

Quality of Surface Waters of the United States 1953

Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin

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

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Reclamation, and with other agencies*



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PREFACE

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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1953

PARTS 9-14

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, 1952, to September 30, 1953. Descriptive statements are given for each sampling station for which regular series of chemical analyses 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 other pertinent data.

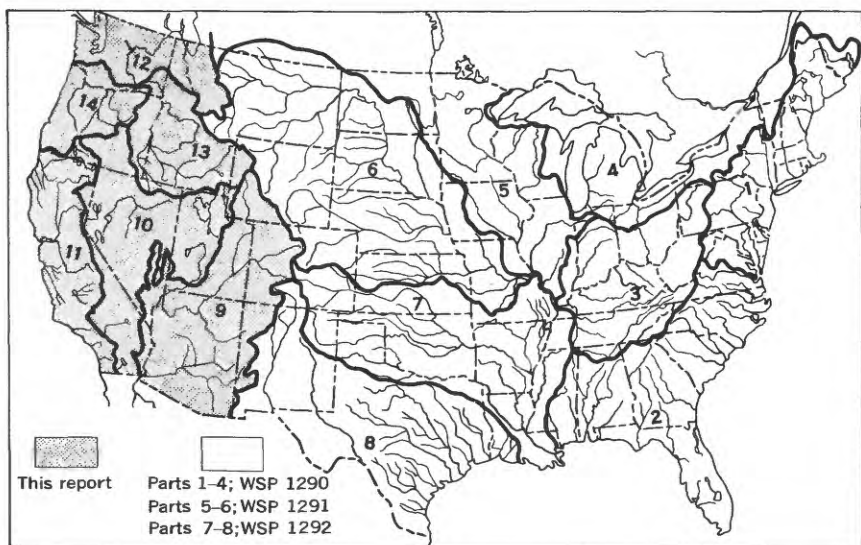


Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1953. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

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 has been 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, 1953, 55 regular sampling stations on 42 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 108 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 pH, chloride, or other determinations were also made on many of the daily samples. As noted in the table headings these data are available for reference at the district offices listed under Division of Work, on pages 19-20.

Quantities of suspended sediment are reported for 20 stations during the year ended September 30, 1953. 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 19 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 stream bed is termed bed load and is not considered in this report. All other undissolved 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 for chemical analyses were usually collected daily at, or near, points on streams where gaging stations are maintained for measurement of water discharge. Most of the analyses were made on 10-day composites of daily samples collected for a period of a year at each sampling point. 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. For some streams that are subject to sudden and large changes in chemical composition or concentration, samples were composited for shorter periods on the basis of the concentration of dissolved solids indicated by measurements of specific conductance of the daily samples.

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).

For those waters containing moderately large quantities of soluble salts, the value reported for dissolved solids is the sum of the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. In other analyses the value reported as dissolved solids is the residue on evaporation after drying at 180°C for 1 hour. Specific conductance is given for most analyses and was determined by means of a conductance bridge using a standard potassium chloride solution as reference.

SUSPENDED SEDIMENT

In general, samples were collected daily with the US D-43 depth-integrating sampler (U. S. Inter-agency, 1948, p. 70-76) 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 comparatively rapid fluctuations in transverse distribution of water discharge or sediment concentration are encountered at the sampling point, 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 mean daily 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, mean daily 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 sediment 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 sediment loads were estimated on the basis of water discharge, sediment concentrations observed immediately preceding and following the periods, and 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 sediment loads for individual days are not estimated, as numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates of sediment loads for individual days. However, estimated sediment loads for missing days in an 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 total quantities of sediment, records of the particle sizes of sediment are included also. The particle sizes of the suspended sediments were determined periodically for many of the stations. As much of the material carried in suspension can pass through the finest sieves, the bottom-withdrawal tube method (U. S. Inter-agency, 1943, p. 82-90) was used in most of the analyses. Generally, sieves were used in the determination of particle sizes for sediments which were predominantly coarser than 0.062 mm. Size distribution for some sediments was determined by a combination of sieves and pipette methods in which the size fraction 0.062 mm and larger was analyzed by sieves and that smaller than 0.062 mm was analyzed by the pipette method (Kilmer and Alexander, 1949). 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. 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 and is calculated by dividing the concentration in parts per million by the chemical combining weight of the constituent. 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 (Fe^{++}).....	0.0358	Carbonate (CO_3^{--}) ..	0.0333
Iron (Fe^{+++}).....	.0537	Bicarbonate (HCO_3^-)..	.0164
Calcium (Ca^{++}).....	.0499	Sulfate (SO_4^{--}) .....	.0208
Magnesium (Mg}^{++}) ...	.0822	Chloride (Cl^-).....	.0282
Sodium (Na^+).....	.0435	Fluoride (F^-).....	.0526
Potassium (K^+).....	.0256	Nitrate (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 quan-

tity 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 (CaCO_3), is calculated from the equivalents of calcium and magnesium except for a few samples for which the reported values also include equivalents of free mineral acid, aluminum, iron, and manganese when present in significant quantities. 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 times 10^6 (micromhos at 25°C). The discharge of the streams is reported in cubic feet-per second (see Streamflow, p. 20) 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 (arithmetical or weighted) for the water year is given for most daily sampling stations. An arithmetical average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the river each day for the water year. A weighted average represents approximately 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. The weighted average of the analyses is computed by multiplying the discharge for the sampling period by the quantities of the individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. Water as represented by the weighted average is less concentrated than that represented by the average of the individual analyses for most streams because at times of high discharge the rivers generally have lower concentrations of dissolved solids.

Mean daily sediment concentrations are expressed in parts per million by weight. A part per million of sediment 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, and dissolved solids. Aluminum, manganese, color, pH, 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 (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 (CO_3 and 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 (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 (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 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 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 NO_3) may be the cause of methemoglobinemia in infants (Waring, 1949). In a report published by the National Research Council, Maxcy (1950, p. 271) concludes that a nitrate content in excess of 44 parts per million (as 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 dis-

solved 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 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

Sodium-adsorption-ratio (SAR) is the relative proportion of sodium to other cations in an irrigation water.

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

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

The term is used for soil extracts and irrigation waters to ex-

press the relative activity of sodium ions in exchange reactions with soil. SAR provides an estimate of the sodium or alkali hazard and reportedly is more significant for interpreting water quality than percent sodium because it relates more directly to the exchangeable sodium percentage the soil will attain when it and the water are in equilibrium.

The U. S. Salinity Laboratory diagram for classifying waters for irrigation divides water into four classes with respect to sodium hazard, the dividing points being at SAR values of 10, 18, and 26. They range from low-sodium water that can be used for irrigation on almost all soils to very high-sodium water which is 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 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 charac-

teristics, 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 the years ended September 30, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, and 1952, for many of the stations listed in this report are given in Water-Supply Papers 942, 950, 970, 1022, 1030, 1050, 1102, 1133, 1163, 1189, 1200, and 1253.

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 southeastern Kansas, 1911.
- *274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
- *339. Quality of the surface waters of Washington, 1914.
- *363. Quality of the surface waters of Oregon, 1914.
- *418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
- *596-B. Quality of water of Colorado River in 1925-26, 1928.
- *596-D. Quality of water of Pecos River in Texas, 1928.
- *596-E. Quality of the surface waters of New Jersey, 1928.
- *636-A. Quality of water of the Colorado River in 1926-28, 1930.
- *636-B. Suspended matter in the Colorado River in 1925-28, 1930.
- *638-D. Quality of water of the Colorado River in 1928-30, 1932.
- *839. Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
- *889-E. Chemical character of surface 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

Financial assistance was furnished by the Bureau of Reclamation of the United States Department of the Interior, in the operation of some stations in Arizona. Investigations of chemical quality in the Great Basin and Pacific Slope basins in California were carried on in cooperation with the State of California. Financial assistance was also furnished by the Corps of Engineers, United States Army, in operation of a sediment and chemical quality station on the East Fork Russian River near Ukiah, Calif. Investigations of chemical quality in the upper Virgin River basin, Utah, were initiated in 1951 in cooperation with the State of Utah.

Sedimentation studies in the Pacific Slope basins in Washington were begun in 1950 with the City of Tacoma.

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

In addition to the cooperative program, many of the stations were operated from funds appropriated directly to the Geological Survey for quality-of-water investigations. Investigation of the chemical quality and suspended-sediment loads in the Colorado River basin in Arizona, Colorado, Nevada, and Utah have been carried on as a continuing Federal project since 1925.

DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, C. 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 supervision of district or regional chemists as follows: In Arizona and New Mexico--J. D. Hem; in Colorado and Wyoming (Colorado River basin), Nevada, Utah, California, Washington, Oregon, and Idaho--C. S. Howard. Any additional information on file may be obtained by writing or visiting the responsible Survey Quality of Water district office as listed in the following table.

District office

Drainage basin

Geology Bldg.
University of N. Mex.
Post Office Box 4103
Albuquerque, N. Mex.

Colorado River basin
(Arizona, New Mexico).

Post Office Box 2657
Building 504
Fort Douglas
Salt Lake City, Utah

Colorado River basin
(Colorado, Utah, Wyoming,
and Nevada).
The Great Basin
(Utah, Nevada).

2520 Marconi Avenue
Sacramento, Calif.

The Great Basin (California).
Pacific Slope basins in
California.

<u>District office</u>	<u>Drainage basin</u>
1001 N. E. Lloyd Blvd. Post Office Box 3418 Portland 14, Oreg.	Pacific Slope basins in Washington and upper Columbia River basin. Snake River basin. Pacific Slope basins in Oregon and lower Columbia River basin.

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 9. COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.

LOCATION.--At bridge at Hot Sulphur Springs, Grand County, 1 mile downstream from gaging station which is 3 miles upstream from Beaver Creek.

DRAINAGE AREA.--782 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1953.

Water temperatures: April 1949 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 103 ppm July 21-31; minimum, 64 ppm June 1-10.

Hardness: Maximum, 69 ppm July 21-31; minimum, 33 ppm June 1-10.

Specific conductance: Maximum daily, 162 micromhos July 28; minimum daily, 72.5 micromhos May 29.

Water temperatures: Maximum observed, 72°F July 27; minimum observed, freezing point on many days during November to February.

EXTREMES, 1947-53.--Dissolved solids (1947-50, 1952-53): Maximum, 109 ppm Aug. 11-20, 1950; minimum, 38 ppm June 21-30, 1947.

Hardness (1947-50, 1952-53): Maximum, 71 ppm Aug. 11-20, 1950; minimum, 20 ppm June 21-30, 1947.

Specific conductance: Maximum daily, 202 micromhos July 31, 1952; minimum daily, 47.6 micromhos June 27, 1947.

Water temperatures: Maximum observed, 72°F July 27, 1953; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per day							
Oct. 1-10, 1952	180	9.2	0.18	13	3.0	4.6	1.6	62	4.5	1.0	0.3	0.4	--	75	0.10	36.4	45	0	18	0.3	109	7.2	10
Oct. 11-20	186	8.6	.19	13	2.9	4.6	1.6	59	5.1	1.0	.3	.6	--	75	.10	37.7	44	0	18	.3	109	7.2	15
Oct. 21-31	186	8.6	.20	13	2.9	4.6	1.6	59	5.1	1.0	.3	.4	0.03	75	.10	36.7	44	0	18	.3	107	7.0	15
Nov. 1-10	102	12	.10	17	3.8	5.9	1.6	76	7.3	1.1	.3	.4	--	83	.13	25.6	58	0	18	.3	135	7.2	10
Nov. 11-20	106	13	.10	16	3.9	6.6	1.3	78	7.3	1.2	.3	.4	.06	96	.13	27.5	56	0	20	.4	139	7.2	10
Nov. 21-30	98.8	12	.07	17	3.8	6.6	1.5	75	7.2	1.2	.3	.3	--	95	.13	25.3	58	0	19	.4	140	7.2	10
Dec. 1-10	111	14	.04	16	3.5	7.0	1.3	75	6.7	.9	.3	.3	--	86	.12	25.8	54	0	21	.4	133	7.0	5
Dec. 11-20	102	14	.07	15	3.1	6.8	1.3	69	6.6	.9	.3	.4	.04	83	.11	22.9	50	0	22	.4	127	6.9	5
Dec. 21-31	87.6	13	.06	16	3.3	6.6	1.3	69	6.8	1.0	.3	.4	--	83	.11	19.6	53	0	21	.4	127	7.0	5
Jan. 1-10, 1953	93.4	13	.07	16	3.1	6.6	1.3	69	6.7	1.0	.3	.5	--	83	.11	20.9	53	0	21	.4	127	6.9	5
Jan. 11-20	90.2	13	.07	15	3.4	6.6	1.3	70	6.3	1.0	.3	.3	.02	81	.11	19.7	51	0	21	.4	126	6.9	5
Jan. 21-31	87.1	12	.06	15	3.4	6.4	1.1	68	6.2	1.0	.3	.8	--	84	.11	19.8	51	0	21	.4	126	7.1	7
Feb. 1-10	86.8	12	.04	15	3.0	6.8	1.4	68	6.7	1.0	.4	.7	--	83	.11	19.5	50	0	22	.4	125	7.3	7
Feb. 11-20	83.1	12	.09	16	3.3	5.3	1.5	68	6.0	1.0	.4	1.1	.02	85	.12	19.1	53	0	17	.3	126	7.0	7
Feb. 20-28	85.6	12	.07	17	3.3	4.8	1.4	70	5.9	1.4	.2	.7	--	84	.11	19.4	56	0	15	.3	129	7.2	7
Mar. 1-10	93.8	12	.07	16	3.0	6.8	1.5	70	6.8	1.1	.3	.9	--	84	.11	21.3	52	0	21	.4	131	7.4	8
Mar. 11-20	100	12	.07	16	3.5	7.1	1.8	74	6.9	1.3	.4	.8	.04	87	.12	23.5	54	0	21	.4	139	7.3	8
Mar. 21-31	114	10	.11	16	3.3	7.1	3.0	73	8.0	1.9	.5	.8	--	91	.12	28.0	53	0	21	.4	142	7.3	20

124	Apr. 1-10 1953...	13	17	18	3.6	7.6	2.3	79	9.8	1.7	.5	0.7	--	98	.13	32.8	60	0	21	.4	152	7.4	18
124	Apr. 11-20	13	17	18	3.5	7.6	1.7	81	7.7	1.2	.4	.3	.05	95	.13	34.4	59	0	21	.4	147	7.9	15
299	Apr. 21-30	11	17	17	3.7	6.7	2.6	76	7.3	1.6	.4	.8	--	95	.13	76.7	56	0	20	.4	143	7.1	25
274	May 1-10	10	11	14	2.6	5.9	2.0	66	6.0	1.4	.4	1.3	--	83	.11	61.4	48	0	21	.4	124	7.2	15
307	May 11-21	10	12	15	3.4	5.7	2.0	62	5.6	1.4	.5	1.3	.04	81	.11	67.1	50	0	19	.4	116	7.1	25
1,042	May 22-31	10	16	10	2.4	4.6	1.6	44	5.5	1.0	.5	1.3	--	69	.09	194	35	0	21	.3	87.0	7.0	35
901	June 1-10	10	10	9.9	2.1	4.2	1.6	44	4.7	.6	.5	1.1	--	64	.09	156	33	0	21	.3	83.1	7.1	35
917	June 11-20	12	07	14	2.5	3.8	1.3	54	4.6	.4	.5	.8	.03	71	.10	176	45	1	15	.2	99.4	7.0	30
484	June 21-30	13	10	15	2.7	4.2	1.5	62	4.4	.6	.4	.7	--	73	.10	95.4	49	0	15	.3	109	7.1	25
287	July 1-10	15	05	18	3.5	5.3	1.5	77	5.3	1.2	.5	1.0	.04	88	.12	63.4	59	0	16	.3	135	7.4	20
307	July 11-20	15	07	20	3.8	6.0	1.5	85	5.3	.6	.5	.8	--	98	.13	81.2	66	0	16	.3	150	7.5	18
244	July 21-31	17	07	21	4.0	6.0	2.0	88	4.9	1.6	.5	1.0	--	103	.14	67.9	69	0	15	.3	154	7.5	18
280	Aug. 1-10	16	08	20	4.4	6.0	1.7	82	5.5	1.0	.4	.6	--	94	.13	71.1	68	1	16	.3	145	7.8	15
184	Aug. 11-20	16	10	19	3.8	5.6	2.2	80	5.3	1.6	.4	.6	.03	92	.13	45.7	63	0	16	.3	140	8.0	20
157	Aug. 21-31	14	02	17	3.7	5.8	1.6	77	5.9	.7	.3	.5	--	87	.12	36.9	58	0	17	.3	137	7.6	10
105	Sept. 1-10	14	03	18	3.9	5.8	1.6	77	6.1	1.7	.3	.6	--	90	.12	25.5	61	0	17	.3	138	7.5	20
86.1	Sept. 11-20	13	05	18	4.1	5.8	1.6	77	6.3	1.4	.3	.6	.04	89	.12	20.7	62	0	16	.3	137	7.6	20
69.1	Sept. 21-30	13	04	17	3.7	5.8	1.6	78	6.5	1.2	.3	.6	--	88	.12	16.4	58	0	17	.3	137	7.6	10
227	Weighted average	12	0.11	15	3.0	5.3	1.7	64	5.6	1.0	0.4	0.8	--	80	0.11	49.0	50	0	18	0.3	117	--	--

COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

EAGLE RIVER BASIN

EAGLE RIVER AT GYPSUM, COLO.

LOCATION.--At bridge at Gypsum, Eagle County, about 400 feet upstream from Gypsum Creek and U. S. Highways 6 and 24, and about 475 feet upstream from gaging station.

DRAINAGE AREA.--844 square miles above sampling station (957 square miles above gaging station below Gypsum).

RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1953.

Water temperatures: April 1949 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 880 ppm Sept. 21-30; minimum, 106 ppm June 11-20.

Specific conductance: Maximum observed, 1,440 micromhos Sept. 29; minimum daily, 161 micromhos June 4.

Water temperatures: Maximum observed, 67°F Aug. 11, 25; minimum observed, 33°F on several days during December to February.

EXTREMES, 1947-50.--Dissolved solids: Maximum, 1,370 ppm Aug. 11-12, 1952; minimum, 106 ppm June 11-20, 1953.

Specific conductance: Maximum daily, 1,440 micromhos Sept. 29; minimum daily, 161 micromhos June 4.

Hardness (1947-50): Maximum, 511 ppm Sept. 21-30, 1948; minimum, 106 ppm June 11-20, 1948.

Specific conductance: Maximum daily, 1,850 micromhos Aug. 6, 1949; minimum observed, 156 micromhos June 4, 1948.

Water temperatures: Maximum observed, 76°F Aug. 24, 1949; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Discharge records for gaging station below Gypsum for water year October 1952 to September 1953 given in WSP 1283.

These records include the inflow of Gypsum Creek, which on the average amounts to about 5 to 7 percent of the annual runoff at the gaging station. No other appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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. 1-10, 1952	233	--	--	122	27	61	--	189	259	87	--	2.0	0.07	639	0.87	402	--	--	--	982	--	--
Oct. 11-31	211	10	--	126	29	68	--	187	277	97	--	2.2	--	692	.94	394	415	260	24	1,020	8.0	--
Nov. 1-30	228	11	--	126	29	68	--	187	277	97	--	2.2	--	722	.98	444	433	280	25	1,080	8.0	--
Dec. 1-10	228	--	--	--	--	--	--	--	--	--	--	--	--	738	1.00	454	--	--	--	1,080	--	--
Dec. 11-20	252	11	--	119	22	66	--	184	249	86	--	3.1	--	664	.90	452	386	235	27	989	8.1	--
Dec. 21-31	223	--	--	--	--	--	--	--	--	--	--	--	--	755	1.03	455	--	--	--	1,110	--	--
Jan. 1-10, 1953	253	--	--	--	--	--	--	--	--	--	--	--	--	675	.92	461	--	--	--	1,000	--	--
Jan. 11-20	209	11	--	119	22	71	--	184	252	100	--	2.3	.06	688	.93	387	390	239	29	1,010	7.9	--
Jan. 21-31	193	--	--	--	--	--	--	--	--	--	--	--	--	669	.91	349	--	--	--	1,010	--	--
Feb. 1-10	192	--	--	--	--	--	--	--	--	--	--	--	--	688	.93	356	--	--	--	1,050	--	--
Feb. 11-20	178	9.8	--	117	23	79	--	172	248	111	--	2.4	--	686	.93	330	386	245	31	1,070	7.8	--
Feb. 21-28	178	--	--	--	--	--	--	--	--	--	--	--	--	703	.96	338	--	--	--	1,070	--	--
Mar. 1-10	193	--	--	--	--	--	--	--	--	--	--	--	--	681	.93	355	--	--	--	1,030	--	--
Mar. 11-20	184	10	--	114	20	65	--	170	242	92	--	1.3	--	641	.87	336	368	229	28	982	8.0	--
Mar. 21-31	209	--	--	--	--	--	--	--	--	--	--	--	--	565	.80	330	--	--	--	894	--	--
Apr. 1-10	197	--	--	--	--	--	--	--	--	--	--	--	--	562	.76	325	--	--	--	864	--	--
Apr. 11-20	187	8.5	--	99	19	69	--	158	209	102	--	.5	.05	592	.81	299	325	195	32	946	8.0	--
Apr. 21-22	212	--	--	--	--	--	--	--	--	--	--	--	--	534	.71	300	--	--	--	818	--	--
Apr. 23-30	377	--	--	--	--	--	--	--	--	--	--	--	--	315	.43	321	--	--	--	503	--	--

EAGLE RIVER BASIN--Continued
EAGLE RIVER AT GYPSUM, COLO.--Continued

Chemical analyses, in parts per million, water year October 1952 to present 1953--Continued																							
Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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						
May 1-7, 1953	299	--	--	--	--	--	--	--	--	--	--	--	--	344	0.47	278	--	--	--	--	548	--	--
May 8-10	476	--	--	51	10	20	--	112	83	--	--	--	--	246	.33	316	--	--	--	--	397	--	--
May 11-22	428	8.8	--	31	4.7	5.1	--	78	34	28	--	1.1	--	272	.37	314	170	78	21	0.7	441	7.7	--
May 23-31	2,183	6.9	--	--	--	--	--	--	34	5.6	--	1.1	--	137	.19	807	97	33	10	.2	221	7.7	--
June 1-10	2,868	5.6	--	25	3.7	4.6	--	66	26	5.2	--	.3	--	111	.15	860	77	23	11	.2	179	7.5	--
June 11-20	3,730	5.5	--	24	3.2	4.1	--	66	25	4.3	--	.5	--	106	.14	1,070	73	19	11	.2	174	7.7	--
June 21-30	1,924	--	--	--	--	--	--	--	--	--	--	--	--	150	.20	779	--	--	--	--	247	--	--
July 1-10	1,079	--	--	--	--	--	--	--	--	--	--	--	--	216	.29	629	--	--	--	--	359	--	--
July 11-20	871	8.0	--	58	8.2	27	--	114	90	38	--	.9	0.04	296	.40	696	178	85	25	.9	488	7.6	--
July 21-31	568	--	--	--	--	--	--	--	--	--	--	--	--	387	.53	594	--	--	--	--	628	--	--
Aug. 1-10	658	--	--	101	17	--	--	162	191	--	--	--	--	422	.57	750	--	--	--	--	668	--	--
Aug. 11-20	315	9.4	--	--	--	58	--	--	191	82	--	.6	--	555	.75	472	324	191	28	1.4	868	8.1	--
Aug. 21-31	233	--	--	--	--	--	--	--	--	--	--	--	--	650	.88	409	--	--	--	--	970	--	--
Sept. 1-10	202	--	--	--	--	--	--	--	--	--	--	--	--	724	.98	395	--	--	--	--	1,090	--	--
Sept. 11-20	180	12	--	134	26	82	--	190	288	110	--	1.4	--	788	1.07	383	442	286	29	1.7	1,170	8.0	--
Sept. 21-30	143	--	--	--	--	--	--	--	--	--	--	--	--	880	1.20	340	--	--	--	--	1,310	--	--
Weighted average	557	--	--	--	--	--	--	--	--	--	--	--	--	310	0.42	466	--	--	--	--	483	--	--

EAGLE RIVER BASIN--Continued

EAGLE RIVER AT GYPSUM, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER MAIN STEM

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.

LOCATION.--At Shoshone power plant, 6 miles upstream from gaging station at Glenwood Springs, Garfield County, which is half a mile upstream from Roaring Fork.

DRAINAGE AREA.--4,560 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: October 1941 to September 1953.

Water temperatures: May 1949 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 583 ppm Dec. 26-31; minimum, 139 ppm June 11-20.

Hardness: Maximum, 264 ppm Dec. 26-31; minimum, 94 ppm June 11-20.

Specific conductance: Maximum observed, 1,100 micromhos Dec. 28; minimum observed, freezing point on many days during November to February.

Water temperatures: Maximum, 68° F July 28-29; minimum observed, freezing point on many days during November to February.

EXTREMES, 1941-53.--Dissolved solids: Maximum, 2,030 ppm Aug. 10, 1947; minimum, 105 ppm June 1-10, 1942.

Hardness: Maximum, 1,480 ppm Aug. 10, 1947; minimum, 72 ppm June 1-20, 1942.

Specific conductance: Maximum daily, 2,260 micromhos Aug. 10, 1947; minimum daily, 153 micromhos May 24, 1948.

Water temperatures (1949-53): Maximum observed, 69° F July 31, 1951; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Discharge records for gaging station at Glenwood Springs for water year October 1952 to September 1953 given in WSP 1283. No appreciable inflow between Shoshone power plant and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952..	1,338	10		57	13	63	2.6	134	98	92		1.0	--	409	0.56	1,480	196	86	41		690	
Oct. 11-20.....	1,349	10		57	13	63	2.8	130	94	92		1.1	0.05	406	.55	1,480	196	89	41		688	
Oct. 21-31.....	1,079	10		66	15	70	3.1	145	117	104		1.1	--	471	.64	1,370	226	107	40		785	
Nov. 1-30.....	1,110	11		66	15	68	2.8	142	117	98		1.4	--	461	.63	1,380	226	110	39		761	
Dec. 1-20.....	1,044	13		61	13	59	2.0	136	102	83		.9	--	413	.56	1,160	206	94	38		682	
Dec. 21-25.....	993	13		56	14	60	2.0	132	88	88		.8	--	398	.54	1,070	197	89	40		661	
Dec. 26-31.....	720	14		76	18	100	2.7	156	132	150		1.1	--	583	.79	1,130	264	136	45		960	
Jan. 1-10, 1953..	1,116	13		58	14	64	2.7	131	95	94		1.4	--	414	.56	1,250	202	94	40		691	
Jan. 11-20.....	949	13		63	16	76	2.7	140	107	111		1.4	.06	466	.63	1,190	223	108	42		774	
Jan. 21-31.....	1,047	13		59	15	66	2.3	132	96	99		1.0	--	422	.57	1,190	208	100	40		706	
Feb. 1-28.....	957	13		56	15	64	2.8	128	92	96		.9	--	412	.56	1,060	201	96	40		686	
Mar. 1-10.....	936	13		53	12	63	2.0	126	87	93		.9	--	392	.53	991	182	78	43		676	
Mar. 11-20.....	1,128	12		57	14	67	2.3	128	96	101		.9	--	415	.56	1,260	200	94	42		715	
Mar. 21-31.....	1,222	12		57	14	65	3.1	133	100	94		1.0	--	409	.56	1,350	200	90	41		701	
Apr. 1-10.....	1,633	12		51	13	58	3.1	124	92	84		.8	--	379	.52	1,670	180	79	41		642	
Apr. 11-20.....	1,418	11		52	14	64	2.3	131	85	96		.04	--	387	.53	1,490	187	88	42		669	
Apr. 21-27.....	1,873	13		45	12	43	1.9	117	75	61		.6	--	310	.42	1,570	162	66	36		524	
Apr. 28-30.....	2,770	12		40	9.2	24	1.7	113	57	30		.9	--	236	.32	1,770	138	46	27		387	

May 1-10, 1953 ...	2,315	41	10	37	1.8	110	66	49	.6	--	279	0.38	1,740	144	54	36	1.3	467
May 11-20	2,361	41	9.7	36	1.5	109	61	49	.6	--	269	.37	1,710	142	53	35	1.3	452
May 21-31	6,260	44	7.3	15	1.5	124	44	18	1.3	--	213	.29	3,600	140	38	19	.5	339
June 1-10	8,946	31	5.9	10	1.0	90	27	12	1.3	--	148	.20	3,570	102	28	17	.4	235
June 11-20	10,800	29	5.2	8.5	1.0	81	27	11	1.2	--	139	.19	4,050	94	28	16	.4	224
June 21-30	5,914	30	6.6	17	1.0	90	38	24	1.0	--	171	.23	2,730	102	28	26	.7	283
July 1-10	3,224	39	9.1	31	1.5	96	63	40	.5	--	247	.34	2,150	135	56	33	1.2	416
July 11-20	2,919	48	11	34	2.1	116	80	43	.5	.05	296	.40	2,330	185	70	31	1.2	486
July 21-31	2,238	59	13	48	2.4	132	100	66	.6	--	377	.51	2,280	200	92	34	1.5	622
Aug. 1-10	2,648	52	11	37	2.4	118	89	48	.6	--	320	.44	2,290	174	78	31	1.2	524
Aug. 11-20	1,830	55	13	55	2.5	124	97	77	.6	--	384	.52	1,900	190	89	38	1.7	639
Aug. 21-31	1,475	59	14	64	2.5	130	106	91	.6	--	425	.58	1,990	204	98	40	1.9	712
Sept. 1-10	1,276	64	15	68	1.8	130	110	103	.4	--	449	.61	1,550	221	114	40	2.0	753
Sept. 11-20	1,125	62	14	60	2.7	124	104	93	.4	--	416	.57	1,260	212	110	38	1.8	700
Sept. 21-30	1,057	64	14	65	2.7	128	112	103	.4	--	450	.61	1,280	217	112	39	1.9	761
Weighted average	2,194	46	10	37	1.8	112	67	52	1.0	--	288	0.39	1,710	.156	64	34	1.3	478

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

LOCATION.--At Grand Valley project diversion dam, 3.7 miles upstream from Cameo, Mesa County, 0.4 mile upstream from Plateau Creek, and 3 miles downstream from gaging station.

DRAINAGE AREA.--Approximately 8,060 square miles above gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1933 to September 1953.

Water temperatures: April 1949 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 854 ppm Dec. 21-31; minimum, 180 ppm June 11-20.

Specific conductance: Maximum daily, 1,680 micromhos Dec. 30; minimum daily, 287 micromhos June 17.

Water temperatures: Maximum observed, 75°F July 27; minimum observed, freezing point on several days during November to February.

EXTREMES, 1933-53.--Dissolved solids (1933-43, 1950-53): Maximum, 1,050 ppm Dec. 21-31, 1939; minimum, 143 ppm June 11-20, 1935.

Hardness (1933-35): Maximum, 399 ppm July 21-31, 1934; minimum, 98 ppm June 21-30, 1935.

Specific conductance (1941-53): Maximum daily, 1,850 micromhos Jan. 8, 1944; minimum daily, 244 micromhos July 2, 1947.

Water temperatures (1949-53): Maximum observed, 75°F July 27, 1953; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952...	2,075	10		76	24	--	126	176	159	177		3.1	--	684	0.93	3,830	288	144	49	3.2	1,140	7.7
Oct. 11-31.....	1,964	10		84	24	--	135	186	175	191		3.5	0.10	731	0.99	3,880	312	160	49	3.3	1,220	7.6
Nov. 1-30.....	1,879	11		87	26	--	140	190	191	192		3.5	--	768	1.04	3,900	324	168	48	3.4	1,260	7.6
Dec. 1-3, 8, 10...	1,620					--							--	845	1.15	3,700	--	--	--	--	1,390	--
Dec. 11-20.....	1,720	14		87	20	--	147	196	184	194		4.2	--	766	1.04	3,560	302	141	52	3.7	1,250	7.8
Dec. 21-31.....	1,741					--						--	--	854	1.16	3,320	--	--	--	--	1,410	--
Jan. 1-10, 1953...	1,710	--				--						--	--	760	1.03	3,510	--	--	--	--	1,270	--
Jan. 11-20.....	1,540	12		84	21	--	154	192	183	207		5.8	0.09	782	1.06	3,250	298	141	53	3.9	1,280	7.7
Jan. 21-31.....	1,558	--				--						--	--	773	1.05	3,250	--	--	--	--	1,290	--
Feb. 1-10.....	1,497	--				--						--	--	772	1.05	3,120	--	--	--	--	1,300	--
Feb. 11-20.....	1,451	12		83	22	--	160	187	189	209		5.4	--	780	1.06	3,060	297	144	54	4.0	1,310	7.4
Feb. 21-28.....	1,356	--				--						--	--	783	1.06	2,870	--	--	--	--	1,310	--
Mar. 1-10.....	1,522	--				--						--	--	741	1.01	3,050	--	--	--	--	1,240	--
Mar. 11-20.....	1,646	10		79	19	--	148	178	175	198		5.0	--	730	0.99	3,240	276	130	54	3.9	1,230	7.6
Mar. 21-31.....	1,773	11		70	20	--	130	168	150	182		2.6	--	675	0.92	3,230	260	122	52	3.5	1,150	7.5
Apr. 1-10.....	2,146	11		69	18	--	113	167	146	162		2.6	--	629	0.86	3,640	244	107	50	3.1	1,070	7.6
Apr. 11-20.....	1,918	9.8		66	17	--	131	154	139	171		1.5	1.10	630	0.86	3,260	236	110	55	3.7	1,080	7.9
Apr. 21-24.....	2,085	7.8		67	18	--	129	152	--	206		2.8	--	--	--	--	242	117	54	3.6	1,130	7.5
Apr. 25-30.....	3,262	9.9		56	12	--	79	140	--	86		1.4	--	440	0.60	3,880	190	75	48	2.5	762	7.6
May 1-10.....	3,126	9.7		52	13	--	78	132	96	106		2.1	--	442	0.60	3,730	184	76	48	2.5	761	7.5
May 11-20.....	3,233	11		54	10	--	71	136	92	93		1.5	--	416	0.57	3,630	176	64	47	2.3	715	7.7
May 21-26.....	6,608	13		53	8.7	--	48	144	64	60		2.4	--	340	0.46	6,070	168	50	38	1.6	566	8.2
May 27-31.....	14,280	11		42	6.7	--	23	123	--	26		2.2	--	--	--	--	132	31	27	1.9	370	8.3

a Not included for computation of weighted averages.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		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, mg./nestum	Non-carbonate					
June 1-10, 1953...	14,800	9.1		37	6.2	20		110	34	26		1.9	--	196	0.27	7,730	118	28	27	0.8	334	7.7	
June 11-20.....	13,360	8.6		38	4.4	15		113	30	19		1.3	--	180	.24	9,450	114	21	22	.6	305	7.5	
June 21-30.....	10,390	--		--	--	--		--	--	--		--	--	305	.31	9,970	--	--	--	--	379	--	
July 1-10.....	6,051	--		--	--	--		--	--	--		--	--	305	.54	5,320	--	--	--	--	579	--	
July 11-20.....	4,979	10		59	9.9	59		137	95	79		1.3	0.04	396	.54	5,320	188	76	41	1.9	685	7.5	
July 21-31.....	3,528	--		--	--	--		--	--	--		--	--	482	.66	4,590	--	--	--	--	801	--	
Aug 1-10.....	4,396	--		--	--	--		--	--	--		--	--	445	.61	5,280	--	--	--	--	735	--	
Aug 11-20.....	2,922	11		74	14	94		167	133	126		1.3	--	556	.76	4,390	240	103	46	2.6	917	7.5	
Aug 21-31.....	2,232	--		--	--	--		--	--	--		--	--	646	.89	3,890	--	--	--	--	1,080	--	
Sept 1-10.....	1,901	--		--	--	--		--	--	--		--	--	658	.89	3,380	--	--	--	--	1,090	--	
Sept 11-20.....	1,685	8.8		84	18	148		172	170	195		2.8	--	740	1.01	3,370	282	141	53	3.8	1,230	7.6	
Sept 21-30.....	1,500	--		--	--	--		--	--	--		--	--	800	.95	3,240	--	--	--	--	1,340	--	
Weighted average	b 3,443	--		--	--	--		--	--	--		--	--	443	0.90	4,120	--	--	--	--	743	--	

b Represents 93 percent of runoff for water year October 1952 to September 1953.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

GUNNISON RIVER BASIN

GUNNISON RIVER NEAR GRAND JUNCTION, COLO.

LOCATION.--At road bridge about half a mile downstream from gaging station, 1 mile downstream from point of diversion of Redlands power canal, and 1½ miles upstream from mouth and Grand Junction, Mesa County.

DRAINAGE AREA.--8,020 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1931 to September 1953.

Water temperatures: April 1949 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 1,790 ppm Sept. 21-30; minimum, 282 ppm May 25-31.

Hardness: Maximum, 963 ppm Sept. 21-30; minimum, 179 ppm June 11-20.

Specific conductance: Maximum daily, 2,230 microhos Sept. 24; minimum observed, freezing point Dec. 28-29.

Water temperatures: Maximum observed, 82°F July 29, Aug. 17, 20; minimum observed, 203 ppm May 11-20, 1944.

EXTREMES, 1931-53.--Dissolved solids: Maximum, 2,820 ppm Sept. 11-20, 1934; minimum, 203 ppm May 11-20, 1944.

Hardness (1931-35, 1943-53): Maximum, 1,370 ppm Sept. 1-20, 1934; minimum, 143 ppm June 1-10, 1933, May 11-20, 1948.

Specific conductance (1941-53): Maximum daily, 2,680 microhos Nov. 5, 1950; minimum daily, 280 microhos May 23, 1948.

Water temperatures (1949-53): Maximum observed, 82°F July 29, Aug. 17, 20, 1953; minimum observed, freezing point on several days during winter months.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent 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. 1-10, 1952....	1,174	17		167	69	126	5.4	209	738	18		8.0	--	1,250	1.70	3,960	700	528	28	2.1	1,670		
Oct. 12-13, 15, 17-19	1,028	18		202	80	153	6.0	231	887	24		9.8	0.26	1,490	2.03	4,140	833	644	28	2.3	1,890		
Oct. 21-31	1,055	18		195	80	154	6.0	234	866	21		9.8	--	1,470	2.00	4,190	816	624	29	2.3	1,870		
Nov. 1-10	960	17		211	89	183	7.6	263	970	23		9.8	--	1,640	2.23	4,250	892	677	31	2.7	2,060		
Nov. 11-20	1,167	19		190	80	149	5.5	260	844	20		9.9	--	1,450	1.97	4,570	803	590	29	2.3	1,860		
Nov. 21-30	1,089	19		177	75	140	6.5	254	782	20		10	--	1,350	1.84	3,970	750	542	29	2.2	1,780		
Dec. 1-10	1,165	22		172	75	150	7.2	250	782	22		12	--	1,370	1.86	4,310	738	532	31	2.2	1,750		
Dec. 11-20	1,305	20		145	63	128	6.6	228	646	16		11	--	1,150	1.56	4,050	621	434	31	2.2	1,520		
Dec. 21-31	1,037	20		150	66	140	7.1	237	691	17		11	--	1,220	1.66	3,420	646	452	32	2.4	1,600		
Jan. 1-10, 1953....	1,112	20		138	61	123	7.3	220	617	20		10	--	1,100	1.50	3,300	596	415	31	2.2	1,470		
Jan. 12-13, 15, 17-19	1,077	18		136	62	125	7.2	217	623	17		9.9	0.14	1,100	1.50	3,200	594	416	31	2.2	1,480		
Jan. 21-31	994	18		132	61	125	5.7	211	613	16		10	--	1,080	1.47	2,900	580	408	32	2.3	1,460		
Feb. 1-10	983	18		129	61	121	6.2	204	611	20		7.5	--	1,070	1.46	2,780	573	406	31	2.2	1,430		
Feb. 11-19	873	18		124	58	115	6.4	203	582	20		9.5	--	1,030	1.40	2,430	548	382	31	2.1	1,390		
Feb. 20, 24-28	908	19		133	62	123	5.8	214	620	18		10	--	1,100	1.50	2,700	587	412	31	2.2	1,470		
Mar. 1-10	910	18		126	59	117	5.7	201	588	20		9.3	--	1,040	1.41	2,560	557	392	31	2.2	1,400		
Mar. 11-20	975	16		110	49	99	6.2	185	494	17		6.5	--	889	1.21	2,340	476	324	31	2.0	1,220		
Mar. 21-31	1,092	15		110	47	94	5.6	183	478	18		6.6	--	864	1.18	2,550	468	318	30	1.9	1,190		
Apr. 1-10	1,234	19		108	49	105	4.1	182	489	24		6.1	--	894	1.22	2,980	471	322	32	2.1	1,230		
Apr. 11-21	1,935	18		124	56	109	4.5	196	566	19		6.0	0.21	999	1.36	2,520	540	380	30	2.0	1,350		
Apr. 22-30	2,294	18		76	26	51	3.2	164	249	8.5		3.9	--	5.6	1.70	3,200	296	162	27	1.3	753		

May 1-8, 1953....	1,470	17	101	38	75	3.6	166	387	13	5.0	--	721	.98	2,860	408	272	28	1.6	1,000
May 9-12.....	2,180	15	74	25	35	3.6	145	223	7.0	2.4	--	453	.62	2,670	288	168	21	.9	678
May 13-21.....	1,786	15	100	37	75	3.8	165	403	12	4.1	--	731	.99	3,530	402	266	29	1.6	1,010
May 23-24a.....	6,215	15	--	--	--	--	169	--	--	1.2	--	--	--	--	246	107	--	--	383
May 25-31.....	9,029	14	54	14	19	1.8	132	110	2.0	2.6	--	282	.38	6,870	192	64	18	.6	434
June 1-10.....	7,851	15	50	14	24	3.9	118	124	4.5	2.5	--	286	.40	6,350	182	86	22	.8	463
June 11-20.....	9,664	13	32	12	21	3.9	124	118	4.0	2.6	--	288	.39	5,310	179	16	20	.7	538
June 21-27.....	4,890	14	64	19	33	3.1	129	182	5.2	3.0	--	366	.52	5,100	234	128	23	.9	570
June 30, July 1-2, 4	2,310	14	80	27	45	1.2	142	266	7.3	3.2	--	315	.70	3,210	310	194	24	1.1	794
July 6-10.....	1,245	13	108	38	72	5.0	162	406	10	4.0	--	736	1.00	2,470	426	293	27	1.5	1,020
July 11-20.....	1,471	19	134	48	91	5.9	188	543	12	3.2	.22	949	1.29	3,770	532	378	27	1.7	1,260
July 21-31.....	1,074	17	136	54	106	8.4	193	588	14	2.0	--	1,020	1.39	2,960	562	404	29	2.0	1,360
Aug. 1-10.....	1,731	21	149	54	105	6.3	206	603	15	4.3	--	1,060	1.44	4,950	594	425	28	1.9	1,400
Aug. 11-20.....	1,811	19	195	79	158	8.8	202	891	20	5.2	--	1,480	2.01	3,240	812	646	29	2.4	1,650
Aug. 21-31.....	778	17	199	79	162	7.4	208	918	23	5.0	--	1,510	2.05	3,170	822	651	30	2.5	1,880
Sept. 1-10.....	801	23	214	83	172	7.7	206	989	22	8.3	--	1,620	2.20	3,500	876	706	30	2.5	2,010
Sept. 11-20.....	762	21	218	83	171	6.7	207	1,000	22	8.2	--	1,630	2.22	3,350	886	716	29	2.5	2,020
Sept. 21-30.....	761	22	236	91	188	6.9	222	1,100	23	11	--	1,790	2.43	3,680	963	781	30	2.6	2,170
Weighted average	b, 1,806	16	105	40	76	4.8	170	412	11	5.2	--	754	1.03	3,670	426	287	28	1.6	1,020

a Not included for computation of weighted averages.

b Represents 94 percent of runoff for water year October 1952 to September 1953.

GUNNISON RIVER BASIN--Continued

GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

DOLORES RIVER BASIN

DOLORES RIVER NEAR CISCO, UTAH

LOCATION.--At gaging station, 9 miles upstream from mouth and 14 miles southeast of Cisco, Grand County.

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

Water temperatures: March 1951 to September 1953.

Sediment records: March 1951 to September 1953.

EXTREMES, March 1951-September 1952.--Specific conductance: Maximum daily, 6,760 micromhos Mar. 8, 1951; minimum daily, 254 micromhos May 8, June 16, 1952.

Water temperatures: Maximum observed, 80°F July 19, 1951.

Sediment concentrations: Maximum daily, 17,500 ppm Apr. 7, 1952; minimum daily, 13 ppm July 15, 1951.

Sediment loads: Maximum daily, 150,000 tons Aug. 30, 1951; minimum daily, 4 tons on several days.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot						
Oct. 1-9, 1952	162	9.3	0.08	110	46	372	19	153	349	570	0.2	5.8	--	1,560	2.12	464	62	7.5	2,650	7.8	7
Oct. 10-20	127	8.5	0.08	117	56	407	28	143	498	980	2	6.7	0.17	2,230	3.10	525	70	12	4,000	8.3	5
Oct. 21-31	122	6.8	0.08	117	56	658	30	152	409	1,040	2	6.7	--	2,400	3.26	522	72	13	4,140	7.8	5
Nov. 1-10	123	7.4	0.08	114	56	675	31	163	395	1,070	3	5.3	--	2,420	3.29	515	73	13	4,180	8.1	5
Nov. 11-22	116	7.8	0.07	116	60	757	19	173	351	1,170	--	10	18	2,580	3.51	508	75	14	4,420	7.7	8
Dec. 12-18	180	11	0.06	107	52	646	16	166	316	1,000	--	14	14	2,240	3.05	481	74	13	3,780	7.4	10
Jan. 1-7, 1953	176	10	0.08	120	57	725	18	196	354	1,100	--	14	--	2,500	3.40	534	74	14	4,190	7.6	5
Jan. 14-15, 20-23, 29	200	8.8	0.08	100	46	568	14	150	302	860	2	21	10	1,980	2.71	438	73	12	3,430	7.3	4
Feb. 1-10	191	10	0.06	102	46	600	29	187	395	935	2	8.0	--	2,130	2.90	444	73	12	3,690	8.0	4
Feb. 11-14	160	9.9	0.07	108	50	741	36	181	335	1,140	2	8.1	11	2,520	3.43	475	76	15	4,370	7.5	4
Feb. 15-18	154	11	0.05	122	65	1,110	54	189	396	1,800	3	9.2	13	3,660	4.88	520	79	20	6,240	8.2	4
Feb. 20-26	140	12	0.05	125	57	900	43	188	393	1,380	3	12	--	3,010	4.09	539	77	17	5,120	8.1	5
Mar. 1-3, 7-10	172	9.2	0.03	110	53	757	38	188	355	1,170	3	5.8	--	2,590	3.52	492	75	15	4,480	8.0	5
Mar. 11-12, 16-19	187	9.0	0.04	121	55	736	37	186	419	1,100	4	5.3	15	2,570	3.00	528	74	14	4,370	7.9	5
Mar. 21-22, 25-30	200	9.2	0.04	108	47	621	32	163	354	965	4	9.8	--	2,230	3.03	463	73	13	3,820	7.8	6
Apr. 1-10	357	8.6	0.06	82	27	247	15	149	224	370	4	9.8	--	1,060	1.44	316	62	6.1	1,850	7.8	10
Apr. 12-15	230	11	0.07	102	43	408	21	168	316	622	2	14	06	1,620	2.00	432	66	8.6	2,740	7.4	8
Apr. 17, 19	288	11	0.13	70	24	163	8.9	148	167	236	--	7.9	--	761	1.03	273	152	55	1,320	7.6	--
Apr. 18, 20-22	494	11	0.08	81	27	198	11	181	201	279	2	7.5	--	905	1.23	313	164	57	1,550	7.6	10
Apr. 23	1,190	--	--	83	16	--	--	226	130	--	--	--	--	--	--	272	87	--	977	7.3	--
May 1, 6-10	782	9.2	0.08	60	19	94	5.9	147	119	138	2	3.0	--	521	.71	228	107	47	900	7.8	9

a Includes equivalent of 7 parts per million of carbonate (CO₃).

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		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					
May 11-14, 1953.....	732	8.1	0.07	61	18	87	5.8	146	121	126	0.2	5.1	--	504	0.69	996	226	106	45	2.5	868	7.6	15
May 16-18, 21-22.....	569	12	.04	68	19	131	7.4	153	133	190	4	5.8	0.03	642	.87	986	248	122	53	3.6	1,100	7.7	10
May 19-20.....	627	7.8	.06	65	24	177	8.8	127	149	264	--	7.7	--	766	1.04	1,300	260	156	59	4.8	1,340	7.2	19
June 1-8, 15.....	1,986	9.6	.03	48	9.1	23	2.3	125	68	28	5	2.0	.06	252	.34	1,350	158	55	24	.8	416	8.1	10
June 21-28.....	706	9.6	.05	57	15	87	5.3	101	130	125	4	5.1	--	484	.66	923	204	120	47	2.6	827	7.5	10
June 29-30.....	356	9.6	.08	68	21	162	8.9	103	186	240	4	9.7	--	756	1.03	727	256	172	57	4.4	1,290	7.5	11
July 1-3, 5-6, 10, 12, 281	281	9.3	.09	70	24	184	10	108	193	276	5	5.8	.05	826	1.12	627	273	184	58	4.8	1,430	7.5	5
July 16-17, 25-26, 31	367	16	--	130	51	260	14	146	518	325	5	9.4	--	1,400	1.90	1,390	534	414	51	4.9	2,130	7.7	12
Aug. 1-8.....	764	13	.10	144	36	129	10	182	419	148	3	5.7	.15	995	1.35	2,050	508	358	85	2.5	1,480	7.9	15
Aug. 24.....	136	12	.10	145	61	504		138	537	735	--	--	--	2,060	2.80	756	613	500	64	8.8	3,340	7.6	--
Sept. 7-15.....	69.8	5.0	.05	172	86	493	30	128	720	715	.6	25	--	2,310	3.14	435	782	678	57	7.7	3,650	7.3	25
Sept. 16-24.....	51.4	4.2	.05	185	97	674	31	130	829	970	.6	31	.22	2,890	3.93	401	860	754	62	10	4,560	7.1	20
Sept. 25-30.....	38.8	4.3	.08	202	106	868	29	146	906	1,260	.6	25	--	3,470	4.72	364	940	820	66	12	5,450	7.2	22

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

Day	Mean discharge (cfs)	October Suspended sediment		Mean discharge (cfs)	November Suspended sediment		Mean discharge (cfs)	December Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	180	255	118	126	41	14	125	--	b 16
2.....	164			122			140		
3.....	180			122			150		
4.....	174			122			155		
5.....	169	114	48	122	42	14	160	36	18
6.....	164			126			155		
7.....	150			126			131		
8.....	140			122			174		
9.....	140	145	51	122	32	9	192	--	b 16
10.....	136			122			186		
11.....	136			126			186		
12.....	131			126			174		
13.....	126	172	59	119	--	b 12	164	--	b 16
14.....	122	253	83	119			192		
15.....	122	459	151	122			180		
16.....	126	136	46	126			186		
17.....	126	231	79	131	32	9	186	--	b 16
18.....	126	165	56	119			180		
19.....	122	--	e 53	104			186		
20.....	126	119	40	96			192		
21.....	126	178	61	96	--	b 12	186	--	b 16
22.....	119	193	62	104			164		
23.....	122	244	80	126			150		
24.....	122	161	53	145			140		
25.....	122	180	59	140	--	b 12	135	--	b 16
26.....	122	74	24	135			140		
27.....	122	147	48	130			145		
28.....	122	221	73	125			150		
29.....	122	66	22	120	--	--	145	--	--
30.....	122			120			140		
31.....	126			--			135		
Total.	4,207	--	1,812	3,661	--	379	5,024	--	510
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.....	150	56	27	186	65	33	186	53	28
2.....	170			186			198		
3.....	190			186			204		
4.....	180			192			186		
5.....	170	--	b 29	192	55	23	196	--	b 29
6.....	180			204			164		
7.....	190			198			150		
8.....	200			192			155		
9.....	180	56	31	186			150	67	30
10.....	180			186			164		
11.....	180			174			180		
12.....	180			164	55	22	209	--	b 40
13.....	185	85	46	150			221		
14.....	198			150			215		
15.....	209			150			215		
16.....	170	--	b 22	150	55	22	198	67	35
17.....	160			180			186		
18.....	160			155			174		
19.....	174			150			174		
20.....	198	85	46	135			180	116	56
21.....	221			130			192		
22.....	198			125			186		
23.....	192			135	--	--	180	117	79
24.....	186	--	b 44	145			174		
25.....	186			145			174		
26.....	186			165			174		
27.....	198	85	43	175			174	--	--
28.....	192			180			180		
29.....	186			--			220		
30.....	174			--			300		
31.....	180	--	b 40	--	--	--	450		
Total.	5,713	--	1,040	4,646	--	732	6,082	--	1,463

e Estimated.

b Computed from water-sediment discharge curve.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	470	327	415	1,400			1,920	1,840	9,540
2.....	400	333	360	1,020			1,870	1,680	8,480
3.....	320	329	284	1,020	--	a 3,700	2,090	1,000	5,640
4.....	300	--	b270	858			2,180	650	3,830
5.....	340	--	b280	712			2,140	750	4,330
6.....	350	299	283	627	220	372	1,930	720	3,750
7.....	370	317	317	616	252	419	1,680	789	3,580
8.....	380	303	311	658	241	428	1,480	800	3,200
9.....	350	231	218	680	230	422	1,240		
10.....	291	210	a 160	712	175	336	1,260		
11.....	276	190	a 140	778	150	315	1,690	--	a 8,500
12.....	255	180	a120	812	170	373	2,070		
13.....	233	180	101	734	150	297	2,490		
14.....	204	160	88	606	124	203	2,850		
15.....	227	140	86	525	125	177	2,580	2,200	15,300
16.....	221	140	a 84	485	190	249	2,230		
17.....	227	200	123	476	200	257	1,870		
18.....	348	550	517	535	220	318	1,690		
19.....	348	600	564	596	230	370	1,480		
20.....	373	597	601	658	198	352	1,320		
21.....	466	600	755	669	200	361	999	--	a 4,400
22.....	789	1,680	3,580	680	220	404	892		
23.....	1,190	2,850	9,160	756			846		
24.....	1,390			823	--	a 1,700	745		
25.....	1,560			1,220			669		
26.....	1,560	--	a 15,000	1,760			575		
27.....	1,690			1,840			515	38	49
28.....	1,690			2,040	--	a 14,000	409		
29.....	1,640			2,490			364		
30.....	1,540			2,810			348		
31.....	--	--	--	2,360			--	--	--
Total.	19,798	--	123,817	32,096	--	113,253	44,422	--	148,544

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.....	330			1,060	27,500	78,700	160	100	a 40
2.....	330			1,630	25,900	s 111,000	122	70	a 23
3.....	330			1,260	8,400	s 31,700	111		
4.....	298			745	640	1,290	104		
5.....	283			557	442	s 678	93	--	b 10
6.....	269			348	420	395	89		
7.....	255			283	421	322	83	29	6
8.....	227	--	b 10	233	408	257	80		
9.....	204			218	470	a 230	74		
10.....	209	59	33	198	470	a 250	67		
11.....	221	670	a 400	174			59		
12.....	215	603	350	169	--	a 45	63	26	5
13.....	221	600	a 360	164			70		
14.....	255	570	a 390	150			67		
15.....	254	3,010	sa 3,100	150			65		
16.....	270	7,370	s 5,690	136			63		
17.....	233	5,600	3,520	131			54		
18.....	385	9,300	sa 11,000	122			56	61	9
19.....	409	8,000	a 8,800	115			52	76	11
20.....	428	3,500	a 4,000	108			52	41	6
21.....	348	2,100	a 2,000	108			50	44	6
22.....	348	1,300	a 1,200	96			48	65	8
23.....	298	900	a 720	194	510	a 270	46	193	24
24.....	255	400	a 280	136	150	55	42	93	11
25.....	233	204	128	126	50	a 17	40	118	13
26.....	204	161	89	104	40	a 11	40	88	10
27.....	186	140	a 70	138	240	a 89	39	84	9
28.....	180	150	a 73	177	370	a 180	38	92	9
29.....	255	300	a 210	291	330	a 260	38	237	24
30.....	390	1,560	sa 2,400	240	210	a 140	38	144	15
31.....	895	9,930	s 29,100	192	150	a 78	--	--	--
Total.	9,218	--	74,045	9,753	--	226,512	1,993	--	314

Total discharge for year (cfs-days) 146,613
 Total load for year (tons) 692,421

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

(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; V, visual accumulation tube).

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
Apr. 22, 1953,	11:30 a. m.	778	58	1,580	4,640	--	47	--	75	--	98	100	--	--	--	VPWCM
Apr. 23	1:45 p. m.	1,110	--	2,710	4,220	--	40	--	67	83	94	99	100	--	--	SPWCM
June 8	10:30 a. m.	1,520	60	884	2,200	--	18	--	27	--	69	88	99	--	--	SPWCM
June 15	1:00 p. m.	2,360	--	2,170	3,180	--	28	--	46	--	72	86	97	100	100	SPWCM
June 15	1:00 p. m.	2,360	--	2,170	3,190	--	23	--	45	--	72	86	97	100	100	SPN
July 12	2:15 p. m.	215	74	476	3,400	71	87	89	91	93	99	99	99	100	100	SPWCM
July 31	5:15 p. m.	1,250	75	17,600	4,010	49	59	77	89	94	99	100	--	--	--	SPWCM
Aug. 2	1:00 p. m.	2,120	76	23,000	4,100	35	48	58	74	90	93	98	99	100	100	SPWCM

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH

LOCATION.--At gaging station, 1 mile downstream from Dolores River, 11 miles south of Cisco, Grand County.

DRAINAGE AREA. --24,100 square miles, approximately.

RECORDS AVAILABLE. --Chemical analyses: August 1928 to September 1953.

Water temperatures: May 1949 to September 1953.

Sediment records: May 1930 to September 1953.

EXTREMES, 1928-52.--Dissolved solids: Maximum, 2,670 ppm Aug. 11-20, 1940; minimum, 202 ppm June 11-20, 1933.

Hardness (1928-35, 1943-52): Maximum, 1,090 ppm Sept. 1-10, 1934; minimum, 131 ppm June 11-20, 1952.

Specific conductance (1941-52): Maximum daily, 4,100 micromhos Sept. 30, 1946; minimum daily, 310 micromhos June 15, 1952.

Water temperatures (1949-52): Maximum observed, 81°F Aug. 5, 1949; minimum observed, freezing point on several days during winter months.

Sediment concentrations (1930-52): Maximum daily, 66,300 ppm Oct. 27, 1952; minimum daily, 14 ppm Nov. 21, 1949.

Sediment loads (1930-52): Maximum daily, 2,790,000 tons Oct. 14, 1941; minimum daily, 84 tons Apr. 16, 1951.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at 9-14 Y-t-h. No record of dissolved solids or specific conductance from 10-1-1968 to 10-31-1970.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boiron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color or pH		
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
Oct. 1-10, 1952	2,835	12		140	64	175	6.5	195	588	150		8.3	--	1,300	9,950	612	452	38	1,770				
Oct. 12-14, 19-20	2,652	13		157	72	194	7.4	213	668	165		9.8	0.19	1,450	10,380	688	513	38	1,950				
2,605	12			151	72	204	8.1	203	660	175		10	--	1,470	10,340	672	506	39	1,990				
2,737	13			149	73	207	8.1	207	649	188		10	--	1,480	10,940	672	502	40	2,010				
3,105	15			146	60	191	7.0	228	579	168		8.8	--	1,340	11,230	611	424	40	1,890				
Nov 12-14, 16, 18-20																							
3,441	15			119	53	195	7.1	200	471	199		8.3	--	1,210	11,65	11,240	515	351	45	1,780			
Dec. 5, 12-17, 19-22																							
Jan. 1-2, 11-12																							
3,094	13			114	49	211	7.7	204	437	234		9.0	.14	1,210	11,65	10,110	486	319	48	1,830			
2,956	13			112	49	208	7.7	202	441	218		8.0	--	1,180	11,62	8,530	484	318	48	1,780			
2,562	13			113	48	216	8.3	202	433	234		7.7	--	1,180	11,62	8,230	477	312	49	1,820			
2,333	14			114	49	220	7.8	204	438	235		8.1	--	1,220	11,66	7,680	486	319	49	1,850			
Mar. 7, 9, 13, 15, 17-20																							
2,999	12			102	43	208	8.3	188	386	226		7.5	--	1,110	11,51	8,990	432	279	51	1,710			
3,032	12			104	43	211	7.6	194	395	231		7.0	--	1,140	11,55	9,330	438	278	51	1,740			
3,819	14			90	40	138	5.8	173	318	147		.6	--	868	11,18	8,950	389	247	43	1,330			
3,144	11			90	38	147	6.6	170	318	157		.9	.12	876	11,19	7,440	380	241	45	1,360			
6,598	11			59	18	48	3.7	135	137	51		4.0	--	410	5.66	7,300	221	110	32	654			
8,470	11			76	21	80	4.7	148	--	--		--	--	577	.78	13,200	276	155	38	905			
May 1-14																							
5,264	14			75	26	89	4.8	165	218	100		3.9	--	625	.85	8,880	294	159	39	980			
12,430	18			67	17	50	3.0	167	138	48		4.0	--	454	.59	14,570	237	100	31	668			
May 21-25, 27,																							
June 1-2, 5, 9, 16,				48	12	25	1.9	126	89	21		2.1	--	276	.38	19,900	207	66	24	8			
16,060	13			55	17	46	2.2	117	150	44		2.7	--	394	.54	17,080	207	111	32	617			
8,408	13			65	22	67	3.0	130	200	61		3.0	--	510	.69	11,580	252	146	36	793			
July 1-2, 5, 7,																							
July 31,				--	--	--	--	196	444	156		--	--	--	--	--	--	--	--	--			
5,190				--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	1,580		

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Aug. 1-3, 14, 31, 1952, 1953	6,372	17		156	52	135	7.4	192	575	91		9.9	0.18	1,170	1.59	20,130	603	456	32	2.4	1,570	
Sept. 4, 7-8,	2,433	16		162	70	194	6.4	200	707	144		9.2	--	1,460	1.99	9,590	692	528	36	3.2	1,950	
Sept. 11-19,	2,053	14		175	77	219	7.0	204	799	160		9.9	--	1,640	2.23	9,000	753	586	36	3.5	2,140	
Sept. 20-30,	1,879	14		196	86	233	7.4	217	856	178		14	--	1,820	2.46	9,230	842	664	37	3.5	2,330	7.8

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

Suspended sediment, water year October 1932 to September 1933									
Day	Mean dis-charge (cfs)	October		Mean dis-charge (cfs)	November		Mean dis-charge (cfs)	December	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1.....	3,380	67	562	2,610	51	372	2,390	84	b 250
2.....	3,280			2,730			2,390		
3.....	3,100			2,890			2,940		
4.....	2,960			2,890			3,380		
5.....	2,810			2,760			3,530		
6.....	2,640	42	291	2,450	47	404	3,410	84	759
7.....	2,610			2,540			3,190		
8.....	2,560			2,710			3,010		
9.....	2,490			2,760			3,190		
10.....	2,520			3,030			3,400		
11.....	2,560	46	334	3,190	--	b 350	3,010	32	308
12.....	2,560			3,050			3,030		
13.....	2,590			2,920			3,260		
14.....	2,540			3,100			3,530		
15.....	2,560			3,250			3,530		
16.....	2,640	50	379	3,340	--	--	3,550	--	b 160
17.....	2,740			3,430			3,170		
18.....	2,830			3,490			3,280		
19.....	2,810			3,080			3,360		
20.....	2,760			3,140			3,780		
21.....	2,890	50	379	3,230	--	--	3,680	--	b 160
22.....	2,690			3,260			3,430		
23.....	2,560			3,340			3,260		
24.....	2,640			3,510			3,080		
25.....	2,570			3,400			2,700		
26.....	2,620	50	379	3,010	--	--	2,550	--	b 160
27.....	2,690			2,710			2,400		
28.....	2,620			2,500			2,300		
29.....	2,540			2,490			2,150		
30.....	2,390			2,320			2,250		
31.....	2,440			--	--	--	2,450		
Total.	83,590	--	11,420	89,130	--	11,292	94,580	--	13,957
		January		February		March			
1.....	2,800	72	564	2,760	35	251	2,890	--	b 250
2.....	3,000			2,690			2,980		
3.....	3,200			2,610			2,960		
4.....	3,100			2,570			2,780		
5.....	3,200			2,590			2,570		
6.....	3,100	--	b 600	2,760	15	106	2,740	58	470
7.....	3,200			2,740			2,800		
8.....	3,320			2,640			2,810		
9.....	3,410			2,610			2,960		
10.....	3,530			2,590			3,010		
11.....	3,510	72	666	2,570	21	137	2,760	26	213
12.....	3,340			2,470			2,990		
13.....	3,170			2,570			3,550		
14.....	2,920			2,710			3,320		
15.....	3,100			2,680			3,360		
16.....	3,250	40	343	2,590	--	b 300	3,100	--	b 800
17.....	2,890			2,710			2,710		
18.....	2,620			2,440			2,780		
19.....	2,800			2,320			2,780		
20.....	2,980			2,340			3,050		
21.....	3,210	40	310	2,440	--	--	3,140	--	b 800
22.....	2,920			2,500			3,140		
23.....	2,830			2,120			3,170		
24.....	2,870			2,200			2,940		
25.....	2,870			2,400			2,800		
26.....	2,870	--	b 250	2,500	--	--	2,590	--	b 800
27.....	2,850			2,780			3,050		
28.....	2,660			2,870			3,210		
29.....	2,610			--			3,250		
30.....	2,620			--			3,580		
31.....	2,710			--			4,350		
Total.	93,460	--	12,916	71,770	--	4,848	94,120	--	16,797

b Computed from water-sediment discharge curve.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	4,270	--	8,000	7,480	180	3,640	25,700	1,210	84,000
2.....	3,950	311	3,170	6,450	267	4,650	26,800	1,030	74,500
3.....	3,580			5,760	202	3,140	27,900	1,150	a 86,600
4.....	3,700			5,060	160	a 2,190	28,000	1,200	a 90,700
5.....	3,810			4,390	200	2,370	27,200	460	33,800
6.....	3,930	112	1,110	3,740	218	2,200	25,700	290	a 20,100
7.....	3,660			3,740	300	3,030	23,500	230	a 14,600
8.....	3,660			3,950	320	3,410	21,000	270	a 15,300
9.....	3,850			4,870	370	4,870	18,600	590	29,600
10.....	3,780	160	a 1,190	5,850	353	5,580	19,100	--	b 110,000
11.....	3,660			6,640	370	6,630	22,900		
12.....	3,600			6,130	350	5,790	27,600		
13.....	3,550			5,040	250	3,400	31,300		
14.....	3,190	110	a 754	4,600	180	2,240	36,800	261	14,900
15.....	2,760			4,170	150	a 1,690	38,000		
16.....	2,540			3,890	140	a 1,470	35,200		
17.....	3,010			4,150	300	a 3,360	31,000		
18.....	3,070	135	1,120	5,000	1,400	a 18,900	28,000	--	b 3,000
19.....	3,120	126	1,060	5,430	2,030	29,800	26,500		
20.....	3,190	330	2,840	6,240	2,400	a 40,400	27,000		
21.....	3,140	1,410	12,000	6,810	2,080	38,200	23,500		
22.....	2,700	1,230	9,630	7,790	1,970	41,400	20,500	--	--
23.....	3,740	1,210	a 12,200	10,600	1,600	45,800	18,700		
24.....	5,080	1,300	17,800	14,100	1,700	64,700	17,600		
25.....	6,080	1,120	18,400	15,600	2,170	91,400	16,600		
26.....	6,200	1,050	17,600	17,600	2,260	a 107,000	15,100	--	--
27.....	6,450	1,220	21,200	19,700	2,080	111,000	13,300		
28.....	6,620	1,090	19,500	22,500	2,010	a 122,000	11,600		
29.....	7,640	1,210	25,000	28,100	2,400	a 162,000	10,600		
30.....	8,470	790	18,100	32,200	3,550	a 309,000	10,000	--	--
31.....	--	--	--	28,000	2,300	a 174,000	--		
Total.	126,200	--	214,087	305,580	--	1,435,260	705,300	--	1,320,800

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.....	9,630	81	1,690	7,320	15,200	s 323,000	3,100	--	b 6,000
2.....	9,420			9,010	26,300	s 639,000	2,920		
3.....	8,780			8,720	13,300	313,000	2,780		
4.....	8,300			8,670	13,200	a 309,000	2,690		
5.....	7,870	b 500	b 500	7,480	3,270	66,000	2,570	184	1,340
6.....	7,060			6,710	--	b 40,000	2,470		
7.....	6,710			5,680			2,340		
8.....	6,170			5,200			2,270		
9.....	5,610			4,800			2,200	135	b 700
10.....	4,830	--	b 12,000	4,000	1,860	17,400	2,120		
11.....	4,640			3,800			1,980		
12.....	4,810			3,740			2,110		
13.....	6,060			3,740			2,110	66	360
14.....	6,080	b 30,000	b 30,000	3,470	211	1,380	2,120		
15.....	5,080			3,170			2,110		
16.....	4,780			2,940			1,930	73	373
17.....	4,680	b 1,500	b 1,500	2,990	--	b 13,000	1,880		
18.....	5,850			2,780			1,850		
19.....	7,030			2,740			2,010		
20.....	7,330	--	b 500	2,610	b 1,300	1,860	1,900	62	317
21.....	6,430			2,420			1,900		
22.....	5,360			2,320			1,870		
23.....	4,830			2,280			1,820	--	--
24.....	4,310	s 30,000	s 30,000	2,440	2,050	18,500	1,840		
25.....	4,090			2,390			1,860		
26.....	3,700			2,340			1,870	--	--
27.....	3,490	b 500	b 500	2,400	--	b 13,000	1,880		
28.....	3,050			2,940			1,890		
29.....	3,120			3,210			1,900		
30.....	3,680	--	--	3,320	--	--	1,950		
31.....	5,190			3,340			--		
Total.	177,970	--	198,210	128,980	--	2,011,080	64,430	--	32,140

Total discharge for year (cfs-days) 2,035,110

Total load for year (tons) 5,282,807

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Particle-size analyses of suspended sediment for water year October 1952 to September 1953

(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
Apr. 2, 1953	3:00 p. m.	4,090	53	659	7,220	--	69	--	93	97	99	100	--	--	SPWCM
Apr. 11	2:55 p. m.	3,680	54	89	562	78	80	83	88	93	95	97	98	99	SPWCM
Apr. 24	1:00 p. m.	4,910	--	1,180	4,300	--	42	--	66	81	89	97	100	--	SPWCM
June 16	1:30 p. m.	35,700	--	1,160	3,300	--	25	--	42	--	67	82	97	100	SPWCM
June 16	1:30 p. m.	35,700	--	1,160	3,570	--	20	--	43	--	67	82	97	100	SPN
July 31	1:00 p. m.	5,320	75	2,740	4,640	45	61	76	81	90	93	98	99	100	SPWCM
Aug. 1	7:00 p. m.	7,820	73	9,440	4,380	51	61	74	87	96	99	100	--	--	SPWCM
Aug. 2	10:00 a. m.	8,250	73	23,800	4,800	45	57	78	90	98	98	99	100	--	SPWCM
Aug. 5	12:45 p. m.	7,530	--	3,160	4,920	45	58	70	83	91	96	99	100	--	SPWCM

GREEN RIVER BASIN

GREEN RIVER NEAR GREEN RIVER, WYO.

LOCATION.--At bridge on Green River-Linwood highway, about 1 mile upstream from gaging station, which is a quarter of a mile downstream from Bitter Creek, 1 mile southeast of town of Green River, Sweetwater County, and 4 miles upstream from high-water line of proposed Flaming Gorge Reservoir.

DRAINAGE AREA.--10,000 square miles, approximately.

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

Water temperatures: May 1951 to September 1953.

Specific conductance: May 1951 to September 1953.

Hardness: 1952-53.--Dissolved solids: Maximum, 738 ppm Nov. 21-30; minimum, 159 ppm June 21-30.

Hardness: Maximum, 385 ppm Nov. 21-30; minimum, 118 ppm June 21-30.

Specific conductance: Maximum daily, 1,227 micromhos Nov. 20; minimum daily, 237 micromhos June 22.

Water temperatures: Maximum observed, 75° July 4, 196; minimum observed, freezing point Dec. 25-27.

Sediment concentrations: Maximum daily, 880 ppm July 16; minimum daily, not determined.

Sediment loads: Maximum daily, 23,900 tons Nov. 17; minimum daily, 9 tons on many days.

EXTREMES: 1951-53.--Dissolved solids: 738 ppm Nov. 21-30, 1952; minimum, 159 ppm June 21-30, 1953.

Hardness: Maximum, 385 ppm Nov. 21-30, 1952; minimum, 116 ppm June 21-30, 1952.

Specific conductance: Maximum daily, 1,220 micromhos Nov. 20, 1952; minimum daily, 237 micromhos June 22, 1953.

Water temperatures: Maximum observed, 75° on several days during summer months; minimum observed, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,640 ppm Apr. 19, 1952; minimum daily, 9 ppm Sept. 25-31, 1951.

Sediment loads: Maximum daily, 32,900 tons July 15, 1952; minimum daily, 9 tons on many days in 1953.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Per- cent soli- um adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25° C)	pH	Col- or	
														Parts per mil- lion	Tons per acre- foot	Tons per acre- foot	Calcium, magnesium					Non- carbon- ate
Oct. 1-10, 1952 ..	711	9.0	0.05	58	24	54	2.0	176	192	8.0	0.3	0.2	--	450	0.61	864	243	99	32	672	7.6	4
Oct. 11-20.....	648	9.2	.05	62	26	62	2.0	188	217	8.6	.3	.2	0.11	491	.67	859	262	108	34	729	7.8	4
Oct. 21-31.....	668	11	.05	66	27	62	2.0	199	222	8.9	.3	.2	--	513	.70	925	276	112	33	751	7.8	3
Nov. 1-10.....	657	11	.05	74	31	74	2.0	212	274	11	.2	.6	--	605	.82	1,070	312	138	34	866	8.0	3
Nov. 11-20.....	471	13	.05	73	28	64	2.0	223	225	9.5	.3	.6	.13	534	.73	679	297	114	32	781	7.8	5
Nov. 21-30	283	12	.04	90	39	89	2.2	265	329	13	.2	.6	--	738	1.00	584	365	168	33	1,030	7.9	4
Dec. 1-10.....	392	12	.03	88	38	69	2.2	274	275	11	.2	.4	--	653	.89	691	376	151	28	940	7.9	4
Dec. 11-20.....	483	11	.03	76	29	60	2.2	228	223	8.2	.2	.6	.05	536	.73	713	308	122	30	760	7.9	5
Dec. 21-31.....	419	10	.03	73	29	58	2.1	220	227	7.9	.2	.4	--	532	.71	601	301	120	29	774	7.9	5
Jan. 1-10, 1953 ..	446	12	.02	79	29	60	2.0	226	236	9.5	.2	.4	--	552	.75	665	316	131	29	815	7.5	10
Jan. 11-31.....	554	11	.02	70	27	56	1.8	202	217	8.5	.1	.3	.09	501	.68	749	286	120	30	746	7.9	5
Feb. 1-10.....	589	10	.02	74	28	57	1.8	208	229	8.0	.0	.3	.12	524	.71	833	300	129	29	774	7.8	10
Feb. 11-20.....	574	10	.04	66	29	58	1.3	208	224	8.2	.2	.4	.13	513	.70	795	284	113	31	753	8.0	5
Mar. 1-10.....	656	9.7	.04	64	25	62	1.5	195	231	9.0	.3	.2	.13	506	.69	896	262	102	32	749	8.2	5
Mar. 11-21.....	899	10	.05	65	25	58	1.5	186	213	9.5	.2	.3	--	494	.67	1,200	265	104	32	731	8.0	5

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° F)		Hardness as CaCO ₃	Percent sodium in hardness	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Apr. 1-10, 1953	1,246	10	0.06	64	25	50	2.4	196	195	8.8	0.3	0.4	--	448	0.61	1,510	102	29	672	7.8	10
Apr. 11-20	1,388	8.7	.06	64	26	48	2.2	215	174	8.0	.3	.3	0.07	446	.61	1,070	90	28	676	7.9	10
Apr. 21-30	1,735	9.9	.07	62	23	39	2.4	208	141	6.8	.4	.6	--	394	.54	1,550	249	25	606	7.8	10
May 1-10	1,443	10	.04	60	22	36	2.6	212	127	7.0	.2	.7	--	378	.51	1,470	240	24	584	7.6	10
May 11-20	1,001	9.2	.03	63	22	46	2.0	207	156	8.5	.2	.8	--	420	.97	1,140	248	29	637	7.8	10
May 21-31	1,190	9.9	.05	64	24	46	2.0	211	165	8.5	.3	.8	--	434	.59	1,390	258	29	657	7.8	10
June 1-10	2,926	10	.02	56	20	33	2.2	194	118	6.0	.2	.9	--	346	.47	2,730	222	24	537	7.8	18
June 11-14	4,275	13	.02	47	17	22	2.2	181	76	4.0	--	1.0	--	a.271	.37	3,200	168	39	439	7.8	18
June 15-20	19,226	11	.05	36	11	11	1.9	194	41	2.8	--	.7	--	169	.26	5,220	135	25	289	7.8	18
June 21-30	19,396	8.5	.02	31	9.7	10	1.4	120	24	1.9	.3	.6	--	159	.22	3,600	118	22	268	7.8	20
July 1-10	4,420	8.6	.01	31	11	14	1.4	121	44	2.2	.3	.5	.06	184	.25	2,200	133	22	308	7.8	10
July 11-20	3,602	9.9	.02	36	13	21	1.4	121	59	4.2	.3	.5	--	230	.31	2,400	148	25	362	7.9	10
July 21-31	2,171	8.2	.03	39	14	25	1.5	184	74	4.5	.3	.3	--	241	.33	1,410	155	29	391	8.1	15
Aug. 1-10	2,404	11	.04	42	16	30	1.3	166	84	5.5	.3	.6	--	276	.38	1,790	171	35	438	7.9	8
Aug. 11-20	1,586	8.4	.04	41	15	28	1.3	152	98	5.5	.3	.4	.07	266	.38	1,440	164	40	426	7.7	9
Aug. 21-31	1,145	7.4	.04	45	18	36	1.4	156	121	6.0	.1	.4	--	318	.43	1,983	186	58	500	7.7	5
Sept. 1-10	804	7.7	.04	49	20	44	1.5	156	152	7.0	.2	.4	--	364	.50	790	204	76	565	7.8	6
Sept. 11-20	631	8.1	.05	53	23	54	1.9	165	189	8.2	.2	.6	.08	431	.59	734	226	92	645	7.9	6
Sept. 21-30	535	8.4	--	57	25	60	1.5	180	211	9.0	.3	.5	--	472	.64	682	245	98	708	7.9	5
Weighted average	1,501	9.7	0.03	48	18	31	1.7	167	110	5.4	0.3	0.6	--	313	0.43	1,270	184	57	483	--	--

a Sum of determined constituents.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Suspended sediment, water year October 1952 to September 1953

Day	October			November			December		
	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.....	760	8	16	688			350		
2.....	736			700			370		
3.....	712	13	25	700			370		
4.....	712			676			370		
5.....	712			652			390	18	19
6.....	712	14	27	664	20	35	400		
7.....	700			688			420		
8.....	700	10	19	664			410		
9.....	688			620			420	--	e 20
10.....	676			522			420		
11.....	664			500			430	15	20
12.....	664	8	14	540			440		
13.....	640			540			460		
14.....	630			570	16	24	470		
15.....	630			580			490		
16.....	620			580			510		
17.....	630	6	10	420	41	46	520		
18.....	652			330	39	a 35	540	14	19
19.....	664			330	--	e 30	540		
20.....	688			320	--	e 25	530		
21.....	688	--	e 13	320	--	e 20	500		
22.....	688			320	--	e 18	480		
23.....	688			310	--	e 16	460		
24.....	676	5	9	300			430		
25.....	676			284			410		
26.....	664			288	--	e 15	390	13	14
27.....	664			256			380		
28.....	664	--	e 9	260			380		
29.....	652			280			380		
30.....	652			310			390		
31.....	640			--	--	--	410		
Total.	20,942	--	450	14,212	--	789	13,460	--	554
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.....	420			600			590		
2.....	420			620			570		
3.....	430			630			550		
4.....	420			630			540		
5.....	410	29	34	630	13	21	540	31	48
6.....	480			620			540		
7.....	440			620			550		
8.....	460			610			580		
9.....	480			590			620		
10.....	500	28	38	530			660		
11.....	520			540			690		
12.....	530			550			700		
13.....	530			560			690		
14.....	520	15	21	580			700		
15.....	490			590	11	17	640	29	51
16.....	480			600			660		
17.....	500			590			640		
18.....	530			580			590		
19.....	540			570			620		
20.....	550			560			630		
21.....	560			560			610		
22.....	570			570			610		
23.....	580			580			650		
24.....	590	6	9	590			700		
25.....	600			600	11	17	806	29	70
26.....	600			600			806		
27.....	600			600			918		
28.....	600			600			1,030		
29.....	590			--	--	--	1,140		
30.....	580			--	--	--	1,280		
31.....	580			--	--	--	1,340		
Total.	16,100	--	617	16,500	--	516	22,190	--	1,760

e Estimated

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	1,370			2,030			2,110		
2.....	1,340			1,800			2,000		
3.....	1,290			1,530			2,150		
4.....	1,260			1,310			2,530		
5.....	1,280			1,200			2,710		
6.....	1,240	46	155	1,150	39	152	2,870	96	758
7.....	1,230			1,180			3,660		
8.....	1,210			1,290			3,790		
9.....	1,140			1,480			3,760		
10.....	1,100			1,460			3,680		
11.....	1,000			1,390			3,300		
12.....	918			1,290			3,500	170	b1,510
13.....	878			1,100			4,660	170	b1,610
14.....	854			974			6,040	210	b2,080
15.....	830			890			7,320	380	b6,200
16.....	818	15	36	854	16	43	8,780	660	b13,000
17.....	806			866			8,780	880	b20,800
18.....	854			842			10,300	860	b23,900
19.....	960			854			11,400	670	b20,600
20.....	960			946			11,800	465	b14,800
21.....	974			1,000			11,700	365	b11,500
22.....	1,060	46	153	1,140	12	39	11,700	320	10,100
23.....	1,230			1,210			11,700	283	8,940
24.....	1,660			1,230			11,000	271	8,050
25.....	2,130			1,210			9,510	240	6,160
26.....	2,110			1,240			8,170	201	4,430
27.....	1,940	129	722	1,200	7,618	39	7,618	199	4,090
28.....	2,000			1,080			7,160	207	4,000
29.....	2,180			1,020			6,440	150	2,610
30.....	2,070			1,120			5,650	125	1,910
31.....	--			1,640			5,020	124	1,680
Total.	38,692	--	6,854	37,526	--	2,379	192,020	--	175,550
	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.....	4,580			2,150	40	232	890		
2.....	4,390			2,460	357	2,370	878		
3.....	4,440			2,530	280	1,910	854		
4.....	4,680			2,900	500	3,950	818		
5.....	4,740			2,760	258	1,920	806		
6.....	4,660	101	1,210	2,550	32	171	806	7	15
7.....	4,440			2,400			782		
8.....	4,200			2,220			750		
9.....	4,050			2,070			740		
10.....	4,020			2,000			720		
11.....	4,050			1,900			720		
12.....	4,020			1,780			710		
13.....	3,840			1,680			670		
14.....	3,660			1,620			643		
15.....	3,480			1,550			625		
16.....	3,480	80	778	1,510	23	86	607	9	15
17.....	3,810			1,480			598		
18.....	3,420			1,480			589		
19.....	3,230			1,440			573		
20.....	3,030			1,420			573		
21.....	2,780			1,390			573		
22.....	2,620			1,360			573		
23.....	2,460			1,310			552		
24.....	2,260			1,230			545		
25.....	2,110			1,180			531		
26.....	1,980	78	457	1,140	12	33	517	8	12
27.....	1,900			1,080			517		
28.....	1,860			1,040			517		
29.....	1,900			1,000			517		
30.....	2,030			946			504		
31.....	1,980			918			--	--	--
Total.	104,100	--	24,907	52,494	--	13,130	19,698	--	420

Total discharge for year (cfs-days) 547,934

Total load for year (tons) 227,926

b Computed from concentration graph based on one size sample and a composite concentration.

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Particle-size analyses of suspended sediment for water year October 1952 to September 1953
(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. 9, 1952.....	6:00 a.m.	a 688	47	--	--	--	--	--	--	--	45	54	65		95	--	S
Mar. 20, 1953.....	12:20 p.m.	a 630	34	--	--	--	--	--	--	--	75	83	96		100	--	S
Apr. 5.....	3:15 p.m.	a 1,280	46	--	--	--	--	--	--	--	81	86	94		99	100	S
Apr. 21.....	5:00 p.m.	1,020	57	--	--	--	--	--	--	--	83	90	96		98	99	S
May 12.....	11:45 a.m.	a 1,290	45	--	--	--	--	--	--	--	81	87	91		98	100	S
May 25.....	3:45 p.m.	a 1,210	57	--	--	--	--	--	--	--	92	94	96		98	100	S
June 8.....	1:30 p.m.	3,710	56	--	--	--	--	--	--	--	70	76	80		85	90	S
June 17.....	5:00 p.m.	10,500	68	838	5,100	5	9	14	31	55	74	87	95		98	--	SPN
June 25.....	6:45 p.m.	7,870	63	212	1,920	10	15	16	24	33	44	61	78		94	--	SPWCM
July 7.....	5:30 p.m.	4,420	72	66	614	5	8	12	16	24	44	59	75		90	--	SPWCM
July 19.....	3:45 p.m.	3,200	75	149	2,900	51	63	79	88	88	97	99	99		99	--	SPWCM
July 30.....	3:45 p.m.	2,000	73	39	446	21	31	37	41	51	64	72	75		79	--	SPWCM
Aug. 10.....	4:45 p.m.	2,000	70	28	456	17	26	48	64	81	83	92	96		98	--	SPN
Aug. 23.....	4:15 p.m.	a 1,310	71	20	--	--	--	--	--	--	80	85	88		92	--	S
Sept. 1.....	5:00 p.m.	a 890	65	11	--	--	--	--	--	--	64	72	80		92	--	S
Sept. 20.....	10:30 a.m.	a 573	55	10	--	--	--	--	--	--	87	97	99		99	--	S

a Mean daily discharge.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR GREEN RIVER, WYO.

LOCATION.--At county highway bridge about 75 yards downstream from gaging station, which is 200 feet downstream from Dry Creek, 12.5 miles southwest of Green River, Sweetwater County, and 14.3 miles upstream from mouth.

DRAINAGE AREA.--3,670 square miles.

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

Water temperatures: March 1951 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 2,660 ppm Dec. 1-10; minimum, 307 ppm Jan. 21-22, 26.

Hardness: Maximum, 1,460 ppm Dec. 1-10; minimum, 48 ppm Jan. 21-22, 26.

Specific conductance: Maximum daily, 3,370 micromhos Dec. 4, 10; minimum daily, 419 micromhos Jan. 21.

Water temperatures: Maximum observed, 71°r July 14; minimum observed, freezing point on many days from November to March.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 2,660 ppm Dec. 1-10, 1952; minimum, 298 ppm June 2-7, 9-10, 1952.

Hardness: Maximum, 1,460 ppm Dec. 1-10, 1952; minimum, 48 ppm Jan. 21-22, 26, 1953.

Specific conductance: Maximum daily, 3,370 micromhos Dec. 4, 10, 1952; minimum daily, 414 micromhos Apr. 4, 1952.

Water temperatures: Maximum observed, 79°r July 31, 1952; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1952 ..	31.6	4.8	0.06	140	84	281	5.6	203	912	122	0.5	0.6	--	1,740	2.37	148	695	529	47	4.6	2,310	7.6	10
Oct. 11-20	32.5	4.5	.15	147	84	281	5.1	211	928	127	.5	.4	0.36	1,770	2.41	155	712	540	46	4.6	2,310	7.8	10
Oct. 21-31	50.8	4.9	.06	135	78	256	5.2	231	785	128	.5	.5	--	1,590	2.16	218	658	468	46	4.3	2,100	7.7	8
Nov. 1-10	51.5	6.5	.07	133	74	244	5.2	235	714	135	.6	.4	--	1,500	2.04	209	636	428	45	4.2	2,020	7.6	8
Nov. 11-20	43.7	7.1	.06	146	76	254	5.2	285	737	147	.4	.4	.30	1,580	2.15	186	677	444	45	4.2	2,140	7.8	10
Nov. 21-30	39.5	12	.07	174	100	303	7.5	369	596	197	.5	1.7	--	1,990	2.71	212	845	542	44	4.5	2,570	8.0	10
Dec. 1-10	32.9	15	.08	247	133	406	9.7	502	1,210	245	.4	2.1	--	2,660	3.62	236	1,160	752	43	5.2	3,280	7.9	15
Dec. 11-20	32.5	12	.05	203	94	358	5.0	416	865	143	.4	1.7	.36	1,900	2.56	289	893	552	38	3.8	2,410	7.7	15
Dec. 21-31	46.3	16	.05	179	81	220	3.7	366	713	130	.4	1.4	--	1,610	2.19	214	780	462	36	3.4	2,120	7.8	10
Jan. 1-10, 1953 ..	54.3	15	.03	153	86	180	3.5	367	579	108	.3	1.5	--	1,350	1.84	199	666	386	37	3.0	1,800	7.9	10
Jan. 12-17	83.5	12	.05	158	95	144	3.5	310	458	86	.4	2.4	.51	1,060	1.44	161	528	275	37	2.7	1,310	7.5	10
Jan. 19-20	92.5	13	.05	158	71	147	3.5	310	458	86	.4	2.4	--	1,060	1.44	161	528	275	37	2.7	1,310	7.5	10
Jan. 21-22, 26 ..	96.7	13	.05	144	33	83	1.7	180	165	36	.5	1.4	--	430	.42	80.2	103	0	0	7.8	639	7.8	--
Jan. 23-24, 28-31	115	11	.05	89	39	150	3.1	255	364	94	.3	1.8	--	865	1.20	263	382	171	46	3.3	1,320	7.8	20
Jan. 27b	115	13	--	--	--	--	--	222	193	46	--	1.2	--	--	--	--	170	0	--	--	864	7.6	--
Feb. 1-10	116	11	.04	81	34	121	3.3	242	293	72	.3	.5	--	738	1.00	231	342	144	43	2.9	1,130	7.5	15
Feb. 11-28	118	12	.04	111	49	154	4.1	306	409	88	.4	.5	.51	1,010	1.37	322	478	228	41	3.1	1,480	7.7	15

a Sum of determined constituents.

b Not included for computation of weighted averages.

GREEN RIVER BASIN--Continued
BLACKS FORK NEAR GREEN RIVER, WYO.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color		
														Parts per million	Tons per acre-foot	Tons per million	Calcium, magnesium	Non-carbonate						
Mar. 1-10, 1953.	227	12	0.05	79	31	110	3.9	246	265	62	0.4	1.1	--	691	0.94	424	324	123	42	2.7	1,060	7.9	12	
Mar. 11-12, 16-20	434	10	.05	66	28	107	3.0	218	241	62	.5	.9	0.13	626	.85	734	280	101	45	2.8	991	8.0	10	
Mar. 13-14, 1953.	588	14	.05	33	10	82	2.5	184	117	26	.4	1.1	--	370	.50	597	124	0	59	3.2	601	7.9	15	
Mar. 21, 23-24, 30-31, 1953.	335	12	.04	72	32	120	4.2	238	270	73	.4	.8	--	697	.95	630	311	116	45	3.0	1,090	8.2	15	
Mar. 25-28, 1953.	382	21	.04	41	11	106	3.4	206	152	39	.5	.8	--	467	.64	482	148	0	60	3.8	749	7.9	8	
Apr. 1-10, 1953.	297	11	.05	82	37	100	4.4	260	260	68	.5	.5	--	698	.95	558	356	114	38	2.3	1,070	8.1	8	
Apr. 11, 13-16, 18, 20, 1953.	249	12	.05	71	29	118	4.4	242	263	66	.4	.5	.17	683	.93	459	296	98	46	3.0	1,080	8.3	7	
Apr. 17-20, 1953.	258	20	--	81	36	133	--	208	158	41	--	1.2	--	--	--	--	350	127	--	--	--	1,074	8.2	--
Apr. 21-25, 1953.	393	19	.06	62	24	89	6.1	272	281	80	.4	1.5	--	764	1.04	811	350	29	45	3.1	1,170	8.0	10	
Apr. 27-30, 1953.	427	14	.06	62	24	49	3.5	232	120	30	.1	1.7	--	416	.87	794	293	86	23	1.6	953	7.9	--	
May 1-10, 1953.	301	10	.04	80	29	75	1.8	240	161	38	.2	1.2	--	493	.67	572	278	68	33	1.6	771	8.0	10	
May 11-20, 1953.	427	10	.04	80	29	75	3.0	248	207	48	.2	1.0	.16	583	.79	474	318	116	34	1.6	887	8.1	10	
May 21-31, 1953.	482	12	.06	80	32	88	2.8	256	224	49	.3	1.4	--	627	.85	816	331	121	36	2.1	946	8.1	10	
June 1-15, 1953.	1,215	15	0.10	66	23	72	3.4	236	160	36	.5	1.2	--	498	.68	1,630	259	66	37	2.0	765	7.7	35	
June 16-20, 1953.	2,368	14	.08	52	15	46	2.5	182	104	19	.4	1.2	.11	382	.52	2,440	191	42	34	1.4	535	7.8	47	
June 22-27, 1953.	1,162	12	.07	53	16	48	2.6	170	136	19	.4	1.0	--	395	.52	1,210	198	58	34	1.5	588	7.8	32	
June 29-30, 1953.	454	11	.15	75	24	68	3.3	190	228	28	.5	.8	--	536	.73	1,657	286	130	34	1.8	795	7.9	35	
July 1-10, 1953.	163	13	0.10	86	39	134	4.9	242	386	51	.4	.3	--	850	1.16	374	375	176	43	3.0	1,240	7.8	10	
July 11-20, 1953.	81.2	12	0.10	158	77	260	6.9	232	939	97	.5	.3	.42	1,740	2.37	381	710	520	44	4.2	2,230	7.7	7	
July 21-29, 31, 1953.	57.2	13	0.10	158	80	288	6.9	232	991	108	.6	.3	--	1,320	2.48	281	723	533	46	4.6	2,340	7.8	13	
July 30, 1953.	73.0	11	--	86	27	109	142	379	379	35	--	1.9	--	2,719	.98	142	326	209	42	2.6	1,050	7.5	--	
Aug. 1, 4-8, 10, 1953.	96.7	12	0.10	139	60	254	6.0	210	819	80	.5	.3	--	1,520	2.07	397	568	396	49	4.6	2,010	7.9	13	
Aug. 3, 1953.	145	15	--	74	27	111	111	166	336	34	--	2.6	--	as881	.93	267	296	160	45	2.8	1,020	7.5	--	
Aug. 11-20, 1953.	36.7	12	0.05	98	66	327	5.5	248	862	99	.5	1.0	.44	1,580	2.15	157	516	313	58	6.3	2,190	7.6	18	
Aug. 21-31, 1953.	28.5	9.3	0.05	88	67	389	6.0	246	967	103	.5	.8	--	1,760	2.94	135	495	284	63	7.6	2,410	7.7	10	
Sept. 1-10, 1953.	4.8	7.2	0.05	85	55	298	4.3	218	727	93	.5	.7	--	1,380	1.88	179	438	260	59	6.2	1,950	7.6	10	
Sept. 11-20, 1953.	1.9	5.9	0.05	91	62	338	6.0	238	836	119	.4	.8	.46	1,560	2.16	4,826	482	287	60	6.7	2,220	7.7	10	
Sept. 21-30, 1953.	.9	5.6	0.04	98	68	384	7.0	270	887	148	.5	.7	--	1,760	2.39	8,38	524	303	61	7.3	2,430	7.8	7	
Weighted average	c 239	13	0.07	75	30	96	3.5	230	247	49	0.4	1.1	--	644	0.88	416	310	122	40	2.4	946	--	--	

a Sum of determined constituents.

b Not included for computation of weighted averages.

c Represents 94 percent of runoff for water year October 1952 to September 1953.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR GREEN RIVER, WYO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

GREEN RIVER BASIN--Continued

HENRYS FORK AT LINWOOD, UTAH

LOCATION.--About 75 yards upstream from gaging station, which is in Sweetwater County, Wyoming, 300 feet north of Wyoming-Utah State line at Linwood, Daggett County, Utah.

DRAINAGE AREA--331 square miles.

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

EXTREMES: 1953-53. Discharge: Maximum, 2,000 cfs; minimum, 2,000 cfs; minimum, 352 ppm June 11-13, 15-20.

Specific conductance: Maximum, 1,160 ppm Sept. 21-30; minimum, 277 ppm June 11-13, 15-20.

Water temperature: Maximum observed, 65°F July 13, 26; minimum observed, 45°F from November to February.

EXTREMES: 1951-53. Dissolved solids: Maximum, 2,000 ppm Sept. 21-30; minimum, 312 ppm June 1-6, 9-10, 1952.

Hardness: Maximum, 1,160 ppm Sept. 21-30, 1953; minimum, 208 ppm June 1-6, 9-10, 1952.

Specific conductance: Maximum daily, 2,400 microhmhos Sept. 30, 1953; minimum daily, 395 microhmhos May 15, June 2, 1952.

Water temperatures: Maximum observed, 65°F July 28, 1951, July 26-27, 1952, July 13, 26, 1953; minimum observed, freezing point on many days during winter months.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent adsorption	Specific conductance (microhmhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952	34.9	18	0.05	139	75	76	8.5	250	541	38	0.4	1.3	--	1,080	1.44	656	450	20	1,380	7.8	10
Oct. 11-31	49.8	19	0.05	147	79	77	9.3	274	566	39	0.4	1.2	0.39	1,120	1.52	662	468	19	1,440	7.9	10
Nov. 1-30	47.6	20	0.06	168	88	79	9.2	306	621	42	0.4	1.2	0.35	1,220	1.66	781	530	18	1,560	7.8	10
Dec. 1-10	42.7	21	0.06	163	86	79	6.8	308	588	44	0.3	0.6	--	1,210	1.65	760	508	18	1,520	8.0	10
Dec. 11-20	50.2	19	0.05	140	77	65	7.3	276	504	38	0.4	0.6	0.26	1,040	1.41	666	440	17	1,350	7.9	10
Dec. 21-31	45.3	19	0.07	148	80	68	7.3	289	528	40	0.3	0.6	--	1,090	1.48	698	462	17	1,400	7.8	10
Jan. 1-10, 1953	51.9	17	0.08	142	74	65	6.8	277	500	37	0.3	0.4	--	1,040	1.41	659	432	17	1,340	7.8	10
Jan. 11-20	54.1	17	0.08	134	74	65	7.3	277	479	36	0.4	0.4	0.23	997	1.36	639	412	18	1,300	7.7	10
Jan. 21-31	58.4	20	0.05	138	74	68	8.0	278	487	38	0.2	0.6	--	1,010	1.37	649	421	18	1,340	8.0	10
Feb. 1-10	68.6	19	0.05	134	69	66	7.9	287	465	37	0.3	0.6	--	962	1.31	618	399	19	1,290	8.0	10
Feb. 11-20	59.7	19	0.03	143	76	73	7.9	287	509	39	0.2	0.6	0.21	1,060	1.44	670	434	19	1,390	7.9	10
Mar. 1-20	68.3	19	0.04	124	64	73	9.2	256	454	34	0.3	0.9	0.24	936	1.27	572	362	21	1,250	7.8	15
Mar. 21-31	92.8	18	0.04	116	64	62	8.6	258	413	34	0.2	0.4	--	874	1.19	552	341	19	1,190	8.0	15
Apr. 1-10	65.8	19	0.17	126	72	70	7.3	284	451	37	0.3	0.5	--	972	1.32	610	378	20	1,320	7.8	15
Apr. 11-20	67.1	21	0.07	129	75	80	8.2	284	493	40	0.2	0.5	0.23	1,020	1.39	630	398	20	1,370	7.9	7
Apr. 21-30	97.9	17	0.11	90	43	44	5.7	244	253	22	0.4	0.5	--	617	0.84	402	202	21	895	8.0	8
May 1-10	61.0	16	0.13	107	56	56	5.5	252	357	28	0.3	0.5	--	779	1.06	498	291	19	1,080	8.0	9
May 11-20	61.5	10	0.05	112	60	55	7.7	268	384	32	0.4	1.1	0.15	834	1.13	526	314	18	1,200	7.8	15
May 21-29	57.6	17	0.06	106	54	50	6.9	242	346	28	0.4	0.9	--	765	1.04	486	288	18	1,040	8.0	20
May 30-31, June 1-10	138	18	0.09	82	37	33	6.9	196	231	18	0.5	0.8	--	544	0.74	356	196	16	766	7.9	50

June 11-13, 15-20, 1953	856	19	.07	63	17	20	5.9	179	110	8.8	.4	1.3	.11	352	.48	814	227	80	16	.6	516	7.8	30
June 14 ^a	2,100	--	--	--	--	--	--	184	199	16	--	--	--	--	--	--	288	137	--	--	718	--	--
June 21-26	18	18	.03	68	24	24	4.6	185	145	11	.4	1.0	--	410	.56	288	268	116	16	.6	594	7.7	25
June 27-30	88.5	22	.06	93	39	44	6.8	223	266	19	.4	.8	--	634	.86	151	392	210	19	1.0	874	7.8	20
July 1-5	32.0	24	.11	126	57	70	8.3	260	428	31	.4	.8	--	926	1.26	80	549	336	21	1.3	1,210	8.0	18
July 6-10	7.52	29	.04	188	91	112	10	326	714	47	.4	.9	--	1,430	1.94	31	843	576	22	1.7	1,760	8.0	22
July 11-20	29.1	28	.06	170	80	100	10	333	617	43	.4	.6	.43	1,290	1.75	101	753	480	22	1.6	1,600	8.1	25
July 21-31	19.5	26	.12	203	103	122	10	340	813	52	.5	.4	--	1,590	2.16	84	930	652	22	1.7	1,930	7.9	20
Aug. 1-10	67.1	28	.11	133	59	69	11	280	438	28	.6	1.0	--	938	1.28	170	574	345	20	1.3	1,250	7.8	25
Aug. 11-20	14.1	25	.10	178	92	99	12	288	718	44	.6	.2	.35	1,380	1.88	53	822	586	20	1.5	1,700	8.0	25
Aug. 21-31	9.63	24	.11	206	103	119	12	310	845	49	.5	.2	--	1,600	2.18	42	938	684	21	1.7	1,930	7.9	25
Sept. 1-10	4.86	25	.05	230	119	143	11	298	1,000	57	.6	.3	--	1,850	2.52	24	1,060	820	22	1.9	2,150	7.8	22
Sept. 11-20	4.46	23	.05	238	122	144	11	298	1,040	58	.5	.4	.53	1,920	2.61	23	1,100	852	22	1.9	2,200	7.9	25
Sept. 21-30	4.04	24	.06	256	127	143	11	310	1,080	60	.5	.5	--	2,000	2.72	22	1,160	906	21	1.8	2,260	7.8	27
Weighted average	b 74.7	19	0.07	107	51	51	7.2	237	342	26	0.4	0.9	--	755	1.03	152	476	282	19	1.0	1,010	--	--

a Not included for computation of weighted averages.

b Represents 93 percent of runoff for water year October 1952 to September 1953.

GREEN RIVER BASIN--Continued

HENRYS FORK AT LINWOOD, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

GREEN RIVER BASIN--Continued
YAMPA RIVER NEAR WAYBELL, COLO.

LOCATION.--At county bridge 1 mile north of Maybell, Moffat County, and about 3½ miles downstream from gaging station.

DRAINAGE AREA.--3 410 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

Sediment records: December 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 469 ppm Sept. 21-30; minimum, 78 ppm June 11-20.

Hardness: Maximum, 238 ppm Dec. 1-10; minimum, 46 ppm June 11-20.

Specific conductance: Maximum daily, 807 micromhos Sept. 30; minimum daily, 94.3 micromhos June 19.

Water temperatures: Maximum observed, 78°F July 16, 19-20; minimum observed, freezing point Nov. 17, Feb. 13, 21.

Sediment concentrations: Maximum daily, 1,630 ppm May 22; minimum daily, 6 ppm Jan. 26-31.

Sediment loads: Maximum daily, 23,100 tons May 22; minimum daily, 4 tons on many days during January and February.

EXTREMES, 1950-53.--Dissolved solids: Maximum, 469 ppm Sept. 21-30, 1953; minimum, 72 ppm June 21-30, 1951.

Hardness: Maximum, 238 ppm Dec. 1-10, 1952; minimum, 45 ppm June 21-30, July 1-10, 1951.

Specific conductance: Maximum daily, 807 micromhos Sept. 30, 1953; minimum daily, 94.3 micromhos June 19, 1953.

Water temperatures: Maximum observed, 81°F July 30, 1951; minimum observed, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 6,000 ppm July 22, 1951; minimum daily, 2 ppm Jan. 21 to Feb. 4, 1951.

Sediment loads: Maximum daily, 23,100 tons May 22, 1953; minimum daily, 1 ton Jan. 21 to Feb. 4, 1951.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Prior to Jan. 30, 1951, samples were collected at bridge on U. S. Highway 40, 100 feet upstream from gaging station. Records of specific conductance of daily samples available in district office at Salt Lake City. Records of discharge for water year October 1952 to September 1953 given in WSP 1283. No appreciable inflow between gaging station and sampling station.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent 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. 1-10, 1952...	168	4.8	0.03	40	19	54	3.0	189	88	36	0.2	0.7	--	337	0.46	153	178	23	39	1.8	570	8.0	7
Oct. 11-31.....	200	8.0	.02	43	20	50	3.0	196	87	32	.4	.6	--	337	.46	182	190	29	36	1.6	562	7.9	8
Nov. 1-22.....	217	11	.02	45	20	46	3.0	202	87	28	.4	.6	0.08	340	.46	199	194	29	34	1.4	556	8.1	5
Nov. 23-30.....	182	15	.04	54	24	55	3.0	236	109	35	.3	.6	--	414	.56	203	233	40	34	1.6	665	7.9	8
Dec. 1-10.....	243	16	.03	56	24	49	3.1	248	104	32	.3	.4	--	404	.55	265	238	35	31	1.4	665	7.6	5
Dec. 11-20.....	237	16	.03	43	18	41	2.2	200	77	24	.3	1.0	0.08	320	.44	205	182	18	33	1.3	525	7.9	5
Dec. 21-31.....	189	15	.02	44	19	43	2.2	195	83	27	.4	1.3	--	326	.44	166	188	28	33	1.4	540	7.7	5
Jan. 1-10, 1953..	239	15	.02	45	18	42	2.4	198	76	24	.4	1.1	--	320	.44	206	186	24	33	1.3	524	7.4	5
Jan. 11-20.....	229	15	.04	42	19	42	2.9	191	82	26	.4	1.0	0.08	323	.44	200	183	26	33	1.4	531	7.4	5
Jan. 21-31.....	244	14	.07	43	20	45	2.7	194	89	26	.2	1.0	--	336	.46	221	190	30	34	1.4	546	7.7	7
Feb. 1-10.....	238	12	.10	42	20	46	2.7	190	89	27	.2	.5	--	334	.45	215	187	32	34	1.5	545	7.8	7
Feb. 11-19.....	213	14	.08	44	20	45	2.7	198	89	26	.2	.6	0.08	340	.46	196	192	30	33	1.4	532	7.9	5
Feb. 20-28.....	206	13	.10	44	19	45	2.8	196	84	26	.3	.5	--	335	.46	186	188	28	34	1.4	547	7.8	20
Mar. 1-10.....	284	12	.19	42	18	45	2.8	180	94	26	.2	.6	--	334	.45	256	179	32	35	1.5	538	7.8	20
Mar. 11-20.....	316	13	.10	41	18	42	2.2	169	96	21	.3	.7	0.05	318	.43	271	176	38	34	1.4	512	7.8	10
Mar. 21-31.....	584	11	.09	40	19	40	2.2	165	98	19	.2	1.0	--	312	.42	492	178	43	32	1.3	505	7.9	10

GREEN RIVER BASIN--Continued
YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH or
														Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate				
Apr. 1-10, 1953...	863	12	0.11	43	19	32	2.7	156	102	13	0.3	3.9	--	301	0.41	705	186	53	27	1.0	477	7.8
Apr. 11-24.....	791	7.9	.11	43	19	34	2.7	163	96	16	.3	3.9	0.04	302	.42	645	186	52	28	1.1	493	7.9
Apr. 25-30.....	2,797	13	.37	31	11	12	2.7	118	36	5.0	--	1.2	--	182	.25	1,370	122	26	17	.5	261	7.6
May 1-10.....	1,904	13	.22	28	10	13	1.9	110	39	5.2	.5	2.0	--	180	.24	925	111	21	20	.5	277	7.4
May 11-23.....	2,610	12	.24	26	8.6	11	1.9	106	30	4.2	.5	1.4	.05	159	.22	1,120	100	14	19	.5	243	7.3
May 24-31.....	8,011	11	--	22	5.9	5.6	1.9	86	13	2.5	.5	1.8	--	122	.17	2,640	80	9	13	.3	175	7.3
June 1-10.....	6,857	9.2	.27	14	4.1	4.7	1.5	58	11	1.7	.5	1.6	--	88	.12	1,630	52	4	16	.3	125	7.2
June 11-20.....	7,840	7.9	.27	12	3.8	4.6	1.5	52	8.7	1.3	.5	1.3	.04	78	.11	1,650	46	3	17	.3	103	7.2
June 21-30.....	3,650	8.9	.07	15	4.8	7.2	1.3	59	14	4.5	.3	1.2	--	92	.13	907	57	8	21	.4	143	7.0
July 1-8.....	1,348	8.6	.02	18	5.9	13	1.6	75	24	8.6	.4	.7	--	122	.17	444	70	8	28	.7	198	7.2
July 9-20.....	1,852	10	.05	26	9.3	19	2.3	112	38	12	.4	.7	.11	179	.24	412	103	11	28	.8	291	7.4
July 21-31.....	464	11	.04	22	13	28	2.3	142	51	16	.4	.8	--	228	.31	286	134	17	31	1.1	377	7.5
Aug. 1-10.....	647	10	.16	33	14	25	3.1	154	54	12	.5	.9	--	233	.32	407	148	22	26	.9	385	7.6
Aug. 11-20.....	347	5.0	.04	35	15	31	3.1	152	59	21	.5	1.0	.08	248	.34	232	149	24	31	1.1	421	7.7
Aug. 21-31.....	213	4.1	.03	37	17	42	3.1	161	74	30	.4	1.4	--	288	.39	166	162	30	35	1.4	492	7.7
Sept. 1-10.....	143	4.1	.06	38	18	56	2.5	174	92	40	.4	1.0	--	344	.47	133	169	26	42	1.9	575	7.5
Sept. 11-20.....	99.5	3.2	.08	42	23	72	3.0	192	118	55	.3	1.1	.15	420	.57	101	200	42	43	2.2	693	7.7
Sept. 21-30.....	74.1	3.7	.03	45	24	86	3.0	204	137	64	.3	1.1	--	469	.64	93.8	211	44	47	2.6	773	7.6
Weighted average	1,145	10	0.19	23	8.4	14	1.9	97	31	7.2	0.4	1.5	--	154	0.21	476	92	14	24	0.6	237	--

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1952 to September 1953

Day	October			November			December		
	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.....	165			196			240		
2.....	168			199			270		
3.....	168			202			260		
4.....	170			208			240		
5.....	170	21	10	216	15	8	230	13	9
6.....	170			216			250		
7.....	168			208			240		
8.....	168			205			250		
9.....	168			212			230		
10.....	168			219			220		
11.....	168			222	15	8	250		
12.....	168	18	8	208			240	14	9
13.....	172			187			240		
14.....	175			199			230		
15.....	178			233			220		
16.....	181			240	32	20	230		
17.....	184			254			240		
18.....	187			240			240		
19.....	199			250			240		
20.....	208	25	14	250			240	10	8
21.....	212			250			240		
22.....	216			170	22	12	230		
23.....	222			168			220		
24.....	222			200			200		
25.....	226			180			170		
26.....	219			160			160		
27.....	216	14	8	150			150	11	5
28.....	219			180	16	8	160		
29.....	216			200			170		
30.....	205			220			180		
31.....	202			--			200		
Total.	5,878	--	312	6,242	--	336	6,880	--	243
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.....	220			240			300	197	180
2.....	230			260			280	137	104
3.....	230			250			270		
4.....	240	11	7	250	10	7	250		
5.....	240			250			270	37	27
6.....	250			250			280		
7.....	250			240			290	109	85
8.....	250			230			300	138	112
9.....	240			210			300	155	126
10.....	240	10	7	200	7	4	300	148	120
11.....	240			190			310	112	94
12.....	240			200			300	130	105
13.....	240			200			290	80	63
14.....	240			200			280	142	107
15.....	220			220			270		
16.....	200	8	5	230			300		
17.....	200			220			320		
18.....	220			240	7	4	340	55	51
19.....	250			220			360		
20.....	240			190			385		
21.....	250			170			425		
22.....	240	8	5	170			405	50	57
23.....	240			190			436		
24.....	240			200			365	54	53
25.....	240			200	7	4	370	50	a 50
26.....	250			220			425		
27.....	240			240			528	39	63
28.....	230	6	4	270	140	102	635		
29.....	250			--	--	--	796		
30.....	280			--	--	--	958		
31.....	240			--	--	--	1,080	119	327
Total.	7,360	--	175	6,150	--	231	12,418	--	2,664

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	1,060	84	203	2,730	80	378	7,590	259	5,310		
2.....	929			2,240			7,930	240	5,140		
3.....	887			1,820			7,780	197	4,140		
4.....	824			1,600			7,470	169	3,410		
5.....	859			1,380			7,160	158	3,050		
6.....	824	67	127	1,230	103	604	6,920	155	2,900		
7.....	915			1,260			6,390	160	2,760		
8.....	901			1,690			6,000	162	2,620		
9.....	782			2,320			5,390	163	2,370		
10.....	698			2,770			5,940	118	1,890		
11.....	642	22	35	2,640	55	275	6,940	153	2,870		
12.....	594			2,160			7,710	230	4,790		
13.....	552			1,880			8,170	218	4,810		
14.....	516			1,750			9,030	291	7,090		
15.....	522			1,710			9,680	194	5,070		
16.....	546	22	35	1,790	151	962	8,960	110	2,660		
17.....	510			2,060			7,420	108	2,160		
18.....	558			2,360			6,710	119	2,160		
19.....	621			2,620			6,860	140	2,590		
20.....	642			2,890			6,920	118	2,200		
21.....	684	1,050	5,610	4,080	1,080	s13,400	5,980	112	1,440		
22.....	1,080			5,250			23,100			5,030	
23.....	1,630			5,350			770			4,580	
24.....	1,980			5,330			390			5,610	4,270
25.....	2,240			5,210			313			4,400	3,880
26.....	2,360	227	1,450	5,980	500	8,070	3,330	110	758		
27.....	2,460	266	1,770	6,730	543	9,870	2,780				
28.....	2,850	236	1,820	7,200	516	10,000	2,420				
29.....	3,450	285	2,650	6,600	649	15,100	2,240				
30.....	3,420	362	3,340	9,130	550	13,600	1,990				
31.....	--	--	--	7,900	330	a7,000	--	--	--		
Total.	36,536	--	23,243	111,660	--	133,051	183,470	--	80,989		
July				August			September				
1.....	1,800	22	84	516	400	557	198	50	20		
2.....	1,780			740	450	899	188				
3.....	1,570			859	151	350	167				
4.....	1,410			998	168	453	138				
5.....	1,230			901	107	260	132				
6.....	1,080	33	79	663	57	73	125	83	23		
7.....	1,010			534			122				
8.....	901			458			125				
9.....	817			415			118				
10.....	747			390			115				
11.....	726	21	42	385	22	21	108	54	12		
12.....	901			395			100				
13.....	1,200			405			93				
14.....	894			375			93				
15.....	747			335			93				
16.....	733	43	95	312	66	54	91	26	5		
17.....	740			312			80				
18.....	1,010			325			83				
19.....	894			325			75				
20.....	817			298			70				
21.....	726	81	106	272	66	41	75	79	79		
22.....	698			252			79				
23.....	552			226			79				
24.....	480			205			79				
25.....	425			208			79				
26.....	380	38	35	208	25	13	77	68	67		
27.....	375			202			66				
28.....	335			189			72				
29.....	335			191			66				
30.....	355			198			72				
31.....	442	159	190	194	--	--	--	--	--		
Total.	26,110	--	2,684	12,285	--	3,513	3,064	--	445		
Total discharge for year (cfs-days)..... 418,053											
Total load for year (tons)..... 247,883											

s Computed by subdividing day.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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	0.500	1.000	
Mar. 30, 1953	5:00 p. m.	950	42	73	--	--	--	--	--	--	94	98	99	100		S
May 21	5:30 p. m.	4,850	53	1,450	3,360	49	49	66	83	95	99	99	100	--		SPWCM
June 8	5:00 p. m.	5,860	55	187	2,460	32	32	51	66	88	99	99	99	100		SPWCM
July 30	6:00 p. m.	325	72	16	230	65	71	80	83	92	94	96	98	99		SPWCM
Aug. 29	5:00 p. m.	198	76	10	--	--	--	--	--	--	88	93	96	98		S

GREEN RIVER BASIN--Continued
LITTLE SNAKE RIVER NEAR LILY, COLO.

LOCATION --About 2 miles upstream from gaging station, which is 6 miles north of Lily, Moffat County, and 10 miles upstream from mouth.
DRAINAGE AREA --730 square miles (above gaging station).
RECORDS AVAILABLE --Chemical analyses: December 1930 to September 1953.
Water temperatures: December 1930 to September 1953.

EXTREMES 1952-53 --Dissolved solids: 130 ppm Aug. 1-5; minimum, 116 ppm June 11-20.
Hardness: Maximum, 491 ppm Aug. 5; minimum, 66 ppm June 11-20.

Specific conductance: Maximum daily, 770 micromhos Aug. 1; minimum daily, 146 micromhos June 17.

Water temperatures: Maximum daily, 69°F Jul. 20; minimum observed freezing 15°F Aug. 1-5, 1953. Many days from October to March.

EXTREMES 1950-53 --Dissolved solids (1950-51, 1952-53): Maximum, 150 ppm Aug. 1-5, 1953. Minimum, 116 ppm June 11-20, 1953.

Hardness (1950-51, 1952-53): Maximum, 588 ppm Jul. 20, 1951. Minimum, 66 ppm June 11-20, 1953.

Specific conductance (1950-51, 1952-53): Maximum daily, 1,770 micromhos Aug. 1, 1953; minimum daily, 146 micromhos June 17, 1953.

Water temperatures: Maximum observed, 82°F Aug. 18, 1951. Minimum observed, freezing, point on many days during winter months.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953.

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per- cent sodium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 23°C)	Col- or pH		
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon- ate					
Oct. 1-10, 1952 ..	14.2	10	0.03	74	27	158	4.0	228	361	62	0.3	0.4	--	823	1.12	31.6	296	108	53	4.0	1,230	8.0	5
Oct. 11-20	23.9	9.5	.03	77	31	194	4.0	267	398	74	.4	.6	0.14	928	1.26	59.9	320	100	57	4.7	1,370	8.0	7
Oct. 21-31	52.5	12	.03	--	--	--	--	a256	225	42	.4	.9	--	610	.83	86.5	--	--	--	--	931	8.4	7
Nov. 1-21	60.5	16	.03	64	23	98	3.0	256	205	36	.4	.6	1.10	578	.79	94.4	254	44	45	2.7	887	8.1	7
Nov. 22-30	29.4	21	.03	88	31	120	3.2	345	251	42	.4	.6	.11	734	1.00	58.3	347	64	43	2.8	1,080	8.2	9
Dec. 1-10	65.0	27	.04	77	29	99	3.2	315	203	34	.4	.9	--	623	.85	109	311	53	41	2.4	929	7.9	10
Dec. 11-20	65.0	23	.05	65	21	69	2.8	264	137	24	.3	.8	--	467	.64	82.0	248	32	37	1.9	720	7.8	10
Dec. 21-31	65.0	22	.04	60	18	57	2.4	241	122	20	.2	.8	--	406	.55	71.3	224	26	35	1.7	632	8.0	8
Jan. 1-10, 1953 ..	75.0	23	.04	61	18	58	3.3	241	129	18	.3	.8	--	416	.57	84.2	226	28	35	1.7	636	8.0	10
Jan. 11-20	75.0	21	.05	61	17	55	2.8	233	119	18	.3	.9	.07	412	.56	83.4	222	31	35	1.6	634	7.8	10
Jan. 21-31	75.0	20	.07	58	18	57	2.3	226	122	18	.3	.4	--	407	.55	82.4	218	34	36	1.7	631	7.7	10
Feb. 1-10	75.0	18	.06	54	18	61	2.3	212	125	26	.3	.4	--	412	.56	83.4	208	35	39	1.8	641	8.0	10
Feb. 11-19	75.0	18	.08	60	19	65	2.3	232	139	24	.3	.3	1.10	440	.60	88.1	228	38	39	1.9	686	7.9	10
Feb. 20-28	75.0	20	.12	63	20	61	2.6	240	133	22	.4	.8	--	436	.60	86.7	239	42	35	1.7	677	7.7	10
Mar. 1-10	233	16	.10	41	12	71	2.8	190	109	24	.4	1.1	--	374	.51	235	132	0	50	2.5	590	8.2	10
Mar. 11-20	398	17	.03	48	15	80	1.9	209	146	25	.3	1.4	.05	433	.59	465	182	10	48	2.6	673	8.0	10
Mar. 21-31	296	19	.03	52	16	70	1.9	207	143	22	.4	1.2	--	429	.58	343	196	26	43	2.1	658	8.1	10
Apr. 1-10	396	17	.08	58	17	56	1.9	204	138	19	.4	1.2	--	414	.56	443	214	48	36	1.7	634	7.9	10
Apr. 11-24	283	19	.05	57	17	69	1.9	218	143	23	.4	.8	.06	444	.60	315	212	34	41	2.1	678	8.2	10
Apr. 25-30	878	18	.10	42	11	25	1.4	152	65	6.5	--	1.3	--	254	.35	602	150	26	26	.9	390	8.0	--

a Includes equivalent of 7.9 parts per million of carbonate (CO₃).

GREEN RIVER BASIN--Continued
LITTLE SNAKE RIVER NEAR LILLY, COLO.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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					
May 1-10, 1953	785	18	0.01	44	12	24	1.5	154	66	7.0	0.4	1.7	--	254	0.35	538	160	34	24	0.8	391	7.8	15
May 11-20	962	16	.04	36	9.1	16	1.0	133	37	5.2	.4	1.3	--	194	.26	504	128	18	21	.6	301	7.8	15
May 21-31	2,475	15	.07	32	6.9	13	1.2	119	27	3.8	.3	1.8	--	169	.23	1,130	108	11	21	.5	254	7.8	32
June 1-10	2,281	13	.12	23	5.1	8.1	1.2	88	15	2.0	.4	1.9	--	121	.16	745	78	6	18	.4	176	7.7	40
June 11-20	2,235	12	.16	19	4.6	7.7	.9	76	15	1.0	.4	1.4	--	116	.16	700	66	4	20	.4	159	7.9	45
June 21-28	1,100	14	.11	24	4.8	12	1.2	93	24	3.2	.4	.7	--	137	.19	407	80	4	24	.6	208	7.5	30
June 29-30, July 1-4	347	15	.04	31	7.6	26	2.2	126	51	8.0	.4	.5	--	207	.28	194	108	6	34	1.1	320	7.6	15
July 5-10	120	17	.03	42	11	51	3.2	164	96	16	.3	.4	--	317	.43	103	150	16	42	1.8	492	8.0	13
July 11-20	43.2	17	.03	61	16	90	5.1	199	196	32	.3	.7	0.12	518	.70	60.4	218	55	47	2.6	780	7.9	10
July 21-31	24.3	31	.06	78	22	115	6.1	213	296	36	.3	.3	.14	682	.93	44.7	285	110	46	3.0	1,000	7.7	10
Aug. 1-5	103	22	.09	149	29	165	9.5	246	532	66	.6	.7	--	1,150	1.56	32.0	491	290	42	3.2	1,530	7.8	22
Aug. 6-10	162	19	.09	58	14	83	4.5	233	154	22	.6	1.1	--	474	.64	207	202	11	46	2.6	726	7.8	13
Aug. 11-20	37.6	18	.07	68	19	113	5.2	237	238	34	.4	.9	--	616	.84	62.5	248	54	49	3.1	921	8.1	5
Aug. 21-31	14.3	15	.07	77	24	142	6.1	230	335	46	.3	.6	--	770	1.05	29.7	290	102	51	3.6	1,130	7.8	5
Sept. 1-10	5.0	15	.07	85	25	150	6.0	220	364	54	.3	.2	--	816	1.11	11.0	315	134	50	3.7	1,190	8.0	5
Sept. 11-20	1.7	16	.07	85	23	145	6.0	216	367	56	.3	.1	.14	823	1.12	3.78	315	138	49	3.6	1,190	8.1	5
Sept. 21-30	.2	20	.11	87	22	130	3.2	215	323	48	.3	.4	--	755	1.03	.408	308	132	48	3.2	1,120	8.0	10
Weighted average	371	15	0.09	35	9.0	26	1.5	132	56	8.2	0.4	1.4	--	225	0.31	225	124	16	31	1.1	339	--	--

GREEN RIVER BASIN--Continued

LITTLE SNAKE RIVER NEAR LILY, COLO.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH

LOCATION.--At gaging station, 1 mile below Cub Creek, 6½ miles northeast of Jensen, Uintah County, and 12 miles upstream from Brush Creek.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1953.

Sediment records: May 1948 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum observed, 78°F July 14; minimum observed, freezing point Dec. 1, 15, Jan. 20.

Sediment concentrations: Maximum daily, 3,050 ppm June 17; minimum daily, 12 ppm Sept. 24-30.

Sediment loads: Maximum daily, 181,000 tons June 17; minimum daily, 26 tons Sept. 24-30.

EXTREMES, 1948-53.--Sediment concentrations: Maximum daily, 15,800 ppm Apr. 9, 1952; minimum daily, 12 ppm Sept. 24-30, 1953.

Sediment loads: Maximum daily, 567,000 tons Apr. 9, 1952; minimum daily, 26 tons Sept. 24-30, 1953.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1283. Records of chemical analyses from June 1947 to September 1952 and water temperatures from March 1949 to September 1952 for Green River at Jensen available in prior Water-Supply Papers.

Temperature (°F) of water, water year October 1952 to September 1953

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1952 to September 1958

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.....	1,180	22	69	1,160	37	115	580	110	172
2.....	1,180			1,150			650		
3.....	1,180			1,140			670		
4.....	1,180			1,150			700		
5.....	1,140			1,170			735		
6.....	1,110	--	b 80	1,180	40	127	765	--	b 120
7.....	1,110			1,190			805		
8.....	1,120			1,180			885		
9.....	1,120			1,180			870		
10.....	1,110			1,160			845		
11.....	1,110	31	90	1,110	--	b 90	905	36	105
12.....	1,110			1,080			905		
13.....	1,100			1,100			995		
14.....	1,100			1,120			1,040		
15.....	1,060			1,110			1,050		
16.....	1,060	36	112	1,160	73	224	1,060	30	71
17.....	1,060			1,260			1,090		
18.....	1,070			1,280			1,100		
19.....	1,070			1,080			1,100		
20.....	1,090			1,020			1,100		
21.....	1,100	60	82	1,080	72	148	1,070	--	b 60
22.....	1,130			980			1,010		
23.....	1,160			692			960		
24.....	1,170			552			920		
25.....	1,180			520			880		
26.....	1,180	--	--	490	--	--	840	41	107
27.....	1,180			480			780		
28.....	1,180			490			750		
29.....	1,160			520			790		
30.....	1,160			550			880		
31.....	1,160			--			970		
Total.	34,980	--	2,890	29,274	--	4,332	27,700	--	3,191
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.....	1,010	41	127	1,350	102	382	1,240	120	a 400
2.....	1,080			1,370			1,250	120	a 400
3.....	1,100			1,380			1,270	200	686
4.....	1,150			1,390			1,290	180	627
5.....	1,200			1,410			1,450	200	783
6.....	1,230	36	119	1,420	107	392	1,540	200	832
7.....	1,300			1,430			1,550	210	a 880
8.....	1,280			1,480			1,590	500	a 2,100
9.....	1,260			1,410			1,660	740	3,360
10.....	1,250			1,000			1,670	850	4,290
11.....	1,220	91	275	1,320	78	299	2,250	1,000	8,080
12.....	1,200			1,430			2,780	2,200	a 17,000
13.....	1,190			1,420			2,660	3,280	25,300
14.....	1,170			1,420			2,720	2,120	15,600
15.....	1,160			1,430			2,410	1,610	11,800
16.....	1,100	150	481	1,420	50	154	2,420	1,600	10,500
17.....	1,100			1,400			2,320	1,020	6,390
18.....	1,110			1,390			2,320	730	4,570
19.....	1,120			1,320			2,260	650	3,970
20.....	1,120			1,280			2,260	790	4,820
21.....	1,160	143	507	1,120	--	--	2,110	900	5,130
22.....	1,160			1,050			1,960	700	3,700
23.....	1,150			1,090			1,880	490	2,490
24.....	1,180			1,120			1,830	470	2,320
25.....	1,200			1,160			1,830	400	1,980
26.....	1,280	--	--	1,180	--	--	1,940	370	1,940
27.....	1,290			1,180			2,020	500	2,730
28.....	1,300			1,220			2,320	570	3,570
29.....	1,320			--			2,500	1,300	8,780
30.....	1,310			--			2,730	1,900	14,000
31.....	1,350			--			3,070	1,450	12,000
Total.	37,030	--	8,793	36,590	--	7,456	63,520	--	179,028

a Computed from water-sediment concentration graph.

b Computed from water-sediment discharge curve.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	3,230	1,230	10,700	7,810	2,570	54,200	12,100	1,530	50,000
2.....	3,490	1,240	11,700	6,920	2,100	39,200	12,100	1,470	48,000
3.....	3,360	1,410	12,800	6,100	1,800	26,400	12,900	1,600	a 56,000
4.....	3,220	1,170	10,200	5,360	1,170	16,900	13,000	1,450	50,900
5.....	3,110	900	7,560	4,750	1,010	13,000	12,700	1,370	47,000
6.....	2,960	750	5,990	4,210	770	8,750	12,800	980	33,900
7.....	2,930	500	3,960	3,840	870	6,950	13,000	1,180	41,400
8.....	2,920	510	4,020	3,620	680	6,650	12,800	1,360	47,000
9.....	3,010	650	5,280	4,150	910	10,200	13,200	1,350	48,100
10.....	2,970	450	3,610	5,100	1,400	19,300	12,900	1,520	52,900
11.....	2,800	400	3,020	5,860	1,370	21,700	13,200	1,600	57,000
12.....	2,590	340	2,380	5,770	1,370	21,300	14,600	1,700	67,000
13.....	2,470	280	1,870	5,080	1,130	15,500	15,600	2,000	84,200
14.....	2,340	310	1,960	4,590	720	8,920	16,700	2,410	109,000
15.....	2,210	500	2,980	4,300	550	6,390	19,200	3,040	158,000
16.....	2,140	460	2,660	4,100	500	5,540	21,800	2,790	164,000
17.....	2,190	360	2,130	4,080	540	5,950	22,000	3,050	181,000
18.....	2,200	330	1,960	4,460	610	7,350	21,300	2,190	126,000
19.....	2,190	400	2,370	4,890	890	11,800	21,200	1,770	101,000
20.....	2,190	410	2,420	5,380	1,120	16,300	21,500	1,600	a 93,000
21.....	2,290	400	2,470	5,840	2,020	31,900	21,700	1,210	70,900
22.....	2,450	550	3,640	9,180	2,040	s 50,400	20,600	1,190	66,200
23.....	2,540	510	3,500	9,730	1,720	45,200	19,100	1,140	58,800
24.....	3,290	920	6,170	9,200	2,710	67,300	18,300	1,110	54,800
25.....	4,320	2,100	24,500	9,340	1,750	44,100	16,900	1,080	49,300
26.....	4,750	1,750	22,400	9,450	1,530	39,000	15,000	1,050	42,500
27.....	5,380	2,030	29,500	10,000	2,000	54,000	13,200	1,040	37,100
28.....	6,030	2,100	34,200	10,900	2,100	61,800	12,000	920	29,800
29.....	6,650	2,090	37,500	11,500	2,300	a 71,000	10,900	890	26,200
30.....	7,370	2,420	48,200	13,200	2,600	92,700	9,760	710	18,700
31.....	--	--	--	13,600	2,470	90,700	--	--	--
Total.	99,590	--	313,650	212,310	--	970,400	472,060	--	2,069,700
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	8,680	540	12,700	2,520	780	5,310	1,310	--	b 230
2.....	7,760	520	10,900	2,760	900	6,710	1,280	--	b 210
3.....	7,080	500	9,560	2,670	1,740	12,500	1,240	58	192
4.....	6,550	460	a 8,100	3,280	1,450	12,800	1,220		
5.....	6,250	350	5,910	3,550	800	7,670	1,210	--	b 160
6.....	6,130	360	5,960	3,700	1,500	a 15,000	1,180		
7.....	6,030	350	5,700	3,780	1,900	19,400	1,130	38	111
8.....	5,790	310	4,850	3,410	1,330	12,200	1,110		
9.....	5,400	260	3,790	3,130	740	6,250	1,100	23	60
10.....	5,040	240	3,270	2,940	500	3,970	1,060		
11.....	4,770	210	2,700	2,760	790	5,890	1,060	14	33
12.....	4,610	220	2,740	2,590	840	5,870	1,040		
13.....	4,590	230	a 2,900	2,460	330	2,190	1,020	12	26
14.....	4,910	239	3,170	2,340	200	1,280	1,000		
15.....	4,770	221	2,850	2,280	139	848	987	--	--
16.....	4,370	200	2,360	2,190	141	834	959		
17.....	4,080	180	1,980	2,090	100	564	931	--	--
18.....	4,020	151	1,640	1,980	90	481	910		
19.....	4,280	200	2,300	1,930	90	469	904	--	--
20.....	4,320	190	2,220	1,870	74	374	878		
21.....	3,910	190	2,010	1,830	75	371	864	--	--
22.....	3,710	680	6,810	1,780	68	327	839		
23.....	3,410	180	1,660	1,740	51	240	821	--	--
24.....	3,130	115	972	1,720	100	464	815		
25.....	2,930	114	902	1,680	270	1,220	821	--	--
26.....	2,750	107	794	1,610	88	360	815		
27.....	2,580	99	690	1,550			809	--	--
28.....	2,430	99	650	1,500	--	b 260	797		
29.....	2,410	590	a 3,800	1,480			791	--	--
30.....	2,330	1,090	6,860	1,430			774		
31.....	2,540	1,450	9,940	1,380	--	--	--	--	--
Total.	141,560	--	130,688	71,890	--	125,272	29,695	--	2,549
Total discharge for year (cfs-days)									1,256,199
Total load for year (tons)									3,817,949

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR JENSEN, UTAH--Continued

Particle-size analyses of suspended sediment for water year October 1952 to September 1953
(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; V, visual accumulation tube)

Date of collection	Time	Discharge (cfs) ¹	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. 5, 1952	6:00 p.m.	1,140	62	18	--	--	--	--	--	--	80	95	98	S	100	--	1.000		
Oct. 15	4:30 p.m.	a 1,060	55			--	--	--	--	--	--	--	--		--	--	S	--	--
Oct. 25	5:00 p.m.	1,180	55			--	--	--	--	--	--	--	--		--	--	S	100	--
Nov. 5	4:00 p.m.	1,170	41	54	--	--	--	--	--	--	95	98	99	S	100	--	--		
Nov. 16	3:30 p.m.	a 1,160	34			--	--	--	--	--	--	--	--		--	--	S	--	--
Nov. 25	3:30 p.m.	520	33			--	--	--	--	--	--	--	--		--	--	S	--	--
Dec. 16	5:00 p.m.	a 1,060	33	25	--	--	--	--	--	--	42	78	89	S	97	100	S		
Dec. 25	4:30 p.m.	a 880	33	40	--	--	--	--	--	--	92	95	96		S	99	100		
Jan. 15, 1953	3:00 p.m.	1,160	33	108	--	--	--	--	--	--	87	96	99		S	100	--		
Jan. 25	3:00 p.m.	a 1,200	33			--	--	--	--	--	--	--	--	--	--	S	--	--	
Feb. 5	4:00 p.m.	1,410	34			--	--	--	--	--	--	--	--	--	--	S	--	--	
Feb. 15	1:30 p.m.	a 1,430	33	54	--	--	--	--	--	--	93	95	97	S	99	100	S		
Feb. 25	5:30 p.m.	1,160	35	52	1,250	--	--	--	--	--	89	95	99		SBWCM	100	--		
Feb. 28	11:45 a.m.	a 1,220	37			42	48	58	70	83	89	95	99		100	--	SBWCM	--	--
Mar. 13	11:50 a.m.	2,660	38	3,270	4,160	--	74	--	93	--	96	98	100	SPWCM	--	--	--		
Mar. 13	11:50 a.m.	2,660	38	3,270	6,070	62	71	82	90	95	96	98	100		SPWCM	--	--	--	
Mar. 28	2:15 p.m.	2,400	54	543	2,090	--	63	--	81	92	96	99	100		SPWCM	--	--	--	
Apr. 3	3:00 p.m.	3,290	48	1,520	3,600	--	68	--	85	--	92	96	99	SPN	100	--	--		
Apr. 3	3:00 p.m.	3,290	48	1,520	3,750	--	6	--	86	--	92	96	99		SPN	100	--	--	
Apr. 10	12:20 p.m.	2,960	41	321	--	--	--	--	--	--	85	91	98		S	100	--	--	
Apr. 25	4:30 p.m.	4,610	60	2,350	3,800	--	42	--	62	--	82	94	99	SPWCM	100	--	--		
May 28	2:00 p.m.	11,000	63	2,360	5,360	--	22	--	32	--	54	67	84		SPWCM	98	100	SPWCM	
June 8	12:30 a.m.	12,900	62	1,250	1,160	--	--	--	25	--	42	57	74		SPWCM	92	98	SPWCM	
June 29	12:00 m	10,900	68	739	1,270	10	13	16	19	24	44	74	93	V	99	100	SBWCM		
July 9	4:00 p.m.	5,360	78	232	--	--	--	--	--	--	66	85	98		S	100	--	--	
July 14	4:00 p.m.	5,120	78	237	--	--	--	--	--	--	64	91	99		V	100	--	--	
July 28	3:05 p.m.	2,420	77	68	--	--	--	--	--	--	86	95	99	S	100	--	--		
Aug. 11	12:20 p.m.	2,760	69	423	--	--	--	--	--	--	97	99	100		S	--	--	--	
Aug. 26	3:00 p.m.	1,620	66	65	--	--	--	--	--	--	95	98	99		S	100	--	--	
Sept. 7	4:30 p.m.	a 1,130	66	26	--	--	--	--	--	--	96	98	100	S	--	--	--		
a Mean daily discharge.																			

a Mean daily discharge.

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH

LOCATION--At gaging station, just downstream from bridge on State Highway 45, 1 mile downstream from Evacuation Creek, and 7 miles north of Watson, Uinta County, Utah.

DRAINAGE AREA--4,020 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses, December, 1950 to September, 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES 1952-53--Dissolved solids: Maximum 1,450 ppm Aug. 1; minimum, 240 ppm June 11-20.

Specific conductance: Maximum daily, 1,750 microhos Aug. 1; minimum daily, 327 microhos June 18.

Water temperatures: Maximum observed, 82° F July 20; minimum observed, freezing point on many days from November to April.

EXTREMES 1950-53--Dissolved solids: Maximum 1,450 ppm Aug. 1, 1953; minimum, 230 ppm June 21-30, 1951.

Specific conductance: Maximum daily, 1,750 microhos Aug. 1, 1953; minimum daily, 319 microhos June 29, 1951.

Water temperatures: Maximum observed, 82° F July 20, 1953; minimum observed, freezing point on many days during winter months.

REMARKS--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percentage of sodium	Sodium adsorption ratio	Specific conductance (microhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1952...	426	--	--	--	--	--	--	--	--	--	--	--	--	545	0.74	627	--	--	--	864	--	--
Oct. 11-31.....	416	16	74	26	--	76	--	188	174	64	--	19	0.10	539	.73	605	292	136	36	1.9	866	7.6
Nov. 1-19.....	407	16	78	26	--	80	--	195	177	66	--	24	--	555	.75	610	302	142	37	2.0	891	7.6
Nov. 20-30.....	299	--	--	--	--	--	--	--	--	--	--	--	--	676	.92	546	--	--	--	--	1,220	--
Dec. 1-10.....	414	--	--	--	--	--	--	--	--	--	--	--	--	685	.93	766	--	--	--	--	1,190	--
Dec. 11-20.....	461	17	72	20	--	81	--	202	164	66	--	29	--	553	.75	688	261	95	40	2.2	874	7.3
Dec. 21-31.....	409	--	--	--	--	--	--	--	--	--	--	--	--	673	.92	743	--	--	--	--	1,020	--
Jan. 1-10, 1953...	407	--	--	--	--	--	--	--	--	--	--	--	--	580	.70	637	--	--	--	--	889	--
Jan. 11-20.....	415	17	73	21	--	84	--	224	176	66	--	2.7	.07	552	.75	619	270	86	40	2.2	857	7.7
Jan. 21-30.....	395	--	--	--	--	--	--	--	--	--	--	--	--	674	.94	638	--	--	--	--	941	--
Feb. 1-10.....	394	--	--	--	--	--	--	--	--	--	--	--	--	607	.82	646	--	--	--	--	847	--
Feb. 11-17.....	394	18	78	24	--	94	--	230	207	73	--	1.2	--	615	.84	654	293	104	41	2.4	951	8.0
Feb. 18-20.....	405	6.8	32	13	--	45	--	94	107	35	--	1.5	--	287	.39	314	133	56	42	1.7	483	--
Feb. 21-22.....	380	--	--	--	--	--	--	--	--	--	--	--	--	296	.40	304	--	--	--	--	483	--
Feb. 23-28.....	488	--	--	--	--	--	--	--	--	--	--	--	--	296	.88	874	--	--	--	--	1,000	--
Mar. 1-10.....	663	--	--	--	--	--	--	--	--	--	--	--	--	591	.80	1,060	--	--	--	--	933	--
Mar. 11-20.....	621	15	78	26	--	95	--	240	230	62	--	14	--	648	.86	1,080	302	105	41	2.4	1,020	7.7
Mar. 21-31.....	459	--	--	--	--	--	--	--	--	--	--	--	--	704	.98	872	--	--	--	--	1,070	--
Apr. 1-10.....	451	--	--	--	--	--	--	--	--	--	--	--	--	718	.98	874	--	--	--	--	1,070	--
Apr. 11-20.....	407	15	79	26	--	100	--	255	232	76	--	4.3	.06	658	.99	723	302	93	42	2.5	1,060	7.7
Apr. 21-23.....	473	--	--	--	--	--	--	--	--	--	--	--	--	628	.85	802	--	--	--	--	1,190	--
Apr. 24-30.....	709	--	--	--	--	--	--	--	--	--	--	--	--	496	.87	948	--	--	--	--	776	--

a Sum of determined constituents.

May 1-10, 1953...	660	17	75	20	73	196	173	54	24	--	558	76	994	270	109	37	1.9	864	7.6
May 11-20.....	724	16	64	22	66	233	141	46	11	--	492	67	962	248	57	36	1.8	845	7.5
May 21-26.....	1,507	17	66	17	51	204	113	31	35	--	433	59	1,760	233	66	32	1.5	707	7.8
May 27-31.....	2,500	14	52	15	25	178	65	16	2.5	--	287	.39	1,940	192	46	22	.8	482	8.0
June 1, 5-7.....	2,540	14	45	11	20	155	58	16	2.2	--	260	.35	1,780	160	33	22	.7	404	8.1
June 2-4, 8-10 ^b ...	2,405	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	637	--
June 11-20.....	3,025	14	45	9	17	147	49	15	2.0	.08	240	.33	1,960	152	31	20	.6	375	8.4
June 22-23 ^b	1,710	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	788	--
June 24, 28-30....	1,014	--	--	--	--	--	--	--	--	--	324	.44	887	--	--	--	--	515	--
July 1-10 ^b	545	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	888	--
July 11-17.....	611	23	73	21	53	--	176	39	9	.07	513	.70	846	266	113	30	1.4	799	7.8
July 18-20 ^b	626	27	--	--	78	c 444	156	58	2	.15	--	--	--	420	56	--	--	1,210	8.4
July 21 ^b	538	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,250	--
July 22-29.....	410	--	--	--	--	--	--	--	--	--	522	.71	578	--	--	--	--	857	--
July 30-31.....	559	--	--	--	--	--	--	--	--	--	702	.95	1,060	--	--	--	--	1,120	--
Aug. 1.....	2,340	--	--	--	--	--	705	--	--	--	1,450	1.97	9,160	836	--	--	--	1,750	--
Aug. 2-10.....	566	--	--	--	--	--	--	--	--	--	626	.85	990	--	--	--	--	1,010	--
Aug. 11.....	1,390	--	--	--	--	--	268	--	--	--	970	1.32	3,610	530	--	--	--	1,420	--
Aug. 12-20.....	499	21	75	20	--	--	172	58	50	--	574	.78	758	270	--	--	--	1,000	7.5
Aug. 21-31.....	359	--	--	--	--	--	--	--	--	--	600	.82	582	--	--	--	--	934	--
Sept. 1-10.....	310	--	--	--	--	--	--	--	--	--	632	.86	529	--	--	--	--	1,050	--
Sept. 11-20.....	291	19	69	27	100	244	187	79	1.2	--	628	.85	493	282	82	43	2.6	1,140	7.9
Sept. 21-30.....	262	--	--	--	--	--	--	--	--	--	626	.85	443	--	--	--	--	985	--
Weighted average	d 619	--	--	--	--	--	--	--	--	--	505	0.69	844	--	--	--	--	799	--

b Not included for computation of weighted averages.

c Includes equivalent of 41 parts per million of carbonate (CO₃).

d Represents 68 percent of runoff for water year October 1952 to September 1953.

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement taken at approximately 3:15 p. m./

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH

LOCATION.--At gaging station, 2½ miles upstream from Willow Creek and 3 miles southwest of Ouray, Uintah County.

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1952.

Water temperatures: December 1950 to September 1952.

Sediment records: December 1950 to September 1953.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Suspended sediment, water year October 1952 to September 1953

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.....	2,080	--	--	1,990	--	--	1,350	--	--
2.....	2,030	--	--	1,990	--	--	1,450	--	--
3.....	2,020	347	1,890	1,990	--	--	1,500	--	--
4.....	1,990	--	--	1,980	--	--	1,550	--	--
5.....	1,940	--	--	1,990	332	1,780	1,550	--	--
6.....	1,910	--	--	2,010	--	--	1,550	--	--
7.....	1,880	--	--	2,040	--	--	1,650	--	--
8.....	1,850	--	--	2,080	--	--	1,750	--	--
9.....	1,860	--	--	2,130	--	--	1,880	--	--
10.....	1,850	--	--	2,150	--	--	1,950	--	--
11.....	1,830	--	--	2,140	--	--	2,000	--	--
12.....	1,810	--	--	2,150	--	--	2,100	--	--
13.....	1,810	--	--	2,130	--	--	2,200	--	--
14.....	1,810	--	--	2,120	307	1,760	2,260	--	--
15.....	1,800	278	1,350	2,200	--	--	2,320	--	--
16.....	1,810	--	--	2,220	--	--	2,400	--	--
17.....	1,800	--	--	2,240	--	--	2,480	--	--
18.....	1,800	--	--	2,340	--	--	2,400	--	--
19.....	1,830	--	--	2,430	--	--	2,300	--	--
20.....	1,860	--	--	2,430	--	--	2,300	--	--
21.....	1,900	--	--	2,300	--	--	2,500	--	--
22.....	1,910	--	--	2,280	--	--	2,400	--	--
23.....	1,910	--	--	2,160	--	--	2,300	--	--
24.....	1,950	--	--	1,620	--	--	2,200	--	--
25.....	1,960	--	--	1,450	--	--	2,100	--	--
26.....	1,980	--	--	1,250	--	--	1,900	--	--
27.....	2,000	--	--	1,050	--	--	1,800	--	--
28.....	2,000	--	--	950	--	--	1,700	--	--
29.....	2,000	--	--	1,050	251	712	1,600	--	--
30.....	2,000	--	--	1,200	--	b 710	1,500	--	--
31.....	1,990	--	--	--	--	--	1,520	--	--
Total.	59,170	--	c 46,000	58,060	--	c 50,000	60,470	--	c 24,000

b Computed from water-sediment discharge curve.

c Includes loads for missing days computed from water-sediment discharge curves.

Stage-discharge relation affected by ice Nov. 24-Mar. 14.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--Continued

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.....	1,550	--	--	2,450	--	--	2,600		
2.....	1,600	--	--	2,500	--	--	2,660		
3.....	1,700	--	--	2,560	161	1,110	2,750	--	b 1,300
4.....	1,800	--	--	2,560	--	--	2,850		
5.....	1,900	--	--	2,550	--	--	2,900		
6.....	2,050	--	--	2,550	--	--	2,950		
7.....	2,150	--	--	2,600	--	--	3,020	--	b 2, 100
8.....	2,300	--	--	2,720	--	--	3,130		
9.....	2,500	124	837	2,700	161	1,170	3,300	920	a 8, 200
10.....	2,520	--	--	2,650	--	--	3,600	1,120	a 10, 900
11.....	2,500	--	--	2,550	--	--	4,000	1,450	a 15, 700
12.....	2,480	--	--	2,530	--	--	4,500	1,800	21, 900
13.....	2,450	--	--	2,480	--	--	4,700	2,630	35, 900
14.....	2,400	--	--	2,400	--	--	5,300	3,400	48, 700
15.....	2,350	--	--	2,600	--	--	4,800	3,100	40, 200
16.....	2,240	124	750	2,750	124	921	4,230	1,800	a 20, 600
17.....	2,220	--	--	2,700	--	--	4,050	1,400	a 15, 300
18.....	2,230	--	--	2,600	--	--	3,840	1,270	a 13, 200
19.....	2,300	--	--	2,550	--	--	3,750	1,220	a 12, 400
20.....	2,350	--	--	2,480	--	--	3,570	1,160	11, 200
21.....	2,380	--	--	2,300	--	--	3,540	1,080	10, 300
22.....	2,340	--	--	2,080	--	--	3,450	1,100	10, 200
23.....	2,350	--	--	1,950	--	--	3,260	940	a 8, 270
24.....	2,400	--	--	2,050	--	--	3,050	790	a 6, 510
25.....	2,400	--	--	2,180	124	730	3,080	800	a 6, 650
26.....	2,430	98	643	2,250	--	--	2,940	710	a 5, 640
27.....	2,420	--	--	2,360	--	--	3,000	790	a 6, 400
28.....	2,430	--	--	2,500	--	--	3,090	900	7, 510
29.....	2,430	--	--	--	--	--	3,230	950	8, 280
30.....	2,410	--	--	--	--	--	3,600	1,100	a 11, 000
31.....	2,400	--	--	--	--	--	3,870	1,300	a 14, 000
Total.	69,980	--	c 22, 000	69,150	--	c 24, 000	108,610	--	361,760
Day	April			May			June		
	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day
1.....	4,070	1,400	a 15, 000	8,370	2,180	49,300	16,500	3,790	169,000
2.....	4,270	1,500	a 17, 000	8,740	2,110	49,800	15,400	3,100	129,000
3.....	4,410	1,600	a 19, 000	8,160	1,970	43,400	15,800	2,710	116,000
4.....	4,360	1,560	18,400	7,150	1,940	37,500	17,100	2,920	a 135, 000
5.....	4,120	1,440	16,000	6,440	1,470	25,600	17,500	2,750	130,000
6.....	3,980	1,270	a 13, 600	5,720	1,420	21,900	12,300	3,430	160,000
7.....	3,850	950	a 9, 880	5,180	1,190	a 16, 600	17,400	3,510	165,000
8.....	3,690	730	a 7, 270	4,770	780	10,000	17,300	3,010	141,000
9.....	3,690	700	a 6, 970	4,560	850	10,500	16,600	2,180	92,700
10.....	3,690	700	a 6, 970	4,840	890	11,600	16,600	2,000	a 89, 600
11.....	3,670	730	7, 230	5,900	1,040	16,600	17,100	2,230	a 103, 000
12.....	3,620	679	6, 640	6,740	1,050	19,100	18,200	2,430	119,000
13.....	3,420	600	a 5, 540	6,960	960	18,000	20,600	2,700	a 150, 000
14.....	3,180	600	a 5, 150	6,390	900	a 15, 500	23,000	2,900	a 135, 000
15.....	3,030	610	a 4, 990	5,810	880	13,800	24,100	3,010	196,000
16.....	2,920	610	4, 810	5,450	1,330	19,600	25,900	2,950	206,000
17.....	2,780	690	a 5, 180	5,300	1,340	19,200	27,900	3,000	a 230, 000
18.....	2,800	720	5, 440	5,160	1,100	15,300	27,700	3,000	a 220, 000
19.....	2,830	690	5, 270	5,510	970	14,400	26,200	2,500	a 180, 000
20.....	2,830	700	5, 350	5,940	1,340	a 21, 500	25,600	2,000	a 140, 000
21.....	2,800	690	5, 220	6,390	1,500	a 25, 900	25,500	1,600	a 110, 000
22.....	2,760	700	5, 220	7,450	1,750	35,200	25,000	1,500	a 100, 000
23.....	2,650	740	a 5, 890	10,400	3,130	s 91, 600	23,400	1,400	a 88, 000
24.....	3,090	810	6, 760	11,500	4,430	138,000	22,000	1,400	a 83, 000
25.....	3,500	1,800	17,000	11,100	3,250	97,400	20,600	1,300	a 72, 000
26.....	4,730	2,000	25,500	11,600	2,820	88,300	19,000	1,300	a 87, 000
27.....	5,640	2,000	30,500	11,800	2,700	86,000	16,900	1,200	a 55, 000
28.....	6,230	2,100	a 35, 000	12,600	3,000	102,000	15,000	1,200	a 49, 000
29.....	7,150	2,450	47,300	14,200	3,480	133,000	13,600	1,100	a 40, 000
30.....	7,820	2,300	a 49, 000	15,400	3,720	155,000	12,400	1,000	a 33, 000
31.....	--	--	--	16,900	3,700	189,000	--	--	--
Total.	117,880	--	413,080	252,430	--	1,570,600	597,200	--	3,753,300

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

c Includes loads for missing days computed from water-sediment discharge curves.

Stage-discharge relation affected by ice Nov. 24-Mar. 14.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	11,300	920	a 28,100	4,190	6,870	s 82,400	1,890	610	a 3,110
2.....	10,200	850	a 23,400	4,410	8,120	a 96,700	1,820	470	2,310
3.....	9,140	778	19,200	4,000	6,750	72,900	1,760	435	2,070
4.....	8,370	628	14,100	4,090	4,380	48,400	1,720	350	a 1,630
5.....	7,780	622	13,100	4,090	3,070	33,900	1,700	257	1,180
6.....	7,400	566	11,300	4,600	2,130	26,500	1,660	268	1,200
7.....	7,150	500	9,650	4,580	1,700	21,000	1,620	278	1,220
8.....	7,030	446	8,470	4,710	1,750	a 22,300	1,570	280	a 1,190
9.....	6,690	460	8,310	4,660	2,050	25,800	1,510	230	a 938
10.....	6,370	430	a 7,400	4,410	2,250	26,800	1,490	239	961
11.....	6,140	430	a 7,100	4,050	1,970	21,500	1,460	170	a 670
12.....	5,900	390	a 6,200	4,270	2,700	a 31,100	1,450		
13.....	5,900	900	14,300	3,500	5,950	56,200	1,420		
14.....	5,700	600	9,230	3,300	2,500	22,300	1,380		
15.....	5,680	530	8,130	3,160	2,050	17,500	1,340	--	800
16.....	5,740	580	8,990	3,050	1,190	9,800	1,330		
17.....	5,400	531	7,740	2,940	890	7,060	1,330		
18.....	5,060	552	7,540	2,840	680	5,210	1,290	177	616
19.....	4,960	541	7,250	2,710	547	4,000	1,270		
20.....	4,980	610	8,200	2,590	510	a 3,570	1,260		
21.....	5,180	567	7,930	2,500	464	3,130	1,240	--	b 540
22.....	4,710	390	4,960	2,470	462	3,080	1,220		
23.....	4,450	430	a 5,200	2,390	463	2,990	1,170		
24.....	4,200	390	4,420	2,370	540	a 3,460	1,140		
25.....	3,620	359	3,700	2,310	820	5,110	1,100	143	425
26.....	3,540	306	2,920	2,210	840	5,010	1,080	--	--
27.....	3,350	310	2,800	2,180	740	a 4,360	1,100	--	--
28.....	3,160	260	2,390	2,070	440	2,460	1,100	--	b 400
29.....	3,000	290	2,350	2,050	400	a 2,210	1,100	--	--
30.....	2,890	260	2,180	2,030	590	3,230	1,080	--	--
31.....	3,090	2,800	23,500	1,990	672	3,610	--	--	--
Total.	178,280	--	290,060	100,720	--	673,590	41,600	--	27,560

Total discharge for year (cfs-days) 1,713,550

Total load for year (tons) 7,255,950

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

GREEN RIVER BASIN--Continued
GREEN RIVER NEAR OURAY, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953
(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; V, visual accumulation tube)

Date of collection	Time	Dis-charge (cfs)	Water-temperature (° F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analysed (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
Mar. 12, 1953	1:25 p.m.	4,500	34	1,870	4,850	--	36	--	47	--	69	84	95	100	SPWCM
Mar. 28	1:00 p.m.	3,110	53	770	--	--	--	--	--	--	70	84	98	100	S
Apr. 11	10:30 a.m.	3,660	41	681	--	--	--	--	--	--	61	78	98	100	S
Apr. 24	1:35 p.m.	3,060	62	679	1,690	36	43	48	51	54	71	88	99	100	SBWCM
May 8	1:30 p.m.	4,790	58	668	--	--	--	--	--	--	74	93	100	--	S
May 29	1:30 p.m.	14,400	60	3,400	4,900	--	30	--	46	--	73	88	97	100	SPWCM
June 5	1:00 p.m.	17,500	59	2,320	4,100	--	23	--	34	--	66	89	98	100	SPWCM
June 12	12:30 p.m.	18,000	--	2,350	3,630	--	31	--	47	--	73	90	98	100	SPWCM
July 3	11:00 a.m.	9,140	71	722	--	--	--	--	--	--	56	88	100	--	V
July 13	1:00 p.m.	6,010	83	1,230	2,020	29	36	45	55	68	77	93	100	--	SBWCM
July 13	1:00 p.m.	6,010	83	1,230	1,720	5	12	36	58	68	81	94	100	--	SBN
July 31	3:00 p.m.	3,060	--	2,980	3,880	--	58	--	88	--	95	98	100	--	VPWCM
Aug. 6	11:30 a.m.	4,600	--	1,950	3,010	--	57	--	78	--	90	96	100	--	VPWCM
Aug. 21	1:10 p.m.	2,480	73	398	--	--	--	--	--	--	89	97	100	--	S
Sept. 5	2:25 p.m.	1,690	71	218	1,290	--	47	--	71	--	85	96	100	--	VPWCM
Sept. 25	12:30 p.m.	a1,100	68	133	--	--	--	--	--	--	79	92	99	100	S

a Mean daily discharge.

GREEN RIVER BASIN

WILLOW CREEK NEAR OURAY, UTAH

LOCATION.--At gaging station 8 miles upstream from mouth and 10 miles south of Ouray, Uintah County.

DRAINAGE AREA. 7-907 square miles.
RECORDS AVAILABLE. --Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.
 Maximum averages: --Chemical analyses, December 1950 to September 1953.
 EXTREMES, 1952-53.--Specific conductance: Maximum daily, 6,370 micromhos Aug. 11; minimum daily, 1,080 micromhos July 31.

1952-53.--Specific conductance: Maximum daily, 6,370 micromhos Aug. 11; minimum daily, 1,080 micromhos July 31. Water temperatures: Maximum observed, freezing point on many days during November to March. 1950-53.--Specific conductance: Maximum daily, 8,770 micromhos July 8, 1951; minimum daily, 673 micromhos May 8, 1952. EXTREMES.

Water temperatures: Maximum observed, 89°F July 14, 1951, June 8, 1953; minimum observed, freezing point on many days during winter months. Water temperatures reported for dissolved solids are sums of determined constituents. Records of specific conductance on daily samples available.

EXTRACTS, 1950-55.--Specific conductance: Maximum daily, 8,170 micromhos July 8, 1951; minimum daily, 613 micromhos May 8, 1952.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance on daily samples available.

REMARKS.--values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

an adequate outlet in which mine effluents, necessary to discharge into surface water year around, would be permitted.

Chemical analyses, in parts per million, water year October 1952 to September 1953

[illegible]

GREEN RIVER BASIN--Continued

WILLOW CREEK NEAR OURAY, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	41	32	32	--	32	--	48	76	74	64	73
2	61	43	32	32	32	32	--	49	71	78	74	72
3	59	41	32	32	32	32	--	57	72	72	74	73
4	61	39	32	32	32	34	--	66	67	74	75	76
5	63	37	32	32	32	33	--	65	59	83	75	77
6	63	34	32	32	32	33	--	66	67	80	77	70
7	61	38	32	32	32	33	--	63	66	87	76	66
8	60	43	32	32	32	33	42	63	65	89	74	67
9	59	34	32	32	32	33	46	52	72	73	77	56
10	59	32	32	32	32	33	46	56	76	72	73	65
11	59	32	32	32	32	33	43	59	73	82	75	69
12	53	35	32	32	32	--	44	59	83	87	75	65
13	46	39	32	32	32	--	53	57	76	82	75	59
14	52	37	32	32	32	37	56	61	77	84	72	62
15	49	36	32	32	32	35	56	63	81	83	73	71
16	45	34	32	32	32	47	57	53	85	81	75	74
17	43	40	32	--	32	45	55	51	84	74	74	73
18	44	34	32	--	32	44	--	50	83	82	75	74
19	43	33	32	--	32	44	59	50	77	80	75	73
20	44	33	32	32	32	39	61	53	83	81	75	73
21	--	34	32	32	32	44	65	52	80	82	68	66
22	43	33	32	32	32	44	67	57	80	84	68	65
23	44	33	32	32	32	42	54	59	72	82	--	71
24	41	32	32	--	32	39	55	68	--	79	68	61
25	40	32	32	32	32	45	54	74	71	87	69	53
26	41	32	32	--	32	41	59	68	70	79	70	69
27	43	32	32	--	32	41	55	67	75	83	71	67
28	42	32	32	32	32	--	53	68	84	81	68	64
29	42	32	32	32	--	--	60	70	71	85	72	50
30	43	32	32	--	--	--	53	69	79	75	72	52
31	46	--	32	--	--	--	--	72	--	78	72	--
Average	50	35	32	32	32	38	--	60	75	80	73	67

GREEN RIVER BASIN--Continued
PRICE RIVER AT WOODSIDE, UTAH

LOCATION --At bridge on U. S. Highway 50 at Woodside, Emery County, and 20 miles upstream from mouth.

DRAINAGE AREA --1,500 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: December 1946 to September 1949, February 1951 to September 1953.

Water temperatures: February 1951 to September 1953.

EXTREMES: 1952-53 --Dissolved solids: Maximum, 5,260 ppm Nov. 22-30; minimum, 1,790 ppm Aug. 29-31.

Hardness: Maximum 2,050 ppm Nov. 22-30; minimum, 796 ppm Aug. 29-31.

Specific conductance: Maximum daily, 6,620 micromhos Nov. 28; minimum daily, 2,060 micromhos Aug. 30.

Water temperatures: Maximum observed, 84°F July 12; minimum observed, freezing point Dec. 29, Feb. 19.

EXTREMES, 1951-53 --Dissolved solids: Maximum, 8,220 ppm Dec. 11, 1951; minimum, 592 ppm May 21-30, 1952.

Hardness: Maximum, 3,010 ppm Dec. 11, 1951; minimum, 353 ppm June 1-3, 6-10, 1952.

Specific conductance: Maximum daily, 8,540 micromhos Dec. 11, 1951; minimum daily, 814 micromhos June 1, 1952.

Water temperatures: Maximum observed, 89°F July 30, 1952; minimum observed, freezing point on many days during winter months.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
Oct. 1-10, 1952...	67.7	5.7	0.04	188	187	589	7.1	278	2,070	70	0.3	6.4	--	3,260	4.43	632	1,240	1,010	51	7.3	3,890	7.7	15
Oct. 11-20.....	79.6	6.6	0.04	188	178	510	7.2	286	1,920	64	3	6.9	0.23	3,020	4.11	686	1,200	966	48	6.4	3,690	7.8	20
Oct. 21-31.....	79.2	8.1	0.39	230	224	677	8.1	340	2,480	76	3	6.3	--	3,880	5.25	885	1,500	1,220	49	7.6	4,520	7.6	25
Nov. 1-10.....	77.5	5.8	0.06	188	229	709	7.6	326	2,500	80	3	8.9	--	3,890	5.29	873	1,410	1,140	52	8.2	4,570	7.8	20
Nov. 11-21.....	73.4	7.2	0.05	232	259	742	7.2	352	2,730	90	3	10	0.28	4,250	5.78	922	1,640	1,360	49	8.0	4,980	7.7	20
Nov. 22-30.....	61.0	9.2	0.06	310	310	914	8.3	452	3,360	112	3	11	--	5,260	7.15	937	2,050	1,680	49	8.8	5,880	7.8	20
Dec. 1-10.....	60.0	12	0.07	273	264	700	9.7	425	2,720	98	1	15	--	4,300	5.85	766	1,770	1,420	46	7.2	4,980	8.0	12
Dec. 11-20.....	60.0	11	0.07	229	202	516	8.0	409	2,020	76	1	11	0.33	3,270	4.45	582	1,400	1,070	44	6.0	3,950	7.8	15
Dec. 21-31.....	57.8	11	0.06	254	244	667	8.7	425	2,500	95	1	14	--	4,000	5.44	679	1,640	1,290	47	7.2	4,660	7.9	12
Jan. 1-10, 1953...	56.0	11	0.09	256	243	631	8.8	432	2,390	91	2	14	--	3,860	5.25	637	1,640	1,280	45	6.8	4,520	8.0	11
Jan. 11-20.....	56.0	11	0.07	231	207	556	7.6	408	2,090	82	3	11	0.29	3,400	4.62	565	1,430	1,090	46	6.4	4,070	8.0	8
Jan. 21-31.....	56.0	11	0.05	232	203	553	7.6	373	2,060	74	1	11	--	3,340	4.54	541	1,410	1,110	46	6.4	4,010	8.0	10
Feb. 1-10.....	60.0	10	0.06	230	236	747	7.7	381	2,610	83	1	11	--	4,120	5.60	705	1,540	1,230	51	8.3	4,790	8.0	14
Feb. 11-19.....	60.0	11	0.08	246	252	777	8.0	395	2,710	93	1	11	0.31	4,300	5.85	745	1,650	1,330	50	8.3	5,010	8.0	10
Feb. 20-28.....	70.0	9.6	0.07	253	235	696	8.2	397	2,470	90	0	11	--	4,010	5.45	830	1,600	1,270	48	7.6	4,680	8.0	8
Mar. 1-10.....	82.8	8.3	0.07	232	218	698	8.0	355	2,470	76	1	11	--	3,900	5.30	914	1,480	1,180	51	7.9	4,560	8.0	18
Mar. 11-20.....	90.7	9.4	0.04	210	219	502	7.2	334	2,100	68	3	7.7	0.22	3,290	4.47	862	1,420	1,150	43	5.8	4,040	8.0	18
Mar. 21-31.....	82.6	6.8	0.05	200	202	572	7.2	326	2,130	74	5	7.0	--	3,360	4.57	803	1,330	1,060	48	6.8	4,060	8.0	15
Apr. 1-10.....	91.0	8.7	0.05	182	203	589	7.2	356	2,070	72	5	7.0	--	3,310	4.50	860	1,290	997	50	7.1	3,980	8.0	20
Apr. 11-20.....	65.9	8.7	0.05	181	192	536	9.4	334	1,930	74	0	6.2	0.27	3,100	4.22	589	1,240	968	48	6.6	3,780	7.7	20
Apr. 21-30.....	52.5	10	0.05	214	227	700	10	326	2,480	88	3	5.8	--	3,900	5.30	588	1,470	1,200	51	7.9	4,610	7.7	20

May 1-10, 1953...	77.2	11	.06	175	160	450	11	322	1,700	58	.2	6.9	--	2,730	3.71	592	1,090	830	47	5.9	3,360	7.8	20
May 11-20.....	65.8	9.6	.06	194	176	513	12	310	1,920	68	.3	5.4	.22	3,050	4.15	565	1,210	954	48	6.4	3,710	7.9	20
May 21-31.....	82.6	9.5	.06	186	179	500	12	316	1,900	64	.3	5.6	--	3,010	4.09	705	1,200	941	47	6.3	3,640	8.1	20
June 1-10.....	91.2	12	.11	192	179	550	8.6	316	1,960	64	.3	5.6	--	3,130	4.26	822	1,220	956	49	6.9	3,760	7.9	25
June 11-20.....	88.1	10	.23	194	187	553	10	310	2,020	60	.3	5.3	.30	3,190	4.34	821	1,250	999	49	6.8	3,860	7.8	25
June 21-30.....	76.2	9.2	.11	180	170	500	9.1	286	1,820	60	.4	4.1	--	2,890	3.93	636	1,150	914	48	6.4	3,530	7.8	23
July 1-10.....	69.7	13	.09	200	172	479	8.6	286	1,860	61	.6	5.0	--	2,930	3.98	582	1,210	988	46	6.0	3,550	7.7	20
July 11-18.....	146	15	.09	254	170	506	11	310	2,050	64	.3	4.5	.33	3,230	4.39	1,360	1,330	1,080	45	6.0	3,810	7.6	20
July 19-20.....	150	17	.09	206	96	291	8.9	290	1,170	38	.6	.2	--	1,970	2.68	822	908	671	41	4.2	2,450	8.0	20
July 21-31.....	87.5	12	.09	246	181	528	11	256	2,150	69	.4	5.0	--	3,330	4.53	846	1,360	1,150	46	6.2	3,970	7.6	20
Aug. 1-10.....	201	14	.09	272	144	424	12	280	1,860	58	.6	2.7	--	2,930	3.98	169	1,270	1,040	42	5.2	3,500	7.8	20
Aug. 11-20.....	75.3	11	.09	212	156	482	9.5	276	1,810	58	.6	2.3	.33	2,880	3.92	618	1,170	944	47	6.1	3,480	7.9	30
Aug. 21-28.....	174	9.3	.10	220	159	500	9.9	270	1,910	59	.5	3.2	--	3,000	4.08	1,480	1,200	982	47	6.3	3,610	7.7	30
Aug. 29-31.....	428	14	.11	182	83	256	8.7	234	1,100	33	.7	1.3	--	1,790	2.43	2,170	796	604	41	3.9	2,300	7.4	20
Sept. 1-10.....	62.8	7.9	.06	218	205	551	9.4	272	2,140	68	.5	6.2	--	3,340	4.54	607	1,390	1,160	46	6.4	4,020	7.5	25
Sept. 11-20.....	50.1	5.7	.05	206	194	633	8.9	252	2,260	70	.4	5.7	.31	3,510	4.77	507	1,310	1,100	51	7.6	4,170	7.4	25
Sept. 21-30.....	52.2	5.6	.05	206	199	583	7.5	278	2,180	72	.4	5.4	--	3,400	4.62	510	1,330	1,100	49	7.0	4,060	7.6	25
Weighted average	81.3	10	0.09	219	192	558	9.1	322	2,100	70	0.3	6.8	--	3,330	4.53	731	1,340	1,070	47	6.6	3,970	--	--

GREEN RIVER BASIN--Continued

PRICE RIVER AT WOODSIDE, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH

LOCATION.--At gaging station, 1 mile southeast of the town of Green River, Emery County, 22 miles upstream from San Rafael River, and 117 miles upstream from mouth.

DRAINAGE AREA.--40,600 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1928 to September 1953.

Water temperatures: May 1949 to September 1953.

Sediment records: May 1930 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 902 ppm Nov. 1-30; minimum 248 ppm June 21-30.

Hardness: Maximum, 444 ppm Dec. 1-31; minimum, 164 ppm June 21-30.

Specific conductance: Maximum daily, 1,460 micromhos Dec. 3; minimum daily, 333 micromhos June 23.

Water temperatures: Maximum observed, 82° F July 20; minimum observed, freezing point on several days from November to January.

Sediment concentrations: Maximum daily, 19,800 ppm Aug. 1; minimum daily, 42 ppm Sept. 29-30.

Sediment loads: Maximum daily, 294,000 tons June 17; minimum daily, 129 tons Sept. 29-30.

EXTREMES, 1928-53.--Dissolved solids: Maximum, 2,010 ppm Sept. 29, 1943; minimum, 184 ppm June 21-30, 1933.

Hardness: Maximum, 488 ppm Dec. 21-31, 1932; minimum, 128 ppm June 21-30, 1933.

Specific conductance (1949-53): Maximum daily, 2,420 micromhos Sept. 29, 1943; minimum daily, 321 micromhos May 30, 1948.

Water temperatures (1949-53): Maximum observed, 82° F July 31, Aug. 5-6, 1949, July 20, 1953; minimum observed, freezing point on several days from November to January.

Sediment concentrations (1930-53): Maximum daily, 63,600 ppm July 11, 1936; minimum daily, 34 ppm Sept. 27, 1951.

Sediment loads (1930-53): Maximum daily, 2,230,000 tons July 11, 1936; minimum daily, less than 100 tons on several days.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium carbonate	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. 1-10, 1952...	2,112	9.2		74	41	107	4.4	220	330	46		1.6	--	750	1.02	4,280	353	172	38	2.5	1,100	7.9	
Oct. 11-31.....	2,089	9.1		81	45	120	5.2	238	373	50		1.4	0.15	831	1.13	4,690	387	192	40	2.7	1,210		
Nov. 1-30.....	2,059	11		88	49	126	3.8	256	401	52		2.3	--	902	1.23	5,010	421	211	39	2.7	1,280		
Dec. 1-31.....	2,096	13		94	51	120	4.2	281	375	51		2.7	--	884	1.20	5,000	444	214	37	2.5	1,260		
Jan. 1-31, 1953..	2,272	13		86	44	102	2.9	261	321	45		3.0	--	770	1.05	4,720	396	182	36	2.2	1,110		
Feb. 1-26.....	2,542	12		82	46	107	3.0	252	333	45		2.8	--	768	1.04	5,270	384	187	37	2.3	1,140		
Mar. 1-10.....	2,847	13		83	43	108	4.2	234	335	41		1.8	--	763	1.04	5,870	364	160	38	2.3	1,050		
Mar. 11-20.....	4,450	12		79	37	100	3.4	234	303	42		2.4	--	703	.96	8,470	329	158	38	2.6	1,100		
Mar. 21-31.....	3,302	11		77	39	111	3.6	231	321	46		2.1	--	744	1.01	6,630	352	163	40	2.6	1,100		
Apr. 1-10.....	4,084	13		76	39	107	3.6	236	324	44		2.3	--	737	1.00	8,130	355	182	39	2.5	1,080		
Apr. 11-20.....	3,496	12		74	46	90	4.5	236	295	39		1.9	23	682	.91	6,150	332	148	37	2.2	994		
Apr. 21-30.....	3,495	12		77	41	92	3.0	236	295	39		2.5	--	692	.95	6,860	360	169	35	2.1	1,010		
May 1-10.....	5,529	12		62	25	81	5.2	205	150	23		2.5	--	452	.61	7,960	258	90	31	1.4	679		
May 11-23.....	5,457	12		56	24	53	3.0	192	159	23		2.2	--	442	.60	6,510	246	88	32	1.5	669		
May 24-31.....	11,580	12		--	--	38	2.4	172	109	13		2.4	--	340	.46	10,630	--	--	29	--	511		

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium chloride	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
June 1-10, 1953...	16,180	13		54	14	27	2.4	190	73	12		1.9	--	300	0.41	13,110	192	36	23	0.8	472	
June 11-20	22,370	12		47	13	25	2.3	164	68	11		2.1	--	268	.36	16,190	171	36	24	0.8	419	
June 21-30	20,280	11		46	12	21	2.9	163	58	8.8		2.0	--	248	.34	13,580	164	31	21	.7	391	
July 1-10	8,581	11		48	15	33	3.2	156	96	18		1.3	--	302	.41	7,000	182	54	28	1.1	478	
July 11-20	5,868	11		57	19	45	3.5	186	136	20		1.5	0.10	385	.52	6,100	220	68	30	1.3	603	
July 21-31	4,113	11		55	22	55	3.5	181	155	23		1.0	--	414	.56	4,600	228	79	34	1.6	649	
Aug. 1-10	4,332	16		81	34	86	5.5	226	288	31		2.8	--	670	.91	7,840	342	157	35	2.0	973	
Aug. 11-20	3,527	13		82	29	70	5.8	230	230	30		2.0	--	582	.79	5,540	324	135	31	1.7	879	
Aug. 21-31	2,555	11		68	31	83	3.2	204	249	34		1.5	--	560	.80	4,070	297	130	37	2.1	886	
Sept. 1-10	1,778	12		80	36	91	4.2	224	298	43		1.0	--	687	.93	3,300	348	164	36	2.1	1,000	
Sept. 11-20	1,423	9.7		72	38	112	4.1	208	322	47		1.0	--	734	1.00	2,820	336	165	42	2.7	1,040	
Sept. 21-30	1,202	8.6		76	40	118	4.1	210	348	52		.8	--	762	1.04	2,470	354	182	42	2.7	1,110	
Weighted average	4,689	12		64	27	62	3.2	202	188	26		2.1	--	496	0.87	6,280	270	105	33	1.6	740	--

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day
1.....	2,240	77	466	2,220	43	257	1,300	113	519
2.....	2,220		539	2,220			1,350		
3.....	2,180	95	534	2,200			1,450		
4.....	2,140			2,200			1,550		
5.....	2,120			2,200			1,600		
6.....	2,080			2,180	42	251	1,650		
7.....	2,080			2,180			1,750		
8.....	2,060			2,200			1,850		
9.....	2,020			2,220			1,950		
10.....	2,000			2,220			2,050		
11.....	2,020	68	367	2,260	175	1,100	2,200	122	817
12.....	2,020			2,240			2,250		
13.....	2,000			2,240			2,380		
14.....	1,980			2,240			2,480		
15.....	1,980			2,260			2,550		
16.....	1,980	65	374	2,240	96	393	2,620	170	1,100
17.....	1,980			2,300			2,650		
18.....	2,020			2,300			2,550		
19.....	2,000			2,330			2,370		
20.....	2,020			2,370			2,400		
21.....	2,040	48	286	2,450	113	808	2,500	218	1,620
22.....	2,120			2,410			2,630		
23.....	2,140			2,280			2,520		
24.....	2,160			2,140			2,450		
25.....	2,160			1,800			2,320		
26.....	2,200	129	848	1,650	129	868	2,200	371	3,110
27.....	2,200			1,200			2,070		
28.....	2,220			1,000			2,000		
29.....	2,220			1,000			1,900		
30.....	2,200			1,050			1,800		
31.....	2,200	75	508	--	112	680	1,650	90	447
Total.	64,980	--	12,716	61,780	--	15,482	64,990	--	22,833
Day	January			February			March		
	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day	Mean dis-charge (cfs)	Suspended sediment Mean concen-tration (ppm)	Tons per day
1.....	1,600	77	392	2,540	113	808	2,450	218	1,620
2.....	1,570			2,610			2,540		
3.....	1,600			2,650			2,610		
4.....	1,700			2,650			2,720		
5.....	1,850			2,630			2,860		
6.....	1,900	129	848	2,650	129	868	2,880	371	3,110
7.....	1,950			2,680			2,930		
8.....	2,050			2,770			3,000		
9.....	2,250			2,810			3,100		
10.....	2,400			2,720			3,380		
11.....	2,450	108	715	2,700	112	680	3,830	575	5,950
12.....	2,550			2,660			4,350		
13.....	2,500			2,620			4,470		
14.....	2,500			2,530			5,130		
15.....	2,500			2,430			5,550		
16.....	2,400	75	508	2,610	129	868	4,940	1,680	22,400
17.....	2,350			2,630			4,410		
18.....	2,300			2,700			4,020		
19.....	2,350			2,700			3,970		
20.....	2,450			2,620			3,830		
21.....	2,420	108	715	2,560	112	680	3,700	1,200	a 12,000
22.....	2,400			2,480			3,580		
23.....	2,410			2,240			3,500		
24.....	2,480			2,000			3,350		
25.....	2,500			2,010			3,250		
26.....	2,450	75	508	2,260	112	680	3,120	600	5,050
27.....	2,500			2,350			3,120		
28.....	2,480			2,370			3,050		
29.....	2,540			--			3,100		
30.....	2,520			--			3,200		
31.....	2,500			--			3,350		
Total.	70,420	--	19,304	71,180	--	23,640	109,290	--	259,080

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	3,650	560	5,520	7,030	2,300	43,700	17,200	4,440	206,000
2.....	3,910	700	7,390	7,640	2,500	a 52,000	16,700	4,150	187,000
3.....	4,080	768	8,460	8,160	2,530	55,700	15,300	3,450	143,000
4.....	4,270	875	10,100	8,000	2,200	a 48,000	15,500	3,160	132,000
5.....	4,410	1,160	13,800	7,260	1,500	a 29,000	16,400	2,930	133,000
6.....	4,410	1,080	12,900	6,590	1,200	a 21,000	16,400	2,550	113,000
7.....	4,210	900	10,200	5,990	1,000	a 16,000	16,300	2,410	106,000
8.....	4,100	745	8,250	5,320	870	12,500	16,400	2,440	108,000
9.....	3,940	745	7,930	4,760	740	9,510	16,100	2,540	110,000
10.....	3,860	710	7,400	4,470	580	7,000	15,500	2,400	100,000
11.....	3,830	530	5,480	4,410	350	4,170	15,400	2,300	a 96,000
12.....	3,830	350	3,620	4,910	550	7,290	15,800	2,400	102,000
13.....	3,810	390	4,010	5,890	657	10,400	17,400	3,100	146,000
14.....	3,700	510	5,090	6,480	740	12,900	20,300	4,170	229,000
15.....	3,520	474	4,500	6,270	667	11,300	22,600	4,500	a 270,000
16.....	3,350	475	4,300	5,720	610	9,420	24,500	4,390	290,000
17.....	3,180	410	3,520	5,320	500	7,180	26,600	4,100	294,000
18.....	3,050	360	2,960	4,970	431	5,780	27,800	3,600	270,000
19.....	2,930	396	3,130	4,880	320	4,220	27,100	3,370	247,000
20.....	2,880	300	2,330	4,880	510	6,720	26,200	3,100	219,000
21.....	2,910	274	2,150	5,220	440	6,200	25,600	3,300	228,000
22.....	2,860	280	2,160	5,650	600	9,150	25,500	3,140	216,000
23.....	2,810	304	2,310	6,340	736	12,600	24,800	1,880	126,000
24.....	2,770	290	2,170	8,580	955	22,100	23,000	1,860	116,000
25.....	2,910	368	2,890	11,000	1,300	a 39,000	21,600	1,440	84,000
26.....	3,000	400	a 3,200	10,500	1,660	47,100	20,200	1,310	71,400
27.....	3,400	400	3,700	10,600	3,120	89,300	18,300	1,700	a 84,000
28.....	4,440	650	7,790	11,100	2,810	84,200	16,200	1,990	87,000
29.....	5,190	1,100	a 15,000	11,800	2,650	84,400	14,400	1,870	72,700
30.....	6,160	1,700	28,300	13,600	3,810	140,000	13,200	1,770	63,100
31.....	--	--	--	15,500	4,350	182,000	--	--	--
Total.	111,370	--	200,560	228,840	--	1,089,840	588,300	--	4,646,200

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.....	12,200	1,560	51,400	4,440	19,800	s 254,000	2,080	1,440	8,090
2.....	11,100	1,480	44,400	4,240	12,200	s 145,000	2,040	1,080	5,950
3.....	9,930	1,240	33,200	5,100	3,520	48,500	1,920	810	a 4,200
4.....	8,970	1,070	25,900	4,410	2,850	33,900	1,840	481	2,390
5.....	8,200	775	17,200	4,130	10,100	113,000	1,740	272	1,280
6.....	7,680	595	12,300	3,940	6,010	63,900	1,690	284	1,300
7.....	7,260	500	9,800	4,020	2,100	a 23,000	1,670	318	1,430
8.....	6,920	422	7,880	4,270	990	a 11,000	1,630	288	1,270
9.....	6,850	432	7,990	4,330	800	9,350	1,610	139	604
10.....	6,700	510	9,230	4,440	1,360	16,300	1,560	115	484
11.....	6,450	550	a 9,600	4,560	1,190	14,700	1,520	122	501
12.....	6,130	476	7,880	4,050	880	9,620	1,510	110	448
13.....	5,960	550	8,850	4,080	731	8,050	1,490	105	422
14.....	5,850	930	14,700	3,910	710	a 7,500	1,470	123	488
15.....	5,850	670	10,600	3,420	3,550	32,800	1,460	112	442
16.....	5,680	610	9,350	3,300	8,850	78,900	1,410	93	354
17.....	5,890	870	13,800	3,180	3,850	33,100	1,380	74	276
18.....	6,060	1,440	23,600	3,050	1,520	12,500	1,340	42	147
19.....	5,650	1,100	a 17,000	2,910	860	6,760	1,340		
20.....	5,160	670	9,330	2,810	670	5,080	1,310		
21.....	5,000	510	6,880	2,700	620	4,520	1,300		
22.....	5,100	575	7,920	2,560	750	5,180	1,280	55	174
23.....	5,060	478	6,530	2,590	660	4,620	1,250		
24.....	4,640	245	3,070	2,630	1,310	9,300	1,240		
25.....	4,350	190	2,230	2,430	800	5,250	1,210		
26.....	4,020	660	7,160	2,430	800	5,250	1,180	42	129
27.....	3,700	290	2,900	2,370	960	a 6,100	1,150		
28.....	3,520	220	a 2,100	2,300	1,000	a 6,200	1,140		
29.....	3,350	233	2,110	3,520	7,720	a 79,600	1,130		
30.....	3,250	404	3,550	2,410	9,200	59,900	1,140	--	--
31.....	3,250	750	6,580	2,160	4,160	24,300	--		
Total.	189,730	--	395,040	106,690	--	1,137,180	44,030	--	31,912

Total discharge for year (cfs-days)..... 1,711,800

Total load for year (tons)..... 7,853,787

s Computed by subdividing day.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued
GREEN RIVER AT GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953
(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		1.000	2.000
Nov. 4, 1952.....	2:20 p.m.	2,180	50	50	--	--	--	--	--	--	86	94	98	100			S
Dec. 3.....	2:00 p.m.	a 1,430	35	73	--	--	--	--	--	--	94	98	99	100			S
Jan. 13, 1953.....	3:00 p.m.	a 2,500	33	176	--	--	--	--	--	--	90	93	98	100			S
Feb. 4.....	2:00 p.m.	2,650	38	94	--	--	--	--	--	--	87	95	99	100			S
Feb. 26.....	3:30 p.m.	2,300	38	129	2,580	--	57	--	86	--	98	99	100	--			SPWCM
Apr. 6.....	10:00 a.m.	4,440	49	1,180	3,600	--	67	--	91	--	97	98	100	--			SPWCM
May 1.....	11:20 a.m.	7,000	55	2,320	4,230	--	44	--	71	--	92	97	100	--			SPWCM
May 18.....	3:45 p.m.	4,940	65	463	3,590	--	54	--	76	--	91	94	99	100			SPWCM
May 18.....	3:45 p.m.	4,940	65	463	3,320	--	19	--	79	--	91	94	99	100			SPN
June 8.....	11:45 a.m.	16,400	64	2,350	3,800	--	24	--	40	57	74	88	98	100			SPWCM
June 16.....	11:40 a.m.	24,200	70	3,710	3,100	--	25	--	37	--	72	90	99	100			SPWCM
June 22.....	9:30 a.m.	25,500	70	2,960	2,220	--	18	--	30	44	62	81	98	100			SPWCM
June 29.....	11:45 a.m.	14,500	70	1,850	2,920	--	13	--	22	33	51	76	98	100			SPWCM
July 7.....	12:15 p.m.	7,260	79	501	2,170	--	18	--	30	41	51	72	98	100			SPWCM
July 23 ^b	2:00 p.m.	5,030	80	602	4,760	16	20	27	32	37	46	--	--	97			SPWCM
Aug. 26.....	3:00 p.m.	2,450	70	770	3,200	55	70	86	91	96	98	99	100	--			SPWCM
Aug. 29.....	8:45 a.m.	5,190	68	4,950	2,800	35	43	57	76	85	95	98	99	99			SPWCM
Aug. 30.....	12:30 p.m.	2,370	71	9,920	4,960	48	67	81	96	100	--	--	--	--			SPWCM
Sept. 4.....	12:30 p.m.	1,840	70	481	3,040	2	8	39	93	99	99	99	100	--			SPN

a. Mean daily
b. Sand sizes doubtful.

GREEN RIVER BASIN--Continued
SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH

LOCATION.--At gaging station 15 feet upstream from bridge on State Highway 24, 15 miles southwest of Green River, Emery County, and 35 miles upstream from mouth.

DRAINAGE AREA.--1,690 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: November 1946 to September 1949, November 1950 to September 1953.

Water temperatures: July to September 1949, October 1950 to September 1953.

Sediment records: March 1948 to September 1949, October 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 4,350 ppm Sept. 21-30; minimum, 701 ppm June 11-20.

Hardness: Maximum, 1,790 ppm Sept. 21-30; minimum, 404 ppm June 11-20.

Specific conductance: Maximum daily, 5,490 micromhos May 25; minimum daily, 797 micromhos June 16.

Water temperatures: Maximum observed, 83°F July 14, 19; minimum observed, freezing point on many days from November to February.

Sediment concentrations: Maximum daily, 74,000 ppm Aug. 2; minimum daily, 31 ppm Sept. 12.

Water loads: Maximum daily, 49,400 tons Aug. 1; minimum daily, less than 0.5 ton Mar. 18.

EXTREMES, 1948-49, 1950-53.--Dissolved solids: Maximum, 5,010 ppm May 11-20, 1951; minimum, 541 ppm June 11-20, 1952.

Hardness: Maximum, 2,000 ppm May 1-10, 1951; minimum, 330 ppm June 11-20, 1952.

Specific conductance: Maximum daily, 6,120 micromhos May 13, 1951; minimum daily, 756 micromhos June 14, 1952.

Water temperatures: Maximum daily, 90°F July 19, 1951; minimum observed, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 115,000 ppm Aug. 4, 1951; minimum daily, 0 ppm (no flow) Sept. 5 to Oct. 3, 1948.

Sediment loads (1948-53): Maximum daily, 86,000 tons Aug. 4, 1951; minimum daily, 0 tons Sept. 5 to Oct. 3, 1948.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per cent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or	Color
														Parts per million	Tons per acre-foot	Calcium, mg-nessum	Non-carbonate					
Oct. 1-10, 1952..	55.2	8.3	0.06	249	193	562	10	273	2,200	57	0.4	2.7	--	3,420	4.65	1,420	1,100	46	6.5	4,040	7.7	10
Oct. 11-20.....	56.4	7.5	.07	255	195	568	9.9	288	2,220	61	.2	2.9	--	3,460	4.71	1,440	1,200	46	6.5	4,170	7.7	10
Oct. 21-30.....	57.0	7.7	.08	262	198	593	9.9	309	2,340	63	.2	3.5	--	3,630	4.94	1,470	1,200	46	6.7	4,270	7.7	15
Nov. 1-10.....	55.5	6.8	.06	277	212	617	9.9	316	2,440	65	.2	3.9	--	3,790	5.13	1,560	1,300	46	6.8	4,400	7.7	15
Nov. 11-20.....	66.2	7.5	.17	283	212	600	9.3	351	2,360	63	.2	5.1	0.30	3,710	5.03	1,560	1,290	45	6.6	4,430	7.7	15
Nov. 21-30.....	55.9	13	.08	284	218	574	10	384	2,360	66	.0	4.2	--	3,740	5.09	1,600	1,290	44	6.2	4,360	7.8	15
Dec. 1-10.....	55.0	12	.07	294	215	570	10	432	2,370	69	.0	4.6	--	3,760	5.11	1,620	1,260	43	6.2	4,340	7.8	15
Dec. 11-20.....	80.0	10	.06	202	145	370	7.6	360	1,490	46	.2	4.3	.23	2,450	3.33	1,000	865	42	4.9	3,000	7.8	13
Dec. 23-24, 26, 28-30	63.3	10	.17	222	163	414	7.6	368	1,720	50	.2	3.6	--	2,770	3.77	1,120	922	42	5.1	3,320	7.9	13
Jan. 1-10, 1953..	74.0	10	.06	214	150	366	7.4	404	1,510	46	.2	3.8	--	2,510	3.41	501	1,150	41	4.7	3,040	7.9	10
Jan. 12-13, 15-16, 20.....	90.0	11	.07	201	141	326	6.4	354	1,340	44	.0	2.9	.22	2,300	3.13	1,080	792	39	4.3	2,790	8.0	5
Jan. 21-22, 27-30.	115	10	.05	186	126	308	6.0	335	1,260	40	.1	4.4	--	2,110	2.87	982	708	40	4.3	2,660	8.0	10

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per-sulfate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
													Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate					
Feb. 1-10, 1953.	130	9.4	0.05	196	139	359	6.5	341	1,430	44	0.0	3.8	2,360	3.21	828	1,080	781	42	4.8	2,910	7.8	8
Feb. 11-20	111	10	0.06	212	156	404	6.5	348	1,620	52	1.1	3.3	2,640	3.59	791	1,170	886	43	5.1	3,200	8.0	8
Feb. 21-28	116	8.4	0.05	208	149	372	6.3	378	1,500	47	1.1	3.0	2,480	3.37	777	1,130	822	42	4.8	3,010	8.0	5
Mar. 1-10	130	10	0.05	186	133	345	6.3	302	1,390	42	1.1	3.2	2,260	3.07	793	1,010	764	42	4.7	2,820	8.0	10
Mar. 11-20	80.9	9.1	0.07	208	144	383	6.9	304	1,550	54	3	2.7	2,510	3.41	548	1,110	862	43	5.0	3,100	7.9	10
Mar. 21-31	69.9	9.6	0.09	212	161	445	6.5	294	1,770	58	2	3.2	2,810	3.82	530	1,190	950	45	5.7	3,470	8.0	8
Apr. 1-10	79.4	8.3	0.10	215	178	500	7.0	296	1,940	64	1	2.7	3,060	4.16	656	1,270	1,030	46	6.1	3,780	7.9	12
Apr. 11-20	53.2	7.9	0.07	235	194	522	7.5	322	2,100	65	3	2.4	3,290	4.47	473	1,380	1,120	45	6.1	4,020	7.9	9
Apr. 21-30	38.3	6.7	0.09	242	199	550	8.6	290	2,180	73	2	1.5	3,410	4.64	353	1,420	1,180	45	6.3	4,080	7.9	10
May 1-10	30.1	6.9	0.13	254	210	623	9.1	315	2,400	74	4	1.5	3,730	5.07	303	1,500	1,240	47	7.0	4,410	7.9	13
May 11-20	20.1	5.6	0.08	299	243	700	11	317	2,750	95	3	1.5	4,260	5.79	231	1,740	1,480	46	7.3	5,000	8.0	10
May 21-31	55.9	6.3	0.09	300	239	689	13	302	2,800	103	2	1.6	4,300	5.85	649	1,730	1,480	46	7.2	4,950	7.7	15
June 1-2	156	8.2	0.13	178	128	350	8.5	286	1,380	36	3	2.5	2,230	3.03	939	970	736	44	4.9	2,730	7.7	15
June 3-10	432	8.8	0.09	130	78	177	5.2	268	743	24	2	2.0	1,300	1.77	1,520	645	426	37	3.0	1,740	7.8	15
June 11-20	869	7.4	0.12	91	43	80	3.6	230	348	12	3	2.2	701	.95	1,540	404	216	30	1.7	993	7.8	15
June 21-24	455	8.4	0.12	101	55	120	4.8	252	483	16	3	2.2	915	1.24	1,120	478	272	35	2.4	1,280	7.9	15
June 26-30	199	8.7	0.08	126	83	197	4.7	270	786	25	2	2.0	1,370	1.86	736	656	435	39	3.3	1,630	7.9	15
July 1-10	95.0	9.5	0.08	180	136	331	8.5	264	1,420	40	3	1.6	2,260	3.07	580	1,010	792	41	4.5	2,770	7.7	10
July 11-20	110	13	0.08	244	156	403	11	260	1,820	54	4	2.1	3,360	4.57	841	1,250	1,040	41	5.0	3,370	7.9	30
July 21-31	44.7	9.0	0.08	254	194	516	11	250	2,190	65	2	1.5	3,360	4.87	406	1,430	1,230	44	5.9	3,940	7.7	20
Aug. 1-10	175	15	0.16	268	115	365	8.9	272	1,610	46	6	1.7	2,560	3.48	1,210	1,140	918	41	4.7	3,060	7.7	20
Aug. 11-20	59.5	14	0.08	361	162	504	13	271	2,240	73	4	2.1	3,500	4.76	562	1,570	1,340	41	5.5	4,000	8.0	29
Aug. 21-31	180	14	0.10	330	126	398	11	247	1,850	48	6	1.7	2,900	3.94	1,410	1,340	1,140	39	4.7	3,350	7.8	23
Sept. 1-10	42.0	12	0.10	286	164	504	12	264	2,070	61	5	2.0	3,240	4.41	367	1,390	1,170	44	5.9	3,730	7.8	22
Sept. 11-20	21.1	9.2	0.06	302	212	652	11	259	2,590	78	3	1.0	3,980	5.41	227	1,610	1,410	46	7.0	4,570	7.6	10
Sept. 21-30	14.1	7.6	0.10	330	236	716	12	283	2,820	90	2	.9	4,350	5.92	166	1,790	1,560	46	7.3	4,950	7.8	10
Weighted average	a111	9.4	0.09	191	122	322	7.0	285	1,330	40	0.3	2.6	2,170	2.95	650	978	744	41	4.5	2,650	--	--

a Represents 95 percent of runoff for water year October 1952 to September 1953.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER BASIN

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	58	136	21	57					
2.....	58	129	20	58	222	34			
3.....	58	130	20	57			50		
4.....	55	330	49	55	401	60			
5.....	54	400	58	54	350	51		306	
6.....	53	430	a 62	54	322	47			
7.....	53	476	68	55	330	49			
8.....	52	470	66	55	390	58	60		
9.....	56	480	73	55	260	39			
10.....	55	530	a 79	55	310	46			
11.....	56	530	80	55	310	46			
12.....	57	475	73	55	290	43	80	458	
13.....	57			54	400	58			
14.....	56			58	390	61			
15.....	56			62	360	a 60	80		
16.....	54	375	56	70	380	72			
17.....	54			76	520	107			
18.....	55			76	500	103			
19.....	58			80	490	106			
20.....	61			76	320	66	80		
21.....	62			74	340	68			
22.....	62			76	500	103		560	
23.....	60	299	47	74	440	88	60		
24.....	56			65	348	61			
25.....	55			45	230	28			
26.....	55			45	222	27	60		
27.....	55								
28.....	55	300	a 45	45	332	40			
29.....	55							390	
30.....	56	223	34	--	--	--			
31.....	56			--	--	--			
Total.	1,743	--	1,584	1,776	--	1,709	2,070	--	2,600
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.....	--	--	--	129	1,200	a 420	154	1,400	a 580
2.....		294		118	1,200	382	164	3,150	1,390
3.....		330		111	1,310	393	134	2,090	756
4.....		319		111	1,700	509	111	1,030	309
5.....	70	280	56	123	2,550	847	109	1,140	336
6.....		230		127	1,800	617	116	1,470	460
7.....		300		134	1,800	651	129	1,800	627
8.....		350		141	1,400	a 530	127	1,590	545
9.....		370		159	1,600	a 690	127	1,420	487
10.....		--		146	1,500	591	129	1,480	515
11.....		--		114	1,210	372	131	1,610	569
12.....		334		113	961	293	125	1,800	a 610
13.....		370		103	997	s 272	120	1,940	629
14.....	90	--		100	880	238	107	1,610	465
15.....		320	110	107	1,100	a 320	96	1,500	a 390
16.....		250		120	1,500	a 490	89	1,200	288
17.....		--		120	1,650	535	56	480	a 73
18.....		1,270		120	1,120	363	4	100	(t)
19.....		620		106	948	271	27	1,150	s 125
20.....		300		104	830	s 243	58	1,220	191
21.....		630		101	730	199	64	820	142
22.....		670		100	770	a 210	69	810	151
23.....	100	--	190	104	840	236	68	933	171
24.....		--		116	1,250	392	65	720	126
25.....		--		127	830	285	64	640	111
26.....	120	1,800	583	125	1,270	429	67	1,040	188
27.....	120	1,730	561	123	1,040	345	69	1,100	a 200
28.....	125	1,760	594	134	970	351	70	900	170
29.....	127	1,770	607	--	--	--	68	1,120	206
30.....	116	1,370	429	--	--	--	75	1,520	308
31.....	118	1,300	a 410	--	--	--	90	1,710	416
Total.	2,866	--	5,900	3,336	--	11,474	2,878.4	--	11,534

s Computed by subdividing day.

t Less than 0.50 tons.

a Computed from partially estimated concentration graph.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	100			52			131	450	159
2.....	80			44			182	1,900	934
3.....	76			38			246	1,630	1,080
4.....	75			33			292	2,280	1,800
5.....	74			29	250	22	433	700	818
6.....	86	947	206	27			456	700	862
7.....	80			23			438	800	946
8.....	76			19			424	1,000	1,140
9.....	78			18	100	a 5	479	1,600	2,070
10.....	69			18	100	a 5	690	3,810	7,100
11.....	63			19			832	4,240	9,520
12.....	57			20			917	3,880	9,610
13.....	52	458	73	18			963	4,000	10,400
14.....	50			18	103	5	1,100	3,800	a 11,000
15.....	61			20			1,080	2,700	7,870
16.....	61			18			912	3,530	s 8,660
17.....	54			19			832	3,100	6,960
18.....	46			19			763	1,880	3,870
19.....	44			24			666	1,650	2,970
20.....	44			26	172	11	623	1,280	2,150
21.....	42	292	32	24			571	780	1,200
22.....	38			27			511	720	a 990
23.....	36			45			428	798	922
24.....	33			44			366	730	721
25.....	29			39	299	33	324	650	a 570
26.....	33			43			269	780	567
27.....	41	417	44	45			214	430	248
28.....	39			55	300	a 45	185	350	175
29.....	42			68	800	147	170	300	138
30.....	50	350	a 47	107	2,170	627	156	230	97
31.....	--	--	--	118	1,400	a 450	--	--	--
Total.	1,709	--	2,876	1,117	--	1,732	15,653	--	95,547
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.....	143	220	a 85	540	41,000	s a 74,000	69	16,500	3,070
2.....	136	219	80	494	49,400	s 68,300	60	5,900	a 960
3.....	118	334	106	258	22,700	15,800	49	1,670	221
4.....	102	237	71	123	14,500	4,620	43	1,090	127
5.....	90	220	a 53	82	3,100	686	39	690	a 73
6.....	79	190	41	63	1,000	170	37	460	46
7.....	82	240	53	54	640	93	35	320	30
8.....	76	218	45	45	300	36	32	190	16
9.....	60	187	30	44	170	20	29	210	16
10.....	64	360	62	50	230	31	27	120	9
11.....	85	556	s 151	107	714	s 190	25	70	5
12.....	364	10,600	s 10,000	68	6,700	1,230	25	31	2
13.....	141	24,700	s 9,240	51	20,500	2,820	24	63	4
14.....	92	9,650	2,400	43	11,800	1,370	22	72	4
15.....	71	420	81	60	9,000	s 1,900	20	90	5
16.....	60	180	29	78	7,800	a 1,600	19	90	5
17.....	61	270	44	54	17,000	a 2,500	20	77	4
18.....	69	200	37	53	6,800	a 970	19	123	6
19.....	63	840	188	43	2,500	290	19	130	7
20.....	78	450	95	38	1,200	123	18	180	9
21.....	54	220	a 32	34	700	64	18	230	11
22.....	46	500	62	92	3,220	s 1,410	16	210	9
23.....	41	300	33	743	29,000	s a 66,000	14	160	6
24.....	38	140	a 14	311	30,900	s 27,000	14	170	6
25.....	35	79	7	104	25,400	7,130	15	190	8
26.....	32	56	5	68	17,300	3,180	14	69	3
27.....	31	110	9	50	5,400	729	12	160	a 5
28.....	30	135	11	58	3,200	a 500	12	170	6
29.....	31	280	23	211	13,600	s 15,400	13	180	6
30.....	52	2,380	s a 570	213	23,000	a 13,000	13	280	10
31.....	102	3,900	s a 1,200	98	28,000	a 7,400	--	--	--
Total.	2,546	--	24,857	4,330	--	318,762	772	--	4,689

Total discharge for year (cfs-days) 40,796.4

Total load for year (tons) 483,264

s Computed by subdividing day.

a Computed from partially estimated concentration graph.

GREEN RIVER BASIN--Continued
SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953
(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; V, visual accumulation tube)

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	0.500		1.000
Oct. 7, 1952	2:45 p. m.	55	66	566	--	--	--	--	--	--	59	72	96	99	S
Oct. 13	2:45 p. m.	58	65	633	--	--	--	--	--	--	60	75	97	100	S
Nov. 10	2:35 p. m.	56	45	290	--	--	--	--	--	--	67	79	97	100	S
Nov. 17	3:00 p. m.	79	44	646	--	--	--	--	--	--	86	100	--	--	V
Nov. 25	9:45 a. m.	a 45	33	279	--	--	--	--	--	--	89	94	99	100	S
Dec. 2	2:20 p. m.	a 50	33	201	--	--	--	--	--	--	86	90	98	99	S
Dec. 19	11:20 a. m.	a 80	33	796	4,120	--	27	--	34	--	75	82	100	--	VPWCM
Dec. 24	10:40 a. m.	a 60	33	482	--	--	--	--	--	--	88	95	100	--	S
Jan. 6, 1953	2:00 p. m.	a 70	32	328	--	--	--	--	--	--	86	95	99	100	S
Jan. 13	9:50 a. m.	a 90	32	432	--	--	--	--	--	--	84	90	99	100	S
Jan. 20	9:40 a. m.	a 90	32	338	--	--	--	--	--	--	78	88	99	100	S
Feb. 2	9:45 a. m.	129	32	1,330	3,500	--	21	--	34	--	74	90	99	100	VPWCM
Feb. 7	2:40 p. m.	138	40	2,680	3,050	--	26	--	43	--	72	86	100	--	VPWCM
Feb. 17	2:30 p. m.	116	40	1,860	5,700	--	22	--	35	--	54	73	98	100	SPWCM
Feb. 24	2:40 p. m.	125	37	2,540	3,800	--	12	--	22	--	54	81	100	--	VPWCM
Mar. 7	2:25 p. m.	127	47	1,960	4,620	--	24	--	40	--	63	83	99	100	SPWCM
Mar. 7	2:25 p. m.	127	47	1,960	4,410	--	1	--	33	--	63	83	99	100	SPN
Mar. 23	1:50 p. m.	65	50	816	--	--	12	--	18	--	47	89	100	--	VPWCM
Apr. 13	2:30 p. m.	52	50	524	3,360	--	9	--	18	--	38	72	99	100	VPWCM
May 1	3:40 p. m.	51	55	386	2,800	--	11	--	16	--	44	76	99	100	VPWCM
May 29	2:15 p. m.	67	65	676	3,680	--	8	--	13	--	34	84	100	--	VPWCM
June 3	3:25 p. m.	273	63	1,810	4,080	2	5	7	10	19	45	76	99	100	SBWCM
June 3	3:25 p. m.	273	63	1,810	4,460	1	4	5	16	31	51	79	99	100	SEN
June 30	10:40 a. m.	148	69	243	--	--	--	--	--	--	50	61	98	100	V
July 13	3:00 p. m.	123	60	22,500	4,020	--	76	--	98	--	100	--	--	--	SPWCM
July 18	7:15 p. m.	65	60	244	808	51	62	69	75	82	97	99	99	99	SPWCM
July 29	11:30 a. m.	24	76	280	1,060	0	0	15	50	74	67	75	94	100	SPN

a Sage-discharge relation affected by ice discharge shown is daily mean.

Aug. 1, 1953 . . .	10:45 a. m.	447	74	500	3,260	50	58	76	89	95	98	99	100	--		SPWCM
Aug. 2	8:00 a. m.	548	68	58,100	4,020	48	59	72	88	94	99	99	100	--		SPWCM
Aug. 5	7:00 p. m.	74	77	1,120	3,440	69	80	90	97	100	--	--	100	--		SPWCM
Aug. 29	2:45 p. m.	84	72	3,400	5,560	50	64	81	94	99	99	100	--	--		SPWCM
Sept. 16	2:30 p. m.	19	72	102	1,580	37	57	71	77	78	85	87	90	99		SPWCM

DIRTY DEVIL RIVER BASIN
DIRTY DEVIL RIVER NEAR HITE, UTAH

LOCATION --Samples collected near the mouth, above backwater of the Colorado River, about 9 miles upstream from Hite, Garfield County, and 3 miles downstream from gaging station.

RECORDS AVAILABLE --Chemical analyses: October 1947 to September 1953.

Water temperatures: May 1949 to September 1953.

EXTREMES 1947-52 --Dissolved solids: Maximum 6,310 ppm June 21-30, 1950; minimum 708 ppm Mar. 21-24, 26-31, 1948.

Hardness: Maximum 3,030 ppm July 12, 17, 19, 1951; minimum 435 ppm Aug. 6-7, 1952.

Specific conductance: Maximum daily 9,070 micromhos June 23, 1950; minimum daily 898 micromhos Feb. 17, 1948.

Water temperatures: 1949-52 --Maximum observed, 97°F July 2, 1950; minimum observed, freezing point on several days during winter months.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Prior to July 8, 1948, samples were collected at gaging station near Hanksville. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952 ...		23	0.08	422	61	160	13	137	1,280	130	0.4	1.8	--	2,160	2.94	1,300	1,190	21	2,620	7.9	10
Oct. 11, 13-15,																					
17-18		21	.08	337	58	147	11	159	1,040	131	.4	1.4	0.23	1,830	2.49	1,080	949	23	2,320	7.9	7
Oct. 23-29		21	.08	302	54	135	11	172	1,119	.3	1.8	--	--	1,640	2.23	976	834	23	1,120	7.7	7
Nov. 1, 6-8, 10 ..		22	.08	283	53	130	8.6	172	857	115	.3	2.0	--	1,560	2.12	924	783	23	2,030	7.9	7
Nov. 12, 14-15,																					
18-20		21	.09	277	54	142	8.6	182	895	124	.3	3.2	.22	1,610	2.19	913	764	25	2,120	7.8	10
Nov. 21-22, 24,		21	.09	243	55	145	8.0	200	790	127	.2	3.6	--	1,490	2.03	832	668	27	2,010	8.0	5
26-27																					
Dec. 2, 4, 6, 8, 11,																					
13, 15-18		30	.19	240	49	117	6.9	170	728	101	.2	2.3	.47	1,360	1.85	800	661	24	1,770	7.9	15
Jan. 8, 12-13, 15-17,																					
22, 26, 28, 30, 1953		29	.05	203	46	130	7.4	178	639	119	.2	2.8	.19	1,280	1.71	696	550	29	1,730	7.8	10
Feb. 2, 4, 6, 14, 16-19		28	.07	197	47	140	7.4	196	621	120	.1	2.5	--	1,260	1.71	685	524	30	1,720	7.7	10
Feb. 21, 23-25, 28 ..		30	.07	180	45	124	7.2	190	563	110	.3	2.4	--	1,160	1.58	634	478	30	1,620	7.8	4
Mar. 1, 3, 10, 12, 14,																					
16-21		29	.07	181	48	130	7.2	185	588	112	.3	2.4	--	1,200	1.63	649	496	30	1,670	7.8	4
Mar. 23-31		28	.08	196	58	151	7.7	184	691	142	.2	2.2	--	1,370	1.86	728	576	31	1,850	7.7	15
Apr. 2, 9, 11, 13-18,																					
20		29	.05	192	72	170	8.4	186	739	166	.2	2.0	.16	1,470	2.00	775	622	32	1,990	7.8	10
Apr. 21-24, 28, 30		30	.05	204	66	161	11	194	752	182	.2	1.3	--	1,460	2.01	760	622	31	1,980	7.7	15
May 1, 6-9		28	.07	232	92	259	13	188	1,040	236	.1	1.3	--	2,630	3.60	1,010	953	35	2,690	7.7	15
May 11-12, 16, 18-21		29	.08	204	87	196	14	210	947	203	.5	1.2	.26	1,680	2.52	1,020	844	39	2,430	7.4	18
May 22-30		29	.06	346	114	326	21	238	1,350	350	1.0	1.1	--	2,660	3.64	1,340	1,130	34	3,420	7.6	15

June 1-9, 1953.....	33	11	620	205	761	72	524	1,940	1,240	.6	.6	--	5,130	6.98	2,390	1,960	40	6.8	6,720	7.2	5
June 12-13, 15-16...	29	.09	616	226	979	87	440	2,080	1,520	.8	.8	1.7	5,760	7.83	2,470	2,110	45	8.6	7,480	7.3	5
June 24-27, 30.....	24	.22	716	262	1,170	100	520	2,440	1,810	.5	.8	--	6,780	9.22	2,860	2,440	46	9.5	8,740	7.2	5
July 1-2, 8, 11, 13	29	.31	668	252	1,140	91	344	2,430	1,780	.5	2.2	3.3	6,570	8.94	2,700	2,420	47	9.5	8,610	7.1	4
July 22, 24, 29.....	25	.24	596	145	511	30	224	2,260	460	.8	5.6	--	4,140	5.63	2,080	1,900	34	4.9	4,860	7.0	25
Aug. 3, 7-8, 10.....	25	.09	616	90	399	21	202	2,190	242	.9	5.1	--	3,690	5.02	1,910	1,740	31	4.0	4,130	7.6	28
Aug. 11-20.....	19	.12	632	97	412	17	233	2,210	240	.7	1.7	.45	3,740	5.09	1,980	1,780	31	4.0	4,160	7.5	28
Aug. 21-31.....	21	.13	622	85	398	19	204	2,170	258	.5	2.2	--	3,680	5.00	1,900	1,730	31	4.0	4,060	7.4	30
Sept. 3-5, 7, 10....	23	.06	555	90	281	17	184	1,850	202	.4	4.3	--	3,110	4.23	1,750	1,600	26	2.9	3,560	7.5	25
Sept. 11-19.....	27	.10	414	67	198	13	168	1,310	173	.5	2.1	.40	2,290	3.11	1,310	1,170	25	2.4	2,760	7.3	32
Sept. 21-30.....	24	.10	352	61	165	13	178	1,100	139	.4	1.6	--	1,940	2.64	1,130	983	24	2.1	2,410	7.3	30

COLORADO RIVER BASIN

DIRTY DEVIL RIVER BASIN--Continued

DIRTY DEVIL RIVER NEAR HITE, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

[illegible]

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH

LOCATION --At gaging station at Hite, Garfield County, a quarter of a mile upstream from Trachyte Creek, 1 mile downstream from White Canyon, 8 miles downstream from Dirty Devil River, and 84 miles upstream from San Juan River.

DRAINAGE AREA --76 600 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses, December 1950 to September 1953.

Water temperatures: May 1949 to September 1953.

Sediment records: October 1948 to September 1953.

EXTREMES 1952-53 --Dissolved solids: Maximum, 1,350 ppm Sept. 21-30; minimum, 299 ppm June 21-30.

Hardness: Maximum, 618 ppm Sept. 21-30; minimum, 182 ppm June 1-10.

Specific conductance: Maximum daily, 1,920 microhms Sept. 4; minimum daily, 431 microhms June 23.

Water temperatures: Maximum observed, 83°F July 14, 29; minimum observed, 33°F Dec. 1, 2, 30.

Sediment concentrations: Maximum daily, 27,900 ppm Aug. 28; minimum daily, 160 ppm Sept. 28.

Sediment loads: Maximum daily, 731,000 tons Aug. 2; minimum daily, 1,360 tons Sept. 28.

EXTREMES 1948-53 --Dissolved solids (1950-53): Maximum, 1,990 ppm Sept. 22, 1952; minimum, 251 ppm June 11-20, 1952.

Hardness, 1950-53 --Maximum, 1,080 ppm Sept. 22, 1952; minimum, 155 June 11-20, 1952.

Specific conductance (1950-53): Maximum daily, 2,470 microhms Sept. 22, 1952; minimum daily, 355 microhms June 19, 1952.

Water temperatures (1949-53): Maximum observed, 83°F July 31, 1951, July 14, 29, 1953; minimum observed, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 34,300 ppm Aug. 4, 1951; minimum daily, 49 ppm Jan. 10, 1951.

Sediment loads: Maximum daily, 1,770,000 tons Aug. 4, 1951; minimum daily, 447 tons Jan. 10, 1951.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium	Specific conductance (microhms at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952	5,644	13		121	52	144	5.7	208	499	105		4.0	--	1,080	1.47	516	346	37	1,510	--	--
Oct. 11-20, 1952	4,963	12		120	58	164	5.7	200	540	121		4.3	0.26	1,170	1.59	538	374	40	1,630	--	--
Oct. 23-27, 29	5,197	12		126	59	172	6.1	212	576	125		4.3	--	1,240	1.69	557	384	40	1,690	--	--
Nov. 1-2, 6-8, 10	5,265	12		130	64	178	6.2	224	576	130		5.1	--	1,280	1.74	588	404	39	1,740	--	--
Nov. 11-20, 1952	5,917	12		133	61	178	5.9	233	573	136		5.4	--	1,270	1.73	583	392	40	1,750	--	--
Nov. 21-22, 24, 26	6,300	14		128	59	167	5.7	241	526	120		5.3	--	1,210	1.65	562	364	39	1,660	--	--
Dec. 1-10, 1952	4,617	16		130	59	188	6.3	240	533	150		8.9	--	1,260	1.71	567	370	42	1,780	8.0	--
Dec. 11-12, 15-16																					
18, 22-23, 30	5,918	16		123	57	170	5.8	247	509	130		7.4	26	1,160	1.58	542	339	40	1,660	8.0	--
Jan. 7-19, 1953	6,895	14		161	57	167	5.4	242	446	137		6.6	22	1,100	1.50	494	296	42	1,590	8.0	--
Jan. 21, 25-26, 28-31	6,020	14		104	49	154	5.2	234	408	124		6.6	--	1,000	1.36	461	270	42	1,480	8.0	--
Feb. 1-6, 1953	5,919	14		104	48	155	5.2	235	407	126		6.3	--	1,010	1.37	457	264	42	1,480	7.9	--
Feb. 13-16, 1953	5,920	13		101	48	162	5.0	231	423	124		4.5	--	1,030	1.40	460	260	44	1,460	--	--
Feb. 20-28, 1953	5,324	13		100	47	165	5.1	233	405	138		3.3	--	1,010	1.37	443	252	44	1,500	--	--
Mar. 1-10, 1953	5,807	13		106	49	171	5.0	246	430	145		5.1	--	1,070	1.46	466	264	44	1,560	--	--
Mar. 11-20, 1953	7,661	11		93	43	147	4.8	231	377	111		3.1	--	914	1.24	408	220	43	1,350	--	--
Mar. 21-31, 1953	6,697	14		91	42	138	4.3	211	369	114		3.9	--	889	1.21	400	226	43	1,340	--	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent 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					
Apr. 1-10, 1953.....	8,044	13		95	42	135	4.3	214	383	106		3.3	--	894	1.22	19,420	410	234	41	2.9	1,330	--	
Apr. 11-20.....	7,258	13		88	40	124	4.2	204	343	92		3.1	0.14	822	1.12	16,110	384	217	41	2.7	1,230	--	
Apr. 21-30.....	7,526	13		93	39	126	5.0	199	350	104		3.0	--	832	1.13	16,910	392	230	41	2.8	1,250	--	
May 1-10.....	12,400	13		72	26	73	3.3	195	209	49		3.2	--	554	.75	18,550	286	126	35	1.9	848	--	
May 11-20.....	10,380	13		68	27	76	3.3	188	214	58		2.7	--	554	.75	15,530	280	143	37	2.0	856	--	
May 21-26.....	14,883	13		76	29	84	3.6	169	251	63		3.9	--	624	.85	25,070	308	170	37	2.1	941	--	
May 27-31.....	34,900	13		56	18	42	2.7	155	128	52		3.1	--	380	.52	35,800	214	86	30	1.2	590	--	
June 1-10.....	41,990	16		50	14	28	2.1	155	91	16		2.7	--	303	.41	34,350	182	56	25	.9	471	--	
June 11-20.....	52,010	14		56	13	26	2.3	172	88	16		2.0	--	308	.42	43,250	193	52	22	.8	487	--	
June 21-30.....	40,500	13		53	13	27	1.9	158	88	18		1.3	--	299	.41	32,700	186	56	24	.9	471	--	
July 1-10.....	18,060	14		67	20	40	2.8	168	138	36		1.6	--	404	.55	19,700	249	112	26	1.1	630	--	
July 11, 13-15, 20.....	12,160	13		79	28	61	3.7	184	204	53		1.6	--	544	.74	17,860	312	161	30	1.5	820	--	
July 21-31.....	9,978	15		95	33	73	4.8	194	279	56		2.3	--	674	.92	18,160	372	214	30	1.6	982	--	
Aug. 1-10.....	12,714	16		124	38	114	6.3	212	406	70		4.0	--	881	1.20	30,240	466	292	34	2.3	1,260	--	
Aug. 11-20.....	7,723	15		109	39	102	5.1	204	375	72		3.7	--	833	1.13	17,370	432	266	34	2.1	1,500	--	
Aug. 21-31.....	5,950	14		137	47	131	6.2	206	496	92		4.4	--	1,040	1.41	16,710	536	366	34	2.5	1,470	--	
Sept. 1-10.....	5,069	12		146	57	162	6.4	208	593	110		5.5	--	1,240	1.69	16,970	599	428	37	2.9	1,680	--	
Sept. 11-20.....	3,627	11		130	57	162	5.7	198	569	116		4.2	--	1,220	1.66	11,950	559	397	38	3.0	1,660	--	
Sept. 21-30.....	3,220	11		142	64	185	5.5	204	627	130		4.7	--	1,350	1.84	11,740	618	450	39	3.2	1,600	--	
Weighted average..	^a 11,490	14		81	30	82	3.7	188	255	61		3.2	--	637	0.87	19,760	326	172	35	2.0	939	--	

^a Represents 92 percent of runoff for water year October 1952 to September 1953.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	6,450	742	12,900	5,120	771	10,700	3,880	366	3,830
2.....	6,250	675	11,400	5,000	890	12,000	3,680	320	3,180
3.....	6,110	625	10,300	5,170	880	a12,000	3,840	350	3,630
4.....	5,940	--	e10,000	5,260	860	12,000	4,120	430	4,780
5.....	5,770	665	10,400	5,470	840	a12,000	4,680	500	a6,300
6.....	5,520	544	8,110	5,520	828	12,300	5,050	593	8,090
7.....	5,310	485	6,950	5,480	803	11,900	5,290	600	a8,600
8.....	5,120	375	5,180	5,190	772	10,800	5,380	607	8,820
9.....	5,010	--	e5,000	5,100	730	a10,000	5,240	610	8,630
10.....	4,960	372	4,980	5,280	692	9,870	5,010	600	a8,100
11.....	4,910	341	4,520	5,330	810	11,700	5,080	580	7,960
12.....	4,880	358	4,720	5,480	1,000	14,800	5,360	600	8,680
13.....	4,860	413	5,420	5,870	1,000	a16,000	5,400	600	a8,700
14.....	4,910	467	6,190	5,870	995	15,800	5,330	600	a8,600
15.....	4,930	422	5,620	5,750	900	14,000	5,630	599	9,110
16.....	4,930	397	5,280	5,830	910	a14,000	5,920	620	9,910
17.....	4,910	383	5,080	6,090	1,000	16,400	6,090	630	a10,000
18.....	4,960	484	6,480	6,270	1,120	19,000	6,410	662	11,500
19.....	5,100	472	6,500	6,250	1,000	16,900	6,330	660	a11,000
20.....	5,240	--	e10,000	6,430	860	14,900	6,370	650	a11,000
21.....	5,310	--	e10,000	6,190	780	13,000	6,530	650	a11,000
22.....	5,330	--	e10,000	6,150	780	13,000	6,940	680	12,800
23.....	5,340	721	10,400	6,330	810	a14,000	7,060	650	12,400
24.....	5,290	904	12,900	6,450	822	14,300	6,800	620	a11,000
25.....	5,130	750	10,400	6,510	750	a13,000	6,490	590	a10,000
26.....	5,120	778	10,800	6,410	659	11,400	6,110	560	a9,200
27.....	5,080	872	12,000	6,250	671	11,300	5,880	520	a8,300
28.....	5,120	--	e13,000	5,380	500	a7,300	5,770	490	a7,600
29.....	5,220	981	13,800	4,720	410	a5,200	5,430	460	a6,700
30.....	5,280	--	e14,000	4,200	400	a4,500	4,940	426	5,880
31.....	5,170	--	e12,000	--	--	--	4,550	390	a4,800
Total..	163,460	--	274,600	170,350	--	374,070	170,590	--	259,900
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.....	4,530	360	a4,400	5,770	355	5,530	5,560	580	8,710
2.....	4,520	350	a4,300	5,920	369	5,900	5,850	550	8,690
3.....	4,840	340	a4,400	5,940	355	5,690	5,810	390	6,120
4.....	4,790	320	a4,100	5,980	370	a6,000	5,870	350	5,550
5.....	4,960	300	a4,000	5,960	385	6,200	5,920	319	5,100
6.....	4,930	260	a3,500	5,900	358	5,700	5,900	340	a5,400
7.....	4,860	233	3,060	5,960	422	6,790	5,680	360	a5,500
8.....	4,770	250	3,220	5,920	354	5,660	5,700	381	5,860
9.....	5,360	400	5,790	6,450	490	a8,500	5,880	390	a6,200
10.....	5,850	440	a6,900	6,370	420	a7,200	5,900	397	6,320
11.....	5,940	440	7,060	6,330	400	a6,800	6,090	437	7,190
12.....	5,980	488	7,880	6,230	400	a6,700	6,370	447	7,690
13.....	6,040	456	7,440	6,090	402	6,610	6,470	480	8,390
14.....	6,060	470	a7,700	6,000	401	6,500	7,130	790	15,200
15.....	6,250	520	8,780	5,940	368	5,900	8,210	1,180	26,200
16.....	6,250	530	8,940	6,020	325	5,280	8,780	1,280	30,300
17.....	6,110	400	6,600	5,790	294	4,600	9,330	1,410	35,500
18.....	6,290	406	6,900	5,680	300	4,600	8,930	1,410	34,000
19.....	6,080	418	6,860	5,870	290	a4,600	8,000	1,230	26,600
20.....	5,850	450	a7,100	5,770	244	3,800	7,300	1,140	22,500
21.....	5,920	514	8,220	5,410	200	2,920	7,040	910	17,300
22.....	6,080	500	a8,200	5,220	180	a2,500	7,080	910	17,400
23.....	6,130	430	a7,100	5,460	280	4,140	7,110	975	18,700
24.....	6,090	400	a6,500	5,590	368	5,550	6,960	930	17,500
25.....	5,980	370	5,970	5,330	321	4,620	6,940	800	15,000
26.....	6,130	400	6,620	5,080	280	a3,800	6,700	610	11,000
27.....	6,190	400	a6,700	4,980	254	3,420	6,350	530	9,090
28.....	6,210	422	7,080	5,060	280	3,830	6,110	450	7,420
29.....	6,130	520	8,610	--	--	--	6,130	470	a7,800
30.....	5,940	420	6,740	--	--	--	6,550	500	8,840
31.....	5,830	393	6,190	--	--	--	6,700	480	8,860
Total..	176,890	--	196,860	162,040	--	149,340	208,350	--	415,930

e Estimated.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	6,980	493	9,290	12,600	2,500	85,000	42,100	4,900	557,000
2.....	7,620	510	10,500	14,300	2,850	110,000	42,900	4,300	498,000
3.....	8,070	680	14,800	14,500	2,900	a 110,000	44,200	4,080	487,000
4.....	8,120	740	a 16,000	14,400	2,730	106,000	44,000	3,700	440,000
5.....	7,960	790	a 17,000	14,000	2,590	97,900	43,900	3,400	403,000
6.....	7,980	840	18,000	13,100	2,340	82,800	44,400	3,270	392,000
7.....	8,440	900	20,500	11,600	2,010	63,000	43,400	2,790	327,000
8.....	8,710	1,010	23,800	10,500	1,600	45,400	40,800	2,570	283,000
9.....	8,470	1,100	25,200	9,670	1,300	a 34,000	38,300	2,490	257,000
10.....	8,090	990	21,600	9,330	1,190	30,000	35,900	2,310	224,000
11.....	8,020	820	17,800	9,570	1,020	26,400	35,200	2,300	a 220,000
12.....	7,960	780	16,800	10,300	990	27,500	39,000	2,500	263,000
13.....	7,820	704	14,900	11,000	990	29,400	45,400	2,940	360,000
14.....	7,730	683	14,300	10,800	930	a 27,000	50,700	2,790	362,000
15.....	7,660	650	13,400	10,700	810	23,400	58,200	2,880	453,000
16.....	7,440	580	11,700	11,000	852	25,300	61,300	3,470	574,000
17.....	6,840	490	9,050	10,700	800	a 23,000	59,300	3,300	a 530,000
18.....	6,330	359	6,140	9,960	720	19,400	57,700	2,890	450,000
19.....	6,350	400	a 6,900	9,670	612	16,000	57,400	2,790	432,000
20.....	6,430	390	6,770	10,100	600	16,400	55,900	2,820	426,000
21.....	6,350	320	5,490	10,400	830	23,300	54,600	2,800	a 410,000
22.....	6,250	308	5,200	10,900	950	28,000	52,400	2,670	378,000
23.....	6,230	280	4,710	11,700	1,650	52,100	48,000	2,500	324,000
24.....	6,000	275	4,460	13,200	2,300	a 82,000	45,300	2,610	319,000
25.....	6,150	290	4,820	17,700	2,860	137,000	41,600	2,410	271,000
26.....	7,340	370	a 7,300	25,400	4,750	326,000	39,000	2,210	233,000
27.....	8,560	600	13,900	27,600	5,330	397,000	36,500	2,080	205,000
28.....	9,000	950	23,100	29,200	5,070	400,000	32,800	1,900	a 170,000
29.....	9,280	1,260	31,600	32,700	5,300	468,000	29,000	1,840	144,000
30.....	10,100	1,730	47,200	39,900	5,740	618,000	25,800	1,820	127,000
31.....	--	--	--	45,100	5,720	697,000	--	--	--
Total.	228,280	--	442,230	491,600	--	4,226,300	345,000	--	10,539,000

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.....	23,600	1,610	103,000	12,100	6,300	c 206,000	6,650	6,000	108,000
2.....	22,200	1,450	86,900	13,200	20,500	731,000	6,130	5,500	a 91,000
3.....	21,100	1,350	76,900	14,000	16,300	616,000	5,560	5,300	79,600
4.....	19,900	1,300	a 70,000	15,200	10,000	410,000	5,210	6,400	90,000
5.....	18,000	1,200	a 58,000	14,700	14,800	587,000	5,010	4,000	54,100
6.....	17,100	1,130	52,200	14,100	11,000	419,000	4,840	2,020	26,400
7.....	16,100	1,020	44,300	12,700	6,500	223,000	4,610	1,540	19,200
8.....	15,200	1,000	41,000	11,400	4,230	130,000	4,400	1,100	a 13,000
9.....	14,100	900	34,300	10,300	4,850	135,000	4,220	740	8,430
10.....	13,300	1,000	35,900	9,440	5,000	127,000	4,060	546	5,990
11.....	13,100	2,080	73,600	9,100	5,550	136,000	3,970	600	6,430
12.....	12,100	1,200	a 39,000	8,860	4,750	114,000	3,850	510	5,300
13.....	11,500	830	25,800	8,540	2,500	57,600	3,740	470	a 4,700
14.....	11,600	1,080	33,800	8,680	1,800	42,200	3,590	400	3,880
15.....	12,500	2,380	80,300	8,350	1,650	37,200	3,700	369	3,690
16.....	12,500	2,500	a 84,000	7,980	1,900	40,900	3,610	340	3,310
17.....	11,500	1,500	a 47,000	7,380	2,900	57,800	3,610	332	3,240
18.....	11,900	1,700	a 54,000	6,450	2,450	42,700	3,500	284	2,680
19.....	11,200	1,200	a 36,000	6,080	1,500	24,600	3,330	222	2,000
20.....	12,100	1,310	42,800	5,810	1,300	20,400	3,370	210	a 1,900
21.....	13,100	1,800	63,700	5,560	2,500	a 38,000	3,380	200	1,830
22.....	12,900	2,010	70,000	6,090	--	b 210,000	3,400	260	2,390
23.....	11,900	2,530	81,300	6,510	--	b 160,000	3,270	210	1,860
24.....	10,900	1,900	55,900	5,920	4,250	67,900	3,240	170	1,490
25.....	10,300	1,680	46,700	5,500	3,400	50,500	3,190	170	a 1,500
26.....	9,410	1,300	a 33,000	5,300	2,700	38,600	3,150	160	a 1,500
27.....	8,800	710	16,900	5,640	7,700	sc 144,000	3,150	190	1,620
28.....	8,280	1,290	28,800	7,040	27,900	sa 538,000	3,150	160	1,360
29.....	7,770	980	20,600	6,130	14,700	243,000	3,130	170	1,440
30.....	7,360	620	12,300	5,900	7,400	118,000	3,140	176	1,490
31.....	9,040	3,150	sc 84,300	5,870	4,600	72,800	--	--	--
Total.	410,360	--	1,632,300	269,830	--	5,838,300	119,160	--	549,330

Total discharge for year (cfs-days)..... 3,915,880

Total load for year (tons)..... 24,898,160

e Estimated.

b Computed from water-sediment discharge curve.

s Computed by subdividing day.

c Computed from partly estimated concentration graph.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT HITE, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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; V, visual accumulation tube)

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. 18, 1952	2:15 p.m.	4,980	62	442	1,540	14	16	19	22	29	53	94	94	SPWCM	
Oct. 18, 1952	3:30 p.m.	6,150	43	712	2,080	--	17	--	22	--	37	77	98	SPWCM	
Nov. 22	3:45 p.m.	5,960	36	549	1,620	--	15	--	19	--	36	75	98	SPWCM	
Dec. 16	4:00 p.m.	5,960	40	405	1,990	--	26	--	38	--	59	81	98	SPWCM	
Jan. 25, 1953	2:30 p.m.	5,770	39	255	--	--	--	--	--	--	67	85	98	V	
Feb. 20	3:30 p.m.	5,630	38	312	--	--	--	--	--	--	72	87	99	V	
Feb. 24															
Mar. 16	4:30 p.m.	8,880	50	1,130	3,380	--	31	--	42	--	66	95	100	SPWCM	
Apr. 2	2:45 p.m.	7,750	57	550	3,200	--	39	--	53	--	66	89	97	SPWCM	
Apr. 18	4:15 p.m.	6,270	57	353	4,180	--	54	--	70	--	79	92	100	SPWCM	
May 1	1:25 p.m.	12,800	58	2,690	5,200	--	21	--	34	--	71	96	99	SPWCM	
May 26	11:45 a.m.	25,600	65	4,670	4,840	--	23	--	42	--	81	94	99	SPWCM	
May 26	11:45 a.m.	25,600	65	4,670	4,030	--	10	--	41	--	81	94	99	SPN	
June 1	6:15 p.m.	41,500	63	4,280	3,390	--	24	--	43	--	69	93	96	SPWCM	
June 9	6:00 p.m.	38,100	64	2,350	3,270	--	18	--	32	--	56	85	97	SPWCM	
June 19	6:25 p.m.	57,200	70	2,750	3,940	--	30	--	40	--	67	86	98	SPWCM	
June 27	7:50 p.m.	35,700	72	1,860	6,420	--	14	--	26	--	57	86	100	SPWCM	
July 11	5:10 p.m.	12,700	79	1,620	3,340	--	25	--	46	--	70	89	99	SPWCM	
July 28	7:45 p.m.	8,050	80	1,740	5,310	--	51	--	77	--	90	95	100	VPWCM	
Aug. 3	5:45 p.m.	14,900	78	12,500	4,120	--	53	--	78	--	95	99	100	SPWCM	
Aug. 3	5:45 p.m.	14,900	78	12,500	3,820	--	1	--	76	--	95	99	100	SPN	
Aug. 18	6:00 p.m.	6,250	79	2,120	3,430	59	74	87	83	96	97	99	100	SPWCM	
Aug. 22	5:40 p.m.	6,080	78	19,300	2,900	43	50	60	79	95	97	100	--	SPWCM	
Sept. 15	4:15 p.m.	3,700	77	356	4,230	25	30	36	40	52	80	90	99	SPWCM	

a Mean daily discharge.

ESCALANTE RIVER BASIN

ESCALANTE RIVER AT MOUTH NEAR ESCALANTE, UTAH

LOCATION.--At gaging station in Kane County, 5.1 miles upstream from mouth, 2.2 miles downstream from Davis Gulch, and about 50 miles southeast of Escalante, Garfield County.

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

Water temperatures: March 1951 to September 1953.

EXTREMES, March 1951 to September 1952.--Dissolved solids: Maximum, 681 (sum) ppm Sept. 11, 1952; minimum, 208 ppm May 11-20, 1952.

Hardness: Maximum, 368 ppm Aug. 21-26, 1952; minimum, 148 ppm June 4-8, 7-10, 1952.

Specific conductance: Maximum daily, 1,420 micromhos July 11, 1952; minimum daily, 281 micromhos May 16, 1952.

Water temperatures: Maximum observed, 93°F July 3, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Per- cent so- dium	So- dium ad- sorp- tion ratio	Specific con- ductance (micro- mhos at 25° C)	pH	Col- or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate						
Oct. 1-10, 1952	...	--	...	--	...	--	...	--	...	--	...	--	...	408	0.55	--	258	109	--	--	619	--	--	--
Oct. 11-20	...	21	...	68	21	29	...	182	121	35	...	0.6	0.11	404	.55	...	...	...	20	0.8	622	8.1	--	--
Oct. 21-30	...	--	...	--	...	--	...	--	...	--	...	--	...	386	.52	...	...	...	--	--	596	--	--	--
Nov. 1-2, 4, 7-9, 12-13	...	--	...	--	...	--	...	--	...	--	...	--	...	360	.49	...	...	...	--	--	560	--	--	--
Nov. 14-15	...	14	...	75	17	24	...	214	101	26	...	.9	--	370	.50	...	255	80	17	.6	593	7.4	--	--
Dec. 20	...	28	...	52	16	22	...	178	--	--	...	--	...	302	.41	...	196	50	20	.7	474	7.3	--	--
Jan. 7, 31, 1953	...	28	...	49	16	21	...	172	74	22	...	.8	...	285	.39	...	190	49	19	.7	453	7.8	--	--
Feb. 19	...	--	...	49	15	20	...	168	--	--	...	--	...	267	.36	...	185	47	19	.6	442	7.4	--	--
Mar. 12-20	...	24	...	47	16	23	...	160	66	26	...	.2	...	280	.38	...	183	52	21	.7	453	8.0	--	--
Mar. 23-30	...	--	...	--	...	--	...	--	...	--	...	--	...	293	.40	...	--	--	--	--	470	--	--	--
Apr. 4-10	...	--	...	--	...	--	...	--	...	--	...	--	...	327	.44	...	--	--	--	--	524	--	--	--
Apr. 11, 17-20	...	18	...	64	13	26	...	176	83	32	...	1.4	...	335	.46	...	216	72	21	.8	547	7.7	--	--
Apr. 21-30	...	--	...	--	...	--	...	--	...	--	...	--	...	344	.47	...	--	--	--	--	562	--	--	--
May 1-10	...	--	...	--	...	--	...	--	...	--	...	--	...	353	.48	...	--	--	--	--	575	--	--	--
May 11-20	...	16	...	55	21	30	...	170	91	34	...	5.4	...	354	.48	...	224	85	23	.9	574	8.0	--	--
May 21-30	...	--	...	--	...	--	...	--	...	--	...	--	...	330	.45	...	--	--	--	--	525	--	--	--
June 1-2, 4, 6, 9-10	...	--	...	--	...	--	...	--	...	--	...	--	...	357	.49	...	--	--	--	--	576	--	--	--
June 11-20	...	17	...	52	23	33	...	166	110	39	...	.2	...	366	.50	...	226	90	24	1.0	591	7.8	--	--
June 22-30	...	--	...	--	...	--	...	--	...	--	...	--	...	379	.52	...	--	--	--	--	607	--	--	--
July 1-10	...	18	...	50	24	33	...	158	114	40	...	.2	.12	372	.51	...	225	95	24	1.0	594	7.9	--	--
July 20-31	...	--	...	--	...	--	...	--	...	--	...	--	...	532	.72	...	--	--	--	--	787	--	--	--

ESCALANTE RIVER BASIN--Continued

ESCALANTE RIVER AT MOUTH NEAR ESCALANTE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		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					
Aug. 1, 3-6, 10-11, 1953		--	--	--	--	--	--	--	--	--	--	--	--	540	0.73		552	332	--	--	778	--	--
Aug. 12-20,		20	--	187	33	39	--	268	367	23	--	0.6	--	839	1.14		--	--	13	0.7	1,100	7.5	--
Aug. 21-31,		--	--	--	--	--	--	--	--	--	--	--	--	900	1.22		--	--	--	--	1,160	--	--
Sept. 1-10,		--	--	--	--	--	--	--	--	--	--	--	--	528	.72		--	--	--	--	759	--	--
Sept. 11-12, 17-19, ..		20	--	117	30	35	--	209	255	31	--	.5	--	641	.87		418	247	15	.7	881	8.0	--
Sept. 21-30,		--	--	--	--	--	--	--	--	--	--	--	--	450	.61		--	--	--	--	680	--	--

ESCALANTE RIVER BASIN--Continued

ESCALANTE RIVER AT MOUTH NEAR ESCALANTE, UTAH--Continued

Temperaturé (°F) of water, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	59		--		--	--	54	72	79	75	77
2	59	61		--		--	--	60	a 54	87	--	a 65
3	53	--		--		--	--	61	--	85	79	77
4	65	45		--		--	50	68	71	a 67	80	76
5	58	--		--		--	--	58	--	--	82	a 68
6	--	--		--		--	--	--	63	84	72	--
7	66	58		44		--	62	--	--	83	--	--
8	67	51		--		--	57	70	--	85	--	--
9	55	48		--		--	60	a 50	79	a 69	--	78
10	--	--		--		--	59	52	77	--	77	78
11	67	--		--		--	--	57	75	85	70	77
12	66	54		--		--	--	71	82	--	78	a 63
13	a 54	56		--		43	--	a 51	74	--	79	--
14	66	--		--		--	--	68	--	--	76	--
15	64	--		--		--	--	72	89	--	a 69	--
16	54	--		--		56	--	60	77	--	--	--
17	60	--		--		58	57	--	64	--	--	74
18	52	--		--		59	64	68	66	--	--	a 62
19	62	--		--	32	56	a 45	72	84	--	76	a 63
20	52	--	39	--		a 44	69	76	64	85	a 68	--
21	a 47	--		--		--	75	69	--	84	78	70
22	62	--		--		--	74	57	86	85	70	71
23	63	--		--		59	73	55	--	85	--	73
24	a 45	--		--		58	64	65	86	76	78	74
25	65	--		--		--	59	--	a 62	72	77	68
26	63	--		--		65	--	60	--	--	70	a 65
27	a 44	--		--		68	--	73	--	85	78	--
28	--	--		--		49	65	74	--	87	70	--
29	--	--		--		--	67	75	76	83	a 68	71
30	58	--		--		69	53	a 56	77	80	--	59
31	--	--		35		--	--	--	--	82	78	--
Average	59	--	--	--	--	--	--	64	--	--	--	--

a Collected before 5 a. m.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER. NEAR BLANCO, N. MEX.

LOCATION.--At highway bridge, half a mile downstream from gaging station which is 1 mile upstream from Canyon Largo and $1\frac{1}{2}$ miles east of Blanco, San Juan County, 560 square miles, approximately (at gaging station).

DRAINAGE AREA.--560 square miles, approximately (at gaging station).

RECORDS AVAILABLE.--Chemical analyses October 1945 to September 1953.

Water temperatures: March 1949, 78; September 1953.

Sediment temperatures: March 1949, 78; September 1953.

EXTREMES 1952-53:--Dissolved solids, 11-20 ppm; maximum, 352 ppm Nov. 21-30; minimum, 100 ppm June 1-10.

Hardness: Maximum, 210 ppm Mar. 1949; minimum, 50 ppm June 11-20.

Specific conductance: Maximum observed, 4615 micromhos Mar. 9; minimum observed, 114 micromhos June 5.

Water temperatures: Maximum observed, 81°F July 27; minimum, freezing point on several days during November, December, and January.

Sediment concentrations: Maximum daily, 13,700 ppm Aug. 3; minimum daily, 8 ppm Nov. 4, Jan. 10.

Sediment loads: Maximum daily, 48,400 tons Aug. 3; minimum daily, 4 tons Nov. 3.

EXTREMES 1945-53:--Dissolved solids, Maximum, 1,030 ppm Aug. 16, 1947; minimum, 80 ppm July 1-8, 1949.

Hardness: Maximum, 680 ppm Aug. 16, 1947; minimum, 48 ppm July 1-8, 1949.

Specific conductance: Maximum observed, 1,420 micromhos Aug. 16, 1947; minimum observed, 107 micromhos June 20, 1952.

Water temperatures (1949-53): Maximum observed, 81°F July 27, 1953; minimum, freezing point on many days during winter months.

Sediment concentrations (1949-53): Maximum daily, 20,000 ppm Mar. 15, 1952; minimum daily, 8 ppm Nov. 4, 1952, Jan. 10, 1953.

Sediment loads (1949-53): Maximum daily, 142,000 tons Mar. 29, 1952; minimum daily, 1 ton Sept. 20-25, 1951.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. No appreciable inflow between gaging station and sampling point. Stage discharge relation affected by ice Dec. 22-26, Jan. 7-9.

Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent dissolved	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or
														Parts per million	Tons per acre-foot	Calcium, mg./l.	Non-carbonate				
Oct. 1-10, 1952	321	16	0.01	36	7.6	27	3.0	130	68	4.8	0.2	0.5	0.05	225	0.31	121	14	32	1.1	359	7.7
Oct. 11-20	227	--	--	44	8.8	33	--	--	--	--	--	--	--	264	.36	162	--	33	1.2	419	--
Oct. 21-31	211	--	--	44	9.3	36	--	--	--	--	--	--	--	307	.38	157	--	35	1.3	440	--
Nov. 1-10	206	--	--	44	10	40	--	--	--	--	--	--	--	376	.42	171	--	37	1.4	476	--
Nov. 11-20	255	--	--	49	10	39	--	--	--	--	--	--	--	306	.42	211	--	34	1.3	465	--
Nov. 21-30	174	--	--	57	12	42	--	--	--	--	--	--	--	352	.48	192	--	32	1.3	535	--
Dec. 1-10	274	--	--	56	12	41	--	--	--	--	--	--	--	344	.47	254	--	32	1.3	521	--
Dec. 11-31	276	--	--	49	9.5	35	--	--	--	--	--	--	--	292	.40	218	--	32	1.2	455	--
Jan. 1-15, 1953	258	15	.01	46	9.8	35	2.7	142	101	7.2	.3	.6	.09	293	.40	204	39	32	1.2	449	8.0
Jan. 16-20	284	--	--	48	9.1	35	--	--	--	--	--	--	--	292	.40	224	--	33	1.2	446	--
Jan. 21-31	314	--	--	47	9.2	35	--	--	--	--	--	--	--	296	.40	251	--	33	1.2	453	--
Feb. 1-10	355	--	--	47	9.2	41	--	--	--	--	--	--	--	291	.40	279	--	36	1.4	469	--
Feb. 11-20	229	--	--	51	10	41	--	--	--	--	--	--	--	310	.42	192	--	35	1.4	498	--
Feb. 21-28	255	--	--	54	10	40	--	--	--	--	--	--	--	312	.42	215	--	33	1.3	502	--

Mar 1-10, 1953..	352	52	10	42	--	--	--	--	--	--	--	321	170	--	35	1.4	507	--
Mar 11-20.....	646	58	16	32	--	--	--	--	--	--	--	576	210	--	25	1.0	523	--
Mar 21-31.....	808	40	11	23	--	--	--	--	--	--	--	537	160	--	24	.8	393	--
Apr 1-10.....	805	.02	35	8.8	19	2.4	107	71	3.5	.4	.6	.04	216	29	25	.7	322	7.6
Apr 11-14.....	900	46	10	22	--	--	--	--	--	--	--	469	124	36	24	.8	385	--
Apr 15-20.....	898	34	6.9	18	--	--	--	--	--	--	--	600	156	--	24	.8	289	--
Apr 21-30.....	1,941	--	28	4.8	11	--	--	--	--	--	--	728	114	--	26	.7	208	--
May 1-10.....	1,171	--	28	5.2	16	--	--	--	--	--	--	503	84	--	22	.5	245	--
May 11-20.....	1,959	--	28	5.2	17	--	--	--	--	--	--	448	92	--	28	.7	248	--
May 21-24.....	1,950	--	28	6.1	14	--	--	--	--	--	--	874	95	--	29	.8	245	--
May 25-31.....	3,924	--	20	4.1	5.0	--	--	--	--	--	--	1,200	67	--	14	.3	153	--
June 1-10.....	3,077	--	17	2.9	5.2	--	--	--	--	--	--	831	54	--	17	.3	135	--
June 11-20.....	2,955	--	16	3.2	7.5	--	--	--	--	--	--	822	53	--	24	.5	143	--
June 21-30.....	1,097	--	23	4.5	15	--	--	--	--	--	--	438	76	--	30	.7	220	--
July 1-8.....	466	.04	32	7.0	21	2.7	115	56	3.5	.3	.4	.06	202	27	15	.9	310	7.5
July 9-10.....	333	16	50	14	30	3.9	150	114	4.0	.4	1.3	.43	283	182	60	1.0	474	7.8
July 11-17.....	404	--	43	9.7	31	--	--	--	--	--	--	301	148	--	31	1.1	415	--
July 18-31.....	793	--	37	8.0	24	--	--	--	--	--	--	540	126	--	29	.9	352	--
Aug 1-10.....	658	--	41	8.9	25	--	--	--	--	--	--	437	139	--	28	.9	378	--
Aug 11-20.....	247	--	42	8.2	33	--	--	--	--	--	--	36	138	--	34	1.2	409	--
Aug 21-31.....	252	--	40	8.7	33	--	--	--	--	--	--	175	136	--	34	1.2	401	--
Sept 1-10.....	157	--	40	8.9	38	--	--	--	--	--	--	115	136	--	38	1.4	430	--
Sept 11-20.....	118	--	46	9.9	45	--	--	--	--	--	--	101	156	--	39	1.6	491	--
Sept 21-30.....	87.8	--	45	9.9	47	--	--	--	--	--	--	79.2	153	--	40	1.6	515	--
Weighted average	704	--	31	6.4	18	--	--	--	--	--	--	352	104	--	27	0.8	278	--

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement, generally taken between 11 a. m. and 6 p. m./

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

a Reading obtained before 11 a. m.

b Reading obtained after 6 p. m.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	398	70	a 75	167	50	23	201	29	16
2.....	377	60	a 61	167	31	41	256	33	23
3.....	345	50	a 47	169	9	4	298	33	27
4.....	337	48	44	190	8	4	294	35	28
5.....	329	62	55	201	11	6	273	24	18
6.....	325	72	63	195	30	16	273	19	14
7.....	294	22	17	187	24	12	280	20	a 15
8.....	280	21	16	190	32	16	287	25	a 19
9.....	266	22	16	233	11	7	309	30	a 25
10.....	259	38	27	361	55	54	273	28	21
11.....	243	56	37	373	57	57	266	12	9
12.....	221	40	24	298	62	50	266	9	6
13.....	218	20	12	203	45	25	269	25	18
14.....	230	22	14	212	15	9	287	15	12
15.....	209	21	12	212	13	7	294	11	9
16.....	239	22	14	230	14	9	305	26	21
17.....	230	22	a 14	287	18	14	313	29	25
18.....	230	22	14	273	14	10	325	29	25
19.....	236	18	11	266	47	34	349	33	31
20.....	218	17	a 10	198	56	30	353	32	30
21.....	218	17	a 10	151	54	22	333	--	e 17
22.....	230	16	10	184	60	30	275		
23.....	224	15	9	203	41	22	270		
24.....	227	15	9	249	34	23	265		
25.....	230	15	9	213	28	16	240		
26.....	236	13	8	178	32	15	240		
27.....	227	13	8	130	50	18	230		
28.....	212	14	8	114	56	17	230		
29.....	182	55	27	139	59	22	220		
30.....	169	15	7	179	46	22	230		
31.....	167	63	28	--	--	--	240		
Total.	7,806	--	716	6,352	--	608	8,544	--	579
	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.....	260			300	58	47	287	48	37
2.....	260			310	14	12	329	23	20
3.....	240			330	11	10	313	204	172
4.....	230	--	e 19	350	37	35	298	134	108
5.....	220			377	87	89	256	39	27
6.....	230			390	126	133	221	24	14
7.....	250	38	26	401	65	70	252	20	14
8.....	250	74	50	398	59	63	369	1,680	s 2,050
9.....	240	58	38	361	49	48	515	4,250	s 5,910
10.....	260	8	6	329	68	60	684	3,090	s 5,620
11.....	270	12	9	305	100	82	730	2,750	5,420
12.....	280	44	33	256	25	17	730	2,800	a 5,500
13.....	294	47	37	243	21	14	700	3,130	5,920
14.....	300	53	43	221	21	13	630	2,250	3,830
15.....	290	58	45	226	14	9	550	1,040	1,540
16.....	280	57	43	221	14	8	570	500	770
17.....	270	63	46	212	11	6	600	380	616
18.....	280	20	15	214	14	8	650	680	1,190
19.....	290	113	88	206	19	11	650	1,450	2,540
20.....	300	98	79	182	12	6	650	2,020	3,550
21.....	320	72	62	222	125	75	600	1,000	1,620
22.....	341	53	49	243	44	29	550	350	520
23.....	340	35	32	258	60	42	500	230	310
24.....	330	12	11	275	18	13	550	130	193
25.....	320	15	13	301	16	13	600	130	211
26.....	310	31	26	251	10	7	638	375	646
27.....	300	40	32	255	9	6	794	720	1,540
28.....	300	90	73	236	16	10	878	770	1,830
29.....	305	102	84	--	--	--	1,200	1,230	3,990
30.....	300	32	26	--	--	--	1,460	1,360	5,360
31.....	290	14	11	--	--	--	1,120	930	2,810
Total.	8,750	--	1,091	7,873	--	936	18,874	--	63,878

e Estimated.

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER BASIN

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	801	410	887	1,560	79	333	3,460	880	8,220
2.....	656	180	319	1,330	86	309	3,220	620	5,390
3.....	656	200	354	1,120	84	254	3,460	650	6,070
4.....	686	200	370	1,010	74	202	3,460	750	7,010
5.....	815	245	539	928	50	125	3,300	540	4,810
6.....	780	160	337	871	46	108	3,000	330	2,670
7.....	968	210	549	885	63	150	2,780	320	2,400
8.....	952	180	463	1,120	100	302	2,580	230	1,600
9.....	836	800	1,810	1,380	127	473	2,510	250	1,690
10.....	899	1,580	3,840	1,510	130	a 530	3,000	420	3,400
11.....	1,120	3,150	9,530	1,330	100	a 360	3,220	410	3,560
12.....	1,020	1,250	3,440	1,120	64	194	3,380	500	4,560
13.....	731	470	928	1,020	37	102	3,780	570	5,820
14.....	731	440	868	936	37	94	3,620	510	4,980
15.....	780	310	653	850	30	69	3,460	450	4,200
16.....	752	225	457	871	35	82	2,850	240	1,850
17.....	913	295	727	952	47	121	2,440	160	1,050
18.....	1,080	300	875	944	48	122	2,580	750	5,220
19.....	892	125	301	984	68	181	2,200	260	1,540
20.....	913	160	394	984	90	239	2,320	240	1,500
21.....	1,330	590	2,120	1,080	77	225	1,760	134	637
22.....	1,560	890	3,750	1,460	350	1,380	1,510	90	367
23.....	1,760	1,240	5,890	2,260	1,200	a 7,300	1,330	69	248
24.....	1,860	1,140	5,730	3,000	1,900	a 15,000	1,200	55	178
25.....	1,860	1,030	5,170	3,140	1,530	13,000	1,200	80	259
26.....	2,030	1,270	6,960	3,540	2,150	20,500	992	74	198
27.....	2,200	1,270	7,540	4,130	1,950	21,700	857	31	72
28.....	2,380	1,580	10,200	4,500	2,340	28,400	773	29	61
29.....	2,510	1,110	7,520	4,990	2,120	28,600	692	29	54
30.....	1,920	250	1,300	3,870	1,140	11,900	656	32	57
31.....	--	--	--	3,330	620	5,520	--	--	--
Total..	36,391	--	83,821	56,975	--	157,875	71,590	--	79,671
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.....	608	31	51	932	6,260	s 16,000	224	42	25
2.....	590	37	59	1,120	6,100	18,400	206	37	21
3.....	490	28	37	1,270	13,700	s 48,400	179	34	16
4.....	445	25	a 30	871	4,000	9,410	155	35	15
5.....	421	30	a 34	548	900	1,330	144	30	12
6.....	398	35	38	480	360	467	130	24	8
7.....	470	47	60	408	215	237	136	27	10
8.....	470	64	81	349	160	151	134	30	a 11
9.....	353	1,120	1,070	309	150	125	132	30	11
10.....	313	600	507	294	115	91	126	26	9
11.....	345	220	205	317	90	77	121	23	8
12.....	361	240	234	309	110	92	119	26	8
13.....	455	500	a 610	262	110	78	119	25	8
14.....	412	310	345	269	730	530	115	25	8
15.....	412	2,600	2,890	243	350	230	119	27	9
16.....	390	1,200	a 1,300	221	160	95	126	30	10
17.....	450	1,000	a 1,200	205	95	53	115	43	13
18.....	1,420	3,900	a 15,000	201	85	46	121	36	12
19.....	1,330	3,700	a 13,000	215	70	41	117	36	a 11
20.....	1,420	4,800	a 18,000	227	95	58	108	37	a 11
21.....	1,020	6,100	16,800	212	60	34	108	38	11
22.....	717	1,600	3,100	224	120	73	108	39	11
23.....	801			246	190	126	100	35	9
24.....	794			276	115	86	94	40	10
25.....	548			262	95	67	82	39	9
26.....	465	--	b 2,000	239	75	48	83	38	9
27.....	435			221	70	42	82	42	9
28.....	390			239	80	a 52	76	47	10
29.....	390			309	95	79	70	66	12
30.....	662			287	90	70	75	45	9
31.....	704	6,400	12,200	259	85	59	--	--	--
Total..	18,479	--	102,851	11,825	--	96,647	3,624	--	335

Total discharge for year (cfs-days)..... 257,083

Total load for year (tons)..... 589,008

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

SAN JUAN RIVER BASIN--Continued
SAN JUAN RIVER NEAR BLANCO, N. MEX.--Continued

Particle-size analyses of suspended sediment for water year October 1952 to September 1953
(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; V, visual accumulation tube)

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	1,000	2,000	
Mar. 9, 1953.....	4:00 p. m.	626	50	6,470	4,490	86		98		99		100		--	--	SPWCM	
Mar. 11.....	12:00 p. m.	710	49	2,960	3,380	86		94		96		96		97	98	SPWCM	
Mar. 21.....	4:00 p. m.	638	44		--			--		92		95		99	100	S	
Mar. 31.....	4:30 p. m.	1,020	52	887	2,240	65		87		96		99		100	--	SPWCM	
Apr. 23.....	7:00 p. m.	1,980	58	1,270	2,580	28		49		81		93		99	99	SPWCM	
Apr. 28.....	3:30 p. m.	2,540	54	1,530	2,380	25		35		65		82		98	100	VFWCM	
May 25.....	7:00 p. m.	3,380	61	1,380	1,540	13		22		42		56		90	99	SBWCM	
June 1.....	4:30 p. m.	4,040	59	1,320	--	--		--		35		54		73	91	S	
June 13.....	4:00 p. m.	4,040	70	706	--	--		--		41		61		86	97	S	
July 9.....	6:00 p. m.	317	78	2,440	4,210	94		99		100		100		--	--	SPWCM	
July 21.....	2:50 p. m.	920	--	5,460	5,020	74		98		100		--		--	--	SPWCM	
July 31.....	10:30 a. m.	632	70	6,520	4,100	79		99		100		--		--	--	SPWCM	
Aug. 14.....	5:30 p. m.	236	78	704	1,730	88		98		100		--		--	--	SPWCM	

SAN JUAN RIVER BASIN--Continued

ANTAS RIVER AT FARMINGTON, N. MEX.

LOCATION.--At gaging station at bridge on State Highway 17, 0.6 mile southeast of Farmington, San Juan County, and 1.3 miles upstream from mouth. DRAINAGE AREA.--1,360 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: June 1940 to September 1953.

Water temperatures: December 1950 to September 1953.

Sediment records: December 1950 to September 1953.

EXTREMES 1952-53.--Dissolved solids: Maximum, 808 ppm Sept. 21-30; minimum, 147 ppm June 11-20.

Specific conductance: Maximum observed, 1,160 micromhos Aug. 2; minimum observed, 198 micromhos June 13.

Water temperatures: Maximum observed, 80° F Aug. 12; minimum, freezing point on many days during November, December, and January.

Sediment concentrations: Maximum daily, 13,600 ppm Aug. 2; maximum observed, 19,200 ppm Aug. 2; minimum daily, 9 ppm Sept. 3, 4.

Sediment loads: Maximum daily, 40,500 tons Aug. 2; minimum daily, 1 ton Sept. 3, 4.

EXTREMES 1940-53.--Dissolved solids (1940-49, 1952-53): Maximum, 1,500 ppm Aug. 19, 1949; minimum, 111 ppm June 11-17, 19-20, 1944.

Specific conductance (1941-53): Maximum observed, 1,980 micromhos Aug. 19, 1944; minimum observed, 170 micromhos June 27, 1944.

Water temperatures (1950-53): Maximum observed, 88° F July 29, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations (1950-53): Maximum daily, 13,600 ppm Aug. 2, 1953; minimum daily, 9 ppm Sept. 28-30, 1951, Sept. 3, 4, 1953.

Sediment loads (1950-53): Maximum daily, 64,000 tons Apr. 28, 1952; minimum daily, 1 ton on several days.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Values reported for dissolved solids prior to October 1952 reported as sum of determined constituents. For the period October 1952 to September 1953 the dissolved solids value ranged from 0 to 8 per cent higher than sum of determined constituents.

Records of discharge for water year October 1952 to September 1953 given in WSP 1283. Stage discharge relation affected by ice Nov. 27-30, Dec. 9-11, 24-31, Jan. 9-12, Feb. 21.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃	Percent 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. 1-10, 1952	273	--	--	--	--	--	--	--	--	--	--	--	--	501	0.68	369	--	--	736	--	--	
Oct. 11-20	197	10	--	110	19	53	53	195	260	26	--	0.2	--	596	.81	317	352	53	25	1.2	859	7.7
Oct. 21-31	178	--	--	--	--	--	--	--	--	--	--	--	--	633	.86	304	--	--	--	903	--	--
Nov. 1-10	220	--	--	--	--	--	--	--	--	--	--	--	--	686	.93	407	--	--	--	927	--	--
Nov. 11-20	252	11	--	107	21	58	58	180	277	30	--	.9	--	616	.84	419	354	206	26	1.3	882	7.8
Nov. 21-30	232	--	--	--	--	--	--	--	--	--	--	--	--	660	.90	413	--	--	--	927	--	--
Dec. 1-10	216	--	--	--	--	--	--	--	--	--	--	--	--	670	.91	391	--	--	--	955	--	--
Dec. 11-20	258	11	--	118	20	59	59	213	275	30	--	1.3	--	640	.87	446	376	202	25	1.3	913	7.8
Dec. 21-31	215	--	--	--	--	--	--	--	--	--	--	--	--	628	.85	365	--	--	--	899	--	--
Jan. 1-10, 1953	224	--	--	--	--	--	--	--	--	--	--	--	--	613	.83	371	--	--	--	884	--	--
Jan. 11-20	248	9.4	--	--	--	--	--	--	--	--	--	1.1	--	623	.85	417	352	198	27	1.4	886	7.8
Jan. 21-31	251	--	--	--	--	--	--	--	--	--	--	--	--	604	.82	409	--	--	--	884	--	--
Feb. 1-10	248	--	--	--	--	--	--	--	--	--	--	--	--	579	.79	388	--	--	--	863	--	--
Feb. 11-20	246	10	--	113	14	64	64	192	271	27	--	1.4	--	630	.86	418	340	182	29	1.5	885	7.9
Feb. 21-28	218	--	--	--	--	--	--	--	--	--	--	--	--	621	.84	366	--	--	--	905	--	--
Mar. 1-10	252	--	--	--	--	--	--	--	--	--	--	--	--	583	.79	397	--	--	--	867	--	--
Mar. 11-20	328	13	--	112	20	30	30	188	254	5.0	--	2.5	--	571	.78	506	362	208	15	.7	841	7.4
Mar. 21-31	352	--	--	--	--	--	--	--	--	--	--	--	--	518	.70	492	--	--	--	762	--	--

[illegible]

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement generally taken between 11 a. m. and 6 p. m./

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

a Reading obtained before 11 a. m.

b Reading obtained after 6 p. m.

SAN JUAN RIVER BASIN

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SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	346			185			230	87	54
2.....	327			188			224	40	24
3.....	322			199			220	30	18
4.....	295			210			202	63	34
5.....	268	41	31	224	27	15	202	49	27
6.....	248			217			206	50	28
7.....	236			202			217	52	30
8.....	236			217			232	72	45
9.....	228			268	75	54	230	102	63
10.....	228			295	240	191	200	65	35
11.....	224			277	75	56	200	51	28
12.....	224			264	82	58	220	72	43
13.....	220			256	38	26	240	73	47
14.....	199	17	9	248	32	21	248	40	27
15.....	195			240	28	18	256	21	15
16.....	195			256	19	13	248	100	67
17.....	182			264	25	18	268	89	64
18.....	178			256	95	66	295	57	45
19.....	178			232	83	52	308	45	37
20.....	172			228	65	40	299	60	48
21.....	172	11	5	224	38	23	299	53	43
22.....	178			232	34	21	277	38	28
23.....	185			248	32	21	252	32	22
24.....	188			260	30	21	220	100	59
25.....	188			280	53	37	190	78	40
26.....	175			244	56	37	190	155	80
27.....	166	13	6	220	76	45	200	150	27
28.....	162			210	90	51	200	40	22
29.....	172			210	73	41	190	80	a 41
30.....	188			210	72	41	170	70	32
31.....	182			--	--	--	180	75	36
Total.	6,657	--	432	7,044	--	1,071	7,113	--	1,209
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.....	190	77	40	240	70	45	244	175	115
2.....	190	170	87	232	45	28	256	260	180
3.....	200	56	30	220	43	26	240	315	204
4.....	220	35	21	240	150	97	220	155	92
5.....	230	40	a 25	252	163	111	213	130	75
6.....	240	40	26	260	158	111	217	100	59
7.....	273	60	44	256	258	178	244	130	86
8.....	252	39	27	268	635	459	268	350	253
9.....	230	50	31	273	540	398	304	390	320
10.....	210	58	33	244	170	112	318	580	498
11.....	210	143	81	260	82	58	346	1,180	1,100
12.....	230	107	66	248	30	20	351	900	853
13.....	240	83	54	244	46	30	351	1,450	1,370
14.....	282	163	124	252	72	49	342	600	554
15.....	299	150	121	252	60	41	327	410	362
16.....	252	80	54	248	61	41	299	310	250
17.....	236	72	46	228	55	34	286	350	270
18.....	228	63	39	240	65	42	322	700	609
19.....	240	33	21	244	200	132	337	500	455
20.....	260	35	25	244	340	224	322	570	496
21.....	282	55	42	210	165	94	342	640	591
22.....	264	66	47	199	64	34	337	340	309
23.....	268	44	32	199	80	43	322	180	156
24.....	260	55	39	217	80	47	299	120	97
25.....	248	70	47	236	115	73	299	190	153
26.....	256	65	45	240	103	67	308	290	241
27.....	244	52	34	217	92	54	308	320	266
28.....	244	100	66	228	105	65	322	260	226
29.....	224	65	39	--	--	--	366	300	296
30.....	232	62	39	--	--	--	495	600	802
31.....	240	67	43	--	--	--	471	640	814
Total.	7,474	--	1,468	6,691	--	2,713	9,676	--	12,152

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953--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	400	490	950	250	641	2,800	960	7,260
2.....	425	240	275	794	215	461	2,800	860	6,500
3.....	403	240	261	660	160	285	2,720	880	6,460
4.....	414	290	324	564	129	196	2,980	930	7,480
5.....	442	310	370	483	76	99	3,070	1,180	9,780
6.....	459	310	384	454	59	72	2,640	500	3,560
7.....	558	900	1,360	425	64	73	2,320	380	2,380
8.....	564	1,380	2,100	477	71	91	2,030	330	1,810
9.....	513	1,100	1,520	625	99	167	1,930	370	1,930
10.....	495	590	789	828	164	367	2,480	630	4,220
11.....	495	650	869	716	152	294	3,070	720	5,970
12.....	483	550	717	604	75	122	3,340	810	7,300
13.....	425	260	298	507	53	73	5,200	1,650	23,200
14.....	403	185	201	398	35	38	4,600	850	10,600
15.....	419	120	136	332	22	20	3,940	700	7,450
16.....	392	100	106	327	17	15	2,980	470	3,780
17.....	431	120	140	318	17	a15	2,480	420	2,810
18.....	513	200	277	295	20	16	2,250	350	2,130
19.....	483	180	235	295	26	21	2,180	230	1,350
20.....	483	150	196	313	31	26	1,820	163	801
21.....	564	325	495	351	39	37	1,340	105	380
22.....	688	580	1,080	489	122	161	1,290	128	446
23.....	882	1,100	2,620	1,190	1,250	4,020	1,310	180	637
24.....	1,090	1,500	4,410	1,930	3,200	16,700	1,210	175	572
25.....	1,160	1,170	3,660	2,100	1,700	9,640	1,110	110	330
26.....	1,220	835	2,750	2,250	1,350	8,200	1,060	56	180
27.....	1,370	950	3,510	2,720	1,700	12,500	891	54	130
28.....	1,500	780	3,160	3,340	2,000	18,000	687	44	79
29.....	1,500	700	2,840	4,050	1,650	18,000	625	32	54
30.....	1,120	425	1,290	2,890	940	7,330	597	25	40
31.....	--	--	--	2,400	780	5,050	--	--	--
Total.	20,348	--	36,863	34,075	--	102,730	67,730	--	119,599
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.....	590	67	107	855	10,800	s 25,600	83	13	3
2.....	604	100	163	940	13,600	s 40,500	62	10	2
3.....	525	83	118	810	1,250	2,730	52	9	1
4.....	471	45	57	681	600	1,100	60	9	1
5.....	442	30	36	577	400	623	46	18	2
6.....	414	24	27	513	343	475	41	30	a 3
7.....	387	18	19	425	253	290	37	35	3
8.....	382	18	19	299	158	128	36		
9.....	337	16	15	256	123	85	35		
10.....	322	17	15	206	100	56	37		
11.....	290	19	15	182	73	36	36		
12.....	286	16	12	169	58	26	40	21	3
13.....	273	21	15	139	92	35	43		
14.....	252	34	23	118	67	21	48		
15.....	252	14	10	102	82	23	60		
16.....	260	50	35	89	54	13	81		
17.....	496	1,320	s 2,220	78	47	10	58		
18.....	681	1,800	3,310	53	43	6	55		
19.....	802	1,130	2,450	33	32	3	58		
20.....	723	1,190	2,240	36	41	4	55		
21.....	625	400	675	34	37	3	52		
22.....	544	270	397	33	35	3	46		
23.....	495	230	307	31	67	6	53		
24.....	459	180	223	31	185	15	50	22	3
25.....	351	135	128	28	185	14	44		
26.....	308	134	111	28	62	5	41		
27.....	268	88	64	29	123	10	43		
28.....	236	75	48	30	75	6	43		
29.....	224	84	51	60	32	5	40		
30.....	224	265	160	131	75	27	39	20	2
31.....	463	2,480	s 6,570	104	35	10	--	--	--
Total.	12,986	--	19,640	7,100	--	71,868	1,474	--	83
Total discharge for year (cfs-days).....									186,368
Total load for year (tons).....									369,828

a Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued
ANIMAS RIVER AT FARMINGTON, N. MEX.--Continued

Particle-size analyses of suspended sediment water year October 1952 to September 1953

(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; V, visual accumulation tube)

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	0.500	1.000	
Nov. 20, 1952	5:00 p. m.	236	40	68	--	--	--	--	--	--	92	94	95	96	100	S
Feb. 10, 1953	4:40 p. m.	248	44	104	--	--	--	--	--	--	68	71	75	93	100	S
Mar. 10	5:45 p. m.	342	51	799	1,980	59	59	77	77	82	82	83	87	96	100	SPWCM
Mar. 10	5:45 p. m.	342	51	799	1,620	19	19	71	71	82	82	83	87	96	100	SPN
Mar. 20	6:15 a. m.	313	45	410	--	--	--	--	--	71	71	72	78	93	100	S
Mar. 30	6:15 p. m.	538	50	697	2,670	35	35	55	55	65	65	67	79	96	99	SPWCM
Apr. 10	6:00 p. m.	489	48	497	--	--	--	--	--	--	84	85	87	95	100	S
Apr. 30	6:15 p. m.	1,080	45	350	1,610	63	63	69	69	82	82	87	96	100	--	VPWCM
May 10	6:20 p. m.	828	59	186	--	--	--	--	--	72	72	83	92	100	--	V
May 23	7:05 p. m.	1,620	64	1,330	2,010	18	18	31	31	58	58	68	75	86	99	SPWCM
May 26	6:35 p. m.	2,800	59	2,160	3,910	18	18	31	31	59	59	75	89	99	100	SPWCM
May 29	6:10 a. m.	4,050	56	1,520	--	--	--	--	--	44	44	56	73	89	99	S
June 2	5:30 p. m.	2,800	60	916	--	--	--	--	--	13	13	20	36	78	98	S
June 10	5:45 p. m.	3,270	61	887	--	--	--	--	--	30	30	47	66	89	99	S
June 13	6:15 a. m.	4,960	55	1,940	--	--	--	--	--	41	41	54	69	84	97	S
July 18	7:30 p. m.	746	70	1,630	--	--	--	--	--	99	99	99	100	--	--	S
Aug. 1	6:10 p. m.	1,070	68	13,000	3,670	56	56	80	80	97	97	100	--	--	--	SPWCM

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIP ROCK, N. MEX.

LOCATION.--At gaging station on left bank 3 miles west of Ship Rock, San Juan County, and 6 miles downstream from Chaco River.

DRAINAGE AREA.--12,900 square miles approximately.

RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1953.

Sediment records: December 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum observed, 80°F July 28; minimum, freezing point several days during November, December, January and February.

Sediment concentrations: Maximum daily, 36,600 ppm Aug. 2; maximum observed, 49,900 ppm Aug. 2; minimum daily, 14 ppm Nov. 3.

Sediment loads: Maximum daily, 317,000 tons Aug. 2; minimum daily, 16 tons Nov. 3.

EXTREMES, 1950-53.--Water temperatures: Maximum observed, 82°F July 2, 22, 1951; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 64,800 ppm Aug. 25, 1951; minimum daily, 8 ppm July 13, 1951.

Sediment loads: Maximum daily, 578,000 tons Aug. 25, 1951; minimum daily, 5 tons

July 21, Aug. 21, Sept. 12-24, 1951.

REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1952 to

September 1953 given in WSP 1283. Stage-discharge relation affected by ice Nov. 25-30, Dec. 4, 5, 25, Feb. 19-24.

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement generally taken between 11 a. m. and 6 p. m./

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

a Reading obtained before 11 a. m.

b Reading obtained after 6 p. m.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIP ROCK, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	870	85	a 200	402	--	e 20	523	120	169
2.....	811	73	160	409	15	17	499	99	133
3.....	766	64	132	417	14	16	507	100	137
4.....	748	71	143	523	9,000	12,700	520	110	154
5.....	721	54	105	564	12,000	18,300	480	90	117
6.....	640	24	41	539	6,900	10,000	523	80	113
7.....	640	19	33	523	3,400	a 4,800	523	90	127
8.....	623	25	42	483	1,900	2,480	547	110	a 160
9.....	606	30	a 49	539	1,700	2,470	623	140	235
10.....	523	35	49	623	1,800	3,030	531	140	201
11.....	507	17	23	721	1,100	2,140	491	140	186
12.....	499	20	27	703	400	759	523	130	a 180
13.....	460	17	21	623	220	370	531	120	a 170
14.....	402	25	27	564	220	335	539	110	160
15.....	395	17	18	580	170	266	580	140	219
16.....	395	17	18	589	132	210	572	110	170
17.....	402	54	59	623	127	214	640	90	156
18.....	395	64	68	685	115	213	667	140	252
19.....	395	86	92	658	81	144	721	520	1,010
20.....	402	46	50	623	115	193	730	3,200	6,310
21.....	402	47	51	598	132	213	766	2,700	5,580
22.....	395	57	61	539	106	154	730	2,160	4,260
23.....	395	44	47	572	117	181	649	1,600	2,800
24.....	402			606	159	260	555	480	719
25.....	424			580	129	202	550	300	a 450
26.....	417			550	150	223	555	330	495
27.....	424	--	e 34	470	285	362	555	800	1,200
28.....	409			400	265	286	460	330	410
29.....	424			350	150	142	453	220	269
30.....	417			400	120	130	453	120	147
31.....	409			--	--	--	468	140	177
Total.	15,718	--	1,788	16,456	--	60,830	17,464	--	26,866
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.....	507	105	144	598	450	727	555	47	70
2.....	515	80	111	598	1,650	2,660	694	95	178
3.....	523	80	113	606	390	638	703	540	a 1,000
4.....	499	67	90	623	195	328	632	1,060	1,810
5.....	491	94	125	685	109	202	606	680	1,110
6.....	460	60	a 75	712	167	321	564	1,200	1,830
7.....	539	34	49	694	75	141	547	1,150	1,700
8.....	606	95	155	703	141	268	606	830	1,360
9.....	632	92	157	721	117	228	766	480	993
10.....	589	66	105	685	510	943	910	4,000	9,830
11.....	564	60	a 91	623	124	209	1,050	7,000	19,800
12.....	572	57	88	658	53	94	1,080	5,670	16,500
13.....	623	60	a 100	614	59	98	1,080	3,200	9,330
14.....	623	800	1,350	632	37	63	1,010	2,360	6,440
15.....	721	1,100	a 2,100	589	27	43	950	1,800	4,620
16.....	649	1,000	1,750	589	73	116	840	1,320	2,990
17.....	623	620	1,040	531	28	40	811	820	1,800
18.....	632			531	39	56	890	800	a 1,900
19.....	623			480	63	82	1,020	870	1,850
20.....	640			450	82	100	1,030	800	a 2,200
21.....	658			430	63	73	1,060	1,700	a 4,900
22.....	658			450	60	73	1,020	2,220	6,110
23.....	667	--	e 900	470	85	108	840	880	2,000
24.....	667			500	94	127	730	350	690
25.....	658			572	62	96	730	310	611
26.....	640			606	32	52	811	400	876
27.....	649			539	50	73	1,080	720	2,100
28.....	614	300	497	555	71	106	1,160	580	1,820
29.....	606	425	695	--	--	--	1,290	655	2,280
30.....	623	455	765	--	--	--	1,710	1,510	6,270
31.....	589	270	429	--	--	--	1,840	1,380	9,840
Total.	18,660	--	19,029	16,444	--	8,065	28,615	--	125,508

e Estimated.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIP ROCK, N. MEX.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	1,430	1,150	4,440	2,720	860	6,320	5,850	1,450	22,900
2.....	1,210	630	2,060	2,200	600	3,560	6,400	1,360	23,500
3.....	1,020	360	991	1,880	350	1,780	6,020	930	15,100
4.....	1,050	240	680	1,560	300	1,260	6,600	1,010	18,000
5.....	1,120	200	605	1,410	370	1,410	6,800	840	15,400
6.....	1,260	500	1,700	1,220	280	922	6,020	500	8,130
7.....	1,460	1,130	4,450	1,120	80	242	5,200	920	12,900
8.....	1,640	1,060	4,690	1,160	200	626	4,620	800	9,980
9.....	1,570	820	3,480	1,460	270	1,060	3,860	480	5,000
10.....	1,350	670	2,440	2,040	500	2,750	4,620	980	12,200
11.....	1,520	780	3,200	2,080	520	2,920	5,850	700	11,100
12.....	1,660	2,330	10,400	1,820	300	1,470	6,400	800	13,800
13.....	1,440	1,800	7,000	1,540	130	541	7,750	1,300	27,200
14.....	1,150	680	2,110	1,340	62	224	8,500	1,250	28,700
15.....	1,130	400	1,220	1,170	49	155	7,750	680	14,200
16.....	1,180	220	701	1,060	41	117	6,200	840	14,100
17.....	1,150	200	621	1,100	33	98	5,050	500	6,820
18.....	1,290	350	1,220	1,180	26	83	4,760	500	6,430
19.....	1,420	390	1,500	1,140	41	126	4,350	850	9,980
20.....	1,240	210	703	1,140	42	129	4,220	1,000	11,400
21.....	1,340	260	941	1,150	68	211	3,520	500	4,750
22.....	1,860	770	3,870	1,290	120	418	2,810	400	3,030
23.....	2,220	1,600	9,590	2,180	1,010	s 6,810	2,630	350	2,490
24.....	2,720	2,800	20,600	3,740	2,250	22,700	2,300	200	1,240
25.....	2,900	2,000	15,700	5,200	3,200	44,900	2,150	224	1,300
26.....	2,900	1,450	11,400	5,200	2,200	30,900	2,040	137	755
27.....	3,200	2,450	21,200	5,850	2,900	45,800	1,710	134	619
28.....	3,410	1,950	18,000	6,600	2,740	48,800	1,380	84	313
29.....	3,740	2,200	22,200	8,250	2,700	60,100	1,200	84	272
30.....	3,300	1,520	13,500	7,250	1,600	31,300	1,160	73	232
31.....	--	--	--	5,500	1,500	22,300	--	--	--
Total.	53,880	--	191,212	82,550	--	340,032	137,720	--	301,841
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.....	1,020	82	226	2,170	21,200	s 133,000	324	650	569
2.....	980	95	251	2,970	36,600	s 317,000	265	280	200
3.....	890	24	48	2,540	26,300	180,000	216	120	70
4.....	775			1,820	15,800	77,600	196	120	64
5.....	766			1,400	6,000	22,700	180	530	258
6.....	640	38	62	1,100	2,800	8,320	161	370	161
7.....	632			900	900	2,190	146	100	39
8.....	640			712	492	946	119	96	31
9.....	667			539	294	428	119	130	42
10.....	564			453	180	220	102	86	24
11.....	564	283	363	389	140	147	110	81	24
12.....	475			343	132	122	110	83	25
13.....	483			382	750	774	106	58	17
14.....	515	214	298	572	4,300	6,640	102	63	17
15.....	523	1,070	1,510	395	11,200	11,900	106	96	27
16.....	598	8,600	13,900	336	12,000	a 11,000	114	92	28
17.....	820	6,200	13,700	254	2,900	1,990	137	134	50
18.....	1,600	12,200	s 52,200	190	1,500	770	146	168	66
19.....	2,460	20,500	136,000	161	500	217	146	152	60
20.....	1,930	9,700	50,500	132	96	34	165	225	100
21.....	1,820	3,900	19,200	132	72	26	175	180	85
22.....	1,280	3,250	11,200	123	174	58	151	216	88
23.....	1,110	2,600	7,790	106	82	23	137	245	91
24.....	1,280	6,800	23,500	114	56	17	132	265	94
25.....	1,050	3,400	9,640	165	78	35	123	258	86
26.....	860	1,900	4,410	137	54	20	132	259	92
27.....	784	1,500	3,180	165	62	28	151	307	125
28.....	623	350	589	294	7,100	5,640	137	292	108
29.....	589	320	509	294	5,500	4,370	123	512	170
30.....	547	800	1,180	306	3,000	2,480	132	252	90
31.....	930	6,200	15,600	356	1,900	1,830	--	--	--
Total.	28,415	--	366,600	19,950	--	790,525	4,463	--	2,901

Total discharge for year (cfs-days) 440,335

Total load for year (tons) 2,235,197

s Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIP ROCK, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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; V, visual accumulation tube)

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
Nov. 4, 1952	4:30 p.m.	515	--	11,500	3,740		85		97		100	--	--		SPWCM	
Nov. 8	2:20 p.m.	475	--	1,720	4,610		92		97		99	99	100	--	SPWCM	
Dec. 20	4:30 p.m.	712	36	5,250	2,980		55		60		62	62	62	74	SPWCM	
Jan. 17, 1953	11:30 a.m.	623	--	251	--		--		--		96	98	99	100	S	
Jan. 28	12:30 p.m.	572	--	209	2,880		84		92		93	94	94	98	SPWCM	
Feb. 2	2:15 p.m.	523	--	1,620	2,790		90		93	94	95	95	97	99	SPWCM	
Feb. 10	2:00 p.m.	676	40	664	2,120		95		98		99	100	--	--	SPWCM	
Mar. 11	9:30 a.m.	1,050	50	7,770	4,490		81		96		97	98	98	98	SPWCM	
Mar. 22	11:30 a.m.	1,020	43	2,590	4,770		41		46		47	48	51	75	SPWCM	
Mar. 31	9:30 a.m.	2,000	48	2,150	3,200		35		58		69	73	83	93	SPWCM	
Apr. 12	4:15 p.m.	1,930	46	4,330	4,760		40		52		54	55	57	73	SPWCM	
Apr. 29	6:45 a.m.	3,930	49	1,960	4,490		24		43		71	78	86	98	SPWCM	
May 24	1:00 p.m.	4,120	64	2,100	3,730		26		43		68	74	80	94	SPWCM	
May 25	6:45 a.m.	5,880	58	4,780	3,980		27		46		74	82	87	97	SPWCM	
June 2	4:00 p.m.	6,060	65	1,080	3,100		13		20		35	53	81	99	SPWCM	
June 10	6:45 a.m.	4,870	61	1,080	--		--		--		30	39	49	69	S	
June 20	7:30 p.m.	4,220	--	1,370	2,030		24		28		31	34	42	64	SPWCM	
July 15	7:00 p.m.	460	77	1,690	2,600		88		99		100	--	--	--	SPWCM	
July 21	10:15 a.m.	1,700	--	3,750	3,570		77		94		96	99	100	--	S	
July 28	7:30 p.m.	507	80	280	--		--		--		100	--	--	--	SPWCM	
Aug. 1	2:15 p.m.	2,260	74	19,000	4,440		72		93		98	99	100	--	SPWCM	
Aug. 2	8:00 p.m.	3,160	73	49,900	3,620		73		87		95	98	99	100	SPWCM	
Aug. 15	7:00 p.m.	356	--	14,300	4,090		84		96		98	99	99	--	SPWCM	
Aug. 29	10:00 p.m.	276	--	3,090	3,820		86		96		100	--	--	--	SPWCM	
Sept. 20	6:45 a.m.	165	57	225	1,350		66		87		99	100	--	--	SPWCM	

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH

LOCATION.--At bridge on State Highway 47, 1,800 feet downstream from gaging station and 20 miles southwest of Bluff, San Juan County.

DRAINAGE AREA.--23,000 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: February to June 1927, October 1929 to September 1953.

Water temperatures: May 1944 to September 1953.

Sediment records: August to September 1928, July 1929 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 1,140 ppm Sept. 11-20; minimum, 180 ppm June 11-20.

Hardness: Maximum, 529 ppm Sept. 1-10; minimum, 110 ppm June 11-20.

Specific conductance: Maximum daily, 1,700 micromhos Sept. 1; minimum daily, 239 micromhos June 16-17.

Water temperatures: Maximum observed, 85°F July 5; minimum observed, freezing point on several days from November to February.

Sediment concentrations: Maximum daily, 89,200 ppm Aug. 2; minimum daily, 520 ppm Sept. 18.

Sediment loads: Maximum daily, 1,140,000 tons Aug. 2; minimum daily, 174 tons Sept. 18.

EXTREMES, 1929-53.--Dissolved solids: Maximum, 1,860 ppm July 21-31, 1934; minimum, 152 ppm June 11-20, 1952.

Hardness: Maximum, 874 ppm July 21-31, 1934; minimum, 104 ppm June 11-20, 1952.

Specific conductance (1941-53): Maximum daily, 2,070 micromhos Aug. 26, 1943; minimum daily, 208 micromhos June 17, 1952.

Water temperatures (1944-53): Maximum observed, 85°F July 21, 1945; minimum observed, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 309,000 ppm Sept. 21, 1929; minimum daily, 0 ppm July 3-13, 1934, Aug. 24-27, 29, 1939.

Sediment loads: Maximum daily, 12,000,000 tons Oct. 14, 1941 (revised); minimum daily, 0 tons July 3-13, 1934, Aug. 24-27, 29, 1939.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium carbonate	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. 1-10, 1952.	818	11	0.03	98	23	75	3.8	170	326	23	0.4	1.8	--	674	0.92	1,490	342	203	32	1.8	955	7.8	--
Oct. 11-31.....	512	8.4	.03	113	31	101	3.8	173	433	29	.5	2.4	0.15	862	1.17	1,190	411	269	35	2.2	1,170	7.8	--
Nov. 1-30.....	684	11	.03	129	34	111	4.1	200	478	32	.5	2.8	--	956	1.30	1,770	462	288	34	2.3	1,280	8.0	--
Dec. 1-31.....	706	18	--	127	35	109	3.6	198	475	34	--	3.7	--	920	1.25	1,750	460	288	34	2.2	1,270	7.8	5
Jan. 1-31, 1953.	687	14	--	127	33	101	3.6	188	458	31	--	3.7	.11	906	1.23	1,680	454	282	32	2.1	1,240	7.8	5
Feb. 1-28.....	640	11	--	121	30	98	3.6	190	438	32	--	2.8	--	858	1.17	1,480	428	272	33	2.1	1,180	7.8	10
Mar. 1-10.....	658	11	.03	121	34	105	4.3	190	464	28	.4	2.8	--	898	1.22	1,600	444	288	34	2.2	1,210	8.0	3
Mar. 11-20.....	1,018	14	.03	110	25	88	4.5	188	373	24	.4	3.9	--	768	1.04	2,110	380	226	33	2.0	1,060	7.8	7
Mar. 21-31.....	1,025	14	.07	97	24	68	4.5	172	318	20	.3	3.0	--	657	.89	1,820	343	202	30	1.6	920	7.8	8
Apr. 1-10.....	1,506	14	.02	79	17	60	3.7	152	241	15	.4	2.8	--	520	.71	2,110	268	143	32	1.6	755	7.8	8
Apr. 11-20.....	1,426	13	.03	79	20	57	3.7	146	255	15	.5	2.4	.08	532	.72	2,050	280	160	30	1.5	762	--	--
Apr. 21-30.....	2,475	16	.04	62	15	37	1.8	142	158	10	.3	1.9	--	383	.52	2,560	216	100	27	1.1	575	7.8	8
May 1-6.....	2,157	15	.05	55	14	28	1.5	122	134	8.0	.3	1.9	--	326	.44	1,900	194	94	24	.9	488	7.7	8
May 7-20.....	1,401	14	.07	65	17	44	2.2	134	187	12	.3	1.3	.06	424	.58	1,900	232	122	29	1.3	619	7.5	6
May 21-25.....	1,710	15	.05	66	19	51	2.2	138	207	14	.4	1.1	--	456	.62	2,110	242	130	31	1.4	665	7.5	8
May 26-31.....	6,277	14	.11	46	9.1	17	1.4	122	76	4.8	.3	1.9	--	238	.32	4,030	152	52	19	.6	361	7.8	15

June 1-10, 1953...	5,398	.07	36	6.9	13	1.1	92	63	4.8	.3	1.5	--	191	.26	2,780	118	43	19	.5	296	7.6	15
June 11-20.....	5,749	.10	33	6.7	13	1.2	80	64	4.8	.2	1.1	0.03	180	.24	2,790	110	44	20	.5	275	7.8	15
June 21-30.....	2,336	.16	.05	47	9.7	26	1.8	113	109	9.0	3	1.2	274	.37	1,730	158	65	26	.9	429	7.5	7
July 1-10.....	884	.10	66	14	54	3.1	136	194	18	.4	.5	--	428	.58	1,020	222	110	34	1.6	642	7.5	9
July 11-17.....	623	.08	97	20	86	4.7	193	309	27	.3	2.5	.12	664	.90	1,120	324	166	36	2.1	951	7.6	15
July 18-21.....	2,205	.22	11	109	26	136	5.6	265	398	26	.5	.7	847	1.15	5,040	379	161	43	3.0	1,210	8.1	22
July 22-30.....	1,484	.19	.17	77	16	70	4.8	188	229	17	.6	1.8	530	.72	2,140	258	104	37	1.9	774	7.8	22
July 31, Aug. 1-5	3,105	.22	.11	125	29	118	6.5	276	414	24	.5	.4	881	1.20	7,390	431	205	37	2.5	1,220	7.9	35
Aug. 6-10.....	1,133	.17	.05	86	18	69	4.7	162	271	18	.6	4.3	576	.78	1,760	288	156	34	1.8	824	7.9	25
Aug. 11-20.....	544	.06	108	26	106	--	--	178	396	28	.5	3.4	802	1.09	1,180	376	230	38	2.4	1,080	7.9	15
Aug. 21-31.....	840	.18	--	140	29	130	--	216	501	32	.4	2.6	977	1.33	2,220	468	292	38	2.6	1,320	7.5	25
Sept. 1-10.....	286	.14	.10	146	40	140	--	184	589	38	.4	3.9	1,090	1.48	871	529	378	37	2.6	1,400	7.6	--
Sept. 11-20.....	133	.09	.09	127	46	162	--	154	624	47	.4	1.7	1,140	1.55	409	506	380	41	3.1	1,500	7.7	11
Sept. 21-30.....	173	.07	.07	122	40	162	--	161	594	50	.4	2.1	1,090	1.48	509	469	337	42	3.2	1,480	7.8	18
Weighted average	1,306	.14	0.07	77	19	56	2.8	150	243	16	0.4	2.0	522	0.71	1,840	270	147	32	1.5	739	--	--

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953

Day	October			November			December		
	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment	
		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day		Mean concen-tration (ppm)	Tons per day
1.....	1,040	4,800	13,500	505	2,780	3,790	391	2,730	2,880
2.....	1,000	3,850	10,400	495	2,530	3,380	495	3,100	4,140
3.....	942	3,290	8,370	456	1,700	2,090	674	3,820	6,950
4.....	864	3,280	7,650	461	1,750	2,180	679	3,000	5,500
5.....	834	5,200	11,700	451	2,910	3,540	668	3,400	6,130
6.....	786	4,100	8,700	612	4,100	6,770	595	3,300	5,300
7.....	714	3,950	7,610	697	9,800	18,400	584	1,900	3,000
8.....	685	3,490	6,290	606	15,200	24,900	579	2,400	3,750
9.....	651	2,940	5,170	606	5,200	8,510	662	3,400	6,080
10.....	662	3,050	5,450	656	4,250	7,530	750	4,000	8,100
11.....	651	2,750	4,830	768	3,900	8,090	726	3,400	6,660
12.....	568	1,880	2,880	810	2,230	4,880	674	2,800	5,100
13.....	574	1,800	a 2,800	882	1,820	4,330	651	2,370	4,170
14.....	579	2,600	4,000	816	2,000	4,410	714	2,600	5,010
15.....	552	3,000	4,470	768	1,640	3,400	732	2,700	5,340
16.....	490	2,260	2,990	846	1,400	3,200	756	3,010	6,140
17.....	505	2,200	3,000	828	4,100	9,170	792	3,000	a 6,400
18.....	480	2,050	2,660	756	2,850	5,820	888	3,190	7,650
19.....	510	1,950	2,690	828	3,280	7,330	900	3,190	7,750
20.....	500	2,650	3,580	822	3,210	7,120	914	2,610	6,440
21.....	500	2,700	3,640	798	3,230	6,960	1,000	3,380	9,130
22.....	505	3,100	a 4,200	780	2,800	5,480	1,000	5,160	13,900
23.....	466	3,950	4,970	780	1,420	2,990	991	5,300	14,200
24.....	510	3,020	4,160	750	3,000	6,080	732	5,020	9,920
25.....	476	3,040	3,910	750	3,300	6,680	640	3,020	5,220
26.....	451	2,900	a 3,500	732	2,700	5,340	679	1,590	2,910
27.....	500	2,900	3,920	640	3,600	6,220	664	1,350	2,420
28.....	495	2,590	3,460	595	4,000	6,430	649	1,100	1,930
29.....	480	2,600	3,370	521	3,200	4,500	634	3,250	5,560
30.....	495	2,100	2,810	495	2,760	3,690	526	1,950	2,770
31.....	471	1,900	2,420	--	--	--	542	1,460	2,140
Total.	18,936	--	159,050	20,510	--	193,210	21,881	--	182,590
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.....	552	1,830	2,730	623	1,820	3,060	584	1,010	1,590
2.....	557	2,150	3,230	628	1,630	2,760	612	1,780	2,940
3.....	606	2,210	3,620	634	1,560	2,670	645	1,250	2,180
4.....	612	2,330	3,850	634	1,540	2,640	726	1,350	2,650
5.....	656	1,950	3,450	668	1,780	3,210	756	1,560	3,180
6.....	634	1,950	3,340	674	1,480	2,690	668	2,000	3,610
7.....	640	2,750	4,750	697	1,410	2,650	662	1,600	a 2,900
8.....	662	2,020	3,610	720	1,460	2,840	628	1,400	a 2,400
9.....	679	1,940	3,560	786	1,550	3,290	606	1,210	1,980
10.....	685	1,910	3,530	768	1,460	3,030	697	2,130	4,010
11.....	750	2,050	4,150	798	1,350	2,910	970	7,100	18,600
12.....	708	1,780	3,400	750	1,470	2,980	1,090	6,250	18,400
13.....	708	2,120	4,050	685	1,400	2,590	1,150	5,420	16,800
14.....	738	1,830	3,650	702	1,050	1,990	1,140	5,790	17,800
15.....	762	2,200	4,530	656	920	1,630	1,140	5,050	15,500
16.....	792	2,380	5,090	634	1,100	1,880	1,080	4,300	12,500
17.....	822	2,600	5,770	612	840	1,390	977	3,300	8,710
18.....	708	3,380	6,460	628	1,160	1,970	870	3,150	7,400
19.....	726	3,150	6,170	617	1,300	2,170	840	2,500	5,670
20.....	679	2,240	4,110	574	1,610	2,500	921	2,260	5,620
21.....	697	1,980	3,730	521	1,120	1,580	1,070	3,120	9,010
22.....	720	1,800	3,500	510	1,270	1,750	1,070	2,400	6,930
23.....	697	1,910	3,590	526	1,820	1,820	1,050	2,000	5,670
24.....	702	1,800	3,410	500	1,000	1,350	991	6,500	17,400
25.....	714	1,540	2,970	563	983	1,490	852	3,130	7,200
26.....	697	1,610	3,030	574	1,000	1,550	750	1,600	3,240
27.....	685	1,430	2,640	606	980	1,600	780	1,400	2,950
28.....	668	1,900	3,430	640	1,200	2,070	907	1,550	3,800
29.....	691	1,780	3,320	--	--	--	1,150	1,950	6,050
30.....	685	1,800	3,510	--	--	--	1,220	2,450	8,070
31.....	651	1,680	2,950	--	--	--	1,430	3,620	14,000
Total.	21,283	--	119,130	17,928	--	64,060	28,032	--	238,760

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1952 to September 1953--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	4,400	22,000	3,090	4,100	34,200	5,510	3,600	53,600
2.....	1,590	3,400	14,600	2,600	2,800	19,700	5,720	3,250	50,200
3.....	1,330	2,850	10,200	2,210	2,170	12,900	5,800	3,180	49,800
4.....	1,200	1,840	5,960	1,910	1,790	9,230	5,820	2,900	45,600
5.....	1,130	1,800	5,490	1,670	1,650	7,440	6,130	3,000	49,700
6.....	1,160	1,450	4,540	1,460	1,950	7,690	6,330	2,700	46,100
7.....	1,630	3,600	15,800	1,330	1,700	6,100	5,500	3,000	44,600
8.....	1,710	5,400	24,900	1,200	1,240	4,020	4,880	2,250	29,600
9.....	1,820	3,900	19,200	1,160	1,170	3,660	4,550	2,080	25,600
10.....	1,640	3,500	15,500	1,310	1,800	a 6,400	3,740	1,910	19,300
11.....	1,580	1,250	5,330	1,760	2,170	10,300	4,850	2,260	29,600
12.....	1,510	1,400	5,710	2,030	2,150	11,800	5,770	2,850	44,400
13.....	1,710	4,000	18,500	1,790	1,810	8,750	5,940	2,850	45,700
14.....	1,640	3,300	14,600	1,570	1,330	5,640	7,730	3,800	a 79,000
15.....	1,290	3,520	12,300	1,420	1,400	5,370	7,400	3,060	61,100
16.....	1,220	2,080	6,850	1,300	1,450	5,090	6,710	2,850	51,600
17.....	1,210	1,620	5,290	1,210	2,900	9,470	5,650	2,120	32,300
18.....	1,280	1,340	4,630	1,150	1,190	3,690	4,940	1,950	26,000
19.....	1,300	1,370	4,810	1,210	1,070	3,500	4,450	2,660	32,000
20.....	1,520	1,950	8,000	1,170	1,080	3,410	4,050	1,600	17,500
21.....	1,390	1,670	6,270	1,090	1,320	3,880	3,960	1,600	17,100
22.....	1,340	1,390	5,030	1,100	1,260	3,740	3,230	1,580	13,800
23.....	1,660	2,400	10,800	1,120	1,340	4,050	2,770	1,400	10,500
24.....	2,080	3,000	16,800	1,540	2,030	8,440	2,460	1,200	7,970
25.....	2,600	5,530	38,800	3,700	3,520	35,200	2,220	1,040	6,230
26.....	2,750	5,730	42,500	4,850	4,600	60,200	2,080	950	5,340
27.....	2,850	5,520	42,500	4,870	4,540	59,700	2,000	779	4,210
28.....	2,970	5,680	45,500	5,940	6,450	103,000	1,770	980	4,680
29.....	3,300	6,950	61,900	6,900	7,200	134,000	1,540	1,400	5,820
30.....	3,810	6,800	67,000	8,290	7,010	157,000	1,330	858	3,080
31.....	--	--	--	6,810	4,500	82,700	--	--	--
Total..	54,070	--	561,310	78,760	--	830,270	134,830	--	912,030
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.....	1,250	700	2,360	2,630	80,500	593,000	461	11,700	14,600
2.....	1,160	830	2,600	4,400	89,200	1,140,000	428	10,400	12,000
3.....	1,080	910	2,650	3,750	56,400	s 603,000	373	5,800	5,840
4.....	1,000	750	2,020	2,710	45,000	341,000	311	3,520	2,960
5.....	900	609	1,480	1,930	26,800	140,000	276	2,420	1,800
6.....	774	758	1,580	1,570	16,700	70,800	255	1,580	1,090
7.....	792	1,010	2,160	1,290	12,400	43,200	241	1,840	1,200
8.....	623	950	1,600	1,090	8,000	23,500	226	1,470	897
9.....	612	660	1,090	928	4,800	12,000	211	1,210	689
10.....	645	2,000	3,480	786	4,000	8,490	174	1,070	503
11.....	762	5,120	10,500	679	3,740	6,860	146	850	335
12.....	792	6,050	12,900	612	3,360	5,550	135	840	306
13.....	640	7,720	13,300	563	3,500	5,320	124	800	268
14.....	521	3,970	5,580	461	3,050	3,800	129	1,060	369
15.....	490	1,520	2,010	852	24,000	55,200	129	700	244
16.....	574	1,450	2,250	768	40,100	86,200	129	650	226
17.....	584	3,700	5,830	521	18,400	25,900	124	600	201
18.....	1,490	30,000	121,000	400	11,000	11,900	124	520	174
19.....	2,810	91,500	746,000	331	13,400	12,000	132	650	232
20.....	2,630	59,000	434,000	258	8,000	5,570	154	700	a 290
21.....	1,890	28,000	143,000	224	7,500	4,540	163	1,000	440
22.....	1,840	16,200	80,500	241	12,000	7,810	160	839	362
23.....	1,580	9,600	41,000	241	16,000	10,400	168	1,000	454
24.....	1,250	6,040	20,400	218	14,000	8,240	174	1,000	470
25.....	1,170	5,300	16,700	192	12,800	6,640	157	982	416
26.....	1,390	6,020	22,600	163	13,900	6,120	163	877	386
27.....	1,220	26,000	85,600	428	24,500	s 53,200	166	983	441
28.....	984	16,200	43,000	2,720	47,000	s 466,000	157	912	387
29.....	921	10,400	25,900	3,170	54,000	s 503,000	196	1,450	787
30.....	3,090	84,000	sl 150,000	1,110	33,500	104,000	224	1,330	804
31.....	3,210	170,000	sl 800,000	536	18,000	26,000	--	--	--
Total..	38,674	--	4,803,090	35,772	--	4,389,240	6,010	--	49,151
Total discharge for year (cfs-days).....									478,686
Total load for year (tons).....									12,501,891

s Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued
SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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; V, visual accumulation tube)

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	1.000	2.000
Nov. 8, 1952	10:15 a.m.	623	47	15,900	4,600		61		64	--	67	83	99	100	SPWCM
Dec. 15	10:00 a.m.	768	35	2,550	--	--	--	--	--	--	--	10	43	94	V
Dec. 20	10:05 a.m.	882	40	2,180	--	--	--	--	--	--	24	51	92	100	V
Jan. 17, 1953	12:10 p.m.	822	36	2,500	3,040		40		42	--	47	62	96	100	SPWCM
Feb. 18	9:55 a.m.	634	44	1,060	--	--	--	--	--	--	15	38	94	100	S
Mar. 9	4:55 p.m.	601	55	1,510	2,890		42		46	--	50	71	97	100	SPWCM
Mar. 11	10:15 a.m.	1,150	53	8,390	4,600		57		70	--	79	88	99	100	SPWCM
Mar. 31	10:45 a.m.	1,640	47	4,310	4,070		18		27	--	44	64	95	100	SPWCM
Apr. 7	2:05 p.m.	1,700	53	3,010	5,040		25		35	--	54	72	96	100	SPWCM
Apr. 7	2:05 p.m.	1,700	53	3,010	4,160		3		37	--	54	72	96	100	SPN
Apr. 26	5:45 p.m.	2,860	60	5,090	3,030		24		38	--	57	75	94	100	SPWCM
Apr. 26	5:45 p.m.	2,860	60	5,090	3,260		11		36	--	57	75	94	100	SPN
May 14	3:00 p.m.	1,540	63	1,170	1,740		12		15	--	28	53	93	100	SPWCM
May 29	5:40 p.m.	7,460	66	6,600	3,320		24		26	--	45	62	84	99	SPWCM
June 2	9:15 a.m.	4,950	87	3,090	4,490		7		12	--	26	44	78	97	SPWCM
June 13	9:30 a.m.	5,440	71	2,140	3,310		9		13	--	27	48	84	98	SPWCM
July 8	10:10 a.m.	634	79	475	296		--		--	--	14	28	70	99	S
July 10	7:10 p.m.	640	77	3,580	6,860		26		57	--	87	88	95	100	VPWCM
July 18	10:45 a.m.	2,140	75	13,900	3,360		45		63	76	89	96	99	100	SPWCM
July 19	9:05 a.m.	1,840	73	98,600	6,010		55		78	--	95	98	100	SPWCM	
July 19	9:05 a.m.	1,840	73	98,600	6,330		4		77	--	95	98	100	SPN	
July 23	7:35 a.m.	1,620	74	9,400	3,960		53		64	67	71	91	100	SPWCM	
Aug. 3	7:50 a.m.	3,200	70	54,200	3,260		46		57	62	73	90	99	100	SPWCM
Aug. 18	8:20 a.m.	400	73	10,200	4,120		65		77	81	87	97	100	SPWCM	
Aug. 27	9:55 a.m.	157	71	7,830	5,580		80		88	--	93	98	100	SPWCM	
Sept. 22	9:10 a.m.	160	65	824	1,360		27	28	30	37	46	72	96	100	SPWCM

COLORADO RIVER MAIN STEM

COLORADO RIVER AT LEES FERRY, ARIZ.

LOCATION.--At gaging station at head of Marble Gorge at Lees Ferry, Coconino County, just upstream from Paria River, 28 miles downstream from Utah-Arizona State line, 61.5 miles upstream from Little Colorado River, and 79 miles downstream from San Juan River.

DRAINAGE AREA.--107,900 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: January to July 1926, October 1926 to June 1927, October 1928 to September 1930, November 1942 to October 1945, October 1947 to September 1953.

Water temperatures: July 1949 to September 1953.

Sediment records: October 1928 to December 1933.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 1,210 ppm Sept. 21-30; minimum, 166 ppm June 21-30.

Hardness: Maximum, 602 ppm Sept. 1-10; minimum, 166 ppm June 21-30.

Specific conductance: Maximum observed, 1,910 micromhos Sept. 8; minimum observed, freezing point Dec. 1.

Water temperatures: Maximum observed, 82° F July 21, 23, 24; minimum daily, 661 ppm Oct. 25.

Sediment concentrations: Maximum daily, 26,200 ppm Aug. 5; minimum daily, 6,220 tons Sept. 30.

EXTREMES, 1928-33, 1942-45, 1947-53.--Dissolved solids (1928-30, 1942-45, 1947-53): Maximum, 1,410 ppm Oct. 11-20, 1928; minimum, 209 ppm June 11-20, 1929.

Hardness (1928-30, 1942-45, 1947-53): Maximum, 720 ppm Oct. 11-20, 1928; minimum, 132 ppm June 11-20, 1944.

Specific conductance (1928-30, 1942-45, 1947-53): Maximum observed, 2,280 micromhos Oct. 15, 1945; minimum observed, 318 micromhos June 9, 1948.

Water temperatures (1928-33, 1942-44, 1947-53): Maximum observed, 84° F Aug. 3, 1952; minimum observed, freezing point on many days during winter months.

Sediment concentrations (1928-33, 1942-44, 1947-53): Maximum daily, 83,300 ppm Aug. 11, 1930; minimum daily, 300 ppm Jan. 8, 1949.

Sediment loads (1928-33, 1942-44, 1947-53): Maximum daily, 9,450,000 tons Aug. 7, 1929; minimum daily, 1,220 tons Jan. 8, 1949.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./ml.	Non-carbonate				
Oct. 1-10, 1952	6,870	13	0.01	119	47	142	6.0	200	472	96	0.4	3.8	0.18	997	1.36	18,490	490	326	38	2.8	1,470	7.8
Oct. 11-20	5,504	11	0.01	115	52	148	5.7	198	491	98	4	3.6	0.18	1,030	1.40	15,310	501	333	39	2.9	1,500	--
Oct. 21-31	5,640	11	0.01	122	58	168	6.3	215	537	118	4	4.3	0.22	1,130	1.54	17,210	544	368	40	3.1	1,640	7.8
Nov. 1-10	5,765	11	0.01	124	59	172	6.2	222	549	116	4	4.2	0.20	1,150	1.56	17,900	552	370	40	3.2	1,640	7.9
Nov. 11-20	6,663	11	0.00	125	58	172	5.8	224	543	116	4	4.6	0.16	1,150	1.56	20,690	550	367	40	3.2	1,640	8.0
Nov. 21-30	7,056	14	0.01	126	55	164	5.8	236	521	112	4	4.6	0.20	1,120	1.52	21,340	540	347	39	3.1	1,600	8.0
Dec. 1-10	5,021	15	0.01	124	55	164	5.5	232	499	126	3	4.9	0.25	1,110	1.51	15,050	536	346	40	3.1	1,620	7.9
Dec. 11-20	6,222	16	0.01	126	56	170	5.8	258	514	132	2	5.3	0.25	1,150	1.56	19,320	545	334	40	3.2	1,680	7.9
Dec. 21-31	7,125	14	0.01	113	48	148	5.2	236	441	114	2	4.5	0.23	1,000	1.36	19,240	480	286	40	2.9	1,480	7.9
Jan. 1-10, 1953	5,387	15	0.01	112	51	157	5.5	238	444	121	4	5.4	0.25	1,030	1.40	14,980	489	294	41	3.1	1,540	7.9
Jan. 11-19	6,840	15	0.00	116	50	158	5.8	238	438	132	4	5.6	0.29	1,040	1.41	19,210	495	300	41	3.1	1,560	8.0
Jan. 20-31	7,553	16	0.01	109	47	144	5.2	230	404	115	3	5.0	0.18	956	1.30	19,560	466	277	40	2.9	1,420	7.7
Feb. 1-10	6,627	14	0.01	106	47	143	5.2	231	410	113	3	4.7	0.17	957	1.30	17,120	458	268	40	2.9	1,410	7.9
Feb. 11-20	6,932	14	0.01	105	46	146	5.2	227	408	112	3	4.4	0.18	953	1.30	17,840	451	265	41	3.0	1,420	7.9
Feb. 21-28	6,075	13	0.01	102	45	156	5.2	228	407	123	3	4.2	0.19	967	1.32	15,860	440	254	43	3.2	1,450	7.8

a Includes equivalent of 7 parts per million of carbonate (CO₃).

Mar. 1-10, 1953	6,386	13	.02	104	47	158	6.1	230	407	126	.3	4.9	.23	979	1.33	16,750	453	264	43	3.2	1,470	8.0
Mar. 11-20	8,095	12	.00	101	45	146	5.8	219	396	109	.3	4.0	.25	927	1.26	20,260	437	258	42	3.0	1,390	8.0
Mar. 21-31	7,857	12	.03	86	40	128	5.1	203	342	93	.3	3.8	.25	810	1.10	17,180	379	212	42	2.9	1,230	7.9
Apr. 1-10	9,032	14	.01	90	41	134	5.1	134	354	103	.3	3.3	.19	848	1.15	20,700	393	222	42	2.9	1,280	7.6
Apr. 11-20	8,992	14	.01	86	38	118	4.6	210	335	79	.2	3.4	.17	781	1.06	18,960	370	198	41	2.7	1,180	7.7
Apr. 21-30	8,642	14	.01	84	38	115	4.6	203	318	85	.2	2.7	.17	762	1.04	17,780	366	199	40	2.6	1,150	7.8
May 1-10	14,760	15	.02	70	28	83	4.1	189	235	54	.3	2.9	.15	585	.80	23,310	287	132	38	2.1	892	7.8
May 11-20	11,700	13	.02	66	27	70	3.8	174	212	49	.3	2.5	.15	530	.72	16,740	276	133	35	1.8	817	7.7
May 21-26	12,467	13	.01	69	27	78	3.9	174	234	54	.3	2.0	.12	567	.77	19,090	283	140	37	2.0	871	7.7
May 27-31	37,740	13	.05	56	20	51	3.7	163	152	35	.2	2.5	.11	413	.56	42,080	222	88	33	1.5	650	7.8
June 1-10	48,490	13	.05	52	14	26	2.5	159	91	16	.3	2.3	.08	295	.40	38,620	187	56	23	.8	472	7.8
June 11-20	55,820	12	.03	49	13	24	2.5	145	88	15	.3	1.9	.09	277	.38	41,750	176	57	22	.8	444	7.7
June 21-30	46,520	12	.04	45	13	24	2.6	138	83	14	.3	1.6	.08	264	.36	33,160	166	53	23	.8	454	7.7
July 1-10	20,360	12	.01	59	17	37	3.4	166	120	30	.3	1.4	.11	362	.49	19,900	217	81	27	1.1	571	7.5
July 11-20	14,180	13	.01	72	22	55	4.1	182	179	43	.4	1.8	.14	479	.65	18,340	270	121	30	1.5	746	7.6
July 21-31	12,140	14	.01	86	26	79	4.8	191	258	53	.4	3.4	.18	619	.84	20,230	322	165	34	1.9	939	7.7
Aug. 1-10	15,340	17	.42	132	35	106	7.3	226	423	59	.5	2.1	.16	893	1.21	36,990	474	288	32	2.1	1,270	7.6
Aug. 11-20	8,887	16	.03	108	33	96	6.0	198	357	58	.4	4.3	.17	776	1.06	18,620	405	243	34	2.1	1,130	7.7
Aug. 21-31	8,280	15	.08	130	36	117	7.0	212	447	70	.5	2.9	.19	929	1.26	20,750	472	299	35	2.3	1,350	7.7
Sept. 1-10	3,744	14	.18	139	50	134	7.9	210	604	97	.4	3.2	.22	1,190	1.62	16,590	692	430	35	2.7	1,560	7.5
Sept. 11-20	3,853	13	.02	131	51	146	5.9	203	536	103	.4	4.4	.22	1,090	1.48	11,430	556	370	37	2.6	1,970	7.6
Sept. 21-30	3,549	10	.02	132	59	172	6.8	194	602	125	.4	3.9	.23	1,210	1.63	10,940	572	413	39	3.1	1,730	7.7
Weighted average	12,140	13	0.04	81	30	83	4.3	185	262	59	0.3	2.9	0.15	627	0.85	20,550	325	174	35	2.0	940	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Temperature (° F) of water, water year October 1952 to September 1953

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	7,910	2,230	47,600	5,710	966	14,900	5,800	957	14,500
2.....	7,770	1,840	38,600	5,660	741	11,300	5,020	862	11,700
3.....	7,420	1,590	31,900	5,570	862	13,000	4,600	671	8,330
4.....	7,150	1,440	27,800	5,460	877	12,900	4,320	713	8,320
5.....	6,950	1,280	24,000	5,460	971	14,300	4,290	749	8,680
6.....	6,790	1,370	25,100	5,660	860	13,100	4,600	801	9,950
7.....	6,530	1,150	20,300	5,830	938	14,800	4,910	950	12,600
8.....	6,250	936	15,800	6,040	998	16,300	5,350	1,050	15,200
9.....	6,070	929	15,200	6,160	1,030	17,100	5,630	1,100	16,700
10.....	5,860	880	13,900	6,100	956	15,700	5,890	1,020	16,200
11.....	5,690	924	14,200	6,130	758	12,500	6,010	1,100	a 18,000
12.....	5,660	865	13,200	5,830	1,300	20,500	5,770	1,120	17,400
13.....	5,570	735	11,100	5,980	1,480	23,900	5,740	1,350	20,900
14.....	5,520	793	11,800	6,160	1,520	25,300	5,950	1,550	24,900
15.....	5,430	854	12,500	6,560	1,490	26,400	6,130	1,110	18,400
16.....	5,430	768	11,300	7,090	1,480	28,300	5,980	987	15,900
17.....	5,490	805	11,900	7,520	1,660	33,700	6,160	943	15,700
18.....	5,490	784	11,600	7,090	1,490	28,500	6,470	1,360	23,800
19.....	5,380	873	12,700	7,090	1,440	27,600	6,790	1,350	24,700
20.....	5,380	790	11,500	7,180	1,500	29,100	7,220	1,350	26,300
21.....	5,430	789	11,600	7,180	1,310	25,400	7,150	1,800	34,700
22.....	5,570	1,110	16,700	7,250	1,430	28,000	7,280	1,800	35,400
23.....	5,690	921	14,100	7,280	1,120	22,000	7,600	1,730	35,500
24.....	5,710	736	11,300	6,920	1,240	23,200	7,840	1,570	33,700
25.....	5,710	661	10,200	7,020	1,470	27,900	7,840	1,500	a 32,000
26.....	5,800	710	11,100	7,090	1,210	23,200	7,660	1,450	30,000
27.....	5,660	877	13,400	7,150	1,260	24,300	7,220	1,290	25,100
28.....	5,550	766	11,500	7,150	1,070	20,700	6,820	1,340	24,700
29.....	5,630	754	11,500	7,050	1,170	22,300	6,560	1,300	23,000
30.....	5,630	778	11,800	6,470	874	15,300	6,220	1,200	20,200
31.....	5,660	874	12,400	--	--	--	5,980	1,050	17,000
Total.	185,780	--	518,600	194,840	--	631,500	190,800	--	639,480
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.....	5,550	900	a 13,000	6,770	1,170	21,400	5,720	1,200	18,500
2.....	5,150	751	10,400	6,600	1,080	19,200	5,780	900	14,000
3.....	5,100	895	12,300	6,540	1,100	19,400	6,120	1,030	17,000
4.....	5,100	814	11,200	6,640	1,160	20,800	6,410	1,110	19,200
5.....	5,370	909	13,200	6,670	1,240	22,300	6,540	1,070	18,900
6.....	5,490	1,270	18,800	6,640	1,160	20,800	6,570	1,000	17,700
7.....	5,520	1,070	15,900	6,670	1,310	23,600	6,740	1,010	18,400
8.....	5,580	1,410	21,200	6,600	1,210	21,600	6,870	1,040	18,700
9.....	5,520	1,250	18,600	6,500	1,080	19,000	6,470	880	15,400
10.....	5,490	1,170	17,300	6,640	1,160	20,800	6,340	837	14,300
11.....	5,690	1,120	17,200	7,210	1,480	28,800	6,440	905	15,700
12.....	6,570	1,370	24,300	7,420	1,490	29,900	6,570	1,060	18,800
13.....	6,770	1,350	24,700	7,380	1,310	26,100	6,940	1,060	19,900
14.....	6,910	1,650	30,800	7,210	1,070	20,800	7,420	1,310	26,200
15.....	7,210	1,560	30,400	6,910	1,310	24,400	7,460	1,400	a 28,000
16.....	7,110	1,200	23,000	6,700	1,220	22,100	7,660	1,700	35,200
17.....	7,150	1,180	22,800	6,740	1,390	25,300	8,730	2,170	51,100
18.....	7,110	1,260	24,200	6,740	1,180	21,500	9,640	2,240	58,300
19.....	7,040	1,110	21,100	6,640	1,140	20,400	10,200	2,120	58,400
20.....	7,080	1,250	23,900	6,370	1,030	17,700	9,890	2,000	53,400
21.....	7,110	1,000	19,200	6,410	1,020	17,700	9,040	1,990	48,600
22.....	6,770	1,130	20,700	6,440	969	16,800	8,360	1,770	40,000
23.....	6,840	1,370	25,300	6,080	950	a 16,000	8,170	1,750	38,600
24.....	6,840	1,410	26,000	5,750	922	14,300	8,100	1,810	39,600
25.....	6,910	1,300	24,300	5,780	851	13,300	8,170	1,700	37,500
26.....	6,980	1,280	24,100	6,150	908	15,100	8,020	1,540	33,300
27.....	6,810	1,310	24,100	6,150	924	15,300	7,880	1,420	30,200
28.....	6,810	1,310	24,100	5,840	932	14,700	7,630	1,440	29,700
29.....	6,980	1,410	26,600	--	--	--	7,210	1,400	a 27,000
30.....	7,040	1,340	25,500	--	--	--	6,910	1,210	22,800
31.....	6,910	1,180	22,000	--	--	--	6,940	1,280	24,000
Total.	198,510	--	656,200	184,190	--	569,100	230,740	--	908,200

a Computed by subdividing day.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	7,490	1,360	27,500	13,100	2,530	89,500	51,800	5,870	821,000
2.....	7,740	1,340	28,000	14,900	2,700	109,000	48,100	5,170	671,000
3.....	8,320	1,300	29,200	16,800	3,240	147,000	48,700	4,410	580,000
4.....	8,850	1,340	32,000	17,400	3,410	160,000	49,700	4,120	553,000
5.....	9,320	1,400	a 35,000	16,500	3,200	143,000	49,200	3,840	510,000
6.....	9,320	1,420	35,700	15,700	3,160	134,000	50,200	3,850	522,000
7.....	9,360	1,370	34,600	14,900	2,840	114,000	50,800	3,330	457,000
8.....	9,320	1,400	35,200	13,600	2,660	97,700	48,700	3,170	417,000
9.....	10,000	1,690	45,600	12,700	2,460	84,400	45,100	3,640	443,000
10.....	10,600	1,900	54,400	12,000	2,300	a 75,000	42,600	3,550	408,000
11.....	10,400	2,000	56,200	11,100	2,130	63,800	39,300	3,320	352,000
12.....	9,760	1,810	47,700	10,400	1,960	55,000	38,800	2,870	301,000
13.....	9,440	1,670	42,600	11,100	1,980	59,300	44,600	3,020	364,000
14.....	9,360	1,680	42,500	12,400	1,950	65,300	51,800	3,090	432,000
15.....	9,360	1,460	36,900	12,900	1,700	59,200	58,300	3,280	516,000
16.....	9,280	1,410	35,300	12,200	1,530	50,400	66,200	3,610	645,000
17.....	8,810	1,420	33,800	12,000	1,570	50,900	68,500	4,190	775,000
18.....	8,390	1,460	33,100	12,200	1,500	49,400	66,200	4,130	738,000
19.....	7,840	1,360	28,800	11,800	1,380	44,000	62,800	3,490	592,000
20.....	7,280	1,170	23,000	10,900	1,400	41,200	61,700	3,470	578,000
21.....	7,080	1,120	21,400	10,400	1,750	49,100	59,400	3,400	a 550,000
22.....	7,490	1,200	24,300	10,600	1,360	38,900	59,400	3,190	512,000
23.....	7,520	1,190	24,200	11,100	1,290	38,700	55,000	3,260	484,000
24.....	7,280	1,120	22,000	11,800	1,400	a 45,000	50,800	3,390	465,000
25.....	7,560	1,030	21,000	12,900	1,420	49,500	48,700	2,850	375,000
26.....	7,990	1,090	23,500	18,000	1,480	s 76,400	44,600	2,810	338,000
27.....	8,360	1,310	29,600	32,100	4,650	s 380,000	42,100	3,000	341,000
28.....	9,440	1,900	48,400	32,900	5,180	460,000	38,800	2,700	a 280,000
29.....	11,300	2,220	67,700	35,200	5,280	502,000	35,200	2,400	228,000
30.....	12,400	2,430	81,400	39,800	5,780	621,000	31,200	2,160	182,000
31.....	--	--	--	48,700	6,520	857,000	--	--	--
Total.	266,660	--	1,100,600	528,100	--	4,809,700	1,503,300	--	14,430,000

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.....	28,000	1,960	148,000	14,100	9,700	369,000	6,940	18,000	337,000
2.....	25,300	1,880	128,000	18,900	22,800	1,160,000	6,280	12,300	209,000
3.....	23,800	1,680	108,000	16,500	18,700	833,000	6,840	8,550	158,000
4.....	22,100	1,500	89,500	16,800	21,400	971,000	6,500	6,030	106,000
5.....	20,800	1,400	a 79,000	17,700	26,200	1,250,000	5,870	4,900	77,700
6.....	19,200	1,300	67,400	16,200	16,300	713,000	5,490	3,720	55,100
7.....	17,400	1,250	58,700	15,400	15,500	644,000	5,320	5,250	75,400
8.....	16,200	1,160	50,700	13,900	16,600	623,000	5,070	7,150	97,900
9.....	15,400	1,150	47,000	12,400	11,800	395,000	4,790	4,460	57,700
10.....	15,400	1,960	81,500	11,500	8,100	252,000	4,640	3,090	38,700
11.....	14,600	1,360	53,600	10,200	6,520	180,000	4,420	2,900	34,600
12.....	14,600	1,660	73,300	10,400	6,000	168,000	4,200	2,100	23,800
13.....	13,400	3,780	137,000	9,600	7,600	197,000	4,060	1,550	17,000
14.....	12,400	2,100	70,300	9,080	4,750	116,000	3,920	1,500	15,900
15.....	12,200	1,210	39,900	8,810	5,900	140,000	3,850	1,410	14,700
16.....	12,400	1,930	64,600	9,000	4,500	109,000	3,720	1,370	13,800
17.....	14,100	3,320	126,000	8,540	4,500	104,000	3,680	1,200	a 12,000
18.....	18,300	5,900	s 303,000	8,770	5,760	136,000	3,700	944	9,430
19.....	15,400	5,700	a 240,000	7,630	4,100	84,500	3,640	801	7,870
20.....	14,400	5,700	a 220,000	6,840	3,900	72,000	3,640	900	8,850
21.....	14,400	8,090	315,000	6,480	4,000	a 70,000	3,550	843	8,080
22.....	14,900	8,900	358,000	6,150	6,800	113,000	3,450	762	7,100
23.....	14,900	6,500	261,000	6,410	4,000	69,200	3,430	679	6,290
24.....	14,100	5,030	191,000	7,380	5,800	116,000	3,430	711	6,580
25.....	12,700	3,850	132,000	7,380	8,100	161,000	3,410	800	7,370
26.....	11,800	3,300	a 110,000	6,410	10,000	173,000	3,340	890	8,030
27.....	10,900	2,950	86,800	7,500	9,780	s 224,000	3,280	863	7,640
28.....	10,400	2,500	70,200	11,300	19,800	s 728,000	3,200	896	7,740
29.....	9,720	2,220	58,300	12,000	19,100	619,000	3,200	750	6,480
30.....	9,520	2,700	69,400	11,300	18,200	555,000	3,200	720	6,220
31.....	10,200	5,670	156,000	8,770	16,000	a 380,000	--	--	--
Total.	478,940	--	3,993,000	333,350	--	11,724,700	130,060	--	1,441,980

Total discharge for year (cfs-days).....4,430,270

Total load for year (tons).....41,423,260

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle - size analyses of suspended sediment, water year October 1952 to September 1953

(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; V, visual accumulation tube)

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	1.000	2.000
Oct. 5, 1952.....	10:00 a.m.	6,950	66	1,390	2,340		31		44		63	87	99	100	SPWCM
Oct. 5.....	10:00 a.m.	6,950	66	1,390	2,400		5		44		63	87	99	100	SPN
Oct. 16.....	8:30 a.m.	5,430	58	790							48	78	98	100	S
Oct. 25.....	9:00 a.m.	5,740	56	628							55	85	97	100	S
Nov. 5.....	9:15 a.m.	5,460	56	952							36	73	99	100	S
Nov. 15.....	3:15 p.m.	6,690	47	1,410	1,600	28	31	35	41	47	56	79	100	--	SBWCM
Nov. 25.....	2:00 p.m.	7,080	40	1,220							35	72	100	--	S
Dec. 5.....	2:30 p.m.	4,320	35	758	1,760		20		27		41	71	100	--	SPWCM
Dec. 15.....	1:45 p.m.	6,220	37	1,040							35	73	99	100	S
Dec. 24.....	3:30 p.m.	8,020	36	1,380	2,150		26		35		54	79	100	--	SPCW
Jan. 5, 1953.....	2:45 p.m.	5,370	35	881							39	70	100	--	V
Jan. 15.....	1:30 p.m.	7,280	41	1,400							39	76	98	100	S
Jan. 25.....	4:30 p.m.	6,870	40	1,280	2,790		22		27		41	75	99	100	SPWCM
Feb. 5.....	2:40 p.m.	6,700	41	1,180							39	74	100	--	V
Feb. 16.....	1:25 p.m.	6,640	43	1,310							34	73	100	--	V
Feb. 25.....	3:15 p.m.	5,870	40	834							35	76	100	--	V
Mar. 5.....	2:00 p.m.	6,540	44	994							44	72	98	100	S
Mar. 16.....	12:00 m.	7,580	49	1,540	4,330		45		54		67	85	99	100	SPWCM
Apr. 1.....	11:45 a.m.	7,490	55	1,240	3,240		29		40		54	75	98	100	SPWCM
Apr. 16.....	11:15 a.m.	9,440	55	1,320	4,420		34		46		62	82	99	100	SPWCM
Apr. 26.....	10:30 a.m.	17,950	66	1,030	4,740		20		31		45	71	98	100	SPWCM
May 4.....	10:30 a.m.	17,700	57	3,360	3,540		32		47		71	84	99	100	SPWCM
May 4.....	10:30 a.m.	17,700	57	3,360	3,170		9		38		71	84	99	100	SPN
May 14.....	9:50 a.m.	12,400	61	1,800	4,020		25		38		56	80	99	100	SPWCM
May 25.....	10:00 a.m.	12,700	62	1,500	3,560		19		31		50	71	93	100	SPWCM
May 27.....	9:10 a.m.	33,800	64	4,510	3,620		16		29		65	82	97	100	SPWCM
June 1.....	8:50 a.m.	52,900	62	5,530	4,500		29		44		78	92	99	100	SPWCM
June 10.....	8:50 a.m.	42,600	63	3,230	3,600		37		53		59	85	98	100	SPWCM
June 17.....	10:30 a.m.	69,600	69	4,140	2,400		18		28		60	80	96	100	VPWCM
June 27.....	9:15 a.m.	41,200	69	2,820	3,660		14		24		54	77	95	100	VPWCM

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953--Continued
(Milled material, 0.075 mm. or larger, dispersed; D, chemically dispersed; M, mechanically dispersed; V, visual accumulation tube;
W, in distilled water; C, chemically dispersed; M, mechanically dispersed; V, visual accumulation tube)

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	1.000	2.000
July 7, 1953.	11:15 a. m.	17,700	79	1,070	--	--	--	--	--	--	56	79	100	V	
July 10.	4:10 p. m.	15,100	80	2,320	5,090	41	41	57	57	79	79	91	99	SPWCM	
July 17.	9:45 a. m.	14,400	79	3,200	3,130	46	46	68	68	83	83	93	99	SPWCM	
July 17.	9:45 a. m.	14,400	79	3,200	4,220	9	9	58	58	83	83	93	99	SPN	
July 23.	11:00 a. m.	15,100	82	6,270	4,000	63	63	79	79	91	91	96	100	SPWCM	
July 27.	10:45 a. m.	11,100	81	2,980	4,210	53	53	67	67	81	81	92	98	SPWCM	
July 30.	5:00 p. m.	9,760	80	3,740	3,400	55	55	73	73	88	88	96	100	VPWCM	
July 31.	6:30 p. m.	11,300	78	6,610	3,630	46	46	66	66	88	88	97	99	VPWCM	
Aug. 1.	9:40 a. m.	13,600	78	8,920	3,580	49	49	72	72	87	87	95	99	SPWCM	
Aug. 1.	8:40 a. m.	13,600	78	8,920	3,730	12	12	72	72	87	87	95	99	SPN	
Aug. 2.	10:10 a. m.	18,600	78	24,300	1,520	54	54	79	79	94	94	98	100	SPWCM	
Aug. 3.	8:50 a. m.	16,800	76	17,800	3,870	31	31	53	53	94	94	98	100	VPWCM	
Aug. 5.	8:50 a. m.	18,000	75	26,500	3,830	59	59	85	85	95	95	99	100	VPWCM	
Aug. 7.	9:50 a. m.	15,700	76	14,200	3,830	65	65	84	84	92	92	98	100	VPWCM	
Aug. 12.	2:15 p. m.	10,400	80	5,560	4,980	55	55	73	73	88	88	96	99	SPWCM	
Aug. 12.	2:15 p. m.	10,400	80	5,560	4,980	4	4	75	75	88	88	96	100	SPN	
Aug. 16.	11:20 a. m.	9,200	78	4,110	3,660	53	53	71	71	85	85	97	100	VPWCM	
Aug. 17.	8:40 a. m.	8,360	78	3,620	3,760	52	52	72	72	86	86	97	100	VPWCM	
Aug. 18.	11:05 a. m.	8,930	79	5,510	4,760	56	56	79	79	90	90	98	100	VPWCM	
Aug. 20.	9:15 a. m.	6,980	77	3,940	3,700	67	67	84	84	92	92	98	100	VPWCM	
Aug. 22.	4:40 p. m.	6,240	79	7,110	3,760	59	59	85	85	96	96	99	100	VPWCM	
Aug. 24.	8:30 a. m.	7,080	78	5,070	5,040	62	62	81	81	93	93	99	100	VPWCM	
Aug. 25.	11:00 a. m.	7,320	77	7,940	3,770	67	67	87	87	96	96	99	100	VPWCM	
Aug. 28.	4:30 p. m.	11,500	75	19,700	3,810	53	53	78	78	93	93	99	100	VPWCM	
Aug. 29.	1:15 p. m.	11,800	75	17,700	4,200	54	54	81	81	96	96	100	--	VPWCM	
Aug. 30.	6:20 p. m.	11,800	75	18,200	4,880	53	53	83	83	95	95	99	100	VPWCM	
Sept. 1.	11:15 a. m.	6,740	72	19,600	4,110	70	70	91	91	96	96	99	100	VPWCM	

PARIA RIVER BASIN

PARIA RIVER AT LEES FERRY, ARIZ.

LOCATION.--At gaging station half a mile upstream from mouth and 1 mile northwest of Lees Ferry, Coconino County.

DRAINAGE AREA.--1,570 square miles, approximately.

RECORDS AVAILABLE.--Chemical analysis: October 1947 to February 1950.

Sediment records: October 1947 to September 1953.

EXTREMES, 1952-53.--Sediment concentrations: Maximum daily, 283,000 ppm July 31; maximum observed 599,000 ppm July 31; minimum daily, 3 ppm June 1-11.

Sediment loads: Maximum daily, 1,260,000 tons Aug. 28; minimum daily, less than 0.05 ton on many days.

EXTREMES, 1947-53.--Sediment concentrations: Maximum daily, 411,000 ppm Aug. 27, 1952; minimum daily, 1 ppm June 1-10, 1950.

Sediment loads: Maximum daily, 1,740,000 tons (revised) Aug. 5, 1948; minimum daily; less than 0.05 ton on many days.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

REVISIONS.--Revised figures of suspended sediment for water years 1948 and 1949 are given herewith:

Suspended sediment, water year October 1947 to September 1948

Month	Discharge (cfs)	Suspended sediment (tons)
October 1947	1,349.9	352,900
November	570	434
December	1,139	27,560
January 1948	711.2	1,470
February	1,632.1	82,650
March	763	10,010
April	519.8	8,710
May	170.2	15,180
June	376.6	139,100
July	221.8	20,530
August	1,963.7	1,975,000
September	195.3	8,960
Total for year	9,634.6	2,643,000

PARIA RIVER BASIN--Continued

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1948 to September 1949

Date	Mean discharge (cfs)	Suspended sediment	
		Mean concentration (percent)	Discharge (tons per day)
Oct. 1, 1948	14	5.90	2,310
Oct. 31	160	6.95	s 47,000
Oct. Total	439	--	50,360
Nov. 1	65	3.90	7,100
Nov. Total	612	--	10,870
Feb. 28, 1949	191	3.83	s 21,900
Feb. Total	1,058.0	--	40,820
Apr. 5	50	4.51	s 6,330
Apr. 7	47	3.84	s 4,940
Apr. Total	1,067	--	42,830
June 5	113	8.48	s 29,300
June 6	154	6.32	s 27,600
June 7	253	14.3	s 110,000
June 8	80	6.75	s 16,500
June 9	187	13.4	s 112,000
June 10	74	4.63	s 9,820
June 14	32	4.10	s 3,670
June 18	60	6.42	s 16,800
June 19	291	31.0	s 417,000
June 20	66	13.0	s 28,700
June 21	30	4.35	s 3,650
June Total	1,668.1	--	787,000
July 11	47	9.95	s 25,300
July 12	26	14.1	s 12,500
July 13	26	10.0	7,540
July 14	12	4.80	1,610
July Total	210.9	--	47,670
Aug. 8	188	26.2	s 282,000
Aug. 9	243	19.3	s 169,000
Aug. 10	58	12.0	s 20,500
Aug. 11	22	6.90	4,250
Aug. 12	17	3.28	1,560
Aug. 25	36	7.73	s 15,800
Aug. 26	17	8.16	s 4,510
Aug. 27	6.5	4.60	837
Aug. Total	713.7	--	500,600
Sept. 14	112	9.15	s 34,300
Sept. 15	24	6.78	4,560
Sept. 16	18	4.10	2,070
Sept. 29	675	28.0	s 970,000
Sept. 30	101	11.5	s 36,800
Sept. Total	1,178.8	--	1,057,000

Total discharge for year (cfs-days) 9,873.9
 Total load for year (tons)..... 2,592,000

Daily maximum load 970,000 tons Sept. 29.

s Computed by subdividing day.

PARIA RIVER BASIN--Continued

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	15	158	6.4	6.8			18	300	15
2.....	13	149	5.2	8.2			16	130	5.6
3.....	12	99	3.2	8.2			20	180	9.7
4.....	12	94	3.0	8.6			18	160	7.8
5.....	12	56	1.8	8.6			15	189	7.7
6.....					5	0.1			
7.....	13			9.1			15	150	6.1
8.....	12			9.1			17	337	s 18
9.....	11			9.1			19	630	32
10.....	10			9.1			25	510	34
11.....	10			9.1			27	1,110	81
12.....	9.6	23	.7						
13.....	9.6			7.2			23	1,070	s 78
14.....	11			6.3			21	1,430	s 99
15.....	10			7.7	7	.2	21	1,090	s 71
16.....	9.6			9.6			24	902	s 69
17.....				11			30	1,390	s 133
18.....	9.6			14	30	1.1	28	1,290	98
19.....	9.1			16	60	2.6	28	1,110	84
20.....	9.1			16	59	2.5	37	990	99
21.....	8.2			15	110	4.5	46	3,730	463
22.....	7.7			16	100	4.3	38	6,030	619
23.....	7.7	14	.3						
24.....	7.7			17	270	12	33	2,940	282
25.....	8.2			16	180	7.8	29	770	60
26.....	7.2			16	230	9.9	19	360	18
27.....	5.9			16	241	10	14	480	18
28.....	6.8			10	163	4.4	8.2	150	a 3.3
29.....									
30.....	6.8			10	170	4.6	14	180	6.8
31.....	6.8			100	1.8		20	352	s 27
Total.	287.5	--	30.2	328.8	--	96.6	693.2	--	2,521.0
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.....	26	400	a 28	19	380	19	22	560	33
2.....	22	330	s 23	19	310	16	23	600	37
3.....	19	454	s 30	21	250	14	21	400	23
4.....	22	858	s 62	21	334	19	18	380	18
5.....	25	744	s 53	20	240	13	16	370	16
6.....	24	588	s 44	20	176	9.5	20	490	26
7.....	30	775	s 79	19	136	7.0	18	370	18
8.....	35	1,030	97	19	230	12	16	320	14
9.....	29	910	71	19	220	11	19	300	15
10.....	29	1,630	128	21	210	12	19	250	13
11.....	29	950	74	18	160	7.8	20	330	18
12.....	29	680	53	21	160	9.1	17	399	18
13.....	29	350	27	20	200	11	16	463	20
14.....	31	440	37	15	200	8.1	15	328	13
15.....	44	1,770	210	20	290	16	15	220	8.9
16.....	27	2,200	160	19	180	9.2	15	191	7.7
17.....	19	2,250	115	15	250	10	15	120	4.9
18.....	23	1,320	82	16	360	16	14	124	4.7
19.....	28	1,000	76	15	280	11	14	140	5.3
20.....	27	630	46	10	200	5.4	13	138	4.8
21.....	24	610	40	7.7	170	3.5	13	110	3.9
22.....	27	570	42	6.8	130	2.4	21	259	15
23.....	18	500	24	9.6	220	a 5.7	17	250	11
24.....	23	600	37	22	620	37	15	230	9.3
25.....	24	800	52	29	1,430	112	13	170	6.0
26.....	23	630	39	23	1,100	s 74	13	130	4.6
27.....	23	420	26	26	870	61	11	170	5.0
28.....	21	500	28	24	560	36	10	830	22
29.....	18	400	19	--	--	--	10	760	21
30.....	21	400	23	--	--	--	14	530	20
31.....	21	470	27	--	--	--	18	520	25
Total.	790	--	1,852	515.1	--	587.7	501	--	461.1

s Computed by subdividing day.

a Computed from estimated concentration graph.

PARIA RIVER BASIN--Continued

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	18	600	29	6.3			4.7		
2.....	13	400	14	8.2			4.2		
3.....	10	220	5.9	7.2			4.2		
4.....	6.8	110	2.0	5.9			3.8		
5.....	6.3	70	a 1.2	5.5			4.2		
6.....	9.4	296	s 18	5.5			4.2	3	(t)
7.....	46	4,050	s 544	5.1			5.1		
8.....	17	14,500	666	3.8			4.7		
9.....	10	6,200	167	3.8			3.8		
10.....	9.1	1,190	29	5.1			3.4		
11.....	7.7	500	10	5.1			3.8		
12.....	6.3	220	3.7	4.7			11	10,400	1,200
13.....	5.9	190	3.0	4.7			6.3	80	1.4
14.....	5.9	60	1.0	5.1			4.7	108	1.4
15.....	8.6	100	2.3	5.1			3.8	61	.6
16.....	9.6	105	2.7	5.1			4.2	40	.4
17.....	7.2	124	2.4	5.1			4.2	24	.3
18.....	5.1	69	1.0	5.1			3.8		
19.....	5.1	42	.6	12	255	8.3	3.0		
20.....	5.1			12			3.4		
21.....	5.5			8.2			4.2		
22.....	5.1			5.9			4.2		
23.....	5.9			5.1			3.8	8	.1
24.....	5.1			4.7			3.0		
25.....	5.1	11	.2	4.2			3.0		
26.....	4.7			4.7			3.4		
27.....	4.7			4.7			3.4		
28.....	5.1			4.2			3.4		
29.....	4.7			4.2			3.4	4	(t)
30.....	4.7			4.2			3.4		
31.....	--	--	--	4.2			--	--	--
Total.	262.7	--	1,505.0	174.7	--	11.3	125.7	--	1,205.4
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.....	4.7			428	269,000	s 500,000	16	26,500	1,140
2.....	3.4			257	208,000	s 187,000	14	17,000	643
3.....	3.4			56	151,000	s 26,200	12	4,500	146
4.....	3.8			21	93,000	5,660	11	400	12
5.....	3.4			14	50,000	1,960	9.1	120	2.9
6.....	3.8		(t)	11	24,000	713	8.0	80	1.7
7.....	4.2			9.5	10,000	256	5.7	120	1.8
8.....	4.2			8.1	830	18	5.7	90	1.4
9.....	4.7			7.6	448	9	5.7	80	1.2
10.....	5.9	577	9	7.2	138	3	7.2	170	3.3
11.....	33	87,600	s 19,000	24	25,000	1,620	18	1,950	s 121
12.....	41	142,000	s 18,300	15	3,500	142	13	19,000	a 670
13.....	16	173,000	s 8,430	10	1,580	43	9.6	36,800	989
14.....	64	239,000	s 82,000	7.2	4,000	78	9.1	30,400	747
15.....	48	197,000	s 31,800	7.2	268	5	8.7	9,300	218
16.....	245	267,000	s 382,000	50	91,800	s 15,700	8.7	1,060	25
17.....	63	145,000	s 29,300	23	73,200	s 4,560	6.8	340	a 6
18.....	234	219,000	s 172,000	10	40,000	1,120	6.1	240	4.0
19.....	337	181,000	s 270,000	9.5	13,000	333	6.1	170	2.8
20.....	47	75,800	s 10,500	6.2	4,500	75	6.1	130	2.1
21.....	21	68,000	4,000	5.8	3,000	a 47	5.0	86	1.2
22.....	14	36,000	1,410	192	125,000	s 126,000	4.4	75	.9
23.....	11	25,000	s 742	105	140,000	s 44,700	5.0	67	.9
24.....	8.1	16,000	350	33	66,500	s 6,410	5.3	39	.6
25.....	9.1	11,500	283	16	50,000	2,240	5.7	32	.5
26.....	17	59,000	sa 3,620	43	40,100	s 13,800	5.3	32	.5
27.....	9.1	12,500	307	610	125,000	s 720,000	5.0	34	.5
28.....	24	42,200	s 5,460	1,200	246,000	s 1,260,000	4.7	29	.4
29.....	25	45,300	s 5,630	149	116,000	s 60,600	4.7	23	.3
30.....	119	168,000	s 81,100	30	95,000	8,260	5.3	33	.5
31.....	290	283,000	s 423,000	20	50,000	2,800	--	--	--
Total.	1,716.8	--	1,549,241	3,385.3	--	2,990,352	237.0	--	4,744.5

Total discharge for year (cfs-days)..... 9,017.8
 Total load for year (tons)..... 4,552,587.8

s Computed by subdividing day

t Less than 0.05 ton.

a Computed from estimated concentration graph.

LITTLE COLORADO RIVER BASIN

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.

LOCATION.--At gaging station at highway bridge in Woodruff, Navajo County, 3½ miles downstream from Silver Creek.

DRAINAGE AREA.--8,100 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: June 1950 to September 1953.

Water temperatures: June 1950 to September 1953.

Sediment records: June 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 1,350 ppm June 15; minimum, 152 ppm Aug. 1.

Hardness: Maximum, 422 ppm Sept. 29; minimum, 62 ppm Dec. 11-20.

Specific conductance: Maximum observed, 2,170 micromhos June 15; minimum observed, 248 micromhos Aug. 1.

Water temperatures: Maximum observed, 90°F July 23; minimum observed, 33°F Dec. 25-28, 30.

Sediment concentrations: Maximum daily, 41,300 ppm Mar. 9; maximum observed, 84,500 ppm July 16; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 53,900 tons July 29; minimum daily, 0 tons on many days.

EXTREMES, 1950-53.--Dissolved solids: Maximum, 1,350 ppm June 15, 1953; minimum, 132 ppm Mar. 21-31, Apr. 1, 1952.

Hardness: Maximum, 422 ppm Sept. 29, 1953; minimum, 40 ppm July 29-30, 1952.

Specific conductance: Maximum observed, 2,170 micromhos June 15, 1953; minimum observed, 166 micromhos Mar. 30, 1952.

Water temperatures: Maximum observed, 90°F July 23, 1953; minimum observed, 33°F several days during December and January.

Sediment concentrations: Maximum daily, 66,400 ppm Aug. 4, 1951; minimum daily, no flow on many days.

Sediment loads: Maximum daily, 409,000 tons Aug. 28, 1951; minimum daily, 0 tons on many days.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH		
															Parts per million	Tons per acre-foot	Calcium	Non-carbonate					
Oct. 1-10, 1952	6.15	24		49	22	27		236	0	53	16		0.3		307	0.42	213	20	21	0.8	504	8.0	
Oct. 11-20	4.59	23		46	23	29	29	218	6	57	18		2		309	42	210	21	23	0.9	504	--	
Oct. 21-31	2.78	23		47	23	29	29	205	8	64	20		2		315	43	212	31	23	0.9	506	--	
Nov. 1-10	4.0	21		47	21	32	20	201	6	66	21		2		313	43	204	30	25	1.0	499	--	
Nov. 11-20	22.6	19		30	14	76	20	208	8	72	27		1.0		349	47	132	0	56	2.9	559	--	
Nov. 21-30	28.5	19		25	7.6	115		250	9	67	38		1.1		405	55	94	0	73	5.2	667	--	
Dec. 1-10	30.0	22		41	18	85		281	0	69	40		1.6		415	56	176	0	51	2.8	681	7.8	
Dec. 11-20	40.0	17		18	4.2	123	235	0	74	48			0.9		401	55	43.3	62	0	81	656	7.9	
Dec. 21-31	40.6	23		41	16	82	244	6	74	42			1.5		406	55	168	0	51	2.8	658	--	
Jan. 1-10, 1953	16.1	18		73	27	129	234	6	109	117			0		604	93	293	92	49	3.3	1,110	--	
Jan. 11-20	13.1	20		62	28	81	238	7	131	72			0.5		518	70	270	63	39	2.1	839	--	
Jan. 21-31	9.50	23		52	26	33		240	7	62	25		0.4		346	47	236	28	23	0.9	568	--	
Feb. 1-10	7.81	21		52	25	41		223	10	75	31		0.5		364	50	232	34	28	1.2	592	8.3	
Feb. 11-20	9.77	22		51	25	33	249	0	61	24			0.2		338	46	8.92	20	24	0.9	551	7.9	
Feb. 21-28, Mar. 1-2	11.3	22		52	26	35	247	6	61	26			0		349	47	10.6	24	24	1.0	562	--	
Mar. 3-9	31.6	20		56	24	146	240	0	187	116			0.3		667	91	238	42	57	4.1	1,080	8.1	
Mar. 10-13	147	19		19	3.9	61	144	0	41	26			0.4		241	33	95.7	64	0	68	3.4	368	8.0
Mar. 14-20	14.9	19		51	15	83	165	0	124	74			0.4		447	61	188	54	49	2.6	734	8.0	
Mar. 21-31	5.25	20		54	22	33	244	0	59	25			0.2		333	45	225	25	24	1.0	531	8.2	

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids		Hardness as CaCO ₃		Percent sodium	Sodium-potassium ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nestum	Non-carbonate			
Apr. 1-10, 1953	3.17	21		53	22	29		225	5	60	22		0.2		323	0.44	2.76	222	30	22	526	--
Apr. 11-20	1.32	19		54	22	30		209	6	70	25		.2		329	.45	1.17	225	44	22	534	--
Apr. 21-30	6.21	18		49	22	29		208	6	61	22		.3		309	.42	5.18	213	32	22	504	--
May 1-10	6.56	18		47	23	27		205	9	57	20		.2		302	.41	5.35	212	30	22	499	--
May 11-20	1.43	18		46	24	31		220	0	64	24		.3		315	.43	1.22	214	33	24	516	8.0
May 21 ^a	.01	12		41	26	45		216	0	83	31		.5		344	.47	.01	210	32	45	563	8.0
June 1-10	56.0	9.5		36	7.2	49		122	0	88	24		1.2		275	.37	41.6	120	20	47	459	7.9
June 11-20	2.56	13		47	22	72		189	0	128	56		1.0		432	.59	3.01	208	53	43	727	7.4
June 21-30	3.7	13		91	14	356		109	0	486	334		5.0		1,350	1.84	13.5	284	195	73	2,170	--
June 31-20 ^a	23	15		56	21	164		176	0	239	136		.5		718	.98	4.5	226	82	61	1,180	7.9
July 1-10	32.0	9.1		45	22	172		184	0	247	137		.5		714	.97	61.7	203	68	65	1,190	7.7
July 11-15, 17-20	73.2	19		29	9.2	67		254	0	56	35		1.4		306	.42	80.5	110	0	57	516	7.8
July 16-20	247	22		103	21	75		284	0	247	32		.4		625	.85	417	344	136	32	947	--
July 21-31	99.5	17		34	7.9	55		156	0	69	29		1.5		290	.39	77.9	118	0	50	481	7.6
Aug. 1	133	--		22	5.5	24		114	0	29	6		10		152	.21	54.6	78	0	40	248	--
Aug. 2-10	14.9	17		32	8.2	36		142	0	50	20		1.3		234	.32	9.41	114	0	41	353	7.7
Aug. 11-20	42.0	20		49	11	138		280	0	128	70		.9		555	.75	82.9	168	0	64	904	--
Aug. 21-27	41.9	29		41	10	35		132	0	85	16		2.7		284	.39	32.1	144	36	35	445	8.0
Aug. 28-31	1.10	30		37	13	27		137	0	82	20		.2		261	.35	78	146	34	29	1,032	7.8
Sept. 1-10	31.0	58		25	6.2	35		178	0	60	31		.4		345	.47	28.9	88	0	65	482	7.9
Sept. 11-20	1.51	44		34	12	33		158	0	50	18		.2		269	.37	11.0	134	5	35	356	7.9
Sept. 21-28, 30	.98	20		47	18	28		192	0	62	21		.4		290	.39	77	192	34	24	477	7.6
Sept. 29	3.4	16		110	36	68		231	0	211	112		4.4		671	.91	6.16	422	233	26	1,110	7.4
Weighted average ^b	20.0	21		39	13	70		201	--	82	38		1.2		363	0.49	19.6	151	0	50	586	--

^a No flow May 22 to June 12, June 30 to July 9.^b Average for 333 days of flow.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement generally taken between 11 a. m. and 6 p. m.

No flow on most days when no temperature is shown./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	55	34	36	35	45	60	55	--	--	70	70
2	70	53	35	38	45	45	66	55	--	--	70	75
3	68	50	34	40	47	45	65	57	--	--	b76	76
4	68	53	34	39	50	44	63	63	--	--	b77	79
5	69	53	34	39	48	49	60	66	--	--	b78	80
6	69	52	34	38	48	51	59	67	--	--	b81	80
7	63	51	35	41	47	53	53	66	--	--	b83	81
8	63	51	36	44	45	53	59	65	--	--	80	a64
9	63	48	34	44	39	54	58	57	--	--	75	83
10	65	48	34	47	41	52	a45	57	--	75	b75	75
11	66	50	36	44	44	58	48	58	--	80	70	79
12	66	47	35	48	38	49	48	64	--	79	77	b77
13	64	49	38	48	41	52	50	70	82	b80	79	81
14	63	49	36	44	--	55	55	64	a70	b80	70	73
15	59	45	40	39	40	55	65	62	a72	80	70	71
16	61	41	37	40	39	52	65	62	a70	70	80	b76
17	59	39	38	39	45	58	58	87	a67	b70	b80	b72
18	60	35	39	44	45	58	65	70	a68	70	81	73
19	60	34	39	47	39	56	64	68	a60	80	81	b74
20	60	34	40	48	38	50	63	69	84	78	b78	75
21	60	35	37	44	42	51	65	70	82	a74	80	69
22	59	38	39	42	41	55	58	--	85	b81	a75	69
23	59	36	36	42	44	59	60	--	73	b90	b78	b70
24	59	34	34	43	40	60	67	--	76	80	b82	69
25	59	33	38	42	45	60	68	--	78	79	80	69
26	55	33	37	44	48	66	69	--	77	80	74	71
27	57	33	38	47	48	68	59	--	80	b78	78	--
28	58	33	36	44	44	58	55	--	79	b75	73	67
29	58	35	37	47	--	57	59	--	79	b72	75	67
30	56	33	39	41	--	52	55	--	--	b70	77	b64
31	55	--	38	45	--	58	--	--	--	b70	75	--
Average	62	43	36	43	43	54	59	63	75	77	77	73

a Measurement obtained before 11 a. m.

b Measurement obtained after 6 p. m.

COLORADO RIVER BASIN

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953

Day	October Suspended sediment			November Suspended sediment			December Suspended sediment		
	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day
1.....	14	65	2.5		45			223	
2.....	10	54	1.5		222			126	
3.....	7	51	1.0		70			76	
4.....	5	26	.4		33			61	
5.....	5	36	.5		36			73	
6.....	4.5	34	.4		41			89	
7.....	4	28	.3		40			87	
8.....	4	38	.4	4	41	a 0.6	30	52	a 340
9.....	4.0	41	.4		59			114	
10.....	4.0	37	.4		39			4,400	
11.....	3.7	34	.3		42			9,300	
12.....	6.3	36	.8		40			8,800	
13.....	5.4	43	.6		41			7,600	
14.....	5.4	42	.6		47			6,000	
15.....	5.4	46	.7		73			4,700	
16.....	4.0	42	.4	20	96	5.2		3,500	
17.....	4.0	35	.4	80	210	45		3,800	
18.....	4.0	45	.5	50	12,900	s 2,630		4,800	
19.....	4.0	41	.4		9,600			7,000	a 540
20.....	3.7	49	.5		9,570		50	7,460	
21.....	3.7	30	.3		6,880	a 700		7,200	
22.....	3.7	32	.3	28	32			4,000	
23.....	3.4	36	.3		8,770		62	3,600	603
24.....	2.8	34	.3		7,390		60	1,160	188
25.....	2.8	32	.2		1,100		50	575	78
26.....	2.8	35	.3	33	2,000	178	40	502	54
27.....	2.4	33	.2		6,300		40	301	33
28.....	2.2	28	.2		5,200	a 300	30	62	5.0
29.....		31	.2	28	1,300		29	66	5.2
30.....	2.2	35	.2		549		18	38	1.8
31.....		36	.2	--	--	--	18	66	3.2
Total.	137.8	--	15.7	551	--	8,967.2	1,147	--	9,851.2
Day	January			February			March		
	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean con- centration (ppm)	Tons per day
1.....	16	25	1.1	8.2	33	0.7	14	197	7.4
2.....	16	25	1.1	7.8	31	.6	15	90	3.6
3.....	16	28	1.2	7.3	35	.7	16	70	3.0
4.....	16	40	1.7	6.8	39	.7	14	52	2.0
5.....	15	32	1.3	7.3	49	1.0	14	48	1.8
6.....	16	42	1.8	7.8	59	1.2	14	57	2.2
7.....	18	66	3.2	8.7	62	1.5	30	592	s 59
8.....	17	59	2.7	7.8	163	3.4	48	28,100	s 3,670
9.....	16	46	2.0	8.2	82	1.8	85	41,300	s 10,100
10.....	15	35	1.4	8.2	69	1.5	234	11,200	s 7,340
11.....	15	36	1.5	8.7	44	1.0	210	8,000	4,540
12.....	14	50	1.9	9.2	31	.8	96	4,700	s 1,200
13.....	14	51	1.9	10	29	.8	49	2,800	370
14.....	14	84	3.2	11	--	e 1.0	28	800	60
15.....	13	44	1.5	10	25	.7	19	196	10
16.....	12	22	.7	10	41	1.1	14	164	6.2
17.....	12	5	.2	9.8	46	1.2	13	139	4.9
18.....	12	12	.4	9.2	392	9.7	11	110	3.3
19.....	13	24	.8	10	73	2.0	10	167	4.5
20.....	12	58	1.9	9.8	48	1.3	9.2	520	13
21.....	10	63	1.7	9.2	37	.9	9.2	191	4.7
22.....	9.2	53	1.3	9.8	39	1.0	7.8	86	1.8
23.....	9.2	25	.6	9.8	59	1.6	6.8	60	1.1
24.....	9.8	18	.5	11	56	1.7	4.4	60	.7
25.....	9.8	16	.4	11	42	1.2	3.4	256	2.4
26.....	9.8	33	.9	11	33	1.0	3.0	53	.4
27.....	9.8	34	.9	10	50	1.4	2.8	49	.4
28.....	9.8	49	1.3	12	87	2.8	2.8	184	1.4
29.....	9.2	51	1.3	--	--	--	5.4	87	1.3
30.....	9.2	49	1.2	--	--	--	6.8	98	1.8
31.....	9.2	41	1.0	--	--	--	5.4	273	4.0
Total.	397.0	--	42.6	259.6	--	44.3	1,001.0	--	27,420.9

e Estimated.

s Computed by Subdividing day.

a Computed from estimated discharge graph.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	4.9	74	1.0	6.8	110	2.0	0	--	0
2.....	4.0	55	.6	7.3	88	1.7	0	--	0
3.....	2.4	50	.3	7.8	106	2.2	0	--	0
4.....	2.8	85	.6	8.2	76	1.7	0	--	0
5.....	3.4	87	.8	7.3	73	1.4	0	--	0
6.....	2.4	175	1.1	5.8	67	1.0	0	--	0
7.....	2.2	105	.6	5.8	143	2.2	0	--	0
8.....	1.9	274	1.4	5.8	165	2.6	0	--	0
9.....	4.0	95	1.0	5.4	116	1.7	0	--	0
10.....	3.7	103	1.0	5.4	80	1.2	0	--	0
11.....	1.3	106	.4	5.8	77	1.2	0	--	0
12.....	1.0	42	.1	3.0	60	.5	0	--	0
13.....	.6	34	.1	.8	47	.1	56	8,040	s 3,370
14.....	.2	34	(t)	.7	47	.1	7.8	500	11
15.....	.1	30	(t)	.6	45	.1	3.7	108	1.1
16.....	.1	49	(t)	.6	40	.1	4.9	174	2.3
17.....	.1	60	(t)	.6	37	.1	1.3	80	.3
18.....	1.0	75	.2	.8	40	.1	.6	77	.1
19.....	4.4	105	1.2	1.0	58	.2	.5	50	.1
20.....	4.4	120	1.4	.4	66	.1	.4	37	(t)
21.....	4.9	142	1.9	.1	49	(t)	.3	37	(t)
22.....	5.8	122	1.9	0	--	0	.3	36	(t)
23.....	5.8	113	1.8	0	--	0	.3	40	(t)
24.....	7.3	115	2.3	0	--	0	.2	81	(t)
25.....	8.2	126	2.8	0	--	0	.2	62	(t)
26.....	6.8	105	1.9	0	--	0	.2	49	(t)
27.....	6.3	129	2.2	0	--	0	.2	56	(t)
28.....	5.8	127	2.0	0	--	0	.2	44	(t)
29.....	5.8	100	1.6	0	--	0	.2	50	(t)
30.....	5.4	160	2.3	0	--	0	0	--	0
31.....	--	--	--	0	--	0	--	--	--
Total.	107.0	--	32.6	80.0	--	20.3	77.3	--	3,385.2
	July			August			September		
1.....	0	--	0	133	22,000	s 11,600	2.4	165	1.1
2.....	0	--	0	64	21,600	s 4,210	2.4	85	.6
3.....	0	--	0	27	1,500	109	2.4	88	.6
4.....	0	--	0	23	252	16	1.0	60	.2
5.....	0	--	0	10	157	4.2	.7	64	.1
6.....	0	--	0	4	95	1.0	1.5	65	.3
7.....	0	--	0	2	48	.3	1.3	82	.3
8.....	0	--	0	1	92	.2	.6	76	.1
9.....	0	--	0	1	98	.3	.4	41	(t)
10.....	32	22,600	s 3,300	2	87	.5	2.4	80	.5
11.....	43	13,500	s 2,190	42	26,500	s 5,870	1.7	82	.4
12.....	9.2	300	7.5	15	6,400	259	.7	53	.1
13.....	7.3	1,000	20	6.1	2,260	s 72	.6	50	.1
14.....	12	2,000	65	292	25,900	s 26,300	.7	77	.2
15.....	7.7	2,840	s 184	40	7,000	756	.6	72	.1
16.....	247	34,200	s 33,500	12	199	6.4	1.0	65	.2
17.....	307	32,600	s 33,600	5	108	1.5	.8	130	.3
18.....	193	22,500	s 13,300	3	92	.8	1.0	126	.3
19.....	60	3,500	567	1.9	80	.4	1.7	113	.5
20.....	20	400	22	1.7	100	.5	1.0	73	.2
21.....	7.8	242	5.1	.7	70	.1	1.0	112	.3
22.....	1.9	163	.8	1.5	117	.5	.8	138	.3
23.....	.7	95	.2	1.0	91	.2	1.0	131	.4
24.....	.2	94	s .1	1.9	103	.5	1.0	126	.3
25.....	11	7,130	s 785	1.1	92	.3	2.2	87	.5
26.....	11	7,380	s 432	.5	96	.1	1.9	86	.4
27.....	34	7,280	s 1,310	1.0	300	.8	1.1	--	e .3
28.....	100	21,100	s 8,040	77	17,200	s 4,470	1.9	102	.5
29.....	440	12,700	s 53,900	34	4,100	s 525	3.4	2,910	27
30.....	396	35,400	s 40,200	8.7	318	7.5	1.9	107	.6
31.....	92	25,900	s 7,080	4.4	259	3.1	--	--	--
Total.	2,032.8	--	198,508.7	817.5	--	54,216.2	41.1	--	36.8

Total discharge for year (cfs-days) 6,649.1

Total load for year (tons) 302,541.7

e Estimated.

s Computed by Subdividing day.

t Less than 0.05 ton.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953
 (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; V, visual accumulation tube)

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	1.000	
Oct. 30, 1952	5:30 p. m.	2.2	56	35	--	--	--	--	--	100	98	98	--	--	--	S
Nov. 17	5:00 p. m.	23	39	252	--	--	--	--	--	--	--	--	100	--	--	S
Nov. 18	11:30 a. m.	112	34	21,500	2,960	93	100	--	--	--	--	--	--	--	--	SPWCM
Nov. 18	11:30 a. m.	112	34	21,500	4,360	90	100	--	--	--	--	--	--	--	--	SPN
Nov. 21	4:30 p. m.	33	35	5,190	3,340	97	98	--	--	100	--	--	--	--	--	SPWCM
Nov. 24	3:30 p. m.	33	34	15,100	3,640	96	--	--	97	100	--	--	--	--	--	SPWCM
Dec. 10	5:00 p. m.	59	34	7,950	3,180	89	99	--	99	100	--	--	--	--	--	SPWCM
Dec. 22	4:00 p. m.	33	39	3,140	2,640	95	--	--	98	98	99	100	--	--	--	SPWCM
Dec. 31	4:00 p. m.	18	38	66	--	--	--	--	--	--	--	--	--	--	--	S
Mar. 9, 1953	4:00 p. m.	65	54	42,800	3,820	86	88	--	88	100	--	--	--	--	--	SPWCM
Mar. 10	3:00 p. m.	347	52	15,100	3,420	80	95	--	95	98	99	100	--	--	--	SPWCM
Mar. 10	3:00 p. m.	347	52	15,100	3,480	15	93	--	93	98	99	100	--	--	--	SPN
Mar. 10	5:00 p. m.	305	52	11,300	3,570	80	93	--	93	99	100	--	--	--	--	SPWCM
Mar. 20	4:00 p. m.	9.8	50	526	--	--	--	--	--	98	99	100	--	--	--	S
Mar. 30	4:00 p. m.	5.8	52	98	--	--	--	--	--	95	96	99	100	--	--	S
Apr. 10	8:30 a. m.	6.3	45	103	--	--	--	--	--	99	100	--	--	--	--	S
Apr. 30	4:00 p. m.	5.4	55	209	--	--	--	--	--	99	99	99	99	100	--	S
June 13	7:00 a. m.	116	78	12,200	4,150	72	97	--	97	100	--	--	--	--	--	SPWCM
July 11	4:30 p. m.	43	75	71,800	4,710	81	100	--	100	--	--	--	--	--	--	SPWCM
July 11	11:30 a. m.	39	70	19,500	5,370	86	99	--	99	100	--	--	--	--	--	SPWCM
July 16	4:00 p. m.	459	70	84,500	4,040	51	78	--	78	99	100	--	--	--	--	VPWCM
July 16	7:45 p. m.	367	70	25,700	4,000	70	95	--	95	100	--	--	--	--	--	SPWCM
July 18	7:30 a. m.	343	70	32,600	3,920	77	96	--	96	100	--	--	--	--	--	SPWCM
July 20	12:00 m.	20	78	311	780	91	95	--	95	97	100	--	--	--	--	SPWCM
July 26	5:30 p. m.	2.2	80	380	1,020	90	99	--	99	100	--	--	--	--	--	SPWCM
July 28	7:30 a. m.	147	68	44,100	2,540	81	99	--	99	100	--	--	--	--	--	SPWCM
July 29	7:00 p. m.	1,210	72	30,500	4,190	96	79	--	79	98	100	--	--	--	--	VPWCM
July 30	6:30 p. m.	129	70	29,100	4,420	76	98	--	98	100	--	--	--	--	--	SPWCM

Aug. 1, 1953.....	65	70	5,910	3,590	86	99	100	--	--	--	SPWCM
Aug. 11	86	70	67,600	4,920	70	89	100	--	--	--	SPWCM
Aug. 14	332	68	26,800	3,850	94	84	89	100	--	--	SPWCM
Aug. 15	35	70	1,050	2,520	93	98	100	--	--	--	SPWCM
Aug. 28	112	73	22,400	3,500	83	98	100	--	--	--	SPWCM

LITTLE COLORADO RIVER BASIN--Continued
LITTLE COLORADO RIVER AT CAMERON, ARIZ.

LOCATION.--At bridge on U. S. Highway 89 at Cameron, Coconino County, 12 miles upstream from gaging station which is 9.5 miles downstream from Moenkopi Wash.
DRAINAGE AREA.--26,500 square miles approximately (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1953.
Water temperatures: October 1951 to September 1953.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for station near Cameron (below Moenkopi Wash) for water year October 1952 to September 1953 given in WSP 1283. Appreciable inflow between sampling site and gaging station during periods of storm runoff from Moenkopi Wash and several small arroyos.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lidum	So-lidum adsorp-tion ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate				
Oct. 1-2, 1952	22			27	7.2	176		257	0	118	104	0.8	8.1		569	0.80		97	0	80	7.8	967	7.9
Nov. 24-25	17			25	7.0	241		263	8	128	184	.6	4.7		744	1.01		92	0	85	11	1,250	--
Dec. 8-11	15			37	8.7	276		225	6	135	280	.5	4.2		873	1.19		128	0	82	11	1,530	--
Jan. 2-7, 9-10, 1953	16			50	12	306		236	8	154	335	.5	1.7		999	1.36		174	0	79	10	1,750	--
Jan. 11-20	18			54	15	312		239	5	163	355	.5	2.4		1,040	1.41		196	0	78	9.7	1,830	--
Jan. 21-27, 29	23			70	18	366		224	6	176	470	.5	1.8		1,240	1.69		248	0	76	10	2,160	--
Jan. 31, Feb. 1-3, 5-6, 8, 10	15			50	12	236		159	0	91	325	.3	1.5		809	1.10		174	44	75	7.8	1,490	7.9
Feb. 11-17	12			43	11	196		142	0	72	275	.3	1.1		680	.92		152	36	74	6.9	1,250	7.8
Feb. 21, 23-26	16			44	12	198		144	0	90	271	.4	1.5		704	.96		160	42	73	6.8	1,280	8.0
Mar. 14, 16-20	15			23	5.6	128		186	0	54	109	.6	1.1		427	.58		80	0	78	6.2	746	7.9
Mar. 23-31	13			18	3.9	89		147	0	36	68	.4	.7		301	.41		61	0	76	5.0	517	7.9
Apr. 4, 6-7, 10	11			22	5.1	80		127	0	34	81	.4	.5		296	.40		76	0	70	4.0	524	7.9
Apr. 11, 15-18	16			34	7.2	100		129	0	50	131	.3	.9		402	.55		114	9	66	4.1	728	7.7
July 18-19	23			10	3.1	124		244	0	51	38	--	1.8		371	.50		38	0	88	8.8	567	7.6
July 20-21, 23-24, 29	21			92	22	284		397	0	293	230	.8	.9		1,140	1.55		320	0	66	6.9	1,820	7.4
July 30-31, Aug. 1	20			56	5.8	151		233	0	153	55	.8	.6		527	.72		89	0	79	7.0	830	7.5
Aug. 3-5, 8	21			26	16	218		347	0	220	138	.8	.4		851	1.16		230	0	67	6.3	1,340	7.4
Aug. 27-28	20			12	2.8	160		224	0	95	75	.8	.7		476	.65		42	0	89	11	770	7.8

a. No flow at gaging station Oct. 11 to Nov. 22, Apr. 27 to July 11, Sept. 10-30.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT CAMERON, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement, generally taken between 12 m. and 4 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	--	--	--	b 34	--	--			--		
2	74	--	--	a 54	40	--	--			--		
3	--	--	--	42	40	--	--			--		
4	--	--	--	44	--	--	62			--		
5	--	--	--	34	44	--	--			--		
6	--	--	--	38	48	--	57			--		
7	--	--	--	42	--	--	50			--		
8	--	--	a 34	--	46	--	--			--		
9	--	--	34	52	--	--	--			--		
10	--	--	36	50	46	--	57			--		
11	--	--	38	50	a 48	--	b 51			--		
12	--	--	--	a 48	42	--	--			--		
13	--	--	--	44	50	--	--			--		
14	--	--	--	39	48	50	--			--		
15	--	--	--	40	46	--	62			--		
16	--	--	--	b 52	48	45	64			--		
17	--	--	--	38	42	a 50	66			--		
18	--	--	--	40	--	50	--			60		
19	--	--	--	46	--	55	--			a 58		
20	--	--	--	40	--	50	--			62		
21	--	--	--	44	42	--	--			a 60		
22	--	--	--	42	--	--	--			--		
23	--	--	--	40	40	b 54	--			60		
24	--	38	--	42	38	a 62	--			a 56		
25	--	34	--	40	48	b 54	--			--		
26	--	--	--	b 32	55	62	--			--		
27	--	--	--	--	--	62	--			--		
28	--	--	--	--	--	60	--			--		
29	--	--	--	b 32	--	60	--			a 56		
30	--	--	--	--	--	62	--			--		
31	--	--	--	40	--	62	--			--		
Average	--	--	--	42	--	--	--			--		

a Reading obtained between 4 p. m. and 6 p. m.

b Reading obtained before 12 m.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.

LOCATION.--At gaging station at Kaibab Bridge, a quarter of a mile upstream from Bright Angel Creek, 11 miles by trail northeast of Grand Canyon, Coconino County, 26 miles downstream from Little Colorado River, and 267 miles upstream from Hoover Dam.

DRAINAGE AREA.--137,800 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1925 to November 1942, September 1943 to September 1953.

Water temperatures: October 1936 to October 1942, September 1943 to September 1953.

Sediment records: October 1925 to November 1942, September 1943 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 1,310 ppm Sept. 21-30; minimum, 335 ppm June 21-30.

Hardness: Maximum, 626 ppm Sept. 1-10; minimum, 221 ppm June 11-30.

Specific conductance: Maximum observed, 2,070 micromhos Sept. 11; minimum observed, 430 micromhos June 20.

Water temperatures: Maximum, 81°F July 26-28; minimum, 36°F several days during December and January.

Sediment concentrations: Maximum daily, 33,600 ppm July 31; maximum observed, 49,700 ppm July 31; minimum daily, 151 ppm Dec. 7.

Sediment loads: Maximum daily, 1,400,000 tons June 16, 17; minimum daily, 1,760 tons Sept. 28.

EXTREMES, 1925-53.--Dissolved solids: Maximum, 1,890 ppm Sept. 21-30, 1934; minimum, 225 ppm June 11-20, 1942.

Hardness: Maximum, 792 ppm Sept. 1-10, 1940; minimum, 127 ppm June 11-17, 1926.

Specific conductance (1937-53): Maximum observed, 2,900 micromhos Sept. 6, 1940; minimum observed, 341 micromhos June 15, 1942.

Water temperatures (1936-53): Maximum observed, 88°F July 17, 1944; minimum daily, 100 ppm on many days.

Sediment concentrations: Maximum daily, 138,000 ppm Sept. 13, 1927; minimum daily, 497 tons July 22, 1934.

Sediment loads: Maximum daily, 27,600,000 tons Sept. 13, 1927; minimum daily, 497 tons July 22, 1934.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. A recording thermograph was installed Sept. 12, 1952.

Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per- cent so- dium ad- sorption ratio	Specific conductance (microhmhos at 25° C)	pH		
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Oct. 1-10, 1952 . . .	7,425	14	0.01	127	49	164	8.2	246	476	134	0.4	4.3	0.24	1,100	1.50	518	317	40	3.1	1,600	7.6	
Oct. 11-20 . . .	5,859	12	.01	116	51	166	8.9	230	451	139	.4	3.0	.24	1,060	1.44	22,500	499	310	41	3.2	1,580	7.6
Oct. 21-31 . . .	5,930	11	.01	123	56	194	8.0	236	511	160	.4	5.4	.21	1,180	1.60	18,890	538	344	44	3.6	1,740	7.5
Nov. 1-10 . . .	6,064	11	.01	123	59	196	8.0	239	524	162	.4	7.0	.24	1,210	1.65	19,810	550	354	43	3.6	1,760	7.7
Nov. 11-20 . . .	6,706	11	.01	128	59	196	7.1	249	537	157	.4	7.7	.19	1,230	1.67	22,270	562	358	43	3.6	1,780	7.8
Nov. 21-30 . . .	7,218	12	.01	126	58	188	7.3	248	512	153	.4	4.9	.23	1,180	1.60	22,990	553	350	42	3.5	1,720	7.8
Dec. 1-10 . . .	5,352	14	.00	124	54	190	6.7	254	473	168	.4	6.4	.46	1,160	1.58	16,760	532	324	43	3.6	1,740	7.3
Dec. 11-20 . . .	6,456	14	.04	133	57	198	7.9	273	493	183	.4	7.0	.18	1,230	1.67	21,440	566	343	43	3.6	1,860	7.6
Dec. 21-31 . . .	7,593	15	.02	130	51	177	6.9	261	437	153	.3	6.9	.19	1,100	1.50	22,550	509	295	43	3.4	1,650	7.7
Jan. 1-10, 1953 . . .	5,816	14	.02	114	48	178	6.1	254	492	162	.4	6.9	.17	1,060	1.44	16,640	482	274	44	3.5	1,610	7.6
Jan. 11-20 . . .	6,947	14	.05	120	53	192	7.3	264	446	177	.4	6.6	.18	1,150	1.56	21,570	518	301	44	3.7	1,720	7.5
Jan. 21-31 . . .	7,073	13	.04	114	48	169	5.7	258	398	150	.4	4.5	.22	1,030	1.40	19,670	482	270	43	3.4	1,560	7.9
Feb. 1-10 . . .	6,837	15	.20	113	47	176	7.8	273	392	157	.3	2.7	.21	1,040	1.41	19,200	476	252	44	3.5	1,590	7.6
Feb. 11-20 . . .	7,065	12	.01	110	47	170	6.7	253	398	151	.3	5.8	.24	1,020	1.39	19,540	468	260	44	3.4	1,560	7.7
Feb. 21-28 . . .	6,372	12	.02	108	49	182	6.6	249	410	158	.3	6.0	.27	1,050	1.43	18,060	471	267	45	3.6	1,600	7.8

Mar. 1-10, 1953....	6,439	15	.10	107	48	180	7.7	266	393	188	.3	2.7	31	1,050	1.43	18,250	464	246	45	3.6	1,600	7.6
Mar. 11-20	8,281	12	.01	108	47	175	9.5	258	392	153	.4	7.3	.26	1,030	1.40	23,030	463	252	44	3.5	1,570	7.7
Mar. 21-31	8,506	16	.21	104	39	153	9.3	283	328	129	.4	1.5	.22	919	1.25	21,100	420	188	43	3.2	1,410	7.3
Apr. 1-10	9,054	15	.18	102	40	157	10.7	262	341	138	.4	2.3	.22	935	1.27	22,850	419	204	44	3.3	1,430	7.3
Apr. 11-20	9,448	16	.10	98	39	142	8.0	259	327	114	.4	2.4	.22	874	1.19	22,280	405	183	43	3.1	1,320	7.2
Apr. 21-30	8,394	16	.22	95	38	140	10	260	314	123	.4	.6	.19	865	1.18	18,580	393	180	43	3.1	1,330	7.1
May 1-10	14,630	15	.34	88	30	103	6.9	247	344	83	.6	2.2	.20	694	.94	27,410	343	140	39	2.4	1,080	7.3
May 11-20	11,720	14	.18	82	27	90	5.8	235	208	75	.6	1.7	.19	691	.84	19,650	316	123	38	2.2	970	7.2
May 21-31	21,350	17	.07	86	27	83	6.1	252	199	72	.3	.8	.18	615	.84	35,450	326	119	35	2.0	960	7.4
June 1-10	47,860	17	.14	67	17	34	4.5	225	87	28	.3	1.7	.09	368	.50	47,550	237	52	23	1.0	595	7.5
June 11-20	54,060	15	.16	64	15	30	4.6	206	82	25	.3	1.2	.08	338	.46	49,330	221	52	22	.9	547	7.5
June 21-30	45,910	14	.23	64	15	28	4.6	212	79	24	.3	1.4	.11	335	.46	41,320	221	48	21	.8	541	7.5
July 1-10	21,050	13	.12	68	17	45	4.3	206	112	41	.3	1.2	.12	403	.55	22,900	240	70	29	1.3	650	7.5
July 11-20	14,340	13	.05	87	23	67	6.1	228	189	62	.3	1.2	.18	561	.76	21,720	312	124	31	1.7	888	7.5
July 21-31	12,750	18	.27	115	31	102	9.4	284	291	280	.4	2.9	.16	790	1.07	27,180	414	182	34	2.2	1,200	7.3
Aug. 1-10	15,840	18	.35	150	37	117	10	304	412	80	.4	3.1	.18	977	1.33	41,780	526	278	32	2.2	1,420	7.5
Aug. 11-20	9,695	17	.31	129	35	111	9.5	271	361	85	.4	3.9	.21	885	1.20	23,160	466	244	34	2.2	1,320	7.4
Aug. 21-31	9,013	18	.16	138	38	133	11	310	391	107	.5	3.0	.23	992	1.35	24,140	500	246	36	2.6	1,460	7.4
Sept. 1-10	6,564	17	.01	177	45	164	14	288	556	128	.5	1.6	.23	1,250	1.70	22,150	626	382	36	2.9	1,720	7.7
Sept. 11-20	4,354	13	.03	154	53	193	12	275	548	168	.5	3.9	.25	1,280	1.74	15,050	602	376	40	3.4	1,860	7.5
Sept. 21-30	3,723	11	.12	144	57	208	12	260	553	194	.5	3.4	.25	1,310	1.78	13,170	594	381	43	3.7	1,930	7.5
Weighted average.	12,260	15	0.14	95	31	101	6.8	243	262	86	0.4	2.7	0.17	719	0.98	23,800	364	166	37	2.3	1,100	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953

Day	Mean discharge (cfs)	October Suspended sediment		Mean discharge (cfs)	November Suspended sediment		Mean discharge (cfs)	December Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	8,420	4,800	109,000	5,970	213	3,430	6,530	325	5,730
2.....	8,230	3,830	85,100	6,070	218	3,570	5,830	302	4,750
3.....	8,040	1,920	41,700	6,010	218	3,540	5,280	270	3,850
4.....	7,740	1,400	^a 29,000	5,950	210	^a 3,400	4,880	240	3,160
5.....	7,450	1,100	^a 22,000	5,830	210	^a 3,300	4,610	200	^a 2,500
6.....	7,280	885	17,000	5,880	210	3,320	4,540	200	2,450
7.....	7,110	696	13,400	5,990	206	3,330	4,870	151	1,990
8.....	6,900	584	11,100	6,170	211	3,520	5,230	194	2,740
9.....	6,660	508	9,130	6,360	224	3,850	5,750	231	3,590
10.....	6,420	457	7,920	6,430	250	4,340	6,000	246	3,990
11.....	6,170	444	7,400	6,380	255	4,390	6,200	304	5,090
12.....	6,030	422	6,870	6,130	244	4,040	6,220	355	5,960
13.....	5,940	332	5,320	6,150	255	4,230	6,080	269	4,420
14.....	5,900	299	4,770	6,290	250	4,250	6,060	234	3,830
15.....	5,800	263	4,120	6,350	630	10,800	6,240	247	4,180
16.....	5,750	267	4,150	6,800	832	15,300	6,390	258	4,450
17.....	5,770	260	4,050	7,160	750	14,500	6,230	299	5,100
18.....	5,770	309	4,810	7,560	713	14,600	6,830	370	6,820
19.....	5,770	247	3,850	7,120	642	12,300	7,020	524	9,930
20.....	5,690	244	3,750	7,120	613	11,800	7,400	710	14,200
21.....	5,690	249	3,830	7,220	596	11,600	7,900	800	17,100
22.....	5,780	245	3,820	7,220	511	9,960	7,860	1,240	26,300
23.....	5,910	216	3,450	7,400	501	10,000	7,840	1,220	25,800
24.....	6,010	237	3,850	7,320	492	9,720	7,920	1,050	22,500
25.....	6,040	222	3,620	7,080	444	8,490	8,160	1,100	24,200
26.....	6,010	226	3,670	7,180	400	7,750	8,130	1,160	25,500
27.....	6,070	208	3,410	7,220	520	10,100	7,840	818	17,300
28.....	5,970	213	3,430	7,220	390	7,600	7,390	700	14,000
29.....	5,880	227	3,600	7,210	380	^a 7,400	6,980	624	11,800
30.....	5,950	218	3,500	7,110	316	6,070	6,880	572	10,600
31.....	5,920	221	3,530	--	--	--	6,620	439	7,850
Total.	198,070	--	434,150	199,880	--	220,500	201,600	--	301,480
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.....	6,380	411	7,080	7,060	326	6,210	6,030	180	2,930
2.....	5,980	386	6,230	6,950	338	6,340	5,900	209	3,330
3.....	5,590	467	7,050	6,730	341	6,200	6,030	210	^a 3,400
4.....	5,460	250	3,690	6,670	318	^a 5,730	6,290	220	^a 3,700
5.....	5,380	265	3,850	6,780	320	5,900	6,560	230	4,070
6.....	5,640	250	^a 3,800	6,820	320	^a 5,900	6,610	270	4,820
7.....	5,810	237	3,720	6,850	321	5,940	6,640	367	6,580
8.....	5,930	221	3,540	6,870	292	5,420	6,820	380	7,000
9.....	6,020	235	3,820	6,820	298	5,490	6,840	332	6,130
10.....	5,970	238	3,840	6,820	306	5,630	6,670	235	4,230
11.....	5,890	276	4,390	6,960	317	5,960	6,540	200	3,530
12.....	6,100	199	3,280	7,470	390	7,870	6,680	210	3,790
13.....	6,810	208	3,820	7,430	390	7,820	6,810	224	4,120
14.....	7,030	232	4,400	7,330	400	7,920	7,190	300	5,820
15.....	7,120	304	5,840	7,260	500	9,800	8,330	580	13,000
16.....	7,330	291	5,760	7,050	361	7,250	8,320	400	8,980
17.....	7,270	384	7,540	6,920	375	7,010	8,610	1,810	42,100
18.....	7,310	474	9,360	6,880	350	6,500	9,630	1,810	47,100
19.....	7,340	449	8,900	6,880	353	6,560	10,100	1,790	48,800
20.....	7,270	448	8,790	6,770	404	7,380	10,600	1,600	45,800
21.....	7,290	386	7,600	6,540	338	5,970	10,100	1,510	41,200
22.....	7,170	429	8,310	6,610	301	5,370	9,290	1,480	37,100
23.....	6,920	388	7,250	6,600	284	4,700	8,810	1,380	32,800
24.....	6,940	381	7,140	6,330	320	5,470	8,690	1,580	37,100
25.....	7,010	446	8,440	6,060	211	3,450	8,530	1,410	32,500
26.....	7,100	431	8,280	6,140	220	3,650	8,530	1,290	29,700
27.....	7,130	389	7,490	6,380	200	3,450	8,350	1,000	22,500
28.....	6,950	361	6,770	6,230	180	3,070	8,130	932	20,500
29.....	7,030	369	7,000	--	--	--	7,880	916	19,500
30.....	7,100	375	7,190	--	--	--	7,720	819	19,200
31.....	7,160	321	6,210	--	--	--	7,540	1,200	14,400
Total.	205,430	--	190,360	190,300	--	167,960	240,770	--	586,740

^a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	7,650	1,200	24,800	12,600	1,830	62,300	49,900	8,600	1,160,000
2.....	8,080	1,000	21,800	13,300	1,980	71,100	48,000	7,400	959,000
3.....	8,370	914	20,700	15,200	3,080	127,000	46,000	6,700	832,000
4.....	8,880	900	21,600	17,000	3,340	153,000	48,400	6,730	879,000
5.....	9,200	953	23,700	16,900	3,200	a 150,000	48,400	6,400	a 840,000
6.....	9,480	950	a 24,000	16,100	2,550	111,000	48,900	5,600	a 740,000
7.....	9,580	1,000	25,900	15,400	2,450	102,000	49,900	4,800	647,000
8.....	9,490	894	22,900	14,400	2,200	85,500	49,400	4,930	658,000
9.....	9,410	821	20,900	13,200	2,020	72,000	46,500	4,280	537,000
10.....	10,400	879	24,700	12,200	1,930	63,600	43,200	4,210	491,000
11.....	10,700	1,030	29,800	11,400	1,730	53,200	40,600	2,900	318,000
12.....	10,500	1,090	30,900	10,800	1,530	44,600	38,800	2,900	304,000
13.....	9,850	1,160	30,900	10,600	1,320	37,800	41,000	3,420	379,000
14.....	9,630	1,040	27,000	11,500	1,270	39,400	47,500	4,200	539,000
15.....	9,490	938	24,000	12,400	1,360	45,500	53,600	5,000	724,000
16.....	9,480	917	23,500	12,600	1,130	38,400	62,500	8,100	a 1,400,000
17.....	9,340	836	21,100	12,100	973	31,800	67,300	7,720	1,400,000
18.....	8,900	830	19,900	12,000	850	27,500	66,600	6,360	1,140,000
19.....	8,510	804	18,500	12,200	820	27,000	63,100	5,400	920,000
20.....	8,080	700	15,300	11,600	767	24,000	59,600	5,730	922,000
21.....	7,530	650	13,200	10,800	690	20,100	58,500	5,000	790,000
22.....	7,400	580	11,600	10,700	724	20,900	56,300	4,530	689,000
23.....	7,800	520	11,000	11,100	957	28,700	55,200	4,480	668,000
24.....	7,700	447	9,290	11,200	800	24,200	50,400	3,720	506,000
25.....	7,500	780	15,800	11,900	740	23,800	47,000	3,390	430,000
26.....	7,680	450	9,330	13,000	1,000	35,100	44,200	3,130	374,000
27.....	8,100	401	8,770	23,700	5,370	s 390,000	41,000	2,900	a 320,000
28.....	8,640	431	10,100	31,300	7,000	592,000	38,800	2,710	284,000
29.....	9,890	700	18,700	32,400	6,460	565,000	35,600	2,100	202,000
30.....	11,600	1,420	44,500	35,900	7,810	757,000	32,100	2,200	191,000
31.....	--	--	--	42,900	9,200	1,070,000	--	--	--
Total.	268,860	--	624,190	498,400	--	4,893,500	1,478,300	--	20,243,000
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.....	28,600	1,590	123,000	15,000	22,200	s 940,000	8,930	15,000	362,000
2.....	26,000	1,280	89,900	18,300	24,600	s 1,230,000	7,360	19,200	362,000
3.....	24,200	1,240	81,000	17,800	24,600	1,180,000	6,950	21,500	403,000
4.....	22,800	1,100	67,700	16,700	24,000	1,080,000	7,380	13,900	277,000
5.....	21,400	1,200	69,300	17,100	24,000	a 1,100,000	6,850	8,700	a 160,000
6.....	20,200	1,000	a 55,000	17,100	22,000	a 1,000,000	6,230	6,400	a 110,000
7.....	18,400	810	a 40,000	15,800	17,300	738,000	5,890	4,470	71,100
8.....	17,300	660	30,800	15,000	15,100	612,000	5,630	2,960	45,000
9.....	16,100	564	24,500	13,400	12,400	449,000	5,320	2,200	31,600
10.....	15,500	513	21,500	12,200	14,000	461,000	5,100	3,710	51,100
11.....	15,000	760	30,800	11,500	9,500	295,000	4,950	5,680	75,900
12.....	14,300	1,400	54,100	10,800	6,650	194,000	4,770	3,250	41,900
13.....	14,300	980	37,800	10,700	7,400	214,000	4,590	2,000	24,800
14.....	12,900	1,510	52,600	9,830	5,200	138,000	4,440	1,800	21,600
15.....	12,400	3,090	103,000	9,390	6,000	152,000	4,330	1,200	14,000
16.....	12,500	3,900	132,000	9,290	4,400	110,000	4,240	814	9,320
17.....	13,100	2,010	71,100	9,480	4,800	123,000	4,110	848	9,410
18.....	15,000	4,400	178,000	9,140	4,450	110,000	4,030	719	7,820
19.....	19,600	8,600	455,000	9,000	3,500	85,000	4,070	525	5,770
20.....	14,300	14,700	568,000	7,820	4,200	88,700	4,010	445	4,820
21.....	14,100	9,300	354,000	7,230	3,050	59,500	4,010	405	4,380
22.....	14,200	6,700	257,000	7,010	3,050	57,700	3,890	377	3,960
23.....	14,800	8,550	342,000	7,160	3,160	61,100	3,780	333	3,400
24.....	14,400	8,470	329,000	7,130	4,900	94,300	3,760	291	2,950
25.....	13,500	5,400	197,000	7,760	9,700	203,000	3,760	229	2,320
26.....	12,600	4,380	149,000	7,440	3,600	72,300	3,730	200	2,010
27.....	11,800	5,810	185,000	8,310	6,250	s 141,000	3,640	182	1,790
28.....	11,000	6,250	186,000	10,700	11,000	s 350,000	3,590	182	1,760
29.....	10,600	3,860	110,000	13,000	20,600	s 751,000	3,540	203	1,940
30.....	10,700	5,160	149,000	11,700	20,400	644,000	3,530	194	1,850
31.....	12,500	33,600	1,180,000	11,700	17,800	562,000	--	--	--
Total.	494,100	--	5,723,100	354,490	--	13,295,600	146,410	--	2,134,500
Total discharge for year (cfs-days).....									4,478,610
Total load for year (tons).....									48,814,060

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Day		Temperature (°F) of water, water year October 1952 to September 1953												Temperature (°F) of water, September 1952											
		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	max	min
1.....	70	59	58	40	37	37	36	42	40	42	41	57	56	59	58	64	63	74	71	77	77	77	77	73	73
2.....	70	59	59	37	36	37	37	41	40	42	42	57	57	58	56	64	62	76	73	77	77	77	77	73	72
3.....	70	59	59	37	37	37	37	41	40	43	42	58	57	57	56	64	62	77	75	77	76	77	76	73	72
4.....	70	59	58	37	36	38	37	41	40	44	43	59	58	58	56	65	62	77	76	77	77	77	77	74	73
5.....	69	58	58	37	36	38	38	42	41	44	43	59	59	59	58	65	63	78	76	77	77	77	76	74	73
6.....	69	58	58	37	36	38	38	42	42	44	43	59	58	58	56	65	64	78	77	77	77	77	76	74	73
7.....	69	57	58	37	36	39	38	43	42	45	44	58	57	57	56	65	64	80	78	77	77	77	77	74	73
8.....	67	56	57	36	37	39	38	43	43	46	45	58	55	54	51	60	65	84	80	79	78	77	77	74	74
9.....	67	56	57	36	37	39	39	43	43	47	46	55	54	54	51	60	66	84	80	79	77	77	77	74	74
10.....	66	55	51	37	37	39	39	43	43	48	47	55	53	53	50	60	66	84	80	79	77	77	77	74	74
11.....	66	55	54	37	37	40	39	43	43	50	48	53	52	52	50	60	66	87	80	79	77	77	77	74	74
12.....	66	55	54	38	37	40	40	44	43	51	50	53	52	52	50	60	66	87	80	79	77	77	77	74	74
13.....	65	54	51	38	38	40	40	44	42	51	50	52	52	52	50	60	66	87	80	79	77	77	77	74	73
14.....	65	54	51	39	38	41	40	43	42	52	51	54	52	51	60	72	70	80	79	78	77	78	77	74	74
15.....	65	54	51	39	38	41	40	43	42	51	50	54	53	51	61	72	70	80	80	78	77	78	77	75	74
16.....	64	53	50	48	39	38	40	43	42	51	50	55	54	52	61	72	70	80	80	78	77	78	77	74	74
17.....	63	52	50	47	39	37	41	40	42	51	50	56	55	52	62	71	70	80	79	79	79	79	78	74	74
18.....	64	52	49	46	40	38	40	42	41	52	51	57	56	53	62	70	69	79	77	79	79	78	74	74	74
19.....	63	51	49	46	40	38	41	40	41	52	51	57	57	57	63	70	69	80	79	79	79	78	74	74	74
20.....	62	51	48	45	41	38	40	41	40	52	52	59	57	57	63	69	68	80	79	79	79	78	74	74	74
21.....	62	51	47	44	42	39	40	40	39	52	51	60	59	54	64	71	68	79	78	79	78	79	78	74	73
22.....	62	51	46	44	41	40	41	40	39	52	51	60	60	56	64	72	70	80	79	78	77	77	77	73	72
23.....	62	51	46	43	40	40	41	41	39	53	51	60	62	60	66	73	71	80	80	79	77	77	77	72	72
24.....	62	51	46	42	40	39	42	41	39	53	51	64	62	66	65	72	71	80	80	79	77	77	77	72	72
25.....	61	50	45	41	39	38	41	40	39	53	52	64	63	65	64	72	70	80	80	79	77	77	77	72	72
26.....	62	50	44	40	39	38	41	40	40	54	53	65	64	64	64	72	70	81	80	79	77	77	77	71	70
27.....	60	50	43	39	38	37	41	40	41	55	54	64	64	64	64	72	70	81	80	76	75	77	77	70	70
28.....	60	50	43	39	38	37	41	40	41	55	54	64	64	64	64	72	70	81	80	76	75	77	77	70	70
29.....	59	58	41	40	38	37	42	41	41	56	55	64	64	64	64	72	71	80	80	74	74	74	74	69	68
30.....	59	58	40	38	37	36	42	41	41	56	55	64	64	64	64	72	71	80	80	74	74	74	74	69	68
31.....	59	58	--	--	--	--	--	--	--	56	55	--	--	--	64	61	--	80	77	73	73	73	--	--	--
Average.....	64	53	51	49	39	37	40	39	42	41	50	49	59	57	62	61	69	67	79	78	77	76	77	73	72

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953
(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; V, visual accumulation tube)

W. DISTRICT WATER, C. CHEMICALLY ANALYZED, AM. MEDICINALLY DISPERSED, V. VISUAL ACCUMULATION (10/67)				Suspended sediment											Methods of analysis	
Date of collection	Time	Discharge (cfs)	Water tem- per- ature (° F)	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		1.000
Oct. 2, 1952	8:30 a.m.	8,230	70	3,710	3,350	--	70	--	89	--	99	100	--	--	SPWCM	
Oct. 13	8:00 a.m.	5,950	64	283	--	--	--	--	--	--	98	99	100	--	S	
Oct. 23	8:30 a.m.	5,900	62	222	--	--	--	--	--	--	97	98	100	--	S	
Nov. 3	8:40 a.m.	6,040	59	227	--	--	--	--	--	--	98	99	100	--	S	
Nov. 15	9:30 a.m.	6,080	50	572	--	--	--	--	--	--	97	99	99	100	S	
Nov. 26	8:10 a.m.	7,160	40	391	--	--	--	--	--	--	98	100	--	--	S	
Dec. 7	10:30 a.m.	4,870	37	140	--	--	--	--	--	--	96	98	99	100	S	
Dec. 17	9:00 a.m.	6,160	39	295	--	--	--	--	--	--	96	98	98	100	S	
Dec. 30	8:40 a.m.	6,830	37	485	1,090	61	74	83	91	98	99	99	100	--	SPWCM	
Jan. 19, 1953	8:45 a.m.	7,510	40	360	899	57	68	76	84	93	96	98	99	99	SPWCM	
Jan. 29	9:00 a.m.	7,160	41	316	--	--	--	--	--	--	98	99	100	--	S	
Feb. 6	10:00 a.m.	6,840	43	294	--	--	--	--	--	--	95	97	99	100	S	
Feb. 18	8:40 a.m.	6,900	43	311	--	--	--	--	--	--	97	98	99	100	S	
Feb. 28	10:00 a.m.	6,260	42	127	--	--	--	--	--	--	95	98	99	100	S	
Mar. 23	11:15 a.m.	6,830	50	1,370	4,750	--	61	--	87	--	98	100	--	--	SPWCM	
Mar. 24	9:00 a.m.	8,880	51	1,570	4,680	--	62	--	86	--	98	99	100	--	SPWCM	
Mar. 26	9:00 a.m.	8,500	53	1,250	4,460	--	70	--	90	--	99	100	--	--	SPWCM	
Mar. 28	10:00 a.m.	8,130	55	642	3,600	--	66	--	86	--	98	100	--	--	SPWCM	
Apr. 13	2:00 p.m.	9,560	52	1,120	4,900	--	60	--	81	--	98	99	100	--	SPWCM	
Apr. 13	2:00 p.m.	9,560	52	1,120	4,640	--	6	--	80	--	98	99	100	--	SPN	
Apr. 27	2:15 p.m.	8,180	64	343	--	--	--	--	--	--	98	99	100	--	S	
May 6	9:00 a.m.	16,100	59	2,430	2,670	--	35	--	57	--	90	98	100	--	VPWCM	
May 16	11:00 a.m.	12,800	61	1,050	3,830	--	40	--	63	--	92	99	100	--	SPWCM	
May 26	9:00 a.m.	12,500	64	914	2,910	--	33	--	50	--	93	100	--	--	VPWCM	

COLORADO RIVER MAIN STEM--Continued
COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1953--Continued.
(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; V, visual accumulation tube)

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	1.000
May 28, 1953.....	10:00 a.m.	31,200	63	6,880	4,660	--	14	--	26	--	67	93	100	VPWCM	
June 2.....	9:15 a.m.	47,400	62	6,750	6,980	--	21	--	36	--	61	82	95	SPWCM	
June 2.....	9:15 a.m.	47,400	62	6,750	5,720	--	2	--	34	--	61	82	95	SPN	
June 8.....	8:30 a.m.	49,200	64	4,830	5,440	--	13	--	22	--	44	72	90	VPWCM	
June 10.....	10:00 a.m.	67,900	70	8,150	3,100	--	7	--	12	--	27	55	87	SPWCM	
June 17.....	10:00 a.m.	67,900	70	8,150	3,140	--	4	--	10	--	27	55	87	SPN	
June 22.....	10:00 a.m.	55,500	70	4,530	5,430	--	16	--	24	--	44	65	89	VPWCM	
July 2.....	8:30 a.m.	26,600	73	1,210	2,410	--	27	--	39	--	70	89	100	VPWCM	
July 12.....	6:00 p.m.	14,300	79	799	3,100	--	50	--	70	--	92	98	100	SPWCM	
July 12.....	6:00 p.m.	14,300	79	799	2,960	--	3	--	72	--	92	98	100	SPN	
July 18.....	10:00 a.m.	14,200	78	8,200	4,390	--	48	--	77	--	98	100	--	VPWCM	
July 21.....	9:00 a.m.	14,600	78	9,320	3,840	--	64	--	90	--	99	100	--	VPWCM	
July 31.....	9:00 a.m.	12,800	77	47,000	3,840	--	59	--	76	--	98	100	--	VPWCM	
Aug. 1.....	9:00 a.m.	14,200	77	11,700	3,820	--	58	--	80	--	98	100	--	VPWCM	
Aug. 2.....	9:30 a.m.	15,100	77	21,100	3,180	--	59	--	78	--	97	100	--	VPWCM	
Aug. 7.....	8:40 a.m.	15,600	77	16,500	4,610	--	63	--	86	--	98	100	--	VPWCM	
Aug. 17.....	8:45 a.m.	9,460	78	5,080	4,250	--	67	--	93	--	99	100	--	VPWCM	
Aug. 29.....	9:30 a.m.	12,600	74	13,900	3,970	--	56	--	81	--	98	100	--	VPWCM	
Sept. 1.....	9:00 a.m.	9,140	73	14,200	3,730	--	64	--	88	--	100	--	--	VPWCM	
Sept. 3.....	9:00 a.m.	6,750	73	21,900	4,750	--	73	--	97	--	100	--	--	SPWCM	
Sept. 21.....	9:00 a.m.	4,020	74	408	3,050	--	70	--	94	--	100	--	--	SPWCM	

VIRGIN RIVER BASIN

VIRGIN RIVER AT VIRGIN, UTAH

LOCATION --At gaging station, 1½ miles southwest of Virgin, Washington County, and about 2 miles downstream from North Creek.

DRAINAGE AREA --334 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1953.

Water temperatures: October 1950 to September 1953.

EXTREMES 1952-53 --Dissolved solids: Maximum, 1,330 ppm July 14-16; minimum, 485 ppm Mar. 11-20.

Specific conductance: Maximum daily, 1,920 microhos July 14; minimum daily, 592 microhos Apr. 28.

Water temperatures: Maximum observed, 85° F July 5-6, 27, Sept. 8; minimum observed, 39° F Nov. 27-29.

EXTREMES 1950-53 --Dissolved solids: Maximum, 1,330 ppm July 14-16, 1953; minimum, 245 ppm May 1-10, 1952.

Specific conductance: Maximum daily, 2,820 microhos July 14, 1953; minimum daily, 383 microhos May 7, 1952.

Water temperatures: Maximum observed, 88° F July 18, 28-30, 1952; minimum observed, freezing point on several days during winter months.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 available in Surface Water district office at Salt Lake City, Utah.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids				Hardness as CaCO ₃		Per cent sodium-sulfate	Specific conductance (micro-mhos at 25°C)	pH			
														Parts per million		Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate						
														Residue at 180°C	Sum										
Oct. 1-10, 1952	88.7	--	--	--	--	--	--	--	--	--	--	--	0.11	554	0.75	125	--	--	--	340	164	27	1.3	878	8.0
Oct. 11-20	91.0	13	84	84	31	56	--	215	197	61	--	3.0	--	577	.78	142	--	--	--	--	--	--	--	860	--
Oct. 21-31	101	--	--	--	--	--	--	--	--	--	--	--	--	558	.76	152	--	--	--	--	--	--	--	863	--
Nov. 1-10	114	--	--	--	--	--	--	--	--	--	--	--	--	566	.77	174	--	--	--	--	--	--	--	863	--
Nov. 11-20	144	12	88	88	28	50	--	240	178	53	2.0	--	--	555	.75	216	--	--	--	336	139	24	1.2	853	8.0
Nov. 21-30	139	--	--	--	--	--	--	--	--	--	--	--	--	548	.75	206	--	--	--	--	--	--	--	846	--
Dec. 1-10	145	--	--	--	--	--	--	--	--	--	--	--	--	538	.73	211	--	--	--	--	--	--	--	831	--
Dec. 11-20	157	12	82	82	28	48	--	240	162	50	1.9	--	--	527	.72	223	--	--	--	322	125	25	1.2	823	7.6
Dec. 21-31	150	--	--	--	--	--	--	--	--	--	--	--	--	544	.74	220	--	--	--	--	--	--	--	846	--
Jan. 1-10, 1953	156	--	--	--	--	--	--	--	--	--	--	--	--	525	.71	221	--	--	--	--	--	--	--	819	--
Jan. 11-20	170	12	77	77	29	48	--	229	150	50	1.7	--	.11	498	.68	229	--	--	--	311	123	25	1.2	779	8.0
Jan. 21-31	148	--	--	--	--	--	--	--	--	--	--	--	--	509	.69	203	--	--	--	--	--	--	--	795	--
Feb. 1-10	150	--	--	--	--	--	--	--	--	--	--	--	--	488	.66	198	--	--	--	--	--	--	--	773	--
Feb. 11-20	131	12	76	76	32	46	--	213	169	54	2.0	--	--	512	.70	181	--	--	--	319	144	25	1.2	800	7.9
Feb. 21-28	128	--	--	--	--	--	--	--	--	--	--	--	--	500	.68	173	--	--	--	--	--	--	--	783	--
Mar. 1-10	131	--	--	--	--	--	--	--	--	--	--	--	--	508	.69	180	--	--	--	--	--	--	--	789	--
Mar. 11-20	128	11	74	74	30	47	--	226	145	55	1.9	--	--	485	.66	168	--	--	--	309	124	25	1.2	779	7.6
Mar. 21-31	123	--	--	--	--	--	--	--	--	--	--	--	--	522	.71	173	--	--	--	--	--	--	--	797	--
Apr. 1-10	132	--	--	--	--	--	--	--	--	--	--	--	--	510	.69	182	--	--	--	--	--	--	--	791	--
Apr. 11-20	111	11	80	80	30	55	--	211	172	61	2.4	--	.10	528	.72	158	--	--	--	324	151	27	1.3	829	7.6
Apr. 21-30	169	--	--	--	--	--	--	--	--	--	--	--	--	495	.67	213	--	--	--	--	--	--	--	758	--
May 1-10	122	--	--	--	--	--	--	--	--	--	--	--	--	534	.73	176	--	--	--	--	--	--	--	827	--
May 11-20	107	11	86	86	27	53	--	213	185	60	2.3	--	--	551	.75	159	--	--	--	328	153	26	1.3	852	7.8
May 21-31	96.6	11	82	82	27	58	--	203	180	63	.6	--	--	571	.78	152	--	--	--	316	150	29	1.4	858	8.1

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER AT VIRGIN, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids				Hardness as CaCO ₃	Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH		
														Parts per million		Tons per acre-foot	Tons per day						Calcium, magnesium	Non-carbonate
														Residue at 180°C	Sum									
June 1-10, 1953	85.7	12		81	32	57	--	--	194	63		0.9	--	592	0.81	137	333	--	--	27	1.4	876	8.1	
June 11-20	70.6	14		83	29	64	--	197	205	66		1.6	--	576	.78	110	326	164	--	30	1.5	880	7.9	
June 21-30	61.1	--		--	--	--	--	--	--	--		--	--	567	.77	93.5	--	--	--	--	--	880	--	
July 1-10	60.4	--		--	--	--	--	--	--	--		--	--	564	.77	92.0	--	--	--	--	--	873	--	
July 11-12, 17-20	192	17		118	28	61	--	286	208	49		1.6	0.14	644	.88	334	410	175	--	24	1.3	944	7.9	
July 14-16	146	23		279	36	66	--	a279	651	51		2.6	--	1,330	1.81	524	846	617	--	15	1.0	1,640	8.3	
July 21-28	89.9	--		--	--	--	--	--	--	--		--	--	593	.81	144	--	--	--	--	--	904	--	
July 29-31	282	--		--	--	--	--	--	--	--		--	--	1,130	1.54	860	--	--	--	--	--	1,460	--	
Aug. 2-10	104	--		--	--	--	--	--	--	--		--	--	858	1.17	240	--	--	--	--	--	1,180	--	
Aug. 11-20	65.3	17		150	26	64	--	210	338	63		1.7	.13	796	1.08	140	480	308	--	23	1.3	1,120	7.9	
Aug. 21-26	--	--		--	--	--	--	--	--	--		--	--	766	1.04	230	--	--	--	--	--	1,050	--	
Aug. 28-31	111	--		--	--	--	--	--	--	--		--	--	728	.99	127	--	--	--	--	--	1,040	--	
Sept. 1-10	64.8	--		--	--	--	--	--	--	--		--	--	622	.85	98.9	355	192	--	--	--	942	8.2	
Sept. 11-20	58.9	13		94	29	61	--	199	224	--		2.1	--	592	.81	90.8	--	--	--	27	1.4	891	--	
Sept. 21-30	56.8	--		--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--
Weighted average	b116	--		--	--	--	--	--	--	--		--	--	578	0.79	181	--	--	--	--	--	872	--	

a Includes equivalent of 12 ppm of carbonate (CO₃).

b Represents 95 percent of runoff for water year October 1952 to September 1953.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT VIRGIN, UTAH--Continued

Temperature (°F) of water, Water year October 1952 to September 1953

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

VIRGIN RIVER BASIN--Continued
WASHINGTON FIELDS CANAL NEAR WASHINGTON, UTAH

LOCATION --At gaging station, about 1½ miles southeast of Washington, Washington County.

RECORDS AVAILABLE --Chemical analyses: October 1950 to September 1953.

REMARKS --Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 23° C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 7, 13, 22, 28, 1952.....		19		173	54	339	27	265	509	485		2.9	0.70	1,740	2.37		655	438	52	5.8	2,730	7.6	
Nov. 4, 11, 18, 25.....		16		156	44	228	19	286	399	325		2.9	--	1,310	1.78		572	337	45	4.2	2,110	7.7	
Dec. 1, 9, 15, 22, 31.....		18		136	41	177	--	283	330	248		2.3	--	1,090	1.48		508	276	43	3.4	1,760	7.7	
Jan. 5, 13, 19, 26, 1953.....		17		126	39	168	--	262	312	238		2.1	.31	1,030	1.40		476	261	43	3.4	1,670	7.8	
Feb. 3, 9, 17, 24, Mar. 3, 9, 16, 23, 30.....		17		129	42	186	--	275	327	252		2.6	--	1,090	1.48		495	270	45	3.6	1,740	7.8	
Apr. 7, 13, 20, 27.....		17		146	44	219	--	267	391	315		2.8	--	1,270	1.73		545	326	47	4.1	2,040	7.6	
May 4, 11, 19, 25.....		18		157	47	292	--	236	449	398		4.0	.65	1,480	2.01		587	393	52	5.3	2,350	7.6	
June 2, 9, 15, 29.....		24		174	65	423	--	214	609	608		9.7	--	2,020	2.75		702	526	57	7.0	3,160	7.8	
July 6, 14, 20, 27.....		22		196	59	364	--	283	574	510		6.6	.75	1,870	2.54		732	500	52	5.9	2,890	7.5	
Aug. 1.....		--		--	--	--	--	228	661	45		1.2	--	--	--		--	--	--	--	1,540	--	
Aug. 2, 10, 19, 25, 27.....		22		294	50	329	--	244	794	478		3.1	--	2,090	2.84		940	740	43	4.7	3,100	7.8	
Sept. 3, 8, 14, 22, 28.....		22		216	67	488	--	224	744	708		4.3	--	2,360	3.21		815	631	57	7.4	3,670	7.8	

VIRGIN RIVER BASIN--Continued

SANTA CLARA RIVER ABOVE WINSOR DAM, NEAR SANTA CLARA, UTAH

LOCATION--At gaging station 2 miles upstream from Winsor Dam, 2½ miles downstream from Sandy Wash, 8 miles downstream from Magotsu Creek, and 9 miles northwest of Santa Clara, Washington County.

DRAINAGE AREA--338 square miles.

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

REMARKS--Values reported for dissolved solids are residue on evaporation. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium				
Oct. 8, 14, 22, 29, 1952.....	16.2	32		47	15	--		198	29	11		0.4	--	268	0.36	11.7	178	--	422	7.8	
Nov. 4, 11, 18, 25.....	21.0	--		51	15	--		208	31	24		1.1	--	287	.39	16.3	192	--	450	8.0	
Dec. 2, 16, 22, 31.....	20.8	34		54	15	18		215	29	21		.8	--	277	.38	15.6	196	17	456	7.9	
Jan. 6, 12, 19, 27, 1953.....	20.2	32		51	14	17		201	27	20		.5	0.09	258	.35	14.1	183	17	421	8.0	
Feb. 3, 9, 16, 24.....	19.5	31		54	14	18		220	33	24		1.0	--	283	.38	14.9	195	15	460	7.6	
Mar. 4, 9, 16, 24, 30.....	17.6	30		49	15	17		202	31	24		1.0	--	264	.36	12.5	182	16	424	8.0	
Apr. 7, 13, 20, 28.....	16.2	34		46	14	17		191	30	22		.7	--	256	.35	11.2	172	15	412	7.8	
May 4, 11, 18, 25.....	15.0	32		41	13	17		172	28	22		.7	--	236	.32	9.56	157	16	379	8.1	
June 2, 9, 15, 29.....	12.2	32		43	15	17		184	31	21		1.0	--	246	.33	8.10	169	18	406	7.7	
July 6, 13, 20, 27.....	8.4	38		45	16	19		192	34	24		1.1	.15	269	.37	6.10	178	21	424	7.6	
Aug. 1, 10, 19, 25, 27.....	18.8	29		53	11	15		210	20	18		1.2	--	262	.36	13.3	170	7	431	7.6	

VIRGIN RIVER BASIN

SANTA CLARA RIVER AT ST. GEORGE, UTAH

LOCATION.--At gaging station half a mile upstream from mouth and 2 miles south of St. George, Washington County.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1953.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		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	Non-magnesium					
Oct. 6, 13, 22, 23, 1952.....	6.7	35		220	48	78		340	555	49		1.4	0.28	1,150	1.56	20.8	748	489	19	1.2	1,530	7.6	
Nov. 4, 10, 18, 24	12.1	32		202	52	71		342	481	61		1.3	--	1,070	1.46	35.0	720	440	18	1.2	1,450	7.6	
Dec. 3, 8, 22, 30	16.0	36		190	44	69		348	438	45		9	--	994	1.35	43.0	656	371	18	1.2	1,360	7.5	
Dec. 15.....	7.5	18		194	57	--		246	551	--		4.4	--	1,460	2.01	30.0	720	518	40	3.6	1,930	--	
Jan. 5, 12, 19, 26, 1953.....	13.7	32		165	33	63		314	367	41		7	.22	856	1.16	31.7	548	291	20	1.2	1,220	7.7	
Feb. 2, 9, 17, 24	6.8	34		281	63	82		396	744	64		1.6	--	1,470	2.00	27.0	960	635	17	1.3	1,860	7.6	
Mar. 3, 9, 16, 23, 31.....	4.2	35		282	71	104		399	776	72		6	--	1,540	2.09	17.5	1,000	673	19	1.4	1,980	7.7	
Apr. 7, 13, 20, 28	4.0	38		290	74	113		357	856	71		9	.40	1,620	2.20	17.5	1,030	737	19	1.5	2,020	7.6	
May 4, 11, 19, 25	2.8	36		306	78	119		383	891	71		6	--	1,690	2.30	12.8	1,080	766	19	1.6	2,110	7.6	
June 2, 9, 15, 23	.9	44		344	114	154		352	1,150	96		1.8	--	2,070	2.82	5.0	1,300	1,010	20	1.9	2,480	7.6	
July 6, 13, 18, 27	.8	39		316	107	150		300	1,110	90		2.2	.46	1,960	2.67	4.23	1,230	982	21	1.9	2,380	7.5	
Aug. 2.....	5.3	--		--	--	--		314	269	53		--	--	--	--	--	--	--	--	--	1,080	--	
Aug. 4, 10, 19.....	.5	45		317	102	163		266	1,170	94		1.1	--	2,020	2.75	2.73	1,210	992	23	2.0	2,450	7.6	
Aug. 27.....	211	--		--	--	--		363	8.5	12		--	--	--	--	--	--	--	--	--	537	--	
Sept. 1, 8, 14, 22, 28.....	.3	39		312	78	134		372	923	90		1.1	--	1,760	2.39	1.43	1,100	795	21	1.8	2,190	7.8	
Sept. 2, 9, 14, 22, 29.....	.3	37		59	18	20		247	31	23		1.1	--	311	.42	.252	220	17	16	.6	497	8.1	

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER NEAR ST. GEORGE, UTAH

LOCATION.--At gaging station 8 miles southwest of St. George, Washington County.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1953.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given WSP 1263.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Sum)			Hardness as CaCO ₃		Percent 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. 6, 13, 22, 23, 1952.....	43.5	23		341	96	412		260	1,140	550		3.4	0.92	2,690	3.66	316	1,250	1,040	42	5.1	3,770	7.6
Nov. 3, 10, 17, 24	149	19		228	64	263	21	287	686	365		4.2	--	1,780	2.42	716	835	616	40	4.0	2,630	7.8
Dec. 3, 6, 15, 31	171	19		194	52	215		278	510	288		3.0	--	1,410	1.92	651	675	447	41	3.6	2,160	7.6
Jan. 5, 12, 19, 26, 1953.....	168	18		168	56	199		273	475	268		2.8	.41	1,330	1.80	603	650	426	40	3.4	2,010	7.6
Feb. 2, 9, 16, 23	137	19		168	56	226		259	512	308		3.1	--	1,420	1.93	525	650	438	43	3.9	2,150	7.7
Mar. 3, 9, 16, 23																						
Apr. 7, 13.....	64.2	19		209	65	262		281	654	392		3.1	--	1,750	2.38	398	780	576	44	4.4	2,650	7.7
May 4, 11, 18.....	40.5	22		280	85	342		238	849	460		1.7	.63	2,150	2.92	235	1,000	788	43	4.7	3,150	7.9
May 4, 11, 18.....	11.2	21		295	89	392		229	1,020	540		3.2	--	2,470	3.36	74.7	1,100	912	44	5.1	3,600	7.4
July 18, 26, 28.....	122	27		610	87	269		276	1,710	345		5.5	.54	3,190	4.34	1,050	1,880	1,650	24	3.0	3,750	7.4
Aug. 4.....	37.0	20		458	67	324		235	1,250	475		2.2	--	2,710	3.69	271	1,420	1,230	33	3.7	3,430	7.3
Sept. 1.....	21.0	19		603	71	396		234	1,680	552		2.2	--	3,450	4.69	205	1,800	1,590	32	4.1	4,320	7.2

Apr. 1-10, 1953	103	80.6	22	22	Apr. 11-20	373	99	288	341	1,120	392	2.6	-.97	2,450	3.33	599	1,340	1,080	30	3.2	3,210	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---</
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VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement generally taken between 7 a. m. and 10 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	65	47	49	51	53	58	61	66	70	75	68
2	68	62	50	50	53	59	64	61	63	68	70	68
3	66	a 68	58	50	52	a 59	61	60	66	a 80	72	67
4	66	63	48	49	52	53	61	a 68	66	71	68	69
5	65	61	48	49	52	52	a 69	61	66	74	69	a 80
6	65	a 69	50	50	54	54	65	62	a 72	a 89	70	a 78
7	64	60	51	54	57	54	60	66	66	a 92	--	68
8	64	a 66	54	54	56	54	55	65	67	a 81	70	69
9	66	57	52	55	a 53	55	60	61	67	75	73	70
10	65	54	50	53	a 54	61	57	61	66	a 80	71	68
11	66	54	50	55	50	56	58	67	66	a 89	76	68
12	66	56	50	54	52	56	58	62	70	a 90	--	a 78
13	65	54	51	55	51	56	60	a 80	68	a 86	a 82	70
14	64	55	53	53	51	54	60	a 73	a 81	a 88	72	69
15	63	55	53	48	55	56	60	a 65	a 76	76	72	68
16	63	52	54	49	52	56	60	64	67	75	a 86	67
17	64	--	a 57	50	51	a 66	62	a 83	68	77	a 86	68
18	62	--	56	50	52	--	61	69	a 75	74	a 86	68
19	64	--	56	51	a 55	59	a 76	a 80	a 80	a 88	a 86	69
20	65	a 57	57	50	48	58	67	70	69	74	71	a 82
21	64	52	53	50	49	57	a 67	68	a 85	75	71	67
22	64	50	48	50	50	59	66	a 81	68	73	70	a 76
23	63	49	48	51	a 55	59	65	a 66	70	77	68	64
24	65	47	47	53	55	59	a 67	63	69	78	70	64
25	65	47	50	53	52	62	63	63	69	a 88	a 81	64
26	62	47	a 52	51	52	66	65	65	70	75	73	64
27	62	45	a 50	50	52	60	65	62	67	--	70	66
28	65	46	47	48	56	a 69	a 73	62	67	74	73	a 77
29	63	--	52	51	--	a 63	58	62	67	74	70	70
30	67	48	a 50	53	--	a 60	60	64	70	75	70	65
31	64	--	52	52	--	a 60	--	a 79	--	75	71	--
Average	65	55	51	51	53	58	63	67	70	79	74	70

a Between 10 a. m. and 7 p. m.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953

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.....	75	532	108	114	1,250	385	216	2,810	1,640
2.....	76	469	96	114	1,350	416	233	3,620	2,280
3.....	74	399	80	120	1,750	567	246	3,280	2,180
4.....	71	237	49	132	1,890	674	216	3,090	1,800
5.....	68	218	40	132	2,100	748	204	2,830	1,560
6.....	67	312	56	123	1,580	525	204	2,510	1,380
7.....	68	307	56	145	2,240	877	211	2,620	1,490
8.....	75	1,050	213	166	3,420	1,530	208	2,490	1,400
9.....	82	1,010	224	145	2,230	873	202	2,580	1,410
10.....	75	530	107	138	2,020	753	199	2,190	1,180
11.....	75	320	65	139	2,130	799	195	2,100	1,110
12.....	76	400	82	139	2,130	799	197	1,870	995
13.....	76	470	96	143	1,990	768	197	1,980	1,050
14.....	79	850	181	145	1,820	713	188	2,000	1,020
15.....	83	750	168	213	6,680	3,840	199	2,470	1,330
16.....	84	1,250	284	246	6,890	4,580	202	2,460	1,340
17.....	105	2,370	672	243	5,630	3,690	218	2,490	1,470
18.....	113	2,350	717	216	4,530	2,640	268	4,420	3,200
19.....	108	1,920	560	195	2,960	1,560	280	4,700	3,550
20.....	116	1,880	589	190	2,790	1,430	262	3,070	2,170
21.....	116	1,580	495	195	3,580	1,880	271	3,720	2,720
22.....	106	1,700	487	199	3,030	1,630	274	3,800	2,810
23.....	118	1,970	628	199	2,720	1,460	238	3,070	1,970
24.....	114	1,450	446	202	2,740	1,490	218	3,490	2,050
25.....	118	1,650	526	190	2,340	1,200	206	2,260	1,260
26.....	113	1,640	500	186	2,120	1,060	213	2,080	1,200
27.....	116	1,730	542	186	2,170	1,090	220	2,000	1,190
28.....	118	1,520	484	186	2,050	1,030	213	2,000	1,150
29.....	123	1,810	601	183	2,100	a 1,000	218	1,850	1,090
30.....	121	1,480	484	195	2,130	1,120	223	1,880	1,130
31.....	121	1,500	490	--	--	--	223	2,270	1,370
Total.	2,930	--	10,126	5,119	--	41,127	6,862	--	51,495
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.....	228	2,110	1,300	192	1,650	855	157	1,330	s 585
2.....	220	2,200	1,310	192	1,570	814	202	1,450	791
3.....	211	2,160	1,230	181	1,510	738	186	1,370	688
4.....	211	2,440	1,390	213	2,540	1,460	183	1,310	647
5.....	211	1,980	1,130	197	1,930	1,030	181	1,320	645
6.....	223	2,580	1,550	179	1,720	831	186	1,310	658
7.....	216	2,220	1,290	170	1,790	822	179	1,410	681
8.....	223	2,380	1,430	175	1,450	685	162	1,500	656
9.....	230	2,240	1,390	218	2,200	1,290	145	1,290	505
10.....	223	2,250	1,350	186	1,450	728	145	1,170	458
11.....	213	1,930	1,110	155	1,080	452	145	1,260	493
12.....	218	1,880	1,110	158	1,000	427	138	1,170	436
13.....	204	1,900	1,050	164	1,250	554	126	1,040	354
14.....	271	9,180	sb 12,100	168	1,360	617	120	1,120	363
15.....	349	11,600	sb 13,700	151	1,270	518	113	975	297
16.....	238	3,100	1,990	151	1,240	506	90	825	200
17.....	226	2,600	1,590	158	1,280	546	80	680	147
18.....	220	2,600	1,540	143	940	363	74	650	130
19.....	230	2,580	1,600	147	1,130	448	72	670	130
20.....	216	2,340	1,360	158	1,440	614	71	830	159
21.....	220	2,220	1,320	136	1,180	433	67	540	98
22.....	220	2,280	1,350	130	1,020	358	72	605	118
23.....	208	1,820	1,020	138	1,030	394	72	740	144
24.....	192	1,890	980	141	955	364	74	670	134
25.....	197	1,950	1,040	141	1,110	423	71	510	98
26.....	197	1,790	952	138	960	358	68	360	66
27.....	202	1,570	856	134	1,200	434	67	374	68
28.....	192	1,510	783	128	930	321	66	350	62
29.....	188	1,670	848	--	--	--	68	440	81
30.....	188	1,550	787	--	--	--	114	1,380	s 515
31.....	192	1,400	726	--	--	--	138	1,500	552
Total.	6,777	--	61,182	4,542	--	17,373	3,632	--	10,966

s Computed by subdividing day.

a Computed from estimated concentration graph.

b Computed from water-sediment discharge curve.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	116	960	301	106	1,450	415	74	350	70
2.....	97	780	204	116	1,330	417	74	614	123
3.....	90	830	202	103	920	256	74	458	92
4.....	98	828	219	89	830	199	76	401	82
5.....	106	860	246	80	750	162	76	399	82
6.....	105	630	179	76	596	122	74	370	74
7.....	100	550	148	74	545	109	72	360	70
8.....	105	650	184	72	600	117	70	443	84
9.....	103	620	172	71	460	88	70	435	82
10.....	98	566	150	74	540	108	70	345	65
11.....	90	440	107	74	570	114	68	365	67
12.....	90	520	126	74	530	106	68	330	61
13.....	83	530	119	72	590	115	66	290	52
14.....	97	693	s 208	71	580	111	66	260	46
15.....	120	1,150	373	72	478	93	65	300	53
16.....	94	725	184	72	460	89	65	450	79
17.....	84	582	132	74	560	112	66	510	91
18.....	83	495	111	74	640	128	67	521	94
19.....	83	460	103	72	520	101	66	440	78
20.....	82	400	89	72	565	110	66	370	66
21.....	82	350	77	74	515	103	66	360	64
22.....	82	390	86	74	555	111	66	420	75
23.....	82	510	113	76	434	89	67	443	80
24.....	83	470	105	77	465	97	66	420	75
25.....	84	440	100	76	557	114	66	490	87
26.....	83	395	89	75	520	105	66	450	80
27.....	84	380	86	74	380	76	67	373	67
28.....	105	1,820	s 2,260	74	430	86	66	360	64
29.....	280	9,900	s 9,240	74	450	90	67	450	81
30.....	141	2,200	838	74	358	71	67	480	87
31.....	--	--	--	74	350	70	--	--	--
Total.	3,030	--	16,551	2,410	--	4,084	2,057	--	2,271
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.....	67	440	80	612	67,200	s 127,000	81	2,000	437
2.....	67	401	73	1,270	68,200	s 284,000	74	1,080	216
3.....	67	380	69	245	17,200	11,400	69	840	156
4.....	66	395	70	122	7,700	2,540	69	800	149
5.....	67	425	77	81	2,840	621	69	770	143
6.....	66	360	64	80	1,390	300	68	825	151
7.....	66	404	72	72	905	176	69	748	139
8.....	66	410	73	72	757	147	68	705	129
9.....	67	290	52	72	725	141	68	760	140
10.....	67	350	63	70	796	150	66	550	98
11.....	66	352	63	69	850	158	66	525	94
12.....	68	300	55	70	820	a 150	66	700	125
13.....	68	355	65	75	700	142	66	610	109
14.....	76	10,000	2,050	69	430	80	68	780	143
15.....	72	7,250	1,410	68	440	81	68	760	140
16.....	71	800	153	68	443	81	66	702	125
17.....	158	13,100	s 7,430	68	350	64	66	645	115
18.....	195	43,000	23,500	68	600	110	66	614	109
19.....	289	41,800	s 39,200	69	490	91	66	690	123
20.....	224	79,500	s 52,900	69	460	86	68	570	105
21.....	134	35,800	13,400	69	370	69	66	619	110
22.....	108	13,800	4,020	69	500	93	64	594	103
23.....	82	4,000	888	69	339	63	66	640	114
24.....	75	1,710	346	69	405	75	66	610	109
25.....	74	1,600	320	69	540	101	64	594	103
26.....	397	60,300	s 83,400	72	864	168	64	555	96
27.....	154	41,400	s 18,500	1,140	78,400	s 385,000	66	620	110
28.....	97	5,800	1,520	1,120	104,000	s 358,000	66	730	130
29.....	88	982	229	316	45,500	s 42,300	66	690	123
30.....	265	45,900	s 43,900	139	16,300	6,120	64	530	92
31.....	737	68,400	157,000	96	5,700	1,480	--	--	--
Total.	4,164	--	451,040	6,617	--	1,220,987	2,019	--	4,036

Total discharge for year (cfs-days)..... 50,159

Total load for year (tons)..... 1,891,238

s Computed by subdividing day.

a Computed from estimated concentration graph.

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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; V, visual accumulation tube)

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	0.500		1.000
Oct. 10, 1952	7:00 a. m.	79	65	328	--	--	--	--	--	--	56	68	94	99		S
Oct. 20	9:00 a. m.	113	65	2,310	--	48	--	78	--	--	88	92	100	--		VPWCM
Oct. 30	10:00 a. m.	109	67	1,360	--	3,420	--	51	--	82	85	96	100	--		VPWCM
Nov. 20	4:00 p. m.	195	57	2,180	--	2,760	--	26	--	68	82	95	100	--		VPWCM
Nov. 30	8:00 a. m.	186	48	2,530	--	3,940	--	22	--	53	73	92	100	--		VPWCM
Dec. 10	8:30 a. m.	199	50	2,190	--	3,310	--	19	--	--	53	81	96	100		VPWCM
Dec. 20	8:00 a. m.	262	57	2,990	--	4,680	--	23	--	12	81	98	100	--		VPWCM
Dec. 30	12:00 a. m.	223	50	1,940	--	2,010	--	15	--	37	73	95	100	--	100	VPWCM
Jan. 10, 1953	8:30 a. m.	223	53	2,450	--	2,900	--	9	--	14	--	70	95	99	--	VPWCM
Jan. 20	9:00 a. m.	211	50	1,750	--	2,290	--	13	--	20	--	46	76	97	100	VPWCM
Feb. 10	11:30 a. m.	179	54	1,410	--	--	--	--	--	--	34	75	98	100		V
Feb. 20	8:00 a. m.	147	48	1,130	--	--	--	--	--	--	33	73	99	100		V
Feb. 28	8:00 a. m.	114	56	851	--	--	--	--	--	--	31	66	98	100		V
Mar. 10	10:00 a. m.	143	61	1,440	--	--	--	--	--	--	17	46	81	100		V
Mar. 31	8:00 a. m.	128	60	2,120	--	1,690	--	11	--	16	--	28	70	96	100	VPWCM
Apr. 10	9:00 a. m.	90	57	364	--	--	--	--	--	--	28	62	76	100		V
Apr. 29	7:30 a. m.	306	58	9,830	--	5,180	--	37	--	65	--	80	90	97	100	SPWCM
Apr. 29	7:30 a. m.	306	58	9,830	--	4,770	--	1	--	57	--	80	90	97	100	SPN
Apr. 29	6:30 p. m.	206	68	3,500	--	5,750	--	40	--	65	--	80	92	99	100	SPWCM
Apr. 30	8:00 a. m.	141	60	--	--	--	--	--	--	--	--	--	--	--	--	SPWCM
May 30	6:30 a. m.	75	64	369	--	--	--	--	--	--	30	41	89	100		V
May 31	4:00 p. m.	73	79	214	--	--	--	--	--	--	44	61	98	100		V
June 29	7:30 a. m.	66	67	230	--	--	--	--	--	--	24	39	90	100		V
July 14	5:00 p. m.	77	88	20,400	--	3,350	--	61	--	96	96	99	100	--	--	SPWCM
July 17	3:00 p. m.	265	81	56,600	--	4,620	--	55	--	87	91	94	97	100	--	SPWCM
July 19	4:20 p. m.	746	86	39,100	--	6,200	--	47	--	72	82	89	95	99	100	SPWCM
July 26	7:00 a. m.	376	75	87,700	--	3,340	--	38	--	75	89	95	97	99	100	SPWCM
July 30	7:30 a. m.	234	76	67,300	--	6,130	--	35	--	73	91	97	98	100	--	SPWCM
July 31	7:30 a. m.	1,950	75	83,900	--	6,140	--	28	--	57	72	84	91	98	100	SPWCM

VIRGIN RIVER BASIN--Continued
VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953--Continued
(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; V, visual accumulation tube)

Date of collection	Time	Discharge (cfs)	Water temperature per- centage 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	0.500	1.000	
Aug. 1, 1953.....	7:00 a. m.	280	75	54,200	4,560	--	55	--	83	90	93	95	99	100		SPWCM
Aug. 2.....	5:30 a. m.	1,790	70	92,300	3,040	--	39	--	64	74	81	88	98	100		SPWCM
Aug. 3.....	7:30 a. m.	245	72	16,800	5,250	--	58	--	83	90	93	95	98	100		SPWCM
Aug. 27.....	7:00 a. m.	197	70	52,900	4,400	--	64	--	89	92	95	96	99	100		SPWCM
Aug. 27.....	9:00 a. m.	1,750	73	110,000	3,980	--	33	--	56	71	82	88	97	100		SPWCM
Aug. 28.....	7:00 a. m.	1,010	73	110,000	4,680	--	34	--	62	77	87	92	98	100		SPWCM
Aug. 28.....	8:00 a. m.	333	70	46,100	4,080	35	50	57	74	86	90	93	97	100		SPWCM
Aug. 29.....	8:00 a. m.	333	70	46,100	5,160	--	0	3	77	86	90	93	97	100		SPN
Aug. 29.....	8:00 a. m.	333	70	46,100	4,500	48	49	62	75	85	90	93	97	100		SPWCM
Aug. 31.....	9:00 a. m.	94	71	6,390	4,360	--	73	--	92	95	96	98	100	--		SPWCM

VIRGIN RIVER BASIN --Continued
MISCELLANEOUS ANALYSES OF STREAMS IN VIRGIN RIVER BASIN IN UTAH
Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
July 13, 14, 17, 26, 1953		29		660	43	27		250	1,560	20		1.3	0.16	2,460	3.35	1,820	1,620	3	0.3	2,630	7.2
Aug. 1, 27,		22		630	41	37		146	1,600	26		1.8		2,430	3.30	1,740	1,620	4	.4	2,560	7.2

FORT PIERCE WASH NEAR ST. GEORGE

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.

Chemical analyses, in parts per million, water year October 1952 to September 1953
The miles given below represent distances measured along the Colorado River downstream from the gaging station at Lees Ferry, Ariz.
A resistance thermometer was used in measuring the temperature of the water.

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)
PIERCE FERRY BAY, MILE 279														
Apr. 14, 1953	0	1,151	60.5	11	92	35		212	331	132	3.3		375	1,330
June 30	5	1,160	75.0	11	39	15		115	90	28	1.9		160	454
GRAND WASH, MILE 248.7														
Apr. 14, 1953	5	1,146	59.0	--	--	--		180	--	--	--		--	1,040
Apr. 14	50	1,101	58.0	11	91	31		210	309	108	2.4		356	1,210
Apr. 14	100	1,051	57.5	--	--	--		209	--	--	--		--	1,180
Apr. 14	130	1,021	57.1	12	88	29		204	282	95	2.5		342	1,130
Apr. 14	132	1,019	--	11	91	36		216	330	131	3.2		374	1,330
ICEBERG CANYON, MILE 287.5														
Apr. 15, 1953	5	1,146	61.5	--	--	--		182	--	--	--		--	1,050
Apr. 15	50	1,101	59.1	--	--	--		206	--	--	--		--	1,220
Apr. 15	100	1,051	58.4	11	92	32		205	316	117	2.4		380	1,230
Apr. 15	158	993	55.9	--	--	--		193	--	--	--		--	1,130
Apr. 15	160	991	56.2	--	--	--		288	--	--	--		--	1,210
July 1	5	1,160	74.7	11	39	9.7		112	86	20	1.8		138	430
July 1	50	1,115	73.9	--	--	--		113	--	--	--		--	448
July 1	100	1,065	63.7	10	73	20		163	213	67	2.4		262	885
July 1	150	1,015	57.5	--	--	--		182	--	--	--		--	1,070
July 1	170	995	57.0	12	87	24		183	289	83	3.1		316	1,070
July 1	171	994	57.2	12	85	24		196	259	80	2.6		314	1,050
SANDY POINT, MILE 293.5														
Apr. 15, 1953	5	1,146	61.0	--	--	--		173	--	--	--		--	979
Apr. 15	50	1,101	57.2	17	81	24		167	252	69	1.8		299	926
Apr. 15	100	1,051	58.0	13	90	30		199	303	105	2.6		348	1,160
Apr. 15	150	1,001	55.6	--	--	--		183	--	--	--		--	1,080
Apr. 15	200	951	54.7	13	88	26		168	285	92	2.5		334	1,080
Apr. 15	218	933	54.6	--	--	--		185	--	--	--		--	1,090
Apr. 15	220	931	54.8	--	--	--		331	--	--	--		--	1,140

SANDY POINT, MILE 293.5--Continued

July 1, 1953	5	1,140	78.5	11	39	12	114	98	23	2.3	148	457
July 1	50	1,115	73.4	--	--	--	116	--	--	--	--	446
July 1	100	1,065	62.8	12	75	26	174	244	78	2.7	292	977
July 1	150	1,015	57.7	11	79	36	176	260	83	2.3	348	1,040
July 1	200	965	55.3	--	--	--	187	--	--	--	--	1,080
July 1	228	937	54.8	--	--	--	176	--	--	--	--	993
July 1	229	936	55.0	11	82	28	187	264	82	2.9	318	1,040

VIRGIN CANYON, MILE 305.5

Apr 14, 1953	5	1,146	58.5	12	78	22	158	239	58	1.6	286	880
Apr 14	50	1,101	57.7	--	--	--	157	--	--	--	--	887
Apr 14	100	1,051	55.1	12	81	23	164	252	67	1.8	298	922
Apr 14	150	1,001	54.8	--	--	--	166	--	--	--	--	949
Apr 14	200	951	54.6	12	85	25	173	268	77	2.3	315	1,010
Apr 14	250	901	54.1	--	--	--	178	--	--	--	--	1,050
Apr 14	303	848	53.3	--	--	--	180	--	--	--	--	1,080
Apr 14	305	846	53.7	--	--	--	286	--	--	--	--	1,170
July 2	5	1,160	73.8	11	43	14	116	91	23	1.5	164	454
July 2	50	1,115	68.9	9.3	50	14	129	128	40	1.6	184	596
July 2	100	1,065	65.0	--	--	--	170	--	--	--	--	987
July 2	150	1,015	58.2	--	--	--	170	--	--	--	--	1,010
July 2	200	965	55.2	12	84	26	177	264	81	2.1	318	1,040
July 2	250	915	54.9	--	--	--	177	--	--	--	--	1,040
July 2	300	865	54.1	13	78	25	170	242	76	2.5	300	976
July 2	318	847	54.1	--	--	--	174	--	--	--	--	1,020
July 2	319	846	54.3	13	91	25	192	253	78	1.8	330	1,030

OVERTON ARM OF LAKE AT LINE OF DEMARCATION BETWEEN TURBID AND CLEAR WATER, 27 MILES ABOVE MOUTH OF VIRGIN RIVER

Apr. 16, 1953	0	1,151	62.5	13	169	59	156	618	214	1.2	666	1,950
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COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Bicarbonate	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (micromhos at 25 °C)
OVERTON ARM OF LAKE, 9.3 MILES ABOVE MOUTH OF VIRGIN RIVER (LOWER VIRGIN NARROWS)														
Apr. 16, 1953	5	1,146	59.7	11	80	21		151	238	58	1.4		287	858
Apr. 16	50	1,101	56.6					151					--	845
Apr. 16	100	1,051	54.7					154					--	865
Apr. 16	150	1,001	53.9					155					--	886
Apr. 16	200	951	53.3					166					--	965
Apr. 16	252	889	53.1					172					--	1,010
Apr. 16	254.5	897	53.1					183					--	1,030
BOULDER CANYON, MILE 334														
Apr. 13, 1953	5	1,146	58.9	11	77	20		155	228	55	1.4		274	848
Apr. 13	50	1,101	57.4					151					--	847
Apr. 13	100	1,051	55.2					157					--	867
Apr. 13	150	1,001	54.2	12	83	21		158	246	61	1.4		295	901
Apr. 13	175	976	53.7					156					--	922
Apr. 13	200	951	53.4	12	85	23		163	262	67	1.8		306	957
Apr. 13	250	901	53.2					169					--	1,010
Apr. 13	300	851	53.0	14	89	27		177	284	80	2.1		332	1,050
Apr. 13	350	801	53.1					174					--	1,030
Apr. 13	388	763	53.1					177					--	1,030
Apr. 13	390.5	761	53.2					417					--	1,210
July 2	5	1,160	76.0	12	64	20		150	183	53	1.8		244	773
July 2	50	1,115	70.0					150					--	780
July 2	100	1,065	63.0	10	83	20		155	239	61	1.8		290	903
July 2	150	1,015	57.0					157					--	908
July 2	175	990	55.3					159					--	898
July 2	200	965	54.4	12	84	21		164	250	67	1.6		298	936
July 2	250	915	53.8					166					--	973
July 2	300	865	53.5					164					--	985
July 2	350	815	53.3					173					--	1,030
July 2	403	762	53.3	16	87	26		170	258	74	2.2		326	1,010
July 2	404	761	53.5					264					--	1,110

COLORADO RIVER MAIN STEM

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NEAR INTAKE TOWERS, MILE 354.7

Oct. 30, 1952.....	5	1,176	74.4	--	--	--	--	140	--	--	--	--	--	723
Oct. 30.....	50	1,133	74.3	--	--	--	--	137	--	--	--	--	--	720
Oct. 30.....	100	1,083	71.8	12	61	18	--	171	39	1.5	226	--	--	681
Oct. 30.....	150	1,033	62.6	--	--	--	--	141	--	--	--	--	--	739
Oct. 30.....	200	983	54.0	--	--	--	--	142	--	--	--	--	--	782
Oct. 30.....	250	933	53.0	--	--	--	--	158	--	--	--	--	--	948
Oct. 30.....	300	883	52.7	11	82	29	--	239	74	2.0	322	--	--	1,000
Oct. 30.....	350	833	52.2	10	66	22	--	203	50	1.4	256	--	--	787
Oct. 30.....	400	783	52.1	--	--	--	--	150	--	--	--	--	--	840
Oct. 30.....	454	729	52.0	12	67	29	--	223	58	1.9	286	--	--	876
Oct. 30.....	456	727	52.0	--	--	--	--	214	--	--	--	--	--	1,070
Nov. 26.....	5	1,172	64.6	9.9	59	21	--	137	41	1.2	234	--	--	703
Nov. 26.....	50	1,127	64.5	--	--	--	--	137	--	--	--	--	--	701
Nov. 26.....	100	1,077	64.5	--	--	--	--	135	--	--	--	--	--	700
Nov. 26.....	150	1,027	63.9	--	--	--	--	140	--	--	--	--	--	716
Nov. 26.....	200	977	53.9	9.6	72	34	--	162	71	2.1	321	--	--	1,000
Nov. 26.....	250	927	52.5	--	--	--	--	161	--	--	--	--	--	968
Nov. 26.....	300	877	52.1	--	--	--	--	164	--	--	--	--	--	1,020
Nov. 26.....	350	827	51.9	10	70	37	--	168	76	2.3	326	--	--	1,020
Nov. 26.....	400	777	51.8	--	--	--	--	170	--	--	--	--	--	948
Nov. 26.....	447	730	52.2	--	--	--	--	168	--	--	--	--	--	1,120
Nov. 26.....	450	727	52.6	23	--	--	--	254	79	4.6	372	--	--	1,120
Dec. 30.....	5	1,164	58.8	10	71	17	--	142	45	1.0	246	--	--	752
Dec. 30.....	50	1,119	58.7	--	--	--	--	144	--	--	--	--	--	748
Dec. 30.....	100	1,069	58.7	--	--	--	--	142	--	--	--	--	--	746
Dec. 30.....	150	1,019	58.7	--	--	--	--	144	--	--	--	--	--	748
Dec. 30.....	165	1,004	57.4	11	77	22	--	152	56	1.5	280	--	--	850
Dec. 30.....	200	969	54.7	9.6	90	24	--	166	74	1.8	325	--	--	1,010
Dec. 30.....	250	919	52.9	--	--	--	--	164	--	--	--	--	--	981
Dec. 30.....	300	889	52.5	--	--	--	--	168	--	--	--	--	--	983
Dec. 30.....	350	819	52.1	--	--	--	--	164	--	--	--	--	--	894
Dec. 30.....	400	769	52.0	--	--	--	--	170	--	--	--	--	--	1,010
Dec. 30.....	440	729	51.9	11	91	25	--	174	74	2.0	328	--	--	1,010
Dec. 30.....	441	728	52.3	--	--	--	--	220	--	--	--	--	--	1,070

COLORADO RIVER MAIN STEM--Continued
LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued														
Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (microhmhos at 25°C)
NEAR INTAKE TOWERS, MILE 354.7--Continued														
Feb. 4, 1953.....	5	1,157	56.4	10	72	18		146	205	48	1.4		256	773
Feb. 4.....	50	1,112	55.8	--	--	--		145	--	--	--		--	771
Feb. 4.....	100	1,062	55.8	--	--	--		147	--	--	--		--	770
Feb. 4.....	145	1,017	55.6	--	--	--		149	--	--	--		--	776
Feb. 4.....	160	1,002	55.5	9.7	77	21		153	227	56	1.6		277	835
Feb. 4.....	175	987	55.3	11	88	24		164	270	70	2.0		316	978
Feb. 4.....	200	962	54.1	--	--	--		169	--	--	--		--	1,040
Feb. 4.....	250	912	52.9	10	93	24		169	280	76	2.1		334	1,030
Feb. 4.....	300	862	52.4	--	--	--		172	--	--	--		--	1,000
Feb. 4.....	350	812	52.0	--	--	--		170	--	--	--		--	1,020
Feb. 4.....	400	762	52.0	--	--	--		176	--	--	--		--	1,030
Feb. 4.....	433	729	52.0	--	--	--		176	--	--	--		--	1,030
Feb. 4.....	434	728	52.1	--	--	--		242	--	--	--		--	1,090
Mar. 3.....	5	1,152	54.1	--	--	--		151	--	--	--		--	814
Mar. 3.....	50	1,107	54.1	--	--	--		151	--	--	--		--	816
Mar. 3.....	100	1,057	53.9	--	--	--		151	--	--	--		--	819
Mar. 3.....	150	1,007	53.9	--	--	--		151	--	--	--		--	819
Mar. 3.....	162	995	53.9	20	79	22		163	235	58	1.3		287	872
Mar. 3.....	200	957	53.9	10	91	25		173	282	75	2.0		329	1,000*
Mar. 3.....	250	907	53.4	11	93	26		176	289	78	2.1		340	1,060
Mar. 3.....	300	857	53.0	--	--	--		al76	--	--	--		--	1,030
Mar. 3.....	350	807	52.3	10	93	25		172	288	77	2.1		337	1,040
Mar. 3.....	400	757	52.3	--	--	--		173	--	--	--		--	1,050
Mar. 3.....	428	729	52.3	--	--	--		177	--	--	--		--	1,040
Mar. 3.....	429	728	52.3	15	94	26		184	287	80	2.0		342	1,060
Mar. 31.....	5	1,147	57.5	--	--	--		152	--	--	--		--	840
Mar. 31.....	50	1,102	56.0	--	--	--		153	--	--	--		--	832
Mar. 31.....	100	1,052	54.6	--	--	--		152	--	--	--		--	832
Mar. 31.....	150	1,002	54.1	--	--	--		153	--	--	--		--	848
Mar. 31.....	165	987	54.1	9.9	81	22		156	244	60	1.8		291	888
Mar. 31.....	170	982	54.1	--	--	--		164	--	--	--		--	942
Mar. 31.....	185	967	53.9	10	87	25		168	271	72	1.8		318	985

* Includes equivalent of 14 parts per million of carbonate (CO₃).

NEAR INTAKE TOWERS, MILE 354.7--Continued

Mar. 31, 1953...	200	952	53.7	--	--	--	170	--	--	--	2.0	--	991
Mar. 31.....	250	902	53.1	--	91	26	171	287	77	--	--	333	1,030
Mar. 31.....	300	852	52.8	--	--	--	176	--	--	--	--	--	1,060
Mar. 31.....	350	802	52.7	--	--	--	179	--	--	--	--	--	1,050
Mar. 31.....	400	752	52.6	--	--	--	183	--	--	--	--	--	1,040
Mar. 31.....	424	728	52.6	13	94	25	179	290	78	1.8	--	339	1,060
Mar. 31.....	425	727	--	--	--	--	232	--	--	--	--	--	1,090
Apr. 29.....	5	1,144	60.1	10	77	21	154	233	56	1.1	--	278	943
Apr. 29.....	50	1,090	59.5	--	--	--	152	--	--	--	--	--	846
Apr. 29.....	100	1,049	55.5	--	--	--	150	--	--	--	--	--	849
Apr. 29.....	150	999	54.7	--	--	--	157	--	--	--	--	--	889
Apr. 29.....	170	979	54.4	11	85	22	162	259	68	1.5	--	302	930
Apr. 29.....	200	949	53.5	--	--	--	171	--	--	--	--	--	1,020
Apr. 29.....	250	899	53.4	--	--	--	172	--	--	--	--	--	1,030
Apr. 29.....	300	849	53.2	--	--	--	173	--	--	--	--	--	1,040
Apr. 29.....	350	799	53.1	--	--	--	168	--	--	--	--	--	1,010
Apr. 29.....	400	749	53.0	--	--	--	171	--	--	--	--	--	1,030
Apr. 29.....	418	731	53.0	12	93	25	174	291	80	1.9	--	336	1,050
Apr. 29.....	421.5	727	53.2	--	--	--	199	--	--	--	--	--	1,110
July 8.....	5	1,161	72.0	12	81	19	155	238	58	1.8	--	280	870
July 8.....	50	1,116	70.8	--	--	--	152	--	--	--	--	--	878
July 8.....	100	1,066	61.3	--	--	--	152	--	--	--	--	--	875
July 8.....	150	1,016	59.1	--	--	--	148	--	--	--	--	--	870
July 8.....	200	966	54.7	12	79	22	159	235	62	--	--	288	886
July 8.....	250	916	53.9	13	88	23	166	261	70	3.1	--	314	887
July 8.....	300	866	53.4	14	87	26	170	271	75	3.3	--	324	1,020
July 8.....	350	816	53.4	--	--	--	171	--	--	--	--	--	1,050
July 8.....	400	766	53.4	--	--	--	175	--	--	--	--	--	1,050
July 8.....	435	731	53.4	--	--	--	176	--	--	--	--	--	1,050
July 8.....	438	728	53.4	15	90	26	178	280	80	--	--	332	1,050
July 8.....	440	726	53.6	17	89	28	208	257	77	4 3	--	338	1,060
Aug. 3.....	5	1,160	80.1	12	70	20	136	233	56	.7	--	260	844
Aug. 3.....	50	1,116	78.7	--	--	--	144	--	--	--	--	--	843
Aug. 3.....	100	1,066	63.8	12	76	23	152	237	58	3.2	--	284	860
Aug. 3.....	150	1,016	58.0	--	--	--	152	--	--	--	--	--	855
Aug. 3.....	200	966	54.5	11	78	23	156	240	61	4.0	--	292	897
Aug. 3.....	250	916	53.7	--	--	--	163	--	--	--	--	--	941

COLORADO RIVER MAIN STEM--Continued

LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids (sum)	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)
Aug. 3, 1953...	300	866	53.6	--	--	--	--	148	--	--	--	--	--	850
Aug. 3	350	816	53.5	--	--	--	--	169	--	--	--	--	--	1,020
Aug. 3	400	766	53.4	12	84	26	26	166	269	72	4.4	4.4	318	997
Aug. 3	438.5	728	53.4	12	90	24	24	178	250	78	4.4	4.4	324	1,030
Aug. 3	439	727	53.6	--	--	--	--	216	--	--	--	--	--	1,050
Sept. 1	5	1,158	78.4	10	70	21	21	134	226	56	1.6	1.6	262	825
Sept. 1	50	1,113	78.0	--	--	--	--	138	--	--	--	--	--	818
Sept. 1	100	1,063	66.1	10	84	17	17	151	242	58	3.3	3.3	282	857
Sept. 1	150	1,013	60.7	--	--	--	--	156	--	--	--	--	--	860
Sept. 1	200	963	57.0	--	--	--	--	152	--	--	--	--	--	861
Sept. 1	250	913	53.7	--	--	--	--	171	--	--	--	--	--	972
Sept. 1	300	863	53.6	6.8	86	23	23	164	265	70	3.6	3.6	310	961
Sept. 1	350	813	53.6	--	--	--	--	171	--	--	--	--	--	1,000
Sept. 1	400	763	53.6	8.4	89	24	24	208	278	76	1.7	1.7	320	1,010
Sept. 1	436	727	53.6	9.6	89	24	24	175	275	74	4.6	4.6	324	1,010
Sept. 1	437	726	53.6	--	--	--	--	210	--	--	--	--	--	1,030
Sept. 29	5	1,153	77.4	10	70	21	21	133	224	56	.6	.6	260	827
Sept. 29	50	1,108	76.9	--	--	--	--	134	--	--	--	--	--	821
Sept. 29	100	1,058	66.4	11	77	22	22	152	235	58	.9	.9	286	879
Sept. 29	150	1,008	60.7	--	--	--	--	155	--	--	--	--	--	870
Sept. 29	200	958	57.2	--	--	--	--	160	--	--	--	--	--	881
Sept. 29	250	908	54.4	--	--	--	--	164	--	--	--	--	--	947
Sept. 29	300	858	53.8	14	85	23	23	187	258	69	1.1	1.1	306	966
Sept. 29	350	808	53.7	--	--	--	--	166	--	--	--	--	--	979
Sept. 29	400	758	53.7	12	89	25	25	175	275	75	1.4	1.4	324	1,020
Sept. 29	430	728	53.7	--	--	--	--	174	--	--	--	--	--	997
Sept. 29	431	727	53.7	--	--	--	--	180	--	--	--	--	--	1,050

NEAR INTAKE TOWERS, MILE 354.7--Continued

LOCATION.--At Hoover Dam, state line between Mohave County, Arizona and Clark County, Nevada, about 1 mile upstream from gaging station.

DRAINAGE AREA.--167,800 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1939 to September 1953.

Water temperatures: October 1941 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 706 ppm Dec. 22-24, 29-31; minimum, 477 ppm Nov. 21, 24-26, 28.

Hardness: Maximum, 348 ppm Apr. 13-17, 20; minimum, 241 ppm Nov. 21, 24-26, 28.

Specific conductance: Maximum daily, 1,080 micromhos Apr. 6; minimum daily, 712 micromhos Nov. 25-26.

EXTREMES, 1939-53.--Dissolved solids (1939-44, 1945-53): Maximum, 824 ppm Mar. 1-10, 1941; minimum, 477 ppm Nov. 21, 24-26, 28, 1952.

Hardness (1939-44, 1950-53): Maximum, 426 ppm Jan. 21-31, 1941; minimum, 241 ppm Nov. 21, 24-26, 28, 1952.

Specific conductance: Maximum daily, 1,250 micromhos Mar. 2, 1941; minimum daily, 712 micromhos Nov. 25-26, 1952.

Water temperatures (1941-50): Maximum observed 69°F Sept. 27, 1945 and several days in 1947 and 1948; minimum observed, 50°F Mar. 23, 28, 30, 1949.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Parts per million	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
Oct. 1-3, 6-10, 1952.	23,010	--	--	71	18	65	--	--	--	--	--	--	514	0.70	31,930	250	--	36	1.8	783	--	--
Oct. 13-17, 20,	21,750	12	0.04	68	21	64	4.7	143	215	46	0.3	2.4	505	.69	29,660	256	139	35	1.7	744	7.7	10
Oct. 21-24, 27-31..	21,590	--	--	69	18	61	--	--	--	--	--	--	497	.68	28,970	248	--	35	1.7	751	--	--
Nov. 3-7, 10,	21,500	--	--	69	18	60	--	--	--	--	--	--	498	.68	28,910	247	--	35	1.7	748	--	--
Nov. 12-14, 17-19, ..	21,900	--	--	69	18	60	--	--	--	--	--	--	492	.67	29,090	245	--	35	1.7	745	--	--
Nov. 21, 24-26, 28, ..	22,220	--	--	66	18	59	--	--	--	--	--	--	477	.65	28,620	241	--	35	1.7	721	--	--
Dec. 1-5, 8-10,	23,500	--	--	73	19	64	--	--	--	--	--	--	528	.72	33,500	262	--	35	1.7	795	--	--
Dec. 11-12, 15-19, ..	22,870	--	--	93	24	92	--	--	--	--	--	--	698	.95	43,100	331	--	38	2.2	1,060	--	--
Dec. 22-24, 29-31..	22,750	--	--	93	24	90	--	--	--	--	--	--	706	.96	43,370	332	--	37	2.2	1,040	--	--
Jan. 2, 5-9, 1953, . .	22,400	--	--	91	24	86	--	--	--	--	--	--	694	.94	41,970	328	--	36	2.1	1,030	--	--
Jan. 12-16, 19-20, ..	20,640	--	--	92	24	88	--	--	--	--	--	--	691	.94	38,510	328	--	37	2.1	1,020	--	--
Jan. 21-23, 28-30, ..	21,440	--	--	90	23	88	--	--	--	--	--	--	676	.92	39,130	320	--	38	2.1	1,000	--	--
Feb. 2-6, 9-10,	21,570	12	.03	88	28	90	4.1	164	273	73	.2	2.1	664	.90	38,670	334	200	37	2.1	1,010	7.8	5
Feb. 11-13, 16-19, ..	20,390	--	--	88	25	92	--	--	--	--	--	--	674	.92	37,110	323	--	38	2.2	1,000	--	--
Feb. 21, 24-27,	18,440	--	--	88	25	91	--	--	--	--	--	--	667	.91	33,210	321	--	38	2.2	994	--	--
Mar. 2-6, 9-10,	18,590	--	--	88	25	91	--	--	--	--	--	--	672	.91	33,730	323	--	38	2.2	1,000	--	--
Mar. 11-13, 16-20, ..	19,350	--	--	90	26	94	--	--	--	--	--	--	695	.95	36,310	333	--	38	2.3	1,030	--	--
Mar. 23-27, 30-31..	17,760	--	--	89	25	93	--	--	--	--	--	--	689	.94	33,040	327	--	38	2.2	1,020	--	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER BELOW HOOVER DAM, ARIZ.-NEV.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 160°C)			Hardness as CaCO ₃		Percent 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					
Apr. 1-3, 6-10, 1953	17,500	--	--	88	26	92	--	--	--	--	--	--	--	690	0.94	32,600	329	--	38	2.2	1,030	--	--
Apr. 13-17, 20.....	17,350	12	0.04	87	32	90	4.9	168	288	73	0.4	2.3	0.14	692	.94	32,420	348	211	36	2.1	1,020	7.5	10
Apr. 21-24, 27-30...	18,180	--	--	87	25	94	--	--	--	--	--	--	--	700	.95	34,360	322	--	39	2.3	1,010	--	--
May 1, 4-8.....	17,730	--	--	84	26	87	--	--	--	--	--	--	--	672	.91	32,170	316	--	37	2.1	976	--	--
May 11-15, 18-20....	17,590	--	--	83	23	86	--	--	--	--	--	--	--	678	.92	32,260	304	--	38	2.2	966	--	--
May 21-22, 25-28...	19,570	--	--	82	27	88	--	--	--	--	--	--	--	670	.91	35,400	316	--	38	2.2	973	--	--
June 1-5, 8-10.....	14,790	--	--	85	24	80	--	--	--	--	--	--	--	658	.89	26,280	310	--	36	2.0	956	--	--
June 11-12, 15-19....	15,430	--	--	82	26	86	--	--	--	--	--	--	--	660	.90	27,500	312	--	38	2.1	956	--	--
June 22-26, 29-30..	14,740	--	--	83	22	84	--	--	--	--	--	--	--	651	.89	25,910	298	--	38	2.1	947	--	--
July 1-3, 6-10.....	15,180	--	--	86	23	88	--	164	--	--	--	--	--	642	.87	26,310	308	174	38	2.2	949	7.7	--
July 13-17, 20.....	15,780	13	.06	82	26	86	3.9	166	259	66	.2	1.6	.16	637	.87	27,140	312	176	37	2.1	957	7.9	7
July 21-24, 27-31...	16,910	--	--	87	23	88	--	166	--	--	--	--	--	647	.88	29,540	311	175	38	2.2	965	7.8	--
Aug. 2, 4-5, 10.....	14,900	--	--	83	25	86	--	164	--	--	--	--	--	639	.87	25,710	309	175	38	2.1	951	7.7	--
Aug. 11-14, 17-20....	17,790	--	--	86	22	85	--	166	--	--	--	--	--	635	.86	30,500	306	170	38	2.1	946	7.8	--
Aug. 21, 24-28, 31...	17,340	--	--	86	22	85	--	166	--	--	--	--	--	640	.87	29,960	308	172	38	2.1	953	7.8	--
Sept. 1-4, 8-10.....	18,510	--	--	86	22	84	--	164	--	--	--	--	--	634	.86	31,690	306	172	37	2.1	941	8.0	--
Sept. 11, 14-18.....	19,470	--	--	86	21	84	--	--	--	--	--	--	--	638	.87	33,540	304	--	38	2.1	938	--	--
Sept. 21-25, 28, 30..	15,960	--	--	84	23	80	--	--	--	--	--	--	--	630	.86	27,150	304	--	36	2.0	941	--	--
Weighted average	a 19,050	--	--	83	23	82	--	--	--	--	--	--	--	632	0.86	32,510	302	--	37	2.1	938	--	--

a Represents 74 percent of runoff for water year October 1952 to September 1953.

GILA RIVER BASIN

GILA RIVER AT KELVIN, ARIZ.

LOCATION. --Just above mouth of Mineral Creek and 1,200 feet upstream from gaging station at Kelvin, Pinal County, 17 miles downstream from San Pedro River, and 19½ miles upstream from Ashurst-Hayden Dam.

DRAINAGE AREA. 13,011 square miles, of which 5,125 square miles are below Coolidge Dam.

RECORDS AVAILABLE. --Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES. 1952-53. --Dissolved solids: Maximum, 2,010 ppm July 1-7, minimum, 480 ppm July 13-20.

Specific conductance: Maximum, 1,930 ppm Sept. 21-30, minimum, 174 ppm Aug. 26.

Water temperature: Maximum, 68° F. July 25, minimum, 52° F. June 12; minimum observed, 64° F. microhms July 16.

Hardness: Maximum, 343 ppm July 1-7, 1953, minimum, 343 ppm Aug. 26-28, 1951.

EXTREMES. 1950-53. --Dissolved solids: Maximum, 1,774 ppm Aug. 26, 1953.

Specific conductance: Maximum, 1,300 ppm Sept. 21-30, 1953, minimum, 174 ppm Aug. 26, 1953.

Water temperatures: Maximum, 68° F. July 25, minimum, 52° F. June 12; minimum observed, 407° F. microhms Jan. 20, 1952.

Hardness: Maximum, 343 ppm July 1-7, 1953, minimum, 343 ppm Aug. 26-28, 1951.

REMARKS. --Values reported for dissolved solids are sums determined constituents. Recorded 41° F. Dec. 15-25, 1950.

in district office at Albuquerque, N. Mex. Records of water year October, 1953 to September 1953 given in WSP 1283. No appreciable inflow from Mineral Creek between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhms at 25°C)	pH	
													Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952	90.8	28		103	34	200		244	242	260	1.2	1.9	990	1.35	243	397	197	52	4.4	1,630	7.7
Oct. 11-20	15.7	35		154	38	207		254	417	256	1.7	.8	1,230	1.67	52.1	540	332	45	3.9	1,890	7.8
Oct. 21-31	9.52	37		161	39	228		268	438	274	1.7	1.0	1,310	1.78	33.7	562	350	47	4.2	1,990	7.8
Nov. 1-10	15.5	34		157	38	234		257	424	278	1.9	1.0	1,290	1.75	54.0	548	337	48	4.3	1,980	7.8
Nov. 11-20	25.8	29		130	35	208		257	346	248	1.3	1.4	1,120	1.52	78.0	468	258	49	4.2	1,760	7.8
Nov. 21-30	17.9	37		140	37	192		277	379	210	1.3	3.8	1,140	1.55	55.0	502	274	45	3.7	1,730	7.9
Dec. 1-10	38.0	35		136	35	188		274	369	196	1.3	5.6	1,100	1.50	113	484	259	46	3.7	1,690	7.9
Dec. 11-20	59.1	36		138	40	238		276	368	280	1.3	4.8	1,250	1.70	199	509	283	50	4.6	1,980	7.8
Dec. 21-31	121	28		124	43	288		275	272	422	1.3	4.0	1,320	1.80	431	486	261	56	5.7	2,220	7.9
Jan. 1-11, 1953	46.7	33		145	35	208		264	397	246	1.5	1.3	1,200	1.63	158	506	290	47	4.0	1,860	7.7
Jan. 12-20	83.4	28		128	40	304		262	290	452	1.2	2.1	1,370	1.86	308	484	270	58	6.0	2,310	7.8
Jan. 21-31	61.1	27		124	40	298		261	282	440	1.2	1.3	1,340	1.82	293	474	260	58	5.8	2,250	7.8
Feb. 1-10	71.6	28		123	37	266		253	291	383	1.5	1.9	1,250	1.70	242	459	252	56	5.4	2,080	7.9
Feb. 11-20	66.4	29		130	37	268		249	317	382	1.5	1.4	1,290	1.75	231	476	272	55	5.3	2,110	7.8
Feb. 21-28	76.6	28		120	37	268		237	280	390	1.4	1.3	1,240	1.69	256	452	258	56	5.5	2,100	7.9
Mar. 1-10	33.2	31		123	32	196		244	316	242	1.8	1.4	1,060	1.44	95.0	438	238	49	4.1	1,790	7.8
Mar. 11-20	136	29		110	33	252		250	237	366	1.6	2.0	1,150	1.56	422	410	205	57	5.4	1,940	7.8
Mar. 21-30	234	30		96	29	244		238	183	364	1.6	1.9	1,070	1.46	676	358	164	60	5.6	1,830	8.0

GILA RIVER BASIN--Continued

GILA RIVER AT KELVIN, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Mar. 31-Apr. 10, 1943	199	35		91	29	214		238	172	321	1.6	1.3		982	1.34	528	346	151	57	1,690	7.7	
Apr. 11-20	123	33		89	30	230		227	189	338	1.4	1.3		1,020	1.39	339	346	160	59	5.4	1,760	7.9
Apr. 21-30	108	33		94	32	252		216	202	368	1.4	1.3		1,090	1.48	318	366	189	60	5.7	1,870	7.9
May 1-10	84.6	31		102	34	272		221	228	414	1.4	1.6		1,190	1.62	272	394	214	60	6.0	2,040	8.0
May 11-20	80.5	33		106	38	300		225	240	458	1.4	1.8		1,290	1.75	280	420	236	61	6.4	2,190	8.0
May 21-31	91.7	26		110	40	341		226	257	520	1.5	1.8		1,410	1.92	349	439	254	63	7.1	2,410	7.7
June 1-10	101	23		130	50	376		216	304	590	1.5	2.2		1,580	2.15	431	530	353	61	7.1	2,670	7.3
June 11-20	41.0	23		146	51	371		215	375	560	1.5	1.4		1,630	2.22	180	574	398	58	6.7	2,680	7.3
June 21-30	2.44	40		212	63	265		247	593	380	1.2	2.1		1,680	2.28	11.1	768	586	42	4.1	2,490	7.3
July 1-7	3.60	45		356	90	149		292	1,050	175	7	1.5		2,010	2.73	19.5	1,260	1,020	20	1.8	2,510	7.4
July 8-12	624	37		113	22	68		338	190	33	9	1.0		631	86	1,060	372	96	28	1.5	948	7.5
July 13-20	283	35		88	19	59		382	49	41	7	3		480	65	367	298	0	30	1.5	775	7.3
July 21-22, 30	548	35		80	18	66		281	108	52	8	1.2		499	68	738	274	43	34	1.7	763	7.3
July 23-29, 31	240	29		114	25	157		253	214	210	7	2.1		876	1.19	568	388	180	47	3.5	1,420	7.2
Aug. 1-4	119	32		104	24	102		341	158	106	1.0	1.5		696	.95	224	358	78	38	2.3	1,120	7.7
Aug. 5-10	166	28		84	21	230		212	185	296	1.2	6.8		956	1.30	428	296	122	63	5.8	1,620	7.6
Aug. 11-20	188	28		73	19	195		200	177	230	1.2	5.1		826	1.12	419	260	96	62	5.3	1,390	7.6
Aug. 21-25, 27-31	146	52		77	18	184		241	165	214	1.0	2.5		832	1.13	328	266	68	60	4.9	1,360	7.7
Aug. 26	220	47		48	13	102		264	53	92	--	1.7		487	.66	289	174	0	56	3.4	783	7.8
Sept. 1-10	18.4	77		105	36	219		240	323	264	1.2	1.7		1,140	1.55	56.6	410	214	54	4.7	1,780	7.9
Sept. 11-20	2.37	53		254	67	164		258	753	214	.7	1.8		1,630	2.22	10.4	909	698	28	2.3	2,240	7.8
Sept. 21-30	1.40	41		376	89	112		312	1,110	110	.6	1.5		1,980	2.71	752	1,300	1,050	16	1.3	2,390	7.6
Weighted average	105	32		108	30	204		280	229	275	1.3	2.0		1,010	1.37	286	393	180	53	4.5	1,600	--

GILA RIVER BASIN--Continued

GILA RIVER AT KELVIN, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement, generally after 4 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	--	60	b 62	53	54	--	b 78	--	a 92	86	73
2	80	a 61	b 59	57	62	54	70	69	81	86	90	77
3	83	b 72	53	60	68	59	72	--	b 81	--	93	81
4	82	64	55	52	59	60	68	74	--	76	88	84
5	77	74	b 53	52	--	62	69	78	a 76	--	b 90	92
6	77	75	b 57	b 52	52	66	71	b 76	a 78	74	91	b 96
7	72	a 64	56	b 54	b 62	68	70	a 78	80	77	--	84
8	82	b 63	54	60	59	--	70	75	a 80	a 80	91	85
9	84	b 59	60	60	64	69	70	b 74	a 81	b 81	89	b 90
10	80	b 69	b 51	b 61	60	70	62	74	a 78	b 84	b 92	b 92
11	78	a 60	55	61	57	68	66	--	a 82	91	92	b 93
12	72	a 59	60	57	58	--	--	b 78	a 78	92	84	b 92
13	70	65	b 62	57	56	66	68	b 79	a 78	b 86	--	85
14	75	70	b 61	56	52	--	71	--	a 80	b 91	91	91
15	74	b 63	55	55	53	b 62	75	b 70	a 86	89	89	78
16	80	56	54	b 57	b 64	60	71	b 70	b 89	86	b 90	77
17	--	56	56	56	60	67	71	74	a 92	84	b 92	75
18	79	50	55	--	52	70	75	--	a 92	86	96	72
19	76	b 62	54	60	52	69	70	b 83	74	b 89	96	74
20	74	62	b 55	60	53	66	78	b 84	80	89	b 98	74
21	75	62	b 52	51	52	66	71	80	79	89	90	78
22	--	63	50	54	54	60	67	b 88	b 92	92	91	81
23	73	58	50	--	56	67	72	79	a 90	85	93	75
24	73	59	52	58	54	70	78	81	a 93	b 95	91	73
25	b 78	51	48	--	62	70	78	--	77	b 98	b 93	b 83
26	77	60	50	55	56	a 72	79	a 71	a 89	89	b 86	--
27	77	b 60	50	59	--	70	75	b 73	70	88	85	78
28	70	56	b 55	57	54	69	b 72	76	a 82	89	--	b 86
29	72	b 60	52	58	--	64	b 78	82	74	88	87	81
30	69	53	52	57	--	65	72	a 66	78	79	76	--
31	b 75	--	b 54	--	--	67	--	77	--	88	88	--
Average	76	62	55	57	57	65	72	76	82	87	90	82

a Reading obtained between 8 a.m. and 12 m.

b Reading obtained between 12 m. and 4 p.m.

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.

LOCATION --Just below dam, 3½ miles above gaging station below Stewart Mountain Dam, which is 6 miles upstream from Verde River, Maricopa County.
DRAINAGE AREA --6,208 square miles, approximately (revised).
RECORDS AVAILABLE --Chemical analyses; December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES, 1952-53 --Dissolved solids: Maximum, 582 ppm Oct. 11-20; minimum, 361 ppm Mar. 21-31.

Hardness: Maximum, 194 ppm Oct. 11-20; minimum, 138 ppm Apr. 1-10.

Specific conductance: Maximum observed, 1,090 micromhos Oct. 16; minimum observed, 620 micromhos Mar. 28.

Water temperatures: Maximum observed, 75°F Oct. 1-3, 12; minimum observed, 53°F Mar. 7.

EXTREMES, 1950-53 --Dissolved solids: Maximum, 1,300 ppm Aug. 21-28, 1951; minimum, 361 ppm Mar. 21-31, 1953.

Hardness: Maximum, 256 ppm Aug. 21-28, 1951; minimum, 138 ppm Apr. 1-10, 1953.

Specific conductance: Maximum observed, 2,490 micromhos Aug. 20, 1951; minimum observed, 620 micromhos Mar. 28, 1953.

Water temperatures: Maximum observed, 84°F Aug. 24, 26-27, 1951; minimum observed, 49°F Feb. 14, 1951.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for gaging station below Stewart Mountain Dam for water year October 1952 to September 1953 given in WSP 1283. No inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃) (B)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per- cent so- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, nesium	Non-mag- acarbon- ate				
Oct. 1-10, 1952	173	27		52	14	119		180	50	172		9.5		547	0.74	256	187	40	58	3.8	936	7.6
Oct. 11-20	20.0	30		55	14	130		204	53	176		4.7		582	.79	31.4	194	28	59	4.1	1,000	7.6
Oct. 21-31	4.61	20		46	12	101		158	46	146		3.4		466	.63	5.80	164	35	57	3.4	810	7.7
Nov. 1, 9-10 ^a	.56	21		48	11	101		160	48	144		3.9		472	.64	.71	165	34	57	3.4	815	7.6
Nov. 11, 16-20 ^a	1.65	19		46	11	101		154	48	144		3.4		466	.63	2.08	160	34	58	3.5	806	7.6
Nov. 21, 23-30 ^a	1.88	18		47	12	98		158	48	142		4.0		465	.63	2.36	167	38	56	3.3	804	7.6
Dec. 1-3 ^a	.13	21		47	12	96		157	49	140		2.9		462	.63	1.62	167	38	56	3.2	808	7.6
Feb. 11-20, 1953	513	15		44	11	89		147	44	131		1.1		418	.57	579	155	34	56	3.1	746	7.6
Feb. 21-28	335	16		42	11	86		147	42	125		1.1		408	.55	369	150	30	55	3.1	720	7.7
Mar. 1-10	289	18		43	11	84		143	42	122		1.2		401	.55	313	152	36	54	3.0	693	7.7
Mar. 11-20	1,005	17		43	10	81		141	42	118		1.2		402	.55	1,090	148	33	54	2.9	693	7.7
Mar. 21-31	1,554	16		40	9.7	73		136	39	105		1.1		361	.49	1,510	140	28	53	2.7	634	7.6
Apr. 1-10	1,307	17		39	10	76		140	36	113		.9		376	.51	1,330	138	24	54	2.8	658	7.5
Apr. 11-20	966	19		44	11	80		149	39	115		.6		379	.52	988	155	33	53	2.8	679	7.7
Apr. 21-30	758	21		44	11	79		149	39	114		.8		382	.52	782	155	33	53	2.8	671	7.7
May 1-10	646	16		40	11	77		142	37	112		1.0		376	.51	656	145	28	54	2.8	668	7.9
May 11-20	631	17		40	11	77		141	38	112		.9		376	.51	641	145	30	54	2.8	668	7.9
May 21-31	1,008	16		41	11	79		143	37	118		1.1		382	.52	1,040	148	30	54	2.8	681	8.0
June 1-10	1,198	17		41	11	83		146	37	122		.8		394	.54	1,270	148	28	55	3.0	702	8.2
June 11-20	1,628	16		42	11	86		144	38	128		.7		398	.54	1,750	150	32	55	3.1	716	8.2
June 21-30	1,646	17		41	11	90		144	38	134		.7		414	.56	1,840	148	30	57	3.2	734	8.2
July 1-10	1,632	15		41	11	91		149	38	136		.6		415	.56	1,830	148	26	57	3.3	740	8.2

a No flow Nov. 2-8, 12-15, 22, Dec. 4 to Feb. 10.

July 11-20, 1958	1,298	20	42	12	92	150	38	137	.5	416	.57	1,460	154	32	56	3.2	752	7.7
July 21-31	1,557	18	41	11	91	150	38	139	.8	414	.56	1,740	160	34	57	3.3	754	7.7
Aug. 1-10	1,353	21	42	11	94	154	39	137	.6	424	.58	1,880	160	34	58	3.3	758	7.7
Aug. 11-20	1,600	18	42	11	96	148	38	138	1.0	465	.56	1,840	160	28	58	3.3	752	7.6
Aug. 21-31	1,465	17	42	11	96	149	37	136	.5	418	.57	1,680	160	28	58	3.4	752	7.6
Sept. 1-10	1,545	17	42	12	92	149	37	140	.7	419	.57	1,750	154	32	56	3.2	752	7.2
Sept. 11-20	1,374	19	41	12	94	150	38	142	.9	431	.59	1,600	152	29	57	3.4	759	7.3
Sept. 21-30	1,097	16	40	12	96	139	41	146	1.3	428	.58	1,270	150	36	58	3.4	767	7.3
Weighted average ^b	965	18	42	11	87	146	38	129	0.9	406	0.55	1,060	150	30	56	3.1	721	--

^b Average for 284 days of flow.

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

[Once-daily measurement, generally between 6:30 a.m. and 9:30 a.m.]

No flow on most days when no temperature is shown.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	66	56		--	60	56	58	61	66	--	72
2	75	--	56		--	58	56	60	61	67	--	71
3	75	--	54		--	58	56	60	62	67	--	71
4	69	--	--		--	58	57	61	62	68	--	71
5	--	--	--		--	58	57	61	62	68	--	68
6	--	--	--		--	58	56	61	61	68	--	69
7	--	--	--		--	53	58	61	61	68	--	69
8	--	--	--		--	54	57	61	61	68	69	69
9	--	65	--		--	54	56	60	61	68	69	69
10	--	66	--		--	--	56	61	62	69	70	69
11	74	65	--		57	54	56	61	63	67	69	69
12	75	--	--		57	55	56	61	64	68	70	68
13	72	--	--		56	55	56	61	63	67	69	68
14	69	--	--		56	55	56	60	64	67	70	68
15	68	--	--		56	55	56	60	63	68	70	68
16	68	64	--		55	55	55	60	63	67	70	68
17	68	64	--		55	55	56	60	63	67	70	68
18	68	64	--		55	55	56	63	63	67	71	69
19	68	a 63	--		55	55	57	64	64	67	71	69
20	68	63	--		54	55	--	60	63	67	71	69
21	68	63	--		54	54	57	60	63	67	71	71
22	69	--	--		54	54	57	60	64	66	72	71
23	67	60	--		54	55	57	60	64	66	72	70
24	67	60	--		54	55	57	60	65	66	71	70
25	67	58	--		54	55	56	60	65	68	71	70
26	67	62	--		54	55	58	60	65	68	71	70
27	66	60	--		54	55	58	60	67	68	71	70
28	66	54	--		60	58	58	60	67	68	71	70
29	66	54	--		--	58	66	60	67	68	71	70
30	66	56	--		--	58	58	61	67	68	71	70
31	65	--	--		--	56	--	61	--	68	70	--
Average	69	62	55		55	56	57	61	63	67	--	69

a Reading obtained at 11 a.m.

GILA RIVER BASIN—Continued

VERDE RIVER BELOW BARTLETT DAM, ARIZ.

LOCATION.—At gaging station 2½ miles downstream from Bartlett Dam, Maricopa County, and 3½ miles upstream from Camp Creek. DRAINAGE AREA.—6,188 square miles.

RECORDS AVAILABLE.—Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES, 1952-53.—Dissolved solids: Maximum, 410 ppm July 21-31; minimum, 265 ppm Sept. 1-10.

Hardness: Maximum, 285 ppm Mar. 11-20; minimum, 179 ppm Sept. 1-10.

Specific conductance: Maximum observed, 695 micromhos July 21; minimum observed, 401 micromhos Sept. 7.

Water temperatures: Maximum observed, 84°F July 24; minimum observed, 42°F Feb. 22.

EXTREMES, 1950-53.—Dissolved solids: Maximum, 450 ppm July 11-20, 1951; minimum, 158 ppm Jan. 11-20, 1952.

Hardness: Maximum, 285 ppm Mar. 11-20, 1953; minimum, 108 ppm Jan. 11-20, 1952.

Specific conductance: Maximum observed, 725 micromhos June 28, 1951; minimum observed, 234 micromhos Jan. 13, 15, 1952.

Water temperatures: Maximum observed, 90°F July 18, Aug. 14, 1951; minimum observed, 41°F Jan. 30, 1952.

REMARKS.—Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate				
Oct. 1-10, 1952	755	18		40	25	28		213	0	60	20		2.8		307	0.42	626	203	28	23	0.9	497	7.9
Oct. 11-20	510	17		40	28	31		212	8	64	22		1.2		324	.44	446	215	28	24	0.9	533	
Oct. 21-31	559	16		40	29	32		224	0	67	24		1.2		328	.45	495	219	36	24	0.9	547	7.6
Nov. 1-10	311	17		41	30	34		233	0	68	25		1.5		337	.46	283	226	35	25	1.0	552	8.0
Nov. 11-20	195	17		40	29	33		224	6	70	23		1.6		336	.46	177	219	26	25	1.0	549	--
Nov. 21-30	152	17		41	28	33		220	5	71	24		1.3		333	.45	137	219	29	25	1.0	542	--
Dec. 1-10	164	17		41	28	34		234	0	68	24		1.8		339	.46	150	218	26	25	1.0	554	7.9
Dec. 11-20	363	15		42	29	34		236	0	70	23		1.6		338	.46	331	224	30	25	1.0	554	8.0
Dec. 21-31	418	18		43	29	36		244	0	70	25		2.9		342	.47	386	226	26	28	1.0	568	7.9
Jan. 1-10, 1953	196	22		56	34	36		304	0	68	26		4.0		395	.54	209	280	30	22	0.9	642	7.9
Jan. 11-20	406	23		56	33	33		300	0	64	23		2.1		372	.51	408	275	29	21	0.9	632	7.9
Jan. 21-31	503	22		50	31	29		281	0	57	20		0.9		353	.48	479	252	22	20	0.8	574	7.9
Feb. 1-10	463	23		51	30	28		269	5	53	20		5		338	.46	422	250	22	20	0.8	560	--
Feb. 11-20	144	21		52	32	29		272	8	58	20		5.5		351	.48	136	281	25	19	0.8	579	--
Feb. 21-28	36.0	0		52	33	34		298	0	64	22		1.0		374	.51	36.4	265	21	22	0.9	622	8.0
Mar. 1-10	31.8	26		51	36	39		300	0	76	26		1.5		402	.55	34.5	275	29	24	1.0	663	8.0
Mar. 11-20	28.6	21		55	36	37		307	0	76	25		1.7		397	.54	30.7	285	34	22	1.0	658	7.9
Mar. 21-31	446	22		54	34	35		298	0	70	25		1.4		387	.53	466	274	30	22	0.9	639	8.0
Apr. 1-10	207	22		52	35	33		288	6	68	24		1.0		384	.52	215	274	28	21	0.9	633	--
Apr. 11-20	125	23		52	34	33		292	5	66	24		0.8		381	.52	129	270	22	21	0.9	628	--
Apr. 21-30	118	23		52	35	34		289	5	67	24		1.2		382	.52	122	274	28	21	0.9	630	--

GILA RIVER BASIN--Continued
VERDE RIVER BELOW BARTLETT DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per-cent so-lidum	So-lidum adsorp-tion ratio	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate					
May 1-10, 1953	118	27		52	34	34	--	283	8	67	24		0.9		387	0.53	123	270	24	22	0.9		632	--
May 11-20	109	21		51	34	32	--	283	7	67	24		.9		379	.52	112	267	24	21	.9		619	--
May 21-31	102	22		50	34	33	--	282	7	68	24		.8		377	.51	104	265	22	21	.9		621	--
June 1-10	93.9	25		49	34	35	--	291	0	69	25		.9		380	.52	96.3	262	24	22	.9		630	7.9
June 11-20	305	26		48	35	36	--	290	0	69	25		1.8		380	.52	313	264	26	23	1.0		629	7.9
June 21-30	783	24		48	35	39	--	291	0	73	27		1.5		388	.53	820	264	26	24	1.0		647	7.8
July 1-10	605	24		44	37	42	3.4	286	0	79	30		1.0		400	.54	653	262	28	26	1.1		656	8.0
July 11-20	458	24		42	39	46	3.6	284	0	88	30		1.1		408	.55	504	266	33	27	1.2		677	8.0
July 21-31	263	26		42	37	47	--	274	0	87	31		1.0		410	.56	291	257	32	28	1.3		665	8.0
Aug. 1-10	443	26		43	28	35	--	242	0	70	22		1.4		343	.47	410	222	24	25	1.0		557	7.4
Aug. 11-20	869	26		42	28	35	--	240	0	68	22		1.0		339	.46	795	220	24	26	1.0		546	7.4
Aug. 21-31	471	27		38	30	38	--	241	0	72	24		1.6		348	.47	443	218	21	27	1.1		565	7.5
Sept. 1-10	412	24		37	21	23	--	203	0	43	14		2.3		265	.36	295	179	12	22	.7		430	7.5
Sept. 11-20	227	24		42	24	28	--	236	0	51	18		1.6		308	.42	189	204	10	23	.9		494	7.6
Sept. 21-30	120	38		40	30	39	--	247	0	67	24		.5		363	.49	118	224	21	28	1.1		562	7.8
Weighted average	321	22		45	31	34	--	259	0	67	24		1.5		354	0.45	307	240	28	24	1.0		580	--

GILA RIVER BASIN--Continued

VERDE RIVER BELOW BARTLETT DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement, generally taken between 7 a. m. and 9 a. m./

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

a Reading obtained between 2 p. m. and 4 p. m.

b Reading obtained between 10 a. m. and 11 a. m.

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.

LOCATION.--At water stage recorder on canal 1½ miles downstream from Lake Pleasant Dam on Agua Fria River, 19 miles north of Maricopa County, and 23 miles upstream from New River.

DRAINAGE AREA.--1,460 square miles, approximately, (above Lake Pleasant Dam).

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 297 ppm Dec. 5, 12, 19, 26, Jan. 12-26.

Hardness: Maximum, 192 ppm Sept. 11-18; minimum, 128 ppm Nov. 7, 14, 21, 28.

Specific conductance: Maximum observed, 500 micromhos Sept. 13; minimum observed, 316 micromhos Oct. 8.

Water temperatures: Maximum observed, 79°F Sept. 17; minimum observed, not determined.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 297 ppm Sept. 11-18, 1953; minimum, 108 ppm June 21-30, 1952.

Hardness: Maximum, 192 ppm Sept. 11-18, 1953; minimum, 108 ppm June 21-30, 1952.

Specific conductance: Maximum observed, 500 micromhos Sept. 13, 1953; minimum observed, 241 micromhos Jan. 29, 1952.

Water temperatures: Maximum observed, 79°F Sept. 17, 1953; minimum observed, 41°F on several days during January and February 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Values shown as extremes relate to canal samples only. Samples collected from canal when there was flow otherwise from Lake Pleasant at headgates. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge furnished by Maricopa Water District through Surface Water Branch, Tucson District for water year October 1952 to September 1953. Monthly diversions to canal below Lake Pleasant diversion dam are published as Agua Fria River at Lake Pleasant Dam in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂) (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color
													Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Oct. 1-12, 1952...	24.3	30			16		175	--	12		3.9		223	0.30	14.6	0	20	342	7.3
Oct. 17, 24, 31...	--	--	39	11	18	--	--	--	--	--	--		194	.26	130	--	23	328	--
Nov. 7, 14, 21, 28	--	--	35	10	16	--	--	--	--	--	--		196	.27	128	--	21	323	--
Dec. 5, 12, 19, 26	--	--	37	11	16	--	--	--	--	--	--		190	.26	138	--	20	322	--
Jan. 12-26, 1953.	17.5	--	38	11	16	--	--	--	--	--	--		190	.26	140	--	20	330	--
Feb. 6, 13, 20, 27, Mar. 6	--	--	39	12	16	--	--	--	--	--	--		198	.27	147	--	19	342	--
Mar. 11-30	79.6	6.7	38	13	17	--	170	31	13	1.0	.7		217	.30	148	9	20	354	7.3
Mar. 21-31	90.5	5.7	38	12	17	--	171	30	12		1.0		212	.29	144	4	20	358	7.4
Apr. 1-10	76.2	6.9	38	12	17	--	173	30	12	.6	.6		212	.29	144	2	20	356	7.6
Apr. 11-21	33.5	6.1	40	12	18	--	178	30	14	1.5	1.5		221	.30	150	4	21	375	7.5
Apr. 24, May 1, 8, 15, 22	--	--	40	12	20	--	--	--	--	--	--		209	.28	150	--	23	368	--
May 23-31	60.0	10	43	14	23	--	185	32	17	0.3	3.0		249	.34	165	5	23	418	8.0
June 1-10	102	6.9	40	13	18	--	178	28	14	2.8	2.8		222	.30	154	8	20	376	8.0
June 11-20	167	6.0	39	12	18	4.3	174	28	12	2.5	2.5		216	.29	147	4	20	367	8.1
June 21-30	271	8.5	39	14	18	--	178	26	15	2.5	2.5		218	.30	155	9	20	372	7.2

July 1-10, 1953...	303	12	40	13	17	--	183	25	14	2.0	224	.30	183	154	4	19	.6	374	7.5
July 11-20.....	218	11	40	13	18	--	186	26	13	1.7	224	.30	132	184	1	20	.6	378	7.5
July 21-31.....	242	7.5	40	13	18	--	187	25	14	1.8	224	.30	146	134	0	20	.6	383	7.5
Aug. 1-10.....	243	11	42	13	21	--	198	26	15	2.2	232	.32	152	158	0	22	.7	392	7.5
Aug. 11-20.....	217	14	43	13	22	--	201	27	18	2.2	239	.33	146	161	0	22	.8	402	7.5
Aug. 21-31.....	209	14	43	13	22	--	203	28	18	2.4	241	.33	137	161	0	24	.8	408	7.5
Sept. 1-10.....	109	12	41	15	24	--	205	33	19	2.1	254	.35	73.4	172	4	23	.8	438	7.6
Sept. 11-16.....	64.8	22	49	17	29	--	242	32	22	1.0	297	.40	52.0	192	0	25	.9	484	7.7
Sept. 25.....	--	--	42	14	24	--	--	--	--	--	245	.33	--	162	--	24	.8	418	--
Weighted average	a 137	10	41	13	19	--	189	27	14	2.0	228	0.31	84.3	156	1	21	0.7	385	--

a Average for 188 days of flow.

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement generally taken at 7:30 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	--	--	--	--	56	65	64	63	68	73
2	--	--	--	--	--	--	57	--	63	63	69	73
3	--	--	--	--	--	--	57	--	64	62	69	74
4	--	--	--	--	--	--	57	--	--	62	69	74
5	--	--	56	--	--	--	57	--	63	62	69	74
6	--	--	--	--	53	58	58	--	64	63	70	74
7	--	68	--	--	--	--	58	--	63	64	70	76
8	--	--	--	--	--	--	58	67	63	64	69	74
9	--	--	--	--	--	--	58	--	64	63	69	77
10	--	--	--	--	--	--	58	--	65	65	70	77
11	--	--	--	--	--	58	58	--	64	65	70	77
12	--	--	54	--	--	58	58	--	60	65	70	77
13	--	--	--	--	51	58	56	--	65	65	70	78
14	--	63	--	--	--	57	58	--	65	65	72	78
15	--	--	--	--	--	56	59	68	64	65	--	78
16	--	--	--	52	--	56	60	--	64	68	72	78
17	72	--	--	--	--	55	60	--	64	68	72	79
18	--	--	--	--	--	55	60	--	62	70	72	--
19	--	--	54	--	--	55	60	--	63	68	72	--
20	--	--	--	--	50	55	61	--	64	68	72	--
21	--	61	--	--	--	55	--	--	63	68	72	--
22	--	--	--	--	--	55	--	69	63	68	72	--
23	--	--	--	52	--	55	--	--	63	68	72	--
24	72	--	--	--	--	54	63	62	63	68	72	--
25	--	--	--	--	--	57	--	63	63	68	72	77
26	--	--	54	--	--	57	--	65	63	68	72	--
27	--	--	--	--	56	58	--	65	63	68	72	--
28	--	60	--	--	--	57	--	65	63	68	72	--
29	--	--	--	--	--	56	--	63	62	69	73	--
30	--	--	--	--	--	56	--	64	63	69	73	--
31	70	--	--	--	--	57	--	64	--	68	73	--
Average	--	--	--	--	--	--	--	--	63	66	71	--

GILA RIVER BASIN--Continued
GILA RIVER BELOW GILLESPIE DAM, ARIZ.

LOCATION --About 1 mile below gaging station on Gila Bend Canal which is 200 feet below Gillespie Dam, Maricopa County, and 8 miles downstream from Hassayampa River. Gila Bend Canal diverts from left bank and Enterprise Canal diverts from right bank at Gillespie Dam.

DRAINAGE AREA --49,620 square miles (revised).

RECORDS AVAILABLE --Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES 1952-53 --Dissolved solids: Maximum 6,120 ppm Oct. 21-31; minimum, 486 ppm Nov. 21.

Hardness: Maximum, 1,690 ppm Jan. 1-10; minimum, 164 ppm Nov. 21.

Specific conductance: Maximum observed, 9,570 micromhos Oct. 12; minimum observed, 858 micromhos Nov. 21.

Water temperatures: Maximum observed, 89°F Aug. 3; minimum observed, 45°F Nov. 28, Dec. 2, Jan. 2.

EXTREMES 1950-53 --Dissolved solids: Maximum 6,450 ppm Oct. 11-20, 1951; minimum, 262 ppm Sept. 1, 1951.

Hardness: Maximum, 1,940 ppm Oct. 11-20, 1951; minimum, 135 ppm Sept. 1, 1951.

Specific conductance: Maximum observed, 10,200 micromhos Oct. 3, 1951; minimum observed, 420 micromhos Sept. 1, 1951.

Water temperatures: Maximum observed, 95°F July 19, 1951; minimum observed, 35°F Jan. 1, 1951.

REMARKS --Values reported for dissolved solids are sums of determined constituents. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Samples from canal are believed to be representative of total flow passing Gillespie Dam, including spill and amounts diverted into Gila Bend and Enterprise Canals. Records of separate and combined discharge for the river and canals for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids			Hardness as CaCO ₃		Percent sodium adsorption (micro-mhos at 25°C)	pH		
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate				
Oct. 1-10, 1952	25.3	30	0.01	360	169	1,500	11	330	0	1,240	2,310	2.4	41	2.7	5,830	7.93	398	1,590	1,320	67	16	9,020	7.6
Oct. 11-20	21.6	30	.01	284	170	1,600	11	350	0	1,290	2,410	2.4	38	3.6	6,110	8.31	356	1,660	1,370	68	17	9,350	7.6
Oct. 21-31	19.9	28	.00	376	175	1,600	11	340	0	1,290	2,440	2.4	31	3.6	6,120	8.32	329	1,660	1,380	68	17	9,450	7.5
Nov. 1-10	22.8	30	.00	376	171	1,500	11	352	0	1,280	2,380	2.4	40	3.1	6,020	8.19	371	1,640	1,350	67	17	9,270	7.6
Nov. 11-18	36.8	32	.01	372	168	1,500	11	356	0	1,230	2,900	2.4	42	3.2	5,830	7.93	379	1,620	1,330	67	16	9,020	7.6
Nov. 19-20	186	20	.01	49	17	170	4.2	178	0	122	195	1.2	8.3	.30	675	92	338	192	46	65	5.3	1,170	8.0
Nov. 21	168	15	--	46	12	114	--	199	0	82	113	--	6.2	--	486	66	220	164	2	60	3.9	858	7.7
Nov. 22-30	80.3	29	.00	261	114	940	9.5	322	0	808	1,450	1.6	28	2.1	3,800	5.17	824	1,120	856	64	12	6,060	7.9
Dec. 1-10	59.3	36	.00	350	170	1,310	12	370	0	1,090	2,090	2.0	46	3.1	5,290	7.19	847	1,570	1,270	64	14	8,200	7.9
Dec. 11-20	50.2	33	.04	384	175	1,500	12	371	0	1,240	2,310	2.2	48	3.1	5,890	8.01	798	1,680	1,370	66	16	9,060	7.9
Dec. 21-31	63.3	30	.00	374	180	1,430	12	367	0	1,190	2,250	2.2	47	2.8	5,700	7.75	974	1,670	1,370	65	15	8,760	7.8
Jan. 1-10, 1953	59.1	32	.03	376	182	1,410	11	369	0	1,170	2,240	2.2	40	2.6	5,640	7.67	900	1,690	1,380	64	15	8,770	7.7
Jan. 11-20	50.3	31	.01	386	174	1,510	12	382	0	1,240	2,340	2.2	42	2.8	5,930	8.06	805	1,680	1,370	66	16	9,100	7.8
Jan. 21-31	57.0	32	.02	372	170	1,460	11	376	0	1,270	2,220	2.6	54	2.7	5,780	7.86	889	1,630	1,320	66	16	8,810	7.8
Feb. 1-10	59.4	36	.02	372	179	1,430	11	346	18	1,260	2,180	2.6	48	2.5	5,710	7.77	916	1,660	1,350	65	15	8,700	--
Feb. 11-20	56.3	36	.01	372	178	1,470	11	353	9	1,280	2,120	2.6	54	2.6	5,800	7.89	882	1,660	1,360	66	16	8,790	--
Feb. 21-28	56.0	35	.01	368	170	1,400	11	361	14	1,200	2,160	2.4	42	2.7	5,580	7.59	844	1,620	1,300	65	15	8,560	--
Mar. 1-10	68.3	31	.00	352	163	1,340	11	377	0	1,080	2,090	2.0	36	3.0	5,290	7.19	975	1,550	1,240	65	15	8,080	7.8
Mar. 11-20	53.1	31	.01	374	175	1,500	11	383	0	1,210	2,290	2.2	38	3.8	5,820	7.92	834	1,650	1,340	66	16	8,770	7.9
Mar. 21-31	52.6	32	.00	374	171	1,420	11	379	0	1,210	2,250	2.2	43	4.0	5,700	7.75	809	1,640	1,330	65	15	8,680	7.9

GILA RIVER BASIN--Continued

GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean dis- charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- roun- (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per- cent so- dium	So- dium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon- ate				
Apr. 1-10, 1953.....	44.0	32	0.05	374	166	1,390	11	392	0	1,180	2,180	2.2	43	3.3	5,570	7.58	662	1,620	1,290	65	15	8,490	7.8
Apr. 11-20.....	37.7	33	.05	380	170	1,380	11	381	0	1,200	2,220	2.4	38	2.8	5,620	7.64	572	1,650	1,340	64	15	8,710	7.8
Apr. 21-30.....	37.1	31	.05	388	170	1,450	11	401	0	1,220	2,250	2.4	37	3.0	5,760	7.83	577	1,670	1,340	65	15	8,790	7.7
May 1-10.....	36.6	34	.03	368	170	1,480	12	383	0	1,220	2,260	2.4	37	3.2	5,770	7.85	570	1,620	1,300	66	16	8,730	7.7
May 11-20.....	41.5	32	.01	352	163	1,390	11	370	0	1,150	2,130	2.4	40	3.7	5,450	7.41	611	1,550	1,240	66	15	8,390	7.7
May 21-31.....	37.7	30	.02	350	162	1,410	11	363	0	1,170	2,150	2.6	37	3.2	5,500	7.48	580	1,540	1,240	66	16	8,370	7.7
June 1-10.....	30.3	33	.02	350	164	1,420	13	350	0	1,190	2,220	2.4	30	2.4	5,590	7.60	457	1,550	1,260	66	16	8,610	7.5
June 11-20.....	24.2	30	.01	346	167	1,440	13	328	0	1,210	2,210	2.4	29	2.8	5,610	7.63	367	1,550	1,280	67	16	8,690	7.6
June 21-30.....	22.5	28	.09	336	158	1,440	12	315	0	1,210	2,190	2.6	30	3.1	5,560	7.56	338	1,490	1,230	68	16	8,560	7.7
July 1-11.....	26.2	29	.00	324	156	1,420	12	293	0	1,190	2,150	2.6	29	2.6	5,490	7.43	386	1,450	1,210	68	16	8,440	7.2
July 12-13.....	31.5	37	--	219	80	690	12	323	0	620	1,050	1.6	16	1.6	2,880	3.82	245	876	611	63	10	4,600	7.8
July 14-16.....	26.0	34	.01	324	144	1,270	13	325	0	1,080	1,960	2.4	35	2.6	5,020	6.83	352	1,400	1,130	66	11	7,850	7.9
July 17-21.....	55.2	28	.01	180	72	690	12	265	0	558	1,000	1.4	19	1.3	2,690	3.66	401	1,745	528	66	15	4,390	7.9
July 22-Aug. 1.....	38.7	33	.01	286	129	1,110	12	314	0	937	1,670	2.0	31	2.0	4,390	5.93	456	1,240	986	66	14	6,820	7.9
Aug. 2.....	89	28	--	150	37	284	11	274	0	258	450	--	7.6	.83	1,360	1.85	327	526	302	53	5.4	2,300	--
Aug. 3-4.....	55.0	29	.01	248	91	770	12	281	0	760	1,140	1.3	30	.94	3,220	4.38	304	933	762	62	11	5,070	--
Aug. 5-10.....	22.5	25	.00	324	154	1,280	13	311	0	1,130	1,960	2.2	35	1.9	5,080	6.91	309	1,440	1,190	66	15	7,830	7.8
Aug. 11-20.....	20.4	29	.01	330	144	1,330	12	304	0	1,130	2,050	2.2	32	3.2	5,200	7.07	286	1,420	1,170	67	15	7,970	7.6
Aug. 21-31.....	19.6	38	.00	316	142	1,290	12	304	0	1,120	1,980	2.4	33	3.2	5,080	6.91	269	1,370	1,120	67	15	7,780	7.7
Sept. 1-10.....	20.9	34	.00	318	144	1,310	11	284	0	1,140	1,990	2.4	37	3.5	5,130	6.98	289	1,390	1,130	67	15	7,850	7.7
Sept. 11-20.....	20.3	45	.00	308	151	1,290	11	283	0	1,140	1,980	2.6	37	3.4	5,110	6.95	280	1,390	1,160	67	15	7,830	7.7
Sept. 21-30.....	13.9	39	.01	338	163	1,470	12	268	0	1,270	2,260	2.4	33	3.6	5,740	7.81	215	1,310	1,290	68	16	8,720	7.6
Weighted average...	40.9	32	0.01	339	156	1,320	11	349	--	1,110	2,040	2.2	38	2.8	5,220	7.10	576	1,490	1,200	66	15	8,030	--

GILA RIVER BASIN--Continued

GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement generally taken between 6 a. m. and 10 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	60	50	46	57	--	65	a 67	74	80	83	76
2	70	60	45	45	55	55	63	66	73	79	85	75
3	75	60	48	47	53	55	65	a 75	72	78	89	75
4	70	60	47	48	55	53	65	65	75	82	--	73
5	70	65	49	49	53	54	67	66	75	80	--	74
6	70	60	49	50	52	55	66	68	75	80	85	75
7	67	60	48	50	56	53	a 65	71	74	80	83	76
8	66	65	48	55	55	a 65	64	71	75	76	80	79
9	67	65	47	53	55	a 65	66	64	76	85	92	75
10	65	65	49	53	56	a 65	a 65	67	76	81	82	74
11	68	65	47	55	55	63	64	68	a 83	--	83	75
12	68	65	46	55	55	59	a 67	63	80	82	82	75
13	65	a 60	47	55	54	60	a 65	65	80	80	83	--
14	63	60	49	56	56	61	a 71	67	83	86	82	83
15	63	57	55	55	55	60	62	a 68	70	80	81	80
16	69	55	55	55	56	60	a 70	65	80	79	79	79
17	68	55	55	54	57	59	a 71	70	75	81	80	73
18	65	57	55	55	55	63	66	72	73	79	79	74
19	65	57	55	52	51	a 65	a 73	72	70	82	81	78
20	62	55	55	55	49	60	a 73	70	71	80	82	76
21	62	50	54	55	49	61	67	71	75	83	83	72
22	60	56	54	54	52	63	67	a 75	75	82	82	75
23	60	55	50	52	a 53	a 63	65	a 78	78	82	83	75
24	65	56	48	53	a 54	60	64	73	78	82	83	75
25	60	50	49	56	a 55	61	72	72	80	82	82	74
26	65	51	47	55	50	62	73	71	75	80	83	70
27	60	51	46	52	53	65	a 73	70	70	80	82	75
28	a 70	45	48	55	55	65	67	65	75	80	83	71
29	60	47	49	55	--	64	65	65	75	81	80	75
30	56	a 55	47	55	--	64	a 67	65	78	80	75	75
31	60	--	48	55	--	63	--	73	--	81	76	--
Average	65	57	50	53	54	61	67	69	76	81	82	75

a Reading obtained between 10 a. m. and 1 p. m.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT YUMA, ARIZ.

LOCATION.--At gaging station, 1,800 feet downstream from highway bridge at Yuma, Yuma County, half a mile upstream from Yuma Main Canal wastewater, 5 miles (revised) downstream from Gila River. 7 miles upstream from boundary between California and Mexico, and 19 miles downstream from Imperial Dam. DRAINAGE AREA.--242,900 square miles, approximately, including all closed basins entirely within the drainage boundary.

RECORDS AVAILABLE.--Chemical analyses: September 1926 to September 1928, October 1942 to February 1943, June 1947 to July 1952, November 1952 to September 1953.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Percent sodium carbonate	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					
Nov. 7, 1952	12,300			78	25	82		165	235	67		1.3		569	0.77	18,900	298	162	37	2.0	911	7.8	
Dec. 8	16,700			72	23	75		156	216	58		1.5		522	.71	23,540	274	146	37	2.0	848	7.7	
Jan. 9, 1953	14,900			70	26	72		155	218	58		1.4		521	.71	20,960	282	154	36	1.9	824	7.8	
Feb. 9	14,900			84	22	98		163	265	73		1.7		624	.85	25,100	300	166	42	2.5	977	7.8	
Mar. 9	7,660			75	30	92		123	281	83		.1		621	.84	12,840	310	210	38	2.3	1,010	7.6	
Apr. 7	4,480			92	31	105		186	295	89		.5		704	.96	8,520	357	204	39	2.4	1,110	7.6	
May 11	3,500			86	30	106		159	293	95		.0		688	.94	6,500	338	208	41	2.5	1,110	7.7	
June 5	3,780			82	31	112		155	295	100		.0		696	.95	7,100	332	205	42	2.7	1,120	7.8	
July 7	7,340			76	29	105		137	289	88		.1		654	.89	12,960	308	196	43	2.6	1,050	7.8	
Aug. 7	4,080			87	30	86		178	245	89		1.2		626	.85	6,900	340	194	35	2.0	1,090	--	
Sept. 9	4,480			86	29	104		174	282	87		.6		675	.92	8,160	334	191	40	2.5	1,070	7.7	

DIVERSIONS AND RETURN FLOW AT AND BELOW IMPERIAL DAM
YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON, AT YUMA, ARIZ.

LOCATION.--At gaging station on Yuma Main Canal below Colorado River siphon on Arizona side of river, 3½ miles (revised) downstream from siphon drop power plant, and a quarter of a mile downstream from highway bridge over Colorado River at Yuma, Yuma County.

RECORDS AVAILABLE.--Chemical analyses: September 1926 to September 1928, October 1942 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 744 ppm May 21-31; minimum, 532 ppm Jan. 1-10.

Hardness: Maximum, 361 ppm April 1-30; minimum, 260 ppm Jan. 1-10.

Specific conductance: Maximum observed, 1,110 micromhos Apr. 1-10, May 7, 18; minimum observed, 795 micromhos Jan. 5.

EXTREMES, 1943-53.--Dissolved solids: Maximum, 760 ppm Apr. 21-26, 28-30, 1947; minimum, 532 ppm Jan. 1-10, 1953.

Hardness: Maximum, 372 ppm June 1-3, 5-10, 1944; minimum, 260 ppm Jan. 1-10, 1953.

Specific conductance: Maximum observed, 1,150 micromhos on several days in May and June, 1944 and June 1947; minimum observed, 795 micromhos Jan. 5, 1953.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Samples collected prior to February 1943 were from the gaging station on the Colorado River at Yuma. Records of discharge for water year October 1952 to September 1953 given in WSP 1283.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carb. (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-10, 1952	555	15	0.01	70	28	90	4.2	156	0	253	71	0.3	1.3	0.13	630	0.86	944	290	160	40	2.3	855	8.0
Oct. 11-20	565	15	.01	76	27	87	4.1	156	0	250	69	.3	1.3	.15	624	.85	922	300	171	38	2.2	832	7.9
Oct. 21-31	320	13	.00	73	26	84	4.1	155	0	242	64	.3	1.4	.12	606	.82	881	289	162	38	2.1	804	8.1
Nov. 1-10	417	13	.00	75	25	82	3.9	156	0	234	64	.3	1.5	.10	593	.81	866	283	159	38	2.1	867	8.1
Nov. 11-20	396	14	.00	72	24	78	3.6	154	0	221	62	.3	1.5	.09	572	.78	827	278	150	38	2.0	863	8.1
Nov. 21-30	394	13	.00	71	24	76	3.6	152	0	218	60	.3	1.6	.11	559	.76	834	276	151	37	2.0	849	8.1
Dec. 1-10	222	13	.00	69	24	74	3.5	153	0	217	58	.3	1.3	.11	566	.77	839	270	145	37	2.0	839	8.5
Dec. 11-20	263	12	.00	70	23	72	3.5	152	0	212	57	.3	1.3	.09	543	.74	809	269	144	36	1.9	827	8.3
Dec. 21-31	219	13	.01	66	23	71	3.6	152	0	207	57	.4	1.3	.17	546	.74	810	264	144	36	1.9	818	8.2
Jan. 1-10, 1953	365	13	.01	68	22	68	3.6	150	0	207	58	.3	1.2	.13	532	.72	803	269	137	36	1.8	801	8.1
Jan. 11-20	300	14	.01	60	23	74	3.8	153	0	217	58	.3	1.2	.14	564	.77	857	269	144	37	2.0	835	8.2
Jan. 21-31	364	14	.01	76	25	80	3.8	155	0	237	65	.4	1.2	.14	608	.83	897	292	166	37	2.0	902	8.1
Feb. 1-10	350	14	.01	82	27	89	4.0	148	8	258	72	.4	1.4	.15	635	.86	900	316	181	38	2.2	960	--
Feb. 11-20	448	13	.00	84	29	92	4.2	159	5	267	76	.4	1.5	.16	675	.89	795	328	192	37	2.2	992	--
Feb. 21-28	333	15	.01	86	29	97	4.3	154	8	275	81	.4	1.4	.18	676	.92	868	334	194	38	2.3	1,030	--
Mar. 1-10	594	13	.01	88	29	97	4.4	156	6	282	81	.4	1.1	.16	684	.93	1,100	338	199	38	2.3	1,040	--
Mar. 11-20	695	12	.00	88	31	101	4.4	154	16	288	87	.4	1.3	.16	701	.96	1,190	347	204	38	2.4	1,060	--
Mar. 21-31	547	12	.01	90	31	102	4.4	156	8	293	87	.4	1.1	.17	711	.97	1,080	352	210	38	2.4	1,080	--
Apr. 1-10	450	13	.04	92	32	100	4.2	187	0	297	88	.4	2.3	.17	737	1.00	895	361	208	37	2.3	1,100	7.9
Apr. 11-20	508	13	.04	92	32	100	4.3	191	0	298	87	.4	2.3	.23	740	1.01	1,010	361	204	37	2.3	1,100	8.0
Apr. 21-30	482	13	.04	92	32	100	4.3	186	0	298	87	.4	2.5	.20	739	1.01	982	361	208	37	2.3	1,100	7.9

DIVERSIONS AND RETURN FLOW AT AND BELOW IMPERIAL DAM--Continued

YUMA MAIN CANAL BELOW COLORADO RIVER SIPHON, AT YUMA, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium in total	Specific conductance (micro-mhos at 25° C)	
															Parts per million	Tons per acre-foot	Tons per day	Calcium magnesium	Non-carbonate			
May 1-10, 1953	473	13	0.05	92	31	101	4.4	187	0	298	88	0.4	2.4	0.22	739	1.01	944	357	204	38	1,100	8.0
May 11-20	568	14	.02	90	33	104	4.4	181	0	300	85	.4	1.5	.23	737	1.00	1,130	360	212	38	1,100	7.7
May 21-31	601	14	.02	90	33	103	4.3	179	0	300	87	.4	1.2	.20	744	1.01	1,210	360	214	38	1,100	7.8
June 1-10	602	13	.02	90	31	101	4.3	180	0	298	87	.4	1.3	.21	741	1.01	1,200	352	204	38	1,090	7.8
June 11-20	664	13	.03	88	31	101	4.4	177	0	295	87	.4	1.8	.19	734	1.00	1,220	347	202	38	1,090	7.9
June 21-30	646	15	.03	88	31	99	4.3	165	6	291	86	.4	1.5	.27	732	1.00	1,260	347	202	38	1,080	7.9
July 1-10	604	17	.01	85	31	101	4.6	177	0	288	86	.4	1.4	.19	713	.97	1,160	340	194	39	1,070	7.7
July 11-20	634	16	.06	84	30	101	4.6	176	0	286	85	.4	1.5	.18	703	.96	1,200	333	189	39	1,070	7.7
July 21-31	742	15	.01	84	29	101	4.5	174	0	281	84	.4	1.5	.18	701	.95	1,400	328	186	40	1,050	8.0
Aug. 1-10	756	16	.01	83	29	101	4.5	170	0	279	84	.4	1.4	.20	697	.95	1,420	326	186	40	1,050	7.9
Aug. 11-20	665	15	.02	82	29	100	4.4	169	0	278	82	.4	1.1	.17	704	.96	1,260	324	185	40	1,040	7.8
Aug. 21-31	635	16	.01	83	30	98	4.3	166	0	280	82	.4	1.1	.18	689	.94	1,180	330	184	39	1,040	7.6
Sept. 1-10	575	13	.02	83	29	97	4.2	166	0	277	83	.4	1.0	.17	689	.94	1,070	326	190	39	1,040	7.7
Sept. 11-20	696	12	.02	82	30	96	4.1	164	0	271	83	.4	1.0	.16	684	.93	1,290	328	190	39	1,030	7.8
Sept. 21-30	673	12	.02	82	29	100	4.3	165	0	279	85	.4	1.0	.18	689	.94	1,250	324	188	40	1,050	7.8
Weighted average...	505	14	0.02	83	29	95	4.2	170	--	273	79	.4	1.4	0.17	680	0.92	927	326	186	38	1,020	--

PART 10. THE GREAT BASIN

SEVIER LAKE BASIN

SEVIER RIVER NEAR LYNNDYL, UTAH

LOCATION --At bridge on State Highway 125, 1½ miles upstream from gaging station, which is 3½ miles southwest of Lynndyl, Millard County.
DRAINAGE AREA --6,270 square miles, approximately.
RECORDS AVAILABLE --Chemical analyses: March 1951 to September 1953.

Water temperatures: March 1951 to September 1953.
EXTREMES, 1951-53. --Dissolved solids: Maximum, 3,050 ppm Mar. 11-16; minimum, 915 ppm Oct. 5-6, 8-9.

Hardness: Maximum, 1,170 ppm Mar. 11-16; minimum, 484 ppm Oct. 5-6, 8-9.
Specific conductance: Maximum daily, 5,630 micromhos Mar. 13; minimum daily, 1,520 micromhos Oct. 9.

Water temperatures: Maximum observed, 78°F July 29; minimum observed, 34°F on several days during November and December.

EXTREMES, 1951-53. --Dissolved solids: Maximum, 3,050 ppm Mar. 11-16, 1953; minimum, 864 ppm Mar. 29-31, 1952.

Hardness: Maximum, 1,170 ppm Mar. 11-16, 1953; minimum, 423 ppm Mar. 29-31, 1952.

Specific conductance: Maximum daily, 5,630 micromhos Mar. 13, 1953; minimum, 1,340 micromhos Mar. 30, 1952.

Water temperatures: Maximum observed, 83°F Aug. 3, 1952; minimum observed, 33°F on many days during December to February, 1952.

REMARKS --Samples reported for dissolved solids are sums of determinate constituents. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in WSP 1284.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 1-4, 7, 1952	56.8	21		94	101	323	6.7	314	416	490		3.3	--	1,610	2.19	650	392	5.5	2,550	8.1	
Oct. 5-6, 8-9	62.0	16	77	77	71	145	4.7	298	201	250		3.6	--	915	1.24	484	240	39	2,9	8.0	
Oct. 10-20	110	19	94	93	285	6.7	346	359	410	285		4.5	0.41	1,440	1.96	428	617	50	5.0	2,310	8.1
Oct. 21-28, 30-31	64.1	17	91	92	242	6.7	318	336	390	410		4.1	--	1,340	1.82	232	335	46	4.3	2,200	8.1
Oct. 29	65.0	16	83	77	161			292	227	280		4.3	--	992	1.35	174	524	40	3.1	1,610	8.0
Nov. 1-10	191	17	84	85	218	6.7	334	305	330	330		4.7	--	1,210	1.65	654	559	46	4.0	1,980	8.1
Nov. 11-20	227	20	87	87	305	6.6	342	360	405	405		3.8	--	1,440	1.96	883	574	53	5.5	2,290	8.1
Nov. 21-30	75.2	19	111	108	334	6.6	332	424	510	510		2.9	--	1,680	2.28	341	721	50	5.4	2,660	8.0
Dec. 1-9	47.9	20	125	111	397	6.6	336	479	585	585		2.7	--	1,880	2.57	244	768	53	6.2	3,000	7.8
Dec. 10-20	26.5	19	152	144	544	8.0	350	694	815	815		1.7	--	2,550	3.47	182	971	54	7.6	4,010	8.0
Dec. 21-31	21.0	20	154	145	548	8.0	354	694	825	825		1.6	--	2,570	3.50	146	980	55	7.6	4,030	7.9
Jan. 1-10, 1953	19.5	21	145	161	596	8.5	315	775	900	900		2.9	--	2,760	3.75	145	1,020	56	8.1	4,350	8.1
Jan. 11-20	19.4	19	156	159	563	8.5	338	766	880	880		3.1	.59	2,720	3.70	142	1,040	766	7.6	4,270	8.1
Jan. 21-31	17.6	20	164	166	618	9.4	362	812	935	935		2.4	--	2,910	3.96	138	1,090	785	8.1	4,510	7.9
Feb. 1-10	16.7	22	156	166	600	8.6	350	793	925	925		4.1	--	2,850	3.88	129	1,070	784	8.0	4,470	8.0
Feb. 11-20	16.8	22	153	159	570	8.3	368	749	865	865		3.0	.59	2,720	3.70	123	1,060	759	7.6	4,250	7.9
Feb. 21-28	18.4	22	175	156	602	8.2	366	750	880	880		3.4	--	2,760	3.75	137	1,080	778	7.7	4,270	--
Mar. 1-10	19.9	21	169	156	580	8.0	357	766	900	900		2.5	--	2,800	3.81	150	1,060	770	8.0	4,370	--
Mar. 11-16	19.5	22	183	173	650	9.2	376	848	975	975		2.9	--	3,050	4.15	161	1,170	860	8.3	4,700	--
Mar. 17	45.0	21	134	99	321			425	502	502		--	--	1,680	2.26	202	1,740	54	8.3	4,700	--
Mar. 17-27	77.5	18	94	82	203	5.9	310	279	338	338		3.5	--	1,180	1.60	247	572	43	3.7	1,950	--
Mar. 18-31	222	22	95	97	283	7.1	344	413	398	398		5.4	--	1,490	2.03	893	636	49	4.9	2,380	--

SEVIER LAKE BASIN--Continued
SEVIER RIVER NEAR LYNNDYL, UTAH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		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					
Apr. 1-10, 1953...	208	20		94	89	266	6.4	344	356	372		4.8	--	1,380	1.88	775	600	318	49	4.7	2,240	--	--
Apr. 11-20.....	197	21		84	86	259	7.1	337	342	368		3.9	0.39	1,340	1.82	713	563	287	50	4.7	2,160	--	--
Apr. 21-30.....	575	23		86	89	285	7.2	349	375	385		5.2	--	1,430	1.94	2,220	580	294	51	5.1	2,300	--	--
May 1-10.....	321	22		84	89	286	7.2	342	377	390		4.7	--	1,430	1.94	1,240	576	296	52	5.2	2,320	--	--
May 11-20.....	488	22		77	86	291	7.5	342	366	380		5.0	--	1,400	1.90	1,840	546	266	53	5.4	2,280	--	--
May 21-31.....	623	22		81	83	291	7.5	351	359	350		5.2	--	1,370	1.86	2,300	544	256	53	5.4	2,260	--	--
June 1-10.....	453	21		84	89	306	7.9	348	381	395		5.2	--	1,460	1.99	1,790	576	290	53	5.6	2,370	--	--
June 11-20.....	383	21		81	87	297	7.9	341	366	405		5.7	--	1,440	1.96	1,490	560	280	53	5.5	2,290	--	--
June 21-30.....	550	19		81	86	297	7.9	346	369	395		5.5	--	1,430	1.94	2,120	568	272	53	5.5	2,300	--	--
July 1-10.....	742	19		79	89	306	7.5	346	377	410		5.7	--	1,460	1.99	2,920	583	280	54	5.6	2,320	--	--
July 11-20.....	517	22		80	93	309	7.2	337	386	410		6.0	.44	1,480	2.01	2,070	582	306	53	5.6	2,350	--	--
July 21-31.....	379	23		84	96	323	7.3	343	395	430		5.6	--	1,530	2.08	1,570	604	323	53	5.7	2,410	--	--
Aug. 1-10.....	199	24		92	91	297	8.7	310	378	415		4.4	--	1,460	1.99	784	604	350	51	5.2	2,330	--	--
Aug. 11-20.....	486	23		84	95	332	7.9	336	398	440		6.2	--	1,550	2.11	2,030	600	324	54	5.9	2,430	--	--
Aug. 21-31.....	527	22		80	100	360	7.6	340	426	470		5.7	--	1,640	2.23	2,330	610	332	56	6.3	2,580	--	--
Sept. 1-10.....	234	24		79	104	350	8.2	338	439	455		7.2	--	1,630	2.22	1,030	624	348	55	6.1	2,550	--	--
Sept. 11-20.....	159	22		84	107	350	8.2	329	439	470		4.9	--	1,650	2.24	708	650	380	54	6.0	2,650	--	--
Sept. 21-30.....	120	21		82	104	332	7.6	332	416	455		8.9	--	1,590	2.16	515	632	368	53	5.8	2,550	--	--
Weighted average	232	21		85	92	309	7.5	341	388	416		5.3	--	1,490	2.03	933	590	311	53	5.5	2,390	--	--

SEVIER LAKE BASIN--Continued

SEVIER RIVER NEAR LYNNDYL, UTAH--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

CARSON RIVER BASIN

EAST FORK CARSON RIVER NEAR GARDNERVILLE, NEV.

LOCATION.--Temperature recorder at gaging station, 3 miles downstream from Leviathan Creek, and 7 miles southeast of Gardnerville.

DRAINAGE AREA.--344 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1953 to September 1953.

EXTREMES, May 1953, Sept. 1953.--Water temperatures: Maximum, 68°F on several days during July and September.

REMARKS.--Minimum values not published because period did not include winter months. Records of discharge for water year October 1952 to September 1953 given in WSP 1284.

Temperature (°F) of water, May to September 1953

Day	April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min
1.....			--		53		53		67		63	
2.....			--		53		54		67		66	
3.....			--		54		54		66		67	
4.....			--		54		55		65		67	
5.....			--		53		55		65		67	
6.....			--		53		56		65		68	
7.....			--		53		56		66		68	
8.....			--		50		57		65		68	
9.....			--		51		58		65		68	
10.....			--		51		58		65		68	
11.....			--		51		59		65		68	
12.....			--		51		59		65		67	
13.....			--		50		60		65		66	
14.....			--		51		62		65		66	
15.....			53		51		62		65		67	
16.....			51		51		62		65		67	
17.....			55		53		62		66		66	
18.....			55		56		62		66		66	
19.....			55		55		63		66		66	
20.....			54		53		65		66		67	
21.....			53		52		65		66		67	
22.....			53		52		65		66		65	
23.....			53		52		66		67		65	
24.....			51		52		66		65		65	
25.....			50		52		66		65		66	
26.....			49		52		66		65		66	
27.....			49		52		66		65		65	
28.....			50		52		68		65		66	
29.....			52		52		68		65		66	
30.....			54		53		68		61		64	
31.....			54		--		68		61		--	
Average.....			--		52		61		65		66	

HUMBOLDT RIVER BASIN

HUMBOLDT RIVER NEAR RYE PATCH, NEV.

LOCATION --Below Rye Patch Dam, 1,000 feet upstream from gaging station, and 2 miles northwest of Rye Patch, Pershing County.

DRAINAGE AREA --13,700 square miles, approximately.

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

Water temperatures: December 1951 to September 1953.

EXTREMES, 1952-53. --Dissolved solids: Maximum, 703 ppm Sept. 21-30; minimum, 543 ppm Nov. 11-20.

Hardness: Maximum, 222 ppm Dec. 1-25; minimum, 194 ppm May 21-31.

Specific conductance: Maximum daily, 1,120 micromhos Aug. 15, Sept. 3; minimum daily, 788 micromhos Oct. 8.

Water temperatures: Maximum observed, 72°F July 21-22, Aug. 18; minimum observed, 35°F Dec. 24.

EXTREMES, 1951-53. Dissolved solids: Maximum, 703 ppm Sept. 21-30, 1953; minimum, 512 ppm Dec. 21-31, 1951.

Hardness: Maximum, 222 ppm Dec. 1-25, 1952; minimum, 171 ppm May 1-10, 1953.

Specific conductance: Maximum daily, 1,120 micromhos Aug. 15, Sept. 3, 1953; minimum daily, 784 micromhos Dec. 31, 1951, Sept. 10, 1952.

Water temperatures: Maximum observed, 76°F July 31, Aug. 1, 1952; minimum observed, 35°F Dec. 24, 1952.

REMARKS. --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Discharge records for gaging station near Rye Patch for water year October 1952 to September 1953 given in WSP 1284. No appreciable inflow between gaging station and sampling point except during periods of local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate as acid (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent 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. 1-10, 1952...	61.1	43	0.05	52	19	103	15	360	--	66	58	0.9	1.5	--	548	0.75	90.4	208	0	50	833	8.1	15
Oct. 11-20	117	43	.05	52	19	104	15	360	--	65	59	.9	1.1	0.53	548	.75	173	208	0	50	835	8.2	18
Oct. 21-31	60.0	41	.05	51	19	104	15	362	--	65	60	.9	1.0	--	548	.75	88.8	208	0	50	842	8.0	15
Nov. 1-10	89.2	40	.05	51	19	104	15	333	12	65	60	.9	.8	--	545	.74	131	205	0	50	831	8.4	15
Nov. 11-20	97.6	40	.06	50	19	105	15	310	24	67	60	.9	1.0	.52	543	.74	143	203	0	51	831	8.5	18
Nov. 21-30	73.4	51	.04	52	20	111	9.2	364	--	71	62	.8	.4	--	562	.76	111	212	0	52	859	8.3	20
Dec. 1-25	4.3	52	.02	56	20	111	9.2	364	--	70	63	.8	.6	.48	561	.76	6.51	222	0	51	865	8.2	20
Feb. 5-19, 1953.	3.5	40	.18	53	20	111	8.8	358	--	71	66	.8	.4	.49	550	.75	5.20	214	0	52	862	8.3	15
Feb. 20-28	2.7	45	.05	48	19	110	14	340	8	68	65	.9	.5	--	549	.75	4.00	198	0	53	858	8.3	10
Mar. 1-10	88.3	44	.07	50	19	110	14	337	12	68	66	.9	.5	--	552	.75	132	203	0	52	862	8.4	12
Mar. 11-20	142	42	.11	50	19	110	14	318	20	69	67	.9	.5	.48	554	.75	212	203	0	52	870	8.3	15
Mar. 21-31	132	42	.10	50	19	110	14	344	8	69	68	.9	.4	--	554	.75	197	203	0	52	872	8.3	15
Apr. 1-10	252	40	.16	48	19	116	15	324	16	72	71	.9	.3	--	556	.76	378	198	0	54	879	8.4	18
Apr. 11-20	288	45	.06	50	20	120	8.9	358	--	75	74	.8	.4	.51	578	.79	449	207	0	54	905	8.1	30
Apr. 21-30	477	42	.06	50	20	121	8.9	354	--	77	76	.7	.4	--	582	.79	750	207	0	55	912	8.2	25
May 1-10	357	42	.09	50	20	122	16	356	--	79	82	.7	.4	--	582	.81	571	207	0	54	931	8.1	20
May 11-20	328	41	.09	51	20	125	17	328	12	80	86	.7	.4	.57	597	.81	529	209	0	54	939	8.3	25
May 21-31	323	47	.06	45	20	131	15	334	9	82	86	.7	1.2	--	606	.82	528	194	0	57	945	8.3	8
June 1-10	251	47	.05	48	20	131	15	345	5	83	88	.8	1.0	--	612	.83	415	202	0	56	964	8.3	8
June 11-20	378	44	.10	46	20	136	16	347	--	85	96	.8	1.2	.57	617	.84	630	197	0	58	983	8.1	12
June 21-30	332	44	.03	46	20	139	16	337	6	88	103	.8	1.0	--	632	.86	567	197	0	58	1,010	8.2	15

HUMBOLDT RIVER BASIN--Continued
HUMBOLDT RIVER NEAR RYE PATCH, NEV.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbinate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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				
July 1-10, 1953	380	44	0.09	46	20	140	17	322	9	90	108	0.8	1.0	--	648	0.88	630	197	0	58	1,030	8.2	15
July 11-20	509	49	.08	46	21	156	19	356	--	95	114	.8	.4	0.54	668	.91	919	202	0	60	1,070	7.7	10
July 21-31	507	51	.05	47	22	158	19	342	10	98	116	.8	.4	--	688	.94	942	208	0	60	1,090	8.2	8
Aug. 1-10	270	51	.04	48	21	158	20	346	8	99	116	.8	.4	--	692	.94	504	206	0	60	1,100	8.2	13
Aug. 11-20	268	49	.07	46	22	160	21	360	--	100	119	.8	.4	.74	694	.94	502	208	0	60	1,110	7.9	20
Aug. 21-31	226	50	.09	46	22	160	21	342	10	102	118	.8	.4	--	695	.95	424	208	0	60	1,110	8.2	15
Sept. 1-10	258	47	.09	45	22	160	20	336	12	103	118	.8	.4	--	694	.94	483	203	0	60	1,110	8.2	15
Sept. 11-20	279	47	.14	44	22	160	20	318	20	104	120	1.0	.4	.78	697	.95	525	200	0	61	1,100	8.3	30
Sept. 21-30	162	53	.18	44	22	165	19	338	12	104	116	.8	.5	--	703	.96	307	200	0	61	1,110	8.3	10
Weighted average	a 211	46	0.08	48	20	137	16	343	--	86	95	0.8	0.6	--	628	0.85	358	202	0	57	992	--	--

a Represents 99.8 percent of runoff for water year October 1952 to September 1953.

HUMBOLDT RIVER BASIN--Continued

HUMBOLDT RIVER NEAR RYE PATCH, NEV.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

PYRAMID AND WINNEMUCCA LAKES BASIN
MISCELLANEOUS ANALYSES OF STREAMS AND LAKES IN PYRAMID AND WINNEMUCCA LAKES BASIN IN CALIFORNIA

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro- mhos at 25° C)	Col- or pH
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium	Non- mag- nesium			

LAKE TAHOE (SOUTH END) BIJOU (SEC. 35, T. 13 N., R. 18 E.)

Oct. 22, 1952.....		8.8	0.00	9.0	2.3	6.9	1.7	52	2.1	2.2	0.0	0.3	0.01	59	0.08		32	0	31	92.4	7.3
Mar. 24, 1953.....				10	1.6	7.4	--	54	--	3.2	--	--	.05	--	--		32	0	34	92.4	7.7
Apr. 13.....		--	--	8.9	2.1	8.2	--	52	--	2.6	--	--	.01	--	--		31	0	37	88.7	7.6
May 4.....		12	.1	8.6	2.3	6.3	1.7	52	2.2	2.2	1.8	.0	.02	60	.08		31	0	29	88.6	7.6
Aug. 10.....		--	--	9.6	2.7	6.1	1.7	52	--	3.0	--	--	.00	--	--		35	0	28	91.5	7.2
Sept. 21.....		9.6	.00	9.2	3.2	6.1	1.6	55	2.0	3.5	.1	.1	.00	62	.08		36	0	26	92.5	7.7

LAKE TAHOE (NORTH END) TAHOE VISTA (SEC. 14, T. 16 N., R. 17 E.)

Oct. 22, 1952.....		11	0.00	9.4	2.3	6.7	1.5	55	2.2	1.9	0.1	0.0	0.02	62	0.08		33	0	29	94.3	7.4
Mar. 24, 1953.....		--	--	9.1	3.0	8.2	--	55	--	2.6	--	--	.01	--	--		35	0	34	94.7	7.7
Apr. 13.....		13	.0	9.5	2.5	6.5	1.6	56	1.9	2.2	.1	.2	.00	65	.09		34	0	28	95.4	7.8
Aug. 10.....		--	--	10	2.2	6.0	1.6	53	--	3.0	--	--	.00	--	--		34	0	27	92.6	7.3
Sept. 21.....		13	--	9.2	2.7	6.9	1.6	54	6.5	1.5	.0	.0	.05	68	.09		34	0	29	94.1	7.6

LAKE TAHOE (WEST SIDE) TAHOE CITY (SEC. 7, T. 15 N., R. 17 E.)

Oct. 22, 1952.....		11	0.00	9.4	2.3	6.9	1.5	54	2.1	2.1	0.0	0.0	0.02	62	0.08		33	0	30	92.1	7.5
Mar. 24, 1953.....		--	--	9.7	1.9	6.5	--	52	--	2.5	--	--	.04	--	--		32	0	31	91.4	7.5
Apr. 5.....		13	.0	9.5	2.2	5.8	1.9	54	2.6	2.0	.0	.2	.01	64	.06		33	0	26	93.0	7.7
Apr. 13.....		--	--	8.9	2.6	8.2	--	54	--	2.6	--	--	.01	--	--		33	0	35	94.3	7.6
Aug. 8.....		--	--	9.0	2.8	5.2	1.4	52	--	2.5	--	--	.02	--	--		34	0	24	90.7	7.6
Sept. 21.....		13	--	8.8	2.9	6.1	1.5	54	3.9	1.0	.0	.0	.00	64	.09		34	0	27	93.1	7.6

TRUCKEE RIVER NEAR TRUCKEE (SEC. 28, T. 17 N., R. 16 E.)

Oct. 22, 1952.....	370	12	0.00	9.4	2.6	6.9	1.8	54	2.6	2.7	0.0	0.1	0.04	65	0.09		34	0	29	93.7	7.5
Mar. 24, 1953.....	85	--	--	9.2	1.7	4.5	--	42	--	1.5	--	--	.02	--	--		30	0	25	84.8	7.7
Apr. 13.....	106	--	--	8.2	2.5	4.1	--	41	--	1.4	--	--	.04	--	--		31	0	22	82.9	7.4
May 4.....	287	18	.0	9.7	2.0	2.8	.8	33	4.4	1.5	.1	.3	.00	52	.07		25	0	19	64.1	7.4
Aug. 10.....	221	--	--	9.6	2.9	6.3	1.5	52	--	2.8	--	--	.00	--	--		36	0	27	92.2	7.8
Sept. 21.....	207	13	--	9.2	2.7	6.1	1.7	55	2.7	2.5	.0	.0	.04	65	.09		34	0	27	101	7.8

TRUCKEE RIVER AT FARAD (SEC. 29, T. 18 N., R. 18 E.)

Oct. 22, 1952.....	445	15	0.00	9.9	3.7	6.9	1.7	57	3.0	3.0	0.0	0.0	0.04	71	0.10		40	0	26	102	7.4
Mar. 24, 1953.....	560	--	--	9.7	3.4	4.5	--	52	--	2.0	--	--	.05	--	--	--	38	0	20	93.1	7.5
Apr. 13.....	520	--	--	8.3	2.7	5.0	--	46	--	1.5	--	--	.01	--	--	--	32	0	25	81.1	7.6
May 5.....	1,447	19	.1	6.8	1.8	3.0	.8	37	2.0	.2	.0	.2	.03	52	.07	--	24	0	20	62.0	7.6
Aug. 11.....	575	--	--	8.8	2.5	4.3	1.2	45	--	2.5	--	--	.00	--	--	--	32	0	22	80.4	7.3
Sept. 22.....	560	16	.03	8.4	2.7	4.3	1.4	48	1.0	2.2	.1	.0	.00	60	.08	--	32	0	22	81.7	7.5

HONEY LAKE BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN HONEY LAKE BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

SUSAN RIVER NEAR SUSANVILLE (SEC. 31, T. 30 N., R. 12 E.)

Mar. 25, 1953...	103	--	--	11	3.7	5.0	--	62	--	1.5	--	--	0.05	--	--	--	43	0	20	99.6	7.8
Apr. 14.....	89	--	--	9.8	4.5	4.0	--	60	--	.9	--	--	.00	--	--	--	43	0	17	96.4	7.6
May 5.....	255	17	0.0	7.1	3.0	2.8	0.7	44	1.2	.8	0.1	0.3	.00	55	0.07	--	30	0	16	89.6	7.6
Aug. 12.....	102	--	--	5.9	2.7	1.8	.3	36	--	.0	--	--	.00	--	--	--	26	0	13	56.4	7.2
Sept. 22.....	6.3	36	--	16	9.0	6.3	2.5	109	1.0	1.2	.0	.3	.00	126	.17	--	77	0	15	173	7.8

PAJARO RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN PAJARO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)			Hardness as CaCO ₃	Percent sodium	Sodium adsorption ratio	Specific conductance (micro- mhos at 25 °C)	Col- or pH
														Parts per million	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbonate			

UVAS CREEK NEAR MORGAN HILL (SEC. 18, T. 10 S., R. 3 E.)

Oct. 20, 1952	0.3	22	0.00	49	19	17	1.2	228	44	7.0	0.1	0.0	0.09	272	0.37		200	14	15	424	7.9
Jan. 20, 1953	133	--	--	28	17	9.2	.7	158	--	6.0	--	--	--	--	--		140	10	12	304	7.9
Feb. 16	17	--	--	33	23	12	.6	198	--	6.5	--	--	--	--	--		177	15	13	369	7.9
Mar. 25	41	--	--	24	22	11	--	166	--	7.0	--	--	.04	--	--		150	14	14	328	7.6
Apr. 21	13	--	--	33	25	14	--	200	--	7.5	--	--	.07	--	--		185	21	14	380	8.2
May 13	13	23	.0	27	24	12	.8	169	32	5.5	.0	.1	.11	216	.30		166	11	14	328	7.7
Aug. 18	5.3	23	--	47	20	14	2.3	220	--	7.5	--	--	.09	--	--		200	19	13	373	7.9
Sept. 24	.3	23	--	46	21	14	.7	222	33	7.5	.2	.1	.09	255	.35		201	19	13	416	7.7

PAJARO RIVER NEAR CHITTENDEN (SEC. 12, T. 12 S., R. 3 E.)

Oct. 20, 1952	5.2	29	0.00	72	64	139	6.8	520	146	121	0.2	0.5	0.53	835	1.14		442	16	40	1,350	8.0
Jan. 20, 1953	a 320	--	--	42	24	34	2.1	190	--	30	--	--	--	--	--		204	48	26	536	7.8
Feb. 17	3.4	--	--	55	57	70	2.5	288	--	55	--	--	--	--	--		372	136	29	938	7.7
Mar. 25	89	--	--	49	36	48	--	228	--	37	--	--	.18	--	--		270	84	28	685	8.0
Apr. 21	22	--	--	82	64	91	--	350	--	82	--	--	.45	--	--		468	180	30	1,220	8.1
May 13	27	23	.0	71	53	67	2.0	304	202	58	.3	4.3	.29	630	.86		395	146	27	976	7.8
Aug. 18	1.9	--	--	91	72	189	4.4	542	--	190	--	--	.34	--	--		523	79	44	1,610	8.2
Sept. 24	2.3	24	--	87	88	212	6.5	602	278	184	.5	1.8	.68	1,180	1.60		579	86	44	1,860	8.2

a Mean daily discharge (cfs).

SOQUEL CREEK BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN SOQUEL CREEK BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot						
Oct. 21, 1952.....	6.2	37	0.00	79	21	50	4.9	248	90	66	0.2	0.2	0.10	470	0.64	284	80	27	748	7.9	
Jan. 20, 1953.....	115	--	--	44	14	22	2.2	136	--	17	--	--	--	--	--	167	56	22	420	7.9	
Feb. 17.....	24	--	--	68	18	35	3.5	206	--	31	--	--	--	--	--	244	74	23	612	8.0	
Mar. 25.....	45	--	--	31	29	32	--	169	--	22	--	--	.06	--	--	196	58	26	497	8.0	
Apr. 21.....	19	--	--	69	18	35	--	208	--	32	--	--	.11	--	--	246	76	24	609	8.2	
May 14.....	21	29	.0	37	35	34	3.4	206	100	32	.2	.4	.08	372	.51	236	68	23	600	8.0	
Aug. 19.....	4.8	--	--	76	21	46	4.4	244	--	61	--	--	.04	--	--	276	76	26	726	7.9	
Sept. 25.....	4.3	38	--	73	25	47	1.3	250	86	65	.2	.2	.13	459	.62	285	80	26	755	8.0	

SOQUEL CREEK AT SOQUEL (SEC. 10, T. 11 S., R. 1 W.)

SAN LORENZO RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN SAN LORENZO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

SAN LORENZO RIVER AT BIG TREES (SEC. 26, T. 10 S., R. 2 W.)

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium carbonate	Sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot						
Oct. 21, 1952.....	24	25	0.00	38	6.9	21	1.8	130	30	24	0.2	0.2	0.08	211	0.29	123	17	27	331	7.7	
Jan. 21, 1953.....	412	--	--	27	7.9	14	1.4	86	--	12	--	--	--	--	--	100	29	23	265	7.7	
Feb. 17.....	102	--	--	38	8.5	18	1.6	120	--	16	--	--	--	--	--	130	31	23	342	8.0	
Mar. 26.....	78	--	--	34	8.7	17	--	109	--	15	--	--	.04	--	--	121	31	23	320	7.6	
Apr. 20.....	82	--	--	38	9.4	19	--	123	--	18	--	--	.06	--	--	133	33	24	346	8.1	
May 14.....	83	26	.0	37	8.0	18	2.0	121	48	16	.1	.4	.03	215	.29	125	29	23	334	7.5	
Aug. 19.....	23	--	--	39	7.3	20	1.8	131	--	21	--	--	.00	--	--	125	30	23	331	7.6	
Sept. 25.....	20	26	--	37	7.4	19	1.5	132	28	22	.2	.2	.06	206	.28	123	15	23	332	7.8	

a Mean daily discharge (cfs).

GUADALUPE RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN GUADALUPE RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro- mhos at 25°C)	Col- or pH
													Parts per million	Tons per acre- foot day	Calcium, mag- nesium	Non- carbon- ate			

LOS GATOS CREEK AT LOS GATOS (SEC. 29, T. 8 S., R. 1 W.)

Oct. 2, 1952	0.5	18	0.00	35	39	20	1.6	248	54	18	0.1	4.0	0.09	312	0.42	248	45	15	531	7.8
Jan. 21, 1953	a 26	--	--	33	17	12	1.2	146	--	12	--	--	--	--	--	132	33	15	344	7.8
Feb. 16	a 40	--	--	35	15	13	1.6	148	--	8.0	--	--	--	--	--	159	28	16	358	7.6
Mar. 26	a 55	--	--	28	14	11	--	194	--	--	--	.05	--	--	--	127	1	16	296	7.5
Apr. 20	a 58	--	--	36	15	12	--	151	--	8.5	--	--	.06	--	--	152	28	15	334	8.1
May 18	79	38	.0	18	9.2	16	2.2	102	13	12	.3	4.4	.24	163	.22	83	0	20	234	7.8
Aug. 18	5.5	--	--	46	21	13	1.6	216	--	10	--	--	--	--	--	201	24	44	435	8.2
Sept. 24	4.8	14	--	44	19	16	1.3	200	37	9.5	.2	.4	.10	240	.33	198	24	16	399	8.2
a Mean daily discharge (cfs)																				

COYOTE CREEK BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN COYOTE CREEK BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

COYOTE CREEK NEAR MADRONE (SEC. 9, T. 9 S., R. 3 E.)

Oct. 20, 1952	41	12	0.00	28	11	14	1.8	126	25	11	0.2	0.5	0.11	166	0.23	115	0	21	272	7.6
Jan. 20, 1953	60	--	--	35	14	16	2.0	156	--	10	--	--	--	--	--	145	17	19	341	8.0
Feb. 16	7.0	--	--	35	19	17	1.9	179	--	12	--	--	--	--	--	165	19	18	374	8.3
Mar. 25	59	--	--	31	16	16	--	162	--	12	--	.05	--	--	--	143	10	20	339	7.8
Apr. 21	56	--	--	34	14	16	--	160	--	9.5	--	--	.05	--	--	142	11	20	334	7.9
May 13	40	8.6	.1	32	16	15	2.2	180	31	10	2	1.0	.10	195	.27	146	15	18	339	7.9
Aug. 18	40	--	--	34	16	15	2.2	170	--	9.0	--	--	.06	--	--	151	11	18	343	7.8
Sept. 24	52	9.0	--	33	17	15	2.0	171	28	10	.3	1.1	.06	200	.27	152	12	17	349	7.8

ALAMEDA CREEK BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN ALAMEDA CREEK BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro- mhos at 25°C)	Col- or pH
														Parts per million	Tons per acre- foot day	Calcium, magnesium	Non-carbonate			
Oct. 21, 1952	82.0	15	0.00	78	52	79	4.9	398	140	75	0.2	0.1	0.82	640	0.87	408	82	29	1,040	8.0
Jan. 20, 1953	119	--	--	53	24	45	2.7	244	--	39	--	--	--	--	--	230	30	30	611	8.1
Jan. 29	60	12	--	61	30	53	2.5	287	84	48	.2	3.1	.35	435	.59	276	40	29	729	8.1
Feb. 16	22	--	--	69	44	77	4.0	358	--	73	--	--	--	--	--	353	60	32	964	8.2
Mar. 25	27	--	--	36	51	56	--	313	--	57	--	--	.41	--	--	300	43	29	805	7.8
Apr. 21	10	--	--	82	43	96	--	394	--	92	--	--	.51	--	--	382	58	35	1,060	8.2
May 13	5.6	14	.0	77	43	84	4.8	330	119	89	.2	.8	.72	619	.84	369	57	33	1,010	8.3
Aug 18	2.4	--	--	85	47	83	5.3	424	--	78	--	--	.67	--	--	406	58	30	1,040	8.0
Sept. 24	2.0	21	--	89	54	86	7.1	460	122	91	.3	.1	.86	697	.95	444	67	29	1,130	8.2

a. Mean daily discharge (cfs).

b. Includes equivalent of 25 parts per million of carbonate (CO₃).

ALAMEDA CREEK NEAR NILES (SEC. 15, T. 4 S., R. 1 W.)

KERN RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN KERN RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro- mhos at 25°C)	Col- or pH
														Parts per million	Tons per acre- foot day	Calcium, magnesium	Non-carbonate			
Oct. 16, 1952	371	17	0.00	20	1.6	20	1.6	89	17	8.8	0.3	0.2	0.14	130	0.18	56	0	43	202	7.8
Jan. 13, 1953	1,093	--	--	20	3.1	19	1.8	95	--	9.5	--	--	--	--	--	63	0	39	204	7.8
Feb. 11	789	--	--	20	3.4	19	1.8	96	--	9.5	--	--	--	--	--	64	0	38	203	7.7
Mar. 18	568	--	--	19	3.6	20	--	92	--	9.2	--	--	.24	--	--	62	0	41	200	8.1
Apr. 21	959	--	--	16	2.9	15	--	83	--	6.5	--	--	.18	--	--	52	0	39	176	7.7
May 5	1,516	18	.0	14	2.1	12	1.4	70	9.0	4.2	.3	.4	.10	96	.13	44	0	37	142	7.9
Aug. 10	363	--	--	13	1.9	14	1.5	61	--	7.0	--	--	.08	--	--	40	0	42	156	7.2
Sept. 21	200	19	--	18	3.4	23	2.2	88	19	14	.3	.1	.18	142	.19	59	0	45	222	7.9

KERN RIVER NEAR BAKERSFIELD (SEC. 2, T. 29 S., R. 28 E.)

TULARE LAKE BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN TULARE LAKE BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953																				
Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per- cent sodium adsorp- tion ratio	Specific conduct- (micro- mhos at 25°C)	Col- or pH
														Parts per mil- lion	Tons per acre- foot	Calcium, mag- nesium	Non- carbon- ate			
TULE RIVER NEAR PORTERVILLE (SEC. 25, T. 21 S., R. 28 E.)																				
Oct. 16, 1952....	46	31	0.00	30	22	22	4.0	236	5.8	13	0.2	0.1	0.12	244	0.33	165	0	22	402	8.0
Jan. 14, 1953....	735	--	--	17	1.8	8.2	1.9	74	--	3.5	--	--	--	--	--	50	0	25	134	7.7
Feb. 11.....	407	--	--	32	5.4	14	1.8	144	--	7.5	--	--	--	--	--	102	0	23	258	7.9
Mar. 18.....	86	--	--	36	5.3	16	--	162	--	9.2	--	--	.22	--	--	112	0	24	275	8.1
Apr. 21.....	123	--	--	29	4.3	11	--	126	--	5.5	--	--	.07	--	--	90	0	21	219	7.8
May 5.....	274	22	.0	21	3.1	7.8	1.3	92	3.0	4.0	.1	.3	.03	108	.15	65	0	20	155	7.9
Aug. 11.....	8.4	--	--	48	7.1	19	3.3	207	--	9.5	--	--	.05	--	--	149	0	21	356	7.8
Sept. 22.....	6.6	33	.09	56	9.5	22	3.3	248	4.9	13	.2	.1	.08	264	.36	179	0	21	421	8.0
KAWEAH RIVER NEAR THREE RIVERS (SEC. 33, T. 17 S., R. 28 E.)																				
Oct. 15, 1952....	68	12	0.00	17	1.6	8.4	1.5	67	3.5	8.0	0.1	0.0	0.01	85	0.12	49	0	26	138	7.7
Jan. 14, 1953....	1,030	--	--	9.7	1.4	5.2	1.3	41	--	3.0	--	--	--	--	--	30	0	26	79.7	7.3
Feb. 10.....	284	--	--	11	1.9	5.8	1.0	50	--	3.2	--	--	--	--	--	35	0	26	100	7.4
Mar. 17.....	287	--	--	11	1.3	5.4	--	48	--	2.9	--	--	.07	--	--	33	0	26	89.7	7.7
Apr. 21.....	654	--	--	6.9	.4	2.8	--	28	--	1.4	--	--	.05	--	--	19	0	24	51.8	7.4
May 5.....	1,080	11	.0	5.0	1.1	2.4	.6	26	1.7	.8	.1	.3	.00	36	.05	17	0	23	46.4	7.4
Aug. 11.....	86	--	--	13	7.7	4.8	4.2	48	--	3.5	--	--	.03	--	--	35	0	20	97.7	7.5
Sept. 22.....	45	17	--	17	2.0	7.4	1.7	65	3.7	9.0	.0	.1	.02	90	.12	51	0	23	136	7.9

TULARE LAKE BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN TULARE LAKE BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953.—Continued																			
Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids (sum)			Hardness as CaCO ₃	Per- cent so- dium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or pH
													Parts per million	Tons per acre- foot	Tons per day				

KINGS RIVER ABOVE NORTH FORK (SEC. 27, T. 12 S., R. 26 E.)

Oct. 15, 1952.....	232	6.9	0.00	8.0	0.8	3.8	1.1	30	4.9	2.0	0.1	0.2	0.03	43	0.06	23	0	25	66.0	7.3
Mar. 17, 1953.....	455	--	--	6.0	.7	4.5	--	28	--	1.9	--	--	--	--	--	18	0	35	54.6	7.5
Apr. 22.....	1,580	--	--	3.4	.2	2.8	--	16	--	1.2	--	--	--	--	.02	9	0	40	44.0	6.9
May 6.....	2,470	6.8	.0	2.7	.5	1.8	.5	13	1.7	.5	.1	.4	.00	21	.03	9	0	29	27.1	7.3
Aug. 11.....	4,240	--	--	5.1	.3	2.2	.5	20	--	1.5	--	--	.00	--	--	14	0	25	40.2	7.2
Sept. 22.....	158	9.6	.03	6.3	1.5	3.8	.9	27	4.7	3.5	.1	.0	.00	44	.06	22	0	26	59.1	7.4

KINGS RIVER AT PIEDRA (SEC. 8, T. 13 S., R. 24 E.)

Oct. 15, 1952.....	625	12	0.00	9.0	1.8	5.0	1.0	42	3.5	2.8	0.1	0.0	0.04	56	0.08	30	0	26	81.0	7.2
Jan. 14, 1953.....	2,650	--	--	7.8	2.6	4.5	1.2	39	--	2.5	--	--	--	--	--	30	0	24	74.2	7.5
Feb. 10.....	832	--	--	6.8	1.0	4.5	.8	31	--	2.5	--	--	--	--	--	21	0	31	68.0	7.2
Mar. 17.....	810	--	--	5.5	1.5	4.1	--	32	--	2.5	--	--	.02	--	--	20	0	31	60.0	7.4
Apr. 22.....	3,300	--	--	2.7	.6	2.8	--	15	--	.6	--	--	.04	--	--	9	0	40	27.5	7.0
May 5.....	4,440	7.3	.0	2.7	.5	2.2	.6	16	1.6	2.0	.0	.5	.02	24	.03	9	0	33	28.3	7.3
Aug. 11.....	542	--	--	5.1	.8	2.8	.8	21	--	2.0	--	--	.00	--	--	16	0	26	45.9	7.2
Sept. 22.....	200	9.8	.01	6.7	2.3	3.8	1.0	30	4.4	4.0	.1	.0	.00	47	.06	26	2	23	64.7	7.4

KINGS RIVER AT PEOPLES WEIR (NEAR KINGSBURG) (SEC. 1, T. 17 S., R. 22 E.)

Oct. 16, 1952.....	30	12	0.00	14	3.1	9.8	1.5	69	5.4	5.5	0.1	1.0	0.03	86	0.12	48	0	30	139	7.3
Jan. 13, 1953.....	353	--	--	12	2.1	14	1.6	64	--	5.0	--	--	--	--	--	34	0	45	125	7.7
Feb. 11.....	325	--	--	10	2.6	7.4	1.1	52	--	3.5	--	--	--	--	--	36	0	30	101	7.7
Mar. 18.....	182	--	--	10	2.8	6.3	--	53	--	4.2	--	--	.06	--	--	36	0	27	105	7.6
Apr. 21.....	343	--	--	4.7	.8	3.1	--	24	--	1.4	--	--	.02	--	--	15	0	31	45.3	7.1
May 6.....	598	9.6	.0	4.0	1.5	2.8	.7	24	2.4	.8	.0	.6	.00	34	.05	16	0	26	43.8	7.3
Aug. 10.....	100	--	--	13	3.9	6.7	1.5	63	--	4.5	--	--	.02	37	--	49	0	27	133	7.3
Sept. 21.....	52	26	--	25	8.3	20	2.7	139	11	11	.1	1.8	.04	174	.24	97	0	30	270	8.0

SAN JOAQUIN RIVER BASIN

SAN JOAQUIN RIVER AT FRIANT, CALIF.

LOCATION --At gage 0.5 miles west of Friant, Fresno County, 1.5 miles downstream from Cottonwood Creek, and 2 miles downstream from Friant Dam.

DRAINAGE AREA 675 square miles

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

REMARKS --Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1285 as San Joaquin River below Friant, Calif.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Per-cent so-dium	So-dium absorp-tion ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
Oct. 15, 1952	1,300	7.6	0.00	2.1	0.7	2.2	0.6	12		1.0	1.6	0.0	0.1	0.01	22	0.03	8	0	35	24.2	6.9
Dec. 6, 1952	1,105	8.0	.06	4.1	1.5	2.0	.7	18		1.5	3.0	.1	.9	.02	35	.05	16	2	20	45.5	6.9
Jan. 14, 1953	129	--	--	8.4	2.2	8.7	1.4	43		--	6.2	--	--	--	--	--	30	0	37	108	7.4
Feb. 10, 1953	525	--	--	4.1	1.3	4.5	.8	24		--	3.5	--	--	--	--	--	16	0	37	50.2	7.4
Mar. 17, 1953	904	--	--	4.6	.4	5.0	--	22		--	3.4	--	--	.05	--	--	13	0	45	49.2	7.4
Apr. 22, 1953	904	--	--	4.7	.3	4.5	--	21		--	4.0	--	--	.08	--	--	13	0	43	48.6	7.1
May 6, 1953	378	11	.0	3.6	1.2	4.8	.8	23		1.6	3.8	.1	.5	.01	39	.05	14	0	41	50.1	7.4
May 15, 1953	394	--	--	4.6	.6	6.1	1.5	24		--	5.2	--	--	--	--	--	14	0	46	50.2	7.1
Aug. 12, 1953	188	--	--	4.7	.5	4.1	.7	21		--	4.5	--	--	.00	--	--	14	0	38	47.5	7.0
Sept. 23, 1953	1,230	11	.03	3.4	.6	2.8	.6	17		1.2	2.0	.0	.5	.07	30	.04	11	0	34	37.6	7.1

a Dissolved solids from residue on evaporation.

SAN JOAQUIN RIVER BASIN--Continued
SAN JOAQUIN RIVER NEAR BIOLA, CALIF.

LOCATION --At Staggs Bridge, 1.9 miles upstream from gaging station, and about 2.5 miles northwest of Biola, Fresno County.

DRAINAGE AREA --1,805 square miles (above gaging station).

RECORDS AVAILABLE --Chemical analyses: November 1952 to September 1953.

Water temperatures: November 1952 to September 1953.

EXTREMES 1952-53 --Dissolved solids: Maximum 117 ppm Jan. 3-10; minimum, 37 ppm Sept. 1-10.

Hardness: Maximum 53 ppm Jan. 11-13; minimum 10 ppm Nov. 1-5, 7-10.

Specific conductance: Maximum daily 170 micromhos Jan. 3; minimum daily, 40.1 micromhos Sept. 27.

Water temperatures: Maximum 90°F July 13; minimum 36°F Feb. 23-24, 28, Mar. 1-2.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, November 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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					
Nov. 1-5-7-10, 1952	452	--	--	2.9	0.7	5.4	1.8	20	2.0	4.5	--	1.2	--	38	0.05	46	10	0	49	0.7	50.5	7.3	7.3
Nov. 11-20	408	8.1	0.00	5.0	.9	5.8	1.1	23	2.0	6.5	0.0	.4	0.14	40	.05	44	16	0	42	.6	69.9	7.1	7.1
Nov. 21-28	254	--	--	5.7	1.4	6.1	1.2	28	2.6	6.2	--	.2	--	46	.06	32	20	0	38	.6	67.3	7.0	7.0
Dec. 16-23	147	--	--	14	4.2	12	2.7	72	6.7	9.2	--	2.0	--	115	.46	46	52	0	32	.7	164	7.3	7.3
Jan. 3-10, 1953	150	--	--	13	4.4	11	3.2	72	6.9	9.5	--	2.2	--	117	.46	47	51	0	30	.7	169	7.2	7.2
Jan. 11-13	152	--	--	14	4.5	11	2.8	71	7.6	9.8	--	1.4	--	116	.46	48	53	0	30	.7	161	7.6	7.6
Jan. 14-20	147	--	--	6.0	1.7	6.9	1.5	30	2.8	7.0	--	1.3	--	96	.08	22	22	0	39	.6	77.1	6.5	6.5
Jan. 21-31	236	6.2	.00	5.7	1.4	7.4	1.4	29	3.0	6.0	.2	1.5	.14	56	.08	36	20	0	43	.7	77.3	6.8	6.8
Feb. 1-10	418	5.5	.00	5.6	1.2	6.1	.9	26	1.7	5.8	.1	.3	.11	45	.06	51	19	0	40	.6	60.4	6.9	6.9
Feb. 11-20	602	13	.02	6.0	1.3	4.7	1.2	26	2.3	6.5	.0	1.0	.13	48	.07	78	20	0	32	.4	63.3	6.9	6.9
Feb. 21-28	813	12	.15	5.2	1.4	6.1	1.5	26	3.1	6.8	.0	1.0	.12	48	.07	105	19	0	39	.6	63.5	7.0	7.0
Mar. 1-6, 10	893	--	--	5.5	1.4	6.1	1.6	24	3.9	6.8	--	--	--	52	.07	125	19	0	38	.6	69.6	6.8	6.8
Mar. 9	883	--	--	--	--	8.2	2.4	28	--	20	--	--	--	57	.07	122	22	0	35	--	102	5.6	5.6
Mar. 11-20	885	12	.10	6.9	1.2	6.1	1.7	21	2.5	9.0	.0	.4	.11	51	.07	122	22	0	35	.6	69.5	6.9	6.9
Mar. 21-31	884	11	.2	6.0	1.7	8.2	3.2	22	2.6	12	.1	9.4	.00	87	.00	160	22	4	41	.8	94.3	6.2	6.2
May 15-20	366	--	--	5.4	1.6	6.9	1.4	28	2.4	7.5	--	.6	--	51	.07	53	20	0	41	.7	66.1	7.0	7.0
May 21-31	397	15	.0	5.0	1.1	7.4	1.3	27	1.9	6.5	.1	.4	.11	49	.07	53	17	0	46	.8	68.5	6.8	6.8
June 1-10	395	13	.0	5.0	1.3	6.1	1.0	26	2.0	5.5	.1	.3	.12	48	.07	51	18	0	41	.6	64.5	7.1	7.1
June 11-20	367	14	.0	5.0	1.3	6.9	1.2	28	2.2	5.8	.0	.3	.01	48	.07	48	18	0	44	.7	65.3	7.0	7.0
June 21-30	332	14	.0	5.2	1.0	6.9	1.1	27	2.5	6.2	.1	.4	.05	48	.07	43	17	0	45	.7	67.0	7.0	7.0
July 1-10	201	7.7	.0	5.8	1.6	8.2	1.1	34	1.9	7.2	.1	.6	.19	54	.07	29	21	0	44	.8	80.7	7.0	7.0
July 11-20	147	4.1	.0	5.8	1.6	8.7	1.2	37	2.3	6.2	.1	.2	.14	53	.07	21	21	0	46	.8	79.8	7.4	7.4
July 21-31	127	8.0	.0	6.6	1.4	8.7	1.0	39	2.5	6.0	.0	.3	.06	54	.07	19	22	0	45	.8	87.8	7.4	7.4

Aug. 1-10, 1953	132	9.0	.0	6.4	1.7	7.8	1.0	39	2.9	5.5	.0	.2	.08	54	.07	19	23	0	41	.7	78.6	7.6
Aug. 11-20	187	8.7	.0	5.9	1.5	7.4	1.0	34	2.4	6.0	.0	.9	.10	53	.07	24	21	0	42	.7	77.7	7.3
Aug. 21-31	450	11	.00	4.6	1.6	4.5	.7	24	2.1	5.0	.1	.9	.06	43	.06	52	18	0	34	.5	58.8	7.1
Sept. 1-10	680	10	.00	4.2	1.1	4.8	.7	23	1.8	4.2	.1	.5	.10	37	.05	69	15	0	40	.5	53.2	7.1
Sept. 11-20	728	10	.02	4.2	1.1	4.5	1.1	22	2.5	4.0	.1	1.1	.14	41	.06	81	15	0	37	.5	49.9	6.8
Sept. 21-30	1,057	8.6	.04	3.0	1.6	3.8	1.2	20	2.0	3.5	.1	.7	.18	38	.05	108	14	0	35	.4	45.8	6.7
Weighted average ^a	443	--	--	b 5.3	b 1.4	6.1	1.4	26	b 2.5	6.6	--	b 1.4	--	b 49	b 0.07	b 58	19	b 0	b 39	b 0.6	68.2	--

^a Represents 68 percent of runoff for water year October 1952 to September 1953.

^b Represents 67 percent of runoff for water year October 1952 to September 1953.

PACIFIC SLOPE BASINS IN CALIFORNIA

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR BIOLA, CALIF.--Continued

Temperature (°F) of water, November 1952 to September 1953

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

SAN JOAQUIN RIVER BASIN--Continued
SAN JOAQUIN RIVER AT FIREBAUGH, CALIF.

LOCATION --At county road bridge at Firebaugh, Fresno County, approximately 9 miles downstream from Mendota Pool.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to January 1953.

Water temperatures: October 1952 to January 1953.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance and water temperatures of daily samples available in district office, Sacramento, Calif. No discharge records available for this station. Many diversions between sampling site and nearest gaging station.

Chemical analyses, in parts per million, October 1952 to May 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-magnesium				
Oct. 1-10, 1952.....		15	0.00	28	14	55	3.7	117		47	77	0.2	1.1	0.34	314	0.43		128	32	48	2.1	529	7.5
Oct. 11-16.....		--	--	24	11	48	2.4	96		37	68	--	.8	--	260	.35		105	28	49	2.0	449	7.3
Oct. 17-18.....		--	--	--	--	--	2.4	31		14	18	--	.6	--	82	--		--	--	--	--	124	7.5
Oct. 19-20.....		--	--	--	--	--	--	27		8.2	9.2	--	1.0	--	62	--		--	--	--	--	88.2	6.9
Oct. 21-31.....	10	.00	5.5	5.5	1.5	6.1	1.6	21		4.4	8.5	.0	1.3	.09	50	.07		20	3	38	.6	71.4	6.8
Nov. 1-4.....	--	--	8.6	2.0	7.8	1.1	29		3.4	6.5	--	--	.2	--	52	.07		30	6	35	.6	70.7	7.3
Nov. 5-6.....	--	--	--	--	--	--	--	38		13	8.5	--	1.0	--	70	.07		--	--	--	--	103	7.5
Nov. 7-10.....	--	--	14	3.5	14	2.5	46		13	11	--	--	.6	--	90	.12		49	12	37	.9	134	7.2
Nov. 11-15.....	--	--	9.4	2.4	6.8	1.4	4		5.4	7.8	--	--	31	--	87	.12		33	30	30	.5	88.6	5.2
Nov. 16-17.....	--	--	--	--	--	3.6	1.1	26		--	4.8	--	--	--	--	--		--	--	--	--	57.4	6.5
Dec. 17-19.....	--	--	23	9.8	46	2.7	61		51	66	--	--	1.0	--	257	.35		98	48	50	2.0	458	7.1
Dec. 20.....	--	--	--	--	16	1.7	28		--	36	--	--	--	--	--	--		43	--	--	--	188	6.0
Dec. 23-25.....	--	--	24	11	57	3.2	80		69	68	--	--	2.1	--	296	.40		105	40	53	2.4	499	7.2
Dec. 26.....	--	--	--	--	34	3.7	27		--	61	--	--	--	--	--	--		68	--	--	--	331	6.4
Dec. 27-31.....	--	--	15	5.0	23	2.3	58		26	25	--	--	1.0	--	140	.19		58	10	45	1.3	230	7.2
Jan. 1-2, 1953.....	--	--	16	5.0	16	2.3	60		15	18	--	--	1.2	--	120	.16		60	11	35	.9	183	7.4
Jan. 3.....	--	--	--	--	5.8	1.9	39		--	6.5	--	--	--	--	--	--		26	--	--	--	87.4	6.6
Jan. 13-18.....	--	--	14	4.2	14	2.7	63		12	15	--	--	2.0	--	114	.16		52	1	35	.8	184	7.4
Jan. 19-20.....	--	--	28	8.1	41	3.0	92		35	49	--	--	2.0	--	230	.31		103	28	45	1.7	380	7.7
Jan. 21-28.....	--	--	14	4.9	21	2.6	68		19	22	--	--	1.6	--	141	.19		55	0	44	1.2	222	7.4
Jan. 29-30.....	--	--	76	47	310	4.3	125		670	165	--	--	5.2	--	1,400	1.90		383	280	63	6.9	970	7.6
Jan. 31.....	--	--	--	--	46	4.3	77		--	33	--	--	--	--	--	--		84	--	--	--	418	7.3
May 15.....	--	--	16	6.2	28	1.8	65		--	36	--	--	--	--	--	--		65	12	47	1.5	270	7.2

SAN JOAQUIN RIVER BASIN--Continued
MERCED RIVER NEAR STEVINSON, CALIF.

LOCATION.--At gage 6 miles northwest of Stevinson, Merced County, and 5 miles upstream from mouth.
DRAINAGE AREA.--1,274 square miles.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sod- ium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃	Per- cent sod- ium	So- dium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25° C)	pH	Col- or
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mag- nesium	Non- carbon- ate				
Oct. 17, 1952	243	19	0.00	28	11	8.4	0.8	118	22	10	0.0	0.0	0.14	157	0.21		115	18	14	257		8.1
Oct. 31, 1952	157	--	--	18	4.9	28	2.3	118	--	13	--	--	.16	--	--		65	0	47	250		7.9
Jan. 15, 1953	1,310	--	--	11	5.0	7.8	1.0	56	--	6.5	--	--	--	--	--		48	2	26	123		7.5
Feb. 12	257	--	--	18	6.9	25	1.8	108	--	14	--	--	--	--	--		73	0	42	239		8.1
Mar. 19	196	--	--	17	5.2	26	--	101	--	16	--	--	.18	--	--		64	0	47	233		7.9
Apr. 22	178	--	--	19	6.1	27	--	113	--	22	--	--	.01	--	--		72	0	45	265		7.5
May 7	166	30	.0	19	5.6	28	2.0	114	8.5	20	.2	2.6	.02	172	.23		70	0	45	287		8.1
May 15	183	--	--	15	5.0	20	1.9	98	--	10	--	--	--	--	--		58	0	42	201		7.5
Aug. 12	142	--	--	17	4.7	28	1.6	99	--	23	--	--	.02	--	--		62	0	49	222		7.5
Sept. 23	219	26	--	17	5.2	29	1.7	98	7.7	28	.1	.2	.01	164	.22		64	0	49	262		7.8

Chemical analyses, in parts per million, water year October 1952 to September 1953

SAN JOAQUIN RIVER BASIN--Continued
SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.

LOCATION --At gaging station in El Pescadero Grant, at Durham Ferry highway bridge, 3 miles downstream from Stanislaus River, and 3.4 miles northwest of Vernalis, San Joaquin County.

DRAINAGE AREA --14,010 square miles, approximately.

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

Water temperatures: March 1951 to September 1953.

EXTREMES, 1952-53 --Dissolved solids: Maximum, 578 ppm Apr. 1-10; minimum, 59 ppm June 21-23, 25-26.

Hardness: Maximum, 226 ppm Apr. 1-10; minimum, 24 ppm June 21-23, 25-26.

Specific conductance: Maximum daily, 1,070 micromhos Apr. 2; minimum daily, 60.0 micromhos June 21.

Water temperatures: Maximum, 77°F Sept. 27-29; minimum, 47°F Feb. 11.

EXTREMES, 1951-53 --Dissolved solids: Maximum, 578 ppm Apr. 1-10, 1953; minimum, 54 ppm June 1-10, 1952.

Hardness: Maximum, 226 ppm Apr. 1-10, 1953; minimum, 23 ppm June 1-10, 1952.

Specific conductance: Maximum daily, 1,070 micromhos Apr. 2, 1953; minimum daily, 60.0 micromhos June 21, 1953.

Water temperatures: Maximum, 78°F July 19, 1951; minimum, 36°F Jan. 10, 1952.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Per- cent so- dium ad- sorpti- on ratio	Specific conductance (micro-mhos at 25° C)	Col- or pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Oct. 1-9, 1952 . . .	1,583	--	--	37	17	69	4.2	148	43	103	--	2.4	0.34	391	0.53	1,670	162	41	47	2.4	648	7.6
Oct. 10-20 . . .	2,134	25	0.00	27	12	53	3.1	113	37	72	0.1	1.8	.20	291	.40	1,680	117	24	49	2.1	495	7.6
Oct. 21-31 . . .	1,850	20	0.00	29	13	64	3.5	119	41	83	2	2.4	1.4	b315	.43	1,570	126	28	52	2.5	549	7.6
Oct. 21-31 . . .	1,829	22	0.00	31	15	65	3.6	120	48	100	1	1.6	2.3	380	.52	1,880	139	40	50	2.4	608	7.7
Nov. 1-10 . . .	1,705	24	0.00	33	16	67	3.9	117	48	101	1	1.0	3.0	359	.49	1,650	148	52	49	2.4	618	7.4
Nov. 11-17 . . .	1,907	--	--	31	14	62	2.9	110	45	91	--	1.3	--	335	.46	1,720	135	45	49	2.3	562	7.5
Nov. 18-20 . . .	2,567	--	--	28	10	43	3.0	83	31	66	--	1.2	--	242	.33	1,680	111	43	45	1.8	413	7.2
Nov. 21-29 . . .	2,729	23	0.00	20	9.2	34	2.7	75	28	56	0	0.9	2.2	213	.29	1,570	88	26	45	1.6	363	7.2
Nov. 30-Dec. 10 . .	2,845	18	0.00	21	10	40	2.6	78	32	60	0	1.3	1.8	229	.31	1,760	94	30	47	1.8	394	7.2
Dec. 11-20	3,493	22	0.00	20	9.0	35	2.5	78	29	48	0	1.2	1.9	202	.27	1,910	87	23	44	1.5	346	7.3
Dec. 21-31	4,543	17	0.00	16	7.2	28	2.2	65	22	36	0	1.2	1.7	157	.21	1,930	70	16	44	1.4	267	7.2
Jan. 1-10, 1953 . .	5,550	14	0.00	17	7.7	28	2.4	74	22	35	0	1.2	1.7	171	.23	2,560	74	13	44	1.4	281	7.3
Jan. 11-20	6,044	15	.05	17	7.9	25	2.2	75	21	34	1	1.9	1.9	169	.23	2,760	75	13	41	1.3	279	7.0
Jan. 20-30	6,740	--	--	16	6.1	22	1.7	72	--	27	--	--	--	--	--	--	65	6	42	1.2	237	7.9
Jan. 31-30	6,221	12	0.00	16	7.7	25	2.1	69	22	34	1	1.6	1.9	168	.23	2,820	72	15	42	1.3	273	7.1
Feb. 1-10	5,196	12	0.00	19	8.4	30	1.9	70	25	48	1	1.1	1.2	193	.26	2,710	82	25	44	1.4	327	7.0
Feb. 11-13, 20 . . .	3,555	--	--	25	12	44	2.4	82	40	68	--	1.3	--	263	.36	2,520	112	45	45	1.8	445	7.2
Feb. 13 a	3,440	--	--	25	16	52	2.0	98	--	70	--	--	--	--	--	--	128	48	46	2.0	488	7.6
Feb. 14-19	2,733	--	--	32	15	62	3.7	88	54	108	--	4	--	366	.50	2,700	142	70	49	2.3	615	6.6
Feb. 21-28	2,535	13	0.00	23	11	49	2.3	79	40	71	0	0.9	2.3	257	.35	1,760	103	38	50	2.1	444	7.3

a Not included in weighted average.

b Sum of determined constituents.

SAN JOAQUIN RIVER BASIN--Continued
SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color or pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Mar. 1-6, 1953	1,453	17	0.20	35	16	72	3.2	108	60	108	0.0	1.3	0.38	387	0.53	1,520	154	65	50	2.5	648	7.5
Mar. 7-10	934	--	--	49	22	98	4.0	138	70	166	--	6.4	--	558	0.76	1,410	213	100	49	2.9	891	7.7
Mar. 11-20	1,172	30	0.00	46	21	100	4.3	142	74	158	0	4.4	.36	507	.69	1,600	202	85	51	3.1	854	7.7
Mar. 12	1,120	--	--	45	19	79	--	138	--	153	--	--	.20	--	--	--	190	78	47	2.5	845	7.5
Mar. 21-31	1,078	33	0.00	46	20	94	5.1	146	62	153	.1	3.9	.33	539	.73	1,570	197	78	50	2.9	842	7.5
Apr. 1-10	704	40	0.00	53	23	100	5.7	160	55	185	.1	2.7	.31	578	.79	1,100	226	96	48	2.9	942	7.6
Apr. 11-20	910	30	.1	41	17	79	4.4	140	44	129	.2	2.5	.19	451	.61	1,110	172	58	49	2.6	727	7.2
Apr. 16	812	--	--	43	18	81	--	146	--	140	--	--	.20	--	--	--	182	62	49	2.6	779	7.6
Apr. 21-22, 25-26, 28	1,858	27	0	37	16	75	4.6	130	41	119	.1	1.8	.17	401	.55	2,010	158	52	50	2.6	676	7.4
Apr. 23-24, 27	1,487	--	--	27	9.0	47	3.3	91	28	72	--	1.7	--	281	.35	1,050	104	30	48	2.0	445	7.2
Apr. 29-30	7,855	--	--	12	3.8	16	2.1	50	9.1	24	--	1.1	--	112	.15	2,380	46	5	42	1.0	177	7.1
May 1-10	4,752	12	0	14	5.9	23	1.8	58	14	34	0	1.5	.06	139	.19	1,780	59	12	45	1.3	232	7.1
May 7	4,010	14	0	13	5.2	20	1.5	54	15	29	.1	.5	.01	125	.17	1,350	54	10	44	1.2	210	7.7
May 11-12	2,955	--	--	19	7.8	34	2.1	70	22	52	--	.7	--	199	.27	1,590	79	22	47	1.7	333	7.2
May 13, 18-20	1,928	--	--	27	10	50	2.6	92	31	78	--	.9	--	275	.37	1,430	108	33	49	2.1	470	7.2
May 14-17	1,482	--	--	38	15	68	3.4	127	42	107	--	1.2	--	380	.52	1,520	156	52	48	2.4	634	7.4
May 15	1,400	--	--	38	16	71	3.4	136	--	113	--	--	--	--	--	--	161	50	48	2.4	673	7.4
May 21, 24-31	2,410	14	0	24	11	44	2.7	96	27	64	.1	1.3	.10	245	.33	1,590	105	26	47	1.9	416	7.4
May 22-23	3,040	--	--	17	6.0	29	1.9	64	18	43	--	.8	--	165	.22	1,350	67	15	48	1.5	285	7.5
June 1-10	3,869	21	0	16	5.7	28	1.9	63	17	38	.2	.5	.23	155	.21	1,620	63	12	48	1.5	261	7.1
June 11-20	4,481	12	0	13	5.3	22	1.7	51	13	33	.1	.3	.14	130	.18	1,570	54	12	46	1.3	219	6.9
June 21-23, 25-26	8,324	--	--	5	6.8	7	1.0	27	3.8	10	--	.9	--	59	.08	1,330	24	2	39	1.7	82	7.0
June 24, 27-30	4,462	--	--	10	4.4	17	1.2	44	13	24	--	.9	--	105	.14	1,270	43	7	45	1.1	171	7.1
July 1, 6-8, 10	2,708	--	--	14	5.7	22	1.6	56	13	31	--	1.3	--	131	.18	958	58	12	44	1.3	218	7.2
July 2-5, 9	3,378	--	--	9	6.6	4	1.5	1.3	43	8.4	--	.9	--	97	.13	885	42	7	43	1.0	159	7.2
July 11-12	1,960	--	--	16	6.2	26	1.7	65	13	38	--	1.2	--	160	.22	847	65	12	46	1.4	260	7.3
July 13-14	1,420	--	--	38	8.9	38	2.2	81	20	61	--	1.1	--	226	.31	867	92	25	47	1.7	373	7.7
July 15-20	860	--	--	22	16	65	3.9	130	3.1	115	--	1.4	--	395	.54	917	161	54	46	2.2	573	8.0
July 21-31	671	28	0	43	19	79	4.4	149	36	140	.2	.6	.28	467	.64	846	186	64	47	2.5	756	7.9

^a Not included in weighted average.

^b Sum of determined constituents.

Aug. 1-10, 1953 ...	734	28	.0	43	18	77	4.1	144	41	131	.1	1.4	.21	460	.63	912	182	64	47	2.5	730	7.5
Aug. 11-20	689	34	.05	44	18	83	4.2	149	41	136	.2	1.2	.23	472	.64	878	184	62	49	2.7	756	7.5
Aug. 13 a	665	--	--	46	18	83	3.8	156	--	142	--	--	.10	--	--	--	169	61	48	2.6	778	7.4
Aug. 21-31	814	29	.00	40	17	81	4.1	144	44	127	.2	1.6	.23	450	.61	989	170	52	50	2.7	723	7.4
Sept. 1-10	952	30	.00	41	17	79	4.2	148	46	123	.2	1.8	.24	432	.59	1,110	172	51	49	2.6	712	7.6
Sept. 11 a	888	36	--	47	17	94	4.6	168	62	142	.2	3.5	.00	b489	.67	1,190	188	50	51	3.0	810	8.3
Sept. 11-20	998	28	.00	41	18	83	4.2	156	48	127	.2	1.8	.23	446	.61	1,200	176	48	50	2.7	741	7.6
Sept. 21-30	1,328	31	.00	35	15	71	4.0	150	38	100	.1	2.3	.14	373	.51	1,340	149	26	50	2.5	694	7.5
Weighted average ^c	2,612	d18	d0.01	22	9.6	39	2.5	82	27	59	d0.1	1.4	e0.19	229	0.31	1,610	94	28	47	1.7	381	--

a Not included in weighted average.

b Sum of determined constituents.

c Represents 100 percent of runoff for water year October 1952 to September 1953.

d Represents 75 percent of runoff for water year October 1952 to September 1953.

e Represents 76 percent of runoff for water year October 1952 to September 1953.

PACIFIC SLOPE BASINS IN CALIFORNIA

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement at 7:30 a.m./

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

SAN JOAQUIN RIVER BASIN--Continued
MOKELDNE RIVER AT WOODBRIDGE, CALIF.

LOCATION.--At dam of Woodbridge Irrigation District, San Joaquin County, 0.4 mile upstream from gaging station at Woodbridge.
DRAINAGE AREA.--644 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1953.

Water temperatures: March 1951 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 68 ppm Dec. 12, 15; minimum, 31 ppm Nov. 21-30, Sept. 21-30.

Hardness: Maximum, 34 ppm Feb. 1, 3, 5, Mar. 3; minimum, 13 ppm Nov. 21-30.

Specific conductance: Maximum daily, 202 micromhos Dec. 15; minimum daily, 35.1 micromhos Sept. 13.

Water temperatures: Maximum, 70°F July 16, 20, 27-28, Sept. 14; minimum, 43°F Jan. 4, 30, Feb. 21.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 68 ppm Dec. 12, 15, 1952; minimum, 30 ppm June 1-10, 11-20, 21-30, July 1-10, 11-20, 1952.

Hardness: Maximum, 34 ppm Feb. 1, 3, 5, Mar. 3, 1953; minimum, 12 ppm June 1-10, 1952.

Specific conductance: Maximum daily, 202 micromhos Dec. 15, 1952; minimum daily, 29.4 micromhos July 9, 1952.

Water temperatures: Maximum, 83°F July 17, 1951; minimum, 40°F Feb. 21, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953.

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Coliform	
														Parts per million	Tons per acre-foot	Tons per day	Calcium					Non-carbonate magnesium
Oct. 1-10, 1952	334	7.4	0.10	4.0	1.5	3.6	1.0	20	3.5	2.8	0.1	0.0	0.17	40	0.05	36	16	0	20	41.4	6.9	
Oct. 11-20	332	6.3	1.0	4.2	1.4	3.1	.8	20	4.4	2.0	.1	.3	.07	38	.05	34	16	0	28	42.7	7.0	
Oct. 21-31	355	7.1	1.0	4.4	1.5	3.4	1.1	21	3.8	2.2	.1	.0	.08	38	.05	36	17	0	29	47.5	7.1	
Nov. 1-10	431	8.1	.00	6.2	1.4	2.8	1.3	15	5.0	6.8	.0	.5	.14	39	.05	45	21	9	21	54.6	6.5	
Nov. 11-20	560	9.5	.00	5.1	1.1	3.2	1.3	15	4.4	7.0	.0	.5	.11	35	.05	53	17	5	27	51.4	6.6	
Nov. 21-30	592			3.6	.9	3.1	.8	18	2.7	4.2		.3		31	.04	50	13	0	33	43.9	7.3	
Dec. 1-4, 6-8, 10	587			3.7	1.2	3.2	1.3	14	3.8	7.0		.5		40	.05	63	14	3	30	52.3	7.2	
Dec. 5, 9	611			5.0	2.0	3.8	2.1	6	6.6	14		.7		48	.07	79	21	16	26	77.2	6.5	
Dec. 11, 20	708			6.0	2.3	4.1	3.3	4	11	13		1.4		64	.09	122	24	21	24	89.8	5.6	
Dec. 12, 15	526			5.8	2.0	3.8	1.8	0	7.6	24		.6		68	.09	96	33	33	19	128	6.7	
Dec. 13-14, 16-19	614			4.8	1.5	3.4	1.6	20	9.5	3.8		.6		57	.08	94	18	2	27	56.4	6.6	
Dec. 21	425					2.2	2.9	8		22						26				100	5.8	
Dec. 22-23	404			6.8	3.1	1.6	1.3	19	13	3.5		.3		54	.07	59	30	14	10	87.9	6.8	
Dec. 24-31	584			5.0	1.7	3.1	.9	20	5.0	3.8		.0		39	.05	61	20	3	25	48.8	6.7	
Jan. 1-10, 1953	615	7.8	2.0	5.7	1.9	2.0	1.2	21	6.3	3.5	.0	.4	.09	42	.06	70	22	5	16	53.9	7.0	
Jan. 11-20	747	6.2	2.0	6.0	1.9	3.4	1.0	21	6.5	5.0	.0	.9	.18	47	.06	95	23	6	24	72.5	6.8	
Jan. 21-31	1,287	9.2	.05	6.5	1.5	3.4	1.1	23	4.1	4.5	1	.4	.11	45	.06	154	24	4	24	57.0	6.9	
Feb. 1, 3, 5	630					2.0	1.3	23		6.5							32			84.4	6.7	
Feb. 2, 4, 6-10	604			6.8	1.9	3.8	.9	22	4.9	7.5		.3		50	.07	82	25	7	24	64.1	6.7	
Feb. 11-20	648	5.3	.05	5.5	1.5	3.1	1.2	23	4.1	4.2	.0	.3	.13	40	.05	70	20	1	24	52.5	7.0	
Feb. 21	631					2.6	1.1	12		14							29			106	5.8	
Feb. 22-28	457	6.0	.15	5.7	1.5	3.4	1.1	22	4.7	5.2	.0	.0	.11	43	.06	53	20	2	25	53.9	6.7	

a Includes 10 parts per million free mineral acidity as H₂SO₄.

SAN JOAQUIN RIVER BASIN--Continued

MOKELMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (Residue at 180°C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Mar. 1-2, 4-10, 1953	370	5.8	0.10	5.7	1.3	3.8	1.0	23	4.6	4.2	0.0	0.0	0.14	41	0.06	41	20	1	28	0.4	53.9	7.0
Mar. 3	390	--	--	--	--	4.5	1.0	23	--	11	--	--	--	--	--	--	34	--	--	--	141	6.9
Mar. 11-20	380	16	10	6.0	1.8	4.0	1.0	23	5.5	4.5	0	0.6	0.08	41	0.06	42	22	4	27	0.4	55.7	7.3
Mar. 21-31	370	12	05	6.1	1.6	3.4	0.8	23	4.7	4.5	0	0.2	0.14	42	0.06	42	22	3	25	0.3	55.4	7.0
Apr. 1-10	223	13	05	6.5	1.7	3.4	0.9	24	4.0	5.5	1	0.2	0.12	41	0.06	25	23	4	23	0.3	54.8	7.3
Apr. 11-20	194	10	0	5.2	1.7	3.4	0.8	24	3.5	3.8	0	0.8	0.05	40	0.05	21	20	0	26	0.3	53.6	6.9
Apr. 21-30	232	9.4	0	5.6	2.2	3.4	0.8	23	4.7	5.2	0	0.4	0.06	42	0.06	26	23	4	24	0.3	64.7	6.9
May 1-10	285	11	0	4.9	1.9	3.8	1.0	24	4.5	3.8	0	0.4	0.05	42	0.06	32	20	0	28	0.4	60.1	6.9
May 11-20	328	9.9	0	5.6	1.5	3.4	1.1	25	3.4	4.0	0	0.2	0.07	39	0.05	35	20	0	26	0.3	52.2	7.2
May 21-31	855	15	0	5.0	1.6	3.4	0.8	23	2.8	4.0	0	0	0.11	42	0.06	97	19	0	27	0.3	52.4	6.9
June 1-10	1,214	16	0	4.8	1.5	3.1	0.9	24	2.6	3.2	0	0	0.09	40	0.05	131	18	0	26	0.3	50.1	7.0
June 11-20	1,333	8.4	0	4.8	1.5	2.8	0.8	21	2.4	4.2	0	0.4	0.06	39	0.05	140	18	1	24	0.3	47.7	6.9
June 21-30	1,619	8.1	0	4.4	1.2	2.8	0.8	22	1.9	2.5	0	0.5	0.02	36	0.05	157	16	0	26	0.3	42.3	6.8
July 1-10	556	9.1	0	4.4	1.5	2.8	0.8	21	1.8	3.5	0	0.2	0.04	37	0.05	56	17	0	25	0.3	43.3	7.1
July 11-20	82	0	4.4	1.2	3.4	0.8	22	1.8	3.0	3.8	0	0.1	0.06	45	0.06	14	16	0	30	0.4	58.9	7.0
July 21-31	46.5	12	0	4.6	1.6	2.6	0.9	21	2.6	3.8	0	0.4	0.04	37	0.05	4.6	18	1	23	0.3	58.9	7.0
Aug. 1-10	73.3	11	0	4.6	1.6	2.0	0.9	21	2.7	3.5	0	0	0.05	36	0.05	7.1	18	1	18	0.2	50.4	7.2
Aug. 11-20	77.0	8.9	0	4.6	1.6	2.0	0.8	20	3.4	3.2	0	0	0.04	36	0.05	7.5	18	2	19	0.2	44.2	7.1
Aug. 21-31	109	9.5	00	4.2	1.6	2.4	0.6	21	2.6	3.2	0	0.4	0.06	36	0.05	11	17	0	23	0.2	44.3	7.2
Sept. 1-2, 4, 8-10, 1953	144	--	--	4.2	1.6	2.4	0.5	19	3.1	3.2	--	--	--	37	0.05	14	17	2	23	0.2	42.9	7.1
Sept. 3, 5-7	186	--	--	3.8	1.6	2.4	0.6	19	3.8	2.2	--	0.6	--	36	0.05	18	16	1	24	0.2	39.2	7.4
Sept. 11-20	235	7.1	00	3.8	1.6	2.0	0.8	18	3.5	3.0	0.1	0.1	0.07	33	0.04	21	16	1	20	0.2	38.0	7.4
Sept. 21-30	253	9.0	03	3.4	1.3	2.2	0.8	17	2.8	1.5	0.1	0.3	0.14	31	0.04	21	14	0	24	0.3	38.3	6.7
Weighted average ^b	493	9.6	0.04	4.5	1.5	3.1	1.0	21	3.9	4.5	0.0	0.3	0.09	41	0.06	454	19	d ₂	d ₂₅	d _{0.3}	54.1	--

^b Represents 100 percent of runoff for water year October 1952 to September 1953.^c Represents 82 percent of runoff for water year October 1952 to September 1953.^d Represents 98 percent of runoff for water year October 1952 to September 1953.

SAN JOAQUIN RIVER BASIN--Continued

MOKELUMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 (Once-daily measurement at 6:30 a. m.)

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

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER AT ANTIOCH, CALIF.

LOCATION --At tidal gage at Antioch, Contra Costa County, and 4.5 miles from mouth.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gage maintained and operated by State of California Division of Water Resources.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂) (Fe)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (sum)	Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate				
Oct. 21, 1952.....	18	0.00	20	16	16	75	4.2	104	30	119	0.1	0.4	0.11	334	0.45	31	57	604	7.3
Jan. 22, 1953.....	--	--	19	9.2	22	22	1.9	64	--	33	--	--	--	85	33	35	280	7.4	--
Feb. 13.....	--	--	17	9.0	22	1.6	76	76	--	28	--	--	--	79	17	37	268	7.2	--
Mar. 11.....	15	.4	11	6.2	13	1.3	58	11	18	18	.1	.4	.09	53	5	34	172	7.1	--
Mar. 24.....	--	--	14	8.9	18	--	76	--	23	--	--	--	--	72	9	35	229	7.4	--
Apr. 13.....	--	--	13	6.8	15	--	67	--	18	--	--	--	--	60	6	35	195	7.0	--
Aug. 20.....	--	--	25	30	218	1.8	76	--	182	--	--	.00	--	186	124	72	1,320	7.1	--
Sept. 14.....	17	--	24	31	212	10	94	65	382	.1	2.5	.16	770	188	176	70	1,460	7.5	--
Sept. 15.....	19	--	21	109	6	7	96	11	184	.2	.9	.12	445	134	156	62	958	7.6	--
Sept. 16.....	18	--	18	12	40	2.5	106	22	96	.0	.5	.02	232	94	7	47	397	8.1	--
Sept. 17.....	20	--	18	11	41	2.7	107	23	50	.2	.5	.06	219	90	2	49	385	8.1	--

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Dissolved solids			Hardness as CaCO ₃	Per- cent so- dium car- bonate	So- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH
													Parts per mil- lion	Tons per acre- foot	Tons (sum)					
SAN JOAQUIN RIVER NEAR MENDOTA (SEC. 7, T. 13 S., R. 15 E.)																				
Oct. 17, 1952	88	8.0	0.00	4.2	0.9	4.3	0.6	21	2.2	3.4	0.0	0.4	0.02	34	0.05	14	0	38	47.1	7.1
Jan. 15, 1953	130	--	--	15	3.8	18	2.2	65	--	17	--	--	--	--	--	53	0	41	194	7.6
Feb. 11, 1953	46	--	--	6.0	2.2	9.2	1.0	36	--	5.8	--	--	--	--	--	24	0	44	78.3	7.2
Mar. 18, 1953	120	--	--	5.1	3.2	16.1	--	28	--	4.3	--	--	.12	--	--	18	0	42	62.1	7.4
Apr. 20, 1953	306	--	--	11	3.2	15	--	41	--	23	--	--	.06	--	--	41	7	45	168	7.2
May 6, 1953	303	14	0	20	8.7	40	2.4	79	33	56	.1	.5	.01	.214	.29	86	21	50	371	7.4
Aug. 12, 1953	310	--	--	18	8.8	27	1.8	78	--	35	--	--	.09	--	--	81	17	41	302	7.4
Sept. 23, 1953	213	7.0	.07	4.2	1.1	4.1	.8	22	2.1	3.5	.1	.2	.02	34	.05	15	0	36	47.2	7.3

SAN JOAQUIN RIVER NEAR MENDOTA (SEC. 7, T. 13 S., R. 15 E.)

SAN JOAQUIN RIVER NEAR DOS PALOS (SEC. 12, T. 11 S., R. 13 E.)

Oct. 17, 1952	7.5	15	0.00	23	8.5	43	2.5	98	29	54	0.0	0.2	0.12	224	0.30		92	12	49	398	7.4
Jan. 15, 1953	157	--	--	15	3.3	16	2.0	66	--	16	--	--	--	--	--		51	0	39	174	7.5
Feb. 11, 1953	59	--	--	9.9	4.0	15	1.4	50	--	12	--	--	--	--	--		41	0	43	153	7.4
Mar. 19, 1953	8	--	--	11	2.9	15	--	48	--	13	--	--	.05	--	--		39	0	45	145	7.7
Apr. 20, 1953	1.3	--	--	13	5.0	21	--	48	--	28	--	--	.08	--	--		53	14	46	217	7.2
May 7, 1953	2.5	12	0	20	6.5	30	1.7	73	28	38	0	.6	.13	173	.24		77	17	45	302	7.8
Aug. 12, 1953	1.2	--	--	21	6.2	28	1.6	78	--	32	--	--	.08	--	--		78	14	43	221	7.4
Sept. 23, 1953	7.4	11	.07	13	3.9	20	1.5	56	18	21	.1	.8	.08	177	.16		48	3	46	200	7.1

BEAR CREEK NEAR STEVINSON (SEC. 36, T. 7 S., R. 10 E.)

Oct. 17, 1952	164	18	0.00	22	8.0	28	3.3	149	8.2	12	0.3	1.2	0.05	174	0.24		88	0	40	282	7.4
Feb. 12, 1953	77	--	--	30	14	42	2.6	206	--	28	--	--	--	--	--		132	0	40	441	8.3
Apr. 22	54	--	--	22	6.7	33	--	149	--	18	--	--	.13	--	--		82	0	47	315	7.5
May 7	67	26	.1	25	9.3	48	3.0	185	20	26	.5	2.5	.04	251	.34		101	0	50	404	7.7
Aug. 12	9	--	--	26	13	106	2.5	212	--	90	--	--	.05	--	--		118	0	65	691	7.5
Sept. 23	94	27	--	20	8.2	31	2.4	150	9.9	12	.3	.7	.01	185	.25		84	0	44	286	7.7

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃	Per- cent sod- ium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	
														Parts per mil- lion	Tons per acre- foot day					Calcium, Non- mag- nesium	carbon- ate
MERCED RIVER AT EXCHEQUER DAM (SEC. 23, T. 4 S., R. 15 E.)																				
Oct. 14, 1952	75	3.7	0.00	7.2	1.9	3.1	0.6	32	1.7	1.4	0.0	0.5	0.03	36	0.05	26	0	20	60.3	7.2
Jan. 9	1,290	--	--	9.7	3.9	2.8	.9	39	--	2.2	--	--	--	--	--	40	8	13	78.1	7.5
Feb. 9	27	--	--	10	2.2	3.6	.7	44	--	2.8	--	--	--	--	--	34	0	18	86.7	7.5
Mar. 16	968	--	--	8.4	2.6	3.1	--	38	--	2.8	--	.02	--	--	--	32	0	18	77.8	7.3
Apr. 23	1,100	--	--	7.6	2.2	3.1	--	34	--	2.0	--	.01	--	--	--	28	0	19	87.4	7.2
May 8	1,280	8.4	.0	4.0	1.2	1.4	.6	19	2.0	1.5	.1	.0	.01	28	.04	15	0	16	35.2	7.1
Aug. 13	1,650	--	--	3.2	.5	2.0	.3	14	--	.5	--	--	.03	--	--	10	0	29	28.7	6.9
Sept. 24	1,210	11	--	6.7	2.0	1.9	.8	30	2.1	2.2	.0	.3	.00	42	.06	25	0	14	57.9	7.0
SAN JOAQUIN RIVER NEAR GRAYSON (SEC. 24, T. 4 S., R. 7 E.)																				
Oct. 21, 1952	675	27	0.00	44	25	123	3.2	182	116	153	0.2	2.4	0.23	584	0.79	213	64	55	988	7.7
Jan. 20, 1953	3,080	--	--	19	8.7	37	2.0	97	--	41	--	--	--	--	--	63	4	48	363	7.8
Feb. 13	1,040	--	--	47	26	129	3.1	173	--	170	--	--	--	--	--	224	82	55	1,060	7.8
Mar. 12	480	--	--	56	34	164	--	159	--	232	--	.56	--	--	--	280	149	56	1,360	8.1
Apr. 16	460	--	--	43	23	114	--	166	--	144	--	.24	--	--	--	202	66	55	942	7.8
May 7	600	23	.0	43	21	109	3.7	169	104	137	.2	2.3	.06	526	.72	194	58	54	895	8.1
Aug. 13	270	--	--	50	27	137	3.4	180	--	188	--	.23	--	--	--	236	58	55	1,110	8.1
Sept. 24	620	24	--	53	16	77	2.7	157	57	92	.2	.8	.16	380	.52	148	20	52	653	7.8
TUOLUMNE RIVER AT LA GRANGE (SEC. 20, T. 3 S., R. 14 E.)																				
Oct. 8, 1952	1,880	5.0	0.00	2.3	0.6	1.5	0.5	13	0.9	0.6	0.0	0.0	0.04	18	0.02	8	0	27	23.8	7.0
Oct. 14	1,460	5.3	.00	2.4	.7	2.4	1.0	14	1.5	2.0	.0	.8	.00	23	.03	9	0	34	32.5	6.7
Jan. 16, 1953	1,620	--	--	4.4	2.7	1.9	.6	28	--	2.0	--	--	--	--	--	22	0	15	52.7	7.0
Feb. 9	1,670	--	--	5.3	2.6	2.4	.7	30	--	1.8	--	--	--	--	--	24	0	17	57.9	7.3
Mar. 16	a 1,680	--	--	4.2	1.7	2.4	--	24	--	1.5	--	.01	--	--	--	18	0	23	46.7	7.2
Apr. 23	a 2,460	--	--	3.7	1.2	2.4	--	22	--	.5	--	.03	--	--	--	14	0	27	37.7	7.2
May 8	a 2,310	9.5	.0	3.2	1.0	1.5	.5	17	1.5	.5	.1	.4	.00	27	.04	12	0	20	35.6	7.3
Aug. 12	2,200	--	--	3.0	.1	1.2	.3	9	--	1.5	--	--	.02	--	--	8	1	24	20.2	6.5
Sept. 24	2,100	6.9	--	2.5	.9	1.1	.3	13	.7	1.0	.0	.1	.00	20	.03	10	0	19	25.0	6.7

a Mean daily discharge (cfs).

TUOLUMNE RIVER AT HICKMAN (SEC.34, T.3 S., R.11 E.)

Oct. 14, 1952	2,750	12	0.00	7.4	2.8	11	4.3	1.3	32	2.0	19	0.0	0.0	0.00	71	0.10		30	43	114	6.9
Jan. 16, 1953	1,650	--	--	6.7	3.9	5	6.3	.8	37	--	6	--	--	--	--	--	--	32	52	83.4	7.4
Feb. 9	1,350	--	--	7.7	3.1	52	6.3	.8	37	--	6	--	--	--	--	--	--	32	30	83.0	7.1
Mar. 12	325	--	--	30	1.1	52	1.1	--	87	--	108	--	--	.05	--	--	--	30	40	516	8.0
Apr. 23	358	--	--	29	8.8	46	--	--	87	--	98	--	--	.07	--	--	--	100	58	476	7.9
May 8	157	33	0	24	8.6	47	4.0	4.0	80	3.5	82	.1	.8	.06	253	.34	--	30	51	443	7.5
Aug. 13	164	--	--	30	8.0	53	5.2	4.0	100	--	106	--	--	.06	--	--	--	192	49	517	7.8
Sept. 24	100	50	--	30	12	55	5.1	5.1	105	3.2	112	.1	.3	.06	319	.43	--	124	38	539	8.2

TUOLUMNE RIVER AT TUOLUMNE CITY (SEC.7, T.4 S., R.8 E.)

Oct. 21, 1952	a 901	33	0.00	16	4.8	24	2.1	104	6.7	11	0.1	3.4	0.22	152	0.21		60	0	46	7.5
Jan. 20, 1953	a 2,130	--	--	15	3.5	16	1.7	50	--	31	--	--	--	--	--	--	52	16	44	7.3
Feb. 13	1,550	--	--	17	5.7	25	1.9	61	--	45	--	--	--	--	--	--	66	44	259	7.3
Mar. 12	a 375	--	--	43	14	76	--	--	126	--	156	--	.09	--	--	--	165	62	50	730
Apr. 16	a 295	--	--	48	14	80	--	--	142	--	162	--	.13	--	--	--	178	61	50	780
May 7	524	22	0	31	9.4	55	3.9	96	7.8	107	.1	3.0	.07	286	.39	--	116	37	50	532
Aug. 13	a 352	--	--	47	13	81	5.5	154	--	152	--	--	.04	--	--	--	171	45	50	744
Sept. 24	a 364	40	--	41	15	71	5.3	145	7.6	136	.2	.8	.08	388	.53	--	164	45	47	680
																				7.5

SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE (SEC. 29, T.3 S., R.7 E.)

Oct. 21, 1952	1,125	18	0.00	31	13	64	3.2	119	48	95	0.2	1.8	0.16	333	0.45	131	34	51	604	7.7	
Jan. 20, 1953	4,650	--	--	17	6.4	29	2.3	75	--	35	--	--	--	--	--	--	--	69	47	275	7.5
Feb. 13	2,100	--	--	29	14	65	2.3	108	--	90	--	--	--	--	--	--	--	130	52	585	8.0
Mar. 12	600	--	--	55	26	132	--	154	--	215	--	--	.36	--	--	--	--	244	118	1,130	--
Apr. 16	645	--	--	49	22	109	--	171	--	177	--	--	.32	--	--	--	--	213	73	960	7.5
May 7	1,540	22	0	35	15	72	3.2	124	53	110	.1	2.0	.01	373	.51	149	48	51	657	8.1	
Aug. 13	500	--	--	55	18	97	4.7	162	--	176	--	--	.08	--	--	211	78	49	917	7.6	
Sept. 25	1,000	30	.03	40	16	82	4.0	156	47	122	.2	2.0	.17	420	.57	166	38	51	720	7.5	

a Mean daily discharge (cfs).

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	Potas-sium (Na)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent ad-sorp-tion ratio	Specific conduct-ance (micro-mhos at 25° C)
													Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbon-ate		

STANISLAUS RIVER AT MOUTH (SEC. 17, T. 3 S., R. 7 E.)

Oct. 21, 1952	a 179	25	0.00	22	9.0	14	2.1	125	8.2	8.5	0.0	2.1	0.08	152	0.21	92	0	24	239
Jan. 20, 1953	a 1,670		--	12	6.7	5.0	1.3	64	3.2	3.2	--	--	--	--	--	56	5	16	127
Feb. 13	608		--	16	3.5	10	1.4	85	5.0	5.0	--	--	--	--	--	54	0	28	165
Mar. 12	a 289		--	18	6.8	10	--	102	8.0	8.0	--	--	.07	--	--	73	0	23	206
Apr. 16	a 380		--	21	7.5	12	--	115	7.2	7.2	--	--	.02	--	--	53	0	24	222
May 7	1,647	13	.0	25	2.3	2.6	.8	30	3.0	1.5	.1	1.4	.01	45	0.06	84	0	18	7.2
Aug. 14	a 152		--	25	10	19	2.4	446	--	1.1	--	--	.03	--	--	104	0	28	286
Sept. 25	a 150	33	.06	23	9.6	14	2.3	129	8.9	9.2	.1	2.0	.02	166	.23	97	0	23	244

SAN JOAQUIN RIVER AT MOSSDALE BRIDGE (SEC. 4, T. 2 S., R. 6 E.)

Oct. 24, 1952		25	0.00	35	15	78	3.3	124	45	124	0.1	1.6	0.13	388	0.53	149	48	53	632
Jan. 20, 1953			--	9.1	9.1	21	7	70	--	26	--	--	--	--	--	60	3	43	231
Feb. 18			--	35	12	67	2.4	112	--	99	--	--	--	--	--	137	45	51	604
Mar. 12			--	56	21	104	--	155	--	172	--	--	.40	--	--	226	99	50	931
Apr. 17			--	45	18	86	--	154	--	142	--	--	.14	--	--	186	60	50	806
May 13		19	.1	23	9.8	43	2.4	88	29	66	.1	.8	.10	236	.32	98	26	48	416
Aug. 18			--	46	19	86	4.1	162	--	138	--	--	.12	--	--	193	60	49	786
Sept. 17		28	--	41	18	85	3.8	163	45	130	.1	1.1	.13	432	.59	176	43	50	754

SAN JOAQUIN RIVER AT GARWOOD BRIDGE (SEC. 16, T. 1 N., R. 6 E.)

Oct. 24, 1952		23	0.00	30	11	56	3.3	129	33	79	0.1	2.7	0.01	302	0.41	120	14	49	533
Jan. 20, 1953			--	16	4.9	20	1.5	72	--	24	--	--	--	--	--	60	1	41	217
Feb. 18			--	33	15	74	2.7	126	--	100	--	--	--	--	--	144	41	52	635
Mar. 12			--	35	14	67	--	125	--	103	--	--	.24	--	--	145	42	50	630
Apr. 17			--	40	16	73	--	164	--	109	--	--	.16	--	--	166	32	49	703
May 13		15	.0	18	6.8	32	2.0	72	18	46	.1	1.1	.02	174	.24	73	14	24	303
Aug. 18			--	31	12	65	4.8	178	--	72	--	--	.11	--	--	127	0	52	543
Sept. 17		16	--	18	11	29	1.8	94	26	38	.2	.4	.11	187	.25	90	13	41	323

a Mean daily discharge (cfs).

CALAVERAS RIVER NEAR JENNY LIND (SEC. 27, T. 3 N., R. 10 E.)

Oct. 23, 1952	25	15	0.00	25	9.7	7.4	1.6	123	7.7	6.5	0.0	0.5	0.06	134	0.18	102	2	13	224	7.7
Jan. 22, 1953	719	--	--	15	6.1	5.0	1.1	71	--	4.0	--	--	--	--	--	63	4	15	145	7.5
Feb. 16	84	--	--	22	8.8	6.9	1.0	107	--	5.5	--	--	--	--	--	91	3	14	214	7.4
Mar. 23	18	--	--	39	13	12	--	163	--	14	--	--	--	--	--	151	17	15	332	8.0
Apr. 15	10	--	--	24	10	9.2	--	118	--	6.8	--	--	--	--	--	101	4	17	232	7.5
May 12	100	15	--	0	19	7.0	1.4	90	8.6	4.2	1.1	1.1	0.00	106	.14	76	2	15	176	7.8
Aug. 17	2.0	--	--	24	8.1	6.9	2.3	119	--	4.8	--	--	--	--	--	97	0	13	223	7.8
Sept. 14	.6	19	--	29	11	8.0	1.9	131	15	6.8	.0	2.2	.06	157	.21	118	10	13	258	7.4

STOCKTON SHIP CHANNEL NEAR RINDGE PUMP ON RINDGE TRACT (SEC. 27, T. 2 N., R. 5 E.)

Oct. 24, 1952		12	0.00	33	14	62	4.0	134	33	88	0.2	2.7	0.43	315	0.43	140	30	48	568	7.3
Jan. 21, 1953		--	--	22	7.7	28	2.0	80	--	36	--	--	--	--	--	87	21	41	306	7.4
Feb. 18		--	--	25	10	44	2.0	92	--	61	--	--	--	--	--	104	28	47	421	7.4
Mar. 13		--	--	28	13	52	--	97	--	81	--	--	--	--	--	124	44	48	515	7.9
Apr. 17		--	--	28	13	47	--	106	--	74	--	--	--	--	--	123	36	45	513	7.5
May 13		14	--	0	17	7.4	2.3	75	17	40	.0	1.9	.07	166	.23	73	11	45	290	7.6
Aug. 18		--	--	20	8.1	25	2.0	80	--	38	--	--	--	--	--	83	18	39	291	7.3
Sept. 15		3.8	--	24	11	40	2.6	116	20	54	.3	.7	.11	214	.29	105	10	44	403	7.5

OLD RIVER AT SOUTH TIP OF FABIAN TRACT NEAR TRACY (SEC. 6, T. 2 N., R. 5 E.)

Oct. 27, 1952		24	0.00	38	15	78	4.2	138	49	116	0.1	2.6	0.17	395	0.54	156	44	51	697	8.1
Jan. 21, 1953		--	--	13	7.4	21	1.8	73	--	26	--	--	--	--	--	63	3	41	237	7.7
Feb. 18		--	--	37	16	73	2.7	123	--	111	--	--	--	--	--	158	58	49	693	7.4
Mar. 13		--	--	41	19	86	--	119	--	139	--	--	--	--	--	180	83	51	767	8.1
Apr. 17		--	--	56	22	100	--	166	--	184	--	--	--	--	--	230	94	49	960	7.5
May 13		13	--	0	19	7.8	3.0	71	22	52	.1	.8	.06	185	.25	79	21	47	330	7.4
Aug. 18		--	--	46	19	89	3.8	158	--	142	--	--	--	--	--	193	64	49	801	8.0
Sept. 17		26	--	46	20	90	4.5	172	52	142	.2	.7	.16	466	.63	197	56	49	827	7.6

SAN JOAQUIN RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent so-dium absorp-tion ratio	Specific conductance (micro-mhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
DELTA-MENDOTA CANAL NEAR TRACY (SEC. 30, T. 1 S., R. 4 S.)																				
Oct. 22, 1952	—	22	0.00	31	14	65	2.7	124	49	92	0.1	2.2	0.18	339	0.46	135	34	51	594	8.1
Jan. 17, 1953	—	—	—	25	12	79	2.2	108	—	96	—	—	—	—	—	112	24	60	608	7.8
Feb. 17, 1953	193	—	—	28	14	67	2.1	107	—	92	—	—	—	—	—	128	40	53	578	7.4
Mar. 13	309	—	—	39	17	82	—	114	—	126	—	—	.22	—	—	168	74	52	718	8.0
Apr. 17	1,467	—	—	24	11	36	—	83	—	59	—	—	.32	—	—	105	37	43	412	7.6
May 14	2,363	15	.0	18	8.3	30	2.1	70	26	46	.2	.5	.01	181	.25	79	22	44	312	7.0
Aug. 19	2,276	—	—	17	7.7	22	1.5	75	—	28	—	—	.03	—	—	74	13	39	251	7.5
Sept. 11	754	25	—	34	16	61	3.5	136	41	98	.2	2.2	.19	346	.47	151	40	46	616	8.2
Sept. 17	678	21	—	42	21	86	3.6	155	71	137	.2	1.0	.21	459	.62	182	64	49	812	7.6
DELTA-MENDOTA CANAL NEAR MENDOTA (SEC. 19, T. 13 S., R. 15 E.)																				
Oct. 17, 1952	—	15	0.00	42	17	84	4.1	155	77	116	0.3	0.0	0.26	432	0.59	175	48	50	766	7.1
Jan. 15, 1953	—	—	—	58	32	209	3.0	140	—	154	—	—	—	—	—	276	162	62	1,480	8.0
Feb. 11	—	—	—	67	35	232	4.0	152	—	165	—	—	—	—	—	311	186	61	1,630	8.3
Mar. 18	—	—	—	38	16	86	—	109	—	112	—	—	.44	—	—	161	72	54	732	7.9
Apr. 20	—	—	—	30	13	46	—	90	—	70	—	—	.16	—	—	128	55	44	501	7.5
May 6	—	15	.0	14	6.4	26	2.2	64	22	31	.1	1.5	.02	150	.20	61	9	47	252	7.3
Aug. 12	—	—	—	16	7.0	20	1.5	70	—	22	—	—	.06	—	—	69	11	38	243	7.5
Sept. 23	—	18	.05	34	17	73	3.1	133	86	93	.2	.8	.34	391	.53	155	46	50	653	8.0
OLD RIVER AT CLIFTON COURT FERRY (SEC. 20, T. 1 S., R. 4 E.)																				
Oct. 27, 1952	—	24	0.00	34	14	71	2.6	128	50	108	0.1	1.4	0.10	368	0.50	142	38	51	648	8.0
Jan. 21, 1953	—	—	—	17	6.7	27	1.9	74	—	32	—	—	—	—	—	70	9	45	270	7.6
Feb. 17	—	—	—	30	14	64	2.2	111	—	91	—	—	—	—	—	132	42	51	583	7.3
Mar. 13	—	—	—	37	17	82	—	124	—	124	—	—	.36	—	—	162	72	52	702	8.1
Apr. 14	—	—	—	41	18	73	—	131	—	132	—	—	.12	—	—	176	69	47	739	7.6
May 14	—	15	.3	18	7.8	32	2.1	70	24	44	.2	1.0	.08	179	.24	77	20	47	309	7.4
Aug. 9	—	—	—	34	15	62	3.0	122	—	102	—	—	.07	—	—	146	46	47	596	7.7
Sept. 17	—	17	—	28	13	49	2.6	118	32	74	.2	.8	.09	275	.37	123	27	46	490	7.9

ITALIAN SLOUGH NEAR BYRON (SEC. 24, T.1 S., R.3 E.)

Oct. 27, 1952	25	0.00	33	14	81	3.2	144	41	115	0.2	1.6	0.71	385	0.52	140	22	55	693	8.0
Jan. 21, 1953	--	--	43	28	418	6.0	264	--	558	--	--	--	--	--	222	6	80	2,420	7.7
Feb. 17, 1953	--	--	42	30	356	5.3	270	--	485	--	--	--	--	--	228	7	77	2,150	7.5
Mar. 13, 1953	--	--	34	17	79	--	101	--	155	--	--	.52	--	--	155	72	53	2,778	7.7
Apr. 14, 1953	--	--	40	19	78	--	98	--	134	--	--	.59	--	--	178	100	49	778	7.4
May 14, 1953	16	.3	21	9.9	41	2.3	69	38	62	.2	1.4	.16	226	.31	93	37	48	394	7.5
Aug. 19, 1953	--	--	17	7.7	25	2.9	71	--	33	--	--	.14	--	--	74	16	42	274	7.4
Sept. 17, 1953	15	--	19	11	38	2.3	98	24	54	.3	.6	.29	214	.29	93	12	47	376	7.6

ITALIAN SLOUGH NEAR MOUTH (SEC. 7, T.1 S., R.4 E.)

Oct. 27, 1952	25	0.00	30	13	64	2.7	120	41	84	0.1	1.5	0.05	320	0.44	128	30	51	547	8.2
Jan. 21, 1953	--	--	17	9.7	34	2.0	77	--	50	--	--	--	--	--	82	19	47	352	7.4
Feb. 17, 1953	--	--	27	14	60	2.2	98	--	85	--	--	--	--	--	125	44	50	549	7.5
Mar. 13, 1953	--	--	29	13	55	--	94	--	94	--	--	.10	--	--	126	49	49	558	7.7
Apr. 14, 1953	--	--	26	12	37	--	83	--	66	--	--	.28	--	--	114	46	41	432	7.6
May 14, 1953	15	.0	17	7.8	29	2.0	65	2.4	42	.1	1.3	.09	170	.23	74	21	45	299	7.6
Aug. 19, 1953	--	--	17	7.4	19	1.6	74	--	26	--	--	.05	--	--	73	12	36	238	7.6
Sept. 17, 1953	15	--	19	10	30	2.0	93	--	41	.2	1.1	.08	198	.26	88	12	42	328	7.5

INDIAN SLOUGH NEAR BRENTWOOD (SEC. 22, T.1 N., R.3 E.)

Oct. 27, 1952	18	0.00	42	24	94	2.8	170	78	142	0.2	3.7	0.72	488	0.66	204	64	50	869	8.3
Jan. 21, 1953	--	--	67	42	132	2.6	200	--	188	--	--	--	--	--	240	102	46	1,290	8.0
Feb. 17, 1953	--	--	54	28	136	2.7	210	--	222	--	--	--	--	--	290	118	56	1,788	7.8
Mar. 13, 1953	--	--	33	23	47	--	130	--	171	--	--	.51	--	--	177	70	52	488	7.6
Apr. 14, 1953	--	--	25	13	47	--	92	--	70	--	--	.27	--	--	116	48	45	481	7.6
May 14, 1953	16	.0	21	11	43	2.1	85	36	60	.0	1.1	.231	231	.31	98	28	48	404	7.2
Aug. 19, 1953	--	--	20	12	38	1.8	97	--	50	--	--	.31	--	--	99	20	45	385	7.4
Sept. 17, 1953	14	--	21	12	36	2.1	98	31	51	.2	.7	.14	217	.30	102	21	43	382	7.4

SAN JOAQUIN RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- sulfum (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per- cent so- lids	So- lids ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon- ate				
OLD RIVER AT OROWOOD BRIDGE (SEC.17, T.1 N., R.4 E.)																						
Oct. 27, 1952	...	17	0.00	30	11	53	2.8	115	38	77	0.1	1.6	0.18	287	0.39		120	26	48	517	7.8	
Jan. 21, 1953	...		--	19	10	36	1.8	77	--	46	--	--	--	--	--		88	25	46	362	7.8	
Feb. 17, 1953	...		--	25	11	51	1.9	92	--	71	--	--	--	--	--		108	32	50	470	7.4	
Mar. 24, 1953	...		--	27	16	52	--	96	--	87	--	--	1.4	--	--		133	54	46	556	7.4	
Apr. 14, 1953	...		--	23	10	31	--	79	--	50	--	--	1.3	--	--		98	34	41	364	7.6	
May 14, 1953	...	16	.0	19	9.3	30	2.1	73	28	47	.1	1.2	.09	189	.26		86	26	42	332	7.6	
Aug. 19, 1953	...		--	15	8.0	20	1.8	77	--	26	--	--	.05	--	--		70	7	37	240	7.4	
Sept. 17, 1953	...	23	--	42	19	85	4.3	166	50	128	.2	1.3	.20	435	.59		183	47	50	770	7.5	
ROCK SLOUGH NEAR KNIGHTSEN (SEC.34, T.2 N., R.3 E.)																						
Oct. 27, 1952	...	20	0.00	32	14	60	3.2	124	46	86	0.2	1.3	0.17	324	0.44		137	36	48	570	8.2	
Jan. 21, 1953	...		--	31	18	73	2.7	107	--	91	--	--	--	--	--		152	64	51	655	8.0	
Feb. 17, 1953	...		--	19	16	51	1.8	96	--	68	--	--	--	--	--		113	35	49	482	7.4	
Mar. 24, 1953	...		--	27	14	48	--	88	--	79	--	--	1.6	--	--		123	45	46	531	7.7	
Apr. 14, 1953	...		--	23	9.5	32	--	82	--	52	--	--	1.6	--	--		96	29	42	372	7.7	
May 14, 1953	...	14	.0	19	10	33	2.0	77	31	49	.0	1.1	.10	197	.27		88	25	44	348	7.6	
Aug. 19, 1953	...		--	15	8.7	23	1.6	76	--	28	--	--	.07	--	--		73	11	40	253	7.3	
Sept. 17, 1953	...	14	--	18	11	30	1.8	98	24	38	.2	.3	.10	185	.25		90	12	41	339	7.5	
MOSELUMNE RIVER NEAR LANCHA PLANA (SEC.4, T.4 N., R.10 E.)																						
Oct. 23, 1952	685	8.3	0.00	3.4	1.3	2.2	0.6	17	3.5	1.1	0.2	0.1	0.02	29	0.04		14	0	25	35.1	7.1	
Jan. 22, 1953	1,510	--	--	4.0	2.2	2.4	.7	22	--	2.5	--	--	--	--	--		19	1	21	50.2	7.3	
Feb. 16, 1953	615	--	--	5.0	1.1	2.8	.9	23	--	3.0	--	--	--	--	--		17	0	25	49.1	6.9	
Mar. 23, 1953	682	--	--	5.6	1.2	3.8	--	23	--	4.0	--	--	1.6	--	--		19	0	30	51.1	7.3	
Apr. 15, 1953	665	--	--	4.7	1.3	2.4	--	22	--	2.5	--	--	1.1	--	--		17	0	23	49.4	7.1	
May 12, 1953	650	9.3	.1	4.6	2.1	3.0	.8	23	2.3	3.0	.1	1.1	.00	37	.05		20	1	24	52.2	7.3	
Aug. 17, 1953	635	--	--	3.8	1.3	1.6	.7	18	--	2.0	--	--	.02	--	--		15	0	18	36.3	6.9	
Sept. 14, 1953	655	8.7	--	3.4	1.1	1.8	.7	16	2.4	1.5	.0	.1	.01	28	.04		13	0	22	33.5	7.1	
a Mean daily discharge (cfs).																						

a Mean daily discharge (cfs).

COSUMES RIVER NEAR MICHIGAN BAR (SEC.36, T.8 N., R.8 E.)

Oct. 23, 1952	41	16	0.00	9.4	2.1	5.0	0.9	46	3.0	3.8	0.0	0.0	0.00	63	0.09	32	0	25	34.0	7.2
Jan. 22, 1953	1,390	--	--	7.3	3.1	3.4	.8	38	--	3.2	--	--	--	--	--	31	0	19	76.4	7.5
Jan. 27	956	21	.00	6.8	3.6	3.6	.9	40	4.7	3.2	.0	.7	.00	64	.09	32	0	20	84.2	7.2
Feb. 10	730	--	--	7.3	3.4	4.1	.9	42	--	2.2	--	--	--	--	--	32	0	21	83.6	7.2
Mar. 23	742	--	--	4.2	4.5	3.6	--	39	--	2.0	--	--	.04	--	--	29	0	22	74.3	7.1
Apr. 15	487	--	--	5.1	1.9	3.4	--	30	--	1.3	--	--	.01	--	--	20	0	21	57.4	7.2
May 12	680	17	.1	7.2	1.8	2.8	.6	28	1.5	.8	.0	.0	.04	42	.06	18	0	25	71.8	7.6
Aug. 17	23	--	--	6.2	2.6	3.6	1.1	43	--	1.9	--	--	.00	--	--	29	0	21	73.8	7.6
Sept. 14	11	16	--	8.3	3.5	3.8	1.2	48	3.2	1.5	.0	.3	.01	61	.08	35	0	18	84.5	7.7

DELTA CROSS CHANNEL NEAR WALNUT GROVE (SEC.35, T.5 N., R.4 E.)

Oct. 28, 1952		26	0.00	14	7.0	15	1.4	83	10	11	0.1	0.6	0.10	126	0.17	64	0	33	175	7.6
Jan. 22, 1953		--	--	7.9	3.2	3.8	.8	42	--	3.2	--	--	--	--	--	33	0	20	83.7	7.5
Feb. 13		--	--	18	9.1	14	2.9	84	--	19	--	--	--	--	--	82	13	26	221	7.5
Mar. 11		--	--	13	7.3	10	--	63	--	15	--	.17	--	--	--	62	11	26	163	7.4
May 11		16	.2	7.5	4.7	6.7	1.2	44	4.9	6.8	.1	.4	.22	70	.10	38	2	27	102	7.3
May 14		--	--	10	3.7	6.5	--	58	--	4.0	--	--	.02	--	--	40	0	26	111	7.4
Aug. 20		--	--	17	9.3	20	1.6	104	--	15	--	--	.11	--	--	81	0	34	244	7.5
Sept. 16		21	--	17	11	24	1.8	117	16	20	.1	1.2	.04	170	.23	88	0	37	272	7.4

LITTLE POTATO SLOUGH NEAR TERMINUS (SEC.13, T.3 N., R.4 E.)

Oct. 24, 1952		22	0.00	14	7.8	13	1.3	83	9.1	15	0.0	0.5	0.00	124	0.17	67	0	29	193	7.8
Jan. 21, 1953		--	--	11	4.6	6.5	1.3	53	--	7.2	--	--	--	--	--	46	3	23	122	7.5
Feb. 18		--	--	14	5.8	8.7	1.3	63	--	8.0	--	--	--	--	--	59	7	24	141	7.2
Mar. 24		--	--	12	5.9	9.6	--	62	--	9.5	--	--	.02	--	--	54	3	28	158	7.2
Apr. 15		--	--	11	5.1	9.6	--	48	--	18	--	--	.01	--	--	48	9	30	142	7.3
May 13		14	.2	9.6	4.9	9.0	1.1	50	6.1	9.5	.1	.5	.02	79	.11	44	3	30	126	7.4
Aug. 18		--	--	20	11	32	1.5	101	--	34	--	--	.06	--	--	95	12	42	301	7.5
Sept. 15		22	--	17	11	24	1.6	115	17	19	.1	.7	.06	169	.23	88	0	37	273	7.6

SACRAMENTO RIVER BASIN

SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.

LOCATION --At Southern Pacific Railroad bridge at Knights Landing, Yolo County, just downstream from gaging station and about 34 miles upstream from Sacramento.

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

Water temperatures: March 1951 to September 1953.

EXTREMES, 1954-55.--Dissolved solids: Maximum, 244 ppm May 12, 19; minimum, 95 ppm Dec. 21-23, 29.

Hardness: Maximum, 107 ppm May 12, 19; minimum, 48 ppm Dec. 12-13, 20.

Specific conductance: Maximum, 414 micromhos May 12, 19; minimum, daily, 105 micromhos Dec. 29.

Water temperatures: Maximum, 74°F July 20; minimum, 45°F Nov. 29, 1953.

EXTREMES, 1953-54.--Dissolved solids: Maximum, 244 ppm May 12, 19, 1953; minimum, 91 ppm Apr. 11-20, 1952.

Hardness: Maximum, 114 ppm Sept. 10, 1952; minimum, 44 ppm May 12, 19, 1952.

Specific conductance: Maximum, 447 micromhos Sept. 10, 1952; minimum, daily, 99.1 micromhos Mar. 17, 1952.

Water temperatures: Maximum, 78°F July 23, 1952; minimum, daily, 9-11, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge water year October 1952 to September 1953 given in WSP 1285. Considerable inflow during irrigation season of irrigation waste water from drainage canal about 0.3 mile above sampling site. Mixing not complete at sampling site.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium sulfate	Sodium-sulfate ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Oct. 1-10, 1952	6,835	25	0.00	14	8.4	11	1.9	93		10	8.0	0.1	0.3	0.25	125	0.17	70	0	25	0.6	185	7.7	
Oct. 11-20	6,515	20	.00	13	6.9	9.0	1.6	81		7.9	5.8	.1	.8	.10	115	.16	2,020	61	0	24	.5	162	7.6
Oct. 21-31	6,318	26	.00	13	6.8	10	1.8	81		8.4	6.5	.1	.3	.09	116	.16	1,980	60	0	26	.6	164	7.8
Nov. 1-10	6,100	26	.00	15	7.0	10	1.6	82		9.1	8.0	.0	.4	.18	115	.16	1,890	66	0	24	.5	170	7.5
Nov. 11-20	7,153	--	--	13	6.5	12	1.5	80		7.9	8.5	--	.4	--	115	.16	2,220	59	0	30	.7	165	7.8
Nov. 21-30	6,697	--	--	13	5.8	13	1.7	84		11	8.8	--	.8	--	123	.17	2,230	56	0	33	.7	178	8.0
Dec. 1-4	10,410	--	--	10	7.0	10	1.9	68		9.5	7.8	--	3.5	--	117	.16	3,290	54	0	28	.6	151	7.9
Dec. 5-6	10,520	--	--	10	6.2	14	2.0	74		13	10	--	2.0	--	122	.17	3,470	50	0	36	.9	181	8.0
Dec. 7-10	21,000	--	--	8.8	7.5	7.8	1.8	51		9.1	6.2	--	4.6	--	116	.16	6,610	53	11	24	.5	120	7.7
Dec. 11-14	20,100	--	--	12	7.5	9.6	1.8	64		18	6.5	--	2.8	--	100	.14	5,430	61	8	25	.5	155	7.7
Dec. 12-13	19,670	--	--	9.6	5.9	8.2	1.7	52		16	5.2	--	2.8	--	97	.13	5,160	46	6	26	.5	124	7.2
Dec. 17-19	15,500	--	--	15	8.2	16	1.8	82		25	9.2	--	1.6	--	137	.19	5,730	71	4	32	.8	198	7.4
Dec. 21-23	23,050	--	--	12	5.2	4	1.5	51		8.6	6.2	--	1.2	--	95	.13	5,910	51	10	15	.3	117	7.2
Dec. 24-28, 30-31	20,040	--	--	13	6.7	9.4	1.4	70		10	8.5	--	.7	--	112	.15	6,060	60	3	25	.5	160	7.3
Jan. 1-10, 1953	22,760	22	.00	13	7.0	8.0	1.8	67		13	9.5	.0	.7	.16	114	.16	7,010	61	6	21	.4	158	7.3
Jan. 11-20	24,380	19	.00	13	6.3	7.2	1.7	61		12	9.0	.1	.2	.17	106	.14	6,980	58	8	21	.4	146	7.4
Jan. 21-31	23,990	22	.00	13	6.1	6.5	1.5	66		8.8	6.8	.1	.2	.14	101	.14	6,540	58	3	19	.4	140	7.5
Feb. 1-10	20,580	22	.05	14	6.6	6.0	1.3	74		8.6	6.2	.1	.8	.11	106	.14	5,900	62	1	17	.3	151	7.4
Feb. 11-19	17,640	--	--	14	6.4	6.2	1.4	72		8.6	7.0	--	.8	--	106	.14	5,050	61	2	18	.3	148	7.2
Feb. 20	12,100	--	--	--	--	15	1.4	102		--	16	--	--	--	--	--	--	--	103	--	--	263	7.1
Feb. 21-28	10,330	24	.15	18	10	19	1.2	99		24	15	.0	.3	.15	160	.22	4,460	86	5	32	.9	252	7.6

Mar. 1-10, 1953	9,287	36	.05	19	11	18	1.5	102	24	16	.0	.6	.23	163	22	4,090	93	9	29	8	260	7.6
Mar. 11-14, 17, 20	9,582	--	--	16	9.7	17	1.5	92	24	14	--	--	--	146	.20	3,780	80	5	31	8	226	7.7
Mar. 12-13, 16-19	9,070	--	--	20	9.8	14	1.4	93	24	14	--	--	--	149	.20	3,650	95	14	25	6	185	7.7
Mar. 21, 26	14,050	--	--	15	6.6	12	1.2	80	14	8.5	--	--	--	120	.16	4,550	65	0	28	6	178	7.6
Mar. 22-25	15,320	--	--	11	5.4	6.7	1.1	58	9.5	5.8	--	--	--	99	.13	4,100	50	2	22	4	124	7.4
Mar. 27-31	11,640	--	--	17	8.9	16	1.9	93	21	12	--	--	--	146	.20	4,580	79	3	30	6	222	7.4
Apr. 1-2	10,300	--	--	20	10	20	1.6	108	28	14	--	3	--	170	.23	4,730	91	2	32	9	268	7.5
Apr. 2-10	8,700	15	0	15	6.8	9.8	1.3	84	10	7.8	--	.0	.18	116	.16	2,720	65	0	24	5	174	7.5
Apr. 11-12, 15, 18	6,400	--	--	17	7.7	14	1.4	93	18	10	--	.2	--	133	.18	2,300	74	0	28	7	205	7.5
Apr. 13-14, 16-17, 19-20	5,733	--	--	19	11	26	1.7	113	33	20	--	.5	--	189	.26	2,930	93	0	37	1.2	303	7.6
Apr. 21-28	4,969	16	0	15	7.8	14	1.5	86	16	11	1	.5	.12	130	.18	1,740	70	0	30	7	200	7.1
Apr. 29-30	16,400	--	--	12	5.1	9.2	1.2	60	12	8.2	--	.4	--	102	.14	4,520	51	2	28	6	144	7.0
May 1-5	12,470	--	--	12	6.1	10	1.1	66	11	7.2	--	.6	--	103	.14	3,470	55	1	28	6	152	7.2
May 6-7	9,315	--	--	15	8.3	19	1.5	90	24	21	--	.8	--	146	.20	3,670	72	0	36	1.0	226	7.6
May 8-10	9,467	--	--	18	12	36	1.8	122	47	12	--	1.1	--	220	.30	5,630	94	0	45	1.6	357	7.5
May 11, 13-18, 20	9,140	14	0	16	9.2	24	1.6	99	26	14	1	1.0	.08	159	.22	3,920	78	0	40	1.2	253	7.5
May 12, 19	9,485	--	--	20	14	43	2.0	138	52	25	--	1.4	--	244	.33	6,250	107	0	46	1.8	398	7.7
May 21, 23-29	11,600	9.7	--	0	17	11	35	2.0	39	21	2	1.0	.02	203	.28	6,360	88	0	46	1.6	328	7.5
May 22, 30-31	11,430	--	--	15	6.8	15	1.4	84	16	9.8	--	.5	--	127	.17	3,920	65	0	33	8	152	7.5
June 1-10	10,670	32	0	14	8.7	20	1.5	93	18	12	1	.2	.20	140	.19	4,030	71	0	37	1.0	219	7.4
June 11-20	9,732	17	0	13	7.0	14	1.4	76	17	9.8	1	.0	.05	120	.16	3,150	61	0	33	8	163	7.2
June 21-30	8,012	20	0	13	6.2	12	1.4	74	11	8.2	1	.5	.05	108	.15	2,340	58	0	30	7	162	7.4
July 1-10	6,067	20	0	13	7.7	14	1.4	83	13	10	1	.5	.06	123	.17	2,020	64	0	32	8	188	7.5
July 11-20	5,907	23	0	14	8.7	16	1.4	90	15	12	0	.5	.17	125	.17	1,990	71	0	32	8	205	7.8
July 21-31	6,583	32	0	14	7.9	19	1.4	92	16	12	2	.2	.15	134	.18	2,380	67	0	37	1.0	209	8.0
Aug. 1-10	7,367	24	0	15	10	22	1.3	103	21	15	0	.2	.14	159	.22	3,160	79	0	37	1.1	254	7.7
Aug. 11-20	7,276	25	0	15	9.0	19	1.4	98	18	14	0	.3	.13	145	.20	2,850	74	0	35	1.0	229	7.8
Aug. 21-31	7,673	26	0	14	9.2	19	1.3	99	18	13	2	.3	.15	146	.20	3,020	73	0	36	1.0	231	7.7
Sept. 1-10	9,309	23	0	16	10	24	1.4	110	20	16	1	.6	.16	162	.22	4,070	81	0	39	1.2	258	7.9
Sept. 11-20	9,828	24	0	16	9.7	23	1.4	110	18	15	1	.5	.18	157	.21	4,170	80	0	38	1.1	246	8.1
Sept. 21-30	9,752	25	.03	15	10	20	1.6	107	18	12	1	.6	.05	154	.21	4,050	79	0	35	1.0	242	7.7
Weighted average a	11,080	b 22	b 0.01	14	7.7	13	1.5	81	15	10	b 0.1	0.7	b 0.14	128	0.17	3,830	66	0	29	0.7	188	--

b Represents 66 percent of runoff for water year October 1952 to September 1953.

a Represents 100 percent of runoff for water year October 1952 to September 1953.

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement taken at approximately 10 a. m. /

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

SACRAMENTO RIVER BASIN--Continued
FEATHER RIVER AT NICOLAUS, CALIF.

LOCATION.--At highway bridge at Nicolaus, Sutter County, just 0.4 mile upstream from gaging station and 1.2 miles downstream from Bear River.

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

Water temperatures: Maximum, 94 ppm Dec. 1-2, 4, 7; minimum, 49 ppm June 21-30.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 94 ppm Dec. 1-2, 4, 7; minimum, 49 ppm June 21-30.

Hardness: Maximum, 100 ppm Dec. 20; minimum, 27 ppm June 11-20.

Specific conductance: Maximum daily, 207 micromhos Dec. 24; minimum, 27 ppm June 11-20.

Water temperatures: Maximum, 76°F July 21, 23; minimum, 39°F Feb. 10.

Water specific conductance: Maximum, 111 ppm Aug. 1-10, 1951; minimum, 45 ppm June 1-3, 8, 10, 1952.

Hardness: Maximum, 100 ppm Dec. 20, 1952; minimum, 22 ppm June 1-3, 8, 10, 1952.

Specific conductance: Maximum, 100 ppm Dec. 24, 1952; minimum, 22 ppm June 1-3, 8, 10, 1952.

Water temperatures: Maximum, 79°F July 18-19, 1951; minimum, 39°F Jan. 3, 5, 1952, Feb. 10, 1953.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃	Percent adsorption		Specific conductance (micro-mhos at 25°C)	pH	Color	
														Parts per million	Tons per acre-foot	Tons per day		Calcium, mg./neq.	Non-carbonate				Sodium	Sulfate
Oct. 1-10, 1952...	2,801	13	0.00	11	5.3	4.7	0.9	65	3.7	3.2	0.0	0.2	0.19	78	0.11	590	49	0	15	0.3	115	7.5	
Oct. 11-20, 1952...	2,797	14	0.00	12	5.1	4.0	1.5	66	3.6	2.5	0	0.5	0.08	76	0.10	574	51	0	14	0.2	116	7.7	
Oct. 21-31, 1952...	2,740	12	0.00	12	5.3	4.3	1.5	66	3.7	2.5	0	0.3	0.08	68	0.09	503	52	0	15	0.3	117	7.7	
Oct. 23-24, 1952...	2,760	11	0.00	11	5.6	5.2	1.0	65	3.4	3.5	0	0.2	0.00	673	0.10	544	50	0	18	0.3	115	7.5	
Nov. 1-10, 1952...	2,578	14	0.00	13	5.1	4.0	1.5	65	3.9	3.0	0	0.7	0.16	76	0.10	529	53	0	14	0.2	117	7.4	
Nov. 11-20, 1952...	3,187	12	0.00	13	5.2	4.2	1.3	83	5.2	3.5	0	0.3	0.19	79	0.11	680	54	2	14	0.2	122	7.3	
Nov. 21-30, 1952...	3,091	15	0.00	13	5.4	4.0	1.4	65	4.9	3.2	0	0	0.15	78	0.11	651	55	1	13	0.2	120	7.5	
Dec. 1-2, 4, 7, 1952...	3,985	--	--	10	5.1	8.2	1.6	61	12	5.2	--	0.6	--	94	0.13	1,010	46	0	27	0.5	149	7.2	
Dec. 3, 5-6, 8-10, 1952...	5,843	--	--	10	5.1	6.5	1.5	57	13	3	--	1.0	--	81	0.11	1,280	46	0	23	0.4	115	7.3	
Dec. 11-19, 1952...	5,573	--	--	9.6	4.4	6.1	1.5	53	9.4	4.0	--	0.6	--	75	0.10	1,130	42	0	23	0.4	110	7.3	
Dec. 20, 1952...	8,470	--	--	28	7.3	6.1	2.1	106	--	4.8	--	--	--	--	--	--	100	13	11	0.3	195	7.8	
Dec. 21-23, 25-31, 1952...	7,267	16	0.00	13	5.2	3.1	1.3	58	5.8	4.2	1.1	0.2	0.10	79	0.11	1,550	54	6	11	0.2	113	7.4	
Dec. 24, 1952...	5,180	--	--	--	--	3.4	1.0	58	--	6.0	--	--	--	--	--	--	--	--	--	--	207	7.0	
Jan. 1-9, 1953...	12,130	--	--	12	5.0	2.4	1.2	56	5.9	4.5	--	0.6	--	80	0.11	2,620	50	5	9	0.1	113	7.5	
Jan. 10, 1953...	104,000	--	--	--	--	1.5	1.8	32	--	4.0	--	--	--	--	--	--	28	--	--	--	72.3	7.6	
Jan. 11-20, 1953...	56,750	9.7	0.00	8.0	3.5	1.5	9.9	37	3.0	2.5	1.1	0.1	0.13	60	0.08	9,190	34	4	8	0.1	70.1	7.4	
Jan. 13-14, 1953...	54,800	--	--	9.2	2.9	3.2	9.4	44	--	2.8	--	--	--	--	--	--	35	--	0.16	0.2	83.1	7.7	
Jan. 21-31, 1953...	32,580	9.7	0.05	8.3	3.5	2.0	1.2	40	4.0	3.5	0	0.2	0.11	60	0.08	5,280	35	2	11	0.2	86.9	7.2	

a Not included for computation of weighted averages.

b Sum of determined constituents.

SACRAMENTO RIVER BASIN--Continued
FEATHER RIVER AT NICOLAUS, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color		
														Parts per million	Tons per acre-foot						Tons per day	Calcium, mg./l.	Non-carbonate
Feb. 1-10, 1953...	12,220	8.9	0.05	9.5	3.7	3.8	0.9	48	4.0	3.8	0.1	0.4	0.16	65	0.09	2,140	39	0	17	0.3	89.4	7.2
Feb. 10 ^a	11,000	--	--	8.1	4.8	4.5	.7	48	--	1.8	--	--	--	--	--	--	40	1	19	.3	93.1	7.6
Feb. 11-20.....	8,863	13	.05	11	3.9	2.6	1.2	50	4.8	3.8	--	.7	.09	68	.08	1,630	44	3	11	.2	104	7.2
Feb. 21-28.....	6,822	10	.00	10	4.1	5.0	1.1	52	5.7	4.0	0	3.12	7.0	10	.10	1,200	42	0	20	.3	96.2	7.4
Mar. 1-10.....	6,782	16	.00	10	4.2	4.8	1.8	52	4.7	4.0	0	.3	.09	69	.09	1,260	42	0	19	.3	98.0	7.5
Mar. 11-20.....	10,110	23	.02	9.6	4.0	4.5	.9	49	5.6	4.2	0	.5	12	67	.09	1,830	40	0	19	.3	93.4	7.3
Mar. 21-31.....	14,450	16	.02	9.3	3.8	3.6	.8	46	4.2	4.5	0	.4	12	65	.09	2,540	39	1	16	.3	85.9	7.3
Mar. 23 ^a	14,200	--	--	9.2	3.4	3.1	--	47	--	2.0	--	--	.03	--	--	--	37	0	15	.2	85.9	7.3
Apr. 1-10.....	13,440	20	.05	9.0	3.5	3.2	.6	43	3.5	3.8	0	0	.14	60	.08	2,180	37	2	16	.2	78.1	7.4
Apr. 11-20.....	10,440	14	0	8.3	3.2	4.1	.9	44	3.8	3.0	.1	3.08	0	60	.08	1,690	34	0	20	.3	81.6	7.0
Apr. 21-30.....	22,470	14	0	7.6	2.4	3.1	.7	37	3.0	2.2	.1	.4	.00	53	.07	3,220	29	0	19	.3	69.7	6.9
Apr. 23 ^a	13,900	--	--	7.3	3.1	3.0	--	42	--	1.5	--	--	.02	--	--	--	31	0	17	.2	73.0	7.5
May 1-10.....	19,420	11	0	7.2	2.9	3.1	.6	38	2.8	2.8	.1	.4	.04	55	.07	2,880	30	0	18	.3	69.7	7.1
May 11-20.....	13,290	15	0	7.9	2.7	3.4	.9	37	2.7	3.8	0	1.5	.04	55	.07	1,970	31	0	19	.3	81.5	7.0
May 15 ^a	12,200	15	0	7.0	3.5	3.1	.5	42	3.0	3.8	0	.3	.03	54	.07	1,780	32	0	17	.2	73.0	7.6
May 21-31.....	14,960	13	0	6.9	2.9	3.4	.8	37	2.4	2.5	0	.1	.14	53	.07	2,140	29	0	20	.3	68.2	7.0
June 1-10.....	14,080	15	0	7.3	2.9	3.4	.7	38	2.0	2.8	.1	0	.06	53	.07	2,010	30	0	19	.3	72.1	7.0
June 11-20.....	14,030	9.2	0	6.9	2.4	3.1	1.1	36	2.9	2.8	.1	2.04	50	50	.07	1,890	27	0	19	.3	67.4	7.0
June 21-30.....	9,747	15	0	7.1	2.5	2.8	.7	36	2.6	2.0	.1	0	.07	49	.07	1,290	28	0	17	.2	63.9	7.3
July 1-10.....	4,733	17	0	9.0	3.1	4.1	.8	46	2.8	2.5	.1	1.08	.60	60	.08	767	35	0	20	.3	83.7	7.4
July 11-20.....	2,058	16	0	11	4.6	4.0	1.0	57	3.5	4.0	0	.2	1.0	74	.10	411	46	0	15	.2	108	7.6
July 21-31.....	1,119	18	0	12	5.8	5.4	1.1	69	4.8	3.5	0	.6	.08	82	.11	248	54	0	18	.3	131	7.7
Aug. 1-10.....	1,009	18	.00	13	5.4	5.0	1.1	68	5.0	4.8	0	.6	.09	82	.11	223	55	0	16	.3	132	7.4
Aug. 11-20.....	1,073	17	.00	13	5.7	5.4	1.2	67	4.9	4.9	0	.6	.05	85	.12	246	56	1	17	.3	131	7.2
Aug. 19 ^a	1,080	--	--	14	5.1	5.5	1.3	69	--	6.2	--	--	.00	--	--	--	56	0	17	.3	128	7.5
Aug. 21-31.....	1,139	15	.00	13	6.1	5.8	1.2	71	4.4	4.8	.1	.5	.03	86	.12	264	58	0	18	.3	133	7.4
Sept. 1-10.....	1,353	16	.00	13	5.7	5.8	1.3	71	4.9	5.0	0	.6	.07	84	.11	307	56	0	18	.3	134	7.7
Sept. 11-20.....	1,774	16	.00	13	5.4	5.8	1.4	68	4.2	4.5	0	.5	.11	82	.11	393	55	0	18	.3	125	7.6
Sept. 21-31.....	1,360	14	.02	11	5.3	5.6	1.2	72	4.6	2.5	0	.4	.07	82	.11	501	54	0	18	.3	131	7.6
Sept. 24 ^a	2,744	14	.02	11	5.6	5.2	1.3	65	3.6	2.8	.1	.6	.04	76	.10	563	50	0	18	.3	120	7.2
Weighted average ^c	9,868	113	10.01	e 8.9	e 3.6	3.1	1.0	44	e 3.8	3.2	10.1	e 0.3	10.10	e 62	e 0.08	e 1,650	37	e 1	e 14	e 0.2	84.7	--

^a Not included for computation of weighted averages.

^b Sum of determined constituents.

^c Represents 100 percent of runoff for water year October 1952 to September 1953.

^d Represents 91 percent of runoff for water year October 1952 to September 1953.

^e Represents 97 percent of runoff for water year October 1952 to September 1953.

SACRAMENTO RIVER BASIN--Continued

FEATHER RIVER AT NICOLAUS, CALIF.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement taken at approximately 7 a.m./

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

SACRAMENTO RIVER BASIN--Continued

AMERICAN RIVER AT FAIR OAKS, CALIF.

LOCATION.--At highway bridge just downstream from gaging station at Fair Oaks, Sacramento County, 10 miles downstream from South Fork, and about 19 miles from mouth.

DRAINAGE AREA.--1,921 square miles.

RECORDS AVAILABLE.--Chemical analyses: January to December 1906, March 1951 to September 1953.

Water temperatures: March 1951 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 66 ppm Jan. 1-9; minimum, 29 ppm June 21-30.

Hardness: Maximum, 41 ppm Nov. 21-30; minimum, 14 ppm June 21-30.

Specific conductance: Maximum daily, 102 micromhos Nov. 13; minimum daily, 29.5 micromhos June 21.

Water temperatures: Maximum, 80°F Aug. 10, Sept. 1; minimum, 41°F April 9.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 69 ppm Aug. 21-31; minimum, 29 ppm June 21-30, 1953.

Hardness: Maximum, 41 ppm Aug. 1 to Sept. 10, 1951, Nov. 21-30, 1952; minimum, 14 ppm June 21-30, 1953.

Specific conductance: Maximum daily, 112 micromhos Aug. 28, 1951; minimum, 29.1 micromhos June 3, 1952.

Water temperatures: Maximum, 80°F July 28, Aug. 4, 1952, Aug. 10, Sept. 1, 1953; minimum, 40°F Jan. 3, 4, 10, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office, Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boiron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent adsorption (25°C)	Specific conductance (micro-mhos at 25°C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate				
Oct. 1-10, 1952	508	12	0.00	8.0	2.5	4.5	1.0	38	4.0	4.0	4.0	0.0	0.3	0.11	54	0.07	75	30	0	17	0.4	74.6	7.4
Oct. 11-20	442	9.7	0.00	9.6	2.8	3.0	1.1	38	3.7	3.7	3.7	0.0	0.2	0.08	54	0.07	64	35	4	15	0.2	78.6	7.3
Oct. 21-31	428	10	0.00	8.8	2.9	3.2	0.8	39	3.7	3.7	3.7	0.0	0.11	0.06	56	0.08	65	34	2	17	0.2	81.9	7.3
Nov. 1-10	324	11	0.00	11	3.1	3.8	1.1	45	5.0	5.0	5.0	0.0	0.9	0.07	65	0.09	57	40	3	17	0.3	96.1	7.4
Nov. 11-20	796	11	0.00	10	3.0	5.0	1.0	43	5.8	5.8	5.8	0.0	1.0	0.10	64	0.09	138	37	2	22	0.4	99.4	7.2
Nov. 21-30	545	13	0.04	10	4.0	2.6	1.0	43	4.8	4.8	4.8	0.0	0.3	0.03	61	0.08	90	41	6	12	0.2	91.9	7.4
Dec. 1-10	2,001	15	0.00	10	3.5	2.6	1.0	40	6.1	6.1	6.1	0.0	0.0	0.12	61	0.08	330	39	7	12	0.2	87.8	7.3
Dec. 11-20	1,867	10	0.00	9.6	3.5	2.6	0.9	40	6.7	6.7	6.7	0.0	0.0	0.15	58	0.08	292	38	6	13	0.2	84.6	7.2
Dec. 21-31	1,986	11	0.00	9.1	3.5	3.8	0.7	40	6.2	6.2	6.2	0.0	0.0	0.05	60	0.08	322	37	4	18	0.3	88.1	7.4
Jan. 1-9, 1953	4,314	--	--	9.0	3.8	4.3	0.8	42	6.7	6.7	6.7	--	0.5	--	66	0.09	769	38	4	19	--	94.0	7.2
Jan. 10-20	17,900	--	--	--	--	8	0.8	28	--	--	--	--	--	--	--	--	36	--	--	--	--	56.8	7.2
Jan. 21-30	10,550	14	0.00	7.4	2.7	2.8	0.7	32	4.4	4.4	4.4	0.0	0.0	0.08	50	0.07	1,450	30	3	17	0.2	64.5	7.3
Jan. 31	6,782	15	0.00	8.1	2.9	1.3	0.7	34	3.8	3.8	3.8	0.0	0.0	0.10	51	0.07	952	32	4	8	0.1	65.7	7.3
Feb. 1-10	3,524	9.5	0.00	7.0	2.5	2.8	0.6	34	3.9	3.9	3.9	0.0	0.1	0.05	48	0.07	457	28	0	18	0.2	66.0	7.4
Feb. 11-20	2,687	8.6	0.00	7.3	2.2	1.5	0.7	30	3.4	3.4	3.4	0.0	0.1	0.12	46	0.06	334	27	3	10	0.1	62.0	7.1
Feb. 21-28	2,134	8.9	0.00	7.3	2.3	3.4	1.1	32	3.9	3.9	3.9	0.0	0.1	0.06	46	0.07	282	28	1	20	0.3	63.9	7.4
Mar. 1-10	2,420	13	0.00	7.3	2.3	3.1	1.1	32	3.8	3.8	3.8	0.0	0.0	0.06	46	0.06	301	28	1	19	0.3	62.7	7.3
Mar. 11-20	3,544	11	0.00	6.9	2.6	3.6	1.0	33	3.7	3.7	3.7	0.0	0.3	0.12	48	0.07	469	28	1	21	0.3	63.5	7.2
Mar. 21-31	5,207	17	0.00	6.6	2.4	3.1	0.7	31	4.8	4.8	4.8	0.0	0.0	0.08	46	0.06	647	26	1	20	0.3	60.0	7.4

Apr. 1-10, 1953	5,815	15	.00	5.6	1.5	2.2	5	25	2.6	2.6	0	.4	.13	38	0.05	587	20	0	19	.2	46.5	7.3
Apr. 11-20	3,966	12	.00	6.5	1.7	2.8	8	27	2.4	2.4	.1	.1	.14	41	.06	471	23	1	20	.3	51.8	7.2
Apr. 21-30	13,790	9.9	.0	4.7	1.5	2.0	5	22	2.1	2.1	.1	.5	.23	34	.05	1,270	18	0	19	.2	44.4	7.1
May 1-10	8,848	12	.0	5.2	1.5	2.4	6	24	2.2	2.2	.1	.1	.04	38	.05	908	19	0	21	.2	48.8	7.2
May 11-20	8,128	7.9	.0	4.8	1.7	2.0	5	23	2.6	2.6	.1	.1	.06	35	.05	768	19	0	18	.2	45.6	6.8
May 21-31	6,988	9.6	.0	4.4	1.5	2.0	6	22	2.1	2.1	.1	.2	.08	34	.05	641	17	0	20	.2	42.2	6.9
June 1-10	8,782	8.5	.0	4.4	1.2	3.1	8	23	1.6	1.6	.0	.0	.09	34	.05	804	16	0	28	.4	38.6	7.0
June 11-20	9,474	11	.0	4.4	1.2	1.8	5	17	1.6	3.8	.0	.0	.08	32	.04	844	16	2	19	.2	35.5	6.8
June 21-30	6,969	5.6	.0	3.8	1.1	2.0	5	19	1.3	1.8	.0	.0	.02	29	.04	546	14	0	23	.2	32.4	7.2
July 1-10	4,308	7.1	.0	4.2	1.4	2.0	7	22	1.4	1.8	.0	.0	.02	32	.04	372	16	0	20	.2	38.8	6.9
July 11-20	2,514	8.1	.0	5.0	1.3	2.8	8	23	1.8	3.0	.0	.0	.06	35	.05	238	18	0	24	.3	45.5	7.3
July 21-31	1,057	11	.0	7.3	1.7	3.4	9	32	2.3	4.0	.0	.3	.07	49	.07	140	25	0	22	.3	61.3	7.4
Aug. 1-10	564	11	.0	8.9	2.4	3.1	8	38	3.7	4.0	.0	.1	.02	55	.07	84	32	1	17	.2	75.8	7.5
Aug. 11-20	423	10	.0	9.7	2.8	3.4	1.1	42	3.8	5.2	.0	.0	.05	60	.08	69	36	1	17	.3	87.6	7.4
Aug. 21-31	364	12	.00	9.7	3.1	3.8	1.0	43	4.1	6.0	.1	.3	.10	61	.08	60	37	2	18	.3	88.8	7.3
Sept. 1-10	401	13	.00	9.3	2.8	3.8	.9	41	4.1	5.2	.1	.5	.07	59	.08	65	35	1	19	.3	86.4	7.3
Sept. 11-20	396	10	.04	7.9	2.2	3.1	.9	33	3.6	3.0	.1	.5	.13	51	.07	55	29	2	18	.3	74.6	7.1
Sept. 21-30	416	11	.02	8.4	2.2	3.4	1.0	37	3.5	3.2	.1	.5	.10	54	.07	61	30	0	19	.3	80.8	7.0
Weighted average a	3,738	b 11	b 0.00	c 6.0	c 2.0	c 2.0	0.7	27	c 3.0	2.9	b 0.0	c 0.1	b 0.10	c 43	c 0.06	c 429	23	c 1	c 19	c 0.2	53.8	--

a Represents 100 percent of runoff for water year October 1952 to September 1953.

b Represents 96 percent of runoff for water year October 1952 to September 1953.

c Represents 99 percent of runoff for water year October 1952 to September 1953.

SACRAMENTO RIVER BASIN--Continued

AMERICAN RIVER AT FAIR OAKES, CALIF.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 [Once-daily measurement at approximately 8 a. m. to 10 a. m.]

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

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT SACRAMENTO, CALIF.

LOCATION.--At Tower Bridge, 0.4 mile downstream from gaging station at Sacramento, Sacramento County, and approximately 1.3 miles downstream from confluence of the American River.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by State of California Division of Water Resources. Records of discharge for water year October 1952 to September 1953 given in Report of Sacramento-San Joaquin Water Supervision for 1952 and Report of Sacramento-San Joaquin Water Supervision for 1953.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (microhmhos at 25°C)	pH	Color
													Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate				
Oct. 28, 1952	9,480	18	0.00	15	6.5	15	1.5	84	18	8.8	0.1	1.5	126	0.17	64	0	33	179	7.9	
Nov. 21, 1952	11,600	22	--	14	7.2	14	1.9	79	13	11	.0	4.7	127	.17	65	0	31	188	7.9	
Jan. 23, 1953	72,400	--	--	7.5	3.7	4.1	.9	44	--	3.5	--	--	--	--	34	0	20	86.9	7.1	
Feb. 26, 1953	20,200	--	--	15	7.0	11	1.1	81	--	7.5	--	--	--	--	66	0	26	181	7.5	
Mar. 30, 1953	31,200	--	--	12	5.8	10	--	65	--	7.5	--	--	--	--	54	1	29	145	7.3	
Apr. 24, 1953	29,500	--	--	8.8	4.4	6.1	--	51	--	4.0	--	--	--	--	40	0	25	103	7.6	
May 15, 1953	28,300	17	.0	11	5.8	10	1.0	87	10	7.8	.1	.2	96	.13	51	0	29	146	7.4	
Aug. 21, 1953	8,890	--	--	17	10	21	1.3	108	--	17	--	--	--	--	84	0	35	255	7.5	
Sept. 11, 1953	10,500	21	--	14	11	20	1.4	110	18	12	.1	.7	152	.21	80	0	35	247	8.1	
Sept. 12, 1953	10,700	23	--	15	9.7	20	1.4	108	16	11	.1	.2	150	.20	77	0	35	226	8.1	
Sept. 18, 1953	13,100	20	--	16	9.8	20	1.8	108	16	14	.1	.6	152	.21	80	0	35	246	7.8	
Sept. 19, 1953	13,700	22	--	16	10	20	1.5	113	16	12	.1	.5	154	.21	81	0	34	249	8.1	

SACRAMENTO RIVER BASIN--Continued
CACHE CREEK NEAR CAPAY, CALIF.

LOCATION.--At gaging station, 1.8 miles upstream from Clear Lake Water Company's diversion dam, 3.2 miles northwest of Capay, Yolo County, and 5.4 miles northwest of Esparto.

DRAINAGE AREA.--1,052 square miles.

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

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis- charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	So- dium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO ₃)	Car- bonate (CO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids			Hardness as CaCO ₃			Per- cent so- dium	So- ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per mil- lion	(sum) Tons per acre- foot	Tons per day	Calcium, per mag- nesium	Non- carbon- ate					
Oct. 1, 1952	97	9.4	--	33	25	36	2.2	237		17	38	0.1	0.3	1.3	279	0.38		186	0		29		503	7.9
Oct. 20	27	11	0.00	24	41	55	2.5	270		25	68	.1	.2	1.5	356	.48		228	8		32		659	8.1
Nov. 14	19	14	--	50	33	55	2.5	295		31	87	.1	.2	1.7	421	.57		260	18		31		743	8.4
Dec. 13	404	14	.0	32	27	42	2.3	202		32	55	.1	2.2	1.2	307	.42		191	26		32		541	8.0
Jan. 19, 1953	5,240	11	--	23	16	42	2.2	152		15	12	.3	2.2	.35	171	.23		123	0		21		302	7.8
Feb. 11	369	17	--	38	39	42	2.2	291		44	46	.1	1.9	.94	373	.51		256	17		26		649	8.0
Mar. 19	576	12	--	43	39	58	2.3	300		51	73	.1	.8	1.1	428	.58		268	22		32		752	8.3
Apr. 17	188	13	--	32	41	48	2.5	278		42	57	.1	.6	1.3	374	.51		248	20		29		665	8.3
May 16	284	11	.0	31	27	32	2.4	225		25	34	.0	1.3	1.1	276	.38		188	4		27		480	8.3
June 17	451	13	--	27	21	26	2.1	187		16	19	.1	1.9	.85	212	.29		154	0		22		376	8.1
Aug. 17	429	--	--	27	17	16	2.2	173		--	12	--	--	.26	--	--		137	0		20		326	8.0
Sept. 23	33	11	--	36	25	36	2.3	232		20	42	.2	.1	1.1	287	.39		193	3		28		501	8.2

a Includes equivalent of 8 parts per million of carbonate (CO₃).

SACRAMENTO RIVER BASIN--Continued
PUTAH CREEK NEAR WINTERS, CALIF.

LOCATION.--At gaging station 6 miles west of Winters, Yolo County, and 8 miles downstream from Calpell Creek.
DRAINAGE AREA.--377 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-ble solid	So-lu-ble solid ratio	Specific conduct- ance (micro- mhos at 25°C)	pH
															Parts per mil-lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon-ate				
Oct. 1, 1952	1.8	28	--	36	64	41	1.6	398	13	49	28	0.1	0.2	1.0	458	0.62		353	27	20		756	8.5
Oct. 20	9.4	24	0.00	38	65	39	1.9	392	16	55	34	.1	.1	.97	466	.63		362	15	19		776	8.4
Nov. 14	11	25	--	41	62	38	1.5	395	12	50	28	.0	.8	1.1	454	.62		358	14	19		747	8.4
Dec. 13	497	25	.0	19	32	12	1.3	195	0	23	9.8		2.7	.18	221	.30		179	19	13		366	7.9
Jan. 19, 1953	2,700	25	--	13	27	10	1.2	166	0	20	7.8	.3	1.2	.05	187	.25		143	7	13		306	8.0
Feb. 11	390	29	--	27	51	19	.9	296	10	38	13	.1	1.4	.27	335	.46		277	18	13		558	8.3
Mar. 11	307	29	--	30	57	19	1.1	332	8	38	12	.1	1.4	.32	359	.49		310	24	12		589	8.4
Apr. 17	a185	27	--	25	49	17	1.0	302	0	33	12	.1	.3	.31	313	.43		264	16	12		521	8.4
May 18	119	27	.0	23	50	16	1.3	286	16	29	16	.1	.6	.22	322	.44		268	17	11		521	8.5
June 17	44	29	--	32	54	20	1.3	302	24	34	14	.1	.6	.40	336	.49		302	14	13		388	8.6
Aug. 17	7.4	--	--	41	63	37	2.0	369	18	--	28	--	--	.36	--	--		362	12	16		636	8.4
Sept. 23	3.6	26	.00	37	66	40	2.2	394	18	49	30	.2	.4	1.1	466	.63		364	11	19		761	8.6

a Mean daily discharge (cfs).

SACRAMENTO RIVER BASIN--Continued
SACRAMENTO RIVER AT SNODGRASS SLOUGH NEAR COURTLAND, CALIF.

LOCATION --At tidal gaging station 2.0 miles north of Courtland, Sacramento County, and approximately 1.5 miles south of Hood.

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

REMARKS --Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by State of California Division of Water Resources. No discharge records available for this station due to tidal effects from Suisun Bay.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Chemical analyses, in parts per million, water year October 1952 to September 1953																						
Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (sum)			Hardness as CaCO ₃		Per-cent so-ad-sorp-tion ratio	Specific conduct-ance (micro-mhos at 25°C)	pH
															Parts per mil-lion	Tons per acre-foot	Tons per day	Calcium	Non-carbon-ate			
Oct. 7, 1952	37	0.05	16	8.3	13	1.0	106	4.4	11	0.0	0.0	0.0	0.0	0.4	143	0.19	74	0	27	202	7.7	
Oct. 20	16	.00	13	6.5	11	1.6	81	4.6	7.1	.0	.8	.06	.06	.03	100	.14	59	0	28	187	7.6	
Nov. 3	19	.0	13	7.3	11	1.7	81	7.7	7.5	.1	.8	.03	.03	.03	108	.15	62	0	27	163	7.3	
Dec. 3	--	--	17	3.5	9.2	1.2	75	--	--	--	--	--	--	--	--	--	57	0	26	156	7.6	
Dec. 17	20	--	13	5.7	11	1.5	74	11	8.5	.1	1.3	.05	.05	.05	109	.15	56	0	29	162	7.4	
Jan. 6, 1953	--	--	12	6.6	8.2	1.1	69	--	8.0	--	--	--	--	--	--	--	57	1	23	150	7.5	
Jan. 22	12	--	7.4	3.1	3.6	1.8	40	3.5	5.5	.2	.4	.06	.06	.06	54	.07	31	0	20	80.8	7.3	
Feb. 3	17	--	12	5.7	8.2	1.7	69	7.4	5.5	.1	1.3	.02	.02	.02	93	.13	53	0	24	142	7.4	
Feb. 26	20	--	13	6.8	10	1.1	77	10	8.0	.1	1.4	.03	.03	.03	108	.15	60	0	26	187	7.3	
Mar. 11	19	--	14	6.6	8.7	1.8	72	8.8	7.2	.0	.4	.02	.02	.02	101	.14	62	3	23	156	7.5	
Mar. 26	18	--	9.7	4.6	6.3	.7	56	6.4	3.5	.2	.4	.01	.01	.01	77	.10	43	0	24	108	7.6	
Apr. 9	16	--	9.3	5.1	6.3	.8	55	5.2	4.8	.1	.6	.00	.00	.00	75	.10	44	0	23	113	7.4	
Apr. 24	--	--	8.1	2.9	5.4	--	41	--	4.0	--	--	--	--	--	--	--	32	0	27	83.9	7.5	
May 11	16	--	11	4.8	9.8	.9	58	7.8	7.5	.1	.3	.02	.02	.02	86	.12	45	0	32	135	7.3	
May 26	16	.2	10	4.0	9.2	.8	57	7.7	5.5	.0	.1	.03	.03	.03	81	.11	41	0	32	123	7.7	
June 26	15	--	9.4	4.0	9.0	.5	51	6.1	7.8	.1	.2	.03	.03	.03	77	.10	40	0	33	118	6.9	
July 14	17	--	12	6.1	11	.9	70	8.5	11	.0	1.7	.05	.05	.05	103	.14	55	0	30	166	8.0	
July 24	19	--	14	8.2	15	1.3	86	13	13	.0	.0	.09	.09	.09	126	.17	69	0	32	210	7.6	
Aug. 5	23	--	16	8.9	16	1.1	97	14	14	.1	.7	.06	.06	.06	142	.19	76	0	31	226	7.7	
Aug. 26	23	--	16	10	20	1.3	109	17	16	.1	1.7	.04	.04	.04	158	.21	81	0	34	253	7.8	
Sept. 12	27	--	18	11	25	2.0	120	18	18	.1	1.2	.00	.00	.00	179	.24	90	0	37	281	8.2	
Sept. 16	21	--	16	10	20	1.7	110	16	14	.1	.8	.07	.07	.07	154	.21	81	0	34	251	7.5	

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (sum)		Hardness as CaCO ₃		Percent sodium	Specific conductance (micro- mhos at 25 °C)	Col- or
													Parts per million	Tons per acre- foot	Calcium, magnesium	Non-carbonate			

SACRAMENTO RIVER AT DELTA (SEC. 35, T. 36., R. 5 W.)

Oct. 16, 1952	202	27	0.00	9.0	7.4	12	1.0	79	3.2	8.1	0.1	0.4	0.12	107	0.15	53	0	33	153	7.6
Feb. 10, 1953	1,610	--	--	5.5	6.6	3.8	.3	50	--	3.8	--	--	.16	--	--	41	0	17	89	7.3
Mar. 14	1,710	--	--	5.6	5.9	4.3	--	48	--	2.8	--	--	.08	--	--	39	0	20	88	7.2
May 12	1,670	16	.0	5.4	5.6	2.5	1.0	48	2.3	2.2	.0	.2	.03	56	.08	36	0	14	78	7.2
Aug. 30	344	--	--	7.4	8.2	8.2	1.0	70	--	6.0	--	--	.13	--	--	52	0	25	239	7.2
Sept. 14	241	29	.01	8.6	7.7	10	1.2	76	3.5	8.0	.1	.3	.18	106	.14	53	0	28	148	8.0

PIT RIVER NEAR CANBY (SEC. 10, T. 41 N., R. 9 E.)

Oct. 16, 1952	96	31	0.00	20	8.0	22	4.5	138	12	6.2	0.0	1.0	0.10	173	0.24	83	0	35	254	7.8
Mar. 25, 1953	580	--	--	13	5.2	14	--	85	--	5.5	--	--	.04	--	--	54	0	36	175	7.6
Apr. 15	205	--	--	16	5.6	17	--	105	--	5.5	--	--	.03	--	--	63	0	37	200	7.8
May 6	432	31	.1	15	5.2	14	3.7	97	6.6	2.0	.2	1.3	.00	127	.17	59	0	32	175	7.9
Sept. 23	104	34	--	19	9.0	21	5.1	140	8.2	5.0	.5	.9	.07	172	.23	84	0	33	254	7.7

BURNLEY CREEK NEAR BURNLEY (SEC. 18, T. 35 N., R. 3 E.)

Oct. 16, 1952	--	30	0.00	11	4.8	4.5	1.4	70	0.6	0.8	0.0	0.3	0.02	88	0.12	47	0	17	108	7.5
Mar. 26, 1953	--	--	--	6.4	1.9	3.8	--	39	--	1.0	--	--	.04	--	--	24	0	26	60.2	7.4
Apr. 15	--	--	--	5.8	2.7	3.4	--	39	--	.5	--	--	.01	--	--	26	0	22	62.4	7.3
May 6	--	17	.0	4.0	1.9	2.0	.4	27	.7	.2	.0	.0	.04	40	.05	18	0	19	42.3	7.5
Aug. 12	--	--	--	9.8	5.2	3.8	1.1	62	--	1.5	--	--	.01	--	--	46	0	15	98.1	7.2
Sept. 23	31	--	--	10	5.6	4.1	1.0	68	2.1	.2	.1	.1	.05	88	.12	48	0	15	105	7.5

PIT RIVER NEAR MONTGOMERY CREEK (SEC. 32, T. 35 N., R. 1 W.)

Oct. 17, 1952	5,880	32	0.00	11	6.5	12	1.8	91	3.0	3.6	0.1	0.3	0.03	115	0.16	54	0	32	157	7.9
Feb. 16, 1953	4,880	--	--	12	5.0	10	1.6	78	--	3.0	--	--	--	--	--	50	0	29	137	7.6
Mar. 15	2,850	--	--	13	5.2	9.2	--	79	--	4.0	--	--	.03	--	--	54	0	27	138	7.9
May 13	4,860	28	.0	11	5.1	8.2	1.7	75	4.0	3.2	.0	.6	.05	99	.13	48	0	26	156	7.7
Sept. 15	2,660	35	.00	11	6.4	11	2.0	88	2.9	3.5	.0	.3	.08	115	.16	54	0	30	155	7.3

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (sum)			Hardness as CaCO ₃		Sodium adsorption ratio	Specific conductance (micro- mhos at 25°C)	pH or	Col- or
													Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, mag- nesium	Non- carbon- ate				

McCLOUD RIVER ABOVE SHASTA RESERVOIR (SEC. 28, T. 36 N., R. 3 W.)

Oct. 17, 1952.....	1,020	37	0.00	10	2.9	5.8	1.5	57	1.6	1.5	0.0	0.1	0.03	88	0.12	37	0	25		93.9	8.0	
May 13, 1953.....	1,920	25	0	9.6	3.6	4.3	1.2	53	2.5	3.0	0	1.4	.09	77	.10	39	0	19		94.1	7.3	
Sept. 15.....	1,100	34	.02	8.6	3.5	6.1	1.4	56	2.2	1.5	.0	.1	.02	85	.12	36	0	26		95.9	7.7	

SACRAMENTO RIVER NEAR KESWICK (SEC. 28, T. 32 N., R. 5 W.)

Oct. 21, 1952.....	4,580	21	0.00	10	3.6	6.3	1.1	55	4.8	1.8	0.0	0.3	0.05	76	0.10	40	0	25		103	7.6	
Feb. 13, 1953.....	12,000	--	--	10	3.9	6.1	1.2	57	--	2.0	--	--	--	--	--	41	0	24		107	7.1	
Mar. 17.....	4,030	--	--	11	4.0	5.6	--	60	--	2.5	--	.10	--	--	--	44	0	22		111	7.3	
May 4.....	8,000	24	.1	11	4.2	9.2	.9	56	11	6.2	.0	.6	.03	95	.13	45	0	30		128	7.5	
Sept. 14.....	8,550	21	.03	10	4.0	5.8	1.2	59	5.0	2.0	.1	.4	.01	79	.11	41	0	23		110	7.5	

SACRAMENTO RIVER NEAR REDDING (SEC. 18, T. 31 N., R. 4 W.)

Oct. 15, 1952.....	5,700	21	0.00	8.6	4.5	5.8	1.4	56	4.3	1.8	0.0	0.3	0.03	75	0.10	40	0	23		98.1	7.3	
Jan. 15, 1953.....	a61,700	--	--	10	5.3	7.8	1.3	63	--	2.8	--	--	--	--	--	47	0	26		120	7.2	
Feb. 14.....	a11,500	--	--	9.7	4.1	6.1	1.1	58	--	2.5	--	--	--	--	--	41	0	24		105	7.4	
Mar. 13.....	a3,970	--	--	11	3.8	6.5	--	58	--	2.5	--	.01	--	--	--	43	0	25		115	7.7	
May 12.....	a6,530	20	.0	10	5.1	6.1	1.2	58	7.0	3.2	.0	.5	.02	82	.11	46	0	22		112	7.3	
Sept. 1.....	a9,530	--	--	--	4.5	5.4	.9	58	--	3.0	--	.08	--	--	--	42	0	21		107	6.9	
Sept. 15.....	8,040	27	.01	9.8	4.5	6.1	1.2	61	4.6	2.0	.0	1.2	.07	86	.12	43	0	23		113	7.5	

COTTONWOOD CREEK NEAR COTTONWOOD (SEC. 7, T. 29 N., R. 3 W.)

Jan. 15, 1953.....	2,790	--	--	19	8.8	6.1	1.0	97	--	4.0	--	--	--	--	--	84	4	12		188	7.5	
Feb. 19.....	829	--	--	25	10	8.7	.8	122	--	5.8	--	--	--	--	--	104	4	15		233	8.2	
Mar. 27.....	950	--	--	23	9.6	6.9	--	113	--	5.5	--	0.08	--	--	--	97	4	13		211	8.0	
Apr. 15.....	635	--	--	23	9.3	8.2	--	115	--	5.0	--	.02	--	--	--	96	1	16		217	7.7	
May 7.....	758	18	0.0	20	8.7	6.7	.8	104	9.1	4.0	0.0	0.2	.11	119	0.16	86	0	14		186	8.2	
Aug. 10.....	97	--	--	21	10	8.2	1.1	117	--	7.5	--	--	.00	--	--	94	0	16		214	7.4	
Sept. 23.....	76	24	.00	18	10	8.7	1.3	113	5.8	7.0	.1	.2	.09	131	.18	86	0	18		202	7.7	

a Mean daily discharge (cfs).

MILL CREEK NEAR LOS MOLINOS (SEC. 9, T. 25 N., R. 2 W.)

Oct. 10, 1952.....	123	37	0.00	12	4.9	15	2.5	61	11	18	0.0	0.1	0.39	130	0.18	50	0	38	175	7.5
Jan. 15, 1953.....	865	--	--	8.0	2.7	5.6	1.0	41	--	5.5	--	--	--	--	--	31	0	27	87.1	7.4
Feb. 19.....	221	--	--	9.5	4.2	12	2.0	54	--	12	--	--	--	--	--	41	0	38	140	7.9
Mar. 13.....	235	--	--	9.7	4.3	12	--	49	--	12	--	--	.36	--	--	42	2	38	142	7.8
Apr. 15.....	255	--	--	9.7	3.5	12	--	36	--	10	--	--	.21	--	--	39	9	40	135	6.8
May 12.....	380	29	.0	7.6	3.4	8.2	1.5	42	9.3	6.8	.0	.2	.17	87	.12	33	0	34	108	7.7
Aug. 12.....	151	--	--	12	4.5	12	2.1	51	--	13	--	--	.24	--	--	48	7	34	151	7.4
Sept. 23.....	120	26	--	12	5.5	14	2.1	62	13	14	.0	.1	.51	117	.16	53	2	36	176	8.0

DEER CREEK NEAR VINA (SEC. 14, T. 24 N., R. 2 W.)

Oct. 15, 1952.....	121	36	0.00	11	5.3	12	2.0	82	2.9	5.0	0.0	0.2	0.10	115	0.16	49	0	34	143	7.7
Jan. 15, 1953.....	1,320	--	--	7.0	3.7	5.8	.9	46	--	2.5	--	--	--	--	--	33	0	20	74.8	7.4
Feb. 19.....	303	--	--	8.3	4.9	6.8	1.1	62	--	2.2	--	--	--	--	--	41	0	27	108	7.6
Mar. 13.....	353	--	--	7.1	4.8	6.7	--	59	--	1.5	--	--	.16	--	--	37	0	28	100	7.9
Apr. 15.....	480	27	.0	6.8	3.6	5.0	1.0	53	1.7	1.8	.0	.2	.03	71	.10	32	0	25	94.9	7.4
May 12.....	137	--	--	18	11	11	2.2	132	--	4.8	--	--	.08	--	--	90	0	20	215	7.6
Aug. 12.....	118	37	--	18	14	13	2.3	149	5.4	4.0	.1	.2	.15	167	.23	102	0	21	244	7.9

SACRAMENTO RIVER NEAR HAMILTON CITY (SEC. 20, T. 22 N., R. 1 W.)

Oct. 15, 1952.....	5,920	20	0.00	12	4.3	6.5	1.4	66	4.4	2.8	0.1	0.2	0.06	84	0.11	48	0	22	120	7.5
Jan. 15, 1953.....	78,200	--	--	9.3	5.1	6.3	1.2	62	--	2.5	--	--	--	--	--	44	0	23	114	7.4
Feb. 19.....	8,730	--	--	15	5.4	8.2	1.2	76	--	5.0	--	--	--	--	--	60	0	23	146	7.9
Mar. 27.....	10,300	--	--	13	5.3	6.5	--	70	--	3.8	--	--	.06	--	--	54	0	21	136	8.0
Apr. 22.....	6,290	--	--	12	6.2	7.4	--	72	--	4.0	--	--	.05	--	--	55	0	23	139	7.8
May 7.....	8,930	23	.0	11	5.2	6.5	1.0	67	5.5	2.8	.1	.4	.00	88	.12	49	0	22	124	7.9
Aug. 13.....	8,240	--	--	10	4.8	6.3	1.1	63	--	3.2	--	--	.01	--	--	45	0	23	117	7.0
Sept. 24.....	7,400	25	--	12	6.1	6.5	1.0	71	8.7	2.0	.0	.2	.04	97	.13	55	0	20	125	7.8

a Mean daily discharge (cfs).

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃) (B)	Dissolved solids			Hardness as CaCO ₃		Per- cent so- lids adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or	
													Parts per mil- lion	Tons per acre- foot	Calcium, per mag- nesium	Non- carbon- ate					
BIG CHICO CREEK NEAR CHICO (SEC. 9, T. 22 N., R. 2 E.)																					
Oct. 22, 1952	30	24	0.05	12	5.9	9.2	1.1	74	4.9	4.8	0.0	0.6	0.00	99	0.13		54	0	26	140	8.1
Jan. 14, 1953	1,250	--	--	6.1	2.8	2.8	.4	37	--	2.0	--	--	--	--	--		27	0	18	64.6	7.4
Feb. 18	82	--	--	11	6.1	7.4	.9	72	--	5.0	--	--	--	--	--		53	0	23	133	7.8
Mar. 13	88	--	--	10	5.3	6.9	--	62	--	4.5	--	.12	--	--	--		47	0	24	117	7.9
Apr. 22	110	--	--	11	5.7	7.4	--	70	--	4.8	--	.05	--	--	--		51	0	24	7.8	91.4
May 12	125	30	.0	10	6.1	6.1	.7	67	3.5	4.8	.0	.2	.01	94	.13		50	0	21	118	7.8
Aug. 20	31	--	--	13	8.6	12	1.0	102	--	10	--	.10	--	--	--		73	0	26	193	7.8
Sept. 22	26	37	--	16	8.7	14	1.0	104	6.3	9.5	.0	.1	.10	144	.20		76	0	28	194	8.4

STONY CREEK NEAR HAMILTON CITY (SEC. 36, T. 22 N., R. 2 W.)

Oct. 15, 1952	7.6	13	0.00	36	16	17	0.9	184	14	18	0.0	0.2	0.31	206	0.28		156	5	19	337	8.2
Jan. 15, 1953	4,320	--	--	22	9.9	10	1.3	110	--	9.5	--	--	--	--	--		96	5	18	223	7.7
Feb. 19	285	--	--	34	15	15	.8	158	--	14	--	--	--	--	--		147	17	18	336	8.1
Mar. 27	580	--	--	30	12	15	--	139	--	15	--	.23	--	--	--		124	10	21	300	7.4
Apr. 22	183	--	--	30	13	13	--	145	--	14	--	.11	--	--	--		128	10	18	297	8.2
May 7	391	15	.0	25	10	12	.8	132	15	10	.1	.3	.02	156	.21		111	3	19	287	8.2
Aug. 13	7.5	--	--	38	14	15	--	b176	--	14	--	.06	--	--	--		145	0	18	327	8.5
Sept. 24	13	13	--	33	16	16	1.0	180	15	15	.0	.2	.24	198	.27		148	1	19	346	8.0

BUTTE CREEK NEAR CHICO (SEC. 36, T. 22 N., R. 2 E.)

Oct. 22, 1952	84	24	0.00	12	6.0	5.4	0.9	74	3.2	2.8	0.0	0.1	0.00	91	0.12		55	0	17	125	7.6
Jan. 14, 1953	1,880	--	--	5.3	3.1	1.8	.5	34	--	2.0	--	--	--	--	--		26	0	13	56.0	7.3
Feb. 18	372	--	--	7.8	3.7	3.8	.5	50	--	.5	--	--	--	--	--		35	0	19	84.8	7.6
Mar. 13	449	--	--	9.2	3.6	4.0	--	49	--	2.5	--	.12	--	--	--		38	0	19	83.1	7.6
Apr. 22	302	--	--	6.9	2.7	3.4	--	41	--	.9	--	.02	--	--	--		28	0	21	66.9	7.5
May 12	589	20	.0	6.2	3.5	2.8	.6	42	1.4	1.8	.0	.3	.04	56	.08		30	0	17	70.1	7.4
Aug. 20	158	--	--	14	3.4	3.4	--	63	--	1.8	--	.01	--	--	--		49	0	13	104	7.3
Sept. 22	164	24	--	11	4.8	4.5	.9	66	1.3	.8	.0	.0	.20	80	.11		47	0	17	119	7.8

b Includes equivalent of 12 parts per million of carbonate (CO₃).

COLUSA TROUGH NEAR COLUSA (SEC. 34, T. 16 N., R. 2 W.)

Oct. 15, 1952....	a 509	22	0.00	26	17	44	2.3	167	63	28	0.2	0.7	0.04	285	0.39	135	0	41	479	7.6
Jan. 15, 1953....	2,640	--	--	21	21	55	3.7	171	--	36	--	--	--	--	--	139	0	45	512	7.3
Feb. 19, 1953....	198	--	--	56	45	135	1.7	b 328	--	100	--	--	--	--	--	324	56	47	1,170	8.6
Mar. 27.....	573	--	--	32	16	34	1.7	166	--	26	--	--	--	--	--	146	10	34	436	7.4
Apr. 22.....	a 282	--	--	24	18	62	--	163	--	36	--	--	--	--	--	134	0	50	550	8.1
May 7.....	859	13	.2	23	18	64	2.2	172	83	32	.2	1.3	.25	321	.44	132	0	51	535	7.9
Aug. 13.....	a 685	--	--	28	23	69	1.6	222	--	41	--	--	.14	--	--	164	0	47	595	7.6
Sept. 24.....	1,040	18	--	27	22	65	2.4	212	68	39	.6	.9	.20	347	.47	158	0	47	581	7.9

SACRAMENTO SLOUGH NEAR KNIGHTS LANDING (SEC. 20, T. 11 N., R. 3 E.)

Oct. 23, 1952....	a 260	26	0.00	36	26	34	2.2	251	11	38	0.0	0.4	0.15	297	0.40	197	0	27	509	8.1
Jan. 13, 1953....	--	--	--	17	12	21	1.4	98	--	36	--	--	--	--	--	92	11	33	216	7.9
Feb. 10.....	a 3,380	--	--	20	13	19	1.9	132	--	14	--	--	--	--	--	103	0	28	263	7.6
Mar. 12.....	--	--	--	29	20	28	--	198	--	29	--	--	.05	--	--	155	0	28	405	8.0
Apr. 23.....	a 0	--	--	21	13	18	--	128	--	26	--	--	.04	--	--	106	1	27	291	8.0
May 15.....	a 994	20	.1	23	9.9	17	1.6	130	12	12	.1	1.4	.08	161	.22	198	0	27	259	7.6
Aug. 21.....	a 752	--	--	30	23	29	1.4	227	--	24	--	--	.04	--	--	169	0	27	424	8.3
Sept. 23.....	a 1,220	30	--	27	19	25	1.8	212	6.2	14	.3	.4	.10	228	.31	145	0	27	373	7.9

INDIAN CREEK NEAR CRESCENT MILLS (SEC. 25, T. 26 N., R. 9 E.)

Oct. 17, 1952....	67	20	0.00	19	6.2	9.6	1.7	99	6.3	4.4	0.1	0.3	0.08	116	0.16	73	0	22	181	7.5
Mar. 25, 1953....	1,240	--	--	8.5	3.3	5.0	--	52	--	1.0	--	--	.00	--	--	35	0	24	85.4	7.8
Apr. 14.....	895	--	--	10	3.1	5.4	--	56	--	1.0	--	--	.02	--	--	38	0	24	92.7	7.3
May 5.....	1,490	23	.6	8.8	2.3	4.1	1.0	46	2.5	.8	.1	.2	.02	66	.09	31	0	21	79.4	7.8
Aug. 11.....	27	--	--	22	6.3	20	2.1	107	--	2.5	--	--	.00	--	--	81	0	34	191	7.1
Sept. 22.....	25	28	--	22	7.9	10	1.7	115	7.7	4.2	.0	.2	.07	138	.19	87	0	20	211	7.4

a Mean daily discharge (cfs).

b Includes equivalent of 12 parts per million of carbonate (CO₃).

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (sum)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro- mhos at 25°C)	pH or Col- or	
														Parts per million	Tons per acre- foot day					
																				Calcium, magnesium	Non-carbonate
FEATHER RIVER NEAR OROVILLE (SEC. 2, T. 19 N., R. 4 E.)																				
Oct. 17, 1952.....	2,540	14	0.05	10	4.5	5.0	0.9	61	1.8	1.5	0.0	0.3	0.00	68	0.09	43	0	20	103	7.4
Jan. 14, 1953.....	29,500	--	--	5.3	3.1	3.3	.6	34	--	1.5	--	--	--	--	--	26	0	21	59.0	7.0
Feb. 18.....	6,060	--	--	8.0	3.4	4.1	.8	50	--	1.2	--	--	--	--	--	34	0	20	84.9	7.8
Mar. 13.....	5,500	--	--	7.4	4.0	3.8	--	50	--	1.5	--	--	.01	--	--	35	0	19	83.7	7.7
Apr. 22.....	7,220	--	--	7.8	2.1	2.8	--	40	--	.8	--	.15	--	--	--	28	0	18	67.8	7.2
May 12.....	9,600	14	.0	6.7	3.2	3.1	.6	41	2.1	1.0	.0	.2	.01	51	.07	30	0	18	70.7	7.6
Aug. 20.....	2,700	--	--	12	2.9	3.8	.9	59	--	1.0	--	.02	--	--	--	42	0	16	96.9	7.5
Sept. 27.....	2,750	9.0	.03	10	4.8	4.1	1.1	61	1.8	2.0	.0	.2	.07	63	.09	45	0	16	102	7.7
SOUTH HONCUT CREEK NEAR BANGOR (SEC. 35, T. 18 N., R. 5 E.)																				
Jan. 14, 1953.....	152	--	--	5.9	3.7	4.3	0.3	42	--	2.8	--	.6	0.00	83	0.11	30	0	24	76.5	7.2
Jan. 27.....	40	28	0.00	8.2	4.2	6.9	.4	54	4.5	3.5	0.1	0.6	0.00	83	0.11	38	0	28	104	7.3
Feb. 18.....	10	--	--	10	6.1	9.6	.3	68	--	4.2	--	--	--	--	--	50	0	29	162	7.6
Mar. 12.....	78	--	--	9.9	6.1	9.6	--	70	--	4.8	--	--	.02	--	--	50	0	30	135	7.6
Apr. 22.....	8.7	--	--	12	5.9	12	--	77	--	4.0	--	--	.01	--	--	54	0	33	148	7.3
May 12.....	11	26	.0	12	5.5	8.7	.5	75	6.3	4.5	.1	.1	.01	101	.14	53	0	26	134	8.0
YUBA RIVER NEAR SMARTSVILLE (SEC. 14, T. 16 N., R. 6 E.)																				
Oct. 2, 1952.....	695	16	0.00	14	3.4	3.6	1.1	57	6.0	2.8	0.1	0.0	0.04	75	0.10	49	2	13	108	7.4
Oct. 22.....	660	15	.00	14	3.9	4.1	.7	61	6.3	2.2	.0	.0	.11	76	.10	51	1	15	85.5	7.7
Jan. 14, 1953.....	13,000	--	--	5.9	1.8	1.6	.6	28	--	1.5	--	--	--	--	--	22	0	13	48.2	7.4
Feb. 18.....	2,030	--	--	7.7	2.6	2.0	.4	37	--	2.7	--	--	--	--	--	30	0	13	66.1	7.4
Mar. 12.....	2,770	--	--	9.2	2.2	2.0	--	40	--	2.0	--	--	.00	--	--	32	0	12	72.5	7.6
Apr. 23.....	5,910	--	--	7.8	2.3	2.0	--	37	--	1.9	--	--	.04	--	--	29	0	13	66.6	7.4
May 15.....	4,350	13	.0	6.3	2.5	2.2	.4	34	2.7	1.0	.0	.2	.01	45	.06	26	0	15	57.1	7.7
Aug. 21.....	709	--	--	12	2.2	2.6	.6	49	--	1.8	--	--	.02	--	--	39	0	12	83.2	7.6
Sept. 21.....	676	14	--	14	4.6	2.4	.5	58	8.2	1.2	.1	.0	.04	74	.10	54	6	9	112	7.6

CLEAR LAKE (NORTH END) CLEAR LAKE OAKS (SEC. 27, T. 14 N., R. 8 W.)

Oct. 14, 1952	...	0.3	0.00	24	16	12	1.8	161	9.2	7.5	0.1	1.0	0.82	151	0.21	126	0	17	285	7.8
Jan. 16, 1953	...	--	--	22	16	11	1.8	154	--	7.0	--	--	--	--	--	121	0	16	282	7.4
Feb. 20	...	--	--	22	15	11	2.0	142	--	5.5	--	--	--	--	--	117	0	17	259	8.1
Mar. 19	...	--	--	22	15	12	--	141	--	7.8	--	--	.90	--	--	117	1	18	260	7.7
Apr. 16	...	--	--	31	8.5	11	--	136	--	6.0	--	--	.57	--	--	112	1	18	248	8.0
May 8	...	11	.2	22	14	10	1.9	140	9.0	5.5	.1	4.7	.67	147	.20	112	0	16	235	8.1
Aug. 13	...	--	--	23	16	10	2.0	b156	--	5.5	--	--	.52	--	--	123	0	15	268	8.5
Sept. 24	...	4.6	--	23	17	12	1.9	160	10	5.5	.0	.8	.89	154	.21	127	0	17	281	8.2

CLEAR LAKE (WEST SIDE) LAKEPORT (SEC. 24, T. 14 N., R. 10 W.)

Oct. 14, 1952	...	0.7	0.00	21	17	13	2.3	163	9.1	8.0	0.1	0.2	0.93	152	0.21	122	0	18	289	7.5
Jan. 16, 1953	...	--	--	18	12	12	8.7	116	--	5.8	--	--	--	--	--	94	0	16	219	7.4
Feb. 20	...	--	--	20	13	10	2.6	128	--	5.2	--	--	--	--	--	103	0	17	239	7.4
Mar. 18	...	--	--	19	14	11	--	130	--	6.0	--	--	.42	--	--	105	0	17	240	7.5
Apr. 16	...	--	--	21	13	11	--	133	--	5.5	--	--	.55	--	--	108	0	18	241	7.7
May 8	...	11	.3	20	13	9.6	2.1	134	9.7	5.0	.3	4.0	.43	141	.19	103	0	16	244	7.9
Aug. 13	...	--	--	23	15	11	1.9	152	--	7.5	--	--	.52	--	--	119	0	16	266	8.2
Sept. 24	...	11	--	25	16	11	2.1	168	8.1	6.5	.0	.2	.84	163	.22	120	0	15	295	7.0

CACHE CREEK NEAR LOWER LAKE (SEC. 6, T. 12 N., R. 6 W.)

Oct. 14, 1952	...	2.2	0.00	25	18	14	2.3	172	9.1	8.0	0.1	2.4	0.96	166	0.23	136	0	18	308	7.3
Jan. 16, 1953	...	--	--	23	16	12	2.1	155	--	8.0	--	--	--	--	--	123	0	17	286	7.5
Feb. 20	...	2,550	--	24	17	13	2.1	164	--	7.0	--	--	--	--	--	130	0	18	300	8.1
Mar. 18	...	9.2	--	24	22	20	--	176	--	21	--	--	1.2	--	--	150	6	22	365	7.6
Apr. 16	...	7.8	--	25	17	13	--	165	--	7.2	--	--	.60	--	--	132	0	18	299	7.9
May 8	...	6.0	--	25	17	13	--	165	--	7.2	--	--	.60	--	--	132	0	18	299	7.9
Aug. 13	...	295	.5	23	16	11	2.4	156	10	5.8	.2	3.7	.61	157	.21	123	0	16	280	7.9
Sept. 24	...	437	--	24	15	10	1.8	155	--	6.5	--	--	.55	--	--	122	0	15	277	7.9
Oct. 14, 1952	...	77	4.8	--	24	17	12	2.2	162	11	--	2.4	.85	160	.22	130	0	16	311	7.3

b Includes equivalent of 6 parts per million of carbonate (CO₃).

SACRAMENTO RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- rides (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per- cent so- lids ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or pH	
														Parts per mil- lion	Tons per acre- foot	Calcium, mag- nesium	Non- carbon- ate				
NORTH FORK CACHE CREEK NEAR LOWER LAKE (SEC. 31, T. 14 N., R. 6 W.)																					
Oct. 14, 1952.....	1.1	21	0.00	46	39	49	2.2	278	17	96	0.0	0.5	4.4	412	0.56	276	48	28		742	8.2
Jan. 16, 1953.....	1,140	--	--	16	13	9.8	--	122	--	7.5	--	--	--	--	--	93	0	18		227	7.6
Feb. 20.....	134	--	--	27	27	20	.9	216	--	16	--	--	--	--	--	178	1	20		392	8.2
Mar. 19.....	1,430	--	--	17	12	15	--	114	--	11	--	--	56	--	--	92	0	26		227	7.5
Apr. 16.....	107	--	--	27	23	18	--	196	--	18	--	--	1.0	--	--	162	1	19		369	8.2
May 8.....	123	19	.0	25	20	16	1.0	179	13	15	1.1	.9	.46	196	.27	145	0	19		386	8.2
Aug. 13.....	4.1	--	--	37	30	33	1.8	243	--	48	--	--	2.0	--	--	216	17	25		534	8.2
Sept. 24.....	3.0	20	.00	40	37	33	1.9	257	15	66	1	0	1.9	342	.47	252	41	22		602	8.4
LINDSAY SLOUGH NEAR RIO VISTA (SEC. 25, T. 5 N., R. 2 W.)																					
Oct. 28, 1952.....		17	0.00	15	8.2	15	1.7	91	11	12	0.1	1.4	0.10	126	0.17	71	0	31		208	7.8
Jan. 22, 1953.....		--	--	21	17	28	2.2	146	--	20	--	--	--	--	--	122	3	33		362	7.7
Feb. 13.....		--	--	22	18	27	1.6	147	--	22	--	--	--	--	--	129	8	31		368	7.7
Mar. 11.....		--	--	20	12	20	--	115	--	18	--	--	36	--	--	99	5	30		275	7.8
Apr. 13.....		--	--	14	10	11	--	90	--	11	--	--	11	--	--	76	2	24		199	7.3
May 11.....	15	--	.5	13	9.4	13	1.3	83	16	10	1	.4	.06	119	.16	71	3	28		198	7.3
Aug. 20.....	--	--	--	17	11	20	1.6	109	--	16	--	--	.05	--	--	88	0	33		267	7.5
Sept. 16.....		21	--	18	14	29	1.7	127	25	24	3	.7	.16	196	.27	102	0	38		327	7.7
SACRAMENTO RIVER NEAR RIO VISTA (SEC. 31, T. 4 N., R. 3 E.)																					
Oct. 28, 1952.....		16	0.00	14	6.9	12	1.7	84	8.7	10	0.1	0.9	0.08	112	0.15	63	0	29		182	7.6
Jan. 22, 1953.....		--	--	14	6.0	9.6	--	1.7	73	--	--	--	--	--	--	60	0	25		156	7.5
Feb. 13.....		--	--	14	7.5	11	1.0	81	--	9.0	--	--	--	--	--	66	0	26		177	7.5
Mar. 11.....		--	--	15	8.9	13	--	88	--	11	--	--	.03	--	--	74	2	26		195	7.8
Mar. 13.....		--	--	11	6.1	6.9	--	64	--	5.8	--	--	11	--	--	53	0	22		133	7.5
May 11.....	16	--	.2	9.8	6.0	9.8	8	60	10	6.8	0	.1	.12	89	.12	49	0	30		137	7.8
Aug. 20.....	--	--	--	17	9.9	20	1.4	106	--	16	--	--	.00	--	--	83	0	34		259	7.5
Sept. 11.....	21	--	--	17	11	24	2.2	115	19	18	1	1.6	.13	171	.23	88	0	37		284	7.8
Sept. 16.....	19	--	--	16	12	23	1.7	116	18	19	1	1.0	.07	167	.23	89	0	35		271	7.6
a Includes equivalent of 6 parts per million of carbonate (CO ₃).																					

a Includes equivalent of 6 parts per million of carbonate (CO₃).

NAPA RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN NAPA RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (sum)		Hardness as CaCO ₃		Per- cent so- dium	So- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH or	
														Parts per mil- lion	Tons per acre- foot	Calcium, mag- nesium	Non- carbon- ate					
NAPA RIVER NEAR ST. HELENA (SEC. 33, T. 8 N., R. 5 W.)																						
Oct. 20, 1952	0.7	32	0.00	38	17	20	3.3	198	24	12	0.1	2.3	0.28	246	0.33		165	2	20		385	7.6
Jan. 19, 1953	870	--	--	11	5.8	7.4	1.9	63	--	5.2	--	--	--	--	--	--	51	0	23		136	7.3
Feb. 11	48	--	--	18	7.8	14	6.9	93	--	10	--	--	--	--	--	--	77	1	26		219	7.6
Mar. 11	30	--	--	19	9.9	18	--	107	--	16	--	--	--	--	--	--	88	0	31		255	7.4
Apr. 17	32	--	--	18	8.3	16	--	100	--	12	--	--	--	--	--	--	79	0	31		229	7.7
May 18	a26	14	.0	37	16	13	1.8	156	44	8.5	.2	1.3	.11	213	.29		158	30	15		354	8.0
Aug. 14	.1	--	--	31	19	16	1.8	b179	--	10	--	--	--	--	--	--	155	9	18		362	8.4
Sept. 24	1.5	31	.01	33	17	17	1.9	183	23	12	.2	3.2	.27	228	.31		152	2	19		358	7.9

a Mean daily discharge (cfs).

b Includes equivalent of 5 parts per million of carbonate (CO₃).

RUSSIAN RIVER BASIN

EAST FORK RUSSIAN RIVER NEAR CALPELLA, CALIF.

LOCATION.--Approximately 0.2 mile below gage, 3 miles east of Calpella, Mendocino County, and 1.6 miles downstream from Cold Creek. DRAINAGE AREA.--94.0 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953. RECORDS AVAILABLE.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃		Per-cent so-lid sorp-tion ratio	Specific conduct-ance (micro-mhos at 25°C)	pH	
															Parts per mil-lion	Tons per acre-foot	Calcium, mag-nesium	Non-carbon-ate				
Oct. 6, 1952.....	276	6.9	0.00	20	6.5	6.5	0.7	96		5.9	3.4	0.0	0.3	0.28	98	0.13		77	0	15	172	7.7
Jan. 12, 1953.....	1,480	--	--	13	7.0	5.4	1.4	74		--	1.5	--	--	--	--	--		61	1	18	138	7.2
Feb. 13.....	362	--	--	18	6.1	5.6	.7	82		--	2.2	--	--	--	--	--		65	0	16	149	7.7
Mar. 9.....	337	--	--	18	5.9	6.1	--	86		--	2.5	--	--	.36	--	--		69	0	16	155	7.9
Apr. 6.....	354	--	--	17	6.9	6.5	--	86		--	3.5	--	--	.16	--	--		71	0	17	158	7.5
May 4.....	367	11	.0	17	6.9	5.8	.8	83		9.5	3.5	.0	.6	.09	96	.13		71	3	15	157	7.4
June 25.....	280	11	.0	17	6.1	4.5	.6	78		6.9	3.5	.0	.2	.13	88	.12		68	4	13	142	7.9
Aug. 3.....	255	--	--	18	6.0	5.2	.8	84		--	2.5	--	--	.15	--	--		70	1	14	156	7.3
Sept. 1.....	305	17	--	30	15	10	1.3	160		13	12	.3	.6	.18	178	.24		137	5	14	298	7.9
Sept. 14.....	259	8.7	.01	19	7.0	6.1	1.1	94		7.1	3.0	.1	.6	.33	99	.13		76	0	15	173	7.5

RUSSIAN RIVER BASIN--Continued
EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.

LOCATION --At gaging station at private road bridge, 1.3 miles upstream from mouth, and 3.7 miles northeast of Ukiah, Mendocino County.
DRAINAGE AREA --104 square miles.
RECORDS AVAILABLE --Chemical analyses: December 1952 to September 1953.

Water temperatures: December 1952 to September 1953.
Records: December 1952 to September 1953.

EXTREMES: 1952-53. --Dissolved solids: Maximum, 150 ppm Jan. 23-31, Feb. 1-10; minimum, 96 ppm June 1-30.

Sardness: Maximum, 113 ppm Jan. 23-31, Feb. 1-10; minimum, 42 ppm Jan. 6, 7, 9, 14.

Specific conductance: Maximum, 279 micromhos Feb. 10; minimum, 89.8 micromhos Jan. 7.

Water temperatures: Maximum observed, 42° Jan. 5.

Sediment concentrations: Maximum daily, 1,730 ppm Jan. 9; minimum daily, 1 ppm Jan. 29.

Sediment loads: Maximum daily, 20,600 tons Jan. 9; minimum daily, 1 ton several days during January and February.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Chemical analyses, in parts per million, December 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)		
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Non-carbonate				
Dec. 11-31, 1952...	631	9.0	0.00	15	7.6	4.3	1.2	75		8.6	5.0	0.3	1.0	0.28	100	0.14	170	69	7	12	0.2	158	7.5
Jan. 1-5, 8, 10-13, 15-22, 1953...	1,260	21	.00	15	8.0	4.3	.8	80		8.1	4.5	.1	.9	.41	99	.13	337	70	5	12	.2	156	7.6
Jan. 6, 7, 9, 14...	2,360	12	--	9.0	4.8	4.5	1.2	52		6.8	1.8	.1	1.5	.06	a67	.09	427	42	0	18	.3	107	6.6
Jan. 23-31, Feb. 1-10	221	25	.00	24	13	10	.8	136		15	7.0	.0	1.3	.28	150	.20	90	113	2	16	.4	249	8.2
Feb. 11-28...	342	12	.0	17	5.7	6.1	.6	84		7.9	3.5	.1	.5	.22	97	.13	90	66	0	17	.3	164	7.7
Mar. 1-31...	454	12	.0	17	6.2	5.8	.6	82		9.1	3.8	.1	.3	.31	98	.13	120	68	1	16	.3	163	7.8
Apr. 1-30...	376	14	.0	17	7.1	6.5	.7	88		9.5	3.5	.0	.0	.19	99	.13	101	72	0	16	.3	163	8.0
May 1-31...	353	12	.0	18	6.4	6.1	.7	86		8.4	3.8	.0	.3	.24	97	.13	92	71	1	16	.3	158	7.9
June 1-30...	307	8.0	.0	18	5.9	6.1	.7	87		8.8	4.0	.1	.3	.29	96	.13	80	69	0	16	.3	165	8.1
July 1-9, 13, 16, 20, 23, 27...	280	14	.01	18	6.7	5.8	.9	86		8.6	3.5	.3	.9	.10	97	.13	68	72	2	15	.3	157	7.9
Aug. 3, 6, 9-10, 13, 17, 20, 24, 27, 31, Sept. 3, 7, 10, 14, 17, 21, 24, 26, 28.	275	6.7	.02	19	5.8	4.5	1.0	86		8.1	3.8	.0	.6	.31	99	.13	74	71	1	12	.2	158	7.5
	283	8.9	.02	20	6.7	6.5	.8	95		7.2	4.5	.1	.7	.36	105	.14	75	77	0	15	.3	176	7.9

a Sum of determined constituents.

RUSSIAN RIVER BASIN--Continued
EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.

Temperature (°F) of water, December 1952 to September 1953
/Once-daily measurement usually taken between 7 a. m. and 11 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			--	49	53	45	51	a 60	52	60	--	--
2			--	49	53	a 45	52	a 60	53	a 61	--	--
3			--	49	51	a 45	55	a 55	52	a 62	a 64	a 75
4			--	49	a 50	a 51	--	56	59	60	--	--
5			--	42	51	46	--	56	57	61	--	--
6			--	49	55	49	--	57	55	a 62	60	--
7			--	50	55	49	50	a 48	57	63	--	68
8			--	51	52	47	48	56	58	59	--	--
9			--	a 49	a 50	47	45	56	57	62	a 75	--
10			--	a 55	49	49	46	53	56	--	64	a 75
11			a 53	a 55	47	47	50	55	58	--	--	--
12			50	54	a 49	47	52	59	59	--	--	--
13			46	55	a 50	a 47	51	57	58	62	a 74	--
14			a 50	50	51	44	--	56	60	--	--	70
15			a 47	49	a 47	47	51	55	60	--	--	--
16			50	47	a 50	46	50	58	59	65	--	--
17			50	49	47	45	50	a 62	60	65	62	a 68
18			50	a 54	46	45	50	48	59	--	63	--
19			48	54	a 49	50	52	58	60	--	--	--
20			47	b 53	44	45	53	58	59	62	66	--
21			a 45	a 47	45	46	55	55	61	--	--	65
22			47	48	44	51	55	52	61	--	--	--
23			a 46	49	45	49	56	a 55	a 61	63	--	--
24			46	50	44	50	56	a 54	61	--	64	a 65
25			a 46	50	45	49	56	51	60	--	--	--
26			48	57	45	50	a 55	52	60	--	--	63
27			49	45	a 55	47	a 56	52	60	64	a 62	--
28			47	46	a 47	49	--	54	61	63	--	64
29			48	51	--	50	a 55	58	61	--	--	--
30			a 50	52	--	48	52	54	61	--	--	--
31			46	52	--	50	--	56	--	--	a 70	--
Average			--	50	49	48	52	55	58	--	--	--

a Measured between 11 a. m. and 6 p. m.

b Measured after 6 p. m.

RUSSIAN RIVER BASIN--Continued

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Suspended sediment December 1952 to September 1953

Suspended sediment December 1952 to September 1953									
Day	Mean dis-charge (cfs)	Suspended sediment		Mean dis-charge (cfs)	Suspended sediment		December		
		Mean concen-tration (ppm)	Tons per day		Mean dis-charge (cfs)	Mean concen-tration (ppm)	Tons per day		
1.....							--	--	--
2.....							--	--	--
3.....							--	--	--
4.....							--	--	--
5.....							--	--	--
6.....							--	--	--
7.....							--	--	--
8.....							--	--	--
9.....							--	--	--
10.....							--	--	--
11.....							911	175	430
12.....							572	114	176
13.....							470	95	121
14.....							410	74	82
15.....							376	69	70
16.....							358	71	69
17.....							341	65	60
18.....							327	69	61
19.....							802	365	s 1,200
20.....							690	118	s 255
21.....							458	51	63
22.....							414	50	56
23.....							384	43	45
24.....							366	52	51
25.....							399	52	56
26.....							1,140	1,060	s 7,800
27.....							1,330	747	s 3,560
28.....							662	125	223
29.....							781	320	b 675
30.....							1,340	719	sb 3,150
31.....							714	100	193
Total.							13,245	--	18,396
January				February			March		
1.....	1,330	360	s 1,310	171	2	1	327	18	16
2.....	895	97	234	160	2	1	324	24	21
3.....	639	59	102	147	2	1	324	15	13
4.....	572	40	62	139	2	1	320	18	16
5.....	516	30	42	139	2	1	320	17	15
6.....	1,480	924	s 4,940	132	3	1	320	20	17
7.....	1,980	1,250	s 8,640	117	2	1	317	17	15
8.....	1,780	1,580	s 13,100	110	2	1	317	15	13
9.....	3,780	1,730	s 20,600	101	3	1	317	13	11
10.....	1,250	380	1,280	110	6	s 3	327	20	18
11.....	747	230	s 555	278	85	64	324	25	22
12.....	1,340	1,210	s 5,690	351	70	66	344	32	30
13.....	1,460	760	s 3,420	358	54	52	324	19	17
14.....	2,190	1,140	s 7,820	358	43	42	324	10	9
15.....	885	170	406	351	36	34	320	13	11
16.....	598	60	97	358	39	38	324	14	12
17.....	2,430	1,260	s 14,400	358	41	40	324	11	10
18.....	2,730	1,360	sb 11,500	358	34	33	358	20	19
19.....	1,840	843	sb 4,490	355	38	36	1,360	804	s 3,080
20.....	1,940	1,340	sb 7,970	348	30	28	1,470	686	sb 3,250
21.....	1,060	1,400	4,010	344	24	22	999	230	s 765
22.....	709	150	287	341	25	23	616	68	113
23.....	563	60	91	341	21	19	524	50	71
24.....	454	28	34	337	24	22	474	40	51
25.....	380	23	24	337	19	17	446	34	41
26.....	324	6	5	330	25	22	422	32	36
27.....	281	7	5	330	24	21	407	31	34
28.....	252	4	3	327	24	21	358	25	24
29.....	231	1	1	--	--	--	388	31	32
30.....	205	2	1	--	--	--	376	30	30
31.....	188	2	1	--	--	--	369	27	27
Total.	35,029	--	111,120	7,486	--	612	14,064	--	7,839

s Computed by subdividing day.

b Computed from partly estimated concentration graph.

RUSSIAN RIVER BASIN--Continued

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Suspended sediment December 1952 to September 1953--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.....	366	21	21	410	27	30	334	14	13
2.....	362	20	20	376	26	26	330	15	13
3.....	351	21	20	358	27	26	330	16	14
4.....	348	14	13	373	14	14	330	11	10
5.....	351	25	24	369	24	24	327	12	11
6.....	348	22	21	369	26	26	376	51	s 53
7.....	348	18	17	369	24	24	341	25	23
8.....	344	16	15	362	20	20	334	18	16
9.....	348	21	20	355	17	16	334	14	13
10.....	351	18	17	351	17	16	341	15	14
11.....	344	20	19	351	15	14	334	14	13
12.....	337	16	15	348	16	15	330	15	13
13.....	334	15	14	341	14	13	330	15	13
14.....	334	14	13	341	15	14	330	13	12
15.....	334	17	15	341	16	15	324	12	10
16.....	341	16	15	337	15	14	317	14	12
17.....	337	16	15	337	13	12	304	12	10
18.....	330	29	26	327	15	13	291	12	9
19.....	330	20	18	358	20	19	278	12	9
20.....	330	18	16	344	28	26	278	13	10
21.....	327	20	18	373	70	b 71	288	13	10
22.....	324	20	17	344	29	27	275	12	9
23.....	317	22	19	344	14	13	259	9	6
24.....	310	19	16	344	13	12	259	8	6
25.....	310	19	16	362	40	b 39	278	9	7
26.....	334	23	21	348	15	14	275	10	7
27.....	1,050	525	s 2,200	348	20	19	256	13	9
28.....	499	80	108	341	17	16	288	14	11
29.....	503	110	149	337	19	17	281	10	8
30.....	450	55	67	337	17	15	272	12	9
31.....	--	--	--	337	17	15	--	--	--
Total.	11,292	--	2,985	10,932	--	635	9,224	--	373
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.....	262	9	6	278	17	a 13	297	9	a 7
2.....	265	7	5	278	17	a 13	307	10	a 8
3.....	262	8	6	268	17	12	294	10	8
4.....	268	15	11	259	17	a 12	268	10	a 7
5.....	278	14	11	265	17	a 12	294	10	a 8
6.....	268	8	6	278	30	22	275	11	a 8
7.....	246	15	10	281	25	a 19	284	11	8
8.....	252	20	14	291	20	a 16	278	10	a 8
9.....	240	16	10	297	15	12	268	8	a 6
10.....	240	16	a 10	288	16	12	268	6	4
11.....	259	17	a 12	262	13	a 9	272	6	a 4
12.....	272	18	a 13	252	10	a 7	275	7	a 5
13.....	272	18	13	256	7	5	278	8	a 6
14.....	278	18	12	262	8	a 6	275	9	7
15.....	275			262	8	a 6	191	8	a 4
16.....	268			278	12	a 9	177	7	a 3
17.....	268	18	12	275	12	9	191	6	3
18.....	262			262	14	10	202	8	a 4
19.....	262			249	13	a 9	275	9	a 7
20.....	243	18	12	249	12	8	294	10	a 8
21.....	237	18	a 12	259	12	a 8	252	11	7
22.....	240			272	11	a 8	216	10	a 6
23.....	246			275	10	a 7	210	9	a 5
24.....	246	18	a 12	272	10	7	213	7	4
25.....	262			259	10	a 7	210	8	a 5
26.....	275	16	12	268	9	a 7	275	10	7
27.....	268			272	9	7	297	11	a 9
28.....	268			268	9	a 7	317	12	10
29.....	272	17	a 12	297	9	a 7	304	11	a 9
30.....	259			313	9	a 8	307	10	a 8
31.....	259			287	9	7	--	--	--
Total.	8,072	--	349	8,442	--	301	7,864	--	193

Total discharge for period (cfs-days) 125,650

Total load for period (tons) 142,803

s Computed by subdividing day.

a Computed from estimated or interpolated concentration.

b Computed from partly estimated concentration graph.

RUSSIAN RIVER BASIN--Continued
EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Particle-size analyses of suspended sediment, December 1952 to September 1953

(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; V, visual accumulation tube)

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. 11, 1952 . . .	10:30 a. m.	820	--	210	--	--	--	--	--	--	77	86	94		100	--	S
Dec. 12 . . .	9:30 a. m.	541	50	122	--	--	--	--	--	--	81	89	97		99	100	S
Jan. 6, 1953 . . .	1:40 p. m.	1,590	49	619	3,040	29	29	44	44		62	78	91		99	100	SPWCM
Jan. 9 . . .	1:25 p. m.	3,670	48	1,560	2,380	20	20	34	34		60	74	90		97	100	VBWCM
Jan. 14 . . .	1:00 p. m.	2,280	50	801	4,050	30	30	45	45		65	78	91		98	99	SPWCM
Jan. 19 . . .	3:35 p. m.	1,780	54	740	2,740	23	23	32	32		50	63	80		98	100	SPWCM
Jan. 20 . . .	11:30 a. m.	3,220	52	1,800	3,660	19	19	32	32		50	64	80		95	99	SPWCM
Mar. 11 . . .	5:30 p. m.	310	49	28	--	--	--	--	--		81	88	94		100	--	S
Mar. 21 . . .	3:45 p. m.	820	49	180	--	--	--	--	--		78	88	97		100	--	V
Apr. 30 . . .	3:00 p. m.	446	57	41	--	--	--	--	--		84	93	98		100	--	S
May 21 . . .	5:30 p. m.	362	59	82	--	--	--	--	--		98	99	99		100	--	S
June 7 . . .	7:00 p. m.	337	60	20	--	--	--	--	--		88	95	100		--	--	S
July 7 . . .	5:20 p. m.	246	64	13	--	--	--	--	--		86	95	100		--	--	S

RUSSIAN RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RUSSIAN RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃	Per-cent so-dium adsorp-tion ratio	Specific conductance (micro-mhos at 25°C)	
															Parts per million	Tons per acre-foot				
																				Calcium, per cent	Non-carbonate
EAST FORK RUSSIAN RIVER AT POTTER VALLEY (SEC. 6, T. 17 N., R. 11 W.)																				
Oct. 6, 1952	272	7.6	0.00	21	4.9	5.8	0.4	91		6.1	3.0	0.1	0.2	0.28	94	0.13	73	0	15	164
Jan. 12, 1953	1,480	--	--	15	12	2.8	1.0	108		--	1.0	--	--	--	--	--	87	0	6	177
Feb. 13	365	--	--	13	4.2	4.5	.9	62		--	2.2	--	--	--	--	--	50	0	16	113
Mar. 9	337	--	--	17	4.5	5.8	--	73		--	2.5	--	--	.50	--	--	61	1	17	135
Apr. 6	357	--	--	15	5.1	4.5	--	71		--	2.8	--	--	.21	--	--	58	0	14	131
May 4	367	10	0	15	4.5	4.1	.7	68		7.0	3.0	.1	.5	.06	78	.11	56	0	14	126
Aug. 5	255	--	--	19	4.5	4.1	.6	77		--	2.5	--	--	.09	--	--	66	3	12	142
Sept. 14	259	9.5	.01	19	5.8	5.8	1.0	90		7.1	3.0	.0	.2	.39	96	.13	71	0	15	165

RUSSIAN RIVER AT UKIAH (SEC. 28, T. 15, N., R. 12 W.)

Oct. 6, 1952	183	8.6	0.00	21	6.4	7.1	0.9	99		6.4	4.2	0.0	0.4	0.31	104	0.14		0	16	7.3
Jan. 12, 1953	2,770	--	--	28	6.2	7.2	1.4	116		--	4.0	--	--	--	--	--	79	0	14	7.4
Feb. 9	550	--	--	43	11	11	1.0	184		--	5.5	--	--	--	--	--	95	0	13	7.9
Mar. 9	9	--	--	21	8.0	7.4	--	90		--	5.5	--	--	.40	--	--	153	2	20	7.5
Apr. 6	14	--	--	27	8.1	8.2	1.0	122		12	4.0	--	--	.23	--	--	73	0	16	7.5
May 4	0	--	0	27	8.1	8.2	1.0	122		12	4.5	.2	.6	.15	136	.18	85	0	16	7.6
Aug. 3	253	--	--	19	6.2	5.6	--	87		--	3.0	--	--	.17	--	--	101	1	15	8.0
Sept. 14	253	8.8	.01	19	7.0	6.5	1.0	95		7.3	3.5	.1	.6	.33	101	.14	76	0	15	7.6

RUSSIAN RIVER NEAR HOPLAND (SEC. 36, T. 14 N., R. 12 W.)

Oct. 6, 1952	183	11	0.00	11	14	8.0	1.0	105		7.0	4.1	0.0	1.0	0.33	109	0.15		0	17	7.7
Jan. 12, 1953	2,770	--	--	23	6.4	6.7	1.2	128		--	5.5	--	--	--	--	--	85	0	19	7.3
Feb. 9	550	--	--	13	12	11	.9	128		--	5.5	--	--	--	--	--	59	0	17	7.3
Mar. 9	9	--	--	21	7.0	7.2	--	98		--	5.5	--	--	.38	--	--	107	2	18	7.6
Apr. 6	14	--	--	18	8.1	8.2	1.1	97		--	4.8	--	--	.23	--	--	81	0	17	7.5
May 4	0	--	0	18	8.3	7.8	1.1	94		11	4.8	.2	1.5	.22	115	.16	79	0	17	7.6
Aug. 3	253	--	--	16	7.2	6.1	.8	94		--	3.2	--	--	.08	--	--	77	0	15	7.8
Sept. 14	253	11	.01	19	8.3	6.7	.8	100		8.3	4.0	.0	1.2	.40	109	.15	82	0	15	7.5

RUSSIAN RIVER NEAR HEALDSBURG (SEC. 22, T. 9 N., R. 9 W.)

Oct. 6, 1952	170	9.8	0.00	26	11	13	7.4	1.1	143	8.3	5.8	0.0	0.8	0.86	146	0.20	110	0	20	252	7.9
Jan. 12, 1953	7,010	--	--	16	9.7	9.2	9.2	1.0	97	--	4.2	--	--	--	--	--	80	0	17	183	7.9
Feb. 9	912	--	--	27	14	13	8.2	1.0	150	--	6.0	--	--	--	--	--	125	2	14	273	7.8
Mar. 9	624	--	--	24	13	12	8.0	--	132	--	4.5	--	--	.42	--	--	113	5	14	238	8.2
Apr. 6	870	--	--	24	12	12	8.7	--	132	--	4.5	--	--	.44	--	--	109	1	14	243	8.0
May 4	a 986	16	.0	23	12	12	8.7	1.1	136	12	5.5	.2	1.6	.34	142	.19	107	4	15	235	7.8
Aug. 3	273	--	--	25	12	9.2	9.2	1.1	132	--	6.2	--	--	.58	--	--	112	4	15	242	7.4
Sept. 14	234	14	.02	23	12	9.2	9.2	1.0	133	9.6	5.0	.0	.4	.93	140	.19	107	0	16	238	7.8

RUSSIAN RIVER AT GUERNEVILLE (SEC. 32, T. 8 N., R. 10 W.)

Oct. 6, 1952	179	16	0.00	26	14	11	7.4	1.2	150	9.9	7.5	0.0	0.3	0.70	160	0.22	122	0	16	267	6.7
Jan. 12, 1953	11,190	--	--	15	8.9	11	7.4	1.6	88	--	5.2	--	--	--	--	--	74	0	17	171	7.4
Feb. 9	a 1,210	--	--	26	14	11	7.4	1.2	147	--	9.5	--	--	--	--	--	122	2	16	277	7.7
Mar. 9	a 760	--	--	25	13	10	7.4	--	140	--	6.0	--	--	.47	--	--	116	1	16	262	7.9
Apr. 6	a 1,220	--	--	25	12	15	9.6	--	135	--	6.5	--	--	.30	--	--	112	1	23	251	7.7
May 4	1,570	17	.1	22	13	9.6	9.6	1.4	135	13	7.2	.2	1.4	.24	146	.20	108	6	16	237	7.8
Aug. 3	262	--	--	26	13	9.4	9.4	1.2	144	--	6.5	--	--	.44	--	--	118	0	15	259	7.3
Sept. 14	246	14	.01	24	13	10	9.4	1.2	140	9.8	6.0	.1	.6	.83	148	.20	113	0	16	252	7.8

a Mean daily discharge (cfs).

EEL RIVER BASIN
MISCELLANEOUS ANALYSES ON STREAMS IN EEL RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-nesium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids			Hardness as CaCO ₃		Per-cent so-lu-sion ratio	Specific conduct- ance (micro- mhos at 25°C)	
															Parts per mil-lion	Tons per acre- foot	Tons per day	Calcium	Non-carbon-ate			
EEL RIVER NEAR MCCANN (SEC. 3, T. 2 S., R. 3 E.)																						
Oct. 7, 1952.....		8.0	0.00	35	8.8	10	1.2	134	21		6.3	0.0	0.5	0.15	157	0.21		124	14	15		270
Feb. 10, 1953.....				16	4.8	4.1	.9	70			2.5							60	2	13		7.8
Mar. 10.....				23	6.0	5.0		93			3.8			.07				82	6	12		180
Apr. 10.....				18	5.3	5.4		80			3.0			.07				67	1	15		149
May 7.....		11	.0	17	4.9	5.0	.8	74	8.4		3.5	.1	.3	.03	88	.12		63	2	15		139
Aug. 4.....				31	8.2	6.1	1.1	126			5.0			.07				111	8	11		240
Sept. 15.....		9.2	.01	33	9.4	8.5	1.3	131	20		6.5	.1	.3	.18	153	.21		121	14	13		264
SOUTH FORK EEL RIVER NEAR MIRANDA (SEC. 30, T. 3 S., R. 4 E.)																						
Oct. 7, 1952.....	50	4.9	0.00	26	10	11	1.2	134	7.0		7.6	0.1	0.4	0.17	134	0.18		106	0	18		243
Jan. 13, 1953.....	13,500			8,3	3.5	5.0	.9	47			3.5							35	0	23		882
Feb. 10.....	1,400			13	5.6	6.5	.7	70			5.0							56	0	20		132
Mar. 10.....	894			16	5.8	6.5		79			5.2			.08				64	0	16		154
Apr. 7.....	889			15	5.5	7.4		74			3.5			.03				60	0	21		143
May 5.....	1,230	15	.0	13	5.2	6.1	.8	69	5.9		5.0	.1	.3	.03	85	.12		54	0	19		129
Aug. 4.....	156			21	8.2	8.7	.8	107			6.5			.03				86	0	18		197
Sept. 15.....	73	7.3	.02	22	9.4	9.6	1.2	116	6.8		6.5	.1	.6	.18	121	.16		94	0	18		215
EEL RIVER AT SCOTIA (SEC. 7, T. 1 N., R. 1 E.)																						
Oct. 7, 1952.....	95	10	0.00	30	21	12	2.4	197	15		9.0	0.0	0.5	0.11	197	0.27		161	0	14		351
Jan. 13, 1953.....	73,400			18	3.4	4.8	1.4	57			2.8							46	0	18		105
Feb. 10.....	8,170			13	5.2	5.0	.8	78			3.0							66	2	14		148
Mar. 10.....	3,160			21	6.8	6.9		94			5.0			.04				80	3	16		186
Apr. 10.....	5,000			19	6.2	5.8		87			3.5			.04				73	2	15		162
Apr. 28.....	32,300	11		15	3.2	4.0	1.7	61	5.1		2.5	.5	.7	.09	74	.10		51	1	14		113
May 7.....	8,170	12	.0	17	5.5	5.4	.7	76	8.1		3.0	.0	.2	.02	89	.12		65	3	15		142
Aug. 4.....	396			30	8.5	7.8	1.0	130			6.2			.06				110	3	13		241
Sept. 15.....	200	10	.01	33	9.9	9.2	1.5	145	13		6.5	.1	.7	.15	155	.21		123	4	14		270

KLAMATH RIVER BASIN

TRINITY RIVER AT LEWISTON, CALIF.

LOCATION.--Temperature recorder at gaging station at highway bridge at Lewiston, Trinity County, 0.8 mile downstream from Deadwood Creek. DRAINAGE AREA.--724 square miles.

RECORDS AVAILABLE.--Water temperatures: September 1951 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 74° F Aug. 12-14; minimum, 38° F Dec. 6-8, Mar. 2.

EXTREMES, 1951-53.--Water temperatures: Maximum, 74° F Aug. 12-14, 1953; minimum, 33° F Jan. 10-26, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1285.

Temperature (°F) of water, water year October 1952 to September 1953

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

KLAMATH RIVER BASIN--Continued
MISCELLANEOUS ANALYSES OF STREAMS IN KLAMATH RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids		Hardness as CaCO ₃	Per- so- ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or pH	
														Parts per mil- lion	Tons per acre- foot					
KLAMATH RIVER NEAR COPCO (SEC. 36, T. 48 N., R. 5 W.)																				
Oct. 10, 1952	a3,020	37	0.00	11	4.6	14	2.4	71	9.1	4.3	0.2	4.5	0.07	122	0.17	46	0	38	156	7.4
Jan. 13, 1953	a2,920	--	--	10	6.0	17	2.5	75	--	5.2	--	--	--	--	--	50	0	41	180	7.2
Feb. 4	a4,240	--	--	13	6.9	20	2.4	77	--	4.0	--	--	--	--	--	61	0	41	206	7.2
Mar. 3	a5,000	--	--	11	5.7	15	--	66	--	3.8	--	--	.06	--	--	51	0	39	165	7.1
a3,400	--	--	--	14	7.1	17	--	77	--	3.2	--	--	.07	--	--	64	1	37	209	7.7
Apr. 3	a3,340	19	.1	13	7.7	22	3.1	80	33	3.2	.2	1.8	.01	144	.20	64	0	41	217	7.3
May 5	a3,340	--	--	8.9	4.5	10	2.0	59	--	2.5	--	--	--	--	--	41	0	33	126	7.0
July 31	a2,010	--	.03	12	6.3	18	3.0	82	17	4.5	.2	5.0	.11	139	.19	56	0	40	193	7.4
Sept. 3	a2,870	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
KLAMATH RIVER AT SOMESBAR (SEC. 4, T. 11 N., R. 6 E.)																				
Oct. 8, 1952	3,720	34	0.00	13	6.7	14	2.3	88	10	4.8	0.2	2.1	0.08	130	0.18	60	0	33	181	7.6
Jan. 14, 1953	38,000	--	--	11	5.5	4.1	.7	64	--	2.2	--	--	--	--	--	50	0	15	115	7.4
Feb. 11	21,500	--	--	12	6.3	7.4	1.1	72	--	2.2	--	--	.01	--	--	56	0	22	141	7.5
Mar. 11	10,800	--	--	13	6.8	8.2	--	78	--	3.2	--	--	--	--	--	60	0	23	151	7.7
Apr. 8	12,100	--	--	13	6.8	7.4	--	74	--	2.0	--	--	.03	--	--	60	0	21	147	8.0
May 6	18,900	13	.0	11	5.9	5.6	.9	65	8.1	1.5	.0	.7	.03	79	.11	52	0	19	124	7.6
Aug. 5	a3,900	--	--	14	6.2	7.8	--	81	--	3.5	--	--	.00	--	--	60	0	21	148	7.5
Sept. 16	4,390	34	.01	15	8.6	16	2.3	100	16	5.5	.1	2.4	.11	149	.20	73	0	31	214	7.9
TRINITY RIVER AT LEWISTON (SEC. 19, T. 33 N., R. 8 W.)																				
Oct. 15, 1952	153	15	0.00	9.4	11	6.9	0.7	83	4.7	5.7	0.0	0.3	0.05	95	0.13	69	1	18	154	7.9
Feb. 11, 1953	2,910	--	--	5.3	8.5	2.4	.3	54	--	2.8	--	--	--	--	--	48	4	10	93.4	7.5
Mar. 14	2,220	--	--	5.0	8.1	4.1	--	60	--	2.0	--	--	.04	--	--	46	0	16	97.3	7.5
May 12	3,320	14	.0	3.0	6.7	1.6	.3	49	2.3	1.5	.0	.2	.03	56	.08	40	0	8	78.3	7.4
Aug. 30	666	--	--	6.5	9.2	3.1	.4	63	--	3.5	--	--	.04	--	--	54	1	11	117	7.3
Sept. 16	238	15	.01	9.0	9.9	4.1	.5	76	3.1	4.3	.0	.2	.05	84	.11	63	1	12	147	7.3

a Mean daily discharge (cfs).

TRINITY RIVER NEAR HOOPA (SEC. 31, T. 8 N., R. 5 E.)

Oct. 7, 1952	481	14	0.00	23	9.5	6.9	0.7	111	7.7	7.2	0.0	0.8	0.05	125	0.17		97	6	13	212	7.9
Jan. 13, 1953	44,400	--	--	11	4.9	2.4	.6	58	--	1.2	--	--	--	--	--	--	48	0	10	99.6	7.6
Feb. 11,	12,200	--	--	15	5.4	3.1	.5	73	--	2.2	--	--	--	--	--	--	60	0	10	124	7.4
Mar. 11,	7,520	--	--	13	6.9	2.4	--	74	--	3.0	--	--	.03	--	--	--	61	0	8	130	7.7
Apr. 8,	9,250	--	--	13	6.9	3.1	--	72	--	1.5	--	--	.04	--	--	--	61	2	10	123	7.5
May 5,	11,800	14	.0	13	5.2	2.2	.4	66	4.4	2.5	.1	.2	.00	74	.10	--	54	0	8	112	7.7
Aug. 4,	1,870	--	--	17	7.2	3.2	.8	82	--	3.0	--	--	.00	--	--	--	72	5	9	153	7.3
Sept. 16,	1,778	14	.00	20	9.7	4.8	.6	105	8.1	5.5	.0	.2	.04	115	.16	--	90	4	10	197	7.9

KLAMATH RIVER NEAR KLAMATH (SEC. 17, T. 13 N., R. 2 E.)

Oct. 8, 1952	4,750	28	0.00	17	6.2	12	1.7	92	8.8	4.8	0.1	1.4	0.07	125	0.17		68	0	27	181	7.9
Jan. 14, 1953	107,000	--	--	10	4.6	3.1	.6	56	--	2.0	--	--	--	--	--	--	44	0	13	99.0	7.5
Feb. 12,	39,000	--	--	13	5.9	5.8	.7	69	--	2.5	--	--	--	--	--	--	57	0	18	132	7.3
Mar. 12,	23,800	--	--	14	5.8	6.1	--	72	--	3.8	--	--	.21	--	--	--	59	0	18	132	7.9
Apr. 9,	24,400	--	--	13	6.5	5.4	--	72	--	4.2	--	--	.03	--	--	--	58	0	17	133	7.5
May 6,	35,700	13	.0	10	5.5	4.1	.8	60	6.0	1.5	.0	.5	.02	71	.10	--	48	0	15	110	7.4
Aug. 5,	6,420	--	--	15	5.4	5.4	1.0	73	--	3.5	--	--	.05	--	--	--	60	0	16	138	8.0
Sept. 16,	5,140	23	.01	16	8.3	12	1.6	96	13	4.0	.0	1.4	.14	127	.17	--	74	0	26	198	7.6

SMITH RIVER BASIN
MISCELLANEOUS ANALYSES OF STREAMS IN SMITH RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million water year October 1952 to September 1953

Date of collection	Dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids		Hardness as CaCO ₃	Per-cent ad-sorp-tion ratio	Specific conduct- ance (micro- mhos at 25°C)	Col- or	pH
														Parts per mil-lion	Tons per acre- foot					
SMITH RIVER NEAR CRESCENT CITY (SEC. 10, T. 16 N., R. 1 E.)																				
Oct. 9, 1952	234	12	0.00	8.0	12	4.1	0.4	81	3.6	3.1	0.0	1.5	0.03	85	0.12	69	3	11	141	7.8
Jan. 15, 1953	a14,900	--	--	4.1	5.8	2.0	.3	40	--	3.8	--	--	--	--	--	34	1	11	79.0	7.2
Feb. 12	4,980	--	--	4.3	6.3	2.0	.1	46	--	2.0	--	--	--	--	--	37	0	11	87.2	7.4
Mar. 12	6,560	--	--	3.7	7.2	3.8	--	48	--	3.5	--	--	.14	--	--	39	0	18	80.9	7.6
Apr. 9	2,600	--	--	4.4	7.3	2.0	--	50	--	2.5	--	--	.01	--	--	41	0	10	84.1	7.4
May 7	4,980	13	.0	4.2	6.2	1.7	.1	43	1.9	2.5	.0	.2	.00	51	.07	36	1	9	75.3	7.3
Aug. 6	4,520	--	--	7.5	9.8	2.4	.2	67	--	3.2	--	--	.00	--	--	59	4	8	118	7.5
Sept. 17	330	13	.00	7.4	11	2.8	.2	76	3.7	3.5	.0	.3	.06	79	.11	64	1	9	136	7.9

a Mean daily discharge (cfs).

PACIFIC SLOPE BASINS NORTH OF COLUMBIA RIVER

WILLAPA RIVER BASIN

WILLAPA RIVER AT LEBAM, WASH.

LOCATION.--Temperature recorder at gaging station half a mile west of Lebam, Pacific County, and 1 mile upstream from Walker Creek. DRAINAGE AREA.--41.4 square miles.

RECORDS AVAILABLE.--March 1952 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 65°F July 10-13; minimum, 34°F Nov. 28-30, Dec. 1.

EXTREMES, 1952-53.--Water temperatures: Maximum, 67°F July 9-11, 14, 15; Aug. 4, 5, 1952; minimum, 34°F Nov. 28-30, Dec. 1, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, water year October 1952 to September 1953

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	50	47	38	34	44	44	47	47	44	47	43	47	52	48	54	51	58	57	61	59	61	61
2.....	58	56	47	46	40	38	45	44	47	47	44	42	48	44	51	48	53	52	58	58	61	60	62	61
3.....	58	58	46	46	43	40	45	44	47	47	46	44	49	46	57	52	53	51	60	58	61	60	62	60
4.....	58	57	49	46	45	43	45	44	47	47	46	44	49	46	57	52	53	51	60	58	61	60	62	60
5.....	57	56	50	49	45	45	45	44	47	47	46	44	47	45	60	55	53	50	63	60	62	61	63	62
6.....	56	55	50	49	45	44	44	42	47	47	46	46	47	45	60	56	53	51	64	62	62	62	63	63
7.....	57	56	49	47	45	45	44	43	47	47	51	47	47	44	56	53	53	52	64	63	62	62	63	63
8.....	57	57	47	46	45	45	44	44	47	47	48	46	45	45	55	51	54	52	64	64	62	62	63	62
9.....	57	57	46	45	45	45	44	46	45	45	51	48	47	45	53	50	57	53	64	64	62	61	62	61
10.....	57	56	47	45	45	45	45	44	46	45	49	47	48	44	52	50	58	55	65	64	63	61	61	60
11.....	58	49	47	46	45	45	45	45	45	45	49	48	48	46	55	49	59	55	65	65	64	61	61	61
12.....	58	49	46	47	46	46	46	46	46	46	48	46	47	46	58	51	59	55	65	65	64	62	61	60
13.....	58	49	46	46	46	46	46	46	46	46	48	46	47	46	58	51	59	55	65	64	63	61	61	60
14.....	55	47	46	44	46	46	46	46	46	46	48	46	48	46	58	52	58	55	64	63	62	61	60	59
15.....	51	47	44	43	46	46	46	46	46	46	47	45	46	45	52	51	58	57	63	61	63	63	59	59
16.....	51	45	43	44	43	44	46	46	45	44	47	46	49	47	52	51	60	56	63	61	63	62	59	58
17.....	51	44	43	44	44	44	46	46	45	45	47	47	49	48	53	52	60	56	64	62	62	61	58	57
18.....	52	51	45	43	44	42	47	46	45	45	48	47	51	47	54	53	56	54	64	62	62	61	57	56
19.....	53	52	45	44	43	42	46	46	45	44	49	47	53	50	54	52	56	55	62	59	64	63	58	57
20.....	54	53	44	43	43	43	46	46	45	45	49	48	55	51	53	50	55	55	59	57	64	64	58	57
21.....	55	54	43	42	43	42	46	46	45	44	49	48	55	52	53	51	55	54	61	58	64	62	58	57
22.....	55	55	42	41	43	42	46	46	45	44	49	48	55	53	51	50	55	55	61	61	62	60	58	57
23.....	55	55	41	39	43	42	46	46	45	42	51	48	53	51	49	55	54	61	59	61	61	59	57	57
24.....	55	55	39	38	42	39	46	46	44	42	51	49	55	48	50	55	54	60	59	61	59	57	55	54
25.....	55	53	39	38	40	39	46	46	44	42	49	47	55	53	54	49	57	55	60	59	59	59	55	54
26.....	53	51	38	37	40	39	46	45	45	43	51	47	55	53	56	50	57	56	60	57	59	59	54	53
27.....	51	50	37	36	41	40	46	46	46	45	50	48	55	52	55	52	56	55	59	57	59	59	54	53
28.....	50	50	36	34	42	41	46	46	46	44	49	47	53	49	54	52	56	55	60	58	59	59	54	54
29.....	51	50	34	34	44	42	46	46	--	--	48	45	53	48	54	53	58	56	61	59	59	58	54	54
30.....	52	51	34	34	44	44	47	46	--	--	49	47	52	49	53	51	58	56	61	60	60	59	54	54
31.....	52	50	--	--	44	44	47	47	--	--	47	45	--	--	54	48	--	--	61	59	61	60	--	--
Average.....	55	54	44	43	44	42	46	45	46	45	48	46	50	47	54	51	56	54	62	60	62	61	59	58

CHEHALIS RIVER BASIN

CHEHALIS RIVER NEAR GRAND MOUND, WASH.

LOCATION.--Temperature recorder at gaging station at Meadows, 1½ miles southwest of Grand Mound, Thurston County, and 6 miles downstream from Skookumchuck River.

DRAINAGE AREA.--895 square miles.

RECORDS AVAILABLE.--Water temperatures: March to June 1952; November 1952 to August 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 74°F July 11; minimum, 38°F Nov. 27-30, Dec. 1.

REMARKS.--Records of discharge for water year October 1953 given in WSP 1286.

Temperature (°F) of water, November 1952 to August 1953

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

NISQUALLY RIVER BASIN

NISQUALLY RIVER NEAR NATIONAL, WASH.

LOCATION.--Temperature recorder at gaging station 100 feet downstream from railroad bridge, 1 mile west of National, Pierce County, 2½ miles west of Ashford, and 3 miles upstream from Mineral Creek.

DRAINAGE AREA.--133 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to July 1952; November 1952 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum 58°F July 6, 11, 30, Aug. 2, 3, 11-14, Sept. 5; minimum, 33°F Nov. 29, 30.

EXTREMES, 1951-53.--Water temperatures: Maximum, 61°F July 9, 1952; minimum, freezing point on Jan. 2-9, 12-23, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

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.....					36	35	37	37	37	40	39	39	36	45	39	46	42	48	46	56	47	57	53	52
2.....					39	36	37	37	40	40	39	39	35	45	38	43	42	50	46	53	50	58	54	51
3.....					39	36	37	37	41	40	39	37	45	41	39	44	43	51	46	53	50	58	53	47
4.....					39	36	38	38	40	39	40	37	43	40	34	45	51	46	53	50	57	51	57	47
5.....					39	36	38	38	41	39	42	39	43	41	33	44	49	44	57	49	57	52	58	46
6.....					39	37	38	38	41	41	41	39	42	39	48	44	48	46	58	50	57	53	57	47
7.....					37	37	38	38	41	40	44	38	41	39	47	44	47	46	57	50	56	53	52	48
8.....					37	35	38	38	40	39	45	38	42	39	45	43	51	44	57	52	56	53	53	46
9.....					37	35	39	38	39	38	43	38	46	40	46	42	51	44	57	49	56	54	55	46
10.....					37	36	39	38	40	38	42	41	44	38	45	43	53	45	57	50	57	52	56	54
11.....					37	36	40	39	41	39	41	40	41	39	53	42	52	46	58	50	58	53	54	47
12.....					36	37	40	39	41	39	42	39	41	39	54	43	48	46	57	50	58	53	52	49
13.....					37	37	40	40	41	39	42	38	41	39	52	44	47	45	55	51	58	53	52	47
14.....					37	37	40	40	41	39	40	36	44	39	46	46	51	46	52	51	58	53	52	48
15.....					37	37	40	40	39	38	40	39	46	39	46	45	50	48	52	50	57	53	51	50
16.....					38	37	40	40	38	38	40	38	45	42	47	45	55	46	57	48	56	53	51	50
17.....					38	38	40	40	39	38	41	37	48	41	47	45	52	48	57	51	54	52	50	49
18.....					38	38	40	40	39	37	39	38	50	41	47	45	50	47	56	52	56	52	50	49
19.....					38	38	40	40	38	36	44	38	49	45	46	44	47	47	56	53	56	53	51	50
20.....					38	38	40	40	38	37	41	39	49	42	50	43	47	47	53	52	56	54	51	49
21.....					38	38	40	40	39	37	40	38	46	43	46	44	50	47	54	52	55	53	50	49
22.....					36	37	40	40	39	37	40	39	44	42	48	43	51	48	54	53	54	52	50	49
23.....					37	37	41	40	39	35	47	39	45	42	46	43	50	48	54	54	54	53	49	49
24.....					37	35	41	41	40	36	43	40	48	40	44	44	48	48	54	52	53	52	49	48
25.....					35	35	41	39	40	36	43	39	45	42	51	43	48	48	55	54	52	51	49	46
26.....					35	35	39	38	39	36	45	38	46	43	50	46	48	48	55	54	52	52	49	47
27.....					35	35	38	38	41	39	42	40	44	42	48	46	48	48	56	54	52	52	48	47
28.....					35	35	38	38	40	37	43	40	46	42	48	46	50	48	56	53	52	52	47	47
29.....					37	35	40	38	--	--	45	40	44	41	48	46	52	48	57	54	54	52	47	46
30.....					36	33	37	40	--	--	42	39	46	43	49	44	50	48	58	55	53	52	47	46
31.....					37	37	40	39	--	--	41	38	--	--	51	42	--	--	57	53	53	53	--	--
Average.....					37	37	39	39	40	38	42	38	45	41	49	44	50	47	56	51	55	53	52	48

DUWAMISH RIVER BASIN

GREEN RIVER NEAR PALMER, WASH.

LOCATION.--At City of Tacoma Green River Pipe Line bridge about half a mile below the headworks dam and 2 miles below gaging station which is 2½ miles downstream from North Fork and 3½ miles southeast of Palmer, King County.

DRAINAGE AREA.--230 square miles at gaging station.

RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1953.

Sediment records: August 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum observed, 54°F several days in August, Sept. 6, 12; minimum observed, 33°F Nov. 28-30, Dec. 26.

Sediment concentrations: Maximum daily, 430 ppm Jan. 23; minimum daily, 0.5 ppm average Nov. 1-30.

Sediment loads: Maximum daily, 12,800 tons Jan. 23; minimum daily, 0.2 tons average Oct. 1 to Nov. 30, Sept. 1-27.

EXTREMES, 1950-53.--Water temperatures: Maximum observed, 61°F Sept. 6, 1950; minimum, freezing point Mar. 8-10, 1951, Jan. 1-5, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, water year October 1952 to September 1953
(Once-daily measurement taken at 8:30 a. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	40	34	37	39	36	37	40	40	44	52	52
2	47	42	36	37	39	35	38	40	40	46	52	52
3	50	43	37	38	43	36	41	42	40	48	52	52
4	50	43	38	36	37	38	40	40	43	47	52	52
5	53	44	38	36	38	40	40	42	42	47	52	52
6	50	44	38	36	38	40	38	42	42	50	54	54
7	48	42	38	37	38	38	38	42	42	--	53	52
8	50	42	38	37	38	38	38	40	43	52	52	52
9	50	40	38	38	37	38	40	40	43	52	54	52
10	48	40	36	36	39	38	39	40	44	52	50	52
11	48	40	37	38	38	36	38	39	46	52	52	52
12	48	41	38	42	38	38	38	40	46	52	54	54
13	48	40	38	41	38	38	37	41	44	52	52	50
14	45	38	37	42	41	36	38	40	42	52	52	52
15	45	37	36	42	38	37	38	42	42	50	52	52
16	40	36	37	41	37	38	40	40	42	52	52	52
17	46	38	36	42	36	36	40	--	44	52	52	50
18	46	39	36	42	37	37	40	42	44	52	52	52
19	50	39	37	40	36	38	40	38	44	52	52	50
20	48	38	36	42	36	40	42	47	44	50	54	50
21	48	38	36	44	37	38	40	40	43	52	52	48
22	47	36	37	40	36	38	40	38	45	52	52	52
23	47	36	36	44	38	38	40	40	44	52	52	48
24	47	38	36	42	36	38	40	41	44	50	52	52
25	46	34	34	42	36	37	40	40	44	50	50	52
26	44	34	33	38	38	37	40	42	45	--	52	52
27	52	34	34	36	38	48	41	42	--	50	50	43
28	45	33	34	36	38	39	40	--	42	50	50	40
29	46	33	35	38	--	38	38	44	44	52	49	48
30	45	33	36	39	--	39	40	38	44	52	50	48
31	44	--	36	40	--	37	--	38	--	52	51	--
Average	47	38	36	39	38	38	39	41	43	51	52	51

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Suspended sediment, water year October 1952 to September 1953

Day	Mean dis-charge (cfs)	October		November			December		
		Suspended sediment		Suspended sediment			Suspended sediment		
		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.	120			191			97		
2.	117			150			105		
3.	117			130			114		
4.	117			122			130		
5.	112			120			132		
6.	112			117			127	1	a 0.4
7.	110			114			141		
8.	112			107			197		
9.	110			105			175		
10.	110			107			178		
11.	110			120			210		
12.	110			127			788	18	s 43
13.	105			127			664		
14.	105			120			456		
15.	105			114			353		
16.	102	0.6	0.2	112	0.5	0.2	287	1.5	1.3
17.	102			107			242		
18.	100			105			213		
19.	100			102			197		
20.	102			102			181		
21.	105			102			181		
22.	105			102			178		
23.	105			102			168		
24.	114			102			162		
25.	112			100			153		
26.	107			97			147	1	a. 4
27.	105			97			144		
28.	102			97			147		
29.	107			97			175		
30.	124			100			191		
31.	138			--	--	--	181		
Total.	3,402	--	6.2	3,395	--	6.0	6,814	--	62.2
	January			February			March		
1.	175	1	a 0.5	7,960	200	s 4,270	768		
2.	525	11	16	4,400	50	594	720		
3.	870			4,000			696		
4.	672			3,630			680		
5.	532	5	9	3,010			692	2.0	4.1
6.	484			3,560	20	185	704		
7.	604			4,370			700		
8.	966	16	s 49	3,820			752		
9.	2,440	43	s 270	2,790			910		
10.	1,940	10	52	2,270			1,020		
11.	2,740	48	s 418	1,900			1,090		
12.	3,430	18	s 175	1,610			1,050		
13.	2,730			1,420			982		
14.	2,170			1,280			901		
15.	1,910	5	31	1,180	5.5	20	685	1.2	3.0
16.	2,280			1,260			986		
17.	4,140	57	s 734	1,210			955		
18.	5,360	42	s 627	1,090			901		
19.	4,360	14	165	996			847		
20.	3,110	4	34	924			816		
21.	2,670	2	14	874			792		
22.	3,430	54	s 820	838			824		
23.	10,800	430	s 12,800	792	3.4	7.5	928		
24.	5,900	67	s 1,160	760			1,190		
25.	3,620	29	299	732			1,390		
26.	2,830	23	176	712			1,230	2.6	7.4
27.	2,380	10	64	748			1,110		
28.	2,530	12	82	820			1,080		
29.	3,680	36	s 370	--	--	--	991		
30.	5,240	40	566	--	--	--	1,040		
31.	9,180	360	s 10,200	--	--	--	1,030		
Total.	93,898	--	29,260.5	58,956	--	7,029.0	28,640	--	152.4

s Computed by subdividing day.

a Estimated on basis of turbidity-concentration relation.

DUWAMISH RIVER BASIN--Continued
GREEN RIVER NEAR PALMER, WASH.--Continued

Suspended sediment, water year October 1952 to September 1953--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.....	955	3.1	7.1	1,570	4.5	22	1,080	2.6	8.0
2.....	901			1,440			1,020		
3.....	856			1,340			960		
4.....	820			1,460			960		
5.....	856			1,990			910		
6.....	860	3.9	10	2,490	1.7	5.5	901		
7.....	824			2,410			1,120		
8.....	812			2,010			1,130		
9.....	788			1,630			1,060		
10.....	760			1,360			1,010		
11.....	768	4.9	28	1,200	2.5	8.6	1,020	2.8	7.7
12.....	808			1,110			1,160		
13.....	838			1,140			2,000		
14.....	838			1,260			1,740		
15.....	804			1,220			1,430		
16.....	847	4.9	28	1,140	2.5	8.6	1,230		
17.....	942			1,100			1,130		
18.....	986			1,120			1,040		
19.....	1,160			1,310			983		
20.....	1,510			1,350			932		
21.....	1,760	4.9	28	1,290	2.5	8.6	870	2.8	7.7
22.....	2,150			1,220			856		
23.....	2,630			1,140			1,040		
24.....	2,500			1,350			1,240		
25.....	2,130			1,330			1,200		
26.....	1,980	4.9	28	1,250	2.5	8.6	1,100		
27.....	2,080			1,340			1,040		
28.....	2,350			1,360			969		
29.....	2,020			1,340			924		
30.....	1,760			1,300			983		
31.....	--	--	--	1,190			--	--	--
Total.	39,293	--	451.0	43,760	--	369.6	33,038	--	237.0
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.....	919	0.6	0.8	263	0.6	0.3	182	0.6	a 0.2
2.....	870			259			186		
3.....	834			251			178		
4.....	789			247			171		
5.....	736			247			168		
6.....	683	0.6	0.8	251	0.6	0.3	164		
7.....	652			247			160		
8.....	679			243			164		
9.....	613			239			164		
10.....	566			231			157		
11.....	527	0.6	0.8	220	0.6	0.3	150	0.6	a 0.2
12.....	498			212			150		
13.....	481			208			150		
14.....	490			201			146		
15.....	490			201			143		
16.....	448	0.6	0.8	201	0.6	0.3	143		
17.....	422			197			140		
18.....	406			193			136		
19.....	389			186			136		
20.....	372			190			133		
21.....	355	0.6	0.8	190	0.6	0.3	126	7	a 5.8
22.....	338			182			133		
23.....	326			186			140		
24.....	322			193			143		
25.....	313			197			136		
26.....	309	0.6	0.8	190	0.6	0.3	133		
27.....	296			231			140		
28.....	288			231			296		
29.....	284			216			276		
30.....	280			197			351		
31.....	276	0.6	0.8	186	0.6	0.3	--	--	--
Total.	15,251	--	24.8	6,686	--	9.3	4,995	--	22.8

Total discharge for year (cfs-days)..... 338,128

Total load for year (tons)..... 37,630.8

a Estimated on basis of turbidity-concentration relation.

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Particle-size analyses of suspended sediment, water year October 1952 to September 1953

(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	1.000		2.000
Jan. 22, 1953 . . .	6:30 p. m.	3,600	38	42	--	--	--	--	--	--	68	80	89	95	99	--	S
Jan. 23	12:30 p. m.	12,500	44	611	--	13	--	26	35	43	59	74	92	98	100	--	SPWCM
Jan. 23	7:00 p. m.	10,800	42	393	946	12	20	30	39	51	59	71	82	94	98	100	SBWCM
Jan. 29	10:30 a. m.	3,700	38	37	--	--	--	--	--	--	71	86	93	97	99	100	S
Feb. 1	3:30 a. m.	10,900	40	258	2,100	--	24	--	54	--	74	86	93	96	99	100	SPWCM

DUWAMISH RIVER BASIN--Continued
GREEN RIVER NEAR AUBURN, WASH.

LOCATION.--Temperature recorder at gaging station 1½ miles east of Auburn, King County, and 2 miles downstream from Big Soos Creek. DRAINAGE AREA.--382 square miles (excludes 4 square miles in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935)

RECORDS AVAILABLE.--Water temperatures: March to June 1952; November 1952 to September 1953.

EXTREMES 1952-53.--Water temperatures: Maximum, 62°F July 10-12; minimum, 38°F Nov. 29-30, Dec. 1-2, 25.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Day	Temperature (° F) of water, November, 1952 to September, 1953																							
	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.....			--	--	38	42	42	43	43	42	41	47	44	47	47	52	52	55	53	58	56	57	57	
2.....			--	--	41	38	42	43	43	41	41	48	45	49	47	52	51	58	55	59	57	59	57	
3.....			--	--	42	40	42	42	43	43	41	47	45	52	49	54	51	58	56	59	57	80	58	
4.....			--	--	43	42	42	43	43	43	41	45	44	53	51	54	52	58	55	58	57	60	59	
5.....			--	--	43	42	43	43	43	45	43	47	45	53	52	52	60	59	55	59	58	60	59	
6.....			--	--	43	42	42	41	43	45	45	47	45	52	48	52	61	57	59	58	60	60	60	
7.....			--	--	42	42	41	41	43	46	45	45	45	49	48	51	61	58	58	57	60	60	59	
8.....			--	--	43	42	42	41	43	46	46	46	45	50	49	53	61	59	58	57	60	59	59	
9.....			--	--	43	41	42	42	43	42	46	47	45	49	56	53	60	58	57	60	59	59	59	
10.....			--	--	41	41	42	42	42	42	46	48	45	50	49	56	54	62	59	59	57	80	59	
11.....			--	--	41	41	42	42	42	46	44	48	47	52	48	56	54	62	59	59	58	60	59	
12.....			--	--	41	41	43	42	42	44	44	47	46	54	50	56	54	62	59	59	58	59	59	
13.....			--	--	41	41	43	43	42	44	43	46	45	55	52	54	53	60	59	58	59	58	58	
14.....			--	--	41	39	44	43	42	43	42	47	44	54	51	53	52	58	57	60	59	59	59	
15.....			45	45	39	44	43	43	42	43	42	48	45	51	50	53	53	58	60	59	59	59	59	
16.....			45	44	40	39	44	43	43	43	43	48	47	50	50	55	53	59	55	59	58	59	59	
17.....			44	44	40	40	43	43	41	43	42	48	47	50	50	55	54	60	56	58	57	59	57	
18.....			45	45	44	40	40	43	43	41	41	42	42	50	50	54	53	60	58	60	58	57	57	
19.....			45	45	40	40	43	43	41	41	45	42	50	49	50	50	53	58	57	60	59	57	57	
20.....			46	45	40	40	43	43	41	41	44	44	50	49	51	50	53	58	60	60	57	57	57	
21.....			46	45	40	40	44	43	42	41	44	43	49	48	51	50	54	59	55	60	58	57	57	
22.....			43	41	40	41	44	43	42	43	42	48	46	51	50	54	59	56	58	58	57	57	57	
23.....			43	41	41	41	43	43	42	42	43	48	47	50	49	54	54	57	58	58	58	57	57	
24.....			41	41	41	39	43	43	42	41	46	45	47	47	49	54	53	58	54	58	57	57	57	
25.....			41	40	39	38	43	43	42	41	45	44	47	51	49	53	53	58	56	57	57	57	57	
26.....			41	40	39	39	43	42	42	41	46	44	47	47	54	50	53	53	57	55	57	57	56	
27.....			40	40	40	39	42	42	42	41	45	45	48	47	53	51	53	53	55	57	57	56	56	
28.....			40	40	40	40	42	42	42	42	46	45	48	47	51	51	54	53	58	55	57	56	56	
29.....			40	38	41	40	42	42	--	--	47	45	47	47	51	50	56	54	58	56	58	57	56	
30.....			38	38	43	41	42	42	--	--	47	45	48	47	52	50	55	54	56	55	58	57	56	
31.....			--	--	43	42	43	42	--	--	45	44	--	--	50	55	54	53	58	55	57	--	--	
Average.....			--	--	41	40	43	42	42	42	44	44	48	46	51	50	54	53	59	56	59	58	58	

STILLAGUAMISH RIVER BASIN

JIM CREEK NEAR ARLINGTON, WASH.

LOCATION (revised).---Temperature recorder at gaging station at abandoned bridge, 1½ miles upstream from mouth and 3 miles southeast of Arlington, Snohomish County.

DRAINAGE AREA.--48.9 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 71° F, July 10, 11 minimum, freezing point on Nov. 27-30.

EXTREMES, 1951-53.--Water temperatures: Maximum, 71° F, July 10, 11 minimum, freezing point on Nov. 27-30, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

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

STILLAGUAMISH RIVER BASIN--Continued
NORTH FORK STILLAGUAMISH RIVER NEAR DARRINGTON, WASH.

LOCATION (revised).--Temperature recorder at gaging station at highway bridge, 1 mile downstream from Squire Creek and 5 miles northwest of Darrington, Snohomish County.

DRAINAGE AREA.--82.2 square miles (revised).

RECORDS AVAILABLE.--Water temperatures: March 1952 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 61°F Aug. 5, 10-14; minimum, 35°F Nov. 26-30, Dec. 1, 25, 26.

EXTREMES, 1952-53.--Water temperatures: Maximum, 63°F Aug. 10-12, 1952; minimum, 35°F Nov. 26-30, Dec. 1, 25, 26, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, water year October 1952 to September 1953

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.....	54	51	47	46	36	35	37	37	41	40	39	39	44	42	46	45	48	47	53	49	58	54	56	55
2.....	54	51	47	45	37	36	37	37	41	41	39	39	44	42	46	45	49	47	54	50	60	55	57	54
3.....	54	51	46	45	37	37	38	37	41	41	39	39	44	43	48	46	50	48	53	50	59	56	58	54
4.....	53	51	46	46	37	37	38	38	41	41	40	39	44	43	49	46	49	48	52	50	58	56	58	54
5.....	53	50	46	45	38	37	39	38	41	41	41	40	45	43	46	46	49	48	55	50	61	56	58	54
6.....	53	50	46	45	38	38	39	38	41	41	41	41	45	43	48	46	49	49	55	51	58	57	57	54
7.....	53	50	45	44	38	38	39	38	41	41	43	41	44	43	46	46	49	48	56	52	58	57	56	55
8.....	53	52	44	42	38	38	40	39	41	41	43	42	45	43	46	45	49	47	55	52	58	57	57	54
9.....	52	52	43	42	38	37	40	40	41	41	43	42	45	44	45	45	51	48	55	52	59	56	57	54
10.....	53	51	44	42	37	37	40	40	41	40	43	42	45	43	45	45	51	49	56	52	61	56	57	54
11.....	53	51	44	44	37	37	40	40	40	40	43	43	44	43	48	45	50	50	58	54	61	57	57	54
12.....	52	50	44	44	37	36	40	40	40	40	43	42	43	41	49	46	50	50	56	54	61	57	56	54
13.....	51	49	44	44	38	37	40	40	40	40	42	41	41	40	49	47	50	49	55	54	61	56	56	53
14.....	50	47	44	42	38	38	40	40	40	40	42	41	43	41	49	47	50	49	54	53	61	56	56	53
15.....	49	47	43	42	38	38	40	40	40	40	42	41	46	42	47	46	49	49	53	53	60	58	55	52
16.....	49	47	42	41	38	38	40	40	39	39	42	41	45	43	47	46	52	49	56	52	59	58	54	53
17.....	48	46	41	41	38	37	40	40	39	39	41	41	44	43	47	46	51	49	57	53	58	56	52	50
18.....	49	47	42	41	38	37	41	40	39	39	41	41	45	43	47	46	50	49	56	54	60	56	51	50
19.....	49	49	42	42	38	38	41	41	39	39	43	41	45	44	46	45	49	49	54	53	60	57	54	51
20.....	49	49	42	42	38	38	41	41	39	39	43	41	45	44	47	45	49	49	56	52	59	57	53	50
21.....	51	49	42	40	38	38	41	41	40	39	42	41	44	43	46	46	49	49	58	53	59	56	54	50
22.....	51	48	40	38	38	37	41	41	40	39	42	42	44	43	46	46	50	49	55	54	58	56	52	51
23.....	50	50	38	37	37	37	41	41	40	39	43	42	44	43	46	46	49	49	53	52	58	56	52	51
24.....	50	50	37	36	37	36	41	41	40	39	44	43	44	42	47	47	49	49	53	52	56	55	51	49
25.....	50	48	37	36	37	36	41	41	40	39	43	42	44	44	47	46	49	49	55	54	55	54	50	49
26.....	48	47	36	35	36	35	41	41	40	40	44	42	45	44	50	47	49	49	57	53	55	54	50	49
27.....	48	47	36	35	36	36	41	40	40	40	44	43	45	45	50	48	49	49	57	54	54	54	49	49
28.....	48	47	35	35	37	36	40	40	40	39	43	43	45	44	49	48	49	49	56	54	55	54	49	48
29.....	47	47	35	35	37	37	40	40	--	--	44	43	46	44	49	48	50	49	58	54	58	54	48	48
30.....	48	47	35	35	37	37	40	40	--	--	44	42	46	45	48	48	50	49	58	55	56	55	48	48
31.....	47	47	--	--	37	37	41	40	--	--	43	42	--	--	48	47	--	--	58	54	57	55	--	--
Average.....	51	49	42	41	37	37	40	40	40	40	42	41	44	43	47	46	50	49	56	53	58	56	54	52

STILLAGUAMISH RIVER BASIN--Continued
PILCHUCK CREEK NEAR BRYANT, WASH.

LOCATION.--Temperature recorder at gaging station, 500 feet upstream from highway bridge and 2 miles north of Bryant, Snohomish County.
DRAINAGE AREA.--49.7 square miles (revised).
RECORDS AVAILABLE.--Water temperatures: March 1952 to July 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 58°F Oct. 1; minimum, 37°F Nov. 22-30, Dec. 1-4.
EXTREMES, 1952-53.--Water temperatures: Maximum, 60°F Sept. 19-23, 1952; minimum, 37°F Nov. 22-30, Dec. 1-4, 1952.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

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.....	56	57	47	47	37	39	42	41	40	41	46	45		
2.....	57	55	47	47	37	39	42	42	40	43	41	47		
3.....	56	55	45	45	37	40	43	42	40	43	43	50		
4.....	55	53	46	45	38	40	43	41	40	43	52	49		
5.....	54	53	47	46	38	40	43	41	41	43	51	52		
6.....	54	52	47	46	38	40	43	41	41	43	53	52		
7.....	53	52	46	43	38	40	43	42	41	43	52	50		
8.....	53	53	43	41	38	41	40	43	42	44	50	48		
9.....	53	53	41	40	38	41	41	43	42	44	43	48		
10.....	54	53	43	40	38	41	41	43	43	45	44	47		
11.....	54	52	44	43	38	42	41	43	43	45	44	49		
12.....	52	51	44	44	39	38	42	43	43	44	52	49		
13.....	51	49	44	44	40	39	42	43	43	43	52	51		
14.....	48	47	44	43	40	39	42	42	41	43	51	52		
15.....	46	46	43	42	39	42	43	42	42	45	51	52		
16.....	47	46	42	41	39	39	42	42	42	45	51	55		
17.....	47	45	41	41	40	39	42	42	42	45	51	55		
18.....	47	45	41	41	39	39	43	42	42	46	51	53		
19.....	49	47	42	41	40	39	43	42	41	46	51	53		
20.....	49	49	42	42	40	40	43	41	41	47	51	48		
21.....	50	49	42	39	40	40	43	41	41	46	45	49		
22.....	50	50	39	37	40	40	43	41	41	45	45	49		
23.....	50	50	37	40	37	40	43	41	41	45	44	50		
24.....	50	50	37	40	38	43	43	41	42	46	43	50		
25.....	50	48	37	37	38	43	43	41	42	46	49	48		
26.....	48	48	37	37	38	43	42	41	43	42	46	53		
27.....	46	46	37	37	38	42	42	41	43	43	46	45		
28.....	46	46	37	37	38	42	42	41	41	43	46	45		
29.....	46	46	37	37	39	38	42	42	43	43	46	45		
30.....	47	46	37	37	39	39	42	42	43	43	46	46		
31.....	47	47	--	--	39	39	42	42	--	43	42	--		
Average.....	51	50	42	49	39	38	42	42	42	45	44	51	49	52

SKAGIT RIVER BASIN

SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WASH.

LOCATION.--Temperature recorder at gaging station three-quarters of a mile upstream from Alma Creek and 7 miles north of Marblemount, Skagit County. DRAINAGE AREA, 266 square miles, of which 400 square miles is in Canada.

RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1953.

EXTREMES, 1953.--Water temperatures: Maximum, 52° F Sept. 12, 13, 15, 19-23; minimum, 39° F Feb. 13, 14, 16-18, Mar. 1, 2.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, January to September 1953

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.....							--	--	41	41	39	42	42	42	44	44	46	46	48	47	50	50	50	50
2.....							--	41	41	41	40	39	43	42	44	44	46	46	48	47	50	50	51	50
3.....							--	41	41	41	40	40	42	42	46	44	46	46	48	48	50	50	51	50
4.....							--	42	41	40	40	42	42	42	46	44	46	46	48	47	50	50	51	50
5.....							--	42	42	41	40	43	42	45	45	47	46	50	47	50	50	51	50	50
6.....							--	42	42	41	41	43	42	44	43	46	46	48	48	50	50	51	50	50
7.....							--	42	42	42	--	--	42	42	44	43	46	45	48	48	50	50	51	51
8.....							--	42	42	42	--	--	42	42	44	43	46	45	48	48	50	49	51	51
9.....							42	42	42	42	44	43	42	44	43	47	46	50	48	50	48	51	51	51
10.....							42	42	42	42	43	43	42	45	44	48	46	51	49	51	49	51	50	50
11.....							42	41	42	41	43	43	42	45	43	47	46	51	51	51	51	50	51	50
12.....							41	41	41	40	43	43	42	46	44	47	46	51	51	51	51	50	52	50
13.....							41	41	40	39	43	42	42	46	44	46	45	51	51	51	51	50	52	51
14.....							41	41	40	39	42	42	42	45	44	46	45	51	51	51	51	50	51	51
15.....							41	41	40	39	42	42	42	45	44	46	45	51	51	51	51	50	51	51
16.....							41	41	40	39	43	43	42	46	45	47	46	51	50	50	50	50	51	51
17.....							41	41	39	39	43	41	42	45	45	48	46	51	50	51	50	51	50	51
18.....							41	41	40	39	41	40	43	42	46	45	47	46	51	50	51	50	51	51
19.....							41	41	41	40	41	40	45	42	45	44	47	46	51	50	51	50	52	51
20.....							41	41	41	41	41	41	44	42	45	44	47	46	51	51	50	50	52	51
21.....							41	41	40	41	41	41	43	42	45	44	47	47	51	51	51	50	52	51
22.....							41	41	42	40	41	41	43	42	45	44	47	47	51	51	50	50	52	52
23.....							41	41	42	40	44	40	43	45	45	47	47	51	51	51	50	50	52	51
24.....							41	41	43	40	44	43	43	47	45	47	46	51	51	50	50	50	51	51
25.....							41	41	43	40	43	43	45	46	45	47	46	51	51	50	50	50	51	51
26.....							41	41	41	41	40	43	42	44	43	46	45	47	51	51	50	50	51	51
27.....							41	41	41	41	42	42	44	43	46	45	47	47	51	51	50	50	51	51
28.....							41	41	41	41	42	42	44	43	46	45	47	47	51	51	50	50	51	51
29.....							41	41	--	--	43	42	43	47	45	47	47	51	51	50	50	51	50	49
30.....							41	41	--	--	43	42	45	43	46	45	47	50	51	50	51	50	50	49
31.....							41	41	--	--	42	42	--	--	46	45	--	50	50	50	51	50	--	--
Average.....							--	41	41	41	42	41	43	42	45	44	47	46	50	50	50	50	51	50

SKAGIT RIVER BASIN--Continued
CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION (revised).--Temperature recorder at gaging station, 1½ miles downstream from Boulder Creek, 2 miles east of Marblemount, Skagit County, and 2½ miles upstream from mouth.
DRAINAGE AREA.--171 square miles (revised).
RECORDS AVAILABLE.--Water temperatures: May 1952 to September 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 55°F Aug. 19-20, minimum, 34°F Nov. 29-30.
EXTREMES, 1952-53.--Water temperatures: Maximum, 57°F July 9, 11-14, 29-31, Aug. 2-5, 9-13, 1952; minimum, 34°F Nov. 29-30, 1952.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, water year October 1952 to September 1953

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	49	46	45	39	37	39	39	39	39	40	39	42	40	44	43	44	43	49	45	53	48	53	51
2.....	50	49	45	44	40	38	39	39	39	39	40	39	42	40	46	44	44	43	50	45	53	49	52	50
3.....	50	49	46	44	40	40	39	39	40	40	39	39	42	42	48	44	45	43	49	45	52	50	52	49
4.....	50	49	46	46	40	40	40	39	40	40	40	39	42	42	46	43	45	44	48	45	53	51	52	49
5.....	50	48	47	46	40	40	40	40	40	40	41	40	43	42	46	43	47	43	50	45	53	50	53	50
6.....	50	49	47	46	40	40	38	40	40	40	42	41	43	42	44	42	47	44	51	46	53	51	53	51
7.....	50	48	46	43	40	40	39	38	40	40	42	41	44	42	43	42	45	43	51	46	53	51	52	52
8.....	50	49	43	42	40	39	39	39	39	40	39	41	44	43	42	41	45	43	49	46	51	50	53	51
9.....	50	50	42	41	39	39	39	39	39	39	41	40	44	43	42	41	48	43	50	45	52	49	53	51
10.....	50	50	45	42	39	39	40	39	39	39	41	41	44	42	43	41	48	43	52	46	53	49	52	50
11.....	50	49	45	45	39	39	40	39	39	39	42	41	44	42	46	41	47	43	52	46	54	50	53	50
12.....	49	48	45	45	39	39	40	39	39	39	42	42	42	41	47	42	45	44	50	47	54	50	54	52
13.....	48	47	45	44	39	39	41	40	40	39	42	41	41	40	47	42	44	43	50	48	53	50	53	51
14.....	47	45	44	43	39	39	41	41	41	40	41	40	43	40	47	43	45	42	49	48	54	50	52	50
15.....	45	45	43	42	39	39	41	41	40	40	41	41	45	42	44	43	45	44	49	47	54	51	52	50
16.....	46	45	42	41	40	39	41	41	40	39	41	41	44	42	44	43	49	44	51	46	54	52	52	50
17.....	46	45	42	41	40	39	41	41	39	39	41	40	44	43	45	43	47	45	53	48	52	50	51	49
18.....	46	45	43	42	39	39	41	41	40	39	41	41	45	43	45	43	46	44	52	49	54	50	50	50
19.....	47	46	43	43	40	39	41	41	40	40	41	41	46	44	44	42	45	44	50	48	52	52	53	50
20.....	47	47	43	42	40	40	41	40	40	40	41	40	46	44	44	42	46	44	51	48	55	52	51	49
21.....	48	47	42	40	40	40	41	41	40	40	41	40	44	43	44	41	47	45	52	48	53	52	51	50
22.....	48	47	40	39	40	40	41	40	40	40	41	40	44	43	44	42	46	45	51	49	51	50	51	51
23.....	47	47	39	38	40	40	40	40	40	40	43	41	44	43	46	42	45	44	51	48	51	50	51	50
24.....	48	47	38	38	38	37	40	40	40	40	39	43	46	42	46	44	45	44	52	48	50	50	50	49
25.....	48	46	38	37	37	36	40	40	40	39	43	41	44	43	46	43	45	45	51	49	50	49	49	48
26.....	46	45	38	37	37	36	40	40	40	40	40	41	45	43	48	44	47	45	52	48	50	50	49	49
27.....	45	45	37	36	37	36	40	39	40	40	43	44	43	48	44	46	45	52	49	50	50	49	49	49
28.....	45	45	36	35	39	38	39	39	40	40	43	43	43	48	44	46	45	51	49	52	50	49	48	48
29.....	46	45	36	34	39	39	39	39	--	--	43	42	45	42	48	44	47	45	53	49	53	50	48	47
30.....	47	46	37	34	39	39	39	39	--	--	42	42	45	43	44	42	47	45	52	50	52	50	48	48
31.....	47	46	--	--	39	39	39	39	--	--	42	41	--	--	44	41	--	--	51	49	51	49	--	--
Average.....	48	47	42	41	39	39	40	40	40	40	42	41	44	42	45	42	46	44	51	47	53	50	51	50

UPPER COLUMBIA RIVER BASIN

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY

LOCATION.--At cableway, 2.2 miles downstream from international gaging station, which is 0.5 mile downstream from Pend Oreille River, and about 10 miles upstream from Northport, Stevens County, Wash.

DRAINAGE AREA.--59,700 square miles approximately.

RECORDS AVAILABLE.--Chemical analyses: February 1910-January 1911, November 1951 to September 1953.

WATER TEMPERATURES: November 1951 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 110 ppm Apr. 11-20; minimum, 78 ppm July 21-31.

Hardness: Maximum, 92 ppm Mar. 1-10; minimum, 68 ppm July 1-10, 21-31.

Specific conductance: Maximum daily, 190 micromhos Mar. 10; minimum daily, 131 micromhos July 27-30.

Water temperatures: Maximum observed, 63°F Aug. 11, 20; minimum observed, 38°F on many days from December to March.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 110 ppm Apr. 11-20, 1953; minimum, 78 ppm July 21-31, 1953.

Hardness: Maximum, 92 ppm Mar. 1-10, 1953; minimum, 63 ppm July 11-17, 19-20, 1952.

Specific conductance: Maximum daily, 190 micromhos Mar. 10, 1953; minimum daily, 131 micromhos July 27-30, 1953.

Water temperatures: Maximum observed, 63°F Aug. 4, 10, 11, 24, 1952; Aug. 11, 20, 1953; minimum observed, freezing point Jan. 2, 11, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oregon. Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		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. 1-10, 1952	50,550	4.8	0.02	21	4.7	1.3	0.6	77	13	0.2	0.3	0.3	--	85	0.12	11,600	72	9	4	148	7.4	8
Oct. 11-20	48,890	5.4	0.03	22	5.1	1.7	0.6	78	14	0.4	0.4	0.7	0.05	91	0.12	12,010	76	12	5	158	7.5	5
Oct. 21-31	48,470	5.5	0.03	23	5.7	1.5	1.5	80	16	0.9	0.1	0.5	--	98	0.13	12,830	81	15	4	162	7.5	5
Nov. 1-30	48,110	5.7	0.02	24	6.2	2.1	1.1	82	17	0.9	0.1	0.6	0.06	103	0.14	13,380	85	18	5	174	7.4	5
Dec. 1-31	33,160	6.8	0.01	25	5.6	2.4	1.1	89	18	0.8	0.2	0.8	0.02	105	0.14	9,400	85	12	6	180	7.6	3
Jan. 1-31, 1953	32,250	6.7	0.01	25	5.7	2.4	1.1	87	18	0.9	0.2	0.8	0.03	104	0.14	9,060	86	15	6	180	7.7	3
Feb. 1-28	38,650	7.1	0.02	24	5.4	2.4	1.1	88	17	0.9	0.3	0.6	0.03	102	0.14	10,640	82	10	6	177	7.7	4
Mar. 1-10	35,630	11	0.03	27	6.1	2.2	0.8	86	20	0.8	0.2	0.7	0.01	109	0.15	10,490	92	22	5	182	7.6	8
Mar. 11-20	37,900	8.1	0.03	25	5.9	2.2	0.8	84	18	0.8	0.2	0.7	0.01	107	0.15	10,950	87	18	5	179	7.8	5
Mar. 21-31	38,580	8.1	0.05	26	5.7	2.2	0.9	86	19	0.9	0.2	0.8	--	108	0.15	11,250	88	18	5	180	7.5	8
Apr. 1-10	36,510	8.1	0.04	25	5.9	2.2	0.9	84	17	1.1	0.2	0.8	--	108	0.15	10,650	87	18	5	179	7.4	8
Apr. 11-20	36,220	7.5	0.07	26	5.9	2.2	0.9	86	18	0.8	0.2	0.5	0.03	110	0.15	10,760	89	19	5	180	7.4	9
Apr. 21-30	47,090	7.5	0.05	24	5.3	2.0	0.9	79	18	0.8	0.2	0.5	--	103	0.14	13,100	82	17	5	167	7.5	9
May 1-10	88,510	8.0	0.07	23	5.4	2.0	0.4	76	16	0.8	0.2	0.4	--	96	0.13	22,940	80	17	5	160	7.1	5
May 11-20	143,200	7.5	0.02	22	5.2	1.8	0.4	76	14	0.6	0.2	0.6	0.05	89	0.12	34,410	76	14	5	150	7.2	5
May 21-31	196,400	7.0	0.02	21	5.7	1.8	0.7	74	13	0.6	0.2	0.6	--	87	0.12	46,130	76	15	5	147	7.2	5

COLUMBIA RIVER MAIN STEM--Continued
COLUMBIA RIVER AT INTERNATIONAL BOUNDARY--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953—Continued																							
Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per- cent so- dium ad- sorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	Col- or	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./mesium	Non-carbonate					
June 1-10, 1953	255,900	7.7	0.02	21	4.9	1.7	0.5	77	15	0.4	0.1	0.6	--	88	0.12	60,800	73	9	5	0.1	149	7.6	5
June 11-20	343,000	8.1	.02	21	4.9	1.8	.5	76	11	1.0	.1	.6	--	89	.12	82,420	73	10	5	.1	149	7.5	5
June 21-30	273,600	7.8	.02	20	4.7	1.9	.5	76	13	.5	.1	.7	--	86	.12	63,530	69	7	6	.1	144	7.4	5
July 1-10	234,300	7.0	.02	20	4.5	1.6	.5	74	13	.8	.1	.8	--	83	.11	52,510	68	8	5	.1	140	7.5	--
July 11-20	237,600	6.3	.02	20	5.2	1.8	.9	72	11	1.0	.2	.6	0.05	82	.11	52,600	71	12	5	.1	137	7.8	7
July 21-31	190,200	5.7	.02	19	4.9	1.4	.9	70	11	1.2	.1	.6	--	78	.11	40,060	68	10	4	.1	134	7.3	5
Aug. 1-10	130,100	6.0	.02	20	5.0	1.4	.9	72	12	.8	.2	.7	--	81	.11	28,450	70	11	4	.1	137	7.4	8
Aug. 11-20	97,250	4.9	.03	20	4.7	1.4	.9	71	13	1.2	.1	.6	.03	80	.11	21,010	69	11	4	.1	138	7.5	5
Aug. 21-31	99,530	5.9	.02	20	4.7	1.3	1.3	71	13	1.0	.2	.6	--	82	.11	22,040	69	11	4	.1	140	7.5	7
Sept. 1-10	80,670	4.7	.01	21	4.5	1.2	.6	72	13	.5	.2	.6	--	81	.11	17,640	71	12	4	.1	143	7.2	6
Sept. 11-20	72,750	5.0	.01	22	4.7	1.3	.6	74	14	.8	.2	.6	.04	84	.11	16,500	74	14	4	.1	146	7.5	3
Sept. 21-30	70,540	6.1	.01	23	5.2	1.5	.6	81	14	.7	.1	.8	--	91	.12	17,330	79	12	4	.1	156	7.4	3
Weighted average	93,310	6.8	0.02	22	5.1	1.8	0.7	77	14	0.8	0.2	0.6	--	89	0.12	22,420	76	13	5	0.1	151	--	--

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

SPOKANE RIVER BASIN

COEUR D'ALENE RIVER AT CATALDO, IDAHO

LOCATION.--At old wooden highway bridge, just upstream from new bridge on U.S. Highway 10, at Cataldo, Shoshone County, 1½ miles downstream from gaging station and 4½ miles downstream from South Fork.

DRAINAGE AREA.--1,220 square miles, approximately.

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

Water temperatures: October 1952 to September 1953.

EXTREMES: 1952-53.--Dissolved solids: Maximum, 95 ppm Sept. 11-20; minimum, 38 ppm May 1-10, 11-20.

Hardness: Maximum, 61 ppm Sept. 11-20; minimum, 20 ppm Apr. 23-30.

Specific conductance: Maximum daily, 169 micromhos Nov. 27; minimum observed, freezing point on several days during November to December.

Water temperatures: Maximum observed, 72°F July 13; minimum observed, 43.3 micromhos May 7.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for gaging station near Cataldo for water year October 1952 to September 1953 given in WSP 1286.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent sodium chloride 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. 20-31, 1952.	319	9.9	0.02	14	5.6	2.7	1.6	38	34	1.2	0.1	1.0	--	91	0.12	78.4	58	27	9	0.2	143	7.1	3
Nov. 1-10.....	321	9.7	.02	13	5.4	2.5	1.3	38	33	1.0	1.1	1.1	--	88	.12	76.3	55	24	9	.1	139	7.2	3
Nov. 11-20.....	347	9.6	.02	13	5.3	2.7	1.3	38	29	1.1	1.1	1.1	0.00	86	.12	80.6	54	23	9	.2	135	7.2	3
Nov. 21-30.....	261	9.7	.02	14	5.9	2.7	1.3	35	38	1.3	1.1	1.2	--	93	.13	65.5	59	30	9	.2	148	7.2	3
Dec. 1-11.....	309	9.1	.04	14	5.4	2.7	1.3	38	34	1.2	1.1	1.1	.00	90	.12	75.1	57	26	9	.2	143	7.4	3
Dec. 19-31.....	332	9.3	.04	14	5.6	2.5	1.3	36	36	1.2	1.1	.7	--	91	.12	81.6	58	28	8	.1	145	7.2	5
Jan. 1-12, 1953 .	1,361	8.7	.06	13	4.6	2.4	1.4	36	30	1.0	.2	1.5	--	83	.11	305	51	22	9	.1	133	7.1	5
Jan. 13-31.....	4,665	9.9	.06	7.3	2.8	1.9	1.0	23	16	.8	.2	.8	.01	54	.07	680	30	11	12	.2	78.7	7.0	5
Feb. 1-16.....	6,333	10	.06	6.2	2.6	1.7	1.0	22	13	.7	.2	.4	.02	48	.07	821	26	8	12	.1	67.8	7.1	6
Feb. 17-28.....	1,975	10	.03	8.6	3.4	1.9	1.0	28	18	.5	.2	.4	--	59	.08	315	35	12	10	.1	89.3	7.1	3
Mar. 1-10.....	1,377	9.5	.02	9.8	3.7	4.0	1.0	30	22	1.0	1	.5	--	66	.09	245	40	15	18	.3	96.8	6.9	5
Mar. 11-20.....	2,388	9.6	.04	8.0	3.3	1.2	.7	24	16	.5	.1	.5	.02	56	.08	361	34	14	7	.1	78.4	7.1	5
Mar. 21-31.....	2,728	9.5	.12	7.8	2.8	2.8	.8	26	15	.8	.1	.5	--	57	.08	420	31	10	16	.2	75.4	7.0	5
Apr. 1-10.....	2,938	9.5	.04	7.4	3.0	2.3	.6	28	13	.8	.1	.2	--	53	.07	420	31	8	16	.2	70.5	6.9	5
Apr. 11-22.....	3,350	9.3	.04	7.2	3.0	1.8	.6	27	12	.6	.1	.5	.01	51	.07	461	30	8	11	.1	75.1	7.0	4
Apr. 23-30.....	13,225	9.3	.09	4.8	2.0	1.3	.6	21	7.1	.4	.1	.4	--	40	.05	1,428	20	3	12	.1	49.8	6.6	8
May 1-10.....	8,711	9.3	.07	4.8	2.1	1.4	.6	20	8.0	.6	.1	.4	--	38	.05	894	21	4	12	.1	51.0	6.7	8
May 11-20.....	6,827	8.9	.06	4.8	2.4	1.4	.5	22	7.7	.5	.1	.4	.04	38	.05	700	22	4	12	.1	52.6	6.7	7
May 21-31.....	5,651	8.8	.08	5.3	2.4	1.4	.9	21	9.4	.5	.1	.3	--	40	.05	610	23	6	11	.1	57.7	6.9	8
June 1-10.....	5,065	8.8	.05	6.2	2.0	2.4	.8	23	10	.9	.1	.4	--	41	.06	561	24	5	17	.2	60.6	6.8	7
June 11-20.....	3,437	9.0	.04	7.2	2.4	2.6	.8	25	12	1.0	.1	.5	.03	47	.06	436	28	7	16	.2	69.8	6.7	7
June 21-30.....	1,978	10	.04	8.4	3.1	1.4	1.2	27	18	1.3	.1	.8	--	59	.08	315	34	12	17	.3	88.3	6.8	7
July 1-10.....	1,404	9.4	.04	9.2	3.8	2.7	1.2	31	19	.5	.1	.6	--	66	.09	224	36	11	13	.2	92.5	6.9	7
July 11-20.....	984	9.6	.04	10	3.8	2.7	1.2	31	22	.8	.1	.5	.01	66	.09	175	41	15	12	.2	104	6.9	7
July 21-31.....	711	9.6	.07	12	4.5	2.5	1.7	37	27	1.3	.1	.7	--	76	.10	146	48	18	10	.2	117	7.3	5

Aug. 1-10, 1953	577	10	.06	12	4.8	3.0	1.7	33	30	1.0	.1	.8	--	81	.11	126	50	23	11	.2	124	6.7	5
Aug. 11-20	473	11	.04	14	5.0	4.4	1.8	35	36	1.9	.1	.8	.04	92	.13	117	56	27	14	.3	133	6.9	5
Aug. 21-31	465	10	.09	14	5.0	2.9	1.8	36	33	1.7	.1	.8	--	82	.12	112	58	28	19	2	138	6.9	5
Sept. 1-10	392	12	.21	14	5.2	3.7	2.1	35	36	1.5	.1	.4	--	93	.13	98.4	56	28	12	.2	142	7.0	5
Sept. 11-20	328	11	.07	15	5.8	3.7	1.5	39	39	1.6	.1	.4	.03	95	.13	84.1	61	29	11	.2	150	6.9	5
Sept. 21-30	360	10	.02	13	5.6	2.6	2.3	36	34	.9	.1	.9	--	88	.12	85.5	56	26	9	.2	137	7.4	5
Weighted average	a 2,573	9.4	0.06	6.9	2.8	1.9	0.9	24	13	0.7	0.1	0.5	--	50	0.07	347	29	9	12	0.2	71.6	--	--

a Represents 99 percent of runoff for water year October 1952 to September 1953.

SPOKANE RIVER BASIN--Continued

COEUR D'ALENE RIVER AT CATALDO, IDAHO--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

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

Chemical analyses, in parts per million, October 1952

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	Color or pH
														Parts per million	Tons per acre-foot	Calcium	Non-magnesium			
COEUR D'ALENE RIVER NEAR PRICHARD, IDAHO																				
Oct. 19, 1952 . . .	132	9.4		6.4	2.2	3.3		32	4.0	1.0			0.6	45		25	0		62.0	7.4
COEUR D'ALENE RIVER AT ENAVILLE, IDAHO																				
Oct. 19, 1952 . . .	198	9.8		5.7	1.9	3.2		30	3.0	0.7			0.7	40		22	0		52.7	7.4
SOUTH FORK COEUR D'ALENE RIVER NEAR MULLAN, IDAHO																				
Oct. 19, 1952 . . .		8.8		11	3.6	3.5		55	3.0	0.8			0.9	64		42	0		96.0	7.4
ST. JOE RIVER AT CALDER, IDAHO																				
Oct. 18, 1952 . . .	302	8.4		8.2	1.7	3.6		38	3.0	0.5			0.7	45		28	0		64.0	7.4
ST. MARIES RIVER AT LOTUS, IDAHO																				
Oct. 18, 1952 . . .	47	15		6.3	1.5	5.6		34	4.0	1.0			0.9	61		22	0		57.4	7.2
COEUR D'ALENE LAKE AT COEUR D'ALENE, IDAHO																				
Oct. 17, 1952 . . .		7.8		5.5	2.0	2.5		24	6.0	0.5			0.7	40		22	2		54.3	7.2
BLUE CREEK BAY NEAR COEUR D'ALENE, IDAHO																				
Oct. 17, 1952 . . .		7.3		5.5	2.3	2.3		24	6.0	1.0			1.0	39		23	3		56.2	7.2
SPOKANE RIVER NEAR POST FALLS, IDAHO																				
Oct. 17, 1952 . . .	1,590	7.1		5.6	2.0	1.8		24	4.0	1.0			1.0	36		22	2		54.4	7.1

SPOKANE RIVER BASIN--Continued
 MISCELLANEOUS ANALYSES OF STREAMS IN SPOKANE RIVER BASIN--Continued
 Chemical analyses, in parts per million, October 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	Color or pH
													Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate			
SPOKANE RIVER BELOW GREENE STREET AT SPOKANE, WASH.																			
Oct. 16, 1952 . . .		9.0		15	5.6	2.8	68	7.0	1.5			1.6	82		60	4		133	7.4
SPOKANE RIVER AT SPOKANE, WASH.																			
Oct. 16, 1952 . . .	1,680	9.3		15	6.3	7.6	77	9.0	4.5			1.3	91		63	0		161	7.0
LATAH CREEK AT SPOKANE, WASH.																			
Oct. 16, 1952 . . .	19	24		38	11	15		180	15	4.5		3.1	201		140	0		316	7.9
LITTLE SPOKANE RIVER AT DARTFORD, WASH.																			
Oct. 16, 1952 . . .	174	19		31	7.7	6.4	139	4.0	2.0			2.2	144		109	0		238	7.8
SPOKANE RIVER AT LONG LAKE, WASH.																			
Oct. 16, 1952 . . .	2,790	9.0		22	9.2	5.1	108	9.0	2.5			2.9	116		93	4		200	7.7
CHAMOKANE CREEK AT FORD, WASH.																			
Oct. 16, 1952 . . .		32		22	8.5	6.2	118	3.0	1.5			2.7	138		90	0		205	7.7

SPOKANE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SPOKANE RIVER BASIN--Continued

Copper, lead, zinc, and related physical measurements, October 1952
 /Analytical results in parts per million except as indicated/

Date of collection	Mean dis- charge (cfs)	Copper (Cu)	Lead (Pb)	Zinc (Zn)	Specific conduct- ance- (micro- mhos at 25°C)	pH
SOUTH FORK COEUR D'ALENE RIVER NEAR WALLACE, IDAHO						
Oct. 19, 1952		0.15	0.22	2.0	258	7.1
SOUTH FORK COEUR D'ALENE RIVER AT ENAVILLE, IDAHO						
Oct. 19, 1952		0.19	0.10	5.0	342	7.1
COEUR D'ALENE RIVER NEAR CATALDO, IDAHO						
Oct. 19, 1952	316	0.15	0.06	1.5	141	7.2
COEUR D'ALENE LAKE AT COEUR D'ALENE, IDAHO						
Oct. 17, 1952			0.02		54.3	7.2
BLUE CREEK BAY NEAR COEUR D'ALENE, IDAHO						
Oct. 17, 1952			0.03		56.2	7.2
COEUR D'ALENE LAKE AT HARRISON, IDAHO						
Oct. 21, 1952		0.06		0.2	63.3	7.5

SPOKANE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SPOKANE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1952 to September 1953

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)

COEUR D'ALENE RIVER AT ENAVILLE, IDAHO

Apr. 11, 1953.....	1,920	1	5
May 2	6,330	13	222
May 23	3,350	3	27
June 18	1,790	2	10
Aug. 22	289	--	e 3

SOUTH FORK COEUR D'ALENE RIVER NEAR MULLAN, IDAHO

Apr. 12, 1953	31.5	2	0.2
May 1	143	4	1.5
May 24	163	3	1.3
June 18	132	1	.4
Aug. 21	14.8	--	e .1

SOUTH FORK COEUR D'ALENE RIVER AT ENAVILLE, IDAHO

Apr. 12, 1953.....	447	1,990	2,400
Apr. 14	e 420	1,760	2,000
May 1	1,640	522	2,310
May 24	1,400	393	1,490
June 18	981	569	1,480
Aug. 22	147	4,200	1,670

COEUR D'ALENE RIVER NEAR CATALDO, IDAHO

Apr. 11, 1953.....	2,490	344	2,310
May 2	7,650	134	2,770
May 25	5,010	49	663
June 18	2,850	150	1,150
Aug. 22	422	149	170

COEUR D'ALENE RIVER AT DUDLEY, IDAHO

Apr. 13, 1953.....	--	355	--
May 2	8,290	58	1,300
May 25	5,270	26	370
June 20	2,780	115	863

LATAH CREEK AT SPOKANE, WASH.

Apr. 15, 1953.....	144	9	3.5
Apr. 23	119	11	3.5
May 1	695	184	345
May 8	183	27	13
May 15	95	13	3.3
May 22	74	10	2.0
May 29	264	80	57
June 5	121	30	9.8
June 15	134	114	41
June 25	49	31	4.1
July 1	40	94	10
Aug. 12	12.5	285	9.6

e Estimated.

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT GRAND COULEE DAM, WASH.

LOCATION.--At Grand Coulee Dam, Grant-Okanogan County line, 2,500 feet upstream from gaging station, which is 14 miles upstream from Nespelem River. DRAINAGE AREA.--74,100 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1953.

Water temperatures: November 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 110 ppm May 11-20; minimum, 81 ppm Aug. 21-31, Sept. 1-10, 11-20.

Specific conductance: Maximum daily, 183 micromhos May 11, 13; minimum daily, 132 micromhos Aug. 27.

Water temperatures: Maximum observed, 64° F Sept. 24-27; minimum observed, 40° F on several days during March.

EXTREMES, 1950-53.--Dissolved solids: Maximum, 110 ppm Apr. 1-10, 11-20, 1952; May 11-20, 1953; minimum, 80 ppm Sept. 1-10, 11-20, 1952.

Specific conductance: Maximum daily, 183 micromhos Apr. 13, 21, 1952; May 11, 13, 1953; minimum daily, 128 micromhos May 31, 1952.

Water temperatures: Maximum observed, 65° F Aug. 19, 1951; minimum observed, 35° F Mar. 3-4, 1952.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent dissolved	Sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium	Non-carbonate					
Oct. 1-10, 1952	53,350	--	--	--	--	--	--	--	--	--	--	--	--	82	0.11	11,810	--	--	--	--	144	--	--
Oct. 11-31	51,760	5.4	5.0	21	5.0	1.8	75	75	12	1.0	--	0.8	0.07	82	.11	11,460	73	12	5	0.1	145	7.5	--
Nov. 1-30	51,580	4.6	5.2	21	5.2	1.8	78	78	12	1.0	--	.6	--	85	.12	11,840	74	10	5	.1	150	7.3	--
Dec. 1-31	47,910	5.1	5.4	23	5.4	1.6	80	80	14	.8	--	.6	--	90	.12	11,640	80	14	4	.1	158	7.6	--
Jan. 1-31, 1953	44,350	6.2	4.7	24	4.7	2.4	83	83	14	1.1	--	.7	.05	96	.13	11,500	78	10	6	.1	166	7.3	--
Feb. 1-28	64,170	6.1	4.9	24	4.9	2.5	83	83	14	1.1	--	.8	--	98	.13	16,980	79	11	6	.1	168	7.3	--
Mar. 1-10	70,200	8.0	4.8	23	4.8	2.8	85	85	16	1.8	--	1.7	--	100	.14	18,950	78	8	7	.1	170	7.8	--
Mar. 11-20	75,680	7.9	5.2	24	5.2	2.5	83	83	21	1.5	--	.2	.05	106	.14	21,680	80	12	6	.1	178	7.6	--
Mar. 21-31	75,610	8.2	4.7	23	4.7	2.6	81	81	18	1.0	--	1.1	--	101	.14	20,620	77	11	7	.1	169	7.1	--
Apr. 1-10	76,300	8.6	4.5	24	4.5	2.9	83	83	18	1.6	--	1.2	--	103	.14	21,220	78	10	7	.1	172	7.3	--
Apr. 11-20	76,760	9.5	4.9	24	4.9	2.5	83	83	17	1.5	--	.1	.05	108	.15	22,380	80	12	6	.1	174	7.7	--
Apr. 21-30	72,340	9.1	5.2	24	5.2	2.7	84	84	17	1.0	--	.6	--	105	.14	20,510	81	12	7	.1	174	7.4	--
May 1-10	69,730	8.9	5.0	25	5.0	2.9	87	87	17	1.4	--	1.0	--	105	.14	19,770	82	11	7	.1	176	7.3	--
May 11-20	72,560	9.5	5.3	23	5.3	2.8	83	83	17	1.5	--	.1	.07	110	.15	21,550	80	12	7	.1	178	7.8	--
May 21-31	215,000	9.5	4.8	21	4.8	2.1	77	77	16	1.3	--	.4	--	100	.14	58,050	72	9	6	.1	161	7.8	--
June 1-10	293,900	8.0	3.6	20	3.6	1.7	69	69	12	1.3	--	.8	--	87	.12	89,040	64	7	5	.1	143	7.6	--
June 11-20	351,100	8.4	4.1	18	4.1	2.2	67	67	11	1.5	--	.6	--	84	.11	79,630	61	6	7	.1	137	7.6	--
June 21-30	279,700	--	--	--	--	--	--	--	--	--	--	--	--	85	.12	64,190	--	--	--	--	140	--	--

COLUMBIA RIVER MAIN STEM--Continued
COLUMBIA RIVER AT GRAND COULEE DAM, WASH.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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				
July 1-10, 1953...	243,900	--	--	--	--	--	--	--	--	--	--	--	--	85	0.12	55,980	--	--	--	143	--	--
July 11-20	244,100	7.7	--	19	4.7	2.1	--	73	11	1.0	--	0.7	0.05	86	.12	56,680	67	7	0.1	142	7.6	--
July 21-31	195,100	--	--	--	--	--	--	--	--	--	--	--	--	84	.11	44,250	--	--	--	140	--	--
Aug. 1-10	134,600	--	--	--	--	--	--	--	--	--	--	--	--	82	.11	29,800	--	--	--	139	--	--
Aug. 11-20	99,600	7.8	--	19	3.9	2.2	--	69	10	1.7	--	.7	--	83	.11	22,320	64	7	.1	138	7.6	--
Aug. 21-31	102,200	--	--	--	--	--	--	--	--	--	--	--	--	81	.11	22,350	--	--	--	138	--	--
Sept. 1-10	90,120	--	--	--	--	--	--	--	--	--	--	--	--	81	.11	19,710	--	--	--	139	--	--
Sept. 11-20	78,400	6.8	--	19	4.9	1.2	--	69	10	1.3	--	1.0	--	81	.11	17,150	68	11	.1	135	7.6	--
Sept. 21-30	74,990	--	--	--	--	--	--	--	--	--	--	--	--	83	.11	16,810	--	--	--	141	--	--
Weighted average	a 106,400	--	--	--	--	--	--	--	--	--	--	--	--	90	0.12	25,860	--	--	--	150	--	--

a Represents 99 percent of runoff for water year October 1952 to September 1953.

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT GRAND COULEE DAM, WASH.--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement taken at approximately 10 a.m. /

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	--	55	44	44	42	41	43	49	53	59	63
2	63	--	54	--	44	41	41	42	49	53	59	62
3	63	--	54	44	44	41	41	43	49	53	59	62
4	63	--	54	44	43	40	42	43	50	53	59	63
5	62	--	54	44	44	42	42	43	50	53	49	63
6	62	--	54	44	44	40	42	43	51	53	59	63
7	62	--	53	44	44	41	42	43	51	53	58	63
8	62	--	53	44	44	41	42	43	51	54	60	63
9	62	--	52	44	44	42	42	43	51	53	60	62
10	63	60	52	45	44	42	42	43	52	53	61	63
11	62	60	51	45	44	--	42	43	53	53	61	63
12	62	60	51	45	44	41	42	44	52	54	61	63
13	62	59	51	45	44	41	42	44	52	54	62	63
14	62	59	50	45	43	41	42	45	52	55	62	63
15	61	59	50	45	43	41	42	45	53	55	62	63
16	61	59	50	44	43	41	42	46	53	55	62	63
17	61	59	50	44	43	40	42	46	53	55	62	63
18	62	59	49	44	43	40	42	46	53	55	62	63
19	61	59	49	44	43	40	42	46	53	55	62	63
20	61	59	49	44	42	40	42	46	53	58	62	63
21	61	58	49	44	42	40	42	46	53	58	62	63
22	61	57	49	44	42	40	42	47	53	53	62	63
23	61	57	48	--	42	40	42	47	53	58	62	--
24	62	56	48	44	42	41	42	47	54	58	62	64
25	62	56	48	44	42	41	42	47	54	58	--	64
26	--	56	47	44	42	41	42	47	54	58	63	64
27	62	56	47	44	42	41	42	47	54	58	63	64
28	61	56	47	44	42	41	42	47	53	58	63	63
29	61	56	45	44	--	41	43	48	53	59	63	62
30	--	55	45	43	--	41	43	48	53	59	63	62
31	--	--	44	44	--	41	--	48	--	59	63	--
Average	62	--	50	44	43	41	42	45	52	55	61	63

YAKIMA RIVER BASIN
YAKIMA RIVER AT CLE ELUM, WASH.

LOCATION—At gaging station at highway bridge at Cle Elum, Kittitas County, just upstream from Roslyn Creek and 7 miles upstream from Teanaway River.

DRAINAGE AREA—500 square miles, approximately. 1910 to January 1911, December 1952 to September 1953.

RECORDS AVAILABLE—Chemical analyses December 1952 to September 1953.

Water temperatures—December 1952 to September 1953. Maximum, 49 ppm Dec. 30-31, Jan. 1-10; minimum, 32 ppm Sept. 11-20, 21-30.

EXTRACTS, 1952-53—Dissolved solids—Maximum, 49 ppm Dec. 30-31, Jan. 1-10; minimum, 32 ppm Sept. 11-20, 21-30.

Hardness: Maximum, 35 ppm Dec. 30-31, Jan. 1-10; minimum, 21 ppm June 11-20, 21-30.

Specific conductance: Maximum, 40.8 micromhos Dec. 31; minimum daily, 45.4 micromhos Aug. 16.

Water temperatures: Maximum observed, 61°F, July 12, 18.

REMARKS—Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office

at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Chemical analyses, in parts per million, December 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃	Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	Color		
														Parts per million	Tons per acre-foot							
														Calcium, magnesium	Non-carbonate							
Dec. 30-31, 1952, Jan. 1-10, 1953.	166	9.9	0.02	7.8	3.4	2.8	0.5	46	2.0	1.4	0.3	0.4	--	49	0.07	22.0	33	0	15	79.7	7.4	5
Jan. 11-31	826	9.7	.05	6.8	2.1	3.0	.5	34	2.0	1.2	.2	.7	0.01	42	.06	93.7	26	0	20	62.2	7.4	5
Jan. 1-31	1,069	9.9	.04	6.4	2.0	2.5	.5	32	2.0	1.2	.2	.7	.01	40	.05	115	24	0	19	57.9	7.4	4
Feb. 1-28	517	9.5	.02	7.8	2.3	2.2	.6	36	3.3	1.2	.1	.6	--	46	.06	64.2	29	0	14	63.7	7.2	5
Mar. 1-10	531	9.2	.02	7.8	2.3	3.1	.5	40	2.2	1.2	.1	.4	.04	48	.07	68.8	29	0	19	67.7	7.0	5
Mar. 11-20	677	8.9	.02	7.6	2.3	2.2	.7	36	2.1	1.2	.1	.4	--	46	.06	84.1	28	0	14	62.5	7.0	5
Mar. 21-31	1,298	7.8	.02	6.2	2.0	3.1	.7	34	1.7	1.0	.1	.4	--	37	.05	130	24	0	22	51.5	7.2	5
Apr. 1-10	1,549	7.8	.02	5.2	2.2	2.3	.7	29	2.0	1.0	.2	.4	.01	35	.05	146	22	0	18	51.9	6.9	7
Apr. 11-20	1,081	8.6	.03	6.4	2.2	2.8	.5	33	1.8	1.0	.2	.4	.01	42	.06	123	25	0	19	58.8	6.9	9
Apr. 21-30	1,884	11	.03	7.1	2.3	2.8	.4	37	2.1	1.2	.2	.4	--	46	.06	107	27	0	18	65.7	7.0	9
May 1-10	608	11	.03	7.3	2.3	2.8	.4	37	2.0	1.1	.2	.4	.03	45	.06	73.9	28	0	18	65.0	7.1	5
May 11-20	688	10	.03	7.0	2.5	2.8	.4	36	1.7	1.9	.2	.4	--	44	.06	79.4	28	0	18	64.2	7.1	9
May 21-31	2,242	8.3	.02	6.6	2.1	2.2	.7	33	2.4	1.0	.1	.4	--	36	.05	218	25	0	16	57.0	6.9	5
June 1-10	4,277	7.2	.02	5.8	1.7	2.7	.7	28	3.1	1.2	.1	.5	.06	33	.04	381	21	0	21	50.9	6.8	5
June 11-20	2,102	7.2	.09	6.0	2.1	2.7	.7	30	4.0	.8	.1	.4	--	35	.05	199	24	0	19	53.1	6.7	5
June 21-30	2,560	6.7	.02	6.0	2.2	1.5	.7	30	2.7	.9	.1	.4	--	34	.05	235	24	0	12	52.3	6.8	5
July 1-10	2,395	7.1	.02	5.8	2.2	1.3	.4	29	1.8	1.1	.1	.3	.04	33	.04	213	24	0	12	50.6	6.9	5
July 11-20	2,895	7.0	.05	6.0	2.6	1.5	.2	30	2.2	1.4	.2	.5	--	33	.04	252	26	1	10	50.6	6.8	8
July 21-31	2,850	7.2	.03	6.3	2.7	1.3	.2	28	1.9	1.5	.2	.6	--	33	.04	254	27	4	10	49.1	6.9	7
Aug. 1-10	2,885	6.8	.03	6.1	2.7	1.3	.2	28	1.9	1.5	.2	.6	.02	34	.05	263	26	3	10	49.5	6.9	10
Aug. 11-20	2,562	6.8	.02	6.0	2.7	1.3	.2	28	1.8	1.7	.3	.5	--	33	.04	230	28	5	9	49.9	6.7	10
Aug. 21-31	2,582	6.8	.02	5.7	2.6	1.5	.2	28	1.8	1.7	.3	.5	--	34	.05	183	25	2	10	48.3	6.9	6
Sept. 1-10	1,894	7.3	.02	6.0	2.4	1.5	.2	28	2.2	1.1	.2	.6	.02	32	.04	174	25	2	11	49.8	6.9	7
Sept. 11-20	2,641	6.3	.02	5.8	2.4	1.5	.2	28	2.2	1.1	.1	.7	--	32	.04	161	24	1	12	48.9	6.7	7
Sept. 21-30	1,865	7.3	.02	5.8	2.4	1.5	.2	28	2.1	.9	.1	.7	--	32	.04	161	24	1	12	48.9	6.7	7
Weighted average	a1,599	7.8	0.03	6.2	2.3	2.0	0.4	30	2.2	1.2	0.1	0.5	--	36	0.05	155	25	0	15	53.4	--	--

a Represents 93 percent of observed runoff for water year October 1952 to September 1953.

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT CLE ELUM, WASH.--Continued

Temperature (°F) of water, December 1952 to September 1953
 /Once-daily measurement taken at approximately 7 a. m./

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

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT KIONA, WASH.

LOCATION.--At gaging station at highway bridge at Kiona, Benton County, 3½ miles downstream from intake of Kiona Canal and 25 miles upstream from mouth. DRAINAGE AREA.--5,600 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: December 1952 to September 1953.

Water temperatures: December 1952 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 236 ppm Sept. 11-20; minimum, 98 ppm June 11-20.

Hardness: Maximum, 145 ppm Sept. 11-20, 21-30; minimum, 58 ppm June 11-20.

Specific conductance: Maximum daily, 385 micromhos Sept. 18; minimum daily, 123 micromhos Feb. 3.

Water temperatures: Maximum observed 78°F July 18, Aug. 15.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Chemical analyses, in parts per million, December 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent adsorption	Sodium to adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Calcium, magnesium	Non-carbonate					
Dec. 30-31, 1952,	1,694	33	0.03	30	12	23	3.6	171	22	7.9	0.2	4.0	--	215	0.29	124	0	28	0.9	339	7.7	3
Jan. 1-9, 1953	5,902	27	12	17	7.6	12	2.8	96	12	4.2	4	2.9	0.04	135	1.18	74	0	25	0.6	193	7.7	25
Jan. 10-31	7,372	23	12	14	5.9	8.4	1.8	78	8.0	3.2	3	2.0	0.4	105	1.4	59	0	23	0.5	152	7.8	12
Feb. 1-14	3,877	25	08	18	7.0	13	2.1	100	10	4.2	3	1.6	0.1	128	1.17	74	0	26	0.6	193	7.8	3
Feb. 15-28	2,964	28	02	18	7.8	13	2.1	114	12	4.5	3	1.9	--	139	1.19	82	0	25	0.6	216	7.8	6
Mar. 1-10	3,020	24	03	19	7.2	12	2.1	106	11	4.2	3	1.6	0.4	129	1.18	77	0	25	0.6	204	7.5	6
Mar. 11-20	2,209	25	03	21	8.1	14	2.0	122	13	5.2	3	1.6	--	147	0.20	86	0	26	0.7	231	7.5	8
Mar. 21-31	1,714	24	03	23	8.9	16	2.4	134	15	5.4	3	1.9	--	157	0.21	94	0	26	0.7	254	7.9	4
Apr. 1-10	1,401	24	03	28	10	20	2.6	157	20	6.6	3	1.7	0.5	187	0.25	111	0	28	0.8	301	7.9	6
Apr. 11-20	2,724	24	02	22	8.1	14	2.1	116	14	6.2	3	1.8	--	147	0.20	88	0	25	0.6	228	7.8	7
Apr. 21-28	5,124	23	03	17	6.2	10	2.1	88	9.2	3.8	3	1.5	--	116	0.16	68	0	24	0.5	170	7.7	5
Apr. 29-30, May 1-3	3,468	27	--	24	8.7	14	2.8	126	--	5.0	2	1.8	0.3	156	0.22	96	0	23	0.6	237	7.8	--
May 4-7	3,072	26	--	24	8.2	14	2.8	125	--	4.4	1	1.4	--	156	0.21	94	0	24	0.6	241	7.5	5
May 11-20	4,569	24	03	21	7.7	12	2.2	108	13	4.4	1	1.4	--	138	0.19	84	0	23	0.6	207	7.9	5
May 21-31	5,717	26	05	17	7.1	12	1.9	100	11	3.2	1	1.3	--	127	0.17	70	0	26	0.6	190	7.5	10
June 1-10	8,668	21	05	14	5.6	8.6	1.9	75	8.9	2.8	1	1.3	0.3	98	0.13	58	0	24	0.5	147	7.6	10
June 11-20	3,613	26	04	21	8.0	14	2.2	115	14	4.5	1	1.2	--	143	0.19	85	0	26	0.7	220	7.7	10
June 21-30	3,226	25	04	22	8.3	15	2.2	120	15	4.8	2	1.3	--	148	0.20	89	0	26	0.7	232	7.4	10
July 1-10	2,201	27	04	24	9.1	17	2.5	134	17	5.5	2	1.5	0.5	167	0.23	982	0	27	0.9	347	7.6	7
July 11-20	1,585	34	06	33	12	23	3.7	184	23	7.2	3	1.7	--	224	0.30	958	0	27	0.9	347	7.9	10
July 21-31	1,786	34	01	30	12	22	3.9	172	21	6.5	3	2.3	--	210	0.29	124	0	27	0.9	330	7.8	5
Aug. 1-10	1,582	29	01	33	13	24	4.0	166	24	6.8	3	2.2	0.6	219	0.30	935	0	27	0.9	352	7.8	10
Aug. 11-20	2,106	32	02	31	12	22	4.0	174	22	6.8	3	2.0	--	208	0.28	124	0	27	0.9	327	7.9	10
Aug. 21-31	1,917	32	02	33	13	25	4.0	166	23	7.5	3	2.0	--	220	0.30	136	0	28	0.9	350	7.9	7
Sept. 1-10	1,666	32	02	35	14	25	4.3	200	25	8.0	3	2.0	0.4	236	0.32	145	0	27	0.9	376	7.9	8
Sept. 11-20	1,689	32	02	35	14	25	4.2	193	24	7.5	3	2.2	--	234	0.32	145	0	27	0.9	369	8.0	9
Sept. 21-30	a 3,420	26	07	20	8.1	14	2.5	114	13	4.6	0.3	1.9	--	144	0.20	83	0	26	0.7	220	--	--
Weighted average																						

a Represents 85 percent of runoff for water year October 1952 to September 1953.

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT KIONA, WASH.--Continued

Temperature (°F) of water, December 1952 to September 1953

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

PART 13. SNAKE RIVER BASIN

SNAKE RIVER MAIN STEM

SNAKE RIVER NEAR HEISE, IDAHO

LOCATION.--At Eagle Rock canal headgate, 1½ miles upstream from Heise, Bonneville County, 1 5/8 miles downstream from Anderson canal headgate, 1½ miles downstream from gaging station, about 4½ miles east of Ririe, and about 21 miles upstream from Henrys Fork.

DRAINAGE AREA.--5,752 square miles (above gaging station).

RECORDS AVAILABLE.--Chemical analyses: January to September 1953.

Water temperatures: January to September 1953.

EXTREMES, January to September 1953.--Dissolved solids: Maximum, 353 ppm Feb. 1-28, March 1-10; minimum, 168 ppm June 21-30.

Hardness: Maximum, 271 ppm Mar. 1-10; minimum, 128 ppm July 21-31.

Specific conductance: Maximum daily, 608 micromhos Feb. 22; minimum daily, 255 micromhos June 24.

Water temperatures: Maximum observed, 64° F Aug. 1.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1952 to September 1953 given in NSP 1287. About 2.5 percent of normal annual stream flow of 5,000,000 acre feet is diverted by Anderson canal between sampling point and gaging station. This diversion occurs during the months May to November except for leakage through the headgate. No other diversion or appreciable inflow between sampling point and gaging station except during periods of local rains.

Chemical analyses, in parts per million, January to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		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					
Jan. 8-31, 1953..	2,522	11	0.02	68	19	19	3.0	214	80	23	0.3	4.8	0.11	338	0.46	2,300	248	72	14	0.5	550	7.8	2
Feb. 1-28.....	2,341	11	.02	72	20	20	3.0	224	85	24	.3	4.2	.10	353	.48	2,230	262	78	14	.5	572	7.9	2
Mar. 1-10.....	2,235	12	.05	74	21	19	2.7	226	87	26	.4	1.7	--	353	.48	2,130	271	86	13	.5	571	7.6	10
Mar. 11-20.....	2,279	12	.06	73	21	19	2.7	224	84	26	.3	1.4	.12	352	.48	2,170	268	85	13	.5	570	7.8	7
Mar. 21-31.....	2,468	12	.12	68	21	19	2.7	220	81	26	.4	1.2	--	342	.47	2,280	256	76	14	.5	557	8.0	5
Apr. 1-10.....	3,075	11	.05	67	19	18	2.0	217	72	24	.3	1.2	--	321	.44	2,670	245	67	14	.5	531	8.1	5
Apr. 11-20.....	2,824	9.7	.05	70	20	19	2.3	220	75	26	.4	.5	.10	333	.45	2,540	256	76	14	.5	549	8.1	5
Apr. 21-30.....	6,750	12	.06	55	14	12	1.7	184	48	14	.3	1.8	--	252	.34	4,590	195	44	12	.4	420	7.7	5
May 1-10.....	6,511	10	.03	56	14	12	1.6	183	48	12	.3	1.2	--	248	.34	4,360	197	47	12	.4	411	7.9	5
May 11-20.....	8,566	12	.03	51	13	11	1.6	170	41	11	.3	1.4	.10	229	.31	5,300	181	41	12	.4	381	7.5	5
May 21-31.....	9,699	10	.03	50	12	9.1	1.6	169	38	10	.4	1.4	--	218	.30	5,710	174	36	10	.3	365	7.6	8
June 1-10.....	13,900	10	.04	46	12	7.4	1.1	188	32	7.5	.4	1.4	--	198	.27	7,220	164	35	9	.3	330	7.7	8
June 11-20.....	22,930	11	.04	47	8.4	5.3	1.4	164	24	5.0	.3	1.4	.02	188	.26	11,640	152	17	7	.2	311	7.5	8
June 21-30.....	19,500	12	.02	41	8.1	6.7	1.7	137	28	6.0	.3	1.1	--	168	.23	8,850	136	23	10	.2	281	7.4	6
July 1-10.....	15,160	11	.02	38	8.5	7.0	1.8	129	30	7.0	.3	1.3	--	169	.23	6,920	130	24	10	.3	284	7.3	7
July 11-20.....	12,540	13	.02	39	8.7	8.2	1.7	131	34	8.0	.4	.9	.04	177	.24	5,990	133	26	12	.3	282	7.3	6
July 21-31.....	11,880	14	.02	37	8.7	9.6	2.4	128	35	8.8	.5	.8	--	176	.24	5,950	128	23	14	.4	287	7.4	7

Aug. 1-7, 9-10, 1953.....	10,600	14	.02	39	9.0	10	2.3	131	36	9.5	.5	.3	--	183	.25	5,240	134	27	14	.4	305	7.5	5
Aug. 8.....	6,080	--	--	--	--	--	--	179	--	--	--	--	--	254	.35	4,170	190	43	--	--	417	7.7	--
Aug. 11-20.....	9,691	14	.05	38	10	11	2.2	135	33	8.9	.6	.7	.12	184	.25	4,810	136	25	15	.4	310	7.2	7
Aug. 21-31.....	8,348	14	.03	41	10	11	2.2	136	38	9.6	.6	.6	--	191	.26	4,310	143	32	14	.4	323	7.3	7
Sept. 1-10.....	7,717	14	.03	41	11	12	2.2	138	40	10	.6	.9	--	196	.27	4,080	148	34	15	.4	330	7.3	7
Sept. 11-20.....	7,845	15	.03	39	10	12	2.2	132	38	10	.6	.7	.10	191	.26	4,050	138	30	16	.4	320	7.4	9
Sept. 21-30.....	6,100	13	.03	43	12	12	2.2	146	45	11	.6	.5	--	208	.28	3,430	157	37	14	.4	352	7.5	9
Weighted average	b7,736	12	0.03	47	11	10	1.9	156	40	10	0.4	1.3	--	211	0.29	4,410	162	34	12	0.3	351	--	--

a Not included for computation of weighted averages.

b Represents 88 percent of runoff for water year October 1952 to September 1953.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR HEISE, IDAHO--Continued

Temperature (°F) of water, January to September 1953

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

SNAKE RIVER MAIN STEM--Continued
SNAKE RIVER AT KING HILL, IDAHO

LOCATION --At county highway bridge about 400 yards downstream from gaging station, which is 300 feet east of railroad station at King Hill, Elmore County, and 20 miles downstream from Malad (Big Wood) River.

DRAINAGE AREA --35,800 square miles approximately.

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

Water temperatures: March 1951 to September 1953.

EXTREMES 1952-53 --Dissolved solids: Maximum, 358 ppm Nov. 11-20; minimum, 296 ppm Apr. 1-10.

Hardness: Maximum, 213 ppm Dec. 1-10; minimum, 188 ppm Apr. 21-30.

Specific conductance: Maximum daily, 594 micromhos Oct. 3; minimum daily, 432 micromhos Jan. 20.

Water temperatures: Maximum observed, 70°F July 12-13; minimum observed, 45°F Dec. 26, Feb. 20-21, Mar. 2.

EXTREMES 1951-53 --Dissolved solids: Maximum, 359 ppm Sept. 1-10, 1952; minimum, 252 ppm May 1-10, 1952.

Hardness: Maximum, 213 ppm Dec. 1-10, 1952; minimum, 166 ppm May 1-10, 1952.

Specific conductance: Maximum daily, 594 micromhos Oct. 3, 1952; minimum daily, 394 micromhos May 7, 1952.

Water temperatures: Maximum observed, 70°F July 12-13, 1953; minimum observed, 41°F Jan. 3-6, Feb. 15, 1953.

REMARKS --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1287.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25° C)	pH	
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nestum	Non-carbonate				
Oct. 1-10, 1952 ...	10,420	34		47	22	37	5.2	224		60	30		4.1	--	347	0.47	9,760	208	24	27	1.1	547	--
Oct. 11-20	10,910	36		48	22	37	5.0	228		60	28		4.1	0.16	348	.47	10,250	210	24	27	1.1	549	--
Oct. 21-31	9,875	35		48	22	36	5.0	226		59	28		4.1	--	347	.47	9,250	210	26	27	1.1	546	--
Nov. 1-10	9,146	38		47	23	36	5.0	226		60	28		4.1	--	352	.48	8,690	212	27	26	1.1	550	--
Nov. 11-20	9,353	39		46	22	36	5.0	227		60	30		4.1	--	358	.49	9,040	206	20	27	1.1	550	--
Nov. 21-30	8,911	35		48	22	36	4.7	224		61	25		2.8	--	357	.49	8,590	210	27	27	1.1	554	8.1
Dec. 1-10	9,115	33		49	22	37	4.8	226		62	28		2.7	--	355	.48	8,740	213	28	27	1.1	558	8.2
Dec. 11-20	9,571	34		46	22	36	4.8	222		60	29		3.1	--	351	.48	9,070	206	24	27	1.1	556	7.9
Dec. 21-31	10,120	31		48	22	36	4.8	222		59	30		3.0	--	347	.47	9,480	210	28	27	1.1	551	8.1
Jan. 1-31, 1953	10,990	35		46	20	33	4.0	212		57	28		3.7	.10	331	.45	9,820	197	23	26	1.0	526	7.8
Feb. 1-28	12,010	32		49	21	32	4.0	212		59	28		2.7	--	330	.45	10,700	209	35	25	1.0	527	7.8
Mar. 1-10	12,490	32		49	20	30	4.5	213		57	28		2.4	--	322	.44	10,860	204	30	24	.9	520	--
Mar. 11-20	13,370	31		48	20	30	4.5	211		55	28		2.6	--	316	.43	11,410	202	29	24	.9	510	--
Mar. 21-31	13,510	31		49	20	30	4.5	211		52	28		2.6	--	313	.43	11,420	204	31	24	.9	508	--
Apr. 1-10	13,160	29		45	19	29	4.2	202		48	26		2.4	--	296	.40	10,520	190	25	24	.9	484	--
Apr. 11-20	11,000	32		47	19	30	4.5	203		53	29		2.3	.13	309	.42	9,180	196	29	24	.9	502	--
Apr. 21-30	8,397	34		44	19	30	4.5	199		51	28		2.4	--	302	.41	6,800	188	25	25	.9	485	--
May 1-10	8,536	34		44	20	32	4.5	201		54	29		2.9	--	308	.42	7,100	192	28	26	1.0	496	--
May 11-20	7,826	36		45	21	34	3.4	208		56	28		2.7	--	334	.44	6,850	199	28	27	1.0	515	--
May 21-31	9,102	35		45	20	34	3.8	208		57	27		2.9	--	326	.44	8,010	194	24	27	1.1	521	--

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER AT KING HILL, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean dis-charge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO ₃)	Car-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Fluo-ride (F)	Ni-trate (NO ₃)	Bo-ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per-cent so-lidum	So-lidum adsorp-tion ratio	Specific conductance (micro-mhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./l.	Non-carbonate				
June 1-10, 1953 ...	12,270	34		47	21	34	3.8	210		58	28		2.7	--	327	0.44	10,830	204	32	26	1.0	523	--
June 11-20, 1953 ...	19,440	27		48	19	28	3.2	201		52	26		1.8	--	305	.41	16,010	198	34	23	.9	491	--
June 21-30, 1953 ...	11,210	33		48	19	32	4.3	208		54	26		2.2	--	315	.43	9,530	198	28	25	1.0	506	7.7
July 1-10, 1953 ...	8,062	36		46	19	32	4.3	206		54	26		2.8	--	316	.43	6,880	193	24	26	1.0	507	7.8
July 11-20, 1953 ...	7,835	39		47	20	34	4.6	211		57	28		3.2	0.08	328	.45	6,940	200	26	26	1.0	519	8.0
July 21-31, 1953 ...	7,919	38		47	21	34	4.6	213		58	28		3.1	--	330	.45	7,060	204	30	26	1.0	523	7.9
Aug. 1-10, 1953 ...	8,408	44		47	21	35	4.7	220		58	27		2.7	--	339	.46	7,700	204	24	27	1.1	532	7.9
Aug. 11-20, 1953 ...	8,326	42		47	22	35	4.7	220		58	28		2.7	--	337	.46	7,580	208	28	26	1.0	535	7.8
Aug. 21-31, 1953 ...	8,407	43		47	22	37	4.6	221		59	28		2.9	--	346	.47	7,850	208	27	27	1.1	540	7.9
Sept. 1-10, 1953 ...	9,007	38		47	22	37	4.6	220		60	28		2.9	--	337	.46	8,200	208	28	27	1.1	540	7.7
Sept. 11-20, 1953 ...	9,002	37		47	22	37	4.6	222		60	27		3.0	--	336	.46	8,170	208	26	27	1.1	540	7.9
Sept. 21-30, 1953 ...	8,894	41		47	22	38	4.6	224		61	28		3.8	--	350	.48	8,400	208	24	28	1.1	549	--
Weighted average.	10,330	34		47	21	33	4.4	214		57	28		3.0	--	330	0.45	9,200	204	28	25	1.0	525	--

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER AT KING HILL, IDAHO--Continued

Temperature (°F) of water, water year October 1952 to September 1953
 /Once-daily measurement at 11:50 a. m./

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

BOISE RIVER BASIN

BOISE RIVER AT NOTUS, IDAHO

LOCATION.--At steel county highway bridge, 360 yards downstream from gaging station which is a quarter of a mile southeast of Notus, Canyon County, and 7 miles northwest of Caldwell.

DRAINAGE AREA.--3,820 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1939 to January 1940, November 1950 to September 1953.

Water temperatures: November 1950 to September 1953.

Sediment records: January 1939 to June 1940.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 495 ppm Aug. 11-20; minimum, 77 ppm June 11-20.

Hardness: Maximum, 196 ppm Nov. 11-20; minimum, 35 ppm June 11-20, 21-26.

Specific conductance: Maximum daily, 880 micromhos Aug. 22; minimum observed, 35°F Dec. 25-27.

Water temperatures: Maximum observed, 80°F July 13-14; minimum observed, 35°F Dec. 25-27.

EXTREMES, 1939-40, 1950-53.--Dissolved solids: Maximum, 914 ppm Aug. 21-31, 1939; minimum, 77 ppm May 1-10, 1952, June 11-20, 1953.

Hardness: Maximum, 284 ppm July 21-31, 1939; minimum, 35 ppm June 11-20, 21-26, 1953.

Specific conductance: Maximum, 1,390 micromhos Aug. 21-31, 1939; minimum daily, 81.7 micromhos Apr. 27, 1952.

Water temperatures (1950-53): Maximum observed, 85°F on several days during summer months; minimum observed, 35°F Jan. 18, Dec. 25-27, 1952.

Water temperatures (1939-40): Maximum, 8,000 tons Apr. 2, 1939; minimum, 0.3 ton Aug. 3, 1939.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1287.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO ₃		Percent sodium adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium					Non-carbonate
Oct. 1-10, 1952 ..	382	37																			
Oct. 11-20	530	37																			
Oct. 21-31	820	38																			
Nov. 1-10	792	35																			
Nov. 11-20	732	36																			
Nov. 21-30	677	37																			
Dec. 1-10	697	35																			
Dec. 11-20	696	35																			
Dec. 21-31	640	34																			
Jan. 1-10, 1953 ..	630	34																			
Jan. 11-17	780	35																			
Jan. 18-22	1,862	28																			
Jan. 23-31	976	33																			
Feb. 1-9	1,194	29																			
Feb. 10-28	925	29																			
Mar. 1-8	775	31																			
Mar. 9-11	1,085	22																			

a Sum of determined constituents.

Mar. 12-20, 1953	2,777	20	19	4.9	18	1.7	90	24	5.8	2.5	--	141	.19	1,057	68	0	36	1.0	215
Mar. 21-28.....	2,636	19	19	5.0	19	1.7	90	24	6.0	2.1	--	140	.19	1,072	68	0	37	1.0	215
Mar. 29-31.....	3,770	18	18	4.5	12	1.5	74	20	4.8	2.1	--	a117	.16	1,190	63	3	29	.7	171
Apr. 1-10.....	1,790	21	20	6.4	18	1.8	94	27	7.5	2.2	--	145	.20	701	76	0	33	.9	218
Apr. 11-20.....	480	23	26	4.2	85	2.7	132	37	9.0	2.3	.08	215	.29	284	82	0	47	1.7	386
Apr. 21-30.....	877	22	23	3.7	27	2.6	114	32	8.8	2.3	--	181	.25	429	81	0	41	1.3	290
May 1-10.....	871	22	24	5.2	30	2.6	123	35	8.2	2.4	--	193	.26	454	85	0	42	1.4	303
May 11-20.....	1,009	20	22	5.5	27	2.6	112	31	8.0	2.3	--	173	.24	471	78	0	42	1.3	271
May 21-31.....	4,681	17	14	3.7	13	1.5	71	15	4.1	2.6	--	110	.15	1,380	50	0	35	.8	160
June 1-10.....	6,647	15	12	3.1	11	1.3	61	12	3.2	2.1	--	94	.13	1,690	43	0	35	.7	134
June 11-20.....	6,760	14	10	2.4	8.8	1.9	50	8.7	2.6	1.2	--	77	.10	1,410	39	0	35	.6	107
June 21-28.....	6,768	13	11	4.8	8.8	1.4	50	12	2.5	1.3	--	80	.11	1,380	35	0	34	.9	108
June 29-30.....	1,743	12	13	4.8	20	2.3	90	48	6.5	2.4	--	140	.19	861	84	0	39	1.1	218
July 1-10.....	1,584	12	17	4.5	20	2.3	151	20	5.7	2.2	--	184	.16	588	61	0	41	1.7	368
July 11-20.....	2,594	25	28	7.6	40	4.0	152	43	11	2.2	.08	232	.32	583	101	0	43	1.7	368
July 21-31.....	355	31	34	9.7	51	4.0	192	98	15	2.8	--	304	.41	281	125	0	46	2.0	466
Aug. 1-10.....	288	33	37	11	60	4.1	209	88	17	2.8	--	333	.45	259	138	0	48	2.2	514
Aug. 11-20.....	87.4	35	46	15	100	4.7	275	190	32	2.9	--	485	.67	117	176	0	54	3.3	757
Aug. 21-31.....	183	39	48	15	88	4.5	275	110	28	2.7	--	487	.64	206	192	0	53	2.8	708
Sept. 1-10.....	212	37	45	13	76	4.5	246	89	24	2.2	--	408	.55	232	166	0	40	2.6	618
Sept. 11-20.....	418	34	43	13	61	4.5	228	77	20	2.8	--	364	.50	411	181	0	44	2.1	558
Sept. 21-30.....	435	34	43	13	65	4.5	232	79	20	2.7	--	374	.51	437	181	0	46	2.2	570
Weighted Average	1,402	21	23	6.4	29	2.2	118	36	9.3	2.3	--	190	0.26	719	83	0	42	1.4	285

a Sum of determined constituents.

SNAKE RIVER BASIN

BOISE RIVER BASIN--Continued

BOISE RIVER AT NOTUS, IDAHO--Continued

Temperature (*F) of water, water year October 1952 to September 1953

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

SNAKE RIVER MAIN STEM--Continued
SNAKE RIVER NEAR CLARKSTON, WASH.

LOCATION.--One mile downstream from gaging station, 1 mile upstream from Alpowa Creek, 8 miles downstream from Clarkston, Asotin County, and 133 miles upstream from mouth.

DRAINAGE AREA.--103,200 square miles, approximately (above gaging station).

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

Water temperatures: November 1951 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 312 ppm Oct. 21-31; minimum, 96 ppm June 24-30.

Hardness: Maximum, 168 ppm Sept. 21-30; minimum, 53 ppm June 1-10.

Specific conductance: Maximum daily, 529 micromhos Nov. 30, Dec. 3; minimum daily, 133 micromhos May 21.

Water temperatures: Maximum observed, 72°F Aug. 7-8; minimum observed, 34°F Nov. 29-30.

EXTREMES, 1951-53.--Dissolved solids: Maximum, 312 ppm Oct. 21-31, 1952; minimum, 96 ppm May 21-31, 1952, June 24-30, 1953.

Hardness: Maximum, 168 ppm Sept. 21-30, 1953; minimum, 51 ppm June 1-10, 1952.

Specific conductance: Maximum daily, 529 micromhos Nov. 30, Dec. 3, 1952; minimum daily, 118 micromhos May 28, 1952.

Water temperatures: Maximum observed, 73°F Aug. 8-11, 14, 1952; minimum observed, freezing point Jan. 14, 1953.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Discharge records for gaging station near Clarkston for water year October 1952 to September 1953 given in WSP 1287. No appreciable inflow between gaging and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent adsorption ratio	Specific conductance (micro-mhos at 25°C)	pH or Col.		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, mg./nesium	Non-carbonate					
Oct. 1-10, 1952..	21,890	35	0.09	39	15	35	3.9	217	47	15	0.6	1.9	--	305	0.41	18,030	159	0	32	1.2	459	8.0	5
Oct. 11-20	22,260	34	.07	39	16	37	3.9	211	52	18	.6	2.5	0.13	285	.40	17,730	163	0	32	1.3	479	7.6	5
Oct. 21-31	22,170	32	.04	39	16	37	4.5	205	53	18	.5	2.1	--	312	.42	18,680	163	0	32	1.3	472	8.2	8
Nov. 1-30	20,670	30	.04	40	16	36	4.5	204	54	19	.5	2.1	.11	310	.42	17,300	166	0	31	1.2	472	7.9	8
Dec. 1-31	20,960	35	.03	39	15	37	4.5	192	56	19	.6	2.9	.10	300	.41	16,980	159	2	33	1.3	474	8.0	5
Jan. 1-10, 1953..	23,120	33	.02	39	15	35	4.5	180	53	20	.6	3.0	--	281	.40	18,170	159	3	32	1.2	463	7.8	10
Jan. 11-31	48,630	28	.13	26	9.9	21	3.2	123	31	12	.5	2.9	.06	197	.27	25,870	106	5	29	.9	301	7.7	25
Feb. 1-10	58,080	27	.17	22	9.1	17	3.0	108	26	9.5	.5	1.7	--	173	.24	27,110	92	4	28	.8	256	7.7	25
Feb. 11-28	35,200	28	.09	29	11	24	3.0	142	36	14	.5	2.0	.09	218	.30	20,720	118	1	30	1.0	340	7.8	15
Mar. 1-10	32,450	28	.10	31	12	24	2.6	142	38	15	.5	1.9	--	229	.31	20,060	127	10	29	.9	352	7.5	10
Mar. 11-20	39,350	25	.09	29	11	22	2.8	130	37	14	.5	1.6	.10	210	.29	22,310	118	11	28	.9	330	7.4	10
Mar. 21-31	52,220	27	.23	26	10	19	2.3	116	31	11	.5	1.3	--	188	.26	26,510	106	11	27	.8	283	7.3	20
Apr. 1-10	50,910	24	.11	24	9.3	17	2.3	108	28	10	.5	1.0	--	173	.24	23,780	98	10	27	.7	266	7.6	20
Apr. 11-23	48,080	24	.11	23	9.1	17	2.3	108	28	10	.5	.8	.08	170	.23	22,070	95	6	27	.8	261	7.3	15
Apr. 24-30	112,000	21	.28	14	5.6	9.3	1.5	64	23	5.5	.5	.7	--	113	.15	34,170	58	6	25	.5	153	7.4	25
May 1-10	93,860	19	.20	15	5.7	11	1.9	68	17	5.9	.5	.5	--	117	.16	29,650	61	5	27	.6	169	7.4	25
May 11-20	93,740	20	.05	15	4.6	12	1.5	70	18	5.8	.2	.8	.10	112	.15	28,350	56	0	31	.7	166	7.4	20
May 21-31	115,800	21	.06	15	4.9	13	1.5	72	19	5.2	.3	.7	--	116	.16	36,270	58	0	32	.7	171	7.6	20

SNAKE RIVER MAIN STEM--Continued
SNAKE RIVER NEAR CLARKSTON, WASH--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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					
June 1-10, 1953...	168,100	19	0.11	14	4.5	12	1.6	68	18	5.2	0.3	0.8	--	109	0.15	49,470	53	0	32	0.7	158	7.5	20
June 11-20	195,400	18	0.06	17	4.6	11	1.6	72	17	5.0	0.3	0.8	0.09	111	0.15	58,560	61	2	27	0.6	166	7.3	20
June 21-23 a.....	155,300	--	--	--	--	--	--	105	35	5.0	--	1.9	--	--	--	--	--	--	--	--	226	7.5	--
June 24-30.....	119,400	14	0.03	15	4.1	10	1.6	66	16	5.0	0.3	0.8	--	96	0.13	30,950	54	0	28	0.6	150	7.5	--
July 1-10.....	93,300	13	0.03	15	4.3	11	1.6	71	17	5.2	0.2	0.6	--	99	0.13	24,940	55	0	29	0.6	159	7.4	20
July 11-20.....	58,840	16	0.07	17	5.3	12	2.0	78	18	6.5	0.3	0.6	--	113	0.15	17,950	64	0	28	0.7	176	7.4	8
July 21-31.....	32,900	21	0.07	22	7.8	20	2.7	110	29	10	0.4	0.6	0.08	163	0.22	14,480	87	0	32	0.9	262	7.4	10
Aug. 1-10.....	27,650	26	0.02	28	10	27	3.4	138	37	13	0.4	0.9	--	208	0.28	15,530	111	0	34	1.1	328	7.7	10
Aug. 11-20.....	23,230	33	0.03	33	12	30	4.3	170	37	14	0.4	1.0	0.10	242	0.33	15,180	132	0	32	1.1	376	7.6	10
Aug. 21-31.....	22,270	30	0.02	34	12	32	4.3	180	40	14	0.5	1.3	--	253	0.34	15,210	134	0	33	1.2	392	7.5	10
Sept. 1-10.....	22,260	33	0.03	37	14	35	4.2	189	43	14	0.5	1.5	--	265	0.36	15,930	150	0	33	1.2	420	7.6	7
Sept. 11-20	21,510	32	0.03	38	15	37	4.2	191	49	16	0.5	1.5	0.10	277	0.38	16,090	156	0	33	1.3	439	7.7	7
Sept. 21-30	21,800	35	0.03	41	16	38	4.3	215	46	15	0.5	1.9	--	293	0.40	17,250	168	0	32	1.3	464	7.6	7
Weighted average	52,090	23	0.09	25	8.0	18	2.4	107	28	9.3	0.4	1.2	--	166	0.23	25,000	95	8	28	0.8	253	--	--

a Not included for computation of weighted averages.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR CLARKSTON, WASH.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

[Once-daily measurement at approximately 8 a.m.]

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

PART 14. PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN

JOHN DAY RIVER BASIN

SOUTH FORK JOHN DAY RIVER NEAR DAYVILLE, OREG.

LOCATION.--Temperature recorder at gaging station, 0.7 mile downstream from Smoky Creek, and 3 miles south of Dayville, Grant County.

DRAINAGE AREA.--590 square miles, approximately.

RECORDS AVAILABLE. --Water temperatures: October 1951 to September 1953.

EXTREMES, 1952-53. --Water temperatures: Maximum, 76°F July 12; minimum, not determined, probably occurred during period of no record, 1952-53. --Water temperatures: Maximum, 76°F July 12; minimum, not determined, probably occurred during period of no record, 1952-53.

EXTREMES, 1951-53. --Water temperatures: Maximum 77°F July 10, 11, 27, 1952; minimum, freezing point many days in December 1951, January and

February 1952.

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

DESCHUTES RIVER BASIN

DESCHUTES RIVER NEAR CULVER, OREG.

LOCATION.--Temperature recorder at gaging station, 0.7 mile downstream from bridge on Cove-Grandview road, 2½ miles above Crooked River, 4 miles northwest of Culver, Jefferson County, and at mile 116.5.

DRAINAGE AREA.--2 723 square miles.

RECORDS AVAILABLE.--Water temperatures: September 1952 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 63°F July 6-8, 11, 12; minimum, 39°F several days in November, December, and February.

REMARKS.--Records of discharge for water year 1952-53 given in WSP 1288.

Temperature (°F) of water, September 1952 and water year October 1952 to September 1953

Day	September		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	max	min
1.....	58	56	55	54	49	48	39	39	44	44	45	44	45	43	48	46	52	51	57	55	59	57	59	56	60	58
2.....	58	56	55	54	48	45	44	42	45	44	44	44	43	41	46	46	53	51	57	55	61	58	59	57	60	58
3.....	59	58	55	54	46	45	44	42	45	44	44	44	44	41	50	48	55	53	57	55	62	59	57	56	60	58
4.....	59	57	55	54	47	46	44	44	45	44	44	43	43	43	50	49	57	55	57	55	62	58	57	58	59	57
5.....	58	56	55	53	47	47	45	44	43	43	44	44	45	44	51	49	58	55	55	54	62	59	59	56	60	57
6.....	58	57	54	53	47	45	45	42	43	43	44	43	47	44	51	48	57	55	56	55	63	60	60	58	61	59
7.....	57	55	54	53	45	44	42	41	43	43	44	44	48	45	49	47	55	54	57	55	63	60	61	58	60	58
8.....	57	55	54	53	46	46	41	41	45	43	44	42	49	46	48	46	55	53	57	53	63	60	61	58	60	58
9.....	56	54	54	53	46	45	41	40	45	44	43	40	49	47	48	46	54	53	55	54	62	59	60	58	59	57
10.....	56	54	54	52	45	43	42	40	44	42	41	40	49	47	48	46	55	52	58	54	61	59	60	57	59	57
11.....	56	54	53	52	45	45	43	41	45	43	41	40	47	47	48	47	56	52	58	57	63	59	60	57	59	57
12.....	57	56	54	52	45	45	44	43	45	45	41	41	47	46	48	47	56	53	58	55	63	60	61	58	59	57
13.....	57	54	53	52	45	45	44	43	45	44	43	41	47	44	49	47	56	54	57	53	62	59	61	58	59	57
14.....	56	54	53	51	45	44	43	43	43	43	43	43	45	43	50	48	56	55	59	56	62	59	60	58	59	58
15.....	56	54	52	51	44	43	42	42	43	42	43	41	45	44	50	48	56	55	59	57	61	58	59	58	59	58
16.....	57	55	52	51	43	42	41	41	43	43	43	41	46	45	51	50	58	55	59	56	60	58	59	57	59	57
17.....	58	56	52	51	42	42	41	41	44	43	43	41	45	43	53	50	58	56	60	57	60	58	59	57	58	56
18.....	58	56	52	52	42	41	41	41	44	44	41	40	45	44	53	51	58	57	60	56	61	58	60	57	57	56
19.....	59	58	53	52	42	42	41	41	44	42	41	39	45	45	54	53	57	55	58	56	61	58	60	58	58	56
20.....	59	57	53	52	42	42	41	41	43	43	41	40	45	43	56	53	55	53	57	55	61	57	59	58	58	56
21.....	59	56	53	52	42	42	41	41	43	42	41	40	45	43	56	54	54	53	58	56	59	57	58	57	56	55
22.....	58	56	53	52	42	41	41	41	43	42	41	41	45	44	55	53	54	53	59	57	60	57	58	57	56	56
23.....	58	56	52	51	41	39	41	40	43	43	41	40	48	45	55	52	54	53	59	56	59	57	59	57	56	56
24.....	58	56	52	51	39	39	40	40	44	43	42	40	49	48	55	52	54	51	58	55	59	55	59	56	57	55
25.....	58	56	52	50	39	39	40	39	44	43	42	40	49	46	54	53	54	53	58	56	58	55	55	56	56	54
26.....	58	57	50	48	39	39	39	39	43	42	44	41	48	46	54	54	53	51	58	56	59	55	57	56	55	54
27.....	58	55	49	48	39	39	39	39	42	41	46	43	49	47	54	53	53	51	58	57	60	57	57	56	56	55
28.....	57	54	49	48	39	39	39	39	42	40	46	45	49	47	53	53	56	53	57	55	60	57	57	56	56	55
29.....	55	53	49	49	39	39	39	41	39	44	42	--	--	48	46	53	51	57	55	58	57	58	55	55	54	54
30.....	55	54	50	49	39	39	43	41	44	43	--	--	48	47	53	50	57	55	59	57	60	57	58	56	55	54
31.....	--	--	50	49	44	43	44	43	45	44	--	--	48	45	52	50	57	55	59	57	59	56	59	57	--	--
Average.....	57	55	53	51	43	43	42	41	44	43	43	42	47	45	52	50	55	54	56	56	61	58	59	57	58	57

DESCUTES RIVER BASIN--Continued
CROOKED RIVER NEAR CULVER, OREG.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from mouth, 1 mile downstream from Cove powerplant, and 4 miles northwest of Culver, Jefferson County.
DRAINAGE AREA.--4,330 square miles, approximately, of which 500 square miles is probably noncontributing.
RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 63°F July 14; minimum, 44°F Feb. 9, 10.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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.....	56	54	54	51	51	51	52	51	50	50	51	50	50	49	51	50	59	58	60	58	59	58	57	56
2.....	56	56	54	53	51	51	--	--	50	50	50	50	50	50	51	51	59	58	60	59	59	58	57	56
3.....	56	56	53	51	51	51	--	--	50	50	50	50	51	50	54	51	59	58	60	59	59	58	57	56
4.....	56	56	53	51	51	51	--	--	50	47	51	50	51	51	51	57	59	58	60	59	59	58	57	56
5.....	56	55	53	51	51	51	--	--	47	46	51	51	51	51	58	57	59	58	61	59	59	58	57	56
6.....	56	55	53	51	51	51	--	--	48	46	51	51	51	50	59	58	59	58	61	59	59	58	57	56
7.....	55	55	53	51	51	51	--	--	48	46	52	51	50	49	59	57	60	59	61	60	59	58	57	56
8.....	55	55	53	51	51	51	--	--	48	45	52	52	49	48	57	55	59	59	61	60	59	58	57	56
9.....	55	55	53	51	51	51	--	--	45	44	52	49	48	48	55	54	59	59	61	60	59	58	57	56
10.....	55	55	53	51	51	51	--	--	45	44	52	52	49	49	54	54	58	58	61	60	59	58	57	56
11.....	55	55	53	52	51	51	--	--	46	45	52	50	50	49	55	54	60	59	61	59	59	58	57	56
12.....	55	55	53	52	51	51	--	--	47	46	50	50	49	49	56	55	60	59	60	59	59	58	57	56
13.....	55	55	53	52	52	52	--	--	48	47	50	50	49	49	57	56	59	58	61	59	59	58	57	56
14.....	55	54	53	52	52	51	--	--	49	48	50	50	50	49	57	56	60	59	63	61	59	58	57	56
15.....	54	54	53	52	52	51	--	--	49	48	50	50	51	50	58	57	61	60	62	61	58	58	57	56
16.....	54	54	53	52	52	52	--	--	49	48	50	50	51	51	59	57	62	60	61	59	59	58	57	56
17.....	54	54	52	52	52	52	--	--	51	49	48	51	50	52	51	60	62	60	61	60	58	58	57	56
18.....	54	54	52	52	52	52	51	51	49	48	51	50	52	51	59	59	62	60	62	61	58	57	56	56
19.....	54	54	52	52	52	51	46	49	48	51	50	53	52	59	59	61	60	62	61	57	57	56	56	56
20.....	54	54	52	52	52	52	46	45	49	48	51	50	54	53	59	57	60	59	61	59	57	57	56	56
21.....	54	54	52	52	52	52	46	45	49	49	51	50	55	54	57	57	60	59	60	59	57	57	56	56
22.....	54	54	52	51	52	52	46	45	49	49	51	50	54	54	57	56	60	59	60	59	57	57	56	56
23.....	54	54	52	51	52	52	47	45	49	49	52	51	54	53	56	56	60	59	59	59	57	57	56	56
24.....	54	54	51	52	52	52	48	47	49	49	52	52	53	53	55	55	60	59	59	58	57	56	56	56
25.....	54	54	51	51	52	52	48	48	50	49	52	51	54	53	56	56	60	59	59	58	56	56	56	56
26.....	54	54	51	51	52	52	48	48	51	49	51	50	54	53	56	55	59	59	59	58	56	56	56	56
27.....	54	54	51	51	52	52	48	48	51	50	50	53	53	52	55	55	59	59	59	58	56	56	56	56
28.....	54	54	51	51	52	52	48	48	51	51	50	53	52	57	55	59	59	59	59	58	56	56	56	56
29.....	54	54	51	51	52	52	49	48	--	--	51	50	52	51	59	57	59	59	60	58	57	56	56	56
30.....	54	54	51	51	52	52	49	48	--	--	50	50	51	50	58	57	59	59	59	58	57	56	56	56
31.....	54	54	--	--	52	52	50	50	--	--	50	49	--	--	59	58	--	--	59	58	57	56	--	--
Average.....	55	55	52	52	52	52	--	--	48	48	51	50	52	51	57	56	60	59	60	59	58	57	57	56

DESCHUTES RIVER BASIN--Continued
METOLIUS RIVER NEAR GRANDVIEW, OREG.

LOCATION.--Temperature recorder at gaging station at Montgomery Ranch, 8 miles northwest of Grandview, Jefferson County, and 13 miles northwest of Culver.
DRAINAGE AREA.--324 square miles (hydrologic drainage boundary uncertain owing to ground-water exchange).
RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 52°F many days in July; minimum, 39°F Dec. 27, 28, Jan. 26.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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.....	47	45	44	43	42	40	42	40	43	41	43	41	45	42	46	43	48	46	51	46	51	46	50	46
2.....	47	45	43	42	42	42	42	42	42	42	43	41	46	42	46	43	50	45	52	46	51	47	49	46
3.....	47	45	43	42	43	42	42	42	42	42	44	42	46	43	49	44	49	45	52	47	50	47	49	46
4.....	47	45	44	43	42	42	42	41	42	41	44	42	46	43	49	44	49	45	52	46	50	47	49	45
5.....	46	44	44	43	43	42	42	41	42	40	44	43	46	44	49	45	48	45	52	47	51	47	49	46
6.....	16	44	44	42	43	41	42	41	42	41	45	42	45	43	48	45	48	46	52	47	51	47	50	47
7.....	16	44	43	42	42	41	42	42	42	42	45	42	44	42	47	45	48	46	52	47	51	47	50	47
8.....	46	45	43	42	42	41	42	41	42	41	45	43	44	42	46	43	48	45	52	47	51	47	49	46
9.....	47	45	43	41	42	42	42	41	41	40	45	43	44	42	47	43	48	45	51	46	51	47	49	46
10.....	46	44	44	43	42	42	42	41	41	40	45	43	44	42	47	43	50	45	52	47	51	47	49	46
11.....	46	44	44	43	43	42	43	42	42	41	45	43	45	42	48	43	48	46	52	47	51	47	49	46
12.....	46	44	44	44	43	42	43	42	42	41	45	43	45	43	48	43	47	46	52	47	51	47	50	47
13.....	46	44	44	43	43	42	42	41	43	42	44	42	46	43	48	43	49	45	52	47	51	47	49	46
14.....	46	43	43	43	42	41	43	42	44	42	44	42	46	43	48	43	51	45	51	47	51	47	49	46
15.....	45	43	43	43	42	41	42	41	42	41	45	43	46	43	47	43	49	46	51	46	51	47	49	47
16.....	45	43	43	41	42	42	43	42	43	41	45	44	46	44	49	44	50	45	53	46	51	47	48	46
17.....	45	43	42	41	42	41	43	42	43	40	44	42	47	44	49	45	51	46	51	46	51	46	48	45
18.....	45	44	42	42	42	41	42	41	42	40	44	43	48	43	49	46	50	45	52	47	51	47	49	45
19.....	46	45	42	41	42	41	40	41	40	41	44	43	48	45	48	46	49	45	51	46	51	47	49	46
20.....	46	45	42	41	42	41	41	41	43	41	44	43	49	45	47	44	50	45	51	46	50	47	48	46
21.....	46	44	42	42	42	41	41	41	43	41	45	43	49	46	48	45	51	45	51	46	50	46	47	45
22.....	46	44	42	40	42	41	42	41	43	42	45	44	48	45	48	44	51	46	52	46	49	46	48	46
23.....	46	44	41	40	42	40	42	41	43	41	48	43	49	45	47	45	50	46	51	46	49	46	48	46
24.....	45	44	41	40	41	40	42	41	43	41	48	44	49	44	48	44	50	46	51	46	49	46	48	45
25.....	44	43	41	40	41	40	42	41	43	41	45	44	48	45	46	43	51	46	51	46	47	46	47	45
26.....	44	43	41	40	40	41	39	44	42	46	43	48	46	46	44	44	50	46	51	46	49	46	48	45
27.....	45	43	40	40	40	39	41	40	44	42	46	43	47	45	47	45	49	44	51	46	48	46	48	46
28.....	45	43	41	40	41	39	42	41	44	43	46	44	46	43	50	45	50	47	51	46	48	46	48	47
29.....	45	44	41	40	42	41	43	42	--	--	46	42	45	43	50	46	49	46	51	46	48	46	47	45
30.....	45	45	41	40	42	41	43	42	--	--	45	43	46	43	49	45	50	46	51	47	49	46	47	45
31.....	45	44	--	--	42	41	43	42	--	--	45	42	--	--	48	45	--	--	51	46	49	46	--	--
Average.....	46	44	43	42	42	41	42	41	42	41	45	43	46	43	48	44	49	46	51	46	50	47	49	46

DESCHUTES RIVER BASIN--Continued

LOCATION. --Temperature recorder at gaging station, 1 mile downstream from Pelton dam site, 5 miles upstream from Shitike Creek, and $7\frac{1}{2}$ miles northwest of Madras, Jefferson County, at mile 101.6 (river-profile survey).

DRAINAGE AREA. --7,900 square miles, approximately.
RECORDS AVAILABLE. --Water temperatures: March 1952 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 59°F June 17, and several days in July; minimum, 43°F Dec. 28, Jan. 20-22, 27, 28, Feb. 9, 10, 19.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

DESCHUTES RIVER BASIN--Continued
DESCHUTES RIVER AT MOODY, NEAR BIGGS, OREG.

LOCATION.--At right bank, 0.5 mile upstream from bridge on U. S. Highway 30, 0.6 mile downstream from gaging station at Moody, 0.9 mile upstream from mouth, and about 4 miles southwest of Biggs, Sherman County.

DRAINAGE AREA.--10,500 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: August 1911 to July 1912, December 1952 to September 1953.

Water temperatures: December 1952 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 105 ppm Mar. 21-31; minimum, 90 ppm July 21-31.

Hardness: Maximum, 46 ppm Mar. 21-31; minimum, 38 ppm July 11-20.

Specific conductance: Maximum daily, 183 micromhos Jan. 16, Mar. 26; minimum daily, 92.4 micromhos Jan. 19.

Water temperatures: Maximum observed, 67° Aug. 5-6.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Chemical analyses, in parts per million, December 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bонат (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180° C)		Hardness as CaCO ₃		Per- cent so- lution adorp- tion ratio	Specific conductance (micro-mhos at 25° C)	pH	Col- or		
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium					Non-carbonate	
Dec. 29-31, 1952, Jan. 1-10, 1953	6,092	34	0.12	8.1	5.9	10	2.1	70	2.6	2.7	0.4	1.0	--	103	0.14	1,690	44	0	32	0.7	125	7.3	20
Jan. 11-31,	10,460	30	.09	7.6	5.2	8.4	2.0	60	2.4	2.4	.4	1.0	0.08	92	.13	2,600	40	0	30	.6	108	7.3	18
Feb. 1-10,	12,260	29	.09	7.6	5.1	7.7	1.9	58	2.2	2.0	.4	.8	--	93	.13	3,080	40	0	28	.5	102	7.3	20
Feb. 11-28,	6,415	31	.06	8.0	5.1	9.0	1.9	66	2.5	2.4	.5	.8	.08	94	.13	2,140	41	0	31	.6	113	7.3	15
Mar. 1-10,	6,805	33	.04	8.1	4.8	9.9	2.1	71	2.7	2.8	.3	1.0	--	99	.13	1,820	40	0	34	.7	124	7.4	7
Mar. 11-20,	7,019	33	.04	8.1	4.9	9.8	2.1	71	2.5	2.8	.3	1.0	.10	98	.13	1,860	40	0	33	.7	122	7.1	8
Mar. 21-31,	7,636	32	.12	9.0	5.6	10	1.9	73	3.0	2.6	.3	.9	--	105	.14	2,160	46	0	31	.6	127	7.4	12
Apr. 1-10,	7,743	33	.08	8.7	5.1	8.9	1.9	70	2.4	2.4	.3	.6	--	97	.13	2,030	43	0	30	.6	120	7.4	12
Apr. 11-20,	6,375	33	.04	8.5	5.1	10	1.9	74	2.8	2.4	.3	.8	.08	98	.13	1,690	42	0	33	.7	126	7.3	12
Apr. 21-30,	8,630	30	.10	9.2	5.2	7.9	1.6	66	5.5	2.8	.3	.8	--	97	.13	2,260	44	0	27	.5	118	7.4	8
May 1-10,	7,859	30	.08	10	5.2	8.5	1.6	68	3.9	2.4	.3	.6	--	98	.13	2,080	46	0	28	.5	122	7.4	10
May 11-20,	6,847	29	.03	9.4	4.5	9.3	1.6	70	3.5	3.1	.3	.5	.05	95	.13	1,760	42	0	31	.6	122	7.2	10
May 21-31,	8,038	30	.07	9.4	4.8	8.9	1.6	68	3.3	2.2	.3	.5	--	95	.13	2,060	43	0	30	.6	121	7.4	15
June 1-10,	7,478	29	.04	9.6	4.5	9.1	1.7	70	3.4	2.8	.3	.4	--	95	.13	1,920	42	0	31	.6	121	7.6	15
June 11-20,	7,557	30	.05	9.8	4.7	9.1	2.0	72	3.6	3.1	.3	.5	.05	99	.13	2,020	44	0	30	.6	129	7.5	10
June 21-30,	5,834	32	.05	9.0	5.3	11	1.5	72	4.5	3.0	.2	.3	--	98	.13	1,540	44	0	34	.7	127	6.9	15
July 1-10,	5,575	31	.04	8.0	4.9	11	1.5	68	4.4	2.5	.2	.3	--	92	.13	1,380	40	0	36	.8	118	6.9	10
July 11-20,	5,555	31	.03	7.0	5.1	10	1.5	64	4.5	2.4	.2	.3	.04	97	.13	1,450	38	0	35	.7	112	6.9	10
July 21-31,	4,799	33	.06	7.8	5.2	10	1.7	73	3.6	2.3	.2	.3	--	90	.12	1,170	41	0	34	.7	121	7.0	10
Aug. 1-10,	4,990	35	.03	8.2	5.5	10	2.2	70	3.5	2.6	.2	.3	--	97	.13	1,310	43	0	32	.7	121	6.9	6
Aug. 11-20,	4,849	34	.04	7.9	5.6	10	2.2	69	3.0	2.8	.2	.6	.06	95	.13	1,240	43	0	32	.7	120	7.0	8
Aug. 21-31,	5,139	34	.05	7.7	5.3	10	2.2	69	4.1	2.7	.2	.6	--	94	.13	1,300	41	0	33	.7	121	7.0	12

DESCHUTES RIVER BASIN--Continued

DESCHUTES RIVER AT WOODY, NEAR BIGGS, OREG.--Continued

Chemical analyses, in parts per million, December 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per- cent so- dium adsorp- tion ratio	Specific conduct- ance (micro- mhos at 25°C)	pH	Col- or	
														Parts per mil- lion	Tons per acre- foot	Tons per mil- lion	Calcium, mg./ liter	Non- car- bonate					
Sept. 1-10, 1953	5,109	34	0.03	8.1	5.7	11	1.8	71	4.0	2.7	0.2	0.4	--	97	0.13	1,340	44	0	34	0.7	124	7.1	8
Sept. 11-20	4,702	34	.03	8.0	5.9	11	2.0	72	2.6	3.2	.2	.3	0.12	97	.13	1,230	44	0	34	.7	124	7.3	8
Sept. 21-30	4,735	35	.02	8.4	5.7	11	1.6	72	3.3	2.5	.2	.4	--	97	.13	1,240	44	0	34	.7	124	7.3	5
Weighted average	4,698	31	0.06	8.4	5.2	9.4	1.9	68	3.2	2.6	0.3	0.7	--	96	0.13	1,810	42	0	31	0.6	119	--	--

a Represents 82 percent of runoff for water year October 1952 to September 1953.

DESCHUTES RIVER BASIN--Continued

DESCHUTES RIVER AT MOODY, NEAR BIGGS, OREG.--Continued

Temperature (°F) of water, December 1952 to September 1953

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

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.

LOCATION.--At Maryhill Ferry about 2 1/2 miles downstream from Rufus, Sherman County, and about 9 miles upstream from The Dalles gaging station, which is just upstream from Celilo Falls, 3 miles downstream from Deschutes River, and 11 miles east of The Dalles, Wasco County and at mile 201.

DRAINAGE AREA.--237,000 square miles (above gaging station near The Dalles).

RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1953.

Water temperatures: December 1950 to September 1953.

EXTREMES, 1952-53.--Dissolved solids: Maximum, 157 ppm Dec. 21-31; minimum, 85 ppm July 1-10.

Hardness: Maximum, 104 ppm Dec. 21-31; minimum, 63 ppm during several periods April to June.

Specific conductance: Maximum observed, 268 micromhos Dec. 29; minimum daily, 137 micromhos May 24.

Water temperatures: Maximum observed, 77°F Sept. 4-6; minimum observed 46°F Dec. 25, Jan. 19, 30.

EXTREMES, 1950-53.--Dissolved solids: Maximum, 157 ppm Dec. 21-31, 1952; minimum, 85 ppm July 1-10, 1953.

Hardness: Maximum, 104 ppm Dec. 21-31, 1952; minimum, 56 ppm May 21-31, 1951.

Specific conductance: Maximum daily, 268 micromhos Dec. 29, 1952; minimum daily, 124 micromhos May 26, 1951.

Water temperatures: Maximum observed, 77°F Sept. 4-6, 1953; minimum observed, freezing point Jan. 25, 30, 1951.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Discharge records for gaging station near The Dalles, Oreg., for water year October 1952 to September 1953 given in WSP 1288. These records include the inflow of the Deschutes River, which on the average amounts to less than 5 percent of the annual runoff at the gaging station. No other appreciable inflow between Maryhill Ferry and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃	Per- cent sodium carbonate	So- dium adsorp- tion ratio	Specific conductance (micro-mhos at 25°C)	pH	Col- or	
														Parts per million	Tons per acre-foot	Tons per day							Calcium, mg./l.
Oct. 1-10, 1952	86,000	11		25	8.0	12	1.4	104	26	6.5	0.9	--	--	146	0.20	33,900	95	10	21	0.5	239	7.8	
Oct. 11-31	86,000	11		25	8.0	12	1.6	106	26	6.4	.9	0.02	0.02	147	.20	34,130	95	8	21	.5	244	7.7	
Nov. 1-30	84,850	11		26	8.0	13	1.6	110	27	6.9	1.1	--	--	149	.20	34,140	98	8	22	.6	252	7.5	
Dec. 1-10	82,380	14		26	7.8	10	2.4	108	25	5.9	1.4	--	--	145	.20	32,250	97	8	18	.4	239	--	
Dec. 11-19	80,100	13		26	8.0	10	2.4	108	25	5.9	1.6	--	--	145	.20	31,360	96	9	18	.4	239	--	
Dec. 20-28	79,920	13		28	8.4	12	2.4	112	27	6.6	1.3	--	--	157	.21	33,880	104	13	20	.5	258	--	
Jan. 1-10, 1953	81,490	16		22	7.7	10	2.5	92	22	5.8	2.1	--	--	140	.19	30,800	87	11	20	.5	216	--	
Jan. 11-31	126,900	18		20	7.1	8.5	1.5	82	17	4.8	1.7	--	.04	130	.18	44,540	79	12	19	.4	189	7.4	
Feb. 1-10	158,300	16		22	7.6	7.9	1.8	93	19	4.7	1.1	--	--	127	.17	54,280	86	10	16	.4	199	--	
Feb. 11-19	136,800	14		25	8.3	9.8	1.8	103	23	5.4	1.0	--	--	135	.18	49,860	97	12	18	.4	220	--	
Feb. 20-28	122,200	14		25	7.9	9.8	1.8	103	23	5.6	1.1	--	--	137	.19	45,200	95	10	18	.4	224	--	
Mar. 1-10	123,700	16		24	7.8	8.8	2.2	97	21	5.6	1.3	--	--	137	.19	43,760	92	12	17	.4	211	--	
Mar. 11-20	133,300	18		23	7.1	8.6	2.1	96	20	5.1	1.3	--	--	136	.18	48,950	87	8	17	.4	203	--	
Mar. 21-31	154,100	17		23	7.2	8.0	1.5	93	21	5.0	1.0	--	--	133	.18	55,340	87	11	16	.4	199	--	
Apr. 1-10	150,900	15		24	6.4	8.0	1.8	93	21	5.0	.9	--	--	127	.17	51,740	86	10	16	.4	200	--	
Apr. 11-20	136,800	15		20	5.9	7.5	1.6	84	20	3.9	.8	.03	.03	116	.16	42,850	74	5	18	.4	182	--	
Apr. 21-30	179,600	16		17	5.1	6.5	1.9	72	11	3.0	.9	--	--	107	.15	51,890	63	4	18	.4	157	--	

May 1-10, 1953	209,100	16	17	5.0	6.4	1.9	72	14	3.0	9	--	108	.15	60,970	63	4	18	.4	155	--
May 11-20	197,700	8.7	18	4.5	7.5	2.4	79	14	3.3	.3	--	97	.13	51,730	63	0	20	.4	164	--
May 21-31	340,200	7.9	18	4.5	6.8	1.6	75	15	2.5	.4	--	96	.13	86,180	63	2	18	.4	187	--
June 1-10	470,900	6.5	18	4.5	9.1	1.8	81	14	2.4	.4	--	105	.14	133,500	63	0	23	.5	165	--
June 11-20	586,100	6.4	18	4.9	14	2.1	92	13	3.1	.5	--	116	.16	183,800	65	0	31	.8	185	--
June 21-30	472,700	6.5	18	4.5	13	1.8	92	14	2.6	.5	--	111	.15	141,700	63	0	30	.7	181	--
July 1-10	372,900	7.1	19	4.9	3.4	1.1	79	12	1.7	.4	--	85	.12	85,580	68	3	10	.2	145	--
July 11-20	332,900	8.0	20	5.2	4.7	1.1	78	13	1.8	.2	.05	90	.12	80,890	71	7	12	.2	154	--
July 21-31	260,400	7.4	21	5.2	6.8	1.5	85	15	3.0	.4	--	100	.14	70,310	74	4	16	.3	174	--
Aug. 1-10	187,600	7.3	21	5.6	11	1.6	96	15	3.7	.2	--	114	.16	57,740	75	0	24	.6	192	--
Aug. 11-20	144,200	8.0	21	5.6	17	2.6	105	19	5.2	.5	--	135	.18	52,560	75	0	32	.9	218	--
Aug. 21-31	136,500	8.7	22	5.9	6.8	1.1	89	18	3.6	.6	--	109	.15	40,170	79	6	16	.3	186	--
Sept. 1-10	129,600	9.0	21	6.0	7.9	1.6	88	18	3.7	1.0	--	112	.15	39,250	77	5	18	.4	191	--
Sept. 11-20	116,200	8.6	22	6.6	9.0	1.7	91	20	4.2	1.0	--	118	.16	37,020	82	8	19	.4	199	--
Sept. 21-30	110,300	8.1	22	6.6	9.6	1.7	95	22	4.6	1.0	--	124	.17	36,930	82	4	20	.5	209	--
Weighted average	179,300	10	21	5.9	9.2	1.7	89	17	3.8	0.7	--	116	0.16	56,160	77	4	20	0.5	188	--

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

/Once-daily measurement at approximately 4 p. m. /

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

KLICKITAT RIVER BASIN

KLICKITAT RIVER NEAR GLENWOOD, WASH.

LOCATION.--Temperature recorder at gaging station, half a mile downstream from Dairy Creek, 5 miles north of Glenwood, Klickitat County, and 7 miles upstream from Trout Creek.

DRAINAGE AREA.--360 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 56°F Aug. 7, 8, 15, 19; minimum, freezing point on several days in December.

EXTREMES, 1950-53.--Water temperatures: Maximum, 59°F July 10, 11, 1952; minimum, freezing point on Jan. 21, 1951, and several days in December 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288

Temperature (°F) of water, water year October 1952 to September 1953

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.....	49	48	42	40	33	33	35	34	40	38	38	36	38	36	43	40	46	45	51	46	54	51	53	50
2.....	49	47	40	38	35	33	35	33	38	38	36	35	38	36	43	40	47	45	52	47	55	50	52	49
3.....	49	47	39	38	35	34	35	33	39	38	38	36	40	38	46	42	47	44	53	49	54	51	51	48
4.....	49	47	40	38	34	34	35	35	39	39	39	37	40	38	46	42	47	45	53	49	54	50	50	47
5.....	48	46	41	40	36	34	35	35	39	39	39	37	41	39	46	42	46	44	53	49	55	51	51	48
6.....	47	46	41	40	36	33	35	34	39	38	40	38	40	37	45	42	46	46	54	49	55	52	52	49
7.....	47	46	40	38	34	33	35	34	40	39	40	38	38	37	44	42	47	46	54	51	56	51	53	51
8.....	48	46	39	37	35	34	35	34	40	38	40	38	38	38	43	41	47	44	55	52	56	51	53	50
9.....	50	48	37	35	35	34	35	35	38	36	40	39	38	37	43	41	46	44	53	50	55	50	52	49
10.....	49	47	40	37	35	33	35	35	37	36	40	39	38	36	44	41	49	45	55	50	54	50	51	48
11.....	47	47	40	40	34	32	35	35	38	37	39	40	38	45	41	49	47	46	55	50	54	50	51	49
12.....	47	47	40	38	35	34	36	35	38	37	40	39	40	38	46	42	48	46	55	51	55	51	54	51
13.....	47	45	38	38	35	35	36	36	39	38	39	38	41	38	46	42	48	45	53	51	55	51	52	49
14.....	45	43	38	38	35	35	36	36	39	38	38	36	41	38	46	44	48	44	53	51	55	51	52	49
15.....	43	42	38	37	35	35	37	36	38	37	37	36	41	39	47	43	49	46	53	49	56	52	51	49
16.....	45	43	37	35	35	35	37	37	38	37	38	37	41	41	47	43	49	45	53	48	55	52	51	47
17.....	45	44	36	35	35	35	37	37	38	37	37	36	43	40	47	43	50	46	54	49	54	50	48	45
18.....	45	45	37	36	35	35	37	37	37	36	37	35	43	40	46	44	48	45	55	51	55	50	50	46
19.....	46	45	37	36	35	35	37	37	37	36	38	36	44	42	46	44	47	45	54	49	56	52	51	48
20.....	46	46	37	36	35	35	37	37	37	36	38	37	45	41	45	43	45	44	53	48	55	52	50	47
21.....	46	46	37	35	35	35	37	37	37	36	39	37	44	42	45	44	47	44	54	49	53	49	48	45
22.....	46	45	35	34	35	34	37	37	37	37	39	38	43	40	45	43	49	46	55	50	52	49	50	47
23.....	46	45	34	34	34	34	38	37	37	35	41	38	43	40	44	43	48	45	53	48	52	51	49	47
24.....	45	44	34	33	34	34	38	38	36	35	40	39	42	39	44	44	49	45	52	48	51	49	48	44
25.....	44	42	33	33	34	34	38	37	37	36	39	38	42	41	46	43	50	46	53	49	49	48	46	44
26.....	42	41	33	33	34	33	37	37	38	37	39	37	42	41	46	45	49	46	52	48	51	49	46	44
27.....	41	41	33	33	33	33	37	36	39	38	40	38	41	41	47	45	49	48	54	49	52	49	47	46
28.....	41	41	33	33	33	32	37	37	39	39	42	39	48	45	48	46	48	46	53	49	50	49	47	46
29.....	43	41	33	33	33	32	38	37	--	--	40	38	40	39	38	45	47	46	55	50	51	48	46	43
30.....	44	43	33	33	35	32	38	38	--	--	40	38	43	40	47	43	50	46	54	50	52	49	48	44
31.....	43	42	--	--	35	35	39	38	--	--	38	36	--	--	45	42	--	--	53	48	54	50	--	--
Average.....	46	45	37	36	35	34	36	36	38	37	39	37	41	39	45	43	48	45	54	49	54	50	50	47

KLICKITAT RIVER BASIN--Continued
KLICKITAT RIVER NEAR PITT, WASH.

LOCATION.--Temperature recorder at gaging station, 5 miles upstream from Silvias Creek, and 7 miles upstream from mouth at Lyle.
DRAINAGE AREA.--1,290 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 64°F Aug. 6, 12; minimum, 36°F Nov. 24-30, Dec. 1, 2.
EXTREMES, 1950-53.--Water temperatures: Maximum, 66°F July 17, 23, 1951; minimum, 35°F Jan. 28-31, Feb. 1, 2, 1951, Jan. 4-8, 1952.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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	52	47	44	37	36	40	39	45	43	43	40	44	41	48	45	52	49	50	52	61	55	59	55
2.....	55	52	44	41	37	36	40	40	43	43	43	41	44	41	47	45	53	49	60	54	62	56	59	54
3.....	55	52	42	41	39	37	41	40	43	43	42	39	47	44	51	47	52	49	61	55	62	57	57	52
4.....	54	52	42	41	40	39	41	40	43	43	43	41	47	45	52	49	53	50	61	55	60	56	56	52
5.....	54	50	43	42	40	40	41	40	43	43	43	42	48	45	52	50	53	50	62	56	62	57	57	52
6.....	53	50	43	42	41	40	41	41	43	43	45	42	47	44	52	49	52	50	62	56	64	58	57	52
7.....	52	50	43	41	41	40	41	41	45	43	45	42	46	43	49	48	53	50	62	57	63	58	58	54
8.....	54	51	42	40	40	40	43	41	45	42	45	43	43	43	48	46	52	49	63	59	63	58	58	53
9.....	55	53	41	39	40	40	44	42	42	40	46	44	45	43	48	45	52	49	61	57	63	58	57	53
10.....	55	52	42	39	40	39	42	41	41	40	46	44	45	43	48	45	55	49	62	57	63	58	58	52
11.....	53	51	43	42	39	39	43	41	41	40	45	44	45	43	49	46	55	52	62	57	63	57	57	54
12.....	53	50	44	43	41	39	43	43	41	40	46	44	45	43	50	47	53	51	61	57	64	58	60	55
13.....	52	50	44	43	42	41	43	43	41	41	44	42	45	43	50	48	53	49	61	57	63	58	59	55
14.....	52	48	43	42	42	42	43	41	41	41	44	41	46	43	50	50	54	50	61	57	63	58	58	55
15.....	49	46	43	42	42	42	41	41	41	40	43	42	47	44	51	48	57	53	59	56	63	59	58	55
16.....	49	46	42	39	41	41	43	41	41	40	43	43	47	46	52	49	58	53	60	55	62	59	58	54
17.....	50	48	41	40	41	41	44	43	41	40	43	41	50	46	52	50	56	54	61	55	62	57	54	51
18.....	50	49	41	41	41	41	44	43	40	38	42	41	50	47	52	48	56	53	62	57	62	57	55	51
19.....	51	50	41	40	41	41	44	43	40	38	43	41	52	49	49	49	54	52	61	57	63	58	57	53
20.....	52	50	41	41	41	41	43	42	40	38	43	42	53	49	48	46	54	50	61	56	63	59	57	53
21.....	52	51	41	40	41	41	43	42	40	38	44	42	53	50	48	46	54	51	62	56	60	56	55	51
22.....	52	50	40	38	41	41	43	42	41	39	44	43	51	47	47	45	57	51	62	57	59	55	54	53
23.....	50	49	38	37	41	40	44	43	40	38	47	46	49	47	46	45	56	52	61	56	59	56	55	54
24.....	50	49	37	36	40	39	43	43	40	38	47	45	49	46	47	45	58	53	61	55	57	54	55	50
25.....	50	46	36	36	39	39	43	42	41	38	45	44	48	47	48	45	58	53	60	56	56	54	52	49
26.....	47	45	36	36	39	39	42	40	42	40	45	42	48	47	48	48	57	53	61	55	57	54	57	54
27.....	46	45	36	36	39	39	41	40	44	42	45	43	48	47	49	48	56	54	61	56	58	53	57	53
28.....	46	44	37	36	39	38	41	41	44	42	47	44	45	45	53	51	56	52	62	56	57	52	57	52
29.....	46	45	37	36	38	37	43	41	--	--	46	43	47	44	53	51	56	52	62	56	57	52	57	52
30.....	47	46	36	36	39	37	43	43	--	--	45	44	47	44	52	49	57	52	62	57	58	53	57	53
31.....	47	47	--	--	39	39	45	43	--	--	45	44	--	--	50	47	--	--	61	56	59	54	--	--
Average.....	51	49	41	40	40	39	42	41	42	40	44	42	47	45	50	47	55	51	61	58	61	56	57	53

HOOD RIVER BASIN

GREEN POINT CREEK BELOW NORTH FORK NEAR DEE, OREG.

LOCATION.--Temperature recorder at gaging station, three-quarters of a mile upstream from mouth, $1\frac{1}{4}$ miles downstream from North Fork, and $1\frac{1}{4}$ miles west of Dee, Hood County.

DRAINAGE AREA.--20.0 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 58°F July 13, Aug. 18, 19; minimum, 36°F Dec. 11, 28-30, Jan. 1, 2.

EXTREMES, 1950-53.--Water temperatures: Maximum, 60°F Aug. 10, 11, 1952; minimum, 34°F Jan. 3, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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	53	48	38	38	36	40	39	38	40	39	38	40	39	43	42	47	47	52	49	56	52	56	53
2.....	54	53	46	38	38	37	40	39	38	38	38	38	42	40	46	44	47	46	54	51	56	53	56	53
3.....	54	53	45	38	38	37	40	39	38	38	38	38	42	40	46	44	47	46	54	51	56	53	55	52
4.....	54	52	45	38	38	38	40	39	39	42	41	47	45	49	47	47	45	49	54	51	55	53	55	52
5.....	53	52	45	38	38	38	40	40	39	42	41	48	45	48	46	45	48	46	55	52	57	53	56	52
6.....	52	51	45	38	38	38	41	40	41	40	41	40	41	40	48	46	47	46	56	53	56	54	56	53
7.....	52	51	45	38	38	38	41	41	41	40	41	40	41	40	46	44	48	47	56	53	57	54	56	54
8.....	53	52	44	38	38	38	41	41	41	40	41	40	41	40	44	43	47	46	57	54	57	54	56	53
9.....	53	52	44	38	38	38	41	40	41	41	41	41	41	40	43	42	48	46	55	53	56	53	55	52
10.....	52	52	44	38	38	38	40	40	41	41	41	41	41	40	44	42	50	47	57	54	57	53	55	52
11.....	52	51	43	38	36	38	40	40	41	41	41	41	41	40	45	42	50	49	57	54	57	53	55	53
12.....	52	51	43	37	37	38	40	40	41	41	41	41	41	40	47	44	49	48	56	54	57	53	56	54
13.....	52	51	43	38	37	38	40	40	41	41	41	41	41	40	46	44	50	48	56	54	57	53	56	53
14.....	51	50	43	38	38	38	41	40	39	40	40	46	46	46	51	48	51	48	57	55	57	53	56	53
15.....	50	49	43	38	38	38	40	40	39	38	41	40	47	45	52	50	56	56	54	57	55	56	54	54
16.....	50	50	42	41	38	38	39	39	40	39	39	41	41	48	45	52	49	56	52	57	54	55	54	54
17.....	50	50	41	41	38	38	39	39	39	39	38	43	41	48	47	52	50	56	53	57	54	55	52	52
18.....	50	50	41	41	38	38	39	39	39	39	38	43	41	47	47	51	49	57	54	58	54	56	53	53
19.....	51	50	41	41	38	38	39	39	39	39	38	44	43	47	45	49	48	56	53	58	55	56	54	54
20.....	52	51	41	41	39	38	39	39	39	39	39	45	43	45	44	49	48	56	53	56	55	55	55	55
21.....	52	52	41	41	39	38	39	39	39	39	39	45	43	45	45	49	48	56	52	56	53	54	52	52
22.....	52	51	41	40	38	38	40	39	39	40	39	45	43	45	44	50	48	56	53	55	53	54	54	54
23.....	52	51	40	39	38	38	40	39	38	40	40	44	43	44	44	49	48	56	52	54	53	54	53	53
24.....	51	51	39	38	38	38	40	39	38	40	40	44	42	44	44	49	48	56	52	54	53	53	51	51
25.....	51	50	39	38	38	38	40	39	39	38	40	44	43	45	43	50	49	55	53	53	53	53	51	51
26.....	50	49	38	38	37	39	38	40	39	40	39	44	44	45	45	49	48	56	52	54	53	53	51	51
27.....	49	49	38	38	37	38	38	41	39	41	40	44	42	46	45	49	49	56	53	55	53	53	52	52
28.....	49	48	38	38	37	36	39	38	41	39	41	41	42	41	48	45	50	49	56	52	53	53	52	52
29.....	49	48	38	38	36	36	39	39	39	39	41	40	42	41	48	47	50	49	56	52	55	52	51	51
30.....	50	49	38	38	37	36	40	39	39	39	40	42	41	47	45	51	49	56	53	55	52	51	51	51
31.....	49	48	--	--	38	37	40	40	--	--	40	39	--	--	47	44	--	--	56	52	55	53	--	--
Average.....	51	51	42	42	38	38	39	38	40	40	40	39	42	41	46	44	49	48	56	53	56	53	55	53

WILLAMETTE RIVER BASIN

MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK NEAR OAKRIDGE, OREG.

LOCATION.--Temperature recorder at gaging station, half a mile below Whitehead Creek, 4 miles below North Fork of Middle Fork Willamette River, and 7 miles northwest of Oakridge, Lane County.

DRAINAGE AREA. --924 square miles.

RECORDS AVAILABLE. --Water temperatures: September 1950 to September 1953.

EXTREMES, 1952-53. --Water temperatures: Maximum, 66°F Aug. 12, 13, 18, 19; minimum, 35°F Nov. 29.

1952-53. --Water temperatures: Maximum, 60°F Aug. 12, 13, 16, 19, minimum, 33°F Nov. 29.
1952-54. --Water temperatures: Maximum, 67°F Aug. 12, 1952: minimum, 35°F Jan. 29-31, Feb. 1, Mar. 3-7, 1951. Nov. 29, 1952.
1950-53. --Water temperatures: Maximum, 67°F Aug. 12, 1952: minimum, 35°F Jan. 29-31, Feb. 1, Mar. 3-7, 1951. Nov. 29, 1952.

REMARKS. --Record of discharge for water year October 1952 to September 1953 given in WSP 1288.

Day	Temperature (°F) of water, water year October 1952 to September 1953																								
	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.....	57	53	50	49	40	38	41	41	---	---	42	40	47	43	46	43	51	47	58	52	63	58	63	59	
2.....	56	53	49	46	41	40	43	41	44	43	41	40	47	43	49	45	50	47	60	53	64	59	63	59	
3.....	57	54	48	44	41	41	42	42	44	44	43	40	46	44	51	48	50	47	61	55	63	60	63	59	
4.....	57	53	46	44	42	41	42	41	44	44	44	44	41	47	44	53	47	52	48	60	54	62	60	58	
5.....	56	52	47	45	42	41	39	44	44	44	43	41	48	46	53	48	49	47	62	55	65	59	64	59	
6.....	56	52	47	45	42	40	41	39	44	44	44	41	46	44	51	48	50	47	62	56	65	61	64	61	
7.....	55	52	46	44	41	40	41	41	44	44	45	41	45	42	48	47	50	47	62	57	64	61	63	61	
8.....	55	53	45	43	41	40	43	41	44	43	45	42	44	42	47	45	49	46	61	55	64	59	64	59	
9.....	54	54	45	43	41	40	44	43	43	43	42	45	43	44	41	47	44	49	47	62	55	64	60	64	59
10.....	56	53	47	44	42	41	43	43	42	41	45	44	45	43	50	45	52	47	63	56	65	59	64	59	59
11.....	55	52	47	47	43	42	44	43	43	42	46	43	45	43	51	45	52	49	63	57	66	60	62	59	59
12.....	54	51	47	47	43	42	43	44	43	42	45	43	45	43	52	46	51	48	62	57	66	61	63	58	58
1.....	54	50	47	46	43	42	43	43	43	42	44	42	45	43	50	47	51	47	63	57	66	61	63	59	59
2.....	53	50	46	45	42	41	43	43	43	42	44	41	49	44	49	47	54	48	63	59	64	61	64	59	59
3.....	52	49	46	45	41	40	43	42	42	41	44	43	48	45	48	46	54	49	63	58	62	60	63	59	59
4.....	52	48	45	43	42	40	43	43	42	41	44	43	47	45	48	45	55	49	63	57	65	60	61	58	58
5.....	50	48	43	42	42	42	43	43	42	40	44	41	48	45	52	47	56	50	64	58	65	60	59	55	55
6.....	50	49	42	41	42	42	43	43	42	40	44	41	48	45	51	49	55	50	64	59	68	61	60	55	55
7.....	54	50	43	42	42	42	43	43	42	41	43	43	49	46	49	46	52	49	63	59	68	62	61	57	57
8.....	53	51	43	43	42	42	43	43	42	40	43	42	52	46	47	45	54	49	63	57	65	61	61	57	57
9.....	52	50	43	42	42	41	44	43	43	42	42	42	51	47	47	45	56	50	63	57	64	60	59	57	57
10.....	52	50	43	42	41	41	44	44	44	43	42	43	42	49	46	48	56	52	64	59	63	59	60	56	56
11.....	51	50	40	38	41	40	44	44	44	42	41	47	43	49	45	47	56	52	63	59	62	59	60	56	56
12.....	53	51	38	37	40	38	44	43	42	41	46	44	50	45	48	45	57	50	62	58	59	58	58	54	54
1.....	52	50	38	36	38	38	44	43	43	40	46	43	49	46	47	45	57	51	63	58	58	56	56	54	54
2.....	50	48	37	36	39	38	42	42	43	41	46	43	48	46	48	46	57	52	62	57	58	56	57	53	53
3.....	49	46	37	36	40	39	43	42	44	41	47	43	47	45	49	46	57	52	63	58	59	56	58	55	55
4.....	49	46	38	36	40	38	42	42	44	42	46	45	46	44	52	47	54	52	63	58	59	56	58	53	53
5.....	48	46	38	36	40	38	---	---	---	---	47	43	45	44	50	46	55	50	62	63	60	57	54	52	52
6.....	51	49	38	36	41	40	---	---	---	---	43	43	43	43	43	43	50	47	63	59	62	57	54	52	52
7.....	50	50	---	---	---	41	---	---	---	---	46	43	---	---	51	47	---	---	63	58	62	58	---	---	---
8.....	51	43	42	41	40	43	42	43	42	44	42	42	47	44	49	46	53	49	62	58	63	59	61	56	56
Average.....	53	51	43	42	41	40	43	42	44	42	44	42	47	44	49	46	53	49	62	58	63	59	61	56	56

WILLAMETTE RIVER BASIN--Continued

MIDDLE FORK WILLAMETTE RIVER AT LOWELL, OREG.

LOCATION.--Temperature recorder at gaging station, three-quarters of a mile south of Lowell, Lane County, and 4½ miles upstream from Lost Creek. DRAINAGE AREA.--994 square miles.
 RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1953. Maximum, 68°F Aug. 13; minimum, 34°F Nov. 28, 29.
 EXTREMES, 1950-53.--Water temperatures: Maximum, 72°F July 16, 1951; minimum, 34°F Nov. 28, 29, 1953.
 REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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

WILLAMETTE RIVER BASIN--Continued

FALL CREEK BELOW WINBERRY CREEK NEAR FALL CREEK, OREG.

LOCATION.--Temperature recorder at gaging station, 1½ miles downstream from Winberry Creek, 2½ miles southeast of Fall Creek, Lane County, and 3 miles above mouth.

DRAINAGE AREA.--186 square miles.

RECORDS AVAILABLE.--August 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 72°F July 6; minimum, 36°F Nov. 30 to Dec. 3.

EXTREMES, 1950-53.--Water temperatures: Maximum, 74°F Aug. 17, 18, 20, 21, 1950; July 17, 1951, Aug. 4, 1952; minimum, 34°F Jan. 30, 31, 1951.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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

WILLAMETTE RIVER BASIN--Continued

LOOKOUT CREEK NEAR BLUE RIVER, OREG.

LOCATION.--Temperature recorder at gaging station, 0.4 mile upstream from mouth and 6 miles northeast of Blue River, Lane County, Post Office.

DRAINAGE AREA.--24.1 square miles.

RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 64°F July 13, Aug. 13; minimum, 35°F Nov. 29, 30.

EXTREMES, 1950-53.--Water temperatures: Maximum, 64°F July 16-18, 23, 1951; Aug. 2-4, 12, 1952; July 13, Aug. 13, 1953; minimum, 33°F Mar. 3-6, 1951.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Day	Temperature (°F) of water, water year October 1952 to September 1953																							
	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	53	49	47	38	36	40	40	43	43	42	41	44	42	43	42	48	45	56	50	62	56	59	56
2.....	55	53	47	45	38	38	41	40	43	43	41	41	45	41	45	43	46	45	58	51	63	57	59	56
3.....	55	53	45	44	38	38	41	41	43	43	43	41	46	43	48	44	47	44	59	52	61	58	59	55
4.....	55	53	45	44	39	38	41	41	43	43	42	44	43	48	44	47	45	59	52	59	58	59	55	55
5.....	54	53	46	45	40	39	41	40	43	42	43	41	45	44	48	44	45	44	60	53	63	57	60	56
6.....	54	52	46	44	40	39	41	40	44	43	43	41	44	42	46	45	47	45	62	54	62	59	61	58
7.....	54	53	45	44	40	39	41	40	44	44	44	42	43	41	45	44	46	45	62	56	60	59	61	59
8.....	54	54	44	43	40	40	41	40	44	42	44	42	43	41	44	43	46	44	62	56	62	58	61	59
9.....	55	54	44	43	40	40	42	41	43	42	45	43	43	41	44	42	46	44	62	56	62	58	60	57
10.....	55	54	45	43	41	40	41	41	43	43	44	43	43	42	46	43	49	45	63	56	63	57	60	57
11.....	55	52	46	45	41	41	42	41	43	43	44	44	43	42	48	42	48	46	63	56	63	58	60	58
12.....	53	52	46	46	42	41	42	42	43	42	44	42	42	42	48	45	47	46	62	57	63	59	60	58
13.....	52	51	46	45	42	42	42	42	44	43	43	43	42	42	46	44	49	45	64	57	64	59	59	56
14.....	52	50	45	45	42	41	42	42	44	43	44	42	45	42	45	44	49	46	63	58	63	59	60	57
15.....	51	49	45	43	41	41	42	42	43	42	44	44	45	42	44	43	49	47	63	58	62	59	60	58
16.....	50	49	43	42	41	41	42	42	43	42	44	42	43	42	44	43	50	47	63	57	62	59	59	57
17.....	50	49	42	41	41	41	42	42	43	42	44	42	42	42	47	44	53	47	63	58	61	57	57	54
18.....	51	50	41	41	41	41	42	42	43	42	43	43	45	41	45	45	51	48	63	57	63	59	57	55
19.....	52	51	41	40	41	41	42	42	43	42	44	43	45	43	45	43	48	47	62	57	63	60	58	56
20.....	52	51	41	41	41	41	42	42	43	42	44	43	46	43	44	42	50	46	62	56	63	60	58	55
21.....	52	50	42	40	41	38	42	42	44	43	43	42	45	43	43	42	53	47	63	56	61	57	58	55
22.....	51	50	40	39	40	39	42	41	43	43	43	43	43	43	44	42	54	49	63	57	60	57	56	56
23.....	50	50	39	38	40	39	42	42	43	43	45	43	43	43	43	42	53	49	62	56	60	58	57	56
24.....	50	50	38	37	39	38	42	42	43	41	44	44	46	42	44	42	54	48	61	56	58	57	57	54
25.....	50	48	37	37	38	38	42	41	43	42	45	44	45	43	43	42	54	49	61	56	57	56	56	53
26.....	48	48	37	37	38	38	41	40	43	42	45	43	44	44	44	43	51	50	61	55	56	55	55	53
27.....	48	48	37	37	38	38	41	40	43	42	46	44	44	44	44	43	52	50	61	55	56	55	55	53
28.....	48	48	37	36	38	36	41	40	43	42	46	44	44	43	42	46	44	52	50	62	56	57	56	54
29.....	48	48	36	35	39	36	42	40	--	--	46	44	43	42	48	45	52	50	62	56	57	54	54	52
30.....	48	48	36	35	40	39	43	42	--	--	44	44	43	42	45	43	53	50	61	56	58	56	54	55
31.....	49	49	--	--	40	40	43	43	--	--	44	44	--	--	48	43	--	--	61	56	58	56	--	--
Average.....	52	51	42	41	40	39	42	41	43	42	44	43	44	42	45	43	50	47	62	55	61	57	58	56

WILLAMETTE RIVER BASIN--Continued

LOCATION.--Temperature recorder at gaging station, half a mile downstream from Boulder Creek and 3 miles southeast of Detroit, Marion County. DRAINAGE AREA.--216 square miles.

RECORDS AVAILABLE.--Water temperatures: April 1951 to September 1953. Maximum, 59°F Aug. 18, 19; minimum, 35°F Nov. 28-30, Dec. 24-26, Feb. 17, 18.

EXTREMES, 1952-53.--Water temperatures: Maximum 59°F July 28, Aug. 1-3, 1952, Aug. 18, 19, 1953; minimum, 33°F Jan. 2, 3, 1952.

EXTREMES, 1951-53.--Water temperatures: Maximum 59°F for water year October 1952 to September 1953 given in WSP 1288.

REMARKS.--Record of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953																									
Day		October		November		December		January		February		March		April		May		June		July		August		September	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	
1.....	50	48	45	43	39	38	37	39	37	39	37	36	40	37	41	39	46	44	53	47	56	51	58	52	
2.....	51	49	43	41	39	39	37	39	38	36	41	37	42	39	43	40	45	42	54	48	57	52	56	52	
3.....	50	48	41	41	39	38	39	38	39	38	36	42	39	42	40	45	42	54	49	57	53	55	51		
4.....	50	49	41	41	39	38	39	38	39	38	37	41	38	46	41	45	44	54	49	55	53	55	50		
5.....	50	48	42	41	39	38	39	38	39	38	37	42	40	46	41	45	43	56	50	57	52	55	52		
6.....	49	47	43	42	39	37	38	38	39	39	37	41	38	43	41	45	44	57	51	56	53	57	53		
7.....	49	48	42	41	37	37	38	38	39	39	37	38	37	41	40	45	44	57	51	56	53	56	54		
8.....	50	49	41	41	37	36	39	38	39	39	40	37	38	37	41	39	46	44	56	52	58	52	56		
9.....	51	50	41	40	37	36	39	38	39	38	40	38	39	37	40	38	47	45	56	50	57	52	55		
10.....	50	49	43	41	38	37	39	39	39	38	40	39	40	38	42	39	50	44	57	51	57	51	55		
11.....	49	47	43	43	38	38	40	39	38	38	40	39	38	44	39	49	46	57	51	58	52	55	53		
12.....	49	47	43	43	38	38	40	39	38	37	40	38	39	37	45	39	48	46	57	51	58	53	56		
13.....	48	47	44	42	38	38	39	38	38	39	37	39	37	43	40	48	45	56	51	58	52	55	51		
14.....	47	45	42	42	38	38	39	38	38	39	38	39	37	41	38	44	41	50	46	56	53	56	53		
15.....	46	44	42	42	38	37	40	39	38	37	39	38	41	38	42	41	50	46	57	51	57	53	55		
16.....	46	44	42	41	38	38	40	40	37	36	38	37	41	39	43	41	50	45	57	51	58	53	54		
17.....	47	45	41	40	39	38	40	36	35	38	36	42	40	45	42	52	46	58	51	57	52	52	49		
18.....	47	47	40	40	39	38	40	39	37	35	38	37	43	39	44	42	50	46	56	52	59	53	53		
19.....	47	47	40	40	39	38	39	38	39	37	37	37	43	40	43	41	49	46	57	51	59	54	54		
20.....	46	48	40	40	39	38	37	37	36	37	36	45	40	44	41	49	46	57	51	57	54	53	50		
21.....	48	48	40	39	38	37	39	39	37	37	36	43	40	43	42	51	47	58	51	57	52	52	50		
22.....	47	46	37	37	37	37	39	39	37	37	37	36	41	40	44	41	52	47	58	52	55	52	51		
23.....	47	46	37	37	37	36	39	39	37	37	40	37	40	40	43	43	51	47	57	51	55	53	52		
24.....	48	46	37	36	36	35	39	39	37	36	39	38	43	38	44	42	52	47	56	51	53	52	51		
25.....	46	44	36	35	35	35	39	37	36	39	38	42	40	44	43	53	47	57	52	52	51	51	49		
26.....	45	44	36	36	35	39	37	38	37	40	37	41	40	44	43	50	47	57	51	52	51	50	48		
27.....	45	44	36	36	37	36	38	37	38	37	40	38	41	39	43	42	49	47	57	51	53	51	50		
28.....	45	44	35	37	36	38	38	37	40	39	41	39	48	43	49	47	58	51	52	51	51	50	48		
29.....	45	45	35	35	37	36	39	38	--	--	41	38	40	39	46	44	48	47	57	51	53	50	50		
30.....	46	45	38	35	38	37	39	39	--	--	39	39	40	38	45	43	50	47	57	52	55	51	48		
31.....	46	45	--	--	38	38	39	39	--	--	39	38	--	--	46	42	--	--	58	50	54	52	--		
Average.....	48	47	40	40	38	37	39	38	38	38	37	41	39	44	41	49	46	47	57	57	56	52	54		

WILLAMETTE RIVER BASIN--Continued

BREITENBUSH RIVER ABOVE CANYON CREEK NEAR DETROIT, OREG.

LOCATION --Temperature recorder at gaging station 600 feet upstream from mouth of Canyon Creek and 1½ miles (revised) northeast of Detroit, Marion County, Oregon.

DRAINAGE AREA --106 square miles.

RECORDS AVAILABLE --Water temperatures: December 1950 to September 1953.

EXTREMES, 1950-53 --Water temperatures: Maximum observed 57°F Aug. 16, while recorder was removed for construction; minimum, 35°F Nov. 28 to Dec. 1.

EXTREMES, 1950-53 --Water temperatures: Maximum 58°F July 17, 1951, Aug. 13, 14, 1952; minimum, 33°F Mar. 3-7, 1951.

REMARKS --Records of discharge for water year October 1952 to September 1953 given in WSP 1286.

Day	Temperature (°F) of water, water year October 1952 to September 1953																							
	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	49	45	43	38	35	42	41	41	39	38	41	40	42	42	42	45	44	50	46	54	50	53	51
2.....	51	49	43	41	38	38	43	42	41	41	38	38	41	41	42	41	45	43	52	48	55	51	53	52
3.....	51	48	41	41	39	38	43	43	41	41	39	38	42	41	44	42	44	43	52	48	55	53	53	51
4.....	50	48	41	41	39	38	43	43	41	41	40	39	42	41	45	42	45	43	52	48	54	52	53	51
5.....	50	48	42	41	40	39	43	43	41	41	40	39	42	41	45	42	44	43	53	49	--	51	53	52
6.....	49	47	42	42	40	39	43	43	41	41	39	39	42	41	43	42	44	43	53	49	--	52	54	53
7.....	49	48	42	41	40	39	43	43	41	41	40	39	41	41	42	42	44	43	54	49	--	52	54	53
8.....	51	49	41	40	40	40	44	43	41	41	40	40	41	40	42	41	44	43	53	50	--	--	54	53
9.....	51	50	40	40	40	40	44	44	41	41	41	40	40	40	40	42	41	44	43	52	49	--	54	52
10.....	50	48	42	40	40	40	44	44	41	41	41	40	40	40	40	43	41	47	44	54	50	--	53	52
11.....	49	47	42	42	41	40	45	44	41	41	40	40	40	40	44	41	46	45	54	50	56	52	53	52
12.....	49	47	43	42	43	41	44	44	41	40	40	40	40	40	39	45	42	47	45	54	50	56	53	54
13.....	48	47	43	42	43	43	44	43	41	40	40	40	40	40	39	44	42	47	45	54	50	56	53	52
14.....	47	45	42	42	43	43	44	43	41	40	40	40	40	40	42	40	44	43	47	45	53	51	54	52
15.....	46	44	42	42	43	43	43	43	40	40	40	40	40	40	42	41	43	43	47	45	53	49	--	52
16.....	46	44	42	40	43	43	43	43	40	39	40	40	42	41	44	42	48	46	54	49	--	--	53	52
17.....	47	45	40	40	43	43	43	43	42	39	39	40	40	43	41	46	44	49	46	54	49	56	53	52
18.....	48	47	40	40	43	43	43	43	42	39	39	40	40	43	41	45	44	48	46	54	50	57	54	51
19.....	49	48	40	40	43	43	43	43	42	39	39	40	40	44	42	44	42	47	45	54	50	55	54	52
20.....	48	48	40	40	43	43	42	42	39	39	40	39	44	42	43	41	47	45	54	49	54	54	52	50
21.....	48	47	40	40	43	42	42	42	39	39	39	39	43	43	42	42	49	46	54	49	54	53	51	50
22.....	47	46	40	39	42	42	42	42	39	39	39	39	43	43	42	42	49	46	54	50	54	52	50	50
23.....	47	46	39	38	42	42	42	42	38	38	41	39	43	43	43	42	48	46	53	50	53	53	52	50
24.....	47	45	38	37	42	40	42	42	38	38	41	41	44	42	43	42	49	46	53	49	53	52	51	49
25.....	45	44	37	37	40	40	42	41	38	38	41	41	43	43	43	42	50	46	54	50	52	51	50	49
26.....	44	43	37	37	40	40	41	41	39	38	41	41	43	43	43	43	49	47	54	50	51	51	50	49
27.....	44	43	37	36	41	40	41	41	39	39	41	41	43	43	43	43	42	48	46	54	50	51	51	50
28.....	44	44	36	35	41	41	41	41	39	39	41	41	43	42	46	42	48	46	54	50	51	51	50	50
29.....	44	44	35	35	41	41	41	41	--	--	42	41	42	42	45	44	47	46	55	51	51	50	50	50
30.....	45	44	35	35	42	41	41	41	--	--	41	41	42	42	44	43	49	46	54	51	52	50	50	50
31.....	45	45	--	--	42	41	41	41	--	--	41	41	--	--	--	--	--	--	54	50	52	52	--	--
Average.....	48	46	40	40	41	41	43	42	40	40	40	40	42	41	44	42	47	45	53	49	--	--	52	51

WILLAMETTE RIVER BASIN--Continued

NORTH SANTIAM RIVER AT NIAGARA, OREG.

LOCATION.--Temperature recorder at gaging station, 0.8 mile below Big Cliff Dam, 2.1 miles east of Niagara, and 6.3 miles east of Gates, Marion County.

DRAINAGE AREA.--453 square miles.

RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 52°F Aug. 17, 18, Sept. 10-30; minimum, 40°F many days in February and March.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, January to September 1953

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.....							--	42	42	40	40	41	41	42	42	44	44	47	46	50	49	51	50	
2.....							--	42	42	40	40	42	41	43	42	44	44	48	47	50	49	51	50	
3.....							--	42	42	40	40	42	41	43	42	44	44	48	48	50	49	51	50	
4.....							--	42	42	40	40	41	41	43	42	44	44	48	48	50	49	51	50	
5.....							--	42	42	40	40	42	41	43	43	44	44	49	48	51	50	51	50	
6.....							--	42	42	40	40	41	41	43	43	44	44	49	48	50	50	51	50	
7.....							--	42	42	40	40	41	41	43	43	44	44	49	48	50	50	51	50	
8.....							--	42	42	40	40	41	41	43	43	44	44	49	48	50	50	51	50	
9.....							--	42	42	41	40	41	41	44	43	45	45	49	48	50	50	51	50	
10.....							--	42	42	41	41	42	41	44	44	45	45	49	48	51	50	52	51	
11.....							--	42	42	41	41	41	41	44	44	45	45	49	48	51	50	52	51	
12.....							43	43	42	42	41	41	41	44	44	45	45	49	49	51	50	52	51	
13.....							43	43	42	42	41	40	41	44	44	45	45	49	49	50	50	52	51	
14.....							43	43	42	41	41	40	42	41	44	44	45	45	49	49	50	50	52	
15.....							43	43	41	41	41	41	42	41	44	44	45	45	49	49	51	50	52	
16.....							43	43	41	40	41	41	42	42	44	44	45	45	49	49	51	52	52	
17.....							43	43	40	40	41	41	42	42	44	44	45	45	49	49	52	51	52	
18.....							44	43	40	40	41	41	43	42	44	44	45	45	50	49	52	51	52	
19.....							44	44	40	40	41	41	43	42	44	44	45	45	50	49	51	50	52	
20.....							44	44	40	40	41	40	43	42	44	44	45	45	50	49	51	50	52	
21.....							44	43	40	40	41	41	42	42	44	44	45	45	50	49	51	50	52	
22.....							43	43	40	40	41	41	42	42	44	44	45	45	50	49	51	50	52	
23.....							43	42	40	40	42	41	42	42	44	44	45	45	50	49	51	50	52	
24.....							42	42	40	40	41	41	42	42	44	44	46	45	50	49	51	50	52	
25.....							42	42	40	40	42	41	42	42	44	44	46	46	50	49	51	50	52	
26.....							42	42	40	40	42	41	42	42	44	44	46	46	50	49	51	50	52	
27.....							42	42	40	40	41	41	42	42	44	44	46	46	50	49	51	50	52	
28.....							42	42	40	40	41	41	42	42	44	44	46	46	50	49	51	50	52	
29.....							42	42	--	--	41	41	42	42	44	44	46	46	50	49	51	50	52	
30.....							42	42	--	--	41	41	42	42	44	44	46	46	50	49	51	50	52	
31.....							42	42	--	--	41	41	42	42	44	44	--	--	50	49	51	50	--	
Average.....							--	41	41	41	41	42	42	44	44	45	45	49	49	51	50	52	51	

WILLAMETTE RIVER BASIN--Continued
WILLAMETTE RIVER AT SALEM, OREG.

LOCATION.--At bridge on Oregon Highway 22,300 feet downstream from gaging station at Salem, Marion County.
DRAINAGE AREA.--7,280 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August to December 1910, August 1911 to August 1912, February 1951 to September 1953.
EXTREMES, 1952-53.--Dissolved solids: Maximum, 69 ppm Nov. 1-30; minimum, 45 ppm Jan. 21-31.

Hardness: Maximum, 28 ppm Oct. 11-31, Aug. 1-10; minimum, 17 ppm Feb. 1-12.
Specific conductance: Maximum daily, 84.1 microhos Sept. 20; minimum observed, 35.6 Nov. 30.

WATER TEMPERATURES, 1951-53.--Dissolved solids: Maximum observed, 73.6 Aug. 12-14, 19; minimum observed, 35.6 Nov. 30.
EXTREMES, 1951-53.--Dissolved solids: Maximum, 69 ppm Nov. 1-30, 1952; minimum, 43 ppm Apr. 21-30, 1952.

Hardness: Maximum, 28 ppm Sept. 16-20, 24-29, 1951, Aug. 11-20, Oct. 11-31, 1952; minimum daily, 34.6 microhos Jan. 20, 1953.
Specific conductance: Maximum observed, 75.6 on many days during summer months; minimum observed, 35.6 Nov. 30, 1952.

WATER TEMPERATURES, 1951-53.--Dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

REMARKS.--Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Chemical analyses, in parts per million, water year October 1952 to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chlo- ride (Cl)	Fluo- ride (F)	Nit- rate (NO ₃)	Bo- ron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Per- cent soli- dum adsorp- tion ratio	So- l- dum conduct- ance (micro- mhos at 25°C)	Col- or pH	
														Parts per mil- lion	Tons per acre- foot	Tons per day	Calcium, magnesium	Non-carbon- ate				
Oct. 1-10, 1952...	4,756	17		5.6	3.0	4.8	0.9	34	2.8	3.8		0.6		65	0.09	835	26	0	28	0.4	74.7	7.1
Oct. 11-31	4,263	16		6.2	3.1	4.4	.6	34	3.4	3.2		.5	0.03	67	.09	771	28	0	25	.4	75.3	7.1
Nov. 1-30	3,993	18		6.0	2.7	4.8	.6	36	3.7	3.5		.4	--	69	.09	744	26	0	28	.4	76.5	7.0
Dec. 1-10	12,430	16		5.8	3.0	3.7	1.5	31	3.4	3.5		.8	--	60	.08	2,010	27	1	22	.3	66.0	--
Dec. 11-20	25,480	15		5.2	2.8	3.3	.9	28	3.0	2.9		1.0	--	54	.07	3,710	24	2	22	.3	55.6	--
Dec. 21-31	13,000	17		5.6	2.6	3.4	.9	30	3.0	3.2		.8	--	60	.08	2,110	25	0	22	.3	61.4	--
Jan. 1-10, 1953.	39,340	14		4.7	2.3	3.2	.9	26	4.0	2.9		.8	--	59	.08	6,270	21	0	24	.3	53.9	--
Jan. 11-20	118,400	12		5.1	1.9	3.3	1.5	26	3.5	3.1		.8	.04	52	.07	16,620	20	0	24	.3	41.7	--
Jan. 21-31	115,500	13		4.2	2.0	2.9	1.1	26	2.9	2.2		.6	--	45	.06	14,030	19	0	24	.3	43.4	--
Feb. 1-12	106,200	14		4.2	1.6	2.6	1.0	21	3.5	2.1		.4	--	50	.07	14,200	17	0	23	.3	45.7	6.8
Feb. 13-28	48,020	15		5.0	1.6	3.2	1.0	22	4.0	2.4		.5	--	54	.07	7,000	19	1	25	.3	54.3	6.8
Mar. 1-10	19,820	18		6.5	2.0	3.4	.9	30	3.0	3.0		.7	--	56	.08	3,000	24	0	22	.3	61.4	--
Mar. 11-20	26,560	16		6.4	1.9	3.2	1.3	29	3.0	3.1		1.2	--	56	.08	4,320	24	0	21	.3	55.9	--
Mar. 21-31	51,060	15		6.3	2.0	2.9	1.0	28	3.1	2.9		.7	--	52	.07	7,170	24	1	20	.3	51.8	--
Apr. 1-10	34,080	17		5.9	2.0	3.2	1.0	29	3.0	3.0		.6	--	54	.07	3,510	23	0	22	.3	58.6	--
Apr. 11-20	18,560	16		6.1	1.7	3.3	.7	28	3.1	2.3		.6	.04	52	.07	2,610	22	0	24	.3	56.5	--
Apr. 21-30	26,540	15		4.4	2.1	3.1	.9	24	2.5	2.2		.5	--	46	.06	3,300	20	0	24	.3	50.4	--
May 1-10	23,950	15		4.5	2.0	3.1	.9	27	2.1	2.0		.5	--	46	.06	3,600	19	0	25	.3	50.4	--
May 11-20	24,180	15		4.8	2.1	3.2	.9	27	2.1	2.3		.5	--	47	.06	3,070	21	0	24	.3	52.5	--
May 21-30	42,350	15		4.5	2.5	3.1	.6	26	2.8	2.2		.6	--	48	.07	5,490	22	0	23	.3	46.7	--

WILLAMETTE RIVER BASIN--Continued
WILLAMETTE RIVER AT SALEM, OREG.--Continued

Chemical analyses, in parts per million, water year October 1952 to September 1953--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		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, mg./l.	Non-carbonate					
June 1-10, 1953..	31,310	15		4.7	2.1	3.1	0.3	26	2.5	2.2		0.5	--	47	0.06	3,970	20	0	24	0.3	50.4	--	--
June 11-20	26,490	15		4.6	2.1	3.1	.6	28	2.2	2.2		.5	--	48	.07	3,430	20	0	24	.3	50.6	--	--
June 21-30	15,350	16		5.1	2.2	3.4	.6	28	2.7	2.3		.5	--	51	.07	2,110	22	0	25	.3	55.2	--	--
July 1-10	11,890	17		5.6	2.4	3.6	1.0	34	4.3	2.4		.4	--	50	.07	1,610	24	0	24	.3	60.4	--	--
July 11-20	9,006	19		6.4	2.4	3.9	1.0	33	3.0	3.0		.4	0.08	54	.07	1,310	26	0	24	.3	84.8	--	--
July 21-31	6,684	20		6.3	2.4	4.2	1.4	36	3.3	3.4		.5	--	59	.08	1,060	28	0	25	.4	89.9	--	--
Aug. 1-10	6,099	19		6.6	2.7	4.4	1.4	38	4.8	3.3		.5	--	59	.08	972	28	0	25	.4	70.6	--	--
Aug. 11-20	5,487	18		6.0	2.4	4.8	1.3	34	3.6	3.2		.5	--	61	.08	904	25	0	28	.4	73.5	--	--
Aug. 21-31	6,422	18		5.9	2.3	4.6	1.3	35	3.0	2.9		.5	--	59	.08	1,020	24	0	28	.4	69.6	--	--
Sept. 1-10	6,116	17		6.0	2.3	4.6	1.3	36	3.4	2.8		.5	--	57	.08	941	24	0	28	.4	69.3	--	--
Sept. 11-20	5,772	16		6.4	2.4	4.8	1.3	35	4.1	3.3		.5	--	60	.08	935	26	0	28	.4	74.4	--	--
Sept. 21-30	5,987	16		5.8	2.2	4.8	1.3	36	3.7	3.3		.8	--	60	.08	970	24	0	29	.4	72.1	--	--
Weighted average	26,770	15		5.0	2.0	3.2	1.0	26	3.2	2.6		0.6	--	52	0.07	3,760	21	0	24	.3	51.5	--	--

WILLAMETTE RIVER BASIN--Continued

WILLAMETTE RIVER AT SALEM, OREG.--Continued

Temperature (°F) of water, water year October 1952 to September 1953

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

LEWIS RIVER BASIN

LEWIS RIVER AT ARIEL, WASH.

LOCATION.--Temperature recorder at gaging station, at Ariel, Cowlitz County, half a mile downstream from Ariel Dam and power plant and 3 miles upstream from Cedar Creek.

DRAINAGE AREA.--731 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 59°F Oct. 2; minimum, 40°F Mar. 31, Apr. 1, 2, 4, 5, 15.

EXTREMES, 1950-53.--Water temperatures: Maximum, 61°F Oct. 2-5, 1951; minimum, 37°F Feb. 6-16, 1951.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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.....	--	--	55	54	49	49	44	44	42	42	41	41	40	40	44	44	46	46	48	48	--	--	--	
2.....	59	53	55	53	48	49	44	44	42	42	41	41	41	41	40	44	46	46	48	49	--	--	--	
3.....	57	53	55	54	48	49	44	44	42	42	41	41	41	41	41	45	46	46	48	49	--	--	--	
4.....	57	53	55	54	48	49	44	44	42	42	41	41	41	41	40	45	46	46	48	49	--	--	--	
5.....	56	53	55	54	48	48	44	44	42	42	41	41	41	41	40	45	46	46	48	49	--	--	--	
6.....	57	53	55	54	48	48	44	44	42	42	42	41	41	41	45	45	47	46	50	49	--	--	--	
7.....	56	54	54	54	48	48	44	44	42	42	42	41	41	41	45	45	47	47	--	--	--	--	--	
8.....	57	54	54	54	48	48	44	44	42	42	41	41	41	41	45	45	47	47	--	--	--	--	--	
9.....	55	55	54	54	47	47	44	44	42	42	41	41	41	41	45	45	47	47	--	--	--	--	--	
10.....	55	54	56	55	47	47	44	44	42	42	41	41	41	41	45	45	47	47	--	--	--	--	--	
11.....	55	54	55	55	47	47	44	43	42	42	41	41	41	41	45	43	47	47	--	--	--	--	--	
12.....	55	54	56	55	47	47	43	43	42	42	41	41	41	41	44	44	47	47	--	--	--	--	--	
13.....	56	54	56	55	47	47	43	43	42	42	41	41	41	41	44	44	48	47	--	--	--	--	--	
14.....	55	53	56	55	47	46	43	43	42	42	41	41	41	41	44	44	48	48	--	--	--	--	--	
15.....	56	53	56	54	46	44	43	43	42	42	41	41	41	42	40	45	44	48	--	--	--	--	--	
16.....	55	52	54	54	44	44	43	43	42	42	41	41	41	42	41	46	45	48	--	--	--	--	--	
17.....	55	53	55	54	44	44	43	42	42	42	41	41	41	42	42	46	46	48	--	--	--	--	--	
18.....	55	53	55	54	44	44	43	42	42	42	41	41	41	43	42	46	46	48	--	--	--	--	--	
19.....	55	55	55	54	45	44	42	42	42	42	42	42	42	43	43	46	46	48	--	--	--	--	--	
20.....	55	55	54	45	44	44	42	42	42	42	41	42	42	43	43	46	46	48	--	--	54	53	--	
21.....	55	55	53	52	44	43	42	42	41	41	42	42	42	43	43	46	45	48	--	--	54	54	--	
22.....	55	55	53	51	44	44	42	42	41	41	42	42	42	43	43	45	45	48	--	--	55	54	--	
23.....	55	55	51	51	44	44	42	42	41	41	42	42	42	43	43	45	45	48	--	--	55	55	--	
24.....	56	55	52	51	44	43	42	42	41	41	42	42	42	43	42	45	45	48	--	--	55	55	--	
25.....	55	53	52	51	43	43	42	42	41	41	42	42	42	43	42	45	45	48	--	--	55	55	--	
26.....	55	53	52	50	43	43	42	42	41	41	42	41	41	44	43	45	45	48	--	--	55	54	--	
27.....	56	55	51	49	44	44	43	42	42	41	41	41	41	44	44	45	45	48	--	--	55	55	--	
28.....	56	54	51	48	44	44	42	42	41	41	41	41	41	44	44	45	45	49	--	--	55	55	--	
29.....	56	55	51	49	44	44	42	42	--	--	41	41	41	44	43	45	45	49	--	--	55	55	--	
30.....	56	55	49	44	44	44	42	42	--	--	41	41	41	44	44	46	46	49	--	--	55	55	--	
31.....	56	55	--	--	44	44	42	42	--	--	41	40	--	46	46	--	--	--	--	--	--	--	--	
Average.....	56	54	54	53	46	46	43	43	42	42	41	41	42	42	45	45	48	47	--	--	--	--	--	

LEWIS RIVER BASIN--Continued
EAST FORK LEWIS RIVER NEAR HEISSON, WASH.

LOCATION.--Temperature recorder at gaging station, downstream from Basket Creek, 1½ miles northeast of Heisson, Heisson County, and 20 miles upstream from mouth.

DRAINAGE AREA, 25 square miles.

RECORDS AVAILABLE: June 1950 to June 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 60°F Oct. 3; minimum, 33°F Nov. 24 to Dec. 3.

EXTREMES, 1950-53.--Water temperatures: Maximum, 74°F Feb. 1, 1951, Nov. 24 to Dec. 3, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

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	55	50	48	33	33	41	41	44	43	41	39	44	40	45	44	51	47						
2.....	59	56	48	46	33	33	43	43	44	43	40	39	45	41	47	43	51	48						
3.....	60	57	46	44	37	33	43	43	44	44	41	40	43	41	51	46	51	46						
4.....	59	56	45	44	39	37	43	43	42	44	43	43	41	45	42	54	48	50	48					
5.....	58	55	45	44	39	39	42	41	44	43	43	42	44	44	55	50	49	46						
6.....	58	55	45	45	39	39	41	40	44	44	43	42	44	44	50	49	49	48						
7.....	56	55	45	44	40	39	41	41	45	44	44	42	43	42	50	48	48	48						
8.....	57	56	44	43	40	40	44	41	44	42	46	43	43	41	48	46	48	47						
9.....	57	56	43	42	41	40	44	43	42	41	46	43	44	42	46	45	50	46						
10.....	57	55	44	42	41	41	43	43	42	41	45	43	45	41	46	44	53	48						
11.....	56	54	45	44	43	41	45	43	43	42	45	44	45	43	50	43	54	49						
12.....	55	53	45	45	43	43	45	45	43	41	44	42	43	42	52	46	--	--						
13.....	53	51	45	43	43	43	45	44	43	42	43	41	43	42	52	47	--	--						
14.....	53	51	45	43	43	41	44	44	43	42	44	42	39	44	42	50	48	--						
15.....	52	50	43	41	41	40	44	44	42	41	42	41	45	42	48	47	--	--						
16.....	51	49	41	39	41	40	44	44	42	41	42	41	45	45	47	47	--	--						
17.....	51	49	39	39	41	40	44	44	42	41	42	41	45	43	47	47	--	--						
18.....	52	50	39	39	40	39	44	44	42	41	42	42	48	43	48	47	--	--						
19.....	53	51	39	37	40	39	44	44	42	40	45	42	49	47	48	47	--	--						
20.....	53	53	38	37	40	40	44	44	42	41	43	42	50	43	49	45	--	--						
21.....	54	53	38	37	40	40	44	44	42	41	43	42	49	46	49	46	--	--						
22.....	53	53	37	36	40	40	44	44	42	41	43	43	46	46	46	45	--	--						
23.....	53	53	36	35	40	39	44	44	41	39	47	43	46	45	46	44	--	--						
24.....	53	53	35	33	39	37	44	44	41	39	46	44	49	43	46	45	--	--						
25.....	53	50	33	33	37	36	44	43	41	39	43	42	49	46	48	43	--	--						
26.....	50	48	33	33	36	36	43	41	42	40	45	41	48	47	48	46	--	--						
27.....	49	48	33	33	37	36	42	41	43	42	44	43	47	46	47	46	--	--						
28.....	48	48	33	33	38	37	43	42	43	41	44	44	46	44	49	46	--	--						
29.....	48	48	33	33	41	38	43	43	--	--	44	42	45	43	48	47	--	--						
30.....	48	48	33	33	41	41	44	43	--	--	44	42	45	43	47	46	--	--						
31.....	50	50	--	--	41	41	44	44	--	--	42	41	--	--	50	44	--	--						
Average.....	54	52	41	40	40	39	43	43	43	42	43	42	46	43	49	46	--	--						

COWLITZ RIVER BASIN

CISPUS RIVER NEAR RANDLE, WASH.

LOCATION.--Temperature recorder at gaging station, 60 feet upstream from bridge to Tower Rock ranger station, 4 miles downstream from North Fork, and 8 miles southeast of Randle, Lewis County.
 DRAINAGE AREA.--321 square miles (revised).
 RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1953.
 EXTREMES, 1952-53.--Water temperatures: Maximum, 58°F on several days in August.
 EXTREMES, 1950-53.--Maximum, 61°F Aug. 4, 9, 10, 15, 1952; minimum, 35°F several days in January, Nov. 28-30, and Dec. 25, 1952.
 REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Day	Temperature (°F) of water, water year October 1952 to September 1953																							
	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	47	46	44	40	39	39	39	40	40	40	37	44	39	42	41	45	43	50	45	55	48	53	50
2.....	53	47	44	41	40	40	40	39	40	40	40	37	44	39	44	41	45	43	52	47	57	50	56	50
3.....	53	47	45	43	41	40	40	38	41	40	39	39	43	41	47	42	46	44	52	48	56	50	55	49
4.....	53	47	44	42	41	40	38	37	41	40	41	39	43	41	47	42	46	44	52	48	55	50	55	48
5.....	52	47	45	43	41	40	39	38	40	40	41	40	43	41	47	43	44	43	52	48	57	51	56	49
6.....	52	47	45	44	41	39	38	37	41	40	41	40	42	40	44	42	45	44	52	48	55	52	56	50
7.....	51	47	44	42	39	38	38	41	41	44	40	41	40	41	40	43	42	45	44	53	48	57	52	51
8.....	51	48	44	42	39	38	38	41	39	44	40	41	39	42	41	46	43	53	50	56	53	55	51	51
9.....	51	49	43	41	39	39	41	41	39	38	43	40	44	39	42	40	46	43	52	48	58	53	55	49
10.....	52	49	45	43	39	38	--	--	39	39	42	41	43	39	42	41	48	44	54	49	58	52	55	48
11.....	52	47	45	45	38	38	--	--	40	39	42	41	41	39	45	40	47	45	54	49	57	50	54	50
12.....	51	46	45	43	40	38	--	--	40	39	42	40	41	39	47	42	46	44	54	50	58	51	55	51
13.....	50	46	45	43	39	39	--	--	40	39	41	39	41	39	46	42	44	43	51	50	57	50	55	49
14.....	49	45	43	42	39	38	--	--	40	39	40	38	43	39	45	43	47	43	50	49	58	51	55	49
15.....	48	45	43	41	39	37	--	--	39	39	41	39	44	39	43	42	47	45	51	48	57	52	54	49
16.....	48	44	41	39	39	39	--	--	39	39	40	38	43	41	45	43	48	44	53	48	55	51	50	48
17.....	50	45	41	39	40	39	--	--	39	39	41	38	47	40	45	43	47	45	55	50	56	50	51	47
18.....	50	47	43	41	39	38	--	--	40	39	41	39	47	41	43	43	46	44	55	50	57	50	52	46
19.....	51	48	42	40	40	39	--	--	40	38	43	39	46	43	43	42	45	44	52	50	58	51	53	48
20.....	49	48	42	40	40	39	--	--	39	38	41	40	46	42	44	41	45	44	53	49	53	51	52	47
21.....	50	47	43	40	39	39	--	--	39	39	41	40	44	43	42	46	45	45	55	49	56	50	52	46
22.....	50	46	40	38	39	36	40	40	39	38	40	39	43	41	44	41	47	45	55	50	55	49	48	47
23.....	49	46	39	38	38	37	41	40	39	37	45	40	42	41	42	41	46	45	55	50	52	50	50	47
24.....	50	47	38	37	37	36	41	41	40	37	42	41	44	40	42	42	46	45	48	51	49	50	46	46
25.....	47	45	38	37	36	35	41	40	40	37	42	40	43	41	45	41	46	45	53	50	51	48	50	46
26.....	47	44	38	37	36	36	40	39	38	38	43	39	43	42	44	43	46	45	54	49	51	49	47	45
27.....	48	45	38	37	36	36	39	39	40	39	42	41	43	41	44	43	46	46	56	50	50	49	48	47
28.....	47	45	37	35	38	38	39	39	40	38	43	41	41	40	46	43	46	45	54	49	50	49	48	47
29.....	47	46	38	37	35	38	40	39	--	--	44	41	41	39	45	43	47	46	56	49	50	48	46	46
30.....	48	46	36	35	39	39	40	40	--	--	41	40	42	41	44	42	47	46	56	50	53	49	48	47
31.....	47	46	--	--	39	39	41	40	--	--	42	39	--	--	45	41	--	--	58	49	53	51	--	--
Average.....	50	46	42	40	39	38	--	--	40	39	42	40	43	40	44	42	46	44	53	49	55	50	52	48

COWLITZ RIVER BASIN--Continued

WEST FORK TILTON RIVER NEAR MORTON, WASH.

LOCATION.--Temperature recorder at gaging station, three-quarters of a mile upstream from mouth and 4 miles northeast of Morton, Lewis County.

DRAINAGE AREA.--16.4 square miles.

RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1953.

EXTREMES, 1950-53.--Water temperatures: Maximum, 62°F Aug. 19; minimum, 33°F Nov. 26 to Dec. 1.

EXTREMES, 1950-53.--Water temperatures: Maximum, 66°F Aug. 12, 1952; minimum, 33°F Nov. 26 to Dec. 1, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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

COWLITZ RIVER BASIN--Continued
COWLITZ RIVER NEAR MAYFIELD, WASH.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from Mill Creek, 2 miles downstream from Winston Creek, and 2½ miles west of Mayfield, Lewis County.
DRAINAGE AREA.--1,401 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1953. 15, 19, 20, minimum, 37°F Dec. 4, 24-28.
EXTREMES, 1950-53.--Water temperatures: Maximum, 65°F July 19, Aug. 14, 1952; minimum, 35°F Jan. 29-31, Feb. 1, 2, 1951.
REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

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	55	48	47	--	--	40	40	42	41	41	41	--	--	48	47	52	51	57	53	62	60	60	60
2.....	57	55	--	--	--	--	40	40	41	41	41	40	--	--	50	48	52	51	60	55	62	61	60	60
3.....	57	55	--	--	--	--	40	40	--	--	--	--	--	--	54	53	53	51	59	57	62	61	61	60
4.....	57	55	--	--	39	37	40	40	--	--	41	40	--	--	56	53	53	52	59	56	62	61	61	61
5.....	57	55	--	--	39	39	40	39	--	--	43	41	--	--	56	54	53	52	58	55	62	61	62	61
6.....	57	55	--	--	39	39	39	39	--	--	43	43	--	--	55	50	51	50	61	57	62	61	62	62
7.....	56	54	--	--	39	39	39	39	--	--	45	43	--	--	50	49	51	51	61	57	61	60	63	62
8.....	56	54	--	--	39	39	41	39	--	--	45	44	--	--	50	49	51	50	61	58	61	60	62	62
9.....	55	54	--	--	39	39	41	41	--	--	46	45	--	--	50	49	53	50	59	58	60	60	62	62
10.....	54	53	--	--	40	39	41	40	--	--	45	45	--	--	50	49	54	51	61	57	61	59	62	61
11.....	55	52	--	--	40	40	41	40	--	--	45	44	--	--	53	49	55	52	62	58	64	61	61	60
12.....	54	52	--	--	40	40	41	41	--	--	44	43	43	43	56	52	54	50	62	59	64	62	60	59
13.....	--	--	--	--	40	40	41	41	--	--	43	43	43	43	56	54	49	48	61	59	64	62	59	59
14.....	--	--	43	43	40	39	41	41	--	--	43	42	43	42	56	53	51	47	59	57	65	62	60	59
15.....	--	--	43	41	39	38	41	41	--	--	42	42	46	43	53	51	52	50	58	57	85	62	60	59
16.....	--	--	--	--	38	38	41	41	--	--	42	42	46	46	52	51	54	51	60	55	62	60	60	57
17.....	--	--	--	--	38	38	41	41	--	--	42	41	46	46	51	51	54	52	60	58	61	60	57	57
18.....	--	--	--	--	38	38	41	41	--	--	41	41	49	46	51	50	54	52	63	60	63	61	57	57
19.....	--	--	--	--	38	38	41	41	--	--	44	41	50	49	50	49	52	50	65	60	62	62	58	57
20.....	--	--	--	--	38	38	42	41	--	--	44	43	52	50	50	49	51	50	60	57	65	63	58	57
21.....	--	--	--	--	38	38	42	42	--	--	43	43	52	49	51	50	53	51	62	59	63	61	58	57
22.....	--	--	--	--	40	38	42	42	--	--	43	43	49	47	51	49	55	52	61	59	62	60	58	57
23.....	--	--	--	--	40	40	42	42	--	--	43	43	49	46	50	49	55	53	60	59	61	61	57	56
24.....	--	--	--	--	40	37	42	42	--	--	--	--	49	46	50	49	53	52	61	58	61	56	56	55
25.....	--	--	--	--	37	37	42	42	--	--	--	--	48	48	53	49	53	52	61	59	58	57	55	54
26.....	--	--	--	--	37	37	42	41	40	40	--	--	48	47	54	52	53	53	60	59	57	57	54	52
27.....	--	--	--	--	37	37	41	41	41	40	--	--	48	47	53	51	53	52	61	59	57	57	53	52
28.....	--	--	--	--	38	37	41	40	41	41	--	--	47	46	52	51	54	52	61	59	57	57	53	53
29.....	--	--	--	--	39	38	40	40	--	--	--	--	47	46	52	51	55	53	61	59	59	56	53	52
30.....	--	--	--	--	40	39	41	40	--	--	--	--	48	46	51	50	54	53	61	60	60	60	58	52
31.....	49	48	--	--	40	40	42	41	--	--	--	--	--	--	52	49	--	--	61	60	61	60	--	--
Average.....	--	--	--	--	39	38	41	41	--	--	--	--	--	--	52	50	53	51	61	58	62	60	58	58

COWLITZ RIVER BASIN--Continued
TOUTLE RIVER NEAR SILVER LAKE, WASH.

LOCATION.--Temperature recorder at gaging station, half a mile downstream from confluence of North and South Forks and 5 miles northeast of Silver Lake, Cowlitz County.
DRAINAGE AREA.--474 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1953.
EXTREMES, 1952-53.--Water temperatures: Maximum, 69°F Aug. 11, 12, 14, 19; minimum, 33°F Nov. 29, 30.
EXTREMES, 1950-53.--Water temperatures: Maximum, 72°F Aug. 4, 1952; minimum, 33°F Jan. 1-3, Nov. 29, 30, 1952.
REMARKS.--Records of discharge for water year October 1952 to September 1953.

Temperature (° F) of water, water year October 1952 to September 1953																								
Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1.....	58	53	48	47	38	35	40	40	45	43	41	39	46	42	47	45	51	48	--	--	--	--	58	57
2.....	58	53	47	44	39	38	43	40	44	44	41	39	46	42	48	45	52	48	--	--	--	--	58	56
3.....	58	53	46	44	39	39	42	41	44	44	42	41	46	44	54	47	51	48	--	--	--	--	63	57
4.....	58	53	48	46	40	39	41	41	44	43	44	42	45	44	56	51	49	--	--	--	--	53	56	
5.....	57	52	48	48	40	40	41	40	44	43	44	44	46	44	57	51	48	--	--	--	--	64	57	
6.....	57	52	48	46	40	40	40	39	45	44	45	44	45	43	55	50	49	--	--	--	--	62	59	
7.....	55	52	46	45	40	40	41	40	45	45	46	43	44	42	51	49	50	49	--	--	--	--	61	59
8.....	57	53	45	42	40	40	43	41	45	43	47	44	44	42	49	47	51	48	--	--	--	--	62	59
9.....	56	53	43	41	41	40	43	42	43	41	46	44	44	43	47	45	52	48	--	--	--	--	64	57
10.....	54	51	47	43	41	40	42	41	42	41	46	46	44	40	48	45	55	50	--	--	--	--	64	57
11.....	53	52	47	42	40	40	43	42	43	42	46	45	43	42	52	45	57	51	--	--	69	62	61	58
12.....	53	50	47	45	43	42	43	43	43	43	45	44	42	41	55	48	55	50	--	--	69	62	63	59
13.....	52	50	46	45	42	41	43	43	43	43	45	44	42	41	53	50	52	49	--	--	68	61	63	57
14.....	51	47	45	44	41	39	43	43	43	43	44	42	44	40	52	48	55	49	--	--	69	61	64	57
15.....	50	46	44	42	39	39	43	43	43	42	45	44	46	43	48	47	56	51	--	--	67	62	63	58
16.....	50	46	42	40	41	39	43	43	43	42	43	42	46	45	49	47	57	50	--	--	64	61	60	57
17.....	51	47	41	40	41	40	44	43	43	42	44	41	47	45	49	49	56	53	--	--	65	58	59	53
18.....	52	48	43	41	40	40	44	44	43	42	43	43	40	45	49	48	53	50	--	--	67	60	60	54
19.....	54	51	42	41	41	40	44	44	43	41	45	42	50	48	48	48	51	49	--	--	69	62	61	57
20.....	53	51	44	42	41	40	44	44	42	41	45	43	51	47	50	46	50	49	--	--	68	62	60	55
21.....	53	52	42	39	40	40	44	43	42	44	43	51	47	50	47	53	50	49	--	--	65	58	60	54
22.....	53	52	39	37	41	40	43	43	43	41	44	43	47	46	49	46	54	51	--	--	64	58	58	56
23.....	53	52	37	37	40	38	45	43	41	39	48	43	47	45	48	48	53	50	--	--	62	59	58	56
24.....	53	51	37	37	38	36	45	44	41	40	47	45	49	43	47	48	52	50	--	--	59	56	56	52
25.....	51	48	37	36	36	35	45	43	41	40	45	43	50	47	51	48	54	51	--	--	57	55	55	50
26.....	48	46	37	36	37	36	43	42	41	40	46	43	49	47	51	48	52	50	--	--	58	56	52	50
27.....	49	46	36	35	38	37	42	42	43	41	46	45	49	46	50	47	51	50	--	--	56	56	53	51
28.....	49	46	35	34	39	38	42	42	43	40	46	45	46	45	50	47	52	50	--	--	56	55	54	52
29.....	49	48	34	33	41	39	43	42	--	--	47	44	46	44	50	48	55	51	--	--	60	54	52	51
30.....	51	49	35	33	41	41	43	43	--	--	46	43	48	45	50	47	--	--	--	--	61	56	52	50
31.....	51	47	--	--	41	40	45	43	--	--	44	43	--	--	52	45	--	--	--	--	60	58	--	--
Average.....	53	50	43	41	40	39	43	42	43	42	45	43	46	44	50	47	51	48	--	--	--	--	60	55

COWLITZ RIVER BASIN--Continued

COWLITZ RIVER AT CASTLE ROCK, WASH.

LOCATION.--Temperature recorder at gaging station, at highway bridge in Castle Rock, Cowlitz County, 2½ miles downstream from Toutle River and 14 miles upstream from mouth.

DRAINAGE AREA.--2,238 square miles.

RECORDS AVAILABLE.--Water temperatures:

EXTREMES, 1952-53.--Water temperatures: Maximum, 67°F Aug. 12-16, 19-21; minimum, 34°F Nov. 28 to Dec. 1.

EXTREMES, 1950-53.--Water temperatures: Maximum, 72°F Aug. 21, 1951; minimum, freezing point on Jan. 29, 30, 1951.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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

COWLITZ RIVER BASIN--Continued
 LOCATION.--Temperature recorder at gaging station, 3 miles downstream from Gobie Creek, 3.8 miles southeast of Kelso, Cowlitz County, and 5½ miles upstream from mouth.
 DRAINAGE AREA.--119 square miles.

RECORDS AVAILABLE.--July 1950 to September 1953.
 RECORDS AVAILABLE.--Water temperatures: Maximum, 74°F Aug. 11; minimum, 34°F Nov. 24-30, Dec. 1-3.
 EXTREMES, 1950-53.--Water temperatures: Maximum, 81°F Aug. 4, 1952; minimum, 33°F Jan. 2, 1952.
 EXTREMES, 1950-53.--Water temperatures: Maximum, 81°F Aug. 4, 1952; minimum, 33°F Jan. 2, 1952.
 REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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

ABERNETHY CREEK BASIN

ABERNETHY CREEK NEAR LONGVIEW, WASH.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from mouth and 11 miles northwest of Longview, Cowlitz County.
 DRAINAGE AREA.--20.3 square miles.
 RECORDS AVAILABLE.--20.3 square miles.
 RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1953.
 EXTREMES, 1952-53.--Water temperatures: Maximum, 65°F Aug. 11, 19; minimum, 35°F Nov. 28-30.
 EXTREMES, 1950-53.--Water temperatures: Maximum, 68°F Aug. 19-21, 1950; minimum, 34°F Mar. 7, 1951.
 REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953																								
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.....	61	57	49	47	43	42	46	46	41	39	45	39	49	47	51	48	58	54	61	53	60	58		
2.....	60	54	47	44	40	39	45	43	41	46	40	49	46	40	49	46	51	49	61	53	62	58		
3.....	60	55	47	44	42	40	46	45	45	43	46	44	55	48	50	48	59	54	58	57	62	56		
4.....	59	53	49	46	44	42	45	44	46	45	44	44	43	56	49	51	48	58	54	58	56	62	58	
5.....	58	52	49	48	44	43	44	43	45	45	44	42	45	42	57	51	49	63	55	61	58	63	58	
6.....	58	52	49	47	43	42	43	42	45	45	47	42	45	41	54	51	49	64	57	60	58	61	60	
7.....	57	54	47	44	43	42	44	42	46	45	47	42	44	40	51	50	51	64	57	61	57	60	59	
8.....	58	55	45	42	43	43	44	44	46	44	47	43	44	42	51	48	53	63	58	59	57	62	59	
9.....	58	56	43	41	43	43	44	44	44	42	45	44	48	42	50	47	54	62	58	59	56	61	56	
10.....	56	52	46	43	45	43	44	43	44	42	45	44	47	41	49	46	55	64	58	63	56	61	55	
11.....	56	53	48	46	45	43	45	44	43	45	43	45	42	53	45	58	51	64	58	65	57	60	57	
12.....	57	54	48	47	45	45	44	43	45	41	45	42	55	47	56	52	63	60	64	58	61	59	51	
13.....	56	53	48	47	45	45	44	43	44	43	40	48	43	52	49	53	61	59	63	56	61	57		
14.....	53	47	46	45	43	43	45	44	43	43	42	46	41	51	50	55	60	58	64	57	62	57		
15.....	51	46	46	42	42	41	45	43	42	43	42	47	42	49	54	51	59	57	61	59	61	57		
16.....	52	48	42	41	43	41	45	43	42	43	40	47	45	51	49	56	50	63	54	61	59	59	56	
17.....	52	48	43	42	44	43	45	43	42	42	42	47	46	51	50	54	52	64	56	62	58	57	52	
18.....	53	50	43	41	43	42	46	43	41	42	42	51	45	51	50	53	51	62	59	64	59	58	52	
19.....	55	53	42	41	43	42	46	43	42	44	42	52	48	51	49	52	51	60	55	65	60	59	56	
20.....	55	54	43	42	43	43	46	43	42	43	42	52	48	51	48	51	51	61	54	63	59	59	53	
21.....	57	54	42	41	43	42	46	43	42	44	43	50	48	50	49	53	50	63	54	62	55	58	53	
22.....	54	52	41	39	43	42	46	45	43	41	44	44	49	48	47	54	51	61	58	61	56	57	57	
23.....	54	53	39	38	43	41	46	46	42	39	48	44	50	48	48	47	52	58	54	61	57	58	55	
24.....	51	49	39	39	41	40	46	46	42	40	46	43	52	44	48	47	54	51	60	53	58	56	51	
25.....	51	49	39	37	40	39	46	44	43	40	45	42	50	48	51	46	53	51	57	56	55	50		
26.....	50	46	38	36	40	39	44	43	44	43	46	42	49	48	51	48	53	51	57	54	59	56	49	
27.....	50	47	38	36	41	40	44	43	44	41	44	44	50	48	50	49	52	60	53	58	57	54	52	
28.....	49	46	36	35	41	41	44	44	41	38	46	41	49	47	53	49	54	61	57	56	54	53		
29.....	50	49	36	35	43	41	44	44	41	45	41	49	46	51	49	55	52	62	56	60	55	54	53	
30.....	52	50	37	35	44	43	45	44	41	43	41	49	47	51	48	55	52	60	53	61	56	53		
31.....	51	49	--	--	44	42	46	45	--	--	43	40	47	52	45	--	--	60	53	60	59	--	--	
Average.....	55	51	44	42	43	42	45	44	44	43	44	42	48	44	51	48	53	50	61	56	61	57	59	55

ELOKOMIN RIVER BASIN
ELOKOMIN RIVER NEAR CATHLAMET, WASH.

LOCATION.--Temperature recorder, at gaging station, 2 miles northeast of Cathlamet, Wahkiakum County, and 4 miles upstream from mouth.

DRAINAGE AREA.--8.8 square miles.

RECORDS AVAILABLE.--June 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 70°F July; minimum, 35°F Nov. 28-30, Dec. 1.

EXTREMES, 1950-53.--Water temperatures: Maximum, 73°F June 29, 1951; minimum, 35°F Jan. 3, 1952.

REMARKS.--Records of discharge for water year 1952 to September 1953 given in WSP 1286.

Temperature (°F) of water, water year October 1952 to September 1953

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

BIG CREEK BASIN
BIG CREEK NEAR KNAPPA, OREG.

LOCATION --Temperature recorder at gaging station, 0.3 mile downstream from fish hatchery, and 2½ miles south of Knappa, Clatsop County.
DRAINAGE AREA --1.9 square miles.
RECORDS AVAILABLE --Water temperatures: August 1949 to September 1953.
EXTREMES, 1949-53 --Water temperatures: Maximum, 61° F July 12, Aug. 12, 14, 15, 19, 20; minimum, 39° F Nov. 28 to Dec. 1.
EXTREMES, 1949-53 --Water temperatures: Maximum, 62° F Aug. 20, 21, 1951; minimum, 37° F Mar. 5-7, 1951, Jan. 3, 4, 1952.
REMARKS --Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Day	Temperature (°F) of water, water year October 1952 to September 1953																							
	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1.....	54	53	50	48	41	39	46	45	47	47	43	42	45	43	49	47	51	50	55	54	58	56	59	58
2.....	55	54	48	47	42	41	47	45	47	47	46	44	42	47	43	48	47	50	50	55	54	58	59	58
3.....	55	53	48	47	43	42	47	47	47	47	45	44	47	46	52	48	50	49	55	55	57	57	59	58
4.....	53	49	48	45	43	47	46	47	46	45	44	47	45	53	50	50	50	49	56	54	57	56	59	58
5.....	54	53	50	49	45	45	46	45	46	46	46	45	47	46	55	52	50	49	58	55	57	57	60	59
6.....	54	52	50	49	45	45	44	47	46	48	45	46	45	55	53	50	49	59	57	57	57	60	59	59
7.....	54	53	49	47	46	45	46	45	47	47	46	44	47	43	51	50	50	59	58	57	57	59	59	59
8.....	53	53	47	47	46	46	48	46	47	45	47	45	46	46	51	50	50	59	58	57	57	59	59	58
9.....	54	53	47	47	46	46	48	47	45	44	47	46	46	46	50	48	52	50	59	58	59	57	59	58
10.....	54	53	49	47	47	46	47	47	45	44	46	46	48	45	49	48	53	52	60	58	59	57	59	57
11.....	54	53	49	49	47	47	48	47	45	44	46	46	48	46	51	47	55	52	60	58	60	58	59	58
12.....	54	53	49	48	47	48	48	45	44	46	45	46	45	52	49	55	53	61	59	61	59	59	59	59
13.....	54	52	49	48	48	48	48	46	45	45	43	46	46	52	50	53	52	59	59	60	58	59	58	58
14.....	53	51	48	48	47	48	48	46	44	44	43	47	45	51	50	54	52	59	58	61	59	58	57	58
15.....	51	50	48	47	48	47	48	48	44	44	44	44	48	46	50	49	54	53	59	58	61	60	59	58
16.....	51	50	47	45	47	47	48	48	45	43	45	44	48	48	50	49	55	53	59	56	60	59	59	58
17.....	51	50	45	45	47	47	46	46	45	44	45	44	46	46	50	49	58	53	60	58	59	58	58	57
18.....	51	51	46	45	47	46	46	44	44	44	43	44	50	47	50	50	53	52	60	58	60	59	57	55
19.....	53	51	46	45	46	46	46	44	44	44	43	44	51	49	50	50	53	52	58	57	61	60	58	56
20.....	53	52	46	46	46	46	46	46	47	44	43	44	51	50	50	49	52	52	58	57	61	60	58	56
21.....	53	52	46	45	46	46	47	47	45	44	45	44	51	50	49	52	52	59	56	60	58	57	57	56
22.....	53	52	45	43	46	45	47	47	45	44	45	45	51	50	49	49	53	52	59	58	59	57	57	56
23.....	53	53	43	43	46	46	48	47	44	43	47	45	51	49	49	49	53	52	58	56	58	58	56	53
24.....	53	52	43	41	46	45	48	48	43	42	47	46	51	49	49	53	53	56	56	58	57	56	57	54
25.....	52	50	41	41	45	44	48	46	44	42	46	45	51	50	48	53	53	57	56	57	57	57	54	53
26.....	51	50	41	40	44	44	46	45	44	43	47	45	51	50	51	50	53	53	56	54	58	57	53	52
27.....	51	50	40	40	44	44	45	45	44	44	47	46	51	50	51	51	53	53	57	54	58	56	54	52
28.....	50	50	40	39	44	44	46	43	45	43	47	46	50	48	51	50	53	53	57	56	58	56	54	54
29.....	51	50	39	38	46	44	46	46	--	--	46	45	50	48	51	50	54	53	58	56	58	57	54	54
30.....	52	51	39	38	46	46	47	46	--	--	46	46	49	46	51	50	54	53	58	56	58	58	54	54
31.....	52	50	--	--	46	46	47	--	--	--	46	44	--	--	51	48	--	--	56	56	58	58	--	--
Average.....	53	52	46	45	46	45	47	47	45	44	46	45	48	47	51	49	53	52	58	57	59	58	58	56

GRAYS RIVER BASIN
WEST BRANCH GRAYS RIVER NEAR GRAYS RIVER, WASH.

LOCATION --Temperature recorder at gaging station, 1 mile upstream from mouth and 3 1/4 miles northeast of Grays River, Wahkiakum County.
DRAINAGE AREA--16.3 square miles
RECORDS AVAILABLE--June 1950 to September 1953.
EXTREMES, 1950-53.--Water temperatures: Maximum, 66°F Aug. 11; minimum, 39°F Nov. 28.
EXTREMES, 1950-53.--Water temperatures: Maximum, 66°F Aug. 11, 1953; minimum, 36°F Feb. 20, 1952.
REMARKS --Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Day	Temperature (°F) of water, water year October 1952 to September 1953											
	October		November		December		January		February		March	
	max	min	max	min	max	min	max	min	max	min	max	min
1.....	57	55	50	49	42	40	45	45	--	--	--	--
2.....	57	56	50	48	42	43	45	45	--	--	--	--
3.....	57	55	51	49	44	43	45	45	46	46	--	--
4.....	57	55	52	51	45	44	--	--	46	46	--	--
5.....	57	55	52	50	45	45	--	--	46	46	--	--
6.....	56	54	52	49	45	45	--	--	46	46	--	--
7.....	56	55	50	47	45	45	--	--	46	46	--	--
8.....	56	56	49	47	45	45	46	45	46	45	--	--
9.....	56	56	50	48	45	45	46	46	45	44	--	--
10.....	56	55	51	50	45	45	46	46	44	44	--	--
11.....	56	55	51	51	45	45	47	46	44	44	--	--
12.....	56	55	51	50	46	45	47	47	44	44	--	--
13.....	56	53	50	50	46	46	47	47	45	44	--	--
14.....	54	52	50	48	46	46	47	47	45	44	--	--
15.....	53	51	50	48	46	46	47	47	45	43	--	--
16.....	54	52	48	47	46	46	47	46	43	43	--	--
17.....	54	51	48	48	46	46	47	47	43	43	--	--
18.....	54	53	48	47	46	46	47	47	43	43	--	--
19.....	55	54	47	46	46	46	47	47	--	--	--	--
20.....	55	54	47	45	46	45	47	47	--	--	--	--
21.....	55	54	45	45	45	45	47	47	--	--	--	--
22.....	54	53	45	43	45	45	47	47	--	--	--	--
23.....	55	54	44	43	45	45	47	47	--	--	--	--
24.....	55	53	43	42	45	44	47	47	--	--	--	--
25.....	53	51	42	41	44	43	47	47	--	--	--	--
26.....	53	51	41	40	43	43	47	47	--	--	--	--
27.....	53	52	41	40	43	43	47	47	--	--	--	--
28.....	53	51	41	39	44	43	48	47	--	--	--	--
29.....	53	53	40	40	44	44	47	47	--	--	--	--
30.....	53	52	--	--	45	44	--	--	--	--	--	--
31.....	52	50	--	--	45	45	--	--	--	--	--	--
Average.....	55	53	47	46	45	45	--	--	--	--	--	--

YOUNGS RIVER BASIN

NORTH FORK KLASKANINE RIVER NEAR OLNEY, OREG.

LOCATION.--Temperature recorder at gaging station, half a mile downstream from Barth Falls, 2 miles upstream from North Fork of North Fork, and 4 miles southeast of Olney, Clatsop County.

DRAINAGE AREA.--14.0 square miles.

RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1953.

EXTREMES, 1952-53.--Water temperatures: Maximum, 63°F Aug. 18; minimum, 34°F Nov. 28.

EXTREMES, 1950-53.--Water temperatures: Maximum, 65°F July 14, Aug. 4, 1952; minimum, 34°F Nov. 28, 1952.

REMARKS.--Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Temperature (°F) of water, water year October 1952 to September 1953

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	54	49	46	--	--	--	--	48	47	43	40	46	42	49	46	51	49	55	53	59	55	58	58
2.....	58	55	45	45	--	--	--	--	47	47	43	41	48	43	49	46	51	50	55	54	58	57	60	58
3.....	57	54	47	46	--	--	--	--	48	47	45	43	47	46	54	50	54	53	54	57	57	57	59	57
4.....	58	54	49	47	--	--	--	--	47	47	45	44	47	45	56	50	50	48	54	57	54	57	61	57
5.....	58	54	50	49	--	--	--	--	47	47	46	45	47	46	53	50	50	48	59	54	58	57	60	59
6.....	58	54	49	47	--	--	--	--	48	47	47	45	47	44	56	53	50	49	61	56	58	58	60	59
7.....	56	55	47	46	--	--	--	--	48	47	47	44	46	44	53	51	51	50	61	57	59	58	59	59
8.....	56	55	46	45	--	--	--	--	47	45	49	44	46	45	51	49	52	50	60	58	59	58	61	59
9.....	57	55	47	46	--	--	--	--	47	46	45	44	47	45	49	48	53	50	60	58	59	58	60	57
10.....	57	56	49	47	--	--	--	--	46	46	44	44	47	46	48	44	49	47	60	58	60	57	60	57
11.....	57	56	49	49	--	--	--	--	48	46	45	44	47	46	52	46	56	52	60	58	62	58	60	59
12.....	57	55	49	48	--	--	--	--	47	47	45	44	46	45	54	48	56	53	60	59	62	59	61	59
13.....	55	52	48	48	--	--	--	--	47	47	45	44	45	43	55	53	50	55	52	59	58	61	57	59
14.....	53	50	48	48	--	--	--	--	47	47	45	44	44	42	46	45	51	50	55	52	59	58	62	59
15.....	51	49	48	45	--	--	--	--	47	47	44	43	44	43	48	45	50	49	55	54	59	57	61	58
16.....	52	50	45	43	--	--	--	--	47	45	45	44	49	48	50	49	56	53	59	55	61	59	59	57
17.....	53	50	44	43	--	--	--	--	47	45	44	45	43	49	48	50	49	56	54	60	57	61	59	57
18.....	52	51	44	44	--	--	--	--	47	44	43	44	44	52	47	51	50	54	53	60	57	63	60	54
19.....	54	52	44	43	--	--	--	--	44	43	46	44	52	50	51	50	53	52	57	56	62	59	58	56
20.....	54	54	44	43	--	--	--	--	45	44	45	44	51	50	50	48	52	52	56	55	62	60	58	53
21.....	56	54	43	41	--	--	--	--	45	44	45	44	51	50	50	49	53	52	57	54	60	57	56	54
22.....	55	54	41	39	--	--	--	--	45	43	45	45	51	50	50	48	53	52	58	57	60	57	56	56
23.....	54	54	39	38	--	--	--	--	43	41	49	46	51	49	49	48	53	52	57	55	59	58	57	55
24.....	54	52	38	37	--	--	--	--	44	41	48	46	53	46	49	48	52	52	56	55	58	57	56	53
25.....	42	49	37	36	--	--	--	--	44	41	47	45	53	51	51	47	53	52	55	55	57	57	55	53
26.....	50	49	36	36	--	--	--	--	45	42	48	45	52	51	52	50	53	52	55	53	57	57	53	51
27.....	50	49	36	35	--	--	--	--	46	45	46	47	52	50	51	50	53	52	57	54	57	57	55	52
28.....	50	48	35	34	--	--	--	--	46	46	45	47	51	47	52	50	53	52	57	55	57	57	55	55
29.....	51	49	--	--	--	--	--	--	46	46	45	50	47	52	50	55	53	56	57	57	57	55	54	54
30.....	52	51	--	--	--	--	--	--	47	46	45	50	47	51	49	55	53	58	57	57	57	57	55	54
31.....	52	49	--	--	--	--	--	--	48	47	--	45	43	--	51	47	--	--	59	56	58	58	--	--
Average.....	54	52	44	43	--	--	--	--	45	44	46	44	49	47	51	49	53	51	58	56	59	58	58	56

ROGUE RIVER BASIN
ROGUE RIVER AT GRANTS PASS, OREG.

LOCATION --At bridge on U. S. Highway 99 at Grants Pass, Josephine County, and 0.6 mile downstream from gaging station.
DRAINAGE AREA --2 420 square miles approximately.
RECORDS AVAILABLE --Chemical analyses: January to September 1953.

Water temperatures: January to September 1953.

EXTREMES: January to September 1953: --Dissolved solids: Maximum, 85 ppm Mar. 21-31; minimum, 63 ppm July 1-10.

Hardness: Maximum, 42 ppm Mar. 21-31; minimum, 28 ppm July 1-10.

Specific conductance: Maximum daily, 105 micromhos Mar. 22; minimum daily, 58.5 micromhos Jan. 19.

Water temperatures: Maximum observed, 69° F Aug. 14.

REMARKS: --Values reported for dissolved solids are residue on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1952 to September 1953 given in WSP 1288.

Chemical analyses, in parts per million, January to September 1953

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO ₃		Percent 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					
Jan. 5-31, 1953...	12,690	24	0.19	8.1	4.2	4.6	1.1	44	2.8	2.2	0.6	1.3	0.05	80	0.11	2,740	37	1	20	0.3	88.3	7.2	35
Feb. 1-10.....	15,560	22	0.15	7.8	3.8	4.0	1.1	42	2.3	1.5	0.5	1.0	--	74	0.10	3,110	35	1	19	0.3	77.3	7.6	30
Feb. 11-28.....	5,886	26	0.08	8.5	4.4	4.6	1.1	49	3.0	2.1	0.5	0.9	0.06	77	0.10	1,230	39	0	20	0.3	91.0	7.4	20
Mar. 1-10.....	3,608	29	0.08	9.0	3.6	5.6	1.4	52	3.2	2.4	0.3	0.8	--	80	0.11	779	37	0	24	0.4	96.3	7.6	6
Mar. 11-20.....	3,809	29	0.08	8.8	3.6	5.6	1.4	52	2.9	2.6	0.3	0.7	0.06	79	0.11	812	37	0	24	0.4	94.4	7.4	8
Mar. 21-31.....	5,799	24	0.21	9.6	4.3	5.3	1.5	52	3.2	2.6	0.3	1.3	--	81	0.12	1,330	42	0	21	0.4	93.9	7.0	25
Apr. 1-10.....	3,960	26	0.10	8.6	3.5	5.3	1.5	50	2.7	2.6	0.4	1.1	--	78	0.11	834	36	0	23	0.4	91.8	7.2	25
Apr. 11-20.....	3,091	26	0.07	8.6	3.4	5.3	1.5	52	3.4	2.6	0.3	0.6	0.07	77	0.10	643	35	0	24	0.4	94.4	7.4	18
Apr. 21-30.....	4,655	22	0.07	7.4	2.9	3.7	1.2	42	3.5	2.2	0.3	0.6	--	69	0.09	869	30	0	20	0.3	79.9	6.7	15
May 1-10.....	4,037	22	0.05	7.4	2.6	4.2	1.2	40	3.0	1.8	0.1	0.5	--	64	0.09	698	29	0	23	0.3	73.8	6.8	17
May 11-20.....	4,155	23	0.04	7.6	2.9	4.2	1.2	44	3.3	1.9	0.2	0.5	0.04	69	0.09	776	31	0	22	0.3	78.2	6.9	10
May 21-31.....	8,718	23	0.20	8.8	4.5	4.4	1.4	50	5.1	1.9	0.4	0.7	--	81	0.11	1,910	40	0	18	0.3	87.2	7.2	40
June 1-10.....	7,168	22	0.11	7.8	3.5	4.4	1.1	46	3.3	2.2	0.4	0.4	--	71	0.10	1,370	34	0	21	0.3	82.1	7.0	22
June 11-20.....	5,817	22	0.12	7.0	3.3	3.9	1.1	40	2.9	1.7	0.3	0.5	0.05	65	0.09	1,020	31	0	21	0.3	72.6	6.9	28
June 21-30.....	3,957	22	0.06	7.2	3.1	3.9	1.4	39	2.3	2.1	0.3	0.5	--	64	0.09	684	31	0	21	0.3	71.1	7.0	20
July 1-10.....	2,978	26	0.05	6.2	3.0	3.6	1.5	36	2.5	1.8	0.3	0.8	--	63	0.09	507	28	0	21	0.3	69.9	6.9	28
July 11-20.....	2,278	28	0.11	7.0	3.0	3.9	1.5	38	3.1	2.0	0.1	0.6	0.02	69	0.09	424	30	0	21	0.3	71.9	7.1	10
July 21-31.....	1,801	31	0.12	6.9	3.2	4.1	1.6	43	2.5	1.8	0.2	0.7	--	74	0.10	360	30	0	22	0.3	77.8	7.0	25
Aug. 1-10.....	1,637	31	0.12	8.0	3.1	4.3	1.7	46	4.0	2.4	0.1	0.3	--	79	0.11	349	33	0	21	0.3	82.1	6.8	5
Aug. 11-20.....	1,518	31	0.08	7.8	3.2	4.6	1.7	46	3.3	2.7	0.1	0.5	0.06	74	0.10	303	33	0	22	0.4	83.3	7.0	10
Aug. 21-31.....	1,723	31	0.05	8.6	3.3	4.8	1.7	48	3.3	2.7	0.1	0.4	--	79	0.11	368	35	0	22	0.4	88.4	6.9	10
Sept. 1-10.....	1,650	31	0.11	9.0	3.4	5.0	1.7	52	3.1	3.3	0.1	0.4	--	83	0.11	370	36	0	22	0.4	96.1	7.1	10
Sept. 11-20.....	1,485	34	0.03	9.0	3.9	5.5	1.6	52	2.6	2.6	0.2	0.5	0.04	80	0.11	321	38	0	23	0.4	93.4	7.1	11
Sept. 21-30.....	1,549	32	0.04	8.8	3.4	5.5	1.6	51	2.2	2.7	0.2	0.6	--	81	0.11	339	36	0	24	0.4	93.4	7.0	15
Weighted average	5,517	25	0.13	8.1	3.8	4.5	1.3	45	3.0	2.1	0.4	0.9	--	76	0.10	1,050	36	0	21	0.3	84.8	--	--

a Represents 67 percent of runoff for water year October 1952 to September 1953.

ROGUE RIVER BASIN--Continued

ROGUE RIVER AT GRANTS PASS, OREG.--Continued

Temperature (°F) of water, January to September 1953
 /Once-daily measurement at approximately 11:45 a. m. /

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

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