.00	269	8.3	191	2.5	72	33	790			--	705	646	2,520	7.4	--
Dec. 11-20	646	--	.00	193	6.7	123	2.0	60	27	510			--	509	460	1,800	7.3	--
Dec. 21-31	759	--	.00	278	5.7	154	2.1	74	26	688			--	717	656	2,330	7.5	5
Jan. 1-10, 1955	362	12	.04	256	7.3	135	2.1	68	29	615			1,090	669	613	2,100	7.5	5
Jan. 11-20	436	--	.00	318	6.5	173	2.1	69	31	774			--	820	764	2,590	7.6	5
Jan. 21-31	249	--	.00	397	7.2	228	2.5	81	34	1,030			--	1,020	954	3,390	7.8	5
Feb. 1-10	1,520	--	.00	200	5.2	102	1.9	73	26	468			--	520	461	1,680	7.7	5
Feb. 11-20	689	--	.00	216	5.3	112	2.1	66	26	518			--	562	506	1,760	7.6	5
Feb. 21-28	1,792	--	.00	171	3.4	143	1.6	68	23	374			--	441	393	1,360	7.9	5
Mar. 1-10	3,655	--	.00	123	4.4	74	1.7	74	9	343			--	325	255	930	8.0	10
Mar. 11-20	3,576	--	.01	123	4.3	44	2.1	74	22	282			--	325	264	966	7.9	7
Mar. 21-31	2,106	--	.00	131	4.5	45	1.5	71	20	282			--	345	287	994	7.9	5
Apr. 1-10	498	5.8	.04	256	11	150	2.4	78	32	640			1,140	694	620	2,190	7.5	3
Apr. 11-20	1,174	--	.00	185	5.7	81	1.8	61	22	419			--	485	435	1,490	7.7	7
Apr. 21-30	787	--	.02	198	8.2	98	1.9	76	26	492			--	528	465	1,710	7.2	--

May 1-10, 1955	388	--	0.01	335	10	202	2.2	61	30	915	--	877	827	3,000	7.6
May 11-20	405	--	.02	331	12	200	2.1	57	29	960	--	815	828	2,900	7.5
May 21-31	213	--	.01	564	17	380	2.6	63	41	1,700	--	1,530	1,960	5,120	7.5
June 1-10	183	--	.01	901	20	585	3.4	61	53	2,620	--	2,330	2,280	7,650	7.7
June 11-20	158	--	.01	746	17	455	3.2	61	40	2,150	--	1,330	1,860	6,430	7.6
June 21-30	116	--	.01	597	20	515	3.2	51	59	2,570	--	2,320	2,280	7,700	7.5
July 1-10	133	--	.04	541	19	592	3.8	53	53	2,800	4,230	2,330	2,380	7,870	7.3
July 11-20	273	--	.01	494	12	305	2.7	54	33	1,390	--	1,380	1,740	4,370	7.4
July 21-31	68.8	--	.01	1,220	25	860	4.5	44	75	3,500	--	3,150	3,110	10,400	7.3
Aug. 1-10	93.3	--	.01	1,190	22	875	6.0	45	87	3,650	--	3,060	3,020	10,700	7.4
Aug. 23-25, 27-29, 31	55.1	--	.00	913	39	625	3.5	48	56	2,400	--	2,440	2,400	7,290	7.1
Sept. 1-10	47.6	--	.00	1,370	28	932	4.5	44	92	2,750	--	3,530	3,500	11,100	7.0
Sept. 11-20	46.9	--	.00	1,770	38	1,210	7.0	40	117	4,980	--	4,570	4,540	14,400	7.0
Sept. 21-22, 25-30	56.9	--	.00	1,790	43	1,200	6.9	42	104	5,150	--	4,640	4,610	14,300	7.0
Average	a 598	--	0.01	874	16	429	3.4	60	50	1,830	--	1,750	1,700	5,600	--

a Includes missing days.

## TENNESSEE RIVER BASIN--Continued

## NORTH FORK HOLSTON RIVER AT HOLSTON, VA.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	47	--	42	37	48	48	65	76	80	83	77
2	78	44	--	51	39	41	55	65	77	78	83	78
3	65	50	--	46	--	50	56	71	77	79	85	76
4	66	47	--	46	39	50	52	73	79	79	84	76
5	80	40	--	40	38	51	55	76	78	80	84	79
6	75	47	37	40	37	48	56	76	80	79	85	78
7	70	49	45	41	42	44	55	75	76	80	85	78
8	63	47	36	40	40	45	58	--	75	79	83	76
9	62	48	38	40	38	46	59	64	--	78	--	78
10	73	43	39	39	36	45	60	74	71	79	84	78
11	74	39	40	38	35	48	60	74	71	78	83	79
12	73	48	39	37	34	50	61	72	73	79	81	80
13	73	54	45	36	32	53	60	71	71	79	80	79
14	66	49	38	36	34	55	58	73	--	80	--	78
15	60	53	40	39	42	53	59	72	70	81	--	78
16	58	55	40	40	46	51	60	74	72	82	--	77
17	59	53	43	39	44	50	60	75	73	81	79	76
18	58	55	44	38	41	50	62	76	73	83	78	74
19	57	62	38	37	40	51	63	77	73	84	83	75
20	58	55	36	39	41	53	63	76	75	85	83	76
21	56	49	42	40	42	54	64	79	77	85	80	76
22	47	45	40	39	46	55	63	78	81	85	76	77
23	49	57	42	37	42	54	58	79	81	84	80	--
24	55	50	43	36	39	45	59	79	80	82	80	--
25	60	39	40	38	46	43	59	79	80	83	80	74
26	61	38	45	39	40	40	57	80	81	83	--	75
27	60	36	43	37	39	42	56	77	83	83	79	73
28	60	37	44	38	46	45	60	82	81	83	81	72
29	54	37	40	37	--	47	63	83	80	83	81	69
30	52	40	42	37	--	49	61	79	79	83	--	72
31	60	--	44	36	--	49	--	--	--	83	79	--
Average	63	47	41	39	40	49	59	75	77	81	81	76

TENNESSEE RIVER BASIN--Continued  
CULLASAJA RIVER AT CULLASAJA, N. C.

LOCATION.--At gaging station at Cullasaja, Macon County, 1.4 miles (corrected) downstream from Ellijay Creek, and 4.1 miles upstream from mouth.  
DRAINAGE AREA.--86.5 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1386.

Chemical analyses, in parts per million, water year October 1954 to September 1955

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. 14, 1954 .....	29	11	0.09	2.2	0.6	1.8	1.0	14	1.4	0.8	0.1	0.2	27	8	0	29.0	6.4	5
Nov. 12 .....	31	7.9	.07	2.0	.9	1.8	1.0	12	1.3	1.2	.0	.4	26	9	0	28.2	6.4	10
Dec. 10 .....	91	5.5	.08	1.6	.6	1.5	.6	8	2.8	1.2	.0	.3	23	7	0	23.2	6.2	17
Jan. 17, 1955 .....	95	4.7	.05	1.6	.2	1.3	.4	7	2.1	.0	.1	.1	20	5	0	18.9	6.3	3
Feb. 16 .....	174	6.2	.03	1.2	.5	1.0	.4	6	1.1	1.0	.1	.3	17	5	0	17.1	6.2	3
Mar. 14 .....	189	6.4	.02	1.4	.4	1.0	.5	7	1.2	1.0	.1	.1	19	5	0	17.3	6.4	4
Apr. 11 .....	598	4.3	.04	1.1	.3	1.0	.5	4	1.8	1.2	.1	.4	18	4	1	17.6	6.1	10
May 9 .....	142	7.3	.03	1.6	.2	1.3	.5	8	1.3	1.0	.0	.4	19	5	0	19.4	6.5	5
June 3 .....	260	6.7	.02	1.6	.2	1.1	.4	7	1.4	.8	.0	.3	19	5	0	16.7	6.1	3
July 27 .....	134	7.5	.06	1.6	.5	1.4	.6	10	1.1	1.0	.0	.4	22	6	0	19.2	6.7	5
Aug. 10 .....	201	7.2	.08	1.2	.3	1.2	.6	8	1.3	1.0	.1	.1	20	4	0	17.0	6.9	12
Sept. 19 .....	76	8.5	.04	1.2	.3	1.5	.5	10	1.8	1.2	.0	.3	22	4	0	19.4	6.7	5

PART 4. ST. LAWRENCE RIVER BASIN  
STREAMS TRIBUTARY TO LAKE SUPERIOR  
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  $2\frac{1}{2}$  miles north of Besemer, Gogebic County.

DRAINAGE AREA.--202 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 79°F July 26; minimum, freezing point on many days during November, December, January,

February and March.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1387. Stream frozen Nov. 27 to Mar. 31.

Temperature, (°F) of water, water year October 1954 to September 1955

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

<sup>a</sup> Includes estimated temperature, 32°F, on missing days.

## STREAMS TRIBUTARY TO LAKE MICHIGAN

## BLACK RIVER NEAR GARNET, MICH.

LOCATION.--Temperature recorder at gaging station, 10 feet upstream from highway bridge, 15 feet downstream from small tributary entering from right, 3 1/2 miles upstream from Lake Michigan, and 4 miles southwest of Garnet, Mackinac County.  
 DRAINAGE AREA.--28 square miles, approximately.  
 RECORDS AVAILABLE.--Water Temperatures: October 1951 to September 1955.  
 EXTREMES, 1954-55.--Water Temperatures: Maximum, 63°F Aug. 1; minimum, 34°F on many days during December and January.  
 EXTREMES, 1951-55.--Water Temperatures: Maximum 68°F July 21, 22, 1952; minimum, freezing point on many days during winter months of some years.  
 REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1387. River does not freeze over.

Temperature (°F) of water, water year October 1954 to September 1955  
 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
1.....	51	41	41	36	35	35	35	36	41	40	52	51	63	54
2.....	51	41	41	36	35	35	35	37	42	40	52	51	63	54
3.....	50	41	41	35	35	35	35	37	40	39	51	53	61	53
4.....	51	41	41	35	35	35	35	37	40	39	54	54	58	54
5.....	50	41	41	35	35	35	35	37	40	39	57	54	58	54
6.....	47	41	41	35	35	35	35	37	40	39	57	55	60	56
7.....	47	45	41	35	35	35	35	37	39	39	53	55	60	55
8.....	45	43	42	41	34	35	35	37	39	53	51	58	59	53
9.....	45	43	42	41	34	35	35	37	40	39	53	55	57	51
10.....	46	44	41	34	35	35	35	37	41	39	48	55	57	51
11.....	46	45	41	35	34	35	35	37	41	40	47	55	57	54
12.....	47	46	43	41	35	35	35	37	41	40	52	55	59	52
13.....	48	47	44	41	34	35	35	37	41	40	53	55	59	52
14.....	48	48	42	40	34	34	36	37	41	40	56	54	58	52
15.....	48	48	40	35	34	34	36	37	41	40	56	54	59	53
16.....	48	45	41	40	35	34	36	37	40	39	55	55	60	55
17.....	45	44	41	41	35	34	36	37	36	40	55	55	57	55
18.....	44	42	43	41	35	34	36	35	42	39	54	55	57	53
19.....	42	41	43	43	35	34	36	35	42	42	56	55	58	53
20.....	41	41	42	34	34	34	36	38	42	42	56	55	58	53
21.....	42	41	42	34	34	34	36	37	44	41	56	56	59	56
22.....	42	41	42	34	34	34	36	37	44	44	54	56	59	56
23.....	44	42	41	40	35	34	36	37	46	44	56	56	53	50
24.....	44	40	40	35	35	34	36	37	45	45	56	55	54	53
25.....	45	44	40	40	35	35	36	37	48	46	54	51	53	50
26.....	45	45	40	39	36	35	36	37	50	48	54	55	57	55
27.....	45	43	39	39	36	35	36	38	52	51	55	55	59	55
28.....	43	42	38	38	35	35	36	38	53	50	55	58	57	58
29.....	42	42	38	37	35	35	38	38	55	52	52	57	54	56
30.....	42	41	37	36	35	35	38	38	54	50	56	54	57	56
31.....	42	41	--	--	35	35	--	40	39	--	--	58	56	--
Average.....	46	45	41	40	35	35	36	37	44	42	51	55	58	54

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## EAST BRANCH ESCANABA RIVER AT GWINN, MICH.

LOCATION.--Temperature recorder at gaging station in county park at Gwinn, Marquette County, 1 mile upstream from mouth. DRAINAGE AREA.--125 square miles.

RECORDS AVAILABLE.--Water Temperatures: November 1954 to September 1955.

EXTREMES, 1954-55.--Water Temperatures: Maximum, 79°F July 4; minimum, freezing point on many days in December, January, February, March and April.

REMARKS.--Stream frozen Dec. 1 to Apr. 2. Temperatures given for this period are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, November 1954 to September 1955

/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.....			--		34	33	32	32	32	33	32	32	32	34	33	56	55	60	57	74	69	74	68	62	54
2.....			--		--	33	32	32	32	32	32	32	32	32	33	56	54	64	58	74	68	72	70	64	56
3.....			--		--	33	32	32	32	32	32	32	32	34	33	61	55	64	61	76	70	72	69	65	58
4.....			--		--	32	32	32	32	32	32	32	32	33	33	66	61	67	62	79	72	72	70	66	60
5.....			--		--	32	32	32	32	32	32	32	32	33	33	64	57	69	63	76	72	73	70	65	58
6.....			--		--	32	32	32	32	32	32	32	32	33	33	57	53	68	65	75	70	72	69	64	60
7.....			--		--	32	32	32	32	32	32	32	32	33	33	56	53	67	65	76	69	69	66	61	56
8.....			--		--	32	32	32	32	32	32	32	32	35	33	55	51	67	63	77	71	66	62	58	56
9.....			--		--	32	32	32	32	32	32	32	32	36	34	53	49	66	63	76	71	65	60	56	55
10.....			--		--	32	32	32	32	32	32	32	32	35	34	52	47	65	62	72	67	69	63	59	56
11.....			--		--	32	32	32	32	32	32	32	32	35	34	56	50	61	57	69	64	70	63	56	55
12.....			--		--	32	32	32	32	32	32	32	32	36	35	58	52	57	54	69	62	70	62	56	51
13.....			--		--	32	32	32	32	32	32	32	32	--	--	60	54	58	52	71	63	70	62	56	52
14.....			--		--	32	32	32	32	32	32	32	32	--	--	61	55	64	55	73	67	71	63	59	55
15.....			--		--	32	32	32	32	32	32	32	32	--	--	64	56	66	58	72	68	72	64	60	56
16.....			--		--	32	32	32	32	32	32	32	32	--	--	62	56	71	63	69	67	73	68	65	58
17.....			--		--	32	32	32	32	32	32	32	32	--	--	57	52	73	65	71	65	73	68	65	63
18.....			--		--	32	32	32	32	32	32	32	32	45	43	57	52	72	67	71	66	75	69	68	62
19.....			--		--	32	32	32	32	32	32	32	32	44	43	60	55	71	67	72	65	76	70	68	66
20.....			--		--	32	32	32	32	32	32	32	32	43	43	62	54	73	67	77	74	71	66	58	58
21.....			--		--	32	32	32	32	32	32	32	32	44	43	65	56	72	67	75	71	75	70	58	55
22.....			35		--	32	32	32	32	32	32	32	32	46	44	62	58	70	64	76	71	72	69	56	54
23.....			35		--	34	32	32	32	32	32	32	32	46	45	68	60	64	62	74	70	69	64	56	55
24.....			34		--	32	32	32	32	32	32	32	32	45	44	66	60	64	58	71	64	68	64	55	52
25.....			34		--	32	32	32	32	32	32	32	32	45	45	66	58	68	58	72	64	68	62	55	52
26.....			34		--	32	32	32	32	32	32	32	32	51	48	59	55	69	59	74	68	67	66	53	50
27.....			34		--	32	32	32	32	32	32	32	32	54	49	60	57	71	63	71	67	67	64	52	51
28.....			34		--	32	32	32	32	32	32	32	32	55	51	60	58	73	66	68	63	67	66	55	51
29.....			34		--	32	32	32	32	32	32	32	32	57	53	58	52	71	69	70	66	66	66	53	52
30.....			34		--	32	32	32	32	32	32	32	32	57	53	54	51	72	69	69	68	66	61	53	52
31.....			--		--	32	32	32	32	32	32	32	32	--	--	58	54	--	--	71	68	61	57	--	--
Average.....			--		--	32	32	32	32	32	32	32	32	42	40	59	54	67	62	73	68	70	66	60	56

## STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

## EAST BRANCH PINE RIVER NEAR TUSTIN, MICH.

LOCATION.--Temperature recorder at gaging station, 75 feet downstream from highway bridge, half a mile upstream from North Branch, 2½ miles west of Tustin, Osceola County, and 5½ miles northwest of Le Roy.

DRAINAGE AREA.--63 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 73°F July 4; minimum, freezing point on many days during December, January, February, and March.

EXTREMES, 1952-55.--Water temperatures: Maximum, 73°F July 4, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 4, 5, 20, 29-31, Jan. 1, 7, 8, Feb. 22-25, Mar. 6-8, 11-13. Temperatures given for these periods are for the underflow.

Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955  
/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	41	40	36	35	32	32	33	32	32	32	37	33	56	53	61	55	69	64	72	66	80	56
2.....	55	54	40	40	36	35	32	32	33	33	32	32	40	36	56	54	62	57	67	66	70	65	80	54
3.....	57	54	40	40	35	35	32	32	33	33	32	32	42	39	62	56	62	60	68	65	68	65	80	55
4.....	58	57	40	40	35	35	32	32	33	33	32	32	43	40	61	59	65	59	73	68	71	65	80	55
5.....	58	52	40	40	35	35	32	32	33	33	32	32	42	42	59	52	66	62	72	68	70	65	80	57
6.....	52	48	40	40	35	35	32	32	33	33	32	32	42	42	53	49	65	63	72	66	69	66	59	55
7.....	48	46	42	40	35	35	32	32	33	33	32	32	42	36	53	52	64	63	66	66	66	64	57	54
8.....	46	46	42	41	35	35	32	32	33	33	32	32	42	40	51	46	62	62	67	64	62	60	54	53
9.....	49	46	41	40	35	35	32	32	33	33	32	32	43	44	51	43	62	62	67	64	62	61	57	53
10.....	50	49	40	38	35	35	32	32	33	33	32	32	51	46	45	43	62	60	67	62	62	60	57	57
11.....	53	50	40	38	35	34	32	32	33	33	32	32	51	49	50	44	62	60	67	60	66	59	57	53
12.....	54	53	40	40	34	34	32	32	33	33	32	32	49	49	52	50	60	57	66	60	66	58	54	51
13.....	54	52	40	39	35	34	32	32	32	32	32	32	49	49	55	52	57	55	67	60	63	58	53	51
14.....	56	53	41	40	35	34	32	32	32	32	32	32	49	49	58	52	59	55	68	60	62	60	56	52
15.....	56	52	41	39	34	33	32	32	32	32	32	32	48	48	59	53	63	57	67	64	66	61	59	55
16.....	52	48	40	39	33	33	32	32	32	32	32	32	49	47	54	45	59	56	66	63	66	60	61	57
17.....	48	47	42	40	33	33	32	32	32	32	32	32	51	48	55	50	66	60	65	64	65	61	62	58
18.....	47	45	43	42	33	33	32	32	32	32	32	32	50	48	50	46	60	62	68	65	67	61	61	58
19.....	45	43	43	43	33	33	32	32	32	32	32	32	49	48	54	48	62	70	65	67	62	61	59	59
20.....	43	43	43	42	33	33	32	32	32	32	32	32	48	48	60	53	68	63	71	65	66	63	60	57
21.....	44	43	42	41	33	32	32	32	32	32	32	32	52	47	61	53	66	63	70	65	69	63	57	54
22.....	44	44	41	40	32	32	32	32	32	32	32	32	52	50	58	57	66	62	69	64	68	64	57	54
23.....	46	44	40	39	32	32	32	32	32	32	32	32	51	48	58	57	62	59	68	65	64	59	56	54
24.....	47	46	39	38	32	32	32	32	32	32	32	32	50	47	60	58	63	56	66	61	61	58	54	54
25.....	47	46	39	39	32	32	32	32	32	32	32	32	47	46	59	55	64	57	66	60	63	59	54	51
26.....	46	46	39	38	32	32	32	32	32	32	32	32	50	44	57	54	63	56	67	62	63	61	52	50
27.....	46	46	38	37	32	32	32	32	32	32	32	32	54	49	61	58	64	56	68	65	64	61	50	50
28.....	46	43	37	37	32	32	32	32	32	32	32	32	56	51	61	60	66	58	68	65	64	63	54	50
29.....	43	43	37	37	32	32	32	32	32	32	32	32	57	53	60	56	66	60	68	64	67	62	52	50
30.....	43	42	37	36	32	32	32	32	32	32	32	32	56	51	58	54	67	62	70	64	66	63	52	51
31.....	42	41	--	--	32	32	32	32	--	--	36	32	--	--	59	54	--	--	70	65	63	60	--	--
Average.....	49	48	40	39	34	33	32	32	32	32	32	32	48	46	57	53	64	59	68	64	66	62	57	54



## 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, Oscoda County, and 5½ miles southwest of Tustin.

DRAINAGE AREA.--118 square miles.

RECORDS AVAILABLE.--January 1953 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 69°F Aug. 1, 2, 5, 6; minimum, freezing point on many days during January, February, and March.

EXTREMES, 1953-55.--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. 6 to Feb. 20, Mar. 8-13. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

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	53	41	40	37	37	34	33	32	33	33	33	40	38	54	50	58	53	66	64	69	67	62	60
2.....	53	52	41	40	37	37	34	34	32	32	34	34	41	38	54	52	59	54	65	64	69	66	60	58
3.....	56	52	41	40	37	36	34	33	32	34	35	34	41	40	59	53	59	56	65	64	67	66	60	59
4.....	57	56	40	40	36	36	34	34	32	32	35	35	41	40	59	57	60	58	68	65	68	66	60	59
5.....	56	52	40	40	36	35	34	34	32	32	35	32	41	40	58	52	61	58	68	66	69	67	61	60
6.....	52	48	41	40	35	34	34	34	33	32	34	32	41	40	53	49	61	60	68	66	69	67	61	59
7.....	48	46	43	41	34	34	34	34	34	33	32	32	40	38	53	51	60	59	68	66	68	66	60	58
8.....	46	46	42	42	34	34	34	34	34	34	32	32	43	40	52	48	59	58	66	64	67	63	58	57
9.....	49	46	42	40	34	34	34	34	35	34	36	32	46	43	48	45	59	58	65	64	64	62	58	57
10.....	50	49	40	40	34	34	34	33	35	34	35	33	49	46	45	45	60	57	65	63	64	62	60	58
11.....	52	50	41	40	34	34	33	32	34	34	33	32	49	48	50	45	59	56	65	62	64	62	60	58
12.....	53	52	41	40	35	34	32	32	34	33	32	32	49	48	53	48	56	54	65	62	64	62	58	55
13.....	53	52	41	40	35	33	32	33	33	32	32	32	49	49	54	50	54	53	65	62	64	62	56	55
14.....	54	52	42	41	34	33	32	32	34	32	33	32	49	48	56	50	57	53	66	63	63	63	57	55
15.....	54	52	42	40	34	34	32	33	32	33	32	34	33	48	47	57	51	60	65	66	65	62	59	57
16.....	52	48	41	40	35	34	32	32	34	33	34	33	48	46	56	53	61	57	66	64	65	63	61	59
17.....	48	47	42	41	34	34	32	32	34	32	33	33	50	48	55	50	62	58	64	63	65	63	62	61
18.....	47	44	42	42	34	34	32	32	33	32	33	33	50	48	55	50	63	59	66	64	66	64	62	61
19.....	44	43	43	43	34	34	32	32	33	33	35	33	48	47	57	53	63	60	67	65	66	64	62	62
20.....	44	43	43	42	34	33	32	32	33	33	36	34	48	47	57	52	64	61	67	65	66	65	62	61
21.....	44	44	42	41	33	33	32	32	33	33	36	36	50	46	58	52	65	61	67	65	68	66	61	58
22.....	45	44	41	41	33	33	32	32	33	33	36	33	51	48	57	55	63	60	67	65	68	66	58	57
23.....	47	45	41	39	33	33	32	32	33	33	33	33	49	47	57	56	60	57	66	65	67	62	58	56
24.....	47	46	39	39	34	33	32	32	33	32	33	33	49	46	56	57	59	55	65	63	67	62	58	56
25.....	47	46	40	39	35	34	32	32	33	32	33	33	46	45	56	55	60	56	65	63	62	62	58	56
26.....	47	47	40	39	36	35	32	32	33	32	33	33	48	43	55	54	59	56	66	63	63	63	56	55
27.....	47	46	39	38	36	35	32	32	34	33	35	33	51	47	58	55	60	56	67	66	63	62	55	55
28.....	46	44	38	38	35	35	32	32	33	33	36	33	53	49	58	57	63	58	67	66	64	63	56	55
29.....	44	44	38	38	35	33	32	32	--	--	37	34	55	51	57	53	64	60	67	65	65	64	56	55
30.....	44	43	38	37	33	33	32	32	--	--	38	36	54	49	56	53	65	62	68	65	65	65	55	55
31.....	43	41	--	--	33	33	32	32	--	--	39	37	--	--	57	53	--	--	68	66	65	62	--	--
Average.....	49	48	41	40	35	34	33	33	33	33	34	33	47	45	55	52	60	57	66	64	66	64	59	58

Temperature (°F) of water, water year October 1954 to September 1955

Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 88°F Aug. 1; minimum, 32°F Jan. 21.

EXTREMES, 1952-53.--Water temperatures: Maximum, 88°F Aug. 1; minimum, 32°F Jan. 21, 1955.

REMARKS.--Stream frozen Dec. 6, 7, 13-15, 21-23, Jan. 17-19, 25-29, Feb. 5, 6, 12, 13, 17-19, 26, 27. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

/Recorder with temperature attachment, continuous styli 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.....	52	52	--	--	39	39	36	35	34	33	37	37	42	41	54	52	55	52	64	62	68	68	62	58
2.....	52	51	--	--	39	38	36	36	34	34	37	36	42	41	54	53	56	52	63	60	66	63	58	56
3.....	52	50	42	42	38	38	36	35	34	33	37	36	42	42	53	53	56	54	63	63	66	63	58	56
4.....	56	51	42	42	38	38	35	35	33	33	37	37	42	42	58	56	57	53	66	63	66	63	58	56
5.....	--	--	42	41	38	36	35	35	34	33	37	36	42	42	57	53	59	56	67	64	67	63	59	57
6.....	--	--	41	41	36	34	35	35	35	34	36	35	42	42	53	50	59	58	66	66	66	63	58	56
7.....	--	--	42	41	34	34	35	35	35	35	33	33	42	40	53	52	58	56	64	63	66	63	56	54
8.....	--	--	42	42	35	34	35	35	35	35	33	33	41	52	48	56	55	62	60	63	60	54	53	53
9.....	--	--	42	41	36	35	35	35	36	36	37	37	43	48	46	56	55	61	60	61	58	55	53	53
10.....	--	--	41	40	37	36	35	35	36	36	37	37	49	47	46	56	55	62	58	62	59	56	55	55
11.....	--	--	41	40	37	37	35	34	34	34	37	36	49	48	50	46	56	53	62	58	62	58	56	54
12.....	--	--	41	41	37	34	34	34	34	32	36	34	49	48	52	50	54	52	63	60	62	58	54	52
13.....	--	--	41	40	37	35	34	34	34	33	34	34	49	49	53	51	52	51	63	59	63	58	53	52
14.....	--	--	42	41	35	34	34	34	34	33	36	34	49	47	55	51	55	51	64	60	60	59	55	52
15.....	--	--	42	41	36	35	35	34	34	33	37	36	48	48	56	52	57	53	64	62	63	59	56	54
16.....	--	--	41	41	37	36	34	34	35	33	37	35	48	47	55	53	58	55	63	61	63	60	59	56
17.....	--	--	42	41	36	36	34	34	35	34	35	34	50	48	54	50	60	54	63	63	63	60	57	57
18.....	--	--	43	42	37	36	34	34	34	34	35	35	50	49	53	50	61	58	64	61	64	60	57	57
19.....	--	--	43	43	36	35	34	33	35	34	36	35	49	48	54	52	61	58	65	62	64	61	59	58
20.....	--	--	43	42	35	34	33	33	37	35	38	36	49	48	55	51	62	58	65	62	65	62	56	56
21.....	--	--	42	42	34	33	33	32	37	36	38	38	49	47	56	52	64	60	65	62	66	62	56	54
22.....	--	--	42	41	34	33	34	33	36	35	38	35	51	49	55	54	58	56	65	62	66	63	55	53
23.....	--	--	41	40	36	34	34	34	35	35	35	34	51	49	54	54	58	56	65	64	63	60	55	54
24.....	--	--	40	40	37	36	34	34	35	34	36	35	51	49	55	54	58	54	64	61	60	58	54	54
25.....	--	--	40	40	37	37	35	34	34	33	36	35	49	48	55	53	59	55	64	60	60	58	54	52
26.....	--	--	40	40	38	37	35	34	35	33	35	35	50	47	54	53	59	55	66	61	60	59	52	51
27.....	--	--	40	40	39	38	34	34	35	33	35	35	52	49	53	53	59	55	66	61	61	58	52	51
28.....	--	--	40	40	38	37	34	33	37	36	36	35	54	51	56	55	60	56	66	64	62	60	54	52
29.....	--	--	40	40	37	34	33	33	--	--	36	35	52	55	52	61	58	63	63	63	63	60	53	52
30.....	--	--	40	39	34	34	33	33	--	--	40	38	54	52	54	50	63	59	66	62	63	61	52	52
31.....	--	--	35	34	33	33	33	33	--	--	41	40	--	--	54	51	--	--	67	64	61	58	--	--
Average.....	--	--	41	41	36	36	34	34	35	34	37	35	48	46	54	52	58	55	64	61	63	60	56	54

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 81° F. Aug. 1; minimum, freezing point on many days during December, January, February and March.

EXTREMES, 1950-55.--Water temperatures: Maximum, 81° F. Aug. 1, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 4-8, 13-15, 19-23, 29, 30, Jan. 11 to Mar. 10, Mar. 18, 20-23, 26-28. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

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

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

STREAMS TRIBUTARY TO LAKE HURON--Continued  
 AU SABLE RIVER AT GRAYLING, MICH.

(Formerly published as Middle Branch Au Sable River at Grayling)

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:

EXTREMES, 1954-55.--Water temperatures:

February, and March.

EXTREMES, 1953-55.--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 Dec. 8, 9, 15-18, Jan. 13-15, Jan. 29 to Feb. 1, Feb. 15-17, Mar. 3-6. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955

Temperature (°F) of water, water year October 1954 to September 1955

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

## 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 77° F Aug. 4, 1955; minimum, 32° F Jan. 8, 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 77° F Aug. 4, 1953; minimum, 32° F Jan. 8, 1953.

REMARKS.--Stream frozen Dec. 7, 8, 20-22, Jan. 26-29, Feb. 3, 4, 23. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

/Recorder with temperature attachment, continuous ethy 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.....	56	56	44	43	38	37	34	34	34	34	33	33	33	31	37	--	61	59	71	65	75	72	64	63
2.....	56	56	43	42	38	37	34	34	34	34	33	33	33	31	37	--	62	59	69	68	75	74	64	63
3.....	56	56	42	41	38	37	34	34	34	34	33	33	33	31	37	--	62	59	69	68	75	74	64	63
4.....	57	56	41	41	38	36	34	34	34	34	33	33	33	31	42	42	--	66	62	72	70	77	74	63
5.....	56	55	41	41	37	36	35	34	34	33	36	35	35	32	41	--	66	63	72	71	76	75	64	62
6.....	55	55	41	40	36	36	35	34	33	33	35	35	35	41	41	--	85	64	72	71	75	74	64	62
7.....	55	55	40	40	36	36	35	35	34	33	35	35	35	41	40	--	86	65	74	71	74	74	63	62
8.....	53	51	41	40	36	35	35	35	33	33	35	35	34	40	40	--	86	65	74	71	74	72	62	61
9.....	51	50	42	41	35	35	35	35	33	33	33	33	33	42	40	55	62	66	65	76	73	72	71	61
10.....	50	48	42	42	35	33	33	34	33	33	33	33	33	45	52	51	66	65	74	72	71	70	62	60
11.....	50	48	42	42	35	33	34	34	34	33	33	33	33	47	45	51	50	65	64	73	72	70	68	59
12.....	52	50	42	41	34	33	35	34	34	34	34	34	34	49	47	52	50	64	64	72	70	69	67	57
13.....	52	52	42	41	34	33	35	35	34	34	36	34	34	49	49	51	50	64	61	73	70	68	67	56
14.....	54	52	42	41	34	34	35	34	34	34	36	36	36	50	49	54	51	61	59	74	70	67	67	57
15.....	54	53	41	41	34	34	34	34	34	33	36	35	35	50	50	58	54	62	59	72	69	68	66	57
16.....	53	52	41	41	34	34	34	34	33	33	37	36	36	50	50	58	55	62	60	71	70	69	66	59
17.....	52	50	42	41	34	33	34	34	34	33	37	36	36	50	49	58	56	64	61	72	70	68	66	61
18.....	50	47	42	41	33	33	34	34	34	33	36	36	36	49	48	58	57	63	63	72	70	69	66	62
19.....	47	46	42	41	34	33	34	33	33	33	36	35	35	48	48	58	58	64	72	70	70	68	63	61
20.....	46	45	43	42	34	34	33	33	33	33	33	33	33	48	47	59	58	69	65	73	70	72	69	63
21.....	45	45	43	43	34	34	33	33	33	33	35	35	35	47	46	60	57	70	68	73	71	73	70	62
22.....	46	45	43	43	34	34	33	33	33	33	36	35	35	47	46	60	59	70	68	76	72	72	71	61
23.....	47	46	43	42	34	33	33	33	33	33	36	36	36	48	47	62	59	68	65	74	73	71	70	61
24.....	48	47	42	42	33	33	33	33	35	34	36	36	36	49	48	62	60	66	64	73	71	70	69	60
25.....	48	48	42	41	33	33	33	33	35	34	36	35	35	48	47	62	60	65	63	73	71	70	69	59
26.....	49	49	41	40	33	33	33	33	35	34	35	35	35	50	48	61	59	64	63	73	71	70	68	57
27.....	49	49	40	39	33	33	33	33	34	33	35	35	34	51	48	62	60	64	62	72	69	68	65	56
28.....	49	48	39	39	34	33	33	33	33	33	34	34	--	--	61	60	65	62	70	69	66	66	56	55
29.....	48	48	39	39	34	34	33	33	--	--	34	34	--	--	61	60	66	63	71	69	66	66	55	54
30.....	48	46	39	38	34	34	33	33	--	--	35	34	--	--	60	60	66	65	72	70	67	67	66	54
31.....	46	44	--	--	--	--	--	--	--	--	37	35	--	--	60	59	--	--	74	71	66	64	--	--
Average.....	51	50	42	41	35	34	34	34	34	33	35	35	35	46	45	--	65	63	73	70	71	69	60	59

STREAMS TRIBUTARY TO LAKE HURON--Continued  
EAST BRANCH AU GRES RIVER AT McIVOR, MICH.

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.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 75°F July 9, 10, Aug. 1, 2; minimum, freezing point on many days during December, January, February and March.

EXTREMES, 1951-55.--Water temperatures: Maximum, 75°F June 25, 1952, July 9, 10, Aug. 1, 2, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 5 to Mar. 16. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

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

## 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, 1½ miles upstream from Elm Creek, 4 miles southwest of National City, Iosco County, 12½ miles southwest of Tawas City, and 15½ miles upstream from mouth.

DRAINAGE AREA.--169 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September, 1955.

RECORDS, 1954-55.--Water temperatures: Maximum, 84° F Aug. 1, 4; minimum, freezing point on many days during December, January, February and March. EXTREMES, 1951-55.--Water temperatures: Maximum, 84° F Aug. 1, 4, 1955; minimum, freezing point on many days during the winter months.

REMARKS.--Stream frozen Dec. 4 to Mar. 18. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

/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	max	min	max	min	max	max	min	max	min	max	max	min	
1.....	60	59	41	40	37	36	32	32	32	32	32	32	43	40	61	58	66	59	--	--	84	75	68	
2.....	59	57	42	40	36	34	32	32	32	32	32	32	44	42	61	60	67	61	--	--	83	75	68	
3.....	58	57	42	40	34	32	32	32	32	32	32	32	44	42	66	60	66	62	--	--	81	75	68	
4.....	61	58	41	41	33	33	32	32	32	32	32	32	44	42	67	64	71	65	68	62	84	75	70	
5.....	61	56	41	40	33	33	32	32	32	32	32	32	43	43	67	61	75	68	65	83	76	70		
6.....	56	52	41	40	33	33	32	32	32	32	32	32	43	43	61	56	74	69	68	65	79	68		
7.....	52	48	41	40	33	33	32	32	32	32	32	32	43	40	59	58	72	69	69	65	79	73		
8.....	48	46	42	40	33	32	32	32	32	32	32	32	44	41	59	56	68	66	89	85	75	66		
9.....	50	47	41	39	32	32	32	32	32	32	32	32	47	43	56	52	71	65	89	65	75	64		
10.....	51	50	40	38	32	32	32	32	32	32	32	32	51	47	52	51	72	65	69	65	77	67		
11.....	56	51	41	38	32	32	32	32	32	32	32	32	51	50	54	49	64	69	65	76	67	62		
12.....	58	56	41	38	32	32	32	32	32	32	32	32	51	51	59	53	64	60	78	65	76	66		
13.....	58	56	39	37	32	32	32	32	32	32	32	32	51	50	61	57	60	57	80	66	72	65		
14.....	58	56	41	39	32	32	32	32	32	32	32	32	51	50	63	58	62	55	78	68	69	66		
15.....	59	56	40	38	32	32	32	32	32	32	32	32	51	51	64	58	69	59	78	74	75	67		
16.....	56	49	40	38	32	32	32	32	32	32	32	32	52	49	64	59	73	63	77	71	78	67		
17.....	49	47	43	40	32	32	32	32	32	32	32	32	55	51	61	54	77	68	76	70	79	68		
18.....	47	46	44	43	32	32	32	32	32	32	32	32	55	51	62	56	77	69	77	73	81	70		
19.....	46	44	44	44	32	32	32	32	32	32	32	32	50	50	66	60	76	70	--	--	82	72		
20.....	45	44	44	44	32	32	32	32	32	32	32	32	50	49	65	57	75	70	81	70	81	72		
21.....	48	45	43	42	32	32	32	32	32	32	32	32	52	47	66	58	76	70	82	72	83	74		
22.....	48	46	42	40	32	32	32	32	32	32	32	32	54	52	65	61	82	66	82	73	82	74		
23.....	50	47	40	38	32	32	32	32	32	32	32	32	54	51	68	64	66	63	82	74	74	68		
24.....	51	49	39	38	32	32	32	32	32	32	32	32	54	49	67	63	64	60	78	68	72	63		
25.....	51	50	39	39	32	32	32	32	32	32	32	32	49	47	66	58	64	60	77	65	75	65		
26.....	52	50	39	39	32	32	32	32	32	32	32	32	52	48	58	56	64	61	81	68	72	69		
27.....	51	49	39	38	32	32	32	32	32	32	32	32	56	52	63	58	64	61	80	75	72	69		
28.....	49	46	38	37	32	32	32	32	32	32	32	32	54	54	64	63	63	--	80	70	70	68		
29.....	47	46	37	37	32	32	32	32	32	--	--	37	35	60	56	64	61	--	79	67	76	68		
30.....	47	44	37	37	32	32	32	32	32	--	--	38	37	61	55	62	59	--	81	68	74	68		
31.....	44	41	--	--	32	32	32	32	32	--	--	40	38	--	63	59	--	--	82	73	68	64		
Average.....	52	50	41	39	33	32	32	32	32	32	32	32	51	48	62	58	69	64	76	68	77	69		

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

STREAMS TRIBUTARY TO LAKE HURON--Continued  
HOUGHTON CREEK NEAR LUDTON, MICH.

LOCATION.--Temperature recorder at gaging station, half a mile upstream from mouth, 3 miles downstream from Wilkins Creek, and 3 miles southwest of Ludton, Ogemaw County.  
DRAINAGE AREA.--27 square miles, approximately.  
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1955.  
EXTREMES 1954-55.--Water temperatures: Maximum, 69°; July 24, 1952; minimum, freezing point on several days during December, January, and February.  
EXTREMES 1950-55.--Water temperatures: Maximum, 69°; June 24, 1952; minimum, freezing point on many days during winter months.  
REMARKS.--Stream frozen Dec. 4-7, 13, 20-25, Jan. 16-21, Jan. 27 to Feb. 6, Feb. 12-18, Mar. 6-8. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

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	54	41	40	38	38	37	36	32	32	38	37	43	37	57	51	60	52	68	60	68	61	58	54
2.....	54	52	42	41	--	--	37	36	32	32	38	36	44	38	56	52	60	52	65	60	66	61	58	52
3.....	56	52	41	39	--	--	37	35	32	32	38	35	44	39	62	53	58	53	59	64	60	58	53	53
4.....	58	56	41	40	--	--	37	37	32	32	37	36	44	38	60	56	62	55	67	59	67	59	54	59
5.....	56	50	41	40	--	--	37	37	32	32	37	33	42	40	58	51	62	57	61	66	63	60	56	56
6.....	50	48	42	40	--	--	37	36	34	32	37	33	42	40	56	47	62	57	66	61	63	61	58	53
7.....	48	45	42	42	--	--	36	34	36	34	33	33	44	38	56	52	60	57	66	60	65	61	57	52
8.....	47	45	43	41	--	--	36	34	36	34	33	33	47	40	53	48	61	56	65	60	63	58	54	50
9.....	50	47	42	40	37	36	37	36	38	36	40	33	51	42	49	45	62	55	66	61	62	56	53	50
10.....	50	50	42	40	38	37	37	35	38	34	40	36	54	46	48	47	59	55	64	58	62	58	57	53
11.....	54	50	42	40	38	37	36	34	34	33	40	34	52	48	53	45	58	55	64	58	62	58	55	52
12.....	54	52	42	40	37	36	36	35	33	33	35	33	52	48	56	48	56	54	63	58	63	57	52	46
13.....	54	51	41	39	36	33	36	34	33	33	37	34	51	49	57	50	54	51	63	58	61	57	53	46
14.....	54	51	42	40	36	33	35	34	33	33	38	34	52	48	57	49	58	50	65	57	61	59	54	52
15.....	54	50	40	30	37	36	35	34	37	33	35	34	51	48	57	50	62	53	64	60	63	59	56	52
16.....	50	48	42	39	37	36	35	34	37	35	35	33	52	46	56	50	64	55	61	58	64	59	59	54
17.....	48	47	44	42	36	35	34	32	36	33	36	33	54	47	55	46	63	57	61	58	64	59	60	56
18.....	48	45	43	37	36	34	33	33	35	33	38	34	51	47	56	48	63	57	64	58	64	60	60	56
19.....	47	44	45	43	36	33	34	33	37	34	38	33	50	48	59	53	63	58	65	59	64	60	61	57
20.....	47	44	43	42	33	32	32	39	37	40	36	48	47	58	50	65	65	65	59	65	60	61	56	56
21.....	48	45	42	41	33	32	34	32	39	36	37	36	53	46	58	50	65	58	66	60	67	61	56	52
22.....	48	45	41	41	32	32	35	34	37	35	37	32	54	47	57	52	62	58	66	60	66	62	58	52
23.....	51	47	41	39	36	32	35	34	36	33	35	32	53	46	57	54	58	54	66	62	63	58	55	51
24.....	51	48	40	39	37	36	35	33	35	33	36	34	52	47	58	54	59	52	63	58	60	55	54	52
25.....	50	48	40	40	37	37	35	33	35	33	37	34	47	47	57	54	58	53	62	56	61	57	54	50
26.....	49	47	40	39	38	37	35	33	37	34	36	34	54	45	57	51	59	54	65	58	61	58	52	48
27.....	49	43	39	33	37	36	32	37	36	36	33	55	47	59	52	60	54	65	62	58	57	52	50	48
28.....	46	43	39	37	36	32	32	38	37	38	33	57	48	59	56	62	55	64	58	64	58	57	55	52
29.....	46	43	39	36	34	32	32	--	--	41	36	57	50	58	54	63	57	64	57	63	58	54	51	48
30.....	43	43	39	36	34	32	32	--	--	42	35	57	40	58	52	65	58	65	58	65	61	61	54	52
31.....	43	41	--	--	36	34	32	32	--	--	43	36	--	--	59	51	--	--	--	--	60	62	57	--
Average.....	50	48	41	40	--	--	35	34	35	34	37	34	50	45	57	51	61	55	65	59	63	59	56	52

Temperature (°F) of water, water year October 1954 to September 1955  
Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph<sup>7</sup>



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.--Water temperatures: July 1950 to September 1955.  
EXTREMES, 1954-55.--Water temperatures: Maximum, 72°F July 5, 6, 9, Aug. 1; minimum, freezing point on many days during December, January, and February.  
EXTREMES, 1950-55.--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. 20-23, Jan. 20, 21, Jan. 27 to Feb. 7, Feb. 11-18, Mar. 7, 8, 19. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

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

Temperature (°F) of water, water year October 1954 to September 1955  
/Record with temperature attachment, continuous ethyl alcohol-actuated thermometer/7

## 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 1½ miles north of Selkirk, Ogemaw County.

DRAINAGE AREA 19 square miles, approximately.

RECORDS AVAILABLE.--October 1950 to September 1955.

EXTREMES 1954-55.--Water temperatures: Maximum, 76°F Aug. 1, 1955; minimum, freezing point on many days during December, January, February, and March.

EXTREMES 1950-55.--Water temperatures: Maximum, 76°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Stream frozen Dec. 4-9 Dec. 14 to Mar. 20. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

/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	57	40	39	37	36	32	32	32	32	32	32	44	36	59	53	--	--	73	67	76	70	61	57
2.....	57	55	41	40	36	35	32	32	32	32	32	32	46	37	59	54	63	56	71	66	73	68	59	54
3.....	58	55	41	39	35	34	32	32	32	32	32	32	45	38	55	55	62	57	69	65	72	69	60	55
4.....	61	58	41	40	34	34	32	32	32	32	32	32	44	38	64	59	66	80	73	64	74	68	62	55
5.....	59	53	41	40	34	34	32	32	32	32	32	32	43	39	61	52	62	73	69	74	71	63	60	54
6.....	53	49	41	40	34	34	32	32	32	32	32	32	40	40	57	47	67	83	73	69	71	68	61	55
7.....	49	45	42	41	34	34	32	32	32	32	32	32	43	37	57	54	66	83	72	66	69	66	59	53
8.....	48	45	43	41	34	34	32	32	32	32	32	32	46	38	55	49	65	82	71	67	68	61	55	51
9.....	50	47	42	40	34	34	32	32	32	32	32	32	51	40	49	44	63	80	74	68	65	58	54	52
10.....	52	51	41	38	34	34	32	32	32	32	32	32	55	46	48	48	63	59	70	64	67	62	60	54
11.....	52	41	39	34	34	34	32	32	32	32	32	32	53	47	53	46	82	59	68	63	66	62	59	54
12.....	57	57	41	39	34	33	32	32	32	32	32	32	52	48	58	49	59	66	60	66	60	54	49	49
13.....	57	54	40	37	33	32	32	32	32	32	32	32	51	49	59	53	57	54	67	59	64	59	53	49
14.....	57	55	41	40	32	32	32	32	32	32	32	32	53	48	59	51	60	53	89	61	64	63	56	53
15.....	57	52	40	38	32	32	32	32	32	32	32	32	52	48	60	51	64	56	89	67	67	63	58	55
16.....	52	49	41	38	32	32	32	32	32	32	32	32	52	46	59	52	67	59	67	65	68	63	62	56
17.....	49	48	44	41	32	32	32	32	32	32	32	32	55	46	56	47	68	83	67	64	69	64	63	60
18.....	48	45	45	44	32	32	32	32	32	32	32	32	51	48	58	49	69	83	70	65	71	66	62	58
19.....	47	44	45	44	32	32	32	32	32	32	32	32	49	47	63	57	68	83	71	68	71	66	62	58
20.....	47	44	42	32	32	32	32	32	32	32	32	32	47	46	61	52	70	64	71	64	70	66	65	58
21.....	50	47	42	41	32	32	32	32	32	32	32	32	55	44	62	52	69	65	72	66	74	68	58	53
22.....	50	46	41	40	32	32	32	32	32	32	32	32	55	47	59	56	66	61	73	67	72	68	57	54
23.....	54	49	40	38	32	32	32	32	32	32	32	32	54	45	61	58	61	58	72	69	68	62	56	52
24.....	53	50	38	38	32	32	32	32	32	32	32	32	51	46	64	59	61	55	69	64	63	57	56	53
25.....	53	50	39	38	32	32	32	32	32	32	32	32	46	45	63	56	60	56	66	59	66	60	56	52
26.....	52	48	39	38	32	32	32	32	32	32	32	32	53	45	61	54	62	57	71	63	66	64	53	48
27.....	49	46	38	38	32	32	32	32	32	32	32	32	58	47	63	56	63	56	71	68	64	64	51	50
28.....	46	43	38	38	32	32	32	32	32	32	32	32	59	49	63	61	66	59	70	64	64	63	56	51
29.....	46	45	38	38	32	32	32	32	32	32	32	32	59	51	--	--	81	69	62	68	63	56	52	48
30.....	43	40	38	37	32	32	32	32	32	32	32	32	60	50	--	--	69	64	70	63	68	64	56	54
31.....	45	40	--	--	32	32	32	32	32	32	32	32	--	--	--	--	--	--	72	67	64	60	--	--
Average.....	52	49	41	39	33	33	32	32	32	32	32	32	51	44	59	53	64	59	70	65	68	64	58	54

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, Osgow County, and 1½ miles downstream from Prior Creek.

DRAINAGE AREA.--110 square miles.

RECORDS AVAILABLE.--Water temperatures:

EXTREMES, 1954-55.--Water temperatures:

EXTREMES, 1950-55.--Water temperatures:

REMARKS.--Stream frozen Dec. 5-8, 13, 14, 19-25, 30, Jan. 8, Jan. 14 to Feb. 20, Feb. 24, 25, Mar. 5-9. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

October 1950 to September 1955.

Maximum, 78°F Aug. 1; minimum, freezing point on many days during December, January, February, and March.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Maximum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Minimum, 78°F Aug. 1, 1955; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1954 to September 1955

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

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 town of West Branch.  
DRAINAGE AREA.--32 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: May 1952 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 78°F July 4, 6, 9, Aug. 1, 4; minimum, freezing point on many days during December, January, February, and March.

REMARKS.--Stream frozen Dec. 3-11, Dec. 14 to Mar. 10. Temperatures given for these periods are for the underflow. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

Recorded 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.....	59	58	40	38	36	35	32	32	32	32	32	32	45	40	63	55	66	56	76	69	78	71	64	60
2.....	58	56	40	39	35	33	32	32	32	32	32	32	46	42	62	57	67	59	74	69	76	71	64	58
3.....	58	55	40	37	33	32	32	32	32	32	32	32	46	41	62	57	66	70	75	68	75	72	65	58
4.....	60	58	40	39	33	32	32	32	32	32	32	32	45	42	67	60	70	63	78	70	78	71	66	59
5.....	60	54	40	38	32	32	32	32	32	32	32	32	43	42	64	58	72	64	77	71	77	72	66	62
6.....	54	50	41	39	32	32	32	34	33	32	32	32	43	40	60	52	71	66	78	71	76	73	65	59
7.....	50	46	41	39	32	32	32	33	32	32	32	32	43	37	60	55	71	67	77	70	75	71	63	58
8.....	48	46	42	39	32	32	32	33	32	32	32	32	43	38	58	52	68	84	76	71	71	65	60	55
9.....	50	48	42	39	32	32	32	32	32	32	32	32	42	53	47	69	63	78	71	69	62	58	55	58
10.....	52	50	41	38	32	32	32	33	32	32	32	32	52	47	50	48	68	62	76	68	71	65	62	58
11.....	56	52	41	38	32	32	32	32	32	32	32	32	55	49	56	46	67	62	73	67	71	65	61	57
12.....	58	56	41	38	32	32	32	32	32	32	32	32	55	50	60	50	63	60	71	64	69	64	58	53
13.....	57	54	40	37	32	32	32	32	32	32	32	34	54	50	62	54	60	56	72	63	68	63	58	53
14.....	57	54	41	39	32	32	32	32	32	32	32	33	55	50	62	54	63	54	73	65	67	65	59	57
15.....	57	51	39	37	32	32	32	32	32	32	32	34	54	51	64	54	67	57	73	70	70	64	61	57
16.....	51	47	41	37	32	32	32	32	32	32	32	33	54	48	63	56	70	60	72	68	71	64	65	58
17.....	47	46	43	40	32	32	32	32	32	32	32	32	54	48	63	56	70	60	72	68	71	64	65	58
18.....	47	45	45	42	32	32	32	32	32	32	32	35	54	49	61	51	73	66	73	68	73	66	67	61
19.....	46	43	45	44	32	32	32	32	32	32	32	36	52	51	48	64	57	73	66	74	68	69	68	64
20.....	47	43	44	42	32	32	32	32	32	32	32	36	54	48	63	54	74	67	75	67	75	70	68	62
21.....	49	45	42	40	32	32	32	32	32	32	32	35	54	46	64	55	73	68	76	69	77	71	63	57
22.....	49	45	40	39	32	32	32	32	32	32	32	34	53	56	60	54	70	65	76	69	76	71	60	57
23.....	52	47	39	37	32	32	32	32	32	32	32	34	53	57	64	61	65	61	75	70	72	66	59	55
24.....	53	49	38	37	32	32	32	32	32	32	32	35	54	55	66	61	64	58	72	66	67	61	58	56
25.....	53	49	38	38	32	32	32	32	32	32	32	35	53	49	64	57	64	58	70	62	68	63	57	53
26.....	52	48	38	37	32	32	32	32	32	32	32	34	54	46	60	56	65	59	74	65	68	66	56	51
27.....	51	47	38	37	32	32	32	32	32	32	32	35	53	49	63	59	67	59	74	72	66	65	54	52
28.....	47	43	37	36	32	32	32	32	32	32	32	37	53	61	52	65	63	70	61	74	67	66	64	58
29.....	46	45	37	36	32	32	32	32	32	32	32	40	54	62	64	59	70	64	73	65	71	65	57	52
30.....	45	43	37	36	32	32	32	32	32	32	32	42	53	63	62	56	73	67	74	66	71	67	57	55
31.....	43	40	--	--	32	32	32	32	32	32	32	43	38	--	64	56	--	--	75	70	67	63	--	--
Average.....	52	50	40	38	32	32	32	32	32	32	32	34	33	--	62	55	68	68	74	68	72	67	62	57

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.--6,314 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1950 to February 1952.

Water temperatures: March 1950 to September 1955.

Sediment records: April 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 90°F July 27, Aug. 3-5; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 1,070 ppm Mar. 13; minimum daily, 1 ppm Sept. 18-19.

Sediment loads: Maximum daily, 130,000 tons Mar. 6; minimum daily, less than 0.5 ton Sept. 18-19.

EXTREMES, 1950-55.--Water temperatures: Maximum, 90°F July 22, 1952, July 27, Aug. 3-5, 1955; minimum, freezing point on many days during some winter months.

Sediment concentrations: Maximum daily, 2,240 ppm Mar. 26, 1954; minimum daily, 1 ppm on many days during October to December 1953, and September 1955.

Sediment loads: Maximum daily, 142,000 tons Mar. 26, 1954; minimum daily, less than 0.5 ton on several days during October to December 1953, and September 1955.

REMARKS.--Temperature recorder on downstream side of second pier from left end of bridge. Low flow slightly regulated by power plants above station.

Records of discharge for water year October 1954 to September 1955 given in WSP 1387. Flow affected by ice Jan. 30 to Feb. 15, Feb. 22, 23.

Temperature (°F) of water, water year October 1954 to September 1955  
/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.....	72	69	47	45	38	37	36	36	32	32	39	37	44	42	62	60	72	68	79	75	88	85	76	71
2.....	74	70	45	44	37	36	36	36	32	32	40	39	46	44	64	62	75	70	84	76	89	84	76	69
3.....	72	71	44	43	36	35	36	36	32	32	40	40	47	45	66	65	76	70	87	80	90	86	75	69
4.....	72	71	43	42	35	35	37	36	32	32	40	40	47	46	68	66	78	71	87	80	90	87	76	69
5.....	71	66	43	42	35	34	38	37	32	32	40	40	50	47	68	67	79	76	87	80	90	87	76	72
6.....	66	64	42	42	34	33	39	38	32	32	41	40	51	50	68	65	79	76	86	82	87	85	76	69
7.....	65	63	43	42	33	32	39	39	33	33	41	39	51	49	67	66	76	74	84	82	85	82	75	68
8.....	64	62	44	43	32	32	39	39	33	33	39	37	49	48	66	63	74	72	85	81	82	78	71	66
9.....	62	61	44	44	33	32	39	38	33	33	38	36	51	49	63	61	72	71	85	82	79	78	72	65
10.....	62	62	44	44	33	33	38	38	33	33	39	37	54	51	62	60	71	71	84	81	81	79	74	70
11.....	63	62	44	44	33	33	38	37	33	33	42	39	54	53	63	60	71	71	81	78	81	80	73	70
12.....	63	63	45	44	33	33	37	36	33	33	45	42	55	53	66	62	71	70	80	77	80	78	70	64
13.....	65	63	45	44	33	33	36	36	33	33	47	45	57	55	66	64	71	68	80	77	78	75	70	64
14.....	66	65	46	45	33	33	36	35	33	33	47	47	58	57	65	63	68	67	83	78	75	73	70	66
15.....	66	64	45	44	34	33	35	34	33	33	47	47	58	57	65	61	72	69	81	79	78	72	72	69
16.....	64	61	44	43	34	34	34	34	33	33	47	46	58	56	67	62	76	72	80	79	79	76	73	70
17.....	61	53	41	41	31	31	33	33	33	33	45	45	59	58	64	61	75	75	80	80	80	77	73	73
18.....	58	56	45	44	34	34	33	33	33	33	45	44	59	59	67	63	81	77	83	83	82	80	73	72
19.....	56	54	47	45	34	33	33	33	33	33	44	43	60	59	67	65	81	76	83	83	87	80	73	72
20.....	54	53	47	47	33	32	33	33	33	33	44	43	60	59	70	66	80	79	83	82	86	81	73	74
21.....	53	53	47	45	32	32	32	32	32	32	45	44	61	59	71	67	82	78	86	83	87	81	74	68
22.....	53	52	45	44	33	32	32	32	32	32	45	42	61	60	71	68	79	74	87	83	85	80	69	68
23.....	53	53	44	43	32	32	32	32	32	32	42	40	61	60	73	70	78	74	85	84	83	78	69	68
24.....	54	53	43	43	32	32	32	32	32	32	43	42	60	59	74	71	78	72	84	82	81	75	70	67
25.....	54	54	43	43	32	32	32	32	35	33	43	42	59	58	73	71	77	72	85	79	81	74	70	65

[illegible]

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	294	21	17	920	19	47	9,550	105	2,710
2.....	304	28	23	1,310	16	56	7,770	71	1,490
3.....	285	18	14	889	13	31	5,550	67	1,000
4.....	370	18	18	1,220	9	30	3,900	45	485
5.....	1,280	53	183	796	8	17	3,440	37	344
6.....	5,730	59	913	1,070	9	26	2,590	31	217
7.....	9,150	78	1,930	988	4	11	2,200	25	148
8.....	8,750	115	2,720	904	9	22	1,610	20	a 85
9.....	6,460	138	2,410	1,830	12	59	1,480	18	a 70
10.....	5,380	125	1,820	1,230	11	a 35	2,050	14	77
11.....	8,350	120	2,700	1,270	10	34	1,380	20	74
12.....	12,900	185	6,440	1,310	12	42	954	25	64
13.....	19,200	289	15,000	874	14	33	1,160	25	78
14.....	23,400	348	22,000	954	14	36	920	20	50
15.....	31,100	440	36,900	971	12	31	971	18	47
16.....	32,500	605	53,100	751	22	45	812	15	33
17.....	29,700	405	32,500	681	18	33	971	15	39
18.....	21,300	230	13,200	920	15	37	1,060	15	a 45
19.....	15,600	147	6,190	780	17	36	1,060	13	a 35
20.....	11,400	110	3,380	2,400	23	149	904	12	29
21.....	8,950	87	2,100	3,560	27	260	1,350	12	44
22.....	6,640	67	1,200	3,620	27	264	1,330	9	32
23.....	5,380	60	872	2,930	20	158	1,130	3	9
24.....	3,200	52	449	3,080	17	141	1,110	3	9
25.....	2,420	42	274	3,230	23	200	1,000	4	11
26.....	2,390	35	226	3,810	22	226	937	8	20
27.....	1,900	34	174	5,910	30	479	1,160	3	9
28.....	1,610	28	122	5,360	34	494	7,590	16	s 439
29.....	1,720	28	130	8,750	43	1,010	17,400	230	s 11,600
30.....	1,400	26	98	10,200	64	1,760	23,400	487	30,800
31.....	1,220	20	66	--	--	--	21,300	271	15,600
Total.	280,283	--	207,169	72,538	--	5,802	128,129	--	65,693
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.....	17,400	182	8,550	950	3	8	31,800	515	44,200
2.....	16,800	138	6,260	900	2	5	35,500	558	53,500
3.....	16,200	145	6,340	850	7	16	31,100	570	47,900
4.....	13,400	110	3,980	800	8	17	32,500	612	53,700
5.....	12,400	100	3,350	900	15	36	41,900	931	105,000
6.....	24,800	188	12,600	850	9	16	45,900	1,050	130,000
7.....	33,900	408	37,300	700	6	11	40,300	705	76,700
8.....	33,200	512	45,900	850	5	11	28,300	468	35,800
9.....	28,300	363	27,700	800	5	11	19,900	340	18,300
10.....	19,900	187	10,000	950	5	13	13,400	275	9,950
11.....	15,000	128	5,180	1,200	16	52	11,400	220	6,770
12.....	11,900	92	2,960	2,500	10	68	22,000	398	s 25,700
13.....	9,750	76	2,000	4,000	7	76	24,100	1,070	69,600
14.....	6,270	70	1,180	3,100	11	92	16,200	720	31,500
15.....	5,730	55	851	2,500	12	81	11,700	590	18,600
16.....	3,140	48	407	2,230	19	114	9,150	395	9,760
17.....	2,370	44	282	2,930	12	95	7,580	284	5,400
18.....	3,470	36	337	3,900	12	126	7,200	196	3,810
19.....	2,370	26	166	5,380	15	218	5,730	148	2,290
20.....	1,850	21	105	6,270	26	440	4,530	100	1,220
21.....	1,610	17	74	11,400	108	3,320	5,550	86	1,290
22.....	1,520	13	53	15,000	176	7,130	10,800	163	4,750
23.....	1,670	19	86	21,000	358	20,300	15,600	249	10,500
24.....	1,810	21	103	16,800	236	10,700	16,800	330	15,000
25.....	1,130	15	46	12,600	130	4,420	12,900	254	8,850
26.....	1,200	11	36	11,200	87	2,630	10,200	190	5,230
27.....	1,180	9	29	14,400	80	3,110	7,770	148	3,100
28.....	954	10	26	24,100	385	25,000	5,550	115	1,720
29.....	560	5	8	--	--	--	5,030	68	1,400
30.....	750	3	6	--	--	--	6,830	76	1,400
31.....	700	3	6	--	--	--	9,350	76	1,920
Total.	291,234	--	175,921	168,860	--	78,116	546,560	--	804,660

s Computed by subdividing day.

a Computed from estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

## Suspended sediment, water year October 1954 to September 1955--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.....	9,350	82	2,070	3,470	93	871	858	22	51
2.....	8,750	84	1,980	2,200	73	434	573	13	20
3.....	7,390	77	1,540	2,200	62	368	460	6	7
4.....	5,380	73	1,060	1,810	60	293	472	9	11
5.....	4,530	69	844	2,010	55	298	709	10	19
6.....	3,440	72	669	1,110	45	135	460	15	19
7.....	2,640	75	535	1,420	40	a 150	508	10	14
8.....	2,450	54	357	988	35	93	1,180	30	96
9.....	2,150	40	232	709	30	57	2,060	36	200
10.....	1,760	37	176	1,250	32	108	1,640	35	155
11.....	1,360	30	110	1,810	32	156	1,500	44	178
12.....	2,020	30	164	904	38	93	1,950	57	300
13.....	2,530	38	260	812	35	77	1,740	45	211
14.....	2,480	48	321	695	37	69	1,740	41	193
15.....	2,930	74	585	765	34	70	1,310	43	152
16.....	4,370	81	956	737	32	64	1,310	43	152
17.....	3,930	68	722	508	24	33	1,060	30	86
18.....	3,870	53	554	1,110	24	72	842	22	50
19.....	3,900	54	569	1,070	16	46	971	25	66
20.....	5,200	65	913	858	8	18	1,060	27	77
21.....	5,730	66	1,020	667	5	9	653	20	35
22.....	5,200	58	814	449	6	7	472	20	25
23.....	3,710	54	541	460	9	11	342	23	21
24.....	6,080	71	s 1,360	586	7	11	352	17	16
25.....	16,200	314	s 15,300	709	10	19	278	20	15
26.....	18,600	800	40,200	1,040	23	64	270	21	15
27.....	18,900	504	18,900	1,110	30	90	262	17	12
28.....	10,400	302	8,480	971	25	66	278	8	6
29.....	7,200	187	3,640	889	25	60	278	7	5
30.....	4,860	126	1,650	534	18	26	495	14	19
31.....	--	--	--	723	16	31	--	--	--
Total.	172,320	--	106,522	34,574	--	3,899	26,083	--	2,226
	July			August			September		
1.....	612	24	40	612	34	56	225	19	12
2.....	332	17	15	737	33	66	168	17	8
3.....	285	12	9	599	28	45	162	12	5
4.....	270	7	5	709	28	54	198	20	11
5.....	278	6	4	534	25	36	204	42	23
6.....	371	26	26	653	33	58	192	22	11
7.....	547	34	50	534	32	46	180	12	6
8.....	723	66	129	534	41	59	146	15	6
9.....	737	52	103	2,240	57	345	138	18	7
10.....	534	48	69	2,500	60	405	210	17	10
11.....	521	47	66	1,400	49	185	210	14	8
12.....	723	66	129	1,090	45	132	168	12	5
13.....	1,390	62	233	1,060	58	166	134	17	6
14.....	695	48	90	751	55	a 110	129	16	6
15.....	981	58	154	495	38	51	136	10	4
16.....	4,140	67	749	625	34	57	92	8	2
17.....	7,960	80	1,720	586	28	44	95	5	1
18.....	5,730	80	1,240	495	30	40	95	1	(t)
19.....	3,870	77	804	380	27	28	107	1	(t)
20.....	3,380	78	712	285	21	16	107	2	1
21.....	1,570	65	276	270	14	10	78	3	1
22.....	904	37	90	270	12	9	63	16	3
23.....	874	41	97	352	12	11	122	17	6
24.....	874	48	113	304	14	11	186	6	3
25.....	599	34	55	255	9	6	130	2	1
26.....	472	28	36	361	12	12	95	2	1
27.....	460	22	27	495	18	24	110	3	1
28.....	380	22	22	380	16	16	162	3	1
29.....	786	37	78	352	25	24	130	4	1
30.....	737	43	86	460	33	41	146	4	2
31.....	937	46	116	313	22	18	--	--	--
Total.	42,672	--	7,343	20,631	--	2,181	4,318	--	152

Total discharge for year (cfs-days)..... 1,788,202

Total load for year (tons)..... 1,459,684

s Computed by subdividing day.

a Computed from estimated concentration graph.

t Less than 0.5 ton.



## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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
Oct. 16, 1954	12:45 a.m.	32,500		597	1,270	49	71	82	90	95	97	98	100			BSWCM
Oct. 16	12:45 a.m.	32,500		597	1,160	41	57	79	93	96	97	99	100			BSNM
Oct. 16	8:00 a.m.	33,200		644	628	64	76	83	91	95	98	99	100			BSWCM
Dec. 30	9:00 a.m.	23,400		481	1,320	73	80	90	93	97	99	100	--			BSWCM
Dec. 30	9:00 a.m.	23,400		481	1,110	20	41	74	95	97	99	99	100			BSNM
Jan. 7, 1955	10:45 a.m.	34,700		393	1,380	70	83	85	92	94	97	98	99			BSWCM
Jan. 9	11:20 a.m.	28,300		416	827	76	85	89	93	97	99	99	100			BSWCM
Mar. 2	3:00 a.m.	37,100		544	1,940	73	78	84	91	96	98	99	100			BSWCM
Mar. 4	2:45 p.m.	34,700		532	2,280	75	84	93	95	98	99	99	100			BSWCM
Mar. 6	3:40 p.m.	46,800		1,010	1,640	72	84	90	94	96	98	99	100			BSWCM
Mar. 8	3:40 p.m.	46,800		1,010	1,630	56	76	90	96	97	99	100	--			BSNM
Apr. 26	12:05 p.m.	18,600		845	851	79	91	95	99	99	100	--	--			BSNM

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## PORTAGE RIVER AT WOODVILLE, OHIO

LOCATION.--At gaging station at bridge on U. S. Highway 20 in Woodville, Sandusky County.  
DRAINAGE AREA.--433 square miles.

RECORDS AVAILABLE.--Water temperatures: September 1952 to September 1955.

Sediment records: October 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 94°F Aug. 3; minimum, freezing point on several days during January and February.

Sediment concentrations: Maximum daily, 790 ppm Mar. 4; minimum daily, 1 ppm on many days during November to February, and June.

Sediment loads: Maximum daily, 10,200 tons Mar. 5; minimum daily, 0.1 ton on several days during November to February.

EXTREMES, 1950-55.--Water temperatures (1952-55): Minimum, freezing point on several days during December 1952, January and February 1955.

Sediment concentrations: Maximum daily, 1,210 ppm Mar. 12, 1952; minimum daily, 1 ppm on many days during October, December 1950, May, December 1952, January to April, November, December 1953, February, November, December 1954, January, February, and June 1955.

Sediment loads: Maximum daily, 27,900 tons Mar. 12, 1952; minimum daily, less than 0.05 ton on many days during November 1951, November, December 1952, January, November 1953 to February 1954.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1387. Flow affected by ice Dec. 21-22, Jan. 16 to Feb. 9, Feb. 20-21.

Temperature (°F) of water, water year October 1954 to September 1955  
(Once-daily measurement at approximately 4 p.m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	41	37	38	33	42	49	68	74	78	84	--
2	78	40	--	42	33	42	52	71	75	84	93	78
3	--	--	33	42	33	44	51	76	78	88	94	78
4	75	39	37	41	33	41	51	78	83	--	--	75
5	62	42	--	--	--	41	57	74	--	90	88	80
6	--	--	33	42	33	--	57	--	83	80	85	74
7	60	46	--	38	33	36	50	70	79	80	84	--
8	56	49	34	--	33	34	54	66	68	--	81	75
9	65	47	33	39	34	43	59	62	74	--	82	--
10	64	47	--	38	35	49	--	60	75	--	84	--
11	68	47	34	37	--	52	57	--	74	81	84	72
12	67	47	--	36	--	51	65	71	--	82	84	74
13	68	47	35	36	--	48	66	--	64	85	74	74
14	68	--	35	33	--	45	--	68	70	--	69	75
15	60	47	35	33	--	50	69	76	80	80	84	75
16	54	47	--	--	--	46	60	70	--	85	86	84
17	53	54	35	33	35	40	65	--	85	--	89	84
18	52	48	35	33	35	42	66	72	86	86	--	--
19	52	55	--	33	--	44	67	68	--	87	92	--
20	53	--	--	33	--	--	64	78	84	88	70	80
21	55	44	--	33	36	49	67	77	86	80	--	69
22	56	43	--	33	36	--	68	--	83	90	85	72
23	57	42	33	--	38	40	63	75	--	85	83	68
24	60	40	34	33	40	45	--	78	81	--	82	72
25	59	--	--	32	40	42	60	70	81	84	80	67
26	55	41	34	32	38	--	55	73	--	88	--	62
27	--	39	35	34	--	36	55	72	83	85	82	65
28	52	40	37	32	41	39	65	72	--	81	--	--
29	49	39	38	--	--	42	67	64	83	85	83	68
30	45	--	37	--	--	42	67	74	--	--	81	72
31	--	--	39	33	--	46	--	--	--	91	77	--
Average	60	45	--	36	a 35	43	60	71	--	--	83	--

a Includes estimated temperature, 32°F, Feb. 11-16.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## PORTAGE RIVER AT WOODVILLE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	14	31	1.2	39	2	0.2	262	25	18
2.....	23	31	1.9	35	3	.3	202	14	7.6
3.....	28	43	3.2	35	2	a .3	166	12	5.4
4.....	21	35	2.0	40	1	.1	143	10	3.9
5.....	19	50	2.6	50	2	.3	120	8	a 3
6.....	34	30	a 3	112	18	a 5	96	7	1.8
7.....	61	32	5.3	122	7	2.3	77	5	a 1
8.....	40	10	1.1	98	6	1.6	67	5	.9
9.....	31	17	1.4	77	5	1.0	70	4	.8
10.....	48	23	3.0	63	2	.3	72	2	.4
11.....	197	45	s 27	53	2	.3	71	2	.4
12.....	369	86	s 95	45	4	.5	57	2	a .3
13.....	715	175	338	43	5	.6	49	2	.3
14.....	790	196	s 457	41	5	a .6	46	1	.1
15.....	2,360	360	2,290	40	6	.6	50	3	.4
16.....	2,200	176	1,040	37	3	.3	54	--	
17.....	1,290	95	331	35	1	.1	57	--	
18.....	815	66	145	35	5	.5	54	--	
19.....	504	60	82	34	10	.9	55	--	
20.....	298	58	47	34	8	a .7	44	--	e .3
21.....	209	52	29	43	2	.2	45	--	
22.....	158	45	19	53	1	.2	40	--	
23.....	119	37	12	63	5	.8	37	--	
24.....	93	24	6.0	58	7	1.1	44	2	.2
25.....	75	19	3.8	68	7	a 1	57	1	a .2
26.....	63	20	3.4	274	27	s 22	54	1	.1
27.....	61	17	a 3	334	35	32	57	1	.2
28.....	55	12	1.8	324	22	19	696	70	sb 280
29.....	52	11	1.5	550	45	67	2,280	230	b 1,400
30.....	48	4	.5	459	45	a 55	1,990	147	790
31.....	44	3	a .4	--	--	--	1,680	125	567
Total.	10,834	--	4,957.1	3,304	--	214.8	8,792	--	3,084.4
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.....	900	72	175	35	2	0.2	2,950	477	s 4,100
2.....	1,200	81	262	35	2	.2	3,130	340	s 3,120
3.....	1,140	94	289	40	1	.1	1,440	155	603
4.....	690	71	132	35	1	.1	2,980	790	s 7,230
5.....	780	60	sb 160	35	1	a .1	5,650	670	10,200
6.....	3,490	485	4,570	35	2	.2	3,360	253	2,300
7.....	4,250	309	3,540	35	3	.3	1,380	160	596
8.....	1,880	150	a 750	40	5	.5	665	95	170
9.....	990	84	224	50	4	.5	528	56	80
10.....	690	54	101	80	2	.4	550	49	73
11.....	481	38	49	407	--	e 20	1,530	250	s 1,640
12.....	359	26	25	715	--	e 90	3,810	675	6,940
13.....	304	19	16	346	--	e 25	1,720	306	s 1,500
14.....	247	15	10	236	--	e 9	740	153	306
15.....	198	12	6.4	177	--	e 3	514	93	129
16.....	150	10	a 4	172	--	e 3	790	92	s 208
17.....	130	7	2.4	223	7	4.2	930	130	326
18.....	110	4	1.2	469	20	25	510	70	96
19.....	95	2	.5	665	35	a 65	373	36	36
20.....	85	1	a .2	750	45	a 90	270	25	a 18
21.....	80	1	.2	2,500	374	s 2,820	834	60	sb 200
22.....	75	1	.2	2,680	256	1,850	2,770	--	e 2,600
23.....	65	1	a .2	1,850	116	580	2,120	252	1,440
24.....	60	2	.3	1,260	63	214	900	130	316
25.....	55	2	.3	960	48	127	564	67	102
26.....	50	2	.2	790	40	85	400	45	a 50
27.....	45	2	.2	1,540	--	e 700	250	30	20
28.....	45	2	.2	2,680	214	1,550	168	20	9.1
29.....	40	1	a .1	--	--	--	329	20	18
30.....	40	1	a .1	--	--	--	1,000	83	s 240
31.....	35	2	.2	--	--	--	1,380	92	343
Total.	18,759	--	10,319.9	18,840	--	8,262.8	44,535	--	45,009.1

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## PORTAGE RIVER AT WOODVILLE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	960	68	176	127	17	5.8	26	6	0.4
2.....	604	43	70	103	26	7.2	21	4	.2
3.....	407	36	40	92	22	5.5	17	6	.3
4.....	270	30	22	82	17	3.8	14	3	.1
5.....	198	22	12	75	17	3.4	14	6	a.2
6.....	184	18	8.9	71	16	a.3	12	11	.4
7.....	163	13	5.7	61	15	2.5	12	16	.5
8.....	133	8	2.9	53	15	2.1	13	20	.7
9.....	108	6	1.7	44	10	1.2	16	17	.7
10.....	98	4	a.1	43	5	.6	16	18	.8
11.....	97	2	.5	45	6	a.7	22	20	1.2
12.....	110	4	1.2	52	10	1.4	21	18	a.1
13.....	131	6	2.1	42	13	a.1	20	14	.8
14.....	123	3	a.1	35	13	1.2	16	10	.4
15.....	207	16	sb 16	29	12	.9	15	6	.2
16.....	336	50	b 45	25	15	1.0	14	5	a.2
17.....	218	13	7.6	21	15	a.8	12	4	.1
18.....	165	9	4.0	19	13	.7	11	7	.2
19.....	181	9	4.4	18	14	.7	11	12	a.4
20.....	370	10	10	18	12	.6	9.0	17	.4
21.....	586	50	b 80	19	13	.7	7.7	22	.4
22.....	439	27	32	19	15	a.8	6.4	19	.3
23.....	264	26	18	19	14	.7	5.1	16	a.2
24.....	505	--	e 100	21	6	.3	5.1	13	.2
25.....	1,780	292	1,400	28	10	.8	5.5	10	.1
26.....	1,050	137	388	52	12	1.7	--	--	--
27.....	528	104	148	38	10	1.0	6.0	9	a.1
28.....	329	58	52	28	5	.4	6.0	9	.1
29.....	228	34	21	35	2	.2	5.1	17	a.2
30.....	168	25	11	49	3	.4	5.1	28	.2
31.....	--	--	--	35	5	a.5	34	28	s 3.8
Total.	10,940	--	2,682.0	1,398	--	51.6	398.9	--	14.8
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.....	429	220	sb 270	8.1	43	0.9	8.5	60	a.1
2.....	146	72	s 31	7.7	27	.6	8.5	47	1.1
3.....	62	41	6.9	7.2	25	.5	9.0	47	1.1
4.....	31	40	a.3	6.0	30	a.5	8.5	45	1.0
5.....	19	62	3.2	5.1	26	.4	8.1	45	1.0
6.....	24	54	3.5	12	53	s 1.9	7.7	46	1.0
7.....	19	55	2.8	45	58	7.0	7.2	50	a.1
8.....	59	--	e 14	66	68	12	7.2	50	1.0
9.....	135	60	b 20	36	74	7.2	7.2	50	a.1
10.....	168	55	a 25	21	80	4.5	7.2	50	a.1
11.....	205	65	36	15	81	3.3	8.5	49	1.1
12.....	101	44	12	14	74	2.8	7.2	45	.9
13.....	53	34	4.9	12	63	2.0	5.1	38	.5
14.....	30	30	a.2	15	55	2.2	6.8	57	1.0
15.....	25	50	3.4	14	42	1.6	6.4	57	1.0
16.....	57	50	7.7	18	43	2.1	5.5	40	.6
17.....	69	50	a.9	14	42	1.6	5.1	30	.4
18.....	49	72	9.5	11	45	a.1	5.1	35	a.5
19.....	40	71	7.7	10	44	1.2	4.8	55	a.7
20.....	29	67	5.2	9.4	45	1.1	3.8	64	.6
21.....	23	78	4.8	9.0	47	1.1	2.4	65	.4
22.....	17	44	2.0	8.1	52	1.1	1.8	39	.2
23.....	14	37	1.4	6.8	63	1.2	7.0	40	.8
24.....	77	65	a 18	5.1	63	1.4	8.5	38	.9
25.....	95	52	13	5.1	58	.8	12	62	2.0
26.....	52	47	6.6	7.2	55	a.1	10	60	1.6
27.....	30	57	4.6	9.0	52	1.3	6.4	38	.6
28.....	22	70	4.2	10	57	1.5	4.8	33	.4
29.....	14	54	2.0	10	72	1.9	5.1	33	.4
30.....	12	45	a.1	10	80	2.2	8.5	34	.8
31.....	11	37	1.1	8.1	76	1.7	--	--	--
Total.	2,117	--	535.5	434.9	--	69.6	203.9	--	25.6

Total discharge for year (cfs-days) 120,566.7

Total load for year (tons) 75,227.2

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

b Computed from partly estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## PORTAGE RIVER AT WOODVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955

(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	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	
Oct. 15, 1954 . . . .	12:30 p.m.	2,440		514	826	71	84	88	92	94	96	98	99			BSWCM
Oct. 16 . . . . .	2:55 a.m.	2,680		236	1,400	66	79	85	91	95	97	99	99			BSWCM
Jan. 6, 1955 . . . .	8:45 a.m.	3,220		532	957	74	84	90	96	98	99	99	100			BSWCM
Jan. 7 . . . . .	1:30 p.m.	4,090		262	1,040	--	93	95	98	98	99	99	100			BSWCM
Mar. 2 . . . . .	6:00 a.m.	3,810		410	1,410	84	90	93	96	97	98	99	100			BSWCM
Mar. 4 . . . . .	4:45 p.m.	3,810		1,050	1,620	75	87	92	97	98	100	--	--		100	BSWCM
Mar. 4 . . . . .	4:45 p.m.	3,810		1,050	1,740	36	76	95	97	98	99	99	99			BSNM
Mar. 12 . . . . .	4:15 p.m.	4,250		629	601	87	90	94	95	97	99	99	100			BSWCM
Apr. 25 . . . . .	3:30 p.m.	1,850		330	652	87	90	94	98	99	100	--	--			BSWCM

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## SANDUSKY RIVER NEAR FREMONT, OHIO

LOCATION.--At gaging station at highway bridge, 2.3 miles upstream from Ballville power dam, 2½ miles downstream from Wolf Creek, and 3½ miles southwest of Fremont, Sandusky County.

DRAINAGE AREA.--1,248 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to February 1952.

Water temperatures: October 1950 to September 1955.

Sediment records: October 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 91°F July 31; minimum, freezing point on many days during December, January, and February.

Sediment concentrations: Maximum daily, 960 ppm Mar. 12; minimum daily, 1 ppm Oct. 1, Dec. 3, 24-27.

Sediment loads: Maximum daily, 25,100 tons Mar. 5; minimum daily, less than 0.5 ton on many days during October to December, August and September.

EXTREMES, 1950-55.--Water temperatures: Maximum, 91°F July 31, 1955; minimum, freezing on many days during winter months.

Sediment concentrations: Maximum daily, 960 ppm Mar. 12, 1955; minimum daily, 1 ppm on many days during February, October to December 1952, February, October to December 1953, January, September, October, and December 1955.

Sediment loads: Maximum daily, 31,900 tons Mar. 12, 1952; minimum daily, less than 0.05 ton on several days during October 1952 and September 1954.

REMARKS.--Flow affected by ice Dec. 20-26, Jan. 18-Feb. 22. Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955

/Once-daily measurement at approximately 7 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	43	37	--	--	41	48	71	75	83	--	77
2	--	42	--	--	32	44	--	73	76	87	--	71
3	--	--	34	--	32	45	--	74	73	88	89	70
4	--	--	--	--	32	44	51	69	78	--	--	71
5	--	--	--	--	32	44	56	69	82	--	--	71
6	--	--	32	--	32	--	51	72	--	--	84	--
7	--	47	32	--	--	--	54	--	--	--	83	71
8	--	45	32	--	--	39	55	--	68	86	78	--
9	--	47	33	--	--	46	57	61	72	81	81	--
10	--	46	34	--	32	--	62	59	76	84	79	77
11	--	44	34	--	--	49	58	59	70	--	76	73
12	--	44	33	--	--	47	--	69	--	79	--	70
13	68	--	34	--	--	--	66	--	62	--	--	--
14	67	47	34	--	--	49	--	--	70	82	71	70
15	61	--	33	--	--	52	59	--	76	--	79	70
16	55	--	33	--	--	46	--	72	--	--	--	--
17	54	56	33	--	--	--	65	66	--	--	79	--
18	51	55	33	32	--	43	--	71	--	--	85	83
19	51	--	--	--	--	43	--	70	86	82	87	81
20	--	--	32	--	32	--	65	--	80	--	86	80
21	52	--	32	--	--	--	--	74	--	81	88	--
22	54	--	32	--	37	--	--	75	76	83	--	69
23	--	--	--	32	--	45	--	77	78	80	80	69
24	59	--	32	32	39	44	--	76	--	--	77	64
25	56	--	33	--	38	39	55	67	--	83	79	64
26	--	46	33	32	35	--	56	--	73	80	--	64
27	--	--	35	32	39	35	62	--	78	84	81	--
28	54	--	35	32	42	36	64	--	--	--	78	--
29	53	--	--	--	--	40	--	--	84	87	--	--
30	45	37	--	32	--	41	66	--	--	86	80	--
31	44	--	--	--	--	45	--	--	--	91	78	--
Average	--	--	--	--	a 33	--	--	--	--	--	--	--

a Includes estimated temperature, 32°F, on Feb. 1, 7-9, 11-19, 21.

## ST. LAWRENCE RIVER BASIN

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	19	1	(t)	64	8	1	254	4	3
2.....	32	2	(t)	64	7	1	219	2	1
3.....	28	3	(t)	61	5	1	191	1	1
4.....	24	8	1	61	5	1	165	2	1
5.....	43	10	1	72	5	1	140	7	a3
6.....	80	12	2	117	4	1	135	12	4
7.....	154	20	8	196	3	2	117	20	6
8.....	131	17	6	159	3	1	100	11	3
9.....	84	20	4	131	3	1	91	3	1
10.....	95	27	7	112	2	1	84	2	(t)
11.....	144	27	10	95	4	1	99	2	1
12.....	242	36	24	87	4	1	95	2	1
13.....	752	95	s203	84	4	a1	87	2	
14.....	978	85	224	80	5	1	80	2	
15.....	1,100	122	s412	76	7	a1	80	2	
16.....	1,480	145	579	68	10	2	72	2	(t)
17.....	1,010	97	264	76	7	1	76	2	
18.....	732	68	134	61	3	(t)	87	2	
19.....	501	54	73	58	3	(t)	91	2	
20.....	357	47	45	58	4	a1	100	2	1
21.....	273	41	30	64	6	a1	110	2	1
22.....	207	38	21	87	7	2	110	2	1
23.....	175	32	15	95	7	2	110	2	a1
24.....	140	24	9	87	12	3	110	1	
25.....	108	13	4	99	12	a3	120	1	(t)
26.....	95	8	2	170	9	4	130	1	
27.....	84	7	2	207	10	6	140	1	
28.....	76	6	1	260	13	9	264	10	s12
29.....	72	5	1	334	12	11	1,810	162	s819
30.....	68	7	1	320	5	4	2,720	191	1,400
31.....	64	7	1	--	--	--	2,920	222	1,750
Total.	9,348	--	2,084	3,503	--	66	10,907	--	4,014
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.....	2,020	153	834	110	3	a1	4,250	182	2,090
2.....	1,460	100	394	120	3	1	5,150	374	5,060
3.....	1,430	99	382	130	13	4	4,000	355	3,830
4.....	1,020	98	270	120	13	4	8,260	856	s21,200
5.....	1,050	93	s280	120	3	1	11,400	875	25,100
6.....	7,060	571	s12,100	110	2	1	8,540	460	10,600
7.....	7,420	544	10,900	110	2	a1	6,200	320	a5,400
8.....	4,760	319	4,100	120	2	1	2,770	190	1,420
9.....	2,660	174	1,250	200	2	1	1,700	118	542
10.....	1,630	100	440	450	2	2	1,340	80	a290
11.....	1,190	63	202	1,500	--		4,430	657	s12,000
12.....	934	40	101	3,500	--		9,380	960	a24,000
13.....	778	27	57	3,000	--		6,480	450	7,870
14.....	645	18	31	2,000	--	e100	3,880	420	4,400
15.....	556	15	22	1,400	--		2,040	306	1,680
16.....	501	8	11	1,000	--		1,780	182	875
17.....	467	5	6	1,200	--		1,520	122	501
18.....	350	4	4	1,500	--	e200	1,370	81	300
19.....	290	3	2	2,500	--		1,060	68	195
20.....	250	2	1	3,700	47	470	829	60	a130
21.....	220	2	a1	7,000	--	e3,200	1,610	140	s728
22.....	190	2	1	8,500	430		9,870	6,340	e12,000
23.....	170	13	6	7,980	340	a7,300	7,150	510	9,840
24.....	160	7	3	6,480	227	3,970	5,940	388	6,220
25.....	150	3	a1	3,510	126	1,190	3,630	228	2,230
26.....	150	2	1	2,120	96	550	2,000	150	a800
27.....	140	2	1	2,370	90	576	1,270	102	350
28.....	140	3	1	3,630	103	1,010	949	65	166
29.....	130	4	a1	--	--	--	992	47	126
30.....	120	6	2	--	--	--	1,630	48	211
31.....	110	5	a1	--	--	--	2,330	66	415
Total.	38,151	--	31,406	64,480	--	29,353	120,220	--	160,569

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph.

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955--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.....	2,290	80	495	357	57	55	80	16	3
2.....	1,800	75	a 360	300	52	42	68	20	4
3.....	1,250	70	a 240	267	50	36	58	23	4
4.....	881	63	150	242	42	27	55	26	4
5.....	686	57	106	219	33	20	52	27	4
6.....	574	52	80	196	32	17	49	30	a 4
7.....	492	47	62	175	35	a 16	46	30	a 4
8.....	434	37	43	165	35	a 16	61	35	6
9.....	386	32	33	149	38	15	61	37	6
10.....	349	33	31	159	39	17	58	34	5
11.....	327	33	29	159	35	15	64	42	7
12.....	349	34	32	154	40	17	76	45	a 9
13.....	349	33	31	144	40	a 16	80	47	10
14.....	349	27	25	135	30	11	76	41	8
15.....	401	32	35	135	19	a 7	68	21	4
16.....	386	40	a 40	117	15	5	61	18	a 3
17.....	342	38	35	108	13	4	55	18	a 3
18.....	342	27	25	95	8	2	49	18	2
19.....	364	20	a 20	91	5	1	43	17	2
20.....	682	84	s 222	91	5	a 1	43	16	2
21.....	1,530	224	925	87	7	2	40	14	a 2
22.....	1,250	210	a 700	84	11	2	37	11	1
23.....	992	92	246	80	11	2	32	8	1
24.....	1,050	100	a 280	80	23	5	28	8	a 1
25.....	2,160	143	834	84	37	8	26	9	a 1
26.....	1,390	113	424	84	22	5	26	9	1
27.....	964	102	265	72	--	--	26	12	1
28.....	710	98	188	72	--	--	26	12	1
29.....	538	85	a 120	95	--	e 2	26	12	1
30.....	426	68	78	91	--	--	34	17	a 2
31.....	--	--	--	95	--	--	--	--	--
Total.	24,243	--	6,154	4,382	--	374	1,504	--	106
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.....	95	90	23	24	15	a 1	23	12	1
2.....	76	34	7	23	17	a 1	19	9	(t)
3.....	84	19	4	23	16	1	15	12	(t)
4.....	61	17	3	17	15	a 1	15	14	1
5.....	55	17	2	13	14	(t)	15	15	1
6.....	68	25	a 4	14	12	(t)	15	14	a 1
7.....	72	45	a 9	88	66	s 20	15	13	1
8.....	122	144	s 52	126	56	19	15	13	a 1
9.....	180	116	56	112	57	17	13	15	1
10.....	140	116	44	111	52	16	13	16	1
11.....	103	100	a 30	1,660	270	s 1,420	14	13	
12.....	84	49	11	996	300	a 800	14	10	
13.....	76	40	a 8	635	260	a 440	14	9	
14.....	68	41	8	409	213	235	14	8	(t)
15.....	58	40	a 6	294	155	123	13	9	
16.....	87	45	a 10	201	100	a 55	13	12	
17.....	191	50	a 25	140	88	33	13	18	1
18.....	144	60	23	108	73	21	11	9	
19.....	103	63	18	87	42	10	11	4	
20.....	84	45	a 10	68	37	7	10	4	
21.....	61	32	5	55	22	3	10	2	
22.....	46	20	2	49	17	a 2	11	2	
23.....	37	20	2	43	16	2	13	2	
24.....	195	--	e 50	37	15	1	14	3	(t)
25.....	149	72	29	32	15	1	21	5	
26.....	80	36	8	30	14	a 1	32	3	
27.....	49	27	4	28	15	1	32	--	
28.....	37	20	a 2	24	17	1	30	--	
29.....	30	15	1	26	17	1	28	--	
30.....	28	10	1	28	13	1	26	--	
31.....	26	12	1	24	13	1	--	--	--
Total.	2,689	--	458	5,527	--	3,236	502	--	14
Total discharge for year (cfs-days)									285,456
Total load for year (tons)									237,834

e Estimated.

s Computed by subdividing day.

t Less than 0.5 ton.

a Computed from estimated concentration graph



## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
 (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	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. 6, 1955.....	4:00 p.m.	8,820		761	1,220	57	74	85	92	97	98	100				BSWCM
Jan. 6.....	5:45 p.m.	9,100		809	790	70	83	90	94	98	100	--				BSWCM
Jan. 7.....	5:40 p.m.	6,480		430	810	67	78	87	94	98	99	100				BSWCM
Mar. 2.....	8:15 a.m.	5,410		399	1,470	70	83	89	97	99	100	--				BSWCM
Mar. 4.....	5:45 p.m.	12,000		1,020	1,860	64	75	84	90	96	99	100				BSWCM
Mar. 4.....	5:45 p.m.	12,000		1,020	1,880	50	66	81	91	96	99	100				BSNM
Mar. 5.....	9:00 a.m.	12,600		883	2,700	64	79	87	95	98	99	100				BSWCM
Mar. 23.....	3:30 p.m.	6,610		476	803	68	82	89	96	98	100	--				BSWCM

## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## HURON RIVER AT MILAN, OHIO

LOCATION.--Temperature recorder at gaging station on right bank, 45 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 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 91°F July 27, Aug. 4; minimum, freezing point on many days during December, January, and February.

EXTREMES, 1950, 1953-55.--Water temperatures: Maximum, 91°F July 27, Aug. 4, 1955; minimum, freezing point on many days during winter months. RECORDS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955  
/Records 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.....	64	62	44	36	39	35	37	34	32	32	41	41	49	41	71	56	74	61	79	70	89	81	73	67
2.....	67	62	43	38	39	35	39	37	32	32	41	38	53	45	70	59	75	63	86	73	89	82	73	66
3.....	66	63	43	38	38	31	39	37	34	33	41	38	51	48	76	64	73	64	87	77	89	81	76	65
4.....	65	62	43	38	38	34	40	39	35	32	42	42	53	43	77	65	75	65	88	77	91	81	78	68
5.....	64	54	42	38	38	33	40	37	34	32	42	39	59	46	75	66	79	68	89	79	90	82	78	71
6.....	54	52	42	38	38	31	41	38	33	32	39	37	61	52	71	60	80	72	86	80	85	81	78	69
7.....	52	47	42	37	38	32	38	36	33	32	37	34	56	48	68	61	78	71	83	77	81	76	77	69
8.....	50	45	42	38	38	31	37	35	32	32	35	32	54	43	65	59	71	64	87	77	80	73	74	66
9.....	56	48	42	39	37	33	36	35	32	31	42	34	61	56	62	54	67	61	88	78	77	69	74	66
10.....	56	55	42	38	36	33	36	35	35	31	47	40	65	50	58	55	68	62	81	77	79	75	78	70
11.....	61	55	41	38	37	32	37	35	35	31	49	47	62	53	68	56	73	65	83	72	81	75	76	70
12.....	61	57	42	39	37	31	36	34	32	31	49	47	66	54	70	59	72	65	81	72	80	72	72	65
13.....	60	57	41	36	37	31	35	33	35	32	47	44	67	58	68	62	69	63	82	71	78	70	70	63
14.....	61	58	41	37	38	34	35	33	33	32	47	41	66	60	69	61	72	60	86	76	70	66	72	64
15.....	60	52	43	39	39	35	35	32	32	32	47	44	62	58	70	58	76	64	85	78	81	67	79	69
16.....	52	48	43	37	38	35	37	32	34	32	45	41	65	51	72	59	79	66	88	76	82	73	81	72
17.....	50	48	42	39	38	34	35	32	34	32	41	38	68	58	68	59	80	68	89	77	85	75	81	72
18.....	49	46	42	39	36	37	31	33	36	32	41	39	65	55	68	56	80	72	85	78	86	77	81	72
19.....	47	42	49	45	38	32	36	31	33	31	44	37	67	60	67	59	83	75	87	78	87	77	80	72
20.....	47	42	49	44	36	31	36	31	37	31	44	39	64	60	73	62	81	76	85	76	88	80	80	73
21.....	46	42	44	41	37	34	37	31	32	31	47	43	64	60	73	61	82	74	85	77	90	81	74	69
22.....	48	42	43	39	36	33	32	31	32	47	42	68	59	75	67	80	73	85	78	86	81	73	68	68
23.....	46	43	42	37	35	33	35	31	35	33	42	38	63	57	75	69	78	71	83	78	81	76	70	68
24.....	46	43	41	39	36	32	35	31	36	33	46	41	63	56	74	66	77	70	80	72	78	70	72	68
25.....	48	45	42	38	36	33	34	31	36	34	43	39	61	58	69	63	74	70	81	71	79	70	71	66
26.....	50	48	41	37	35	32	34	31	35	35	39	37	55	52	69	61	73	65	89	72	77	71	65	53
27.....	51	49	41	36	34	32	34	32	39	36	39	35	62	51	75	63	78	67	91	79	79	73	62	52
28.....	49	42	40	37	34	32	35	33	41	39	41	34	66	52	75	69	79	68	89	80	73	76	70	65
29.....	48	43	40	35	34	33	35	33	---	44	36	59	54	72	66	79	70	83	75	82	74	64	61	55
30.....	46	40	39	35	37	34	34	32	---	42	37	69	56	66	69	77	72	86	78	87	77	73	67	61
31.....	44	39	---	---	36	35	34	32	---	45	38	---	---	---	---	56	---	---	89	80	77	72	---	---
Average.....	54	49	42	38	37	33	36	33	34	32	43	39	62	53	70	61	76	68	85	76	82	75	75	68

## 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 1955.

Sediment records: October 1950 to September 1955.

EXTREMES, 1954-55.--Water temperatures: Maximum, 85°F July 27, Aug. 2; minimum, freezing point on several days during January and February.

Sediment concentrations: Maximum daily, 1,740 ppm May 24; minimum daily, 1 ppm Sept. 4, 10.

Sediment loads: Maximum daily, 25,300 tons Oct. 15; minimum daily, less than 0.5 ton Sept. 4, 6-8, 10.

EXTREMES, 1948-49, 1950-55.--Water temperatures (1948-49, 1952-55): Maximum, 88°F Aug. 18, 1949; minimum, freezing point on several days during December 1953, January 1954, January and February 1955.

Sediment concentrations (1950-55): Maximum daily, 1,740 ppm May 24, 1955; minimum daily, 1 ppm Sept. 4, 10, 1955.

Sediment loads (1950-55): Maximum daily, 34,000 tons Mar. 25, 1954; minimum daily, less than 0.5 ton on several days during August, September 1954, and September 1955.

REMARKS.--Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

Temperature (°F) of water, water year October 1954 to September 1955  
(Once-daily measurement at approximately 12 m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	46	41	41	33	42	50	60	70	74	83	67
2	72	46	43	41	34	42	54	--	71	80	85	67
3	71	47	40	38	32	41	50	65	71	78	83	70
4	70	45	41	40	32	44	50	73	73	80	84	70
5	65	46	40	43	34	42	51	70	76	81	83	74
6	65	47	37	38	39	38	55	66	72	80	81	71
7	58	47	36	36	38	34	56	65	73	80	78	70
8	56	48	36	39	37	37	50	63	67	81	77	67
9	64	47	39	39	39	--	53	61	70	84	77	70
10	65	48	39	37	39	51	51	60	71	81	77	--
11	66	49	37	37	34	52	58	61	71	72	78	70
12	68	50	39	38	32	53	61	66	68	78	78	66
13	66	49	39	--	32	47	61	64	62	73	72	65
14	70	59	40	36	34	46	61	65	65	79	67	68
15	57	50	39	37	35	51	58	64	67	79	75	70
16	54	50	38	38	35	49	58	68	73	80	80	74
17	54	55	39	35	37	42	60	65	70	79	80	77
18	54	54	39	34	37	43	57	66	77	81	82	76
19	52	58	--	34	39	48	63	63	76	81	81	74
20	52	54	34	35	40	47	63	68	76	82	83	71
21	53	50	35	36	35	50	62	68	76	81	81	70
22	56	47	34	37	35	48	62	73	76	81	79	70
23	54	41	39	35	37	42	62	73	75	80	76	66
24	55	46	38	36	37	46	60	67	75	78	75	70
25	55	46	37	35	36	44	58	67	72	80	75	65
26	59	45	34	34	36	38	54	68	70	82	74	62
27	57	44	39	32	42	38	55	68	68	85	75	84
28	54	45	44	32	41	38	61	72	73	81	75	66
29	53	43	40	32	--	40	62	73	76	82	76	67
30	50	41	39	32	--	42	60	66	73	81	75	68
31	48	--	42	32	--	48	--	68	--	84	73	--
Average	60	48	39	36	36	44	57	67	72	80	78	69

## STREAMS TRIBUTARY TO LAKE ERIE

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## STREAMS TRIBUTARY TO LAKE ERIE--Continued

## CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Suspended sediment, water year October 1954 to September 1955

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.....	271	200	sa 180	358	2	2	443	12	14
2.....	123	40	13	354	2	2	498	15	20
3.....	106	19	5	331	2	2	516	18	25
4.....	1,060	1,350	s 5,030	354	3	3	516	20	28
5.....	826	750	sa 1,900	398	17	18	498	11	15
6.....	714	650	sa 1,900	371	6	6	429	7	8
7.....	328	42	37	358	4	4	378	8	8
8.....	255	29	20	358	3	3	318	5	4
9.....	278	17	13	337	4	4	318	7	6
10.....	337	280	sa 380	328	5	4	422	23	26
11.....	429	634	734	314	5	4	375	9	9
12.....	912	700	sa 1,900	301	5	4	314	10	8
13.....	1,700	790	s 4,250	271	5	4	311	12	10
14.....	881	180	428	265	5	4	361	17	16
15.....	7,070	1,220	s 25,300	239	6	4	587	36	57
16.....	12,100	713	23,300	239	5	3	551	24	36
17.....	6,320	345	5,890	219	6	4	498	18	24
18.....	4,110	287	2,960	207	7	4	957	188	s 554
19.....	3,630	245	2,400	194	5	3	938	80	b 200
20.....	2,980	205	1,650	185	3	1	788	43	91
21.....	2,210	160	955	194	2	1	714	34	66
22.....	1,600	128	553	174	2	1	641	34	59
23.....	1,260	114	388	204	3	2	659	27	48
24.....	957	75	194	229	12	7	957	38	98
25.....	770	52	108	321	11	10	900	28	68
26.....	659	43	76	294	7	6	752	21	43
27.....	551	35	52	281	2	2	938	31	78
28.....	498	27	36	324	5	4	1,340	170	sa 750
29.....	443	20	24	481	48	s 70	1,700	280	s 1,430
30.....	398	12	13	481	21	27	3,150	816	s 7,840
31.....	378	2	2	--	--	--	1,950	144	758
Total..	54,154	--	80,691	8,964	--	213	23,717	--	12,397
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.....	1,700	101	464	275	8	6	2,820	356	s 2,900
2.....	1,750	97	458	248	8	5	2,380	190	1,220
3.....	1,600	78	337	248	9	6	2,100	123	697
4.....	1,520	77	316	219	11	6	6,170	522	s 9,110
5.....	1,600	139	s 716	210	11	6	5,020	387	4,970
6.....	3,990	--	e 3,700	301	21	17	3,630	280	2,740
7.....	2,600	123	863	464	31	39	2,700	220	1,600
8.....	1,900	102	523	422	21	24	2,050	175	969
9.....	1,560	65	274	436	--	e 30	1,900	144	739
10.....	1,470	51	202	1,570	400	sa 2,000	1,800	120	583
11.....	1,300	49	172	2,760	--	e 3,600	3,920	861	s 10,900
12.....	1,030	48	133	1,560	121	510	3,630	447	4,380
13.....	900	45	b 110	1,300	78	274	2,600	251	1,760
14.....	752	44	89	1,070	46	133	2,050	214	1,180
15.....	659	37	65	995	39	105	1,800	143	695
16.....	569	22	34	919	45	112	2,000	164	886
17.....	516	19	26	957	54	140	1,560	114	480
18.....	481	16	21	826	48	107	1,340	98	354
19.....	446	15	18	826	61	136	1,180	80	255
20.....	409	14	15	1,480	210	sa 970	1,070	69	199
21.....	354	18	17	3,390	480	4,390	2,310	340	s 2,500
22.....	381	18	18	4,390	601	s 7,440	5,480	928	12,200
23.....	375	12	12	3,150	282	2,230	3,390	300	2,740
24.....	341	11	10	2,540	158	1,080	2,700	171	1,250
25.....	358	16	15	2,260	142	866	2,210	168	1,000
26.....	314	10	8	2,100	140	794	2,000	128	691
27.....	285	11	8	2,260	144	879	1,700	90	413
28.....	275	20	15	2,160	126	735	1,520	76	312
29.....	288	20	16	--	--	--	1,560	86	362
30.....	275	15	11	--	--	--	1,750	86	406
31.....	252	15	10	--	--	--	1,800	75	364
Total..	30,250	--	8,676	39,336	--	26,640	78,140	--	68,855

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

## CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

## Suspended sediment, water year October 1954 to September 1955--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.....	1,520	45	185	1,300	69	242	301	15	12
2.....	1,260	36	122	1,070	55	159	265	15	11
3.....	1,110	35	105	881	48	114	235	15	10
4.....	995	30	80	733	30	59	216	12	7
5.....	900	32	78	623	27	45	198	15	8
6.....	807	22	48	498	25	34	171	16	7
7.....	733	22	44	464	6	8	204	17	9
8.....	641	28	48	696	--	e 210	419	88	s 150
9.....	587	10	16	498	15	20	605	104	170
10.....	534	7	10	516	18	25	464	28	36
11.....	481	6	8	426	13	15	443	30	36
12.....	481	8	10	298	11	9	498	38	51
13.....	443	3	4	285	10	8	1,420	--	e 2,900
14.....	770	74	s 178	278	8	6	862	107	249
15.....	1,560	188	792	239	13	8	623	40	87
16.....	1,380	76	283	207	12	7	481	40	52
17.....	1,470	85	s 777	216	10	6	412	35	39
18.....	1,340	73	264	207	10	6	364	24	24
19.....	1,460	84	s 386	213	9	5	301	16	13
20.....	4,390	490	5,810	207	4	2	245	18	12
21.....	3,210	316	2,740	194	8	4	252	15	10
22.....	2,050	132	731	182	10	5	252	9	6
23.....	1,470	96	381	255	16	11	204	9	5
24.....	1,860	130	sa 800	1,780	1,740	s 11,000	248	9	6
25.....	3,810	580	5,970	714	342	s 833	213	9	5
26.....	4,250	318	3,650	446	33	40	182	8	4
27.....	2,820	147	1,120	314	22	19	144	11	4
28.....	2,210	107	638	301	22	18	165	10	4
29.....	1,950	90	474	422	40	sa 50	149	13	5
30.....	1,650	74	330	368	22	22	185	37	s 32
31.....	--	--	--	321	15	13	--	--	--
Total.	48,142	--	26,082	15,152	--	13,003	10,721	--	3,944
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.....	862	380	a 900	108	15	4	105	4	1
2.....	587	184	292	123	5	2	100	2	1
3.....	412	68	81	125	10	3	101	2	1
4.....	412	--	e 110	123	6	2	93	1	(t)
5.....	288	18	14	127	8	3	78	3	1
6.....	248	15	10	134	12	4	76	2	(t)
7.....	258	20	14	291	210	sa 220	90	2	(t)
8.....	275	15	11	258	120	sa 120	90	2	(t)
9.....	385	100	sa 110	160	14	6	93	2	1
10.....	245	18	12	142	8	3	110	1	(t)
11.....	176	10	5	176	10	5	253	20	sa 16
12.....	162	10	4	160	8	3	154	6	2
13.....	144	12	5	188	32	s 28	129	5	2
14.....	142	12	5	516	170	sa 290	105	2	1
15.....	136	11	4	210	22	12	101	2	1
16.....	160	11	5	168	14	6	103	3	1
17.....	149	11	4	160	22	10	98	5	1
18.....	331	360	sa 430	160	18	8	90	4	1
19.....	198	36	s 24	139	13	5	79	5	1
20.....	157	9	4	142	18	7	88	5	1
21.....	134	5	2	125	10	3	84	5	1
22.....	123	6	2	116	7	2	84	7	2
23.....	121	6	2	207	20	a 11	102	8	2
24.....	570	210	sa 340	139	15	6	255	45	sa 35
25.....	278	30	s 26	121	10	3	127	20	7
26.....	182	6	3	106	20	6	93	8	2
27.....	157	6	2	101	8	2	94	5	1
28.....	204	7	4	108	5	1	190	19	10
29.....	154	6	2	96	10	2	123	9	3
30.....	146	7	3	112	3	1	106	9	2
31.....	125	7	2	139	4	2	--	--	--
Total.	7,921	--	2,432	4,980	--	780	3,394	--	99

Total discharge for year (cfs-days)

324,871

Total load for year (tons)

243,812

e Estimated.

t Less than 0.5 ton.

s Computed by subdividing day.

a Computed from partly estimated concentration graph.

STREAMS TRIBUTARY TO LAKE ERIE--Continued  
CUVAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1954 to September 1955  
(Methods of analysis: B, Bottom with aul 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	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. 4, 1954	6:00 p.m.	1,800		3,370	4,870	37	48	67	82	97	98	100	--	BSWCM	
Oct. 13	10:40 a.m.	1,650		749	1,440	46	60	83	89	98	100	--	--	BSWCM	
Oct. 15	7:15 p.m.	9,920		1,180	1,160	45	56	68	82	92	97	98	98	BSWCM	
Oct. 17	10:15 a.m.	6,410		373	626	34	47	58	71	84	91	94	97	BSWCM	
Mar. 11, 1955	8:20 p.m.	5,420		984	901	47	55	69	82	91	95	98	99	BSWCM	
Mar. 22	11:15 a.m.	6,230		1,260	1,120	36	45	58	75	86	91	94	98	BSWCM	
Apr. 20	1:00 p.m.	5,100		592	993	44	52	61	74	84	90	93	95	BSWCM	
Apr. 25	10:45 a.m.	3,090		622	1,140	43	53	65	80	92	96	98	99	BSWCM	
May 24	7:30 p.m.	2,210		2,110	1,970	45	58	72	90	96	99	99	100	BSWCM	
May 24	7:30 p.m.	2,210		2,110	1,960	20	30	52	87	96	98	99	--	BSNM	

## STREAMS TRIBUTARY TO LAKE ONTARIO

## GENESEE RIVER AT SCIO, N. Y.

LOCATION.--At bridge at Scio, Allegany County, about 0.6 miles downstream from Vandermark Creek and about 1 mile downstream from gaging station. DRAINAGE AREA.--332 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 236 ppm Oct. 11-15, 20; minimum, 74 ppm Mar. 11-20.

Hardness: Maximum, 103 ppm Aug. 11, 13; minimum, 34 ppm Feb. 21.

Specific conductance: Maximum, 417 micromhos Aug. 11-13; minimum, 111 micromhos Mar. 2-10.

Water temperatures: Maximum, 85°F Aug. 2-5; minimum, 32°F Dec. 6, 20-22, Jan. 27.

REMARKS.--Records of specific conductance of daily samples available in district office in Albany, N. Y. Mean discharges reported are at gaging station.

Records of discharge for water year October 1954 to September 1955 given in WSP 1387.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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	
														Total	Non-carbonate				Undiluted	Filtered
Oct. 1-10, 1954	28	11	0.29	29	6.8	38	1.6	78	45	57	0.1	2.0	221	101	37	378	7.3	12	--	--
Oct. 11-15, 20	37	5.8	--	27	7.5	43	1.8	99	10	63	.2	20	236	100	19	409	7.0	14	--	--
Oct. 16-19	202	--	--	--	--	--	18	69	8.9	43	--	2.2	--	89	32	323	6.9	16	--	--
Oct. 11-20	--	4.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 21-31	43	5.1	.44	26	7.1	36	2.8	88	11	60	.2	20	226	95	23	376	7.0	7	--	--
Nov. 1-10	49	5.4	.36	26	5.4	37	2.1	56	22	63	.4	16	224	97	40	381	7.1	8	--	--
Nov. 11-20	46	3.5	.33	26	7.0	31	1.5	59	21	67	.0	4.0	213	94	49	367	7.0	2	--	--
Nov. 21-30	69	2.9	.27	25	6.8	30	1.4	54	20	66	.0	3.5	215	91	47	355	7.0	2	--	--
Dec. 1-10	66	5.7	.24	25	6.1	29	1.3	50	20	65	.0	2.8	225	88	47	324	7.0	2	--	--
Dec. 11-14	71	--	--	--	--	--	--	47	20	66	--	3.0	155	83	44	344	6.9	--	--	--
Dec. 15-20	232	4.2	.17	19	5.0	20	1.3	32	20	46	.0	4.0	--	68	42	250	6.8	3	--	--
Dec. 21-28	170	5.1	--	--	--	--	--	37	20	48	.0	2.8	161	72	42	261	6.6	3	--	--
Dec. 29-31	1,400	--	--	20	5.4	20	1.2	14	20	20	--	5.5	--	44	33	141	6.5	--	--	--
Dec. 21-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 21-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 1-10, 1955	746	5.9	.13	12	7.9	4.3	1.3	24	32	18	.0	1.8	102	64	44	153	6.0	5	--	--
Jan. 11-20	196	5.7	.16	15	5.0	15	1.4	32	18	30	.1	4.0	141	58	32	203	6.9	3	--	--
Jan. 21-31	92	4.5	.17	18	5.0	19	1.5	42	18	36	.1	4.0	165	65	31	240	7.2	3	--	--
Feb. 1-10	82	5.0	.19	20	5.4	19	1.5	47	18	39	.1	3.3	162	73	35	252	7.0	3	--	--
Feb. 11-20	116	4.2	.21	21	4.7	22	2.8	42	17	47	.1	2.7	160	72	38	267	7.1	7	--	--
Feb. 21	218	--	--	--	--	24	--	34	19	45	--	3.8	--	62	34	258	6.7	6	--	--
Feb. 22-28	747	4.8	--	--	--	--	--	21	16	25	.0	3.7	110	47	30	161	6.8	6	--	--
Feb. 21-28	--	--	--	13	3.3	12	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 1	4,300	--	--	--	--	--	9.7	10	16	28	--	3.5	--	--	--	--	--	--	--	--
Mar. 2-10	1,940	4.4	--	9.2	2.4	6.6	1.3	16	16	13	.0	3.1	76	34	20	111	6.8	10	--	--
Mar. 1-10	--	--	2.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 11-20	1,220	15	.17	9.2	2.8	6.0	.9	18	13	12	.1	3.0	74	36	21	118	7.0	5	--	--
Mar. 21-31	896	15	.13	9.5	3.0	6.9	1.0	20	14	14	.1	2.7	76	37	20	126	7.0	5	--	--

Apr. 1-10, 1955.....	324	14	.13	12	2.8	9.5	1.0	26	15	20	.1	1.9	86	42	21	155	7.1	3	--
Apr. 11-20.....	216	3.8	.20	14	3.6	14	1.4	36	16	24	.0	.9	104	50	21	174	7.3	6	--
Apr. 21-30.....	218	2.9	.13	14	3.7	14	1.4	36	16	27	.0	1.8	111	51	21	183	7.2	10	--
May 1, 3-5, 7, 9-10.	155	2.6	--	15	3.7	15	1.5	40	16	27	.0	1.1	112	53	20	185	7.6	10	--
May 6, 8.....	160	--	--	--	--	23	--	42	16	34	--	.4	--	49	15	242	7.4	10	--
May 1-10.....	--	--	.20	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 11-20.....	98	4.2	.19	17	4.1	17	1.9	49	16	30	.0	1.5	122	60	20	209	7.6	5	--
May 21-31.....	73	2.3	.26	20	3.1	18	2.0	53	16	33	.0	.9	147	63	19	227	7.1	12	--
June 1-10.....	52	1.7	.24	23	1.9	21	2.0	59	16	40	.1	1.4	164	70	22	260	7.2	11	--
June 12, 14-15.....	116	--	--	--	--	16	--	45	14	28	--	1.5	--	58	21	194	7.0	16	--
June 11, 13, 16-20..	58	2.4	--	24	1.3	19	2.1	54	16	36	.0	1.4	151	66	21	246	7.1	14	--
June 11-20.....	--	--	.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 21-30.....	41	4.3	.22	22	5.7	26	2.3	66	20	46	.0	.6	164	78	24	309	7.0	3	3.2
July 1-10.....	37	7.2	.10	22	7.0	26	2.3	72	18	45	.0	2.2	176	84	25	322	7.4	7	6.5
July 11-20.....	23	7.2	.27	22	7.0	24	2.3	76	17	41	.1	1.2	188	84	21	310	7.2	7	8.9
July 21-31.....	23	6.2	.33	23	6.9	27	2.4	70	19	48	.1	1.7	174	86	28	324	7.4	5	4.5
Aug. 1-10.....	20	6.2	.25	27	7.9	30	2.5	79	21	57	.0	1.7	198	100	35	368	7.6	5	4.1
Aug. 11-13.....	145	--	--	--	--	37	--	71	17	76	--	--	--	103	38	417	7.2	--	--
Aug. 14-16.....	332	--	--	--	--	15	--	53	17	32	--	--	--	57	30	218	6.8	--	--
Aug. 12, 17-20.....	69	4.6	--	20	6.7	20	2.1	52	20	40	.1	1.6	147	78	35	273	7.4	8	4.0
Aug. 1-10.....	--	--	.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 21-31.....	36	2.6	.25	22	6.0	23	2.2	57	17	46	.0	.9	151	80	33	290	7.3	3	3.9
Sept. 1-10.....	22	3.9	.25	25	7.2	30	2.3	67	19	66	.0	.8	150	92	32	363	7.4	5	3.7
Sept. 11-20.....	24	4.9	.21	25	6.2	30	2.3	73	18	54	.0	.9	189	88	24	363	7.4	5	4.0
Sept. 21-30.....	30	4.7	.22	25	6.7	31	2.2	70	20	57	.1	1.3	188	90	33	352	7.3	8	3.4
Average.....	246	5.5	0.24	20	5.2	22	1.8	49	18	42	0.06	3.4	158	71	30	265	--	7	--



## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## GENESEE RIVER AT SCIO, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955

/Once daily measurement at approximately 6 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	48	39	39	34	38	--	64	64	80	82	72
2	74	46	39	38	34	38	--	--	68	81	85	73
3	70	45	37	38	34	40	--	64	70	83	83	75
4	70	45	36	38	34	41	--	70	75	84	80	75
5	65	47	36	36	34	40	--	70	76	84	85	74
6	62	48	32	35	34	39	--	55	78	82	83	73
7	60	48	33	35	38	34	--	65	72	84	79	70
8	57	48	34	35	38	35	--	60	62	78	78	79
9	58	48	40	35	40	41	--	58	68	84	78	69
10	64	48	39	38	43	45	--	56	72	86	77	73
11	68	48	38	36	35	--	--	64	66	81	75	69
12	70	48	40	38	33	--	--	65	65	80	78	68
13	70	48	39	35	34	--	--	65	62	80	70	66
14	70	48	40	35	35	--	--	68	63	80	73	68
15	68	47	36	35	38	--	--	69	72	80	79	71
16	58	48	36	35	38	--	--	68	75	82	80	73
17	55	53	35	35	40	--	--	66	78	84	80	74
18	55	58	36	35	39	--	--	65	80	80	75	76
19	53	59	35	35	42	--	--	64	77	82	80	76
20	55	57	32	35	44	--	--	67	78	82	83	71
21	55	48	32	35	38	--	60	70	78	82	83	67
22	57	45	32	39	34	--	61	70	77	83	78	65
23	59	47	35	37	36	--	60	72	75	78	75	64
24	58	45	36	35	37	--	55	76	75	79	73	63
25	60	44	35	35	38	--	53	72	72	81	75	62
26	60	43	37	37	37	--	50	70	68	81	74	63
27	55	42	38	32	38	--	50	75	70	78	73	60
28	55	46	36	34	39	--	55	78	75	77	75	63
29	52	42	35	35	--	--	56	73	75	80	77	63
30	52	49	35	34	--	--	58	66	76	82	75	65
31	48	--	40	35	--	--	--	--	--	84	75	--
Average	61	48	36	36	37	--	--	67	72	81	78	69

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## GENESEE RIVER NEAR MOUNT MORRIS, N. Y.

LOCATION --At bridge on U. S. highway 20A about 1 mile downstream from gaging station and about 4½ miles northeast of Mount Morris, Livingston County.  
 DRAINAGE AREA 1,419 square miles above gaging station.  
 RECORDS AVAILABLE--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1954 to September 1955.

EXTREMES 1954-55.--Dissolved solids: Maximum, 479 ppm July 18-20; minimum, 128 ppm Mar. 1-8.

Hardness: Maximum, 216 ppm Aug. 15; minimum, 71 ppm Mar. 1-8.

Specific conductance: Maximum, 1,450 microhms Aug. 15; minimum, 190 microhms Mar. 12-15.

Water temperatures: Maximum daily, 81°F Aug. 4, 6; minimum, freezing point on many days during December, January and February.

REMARKS.--Records of specific conductance and pH of daily sample available in district office at Albany, N. Y. Mean discharges reported are at gaging station. Record of discharge for gaging station at Jones Bridge, near Mount Morris for water year October 1954 to September 1955 given in NSP 1387.

No appreciable inflow between gaging station and sampling point.

## Chemical analyses, in parts per million, water year October 1954 to September 1955

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 (microhms at 25°C)	pH	Color	Oxygen consumed	
														Total	Non-carbonate				Unfiltered	Filtered
Oct. 1-4, 1954	458	--	--	--	--	34	--	91	30	51	--	0.6	--	104	30	359	7.3	12	--	--
Oct. 5-10	461	5.1	--	39	5.7	43	1.7	106	30	73	0.1	1.0	266	122	36	457	7.4	15	--	--
Oct. 1-10	--	5.3	0.17	--	--	--	3.2	124	20	56	.5	--	--	119	18	424	6.8	15	--	--
Oct. 11-16, 1954	395	5.3	--	32	9.1	35	--	123	28	90	--	1	--	148	48	554	6.9	--	--	--
Oct. 17-18, 20	728	--	--	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oct. 11-20	--	--	--	26	--	--	--	124	29	94	.5	1.0	325	136	35	572	7.3	5	--	--
Oct. 21-31	300	8.7	.22	36	11	56	4.0	124	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 1-5, 8-10	439	4.6	--	41	16	63	3.3	146	38	108	6	.1	370	168	49	658	7.3	5	--	--
Nov. 6-7	318	--	--	--	--	98	--	164	39	175	--	.1	--	208	74	908	7.3	--	--	--
Nov. 1-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 11-12	246	--	--	--	--	--	--	148	37	87	0	1.5	--	176	55	603	7.6	8	--	--
Nov. 13-20	191	4.4	--	53	14	62	2.9	162	41	114	3	1.0	410	192	60	692	7.3	8	--	--
Nov. 11-20	--	--	--	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov. 21-26	281	--	--	50	14	66	2.9	150	39	122	3	1.2	420	185	62	718	7.3	7	--	--
Nov. 27	577	--	--	--	--	53	--	108	55	86	--	2.0	--	154	66	566	7.3	--	--	--
Nov. 28-30	584	--	--	--	--	--	--	102	26	56	--	1.8	--	116	32	376	7.2	6	--	--
Nov. 21-30	--	--	--	--	--	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Contains 0.13 parts per million manganese (Mn).

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## GENESSEE RIVER NEAR MOUNT MORRIS; N. Y.--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955.--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	
														Total	Non-carbonate				Unfiltered	Filtered
Dec. 1, 1954	396	--	--	--	--	40	--	121	23	73	--	1.8	--	140	41	457	7.2	3	--	--
Dec. 6-10	258	6.1	--	51	12	52	2.9	140	39	96	0.2	2.8	382	177	62	616	7.5	5	--	--
Dec. 2-5	358	--	--	--	--	41	--	132	23	82	--	1.8	--	160	52	534	7.5	8	--	--
Dec. 1-10	--	--	0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 11-13	375	--	--	--	--	44	--	120	25	102	--	2.5	--	174	76	640	7.3	4	--	--
Dec. 14-16	980	--	--	--	--	45	--	121	26	87	--	3.0	--	153	54	553	7.2	3	--	--
Dec. 17-20	1,380	4.7	--	31	7.0	26	2.1	83	23	51	1.1	2.8	236	106	38	371	7.0	5	--	--
Dec. 11-20	--	--	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dec. 21-25	707	5.9	--	36	8.0	27	2.3	96	35	50	1	3.3	253	123	45	389	7.1	4	--	--
Dec. 26-29	1,928	--	--	--	--	47	--	107	28	88	--	5.0	--	143	55	535	7.4	5	--	--
Dec. 30-31	6,280	--	--	--	--	--	7.4	49	18	26	--	5.0	--	80	40	230	6.6	8	--	--
Dec. 21-31	--	--	49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 1-10, 1955	2,640	5.3	28	27	4.1	18	--	57	30	32	2	3.9	163	86	39	287	7.0	8	--	--
Jan. 11-20	1,020	5.9	11	31	5.1	22	1.8	78	31	37	2	3.6	188	99	35	330	7.0	7	--	--
Jan. 21-27	651	5.2	--	36	6.1	27	2.0	97	33	47	2	3.4	233	116	37	381	7.3	8	--	--
Jan. 28-31	268	--	07	--	--	42	--	125	42	69	--	2.2	--	155	53	509	7.3	--	--	--
Jan. 21-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 1-9	256	4.7	10	51	13	53	1.9	134	42	102	2	1.8	362	181	72	625	7.3	7	--	--
Feb. 11-20	621	5.2	08	41	7.5	38	2.2	107	37	66	3	2.7	290	134	47	469	7.3	8	--	--
Feb. 21-22	1,920	--	--	--	--	36	--	107	43	58	--	3.2	--	138	50	445	7.1	7	--	--
Feb. 23-28	3,970	5.9	--	27	4.7	19	1.9	65	29	34	3	3.5	183	88	35	286	6.9	12	--	--
Feb. 21-28	--	--	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 1-8	9,950	5.5	--	23	3.0	8.0	1.8	56	24	12	2	3.8	128	71	25	192	7.0	31	--	--
Mar. 9-10	4,920	--	--	--	--	--	9.5	72	10	27	--	4.0	--	90	31	274	7.8	8	--	--
Mar. 1-10	--	--	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 11-13, 14, 16-20	4,300	4.9	--	27	5.3	15	1.6	68	31	24	1	3.8	161	90	34	299	7.2	12	--	--
Mar. 12-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 21, 29-31	6,500	--	--	--	--	11	--	56	25	12	--	4.0	--	69	23	190	7.1	20	--	--
Mar. 22, 23	2,590	7.7	--	31	5.7	20	1.8	82	34	33	2	3.3	202	104	36	316	7.0	13	--	--
Mar. 23, 24	6,420	--	--	--	--	8.3	--	61	13	20	--	3.0	--	76	26	222	7.0	17	--	--
Mar. 25-28	2,920	--	--	--	--	20	--	67	32	28	--	4.0	--	88	33	273	7.3	7	--	--
Mar. 21-30	--	--	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 1-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 7-10	1,480	4.2	--	29	4.8	16	1.6	89	31	27	2	3.4	174	93	37	281	7.2	8	--	--
Apr. 1-10	--	--	--	--	--	24	--	68	29	38	--	3.2	--	106	34	334	7.1	6	--	--
Apr. 11-20	1,140	2.4	08	36	8.0	23	2.0	104	35	37	2	2.7	213	124	39	352	7.2	11	--	--

Apr. 21-30, 1955.....	1,620	3.6	23	37	7.8	21	2.0	100	31	39	.1	2.8	208	126	44	354	7.4	4	---
May 1-7 10.....	773	4.5	---	39	9.2	28	2.0	116	35	48	.2	1.8	240	135	40	405	7.7	5	---
May 8-9.....	600	---	---	---	---	45	---	131	38	67	---	1.5	---	144	37	493	7.8	5	---
May 10.....	---	---	14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
May 11-19.....	423	3.1	---	45	9.6	34	2.0	133	34	59	.1	1.8	282	153	44	464	7.8	4	---
May 20.....	340	---	---	---	---	46	---	141	37	69	---	1.0	---	152	37	518	7.5	7	---
May 21-20.....	---	---	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
May 21-24, 28.....	298	2.6	---	50	9.7	44	2.5	141	36	80	.1	.6	341	165	49	542	7.6	10	---
May 25-27.....	243	---	---	---	---	35	---	148	35	61	---	.9	---	166	45	485	7.4	10	---
May 28-31.....	342	---	---	---	---	55	---	145	38	95	---	.9	---	172	53	595	7.4	10	---
May 21-31.....	---	---	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
June 1, 2, 4-10.....	217	2.6	---	50	9.8	46	3.2	147	35	80	.0	1.5	344	165	45	542	7.4	10	---
June 3.....	287	---	---	---	---	47	---	147	34	78	---	1.2	---	165	45	528	8.1	10	---
June 10.....	---	---	09	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
June 11-20.....	206	3.7	04	52	12	53	3.1	155	37	95	.1	2.8	352	180	53	618	7.8	4	---
June 21-30.....	144	5.5	10	50	10	56	3.3	142	32	101	.5	1.2	339	166	50	632	7.7	2	4.2
July 1, 4, 7, 8.....	102	9.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July 2, 3, 5-6, 9-10.....	99	15	---	50	16	61	3.7	166	33	115	.4	2.8	381	193	57	709	7.3	2	---
July 11-10.....	---	---	13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July 11-17.....	108	54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July 18, 19, 20.....	87	38	---	53	16	89	6.0	163	38	156	.5	.7	479	198	65	848	8.2	2	---
July 21-20.....	66	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July 21-24, 27, 28.....	---	---	25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July 25, 26, 28-31.....	60	5.9	---	52	17	63	4.0	166	38	118	.4	1.0	397	200	64	827	7.8	2	2.3
July 21-31.....	---	---	24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Aug. 1-10.....	84	28	23	54	14	78	3.7	167	42	128	.3	1.5	447	192	56	778	7.9	7	2.7
Aug. 11-14, 16-20.....	317	6.4	---	46	12	48	3.0	118	36	85	.3	1.5	312	164	66	555	7.4	12	4.5
Aug. 15-14.....	1,130	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Aug. 21-20.....	---	---	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Aug. 21-31.....	161	6.9	08	44	12	45	3.0	118	36	87	.2	1.6	299	159	63	530	7.3	7	3.9
Sept. 1-10.....	117	8.1	08	52	12	68	3.0	141	35	133	.2	1.4	285	173	64	686	7.6	7	2.8
Sept. 11-20.....	108	8.7	16	58	12	88	3.4	159	47	130	.2	2.1	412	206	76	704	7.6	5	3.0
Sept. 21-30.....	91	5.2	16	55	13	60	3.1	156	39	110	.2	2.2	374	191	63	665	7.6	7	2.7
Average.....	1,080	8.4	0.18	43	10	46	2.8	119	33	80	0.3	2.2	310	146	49	521	---	8	---

## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## GENESEE RIVER NEAR MOUNT MORRIS, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 /Once-daily measurement at approximately 6 a. m./

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



STREAMS TRIBUTARY TO LAKE ONTARIO--Continued  
GENESSEE RIVER AT DRIVING PARK AVENUE AT ROCHESTER, N. Y.--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	
														Total	Non-carbonate				Unfiltered	Filtered
Mar. 1-3, 10, 1955	14,200	--	--	--	--	13	--	112	48	18	--	5.8	--	144	52	335	7.4	--	--	--
Mar. 4-8	13,900	4.2	0.32	34	4.9	9.8	1.8	80	37	16	0.0	4.2	195	106	40	287	7.4	19	--	--
Mar. 1-10	--	--	--	--	--	--	--	89	41	14	--	2.9	--	--	43	271	7.4	--	--	--
Mar. 13, 14, 15-20	12,100	5.2	--	47	9.5	14	1.7	113	57	24	1.1	4.0	267	157	64	385	7.3	14	--	--
Mar. 11-20	6,080	--	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar. 21-23	11,800	--	--	--	--	11	--	106	48	19	--	1.7	--	--	53	324	7.5	--	--	--
Mar. 21, 22, 25-31	5,110	4.6	--	51	10	15	1.7	119	65	26	1	2.9	281	169	71	397	8.1	15	--	--
Mar. 21-31	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 1-10	3,960	19	48	57	13	14	1.8	134	75	26	2	2.8	289	194	84	456	7.8	15	--	--
Apr. 11-20	3,140	3.6	24	65	14	16	2.2	158	87	28	0	2.4	346	221	91	506	7.5	13	--	--
Apr. 21-27	3,440	3.5	--	67	14	16	2.0	168	88	28	0	1.1	367	225	88	521	7.6	17	--	--
Apr. 28-30	3,940	--	--	--	--	--	--	142	70	24	--	1.0	--	198	82	440	7.5	17	--	--
Apr. 21-30	--	--	23	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 1-6, 8, 10	2,250	2.5	--	65	14	16	2.1	159	88	28	0	1.3	340	221	91	510	7.5	17	--	--
May 7, 9	1,750	--	--	--	--	17	--	a169	92	29	--	.9	--	238	106	529	8.4	17	--	--
May 1-10	--	--	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 11, 13-20	1,450	2.4	--	67	14	22	2.0	161	92	36	0	.6	386	235	93	549	7.6	8	--	--
May 12	1,720	--	--	--	--	22	--	b165	90	38	--	.9	--	236	111	547	8.4	--	--	--
May 11-20	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 21-31	1,300	1.8	10	69	14	21	2.0	157	96	36	0	.3	383	230	102	550	7.6	8	--	--
June 1-6, 8-10	756	2.1	--	66	15	23	2.3	155	92	43	1	1.4	371	227	100	558	7.3	12	--	--
June 7	654	--	--	--	--	28	--	154	94	48	--	1.2	--	232	106	562	8.2	14	--	--
June 1-10	--	--	.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 11-20	659	2.6	14	66	12	22	2.2	148	86	40	1	1.4	349	214	93	525	7.5	12	--	--
June 21-30	520	3.7	.33	61	11	22	2.0	138	76	40	4	1.4	312	198	84	489	7.4	3	7.4	5.9
July 1-10	479	1.4	15	61	11	22	1.8	136	76	40	2	1.8	311	197	86	505	7.3	3	6.2	4.9
July 11-20	440	8.7	20	61	10	26	3.4	144	66	43	2	2.0	332	193	75	534	7.2	3	9.3	6.2
July 21-31	361	1.5	--	62	12	24	3.5	138	72	42	2	1.0	319	199	86	516	7.6	3	6.1	4.9
Aug. 1-10	424	1.7	.27	56	7.2	22	2.1	112	68	40	2	1.9	298	169	78	489	7.4	2	5.9	5.0
Aug. 11-15, 17-20	750	3.3	--	63	15	35	2.6	134	92	66	1	1.3	356	219	109	622	7.6	5	5.2	4.1
Aug. 17	1,530	--	--	--	--	28	--	165	150	78	--	--	--	340	205	876	7.3	--	--	--

a Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).  
b Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

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## STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

## GENESEE RIVER AT DRIVING PARK AVENUE AT ROCHESTER, N. Y.--Continued

Temperature (°F) of water, water year October 1954 to September 1955  
 (Once-daily measurement at approximately 10:30 a. m.)

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

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 1954 to September 1955

Date of collection	Dis-charge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	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	Non- carbon- ate			
DEER RIVER AT COPENHAGEN																		
Apr. 25, 1955 .....	286	1.6	0.43	11	1.5	2.0	1.7	34	9.2	1.2	0.3	1.9	65	34	6	79.2	6.3	25
Aug. 17 .....	a 20	5.3	.34	22	3.2	2.4	1.1	71		1.7	.1	1.3		68	10	161	8.2	7
BLACK RIVER AT GREIG																		
Apr. 25, 1955 .....	5,100	4.5	0.06	6.0	0.5	1.4	0.8	11	9.9	1.2	0.2	1.5	45	17	8	41.2	7.0	28
Aug. 16 .....	738	7.4	.51	11	1.2	1.8	.6	34		.8	.0	.1		32	5	78.1	7.2	18
BLACK RIVER AT CASTORLAND																		
Apr. 26, 1955 .....	7,340	5.2	0.03	5.2	0.6	1.1	0.8	10	8.1	0.8	0.0	0.8	41	15	7	40.9	6.6	25
Aug. 17 .....	1,670	4.8	.44	4.2	.9	1.5	.6	14	6.2	.5	.0	1.0	31	15	3	40.2	7.2	15
a Daily mean discharge.																		

a Daily mean discharge.

STREAMS TRIBUTARY TO ST. LAWRENCE RIVER BASIN  
MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO ST. LAWRENCE RIVER IN NEW YORK

Date of collection	Mean discharge (cfs)	Temperature (°F)	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
															Total	Non-carbonate			
Chemical analyses, in parts per million, water year October 1954 to September 1955																			
ST. LAWRENCE RIVER NEAR ALEXANDRIA BAY																			
Apr. 26, 1955			1.5	0.03	33	6.2	14	1.6	108	27	22	0.1	0.7	183	108	19	297	8.1	3
Aug. 17			1.7	.10	38	7.9	9.1	1.3	113	24	21	.0	.7	170	127	35	301	8.0	5
EAST BRANCH OSWEGATCHIE RIVER NEAR OSWEGATCHIE																			
Apr. 25, 1955	1,840		5.0	0.27	4.0	0.7	1.8	0.9	6	9.4	1.5	0.0	1.5	36	13	8	36.1	6.6	25
Aug. 18	115		5.0	.82	6.1	.8	4.6	1.1	18	2.4	.0	.0	1.4		19	4	72.5	7.4	12
OSWEGATCHIE RIVER NEAR HEUVELTON																			
Apr. 26, 1955	4,010		4.1	0.22	7.5	2.1	1.6	1.2	25	11	1.0	0.0	1.5	57	27	7	67.9	7.1	30
Aug. 18	496		4.3	.26	9.8	1.6	4.8	1.2	36		2.7	.2	1.3		32	2	101	7.2	5
ST. LAWRENCE RIVER AT ODGENSBURG																			
Apr. 26, 1955			1.6	0.08	35	1.6	12	1.4	104	22	9.5	0.1	0.4	160	94	9	278	7.9	5
Aug. 18			2.6	.02	36	7.8	9.0	1.3	110	24	20	.0	.8	165	122	32	294	8.1	7
GRASS RIVER AT PYRITES																			
Apr. 26, 1955	1,590		4.1	0.13	4.0	1.1	2.0	1.0	11	8.3	1.8	0.2	1.3	44	14	6	37.3	6.9	50
Aug. 18	179		8.5	.40	7.6	1.8	1.2	.7	25	.4	.0	.0	.5		26	6	65.3	6.8	28
GRASS RIVER AT MASSENA																			
Apr. 27, 1955	2,060		4.3	0.16	10	4.6	1.0	0.6	39	12	1.0	0.2	1.3	69	44	12	90.9	7.2	50
Aug. 16	225		3.3	.16	12	4.8	2.2	.6	51	9.4	1.9	.4	.2	69	50	8	110	7.0	13

ST. LAWRENCE RIVER NEAR MASSENA

[illegible]

## RAQUETTE RIVER AT PIERCEFIELD

Apr. 25, 1955.....	6,720	5.1	0.04	4.0	0.5	1.0	0.9	5	9.2	1.2	0.0	1.2	32	12	8	38.7	6.5	22
Aug. 18.....	282	3.5	.28	3.1	1.4	1.2	.6	8	6.4	.6	.1	1.1	28	14	7	34.0	6.3	8

## RAQUETTE RIVER AT RAYMONDVILLE

[illegible]

## ST. REGIS RIVER AT BRASHER CENTER

Apr. 26, 1955.....	2,580	4.7	0.12	5.6	1.5	1.4	0.9	18	8.3	0.8	0.0	1.5	45	20	5	47.8	7.3	38
.....																		
Sept. 15.....	374	5.7	.57	8.8	3.1	1.4	.6	35	6.2	1.1	.0	.8	52	35	6	72.5	7.1	25

DEER RIVER AT BRASHER IRON WORKS, ST. LAWRENCE

	381		4.5	0.14	11	3.1	1.4	1.0	.43	9.0	1.2	0.1	1.0	67	40	5	88.4	7.3	40
	Apr. 27, 1955.....																		
	Aug. 16.....	151	5.4	.43	13	4.1	1.6	.7	.44	13	1.5	.0	1.3	75	60	14	107	7.5	40

# LITTLE SALMON RIVER AT BOMBAY

	155	6.2	0.34	12	3.7	2.4	1.2	49	13	0.8	0.1	1.3	74	45	5	105	7.7	20
Apr. 27, 1955.....	155	6.2	0.34	12	3.7	2.4	1.2	49	13	0.8	0.1	1.3	74	45	5	105	7.7	20
" " " " " "	56.2	4.2	.21	18	6.0	1.8	1.1	60	20	2.0	.0	.9	90	70	20	148	8.2	12
Aug. 16, 1955.....	56.2	4.2	.21	18	6.0	1.8	1.1	60	20	2.0	.0	.9	90	70	20	148	8.2	12

**SALMON RIVER AT CHASM FALLS**

	474	6.4	0.35	4.8	1.4	1.3	0.9	15	7.5	1.5	0.1	1.3	45	18	5	41.3	7.5	35
Aug. 27, 1955.....																		
Aug. 19.....	159	9.1	46	8.8	2.6	1.4	7	38		4	0	8		33	2	76.7	6.9	23

STREAMS TRIBUTARY TO ST. LAWRENCE RIVER BASIN--Continued  
MISCELLANEOUS ANALYSES OF STREAMS TRIBUTARY TO ST. LAWRENCE RIVER IN NEW YORK--Continued

Chemical analyses, in parts per million, water year October 1954 to September 1955--Continued

Date of collection	Mean discharge (cfs)	Temperature (°F)	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
															Total	Non-carbonate			
SALMON RIVER AT MALONE																			
Apr. 28, 1955 .....	538		6.9	0.14	6.0	1.8	1.2	0.9	20	8.1	1.2	0.0	1.0	48	22	6	52.1	7.1	35
Aug. 15 .....	204		7.2	.39	10	3.2	1.3	.6	40	7.0	.8	.0	.9	55	38	6	78.3	7.4	25
TROUT RIVER AT CONSTABLE																			
Apr. 28, 1955 .....	83.2		5.8	0.35	9.1	2.6	1.5	1.0	33	11	0.8	0.0	0.6	59	33	6	78.8	7.4	12
Sept. 15 .....	18.8		4.7	.12	19	5.7	2.2	1.2	72	14	1.9	.1	.8	90	71	12	149	7.8	7
CHATEAUGAY RIVER NEAR CHATEAUGAY																			
Apr. 27, 1955 .....	347		6.0	0.14	8.7	1.1	1.9	1.4	24	12	1.0	0.2	0.7	63	26	7	69.0	7.3	18
Aug. 19 .....	136		2.4	.06	12	2.8	1.5	.9	41	9.5	1.0	.0	1.3	55	42	8	91.2	6.9	8
NORTH BRANCH GREAT CHAZY RIVER AT ELLENBURG																			
Apr. 28, 1955 .....	75.1		4.7	0.10	12	1.9	2.2	1.1	42	11	0.8	0.1	1.4	70	38	3	88.8	7.6	10
Aug. 15 .....	14.0		7.0	.08	20	4.6	1.8	1.2	71	11	2.0	.0	.3	89	69	11	146	7.7	10
GREAT CHAZY RIVER AT PERRY MILLS																			
Apr. 27, 1955 .....	544		3.4	0.21	10	2.7	1.5	1.1	39	9.2	0.8	0.0	0.6	61	36	4	84.3	7.5	18
Aug. 19 .....	112		3.7	.09	13	3.0	1.2	1.0	49		2.2	.0	.8		45	5	103	7.7	2
SARANAC RIVER AT PLATTSBURG																			
Apr. 27, 1955 .....	2,090		5.9	0.24	7.1	0.6	1.2	0.9	13	11	0.8	0.1	1.6	55	20	10	49.8	6.9	30
Aug. 19 .....	556		6.5	.50	11	3.0	2.8	.7	40	12	1.2	.1	1.2	67	40	7	96.4	7.4	12
AUSABLE RIVER NEAR AUSABLE FORKS																			
Apr. 27, 1955 .....	a1,680		8.0	0.08	6.0	0.7	1.8	1.0	12	11	1.2	0.1	1.4	56	18	8	47.1	6.8	15
Aug. 19 .....	407		9.0	.32	13	2.0	1.3	.5	23		5.2	.0	.2		41	22	86.2	7.2	37
a Daily mean discharge.																			

a Daily mean discharge.

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