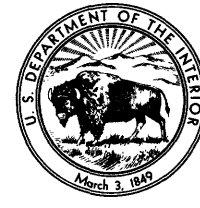
Quality of Surface Waters of the United States 1954

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*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1353

Prepared in cooperation with the States of California and Utah, U.S. Bureau of Reclamation, and with other agencies



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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of California and Utah, U. S. Bureau of Reclamation anc other agencies, by personnel of the Water Resources Division under the direction of:

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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1954

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, 1953, to September 30, 1954. 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, water temperature, sediment loads, and other pertinent data.

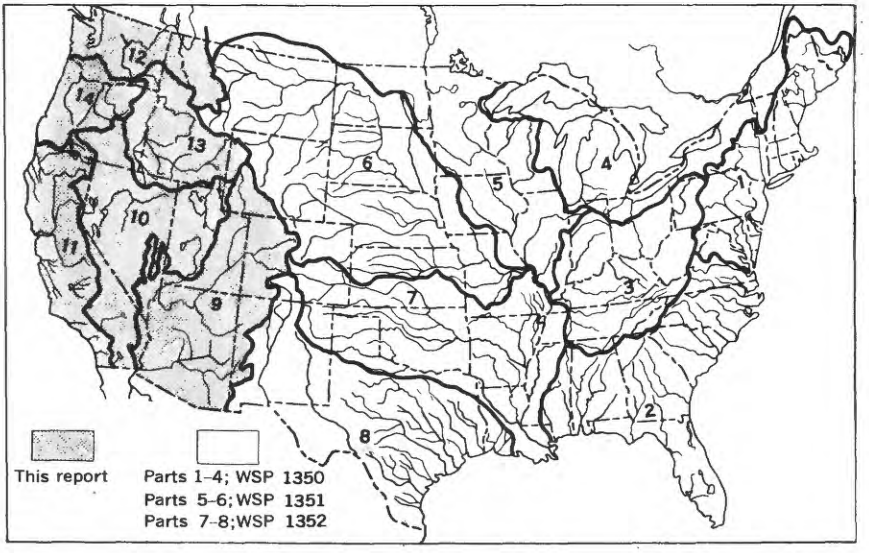

Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1954. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

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, 1954, 157 regular sampling stations on 93 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 at 108 of the regular sampling stations including 55 stations supervised by the Surface Water Branch. 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 page 19.

Quantities of suspended sediment are reported for 18 stations during the year ended September 30, 1954. 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 18 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

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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.). 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.

Reports giving chemical analyses, suspended-sediment loads, and water temperatures of samples of surface water made by the Geological Survey have been published yearly since 1941. Records for many of the stations listed in this report for the water years ending September 30, 1941-1954 are listed below.

Numbers of water-supply papers containing records for Parts 9-14, 1941-1954

Year	WSP	Year	WSP	Year	WSP	Year	WSP
1941	942	1945	1030	1949	1163	1953	1293
1942	950	1946	1050	1950	1189	1954	1353
1943	970	1947	1102	1951	1200	--	--
1944	1022	1948	1133	1952	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 continued in cooperation with the State of California. Financial assistance also was 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 continued in cooperation with the State of Utah. Investigations of sediment characteristics of the Green River near Palmer, Wash. were continued in cooperation 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. Investigations 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 chemists as follows: In Arizona and New Mexico - J. M. Stow; in Colorado and Wyoming (Colorado River basin), Nevada, Utah, and Idaho - J. G. Connor; in Washington and Oregon, - H. A. Swenson; in California - I. W. Walling, 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 Building University of N. Mex. Post Office Box 4217 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 Ave. Sacramento, Calif.	The Great Basin (California) Pacific slope basins in California

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District office	Drainage basin
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.

LITERATURE CITED

American Public Health Association, 1946, Standard methods for the examination of water and sewage, 9th ed., p. 1-112.

Collins, W. D., 1928, Notes on practical water analysis: U. S. Geol. Survey Water Supply Paper 596-H.

Dean, H. T., 1936, Chronic endemic dental fluorosis: Am. Med. Assoc. Jour., v. 107, p. 1269-1272.

Faucett, R. L., and Miller, H. C., 1946, Methemoglobinemia occurring in infants fed milk diluted with well waters of high nitrate content: Jour. Pediatrics, v. 29, p. 593.

Hazen, Allen, 1892, A new color standard for natural waters: Am. Chem. Jour., v. 12, p. 427-428.

Kilmer, V. J. and Alexander, L. T., 1949, Methods of making mechanical analyses of soils: Soil Sci., v. 68, p. 15-24.

Lane, E. W., et al., 1947, Report of the Subcommittee on Terminology: Am. Geophys. Union Trans., v. 28, p. 937.

Magistad, O. C., and Christiansen, J. E., 1944, Saline soils, their nature and management: U. S. Dept. Agriculture Circ. 707, p. 8-9.

Maxcy, Kenneth F., 1950, Report on the relation of nitrate concentrations in well waters to the occurrence of methemoglobinemia: Natl. Research Council, Bull., Sanitary Engineer, p. 265, App. D.

U. S. Inter-agency Report 7, 1943, A stuay of methods used in measurement and analysis of sediment loads in streams, a study of new methods for size analysis of suspended sediment samples, p. 82-90; U. S. Engineer Office, St. Paul, Minn.

U. S. Inter-agency Report 8, 1948, A study of methods used in measurement and analysis of sediment loads of streams, measurement of the sediment discharge of streams, p. 70-76; U. S. Engineer Office, St. Paul, Minn.

U. S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U. S. Dept. Agriculture Handbook 60, p. 1-60.

Waring, F. Holman, 1949, Significance of nitrates in water supplies: Jour. Am. Water Works Assoc., v. 72, no. 2.

Wilcox, L. V., 1948, Explanation and interpretation of analyses of irrigation waters: U. S. Dept. Agriculture Circ. 784, p. 6.

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 1954.
Water temperatures: April 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 116 ppm June 25-30; minimum, 68 ppm May 11-20.
Hardness: Maximum, 75 ppm July 1-10; minimum, 37 ppm May 11-20.
Specific conductance: Maximum daily, 176 micromhos June 28, 29; minimum, 85.3 micromhos May 17-19.
Water temperatures: Maximum observed, 72°F July 15; minimum observed, freezing point on many days from December to March.
EXTREMES, 1947-54.--Dissolved solids (1947-50, 1952-54): Maximum, 116 ppm June 25-30, 1954; minimum 38 ppm June 21-30, 1947.
Hardness (1947-50, 1952-54): Maximum, 75 ppm July 1-10, 1954; 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 (1949-54): Maximum observed, 72°F July 27, 1953, July 15, 1954; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953...	67.9	14	0.05	17	3.5	6.0	1.9	78	5.4	1.0	0.3	0.5	--	89	0.12	16.3	57	0	18	0.3	139	7.4	10
Oct. 11-20.....	76.1	14	.06	17	3.8	6.1	2.0	76	5.4	1.1	.3	.4	0.07	90	.12	18.5	58	0	18	.3	136	7.6	7
Oct. 21-31.....	82.8	15	.08	17	3.7	6.6	2.0	78	5.4	1.2	.3	.4	--	91	.12	20.3	58	0	19	.4	138	7.7	10
Nov. 1-5, 9.....	87.0	14	.06	16	2.4	6.8	1.5	79	5.4	.9	.4	.4	--	90	.12	21.1	50	0	22	.4	137	7.5	8
Dec. 5-10.....	75.3	14	.10	16	2.5	6.6	1.8	76	5.5	1.4	.6	.6	--	90	.12	18.3	50	0	21	.4	137	7.2	8
Dec. 11-15.....	86.0	14	.09	16	2.8	6.4	1.9	74	4.9	.8	.6	.9	.12	90	.12	20.9	51	0	21	.4	134	7.2	8
Feb. 12-20, 1954.	79.2	13	.08	15	3.3	6.3	1.3	66	6.3	1.8	.3	.2	.01	81	.11	17.3	51	0	21	.4	125	7.2	7
Feb. 21-28.....	81.9	12	.13	16	3.5	6.6	1.3	68	6.7	2.2	.2	.1	--	82	.11	18.1	54	0	20	.4	124	7.4	7
Mar. 1-10.....	77.7	12	.05	14	3.3	6.6	1.3	68	6.2	1.5	.4	.6	--	82	.11	17.2	48	0	22	.4	127	7.4	12
Mar. 11-20.....	90.2	14	.05	15	3.1	6.6	1.6	67	5.9	1.7	.3	.5	.03	82	.11	20.0	50	0	22	.4	125	7.3	10
Mar. 21-31.....	88.9	12	.08	16	3.4	7.4	1.0	70	7.4	3.2	.3	.2	--	86	.12	20.6	54	0	23	.4	132	7.5	10
Apr. 1-10.....	177	10	.10	16	3.4	7.0	1.9	68	8.6	1.8	.3	.4	--	85	.12	40.6	54	0	21	.4	130	7.3	18
Apr. 11-20.....	190	11	.18	17	3.6	8.6	1.3	74	8.9	2.4	.5	.2	.11	94	.13	48.2	57	0	24	.5	142	7.5	25
Apr. 21-30.....	163	12	.09	14	2.9	5.3	1.5	61	6.3	1.6	.3	.4	--	80	.11	35.2	47	0	19	.3	114	7.4	20
May 1-10.....	182	10	.06	13	2.6	4.3	1.4	53	5.2	1.2	.3	.5	--	69	.09	33.9	43	0	17	.3	100	7.2	14
May 11-20.....	239	9.7	.08	11	2.4	3.9	1.2	48	6.0	1.0	.3	.6	.07	68	.09	43.9	37	0	18	.3	90.7	7.2	25
May 21-31.....	221	12	.07	15	3.1	5.3	1.5	64	6.3	1.2	.3	.5	--	85	.12	50.7	50	0	18	.3	119	7.4	30
June 1-10.....	192	14	.05	19	3.6	6.9	1.2	85	5.8	.8	.3	.5	.04	102	.14	52.9	62	0	19	.4	150	7.5	25
June 11-18.....	180	14	.05	21	3.7	7.3	1.6	90	5.3	1.1	.4	.5	--	105	.14	51.0	68	0	19	.4	156	7.3	15
June 25-30.....	154	18	.05	23	4.1	8.0	1.8	102	5.4	1.1	--	.6	--	116	.16	48.2	74	0	19	.4	174	7.2	25

July 1, 10, 1954 ...	136	13	.06	23	4.2	7.3	1.6	100	4.6	1.2	.4	.5	--	110	0.15	40.4	75	0	17	.4	171	7.4	18
July 11-20.....	133	14	.07	22	4.3	7.6	1.6	102	4.4	.9	.3	.5	0.04	112	.15	40.2	73	0	18	.4	170	7.5	22
July 21-31.....	152	15	.08	22	4.2	7.4	1.8	98	5.0	.6	.3	.3	--	109	.15	44.7	72	0	18	.4	168	7.5	10
Aug. 1-10.....	89.8	14	.09	21	4.2	7.7	1.8	94	4.5	.9	.4	.4	--	104	.14	25.2	70	0	19	.4	161	7.7	10
Aug. 11-20.....	88.6	13	.07	20	3.9	6.7	1.4	88	4.4	.8	.3	.3	.03	96	.13	23.0	66	0	18	.4	152	7.6	10
Aug. 21-31.....	71.0	12	.05	18	3.6	7.5	1.4	86	5.4	1.1	.5	.3	--	92	.13	17.0	60	0	21	.4	149	7.6	10
Sept. 1-10	52.4	13	.03	21	3.7	8.8	1.5	94	5.7	1.2	.4	.4	--	103	.14	14.6	68	0	22	.5	160	7.4	10
Sept. 11-20.....	48.3	13	.11	20	3.8	8.1	1.7	94	5.5	1.4	.4	.3	.04	102	.14	13.3	66	0	21	.4	161	7.3	10
Sept. 21-30.....	63.2	14	.09	19	3.5	7.2	2.4	84	7.2	1.8	.5	.5	--	101	.14	17.2	62	0	19	.4	152	7.3	10
Weighted average.	a 119	13	0.08	17	3.4	6.6	1.5	76	6.0	1.3	0.3	0.4	--	91	0.12	29.2	56	0	20	0.4	137	--	--

a Represents 80 percent of runoff for water year October 1953 to September 1954.

COLORADO RIVER MAIN STEM--Continued

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

Temperature (°F) of water, water year October 1953 to September 1954

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

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 bridge, 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 1954.
Water temperatures: April 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,040 ppm Oct. 1-10; minimum, 143 ppm May 21-27.
Specific conductance: Maximum daily, 1,560 micromhos Oct. 12, 14; minimum daily, 191 micromhos May 19, 21.
Water temperatures: Maximum observed, 72°F on several days during July and August; minimum observed, 33°F on several days during December.
EXTREMES, 1947-54.--Dissolved solids: Maximum, 1,370 ppm Aug. 11-12, 1952; minimum, 106 ppm June 11-20, 1953.
Hardness (1947-50): Maximum, 511 ppm Sept. 21-30, 1948; minimum, 78 ppm June 1-10, 1948.
Specific conductance: Maximum daily, 1,850 micromhos Aug. 6, 1949; minimum daily, 156 micromhos June 4, 1948.
Water temperatures (1949-54): Maximum observed, 76°F Aug. 24, 1949; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1343. 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 1953 to September 1954

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)	Chlorids (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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	125	--		--	--	--	--	--	--	--		--	--	1,040	1.41	351	--	--	--	--	1,500	--
Oct. 11-20	138	13		183	29	108	--	224	387	150		2.0	0.07	1,030	1.40	384	580	396	29	2.0	1,490	7.9
Oct. 21-31	240	--		--	--	--	--	--	--	--		--	--	831	1.13	538	--	--	--	--	1,240	--
Nov. 1-10	256	--		--	--	--	--	--	--	--		--	--	794	1.08	549	--	--	--	--	1,200	--
Nov. 11-20	242	11		135	23	83	--	190	274	123		1.1	--	782	1.06	511	430	274	29	1.7	1,180	8.1
Nov. 21-30	232	--		--	--	--	--	--	--	--		--	--	764	1.04	479	--	--	--	--	1,160	--
Dec. 1-10	213	--		--	--	--	--	--	--	--		--	--	766	1.04	441	--	--	--	--	1,160	--
Dec. 11-20	208	13		136	23	87	--	190	277	126		1.6	.05	803	1.09	451	432	276	30	1.8	1,200	7.9
Dec. 21-31	163	13		141	22	87	--	195	284	128		1.6	.07	824	1.12	363	442	282	30	1.8	1,230	8.0
Jan. 1-10, 1954	178	12		128	23	84	--	183	257	124		1.6	.06	762	1.04	366	412	262	31	1.8	1,150	7.9
Jan. 11-20	173	11		133	17	91	--	180	259	130		1.5	.09	760	1.03	355	404	256	33	2.0	1,160	7.9
Jan. 21-31	172	10		127	20	95	--	177	255	138		1.0	.09	770	1.05	258	398	253	34	2.1	1,180	7.9
Feb. 1-10	163	11		126	21	87	--	175	261	130		1.7	--	744	1.01	327	400	256	32	1.9	1,160	7.7
Feb. 11-20	162	9.9		124	21	82	--	176	257	120		1.4	--	724	.98	317	394	250	31	1.8	1,120	7.9
Feb. 21-28	156	--		--	--	--	--	--	--	--		--	--	747	1.02	315	--	--	--	--	1,150	--
Mar. 1-10	148	--		--	--	--	--	--	--	--		--	--	778	1.06	311	--	--	--	--	1,220	--
Mar. 11-20	147	9.3		118	21	94	--	176	250	140		1.3	.05	740	1.01	294	382	238	35	2.1	1,160	8.0
Mar. 21-31	149	--		--	--	--	--	--	--	--		--	--	732	1.00	294	--	--	--	--	1,120	--

EAGLE RIVER AT GYPSUM, COLO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954	181	--		--	--	--	--	--	--	--		--	--	590	0.80	288	--	--	--	--	921	--
Apr. 11-17	232	9.2		75	14	54	2.1	133	143	71		0.8	0.07	448	.61	281	245	136	32	1.5	702	7.8
Apr. 18-30	402	7.7		50	9.1	23	1.9	105	83	32		.8	.05	270	.37	293	163	77	23	.8	456	7.6
May 1-9	416	--		--	--	--	--	--	--	--		--	--	270	.37	303	--	--	--	--	430	--
May 10-20	1,010	5.9		30	4.7	10	1.1	70	39	14		1.0	.05	149	.20	406	94	37	18	.4	246	7.6
May 21-27	1,281	--		--	--	--	--	--	--	--		--	--	143	.19	495	--	--	--	--	231	--
May 28-31, June 1-10	760	6.1		41	9.0	20	1.3	87	69	30		.5	.05	233	.32	478	140	68	24	.7	375	7.8
June 11-20	763	6.6		48	7.6	23	--	102	77	33		.8	.03	246	.33	507	151	67	25	.8	421	7.4
June 21-29	744	6.5		50	7.9	23	--	95	82	33		.8	.07	254	.35	510	158	80	24	.8	429	7.4
June 30, July 1-10	406	8.0		81	13	43	--	135	154	60		.8	.05	422	.57	463	254	143	27	1.2	687	7.6
July 11-20	322	13		113	22	55	--	200	215	77		1.2	.09	610	.83	530	375	211	24	1.2	933	7.4
July 21-31	247	9.8		112	16	64	--	171	207	92		1.6	.05	592	.81	395	343	203	29	1.5	930	7.8
Aug. 1-10	148	--		--	--	--	--	--	--	--		--	--	772	1.05	308	--	--	--	--	1,160	--
Aug. 11-20	175	12		154	23	87	--	210	313	123		1.4	.08	836	1.14	395	478	306	49	1.7	1,240	7.9
Aug. 21-31	159	--		--	--	--	--	--	--	--		--	--	884	1.20	380	--	--	--	--	1,290	--
Sept. 1-10	161	--		--	--	--	--	--	--	--		--	--	911	1.24	396	--	--	--	--	1,320	--
Sept. 11-20	173	12		149	22	90	--	200	300	128		1.1	.06	817	1.11	382	462	298	30	1.8	1,230	8.0
Sept. 21-24	155	--		--	--	--	--	--	--	--		--	--	886	1.20	371	--	--	--	--	1,300	--
Sept. 25-30	266	--		--	--	--	--	--	--	--		--	--	515	.71	370	--	--	--	--	770	--
Weighted average	305	--		--	--	--	--	--	--	--		--	--	479	0.65	394	--	--	--	--	.740	--

EAGLE RIVER BASIN--Continued

EAGLE RIVER AT GYPSUM, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.

LOCATION.--At Shoshone powerplant, 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, approximately (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1941 to September 1954.
Water temperatures: May 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 626 ppm Dec. 26-31; minimum, 219 ppm Apr. S.
Hardness: Maximum, 2S8 ppm Nov. 11-18; minimum, 122 ppm May 11-20.
Specific conductance: Maximum daily, 1,160 micromhos Dec. 26; minimum daily, 304 micromhos May 22.
Water temperatures: Maximum observed, 71°F July 31; minimum observed, freezing point on many days during December to March.
EXTREMES, 1941-54.--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, 11-20, 1942.
Specific conductance: Maximum daily, 2,260 micromhos Aug. 10, 1947; minimum daily, 153 micromhos May 24, 1948.
Water temperatures (1949-54): Maximum observed, 71°F July 31, 1954; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1343. No appreciable inflow between Shoshone powerplant and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953	1,102	--	--	59	11	69	--	--	--	--	--	--	--	426	0.58	1,270	194	--	44	2.2	726	--	--
Oct. 11-20	1,095	12	0.04	61	15	70	2.9	130	112	102	0.2	0.7	0.04	442	.60	1,310	214	107	41	2.1	743	7.8	7
Oct. 21-31	935	--	--	81	14	72	--	--	--	--	--	--	--	532	.72	1,340	258	--	38	1.9	852	--	--
Nov. 1-10	815	--	--	88	16	90	--	--	--	--	--	--	--	610	.83	1,340	286	--	41	2.3	991	--	--
Nov. 11-18	856	--	--	86	18	89	--	--	--	--	--	--	--	610	.83	1,410	288	--	40	2.3	991	--	--
Nov. 19-20	1,285	--	--	60	11	60	--	--	--	--	--	--	--	394	.54	1,370	194	--	40	1.9	653	--	--
Nov. 21-30	995	--	--	74	12	77	--	--	--	--	--	--	--	503	.68	1,350	236	--	42	2.2	825	--	--
Dec. 1-10	956	--	--	71	13	76	--	--	--	--	--	--	--	494	.67	1,280	232	--	42	2.2	821	--	--
Dec. 11-13, 16-20	1,114	--	--	60	10	61	--	--	--	--	--	--	--	402	.55	1,210	193	--	41	1.9	674	--	--
Dec. 14-15	776	--	--	83	14	107	---	--	--	--	--	--	--	605	.82	1,270	266	--	47	2.9	1,030	--	--
Dec. 21-25	951	--	--	62	11	68	--	--	--	--	--	--	--	428	.58	1,100	200	--	43	2.1	723	--	--
Dec. 26-31	740	--	--	84	14	117	--	--	--	--	--	--	--	626	.85	1,250	268	--	49	3.1	1,070	--	--
Jan. 1-8, 10, 1954	930	--	--	69	12	88	--	--	--	--	--	--	--	510	.69	1,280	223	--	46	2.6	870	--	--
Jan. 9	1,440	--	--	46	7.9	44	--	--	--	--	--	--	--	298	.41	1,160	148	--	39	1.6	516	--	--
Jan. 11-19	848	13	.03	66	15	89	2.7	140	116	130	.2	.5	.04	503	.68	1,150	226	112	46	2.6	858	8.0	5
Jan. 20a	1,250	--	--	--	--	--	--	112	67	50	--	--	--	--	--	--	142	50	--	--	474	8.0	--
Jan. 21-22	1,525	--	--	42	6.9	43	--	--	--	--	--	--	--	280	.38	1,150	134	--	41	1.6	485	--	--
Jan. 23-31	1,044	--	--	55	9.1	63	--	--	--	--	--	--	--	390	.53	1,100	174	--	44	2.1	665	--	--

a Not included for computation of weighted averages.

Feb. 1, 3-10, 1954	870	--	--	62	11	78	--	--	--	--	--	--	--	456	0.62	1,070	198	--	46	2.4	774	--	--
Feb. 2	604	--	--	80	14	113	--	--	--	--	--	--	--	617	.84	1,010	256	--	49	3.1	1,060	--	--
Feb. 11-20	845	--	--	60	12	80	--	--	--	--	--	--	--	456	.62	1,040	197	--	47	2.6	779	--	--
Feb. 21-25, 27-28	929	--	--	55	9.8	69	--	--	--	--	--	--	--	404	.55	1,010	179	--	46	2.3	699	--	--
Feb. 26	980	--	--	71	14	110	--	--	--	--	--	--	--	585	.80	1,550	236	--	50	3.1	1,010	--	--
Mar. 1-2	736	--	--	70	16	111	--	--	--	--	--	--	--	598	.81	1,190	240	--	50	3.1	1,020	--	--
Mar. 3-10	1,311	--	--	48	9.7	61	--	--	--	--	--	--	--	376	.51	1,330	160	--	45	2.1	643	--	--
Mar. 11-15, 17-20	948	--	--	54	11	69	--	--	--	--	--	--	--	414	.56	1,060	181	--	46	2.2	704	--	--
Mar. 16	664	--	--	69	15	111	--	--	--	--	--	--	--	595	.81	1,070	232	--	51	3.2	1,020	--	--
Mar. 21-31	941	--	--	56	11	72	--	--	--	--	--	--	--	438	.60	1,110	186	--	46	2.3	751	--	--
Apr. 1-7, 9-10	1,354	--	--	51	9.2	60	--	--	--	--	--	--	--	358	.49	1,310	165	--	44	2.0	621	--	--
Apr. 8	2,240	--	--	39	6.3	30	--	--	--	--	--	--	--	219	.30	1,320	124	--	34	1.2	392	--	--
Apr. 11-20	1,415	12	0.05	46	11	53	2.1	120	71	72	0.3	5.3	0.04	337	.46	1,290	160	62	41	1.8	575	7.5	8
Apr. 21-30	1,491	--	--	44	7.3	48	--	--	--	--	--	--	--	294	.40	1,180	140	--	43	1.8	524	--	--
May 1-10	1,503	--	--	45	6.6	48	--	--	--	--	--	--	--	308	.42	1,250	140	--	43	1.8	518	--	--
May 11-20	2,860	--	--	37	6.9	25	--	--	--	--	--	--	--	234	.32	1,810	122	--	31	1.0	374	--	--
May 21-31	2,726	--	--	42	7.7	32	--	--	--	--	--	--	--	260	.35	1,910	136	--	34	1.2	429	--	--
June 1-10	1,577	--	--	54	10	53	--	--	--	--	--	--	--	373	.51	1,590	178	--	40	1.7	603	--	--
June 11-20	1,468	--	--	57	10	56	--	--	--	--	--	--	--	387	.53	1,530	184	--	40	1.8	628	--	--
June 21-30	1,419	--	--	58	8.9	62	--	--	--	--	--	--	--	398	.54	1,520	182	--	43	2.0	656	--	--
July 1-10	1,329	--	--	60	9.4	57	--	--	--	--	--	--	--	386	.52	1,390	189	--	40	1.8	658	--	--
July 11-20	1,392	--	--	65	10	57	--	--	--	--	--	--	--	403	.55	1,510	204	--	38	1.7	674	--	--
July 21-31	1,334	13	.05	64	16	58	2.8	146	103	92	.4	.8	.05	426	.58	1,530	226	106	35	1.7	720	7.7	6
Aug. 1-10	1,193	--	--	60	9.3	70	--	--	--	--	--	--	--	420	.57	1,350	189	--	45	2.2	718	--	--
Aug. 11-20	1,308	--	--	64	9.6	63	--	--	--	--	--	--	--	420	.57	1,480	199	--	41	1.9	703	--	--
Aug. 21-31	1,123	--	--	64	11	73	--	--	--	--	--	--	--	445	.61	1,350	206	--	44	2.2	755	--	--
Sept. 1-10	1,100	--	--	63	12	72	--	--	--	--	--	--	--	442	.60	1,310	206	--	43	2.2	751	--	--
Sept. 11-20	882	--	--	69	12	73	--	--	--	--	--	--	--	468	.64	1,110	220	--	42	2.1	786	--	--
Sept. 21-26, 28-30	965	--	--	79	12	67	--	--	--	--	--	--	--	480	.65	1,250	248	--	37	1.9	821	--	--
Sept. 27	1,140	--	--	77	13	27	--	--	--	--	--	--	--	339	.46	1,040	248	--	19	.7	552	--	--
Weighted average b	1,224	--	--	58	11	61	--	--	--	--	--	--	--	401	0.55	1,330	190	--	41	1.9	673	--	--

b Represents 99.7 percent of runoff for water year October 1953 to September 1954.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

COLORADO RIVER NEAR CAMEO, COLO.

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 1954.
Water temperatures: April 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 873 ppm Dec. 21-31, minimum, 296 ppm May 21-30.
Specific conductance: Maximum daily, 1,650 micromhos Dec. 29; minimum daily, 422 micromhos May 22-23.
Water temperatures: Maximum observed, 75°F July 12, 29, 31; minimum observed, freezing point Jan. 12.
EXTREMES, 1933-54.--Dissolved solids (1933-43, 1950-54): 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 (1941-54): Maximum daily, 1,850 micromhos Jan. 8, 1944; minimum daily, 244 micromhos July 2, 1947.
Water temperatures (1949-54): Maximum observed, 75°F July 27, 1953, July 12, 29, 31, 1954; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (residues at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953..	1,541	--		--	--	--	--	--	--	--		--	--	766	1.04	3,190	--	--	--	--	1,300	--
Oct. 11-20	1,620	10		84	19	147	--	176	172	192		2.0	0.12	738	1.00	3,230	286	142	53	3.8	1,250	7.5
Oct. 21-31.....	1,774	--		--	--	--	--	--	--	--		--	--	827	1.12	3,960	--	--	--	--	1,360	--
Nov. 1-10	1,677	--		--	--	--	--	--	--	--		--	--	843	1.15	3,820	--	--	--	--	1,370	--
Nov. 11-20	1,660	12		96	24	157	--	206	211	215		2.9	--	855	1.16	3,830	338	169	50	3.7	1,400	7.8
Nov. 21-30	1,666	--		--	--	--	--	--	--	--		--	--	791	1.08	3,560	--	--	--	--	1,300	--
Dec. 1-10.....	1,508	--		--	--	--	--	--	--	--		--	--	841	1.14	3,420	--	--	--	--	1,390	--
Dec. 11-20	1,600	13		92	23	168	--	202	200	225		3.9	.09	858	1.17	3,710	322	156	53	4.1	1,410	8.0
Dec. 21-31	1,386	13		90	23	181	--	a200	204	234		4.1	.08	873	1.19	3,270	320	156	55	4.4	1,450	--
Jan. 1-10, 1954..	1,510	13		84	20	160	--	183	177	216		4.3	.08	797	1.08	3,250	292	142	54	4.1	1,330	7.8
Jan. 11-20	1,338	12		78	18	152	--	171	165	206		3.4	.05	748	1.02	2,700	270	130	55	4.0	1,260	7.6
Jan. 21-31.....	1,742	12		77	17	135	--	b178	165	178		2.9	.07	700	.95	3,290	264	118	53	3.6	1,120	8.3
Feb. 1-10	1,436	14		85	21	174	--	190	196	220		3.9	--	827	1.12	3,210	298	142	56	4.4	1,380	7.6
Feb. 11-20	1,485	10		81	19	158	--	178	183	212		4.0	--	775	1.05	3,110	280	134	55	4.1	1,310	7.5
Feb. 21-28	1,459	--		--	--	--	--	--	--	--		--	--	793	1.08	3,120	--	--	--	--	1,340	--
Mar. 1-10	1,610	--		--	--	--	--	--	--	--		--	--	720	.98	3,130	--	--	--	--	1,220	--
Mar. 11-20.....	1,477	11		78	19	154	--	176	173	208		4.6	.09	753	1.02	3,000	272	128	55	4.1	1,270	8.0
Mar. 21-31	1,505	--		--	--	--	--	--	--	--		--	--	758	1.03	3,080	--	--	--	--	1,270	--

a Includes equivalent of 5 parts per million of Carbonate (CO_3).
b Includes equivalent of 6 parts per million of carbonate (CO_3).

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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)	Chlorids (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residues at 180°C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-7, 1954 ...	1,779	--		--	--	--	--	--	--	--		--	--	758	1.03	3,640	--	--	--	--	1,250	--
Apr. 8-20	2,353	9.6		63	15	112	--	156	122	144		2.3	0.07	567	.77	3,600	222	94	53	3.3	944	7.5
Apr. 21-30.....	2,558	8.5		55	14	95	3.5	148	100	124		2.1	--	482	.66	3,330	194	73	51	3.0	823	7.4
May 1-10.....	2,703	7.7		57	15	99	3.7	153	108	128		1.8	--	500	.68	3,650	203	78	51	3.0	871	7.5
May 11-20.....	5,553	8.4		53	9.2	45	2.6	146	66	59		2.2	.05	337	.46	5,050	170	50	36	1.5	550	7.7
May 21-30	6,248	--		--	--	--	--	--	--	--		--	--	296	.40	4,990	--	--	--	--	485	--
May 31, June 1-10..	3,620	--		--	--	--	--	--	--	--		--	--	422	.57	4,120	--	--	--	--	703	--
June 11-20	3,305	7.2		62	15	76	4.2	144	111	106		1.9	.02	468	.64	4,180	216	98	43	2.3	775	7.4
June 21-30.....	3,416	7.0		60	15	69	4.1	137	99	97		2.1	--	432	.59	3,980	211	98	41	2.1	722	7.3
July 1-10	2,638	8.6		74	13	99	--	163	152	128		2.1	.04	547	.74	3,900	240	106	47	2.8	950	7.0
July 11-20.....	2,384	11		88	14	104	--	188	133	142		2.5	.07	622	.85	4,000	278	124	45	2.7	1,040	7.0
July 21-31.....	2,120	10		81	15	114	--	175	145	157		2.9	.04	628	.85	3,590	264	120	48	3.0	1,060	7.2
Aug. 1-10	1,614	8.6		81	17	140	--	169	156	193		3.4	.15	700	.95	3,050	272	133	53	3.7	1,200	6.9
Aug. 11-20	1,988	12		94	16	145	--	221	185	169		3.1	.06	734	1.00	3,940	302	121	51	3.6	1,170	7.8
Aug. 21-31	1,548	--		--	--	--	--	--	--	--		--	--	710	.97	2,970	--	--	--	--	1,180	--
Sept. 1-10.....	1,695	--		--	--	--	--	--	--	--		--	--	751	1.02	3,440	--	--	--	--	1,220	--
Sept. 11-20.....	1,787	12		100	19	148	--	208	209	177		2.8	.07	774	1.06	3,730	326	155	50	3.5	1,230	7.9
Sept. 21-30.....	1,708	--		--	--	--	--	--	--	--		--	--	834	1.13	3,850	--	--	--	--	1,350	--
Weighted average	2,144	--		--	--	--	--	--	--	--		--	--	618	0.84	3,580	--	--	--	--	1,030	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CAMEO, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
Water temperatures: April 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,220 ppm Aug. 21-31; minimum, 514 ppm Apr. 21-30.
Hardness: Maximum, 1,070 ppm Aug. 21-31; minimum, 274 ppm Apr. 21-30.
Specific conductance: Maximum daily, 2,640 micromhos Aug. 31; minimum daily, 558 micromhos Apr. 22.
Water temperatures: Maximum observed, 85°F July 31; minimum observed, 33°F Dec. 8, Jan. 3, 16.
EXTREMES, 1931-54.--Dissolved solids: Maximum, 2,820 ppm Sept. 11-20, 1934; minimum, 203 ppm May 11-20, 1944.
Hardness (1931-35, 1943-54): Maximum, 1,370 ppm Sept. 1-10, 11-20, 1934; minimum, 143 ppm June 1-10, 1933, May 11-20, 1948.
Specific conductance (1941-54): Maximum daily, 2,680 micromhos Nov. 5, 1950; minimum daily, 280 micromhos May 23, 1948.
Water temperatures (1949-54): Maximum observed, 85°F July 31, 1954; minimum observed, freezing point on several days during winter months.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953....	635	--	--	246	81	191	--	--	--	--	--	--	--	1,960	2.67	3,360	950	--	30	2.7	2,250	--	--
Oct. 11-20.....	659	20	0.12	248	104	203	7.8	242	1,190	27	0.6	10	0.23	a1,930	2.62	3,430	1,050	848	29	2.7	2,340	7.7	8
Oct. 21-31.....	1,466	--	--	227	61	160	--	--	--	--	--	--	--	1,630	2.22	6,450	820	--	30	2.4	1,940	--	--
Nov. 1-10.....	1,262	--	--	192	58	137	--	--	--	--	--	--	--	1,410	1.92	4,800	720	--	29	2.2	1,710	--	--
Nov. 11-20.....	1,257	--	--	174	89	133	--	--	--	--	--	--	--	1,290	1.75	4,380	800	--	27	2.0	1,600	--	--
Nov. 21-30.....	1,189	--	--	187	40	137	--	--	--	--	--	--	--	1,270	1.73	4,080	630	--	32	2.4	1,580	--	--
Dec. 1-10.....	960	--	--	169	55	137	--	--	--	--	--	--	--	1,340	1.82	3,470	647	--	32	2.3	1,650	--	--
Dec. 11-20.....	870	--	--	169	59	137	--	--	--	--	--	--	--	1,340	1.82	3,150	667	--	31	2.3	1,650	--	--
Dec. 21-31.....	700	--	--	171	65	144	--	--	--	--	--	--	--	1,400	1.90	2,650	696	--	31	2.4	1,730	--	--
Jan. 1-10, 1954....	685	--	--	160	63	136	--	--	--	--	--	--	--	1,320	1.80	2,440	660	--	31	2.3	1,640	--	--
Jan. 11-20.....	815	18	.11	146	66	134	5.2	232	689	21	.5	11	.18	a1,210	1.65	2,660	636	446	31	2.3	1,600	7.7	7
Jan. 21-31.....	856	--	--	149	60	141	--	--	--	--	--	--	--	1,280	1.74	2,960	620	--	33	2.5	1,610	--	--
Feb. 1-10.....	813	--	--	145	59	133	--	--	--	--	--	--	--	1,230	1.67	2,700	607	--	32	2.4	1,560	--	--
Feb. 11-20.....	816	--	--	135	54	129	--	--	--	--	--	--	--	1,160	1.58	2,560	560	--	33	2.4	1,480	--	--
Feb. 21-28.....	810	--	--	128	52	123	--	--	--	--	--	--	--	1,090	1.48	2,380	533	--	33	2.3	1,420	--	--
Mar. 1-10.....	706	--	--	131	52	125	--	--	--	--	--	--	--	1,110	1.51	2,120	543	--	33	2.3	1,430	--	--
Mar. 11-20.....	772	--	--	121	49	107	--	--	--	--	--	--	--	1,040	1.41	2,170	505	--	32	2.1	1,340	--	--
Mar. 21-31.....	715	--	--	128	52	118	--	--	--	--	--	--	--	1,140	1.55	2,200	535	--	32	2.2	1,450	--	--

a Sum of determined constituents.

Apr. 1-9, 1954 ...	747	--	--	105	44	96	--	--	--	--	--	--	--	911	1.24	1,840	445	--	32	2.0	1,200	--	--
Apr. 10-20	1,199	15	0.06	78	28	62	3.6	158	282	10	0.2	0.6	0.09	590	.80	1,910	310	180	30	1.5	824	7.9	--
Apr. 21-30	1,522	--	--	78	19	50	--	--	--	--	--	--	--	514	.70	2,110	274	--	28	1.3	733	--	--
May 1-10	1,200	--	--	105	30	77	--	--	--	--	--	--	--	725	.99	2,350	384	--	30	1.7	1,020	--	--
May 11-20	1,936	--	--	87	20	51	--	--	--	--	--	--	--	560	.76	2,930	302	--	27	1.3	789	--	--
May 22-24, 26-27..	2,676	--	--	85	19	49	--	--	--	--	--	--	--	531	.72	3,840	292	--	27	1.3	745	--	--
May 30-31	1,280	--	--	127	34	--	--	--	--	--	--	--	--	854	1.16	2,950	456	--	--	--	1,140	--	--
June 1-10	985	--	--	149	47	106	--	--	--	--	--	--	--	1,110	1.51	2,950	564	--	29	1.9	1,370	--	--
June 11-20.....	546	--	--	202	67	166	--	--	--	--	--	--	--	1,620	2.20	2,390	780	--	32	2.6	1,900	--	--
June 21-30.....	450	--	--	228	72	192	--	--	--	--	--	--	--	1,810	2.46	2,200	865	--	33	2.8	2,110	--	--
July 1-10.....	369	--	--	241	77	204	--	--	--	--	--	--	--	1,930	2.62	1,920	920	--	33	2.9	2,250	--	--
July 18, 20-23, 25-31	970	20	.09	182	65	113	6.2	218	747	17	.6	6.6	.27	a1,260	1.71	3,300	722	543	25	1.8	1,620	7.6	18
July 19, 24h	1,080	--	--	--	--	--	--	262	1,170	22	--	11	--	--	--	--	1,030	815	--	--	2,280	7.6	--
Aug. 1-10	456	--	--	209	68	172	--	--	--	--	--	--	--	1,590	2.16	1,960	805	--	32	2.6	1,950	--	--
Aug. 11-20	563	--	--	251	72	192	--	--	--	--	--	--	--	1,900	2.58	2,890	925	--	31	2.8	2,200	--	--
Aug. 21-31	508	--	--	283	88	218	--	--	--	--	--	--	--	2,220	3.02	3,040	1,070	--	31	2.9	2,450	--	--
Sept. 1-10	690	--	--	268	79	200	--	--	--	--	--	--	--	2,060	2.80	3,840	995	--	30	2.8	2,310	--	--
Sept. 11-20	1,024	--	--	235	67	165	--	--	--	--	--	--	--	1,750	2.38	4,840	865	--	29	2.4	1,990	--	--
Sept. 21-30	884	--	--	234	70	175	--	--	--	--	--	--	--	1,800	2.45	4,300	875	--	30	2.6	2,040	--	--
Weighted average	c913	--	--	162	54	126	--	--	--	--	--	--	--	1,240	1.69	3,060	626	--	30	2.2	1,530	--	--

a Sum of determined constituents.
b Not included for computation of weighted averages.
c Represents 96 percent of runoff for water year October 1953 to September 1954.

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GUNNISON RIVER BASIN--Continued

GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
Water temperatures: March 1951 to September 1954.
Sediment records: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 4,360 ppm Oct. 1-7, 9, 15, 19; minimum, 333 ppm May 24.
Hardness: Maximum, 1,120 ppm Oct. 1-7, 9, 15, 19; minimum, 189 ppm May 11-20.
Specific conductance: Maximum daily, 7,760 micromhos Oct. 19; minimum daily, 511 micromhos May 24.
Water temperatures: Maximum observed, 81°F Sept. 1; minimum observed, freezing point on several days during December and January.
Sediment concentrations: Maximum daily, 74,200 ppm Oct. 24; minimum daily, 20 ppm June 24.
Sediment loads: Maximum daily, 442,000 tons Oct. 24; minimum daily, 3 tons Aug. 31.
EXTREMES, 1951-52, 1953-54.--Specific conductance: Maximum daily, 7,760 micromhos Oct. 19, 1953; minimum daily, 254 micromhos May 8, June 16, 1952.
Water temperatures: Maximum observed, 81°F Sept. 1, 1954; minimum observed, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 74,200 ppm Oct. 24, 1953; minimum daily, 13 ppm July 15, 1951.
Sediment loads: Maximum daily, 442,000 tons Oct. 24, 1953; minimum daily, 3 tons Aug. 31, 1954.
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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	Chlorids (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-7, 9, 15, 19, 1953	43.9	4.3	0.08	231	131	1,120	60	134	1,050	1,670	0.6	30	0.26	4,360	5.93	517	1,120	1,000	67	15	6,780	7.1	--
Oct. 21, 23, 26, 28	620	12	.09	226	54	148	11	179	746	145	.4	2.4	.12	1,430	1.94	2,390	786	640	29	2.3	1,980	7.5	--
Nov. 2, 4, 6, 9, 12	196	12	.06	164	65	397	20	168	581	578	.5	18	.12	1,920	2.61	1,020	676	539	55	6.6	3,030	7.8	--
Nov. 16, 18, 20	209	9.7	.04	151	64	580	30	153	533	855	.4	20	.19	2,320	3.16	1,310	640	514	65	10	3,870	7.7	5
Nov. 23	169	--	--	121	53	274		184	415	370	--	14	--	1,340	1.82	611	520	369	53	5.2	2,240	7.5	--
Nov. 30	186	--	--	137	75	1,030		135	526	1,560	--	31	--	3,430	4.66	1,720	650	540	77	18	5,840	8.1	--
Dec. 2, 4, 8, 11, 14	133	11	.05	142	68	622	33	158	503	950	.4	30	.12	2,440	3.32	876	634	504	67	11	4,080	8.0	5
Dec. 19, 21, 23, 28	148	11	.05	133	60	600	33	152	451	930	.4	38	.12	2,330	3.17	931	578	454	68	11	3,890	7.3	8
Dec. 16, 30	120	11	.10	162	81	998	55	127	603	1,560	.4	62	--	3,600	4.90	1,170	737	633	73	16	6,030	7.1	8
Jan. 4, 6, 8, 11, 13, 15, 1954	131	10	.05	127	59	747	40	142	427	1,180	.3	31	.13	2,690	3.66	951	560	443	73	14	4,610	7.5	8
Jan. 18, 20, 29	148	9.7	.07	121	57	715	37	136	414	1,090	.4	39	--	2,550	3.47	1,020	536	425	73	13	4,310	7.3	3
Feb. 2, 8, 10, 12, 15	180	7.9	.05	110	52	477	25	134	393	730	.1	30	.11	1,890	2.57	919	488	378	67	9.4	3,260	7.4	3
Feb. 5	164	8.2	--	117	50	825		105	426	1,230	--	34	--	--	--	--	500	414	78	16	4,790	7.5	--
Feb. 17, 19, 23	178	7.6	.07	113	54	487	26	134	411	730	.4	28	--	1,920	2.61	923	504	394	66	9.4	3,240	7.8	5
Feb. 26, Mar. 1, 3	155	7.4	.08	120	59	814	44	127	429	1,240	.4	31	--	2,810	3.82	1,180	542	438	75	15	4,800	7.7	5

DOLORES RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Mar. 6-9, 1954....	137	6.0	0.08	114	52	540	27	140	407	800	0.3	34	--	2,050	2.79	758	498	384	69	11	3,500	7.3	5
Mar. 11-16, 19-20.	153	5.7	.09	116	56	729	39	130	428	1,100	.3	21	0.09	2,560	3.48	1,060	520	414	74	14	4,420	7.2	10
Mar. 18	145	6.9	--	102	42	431	--	128	359	630	--	33	--	1,670	2.27	654	427	322	69	9.1	2,910	7.0	--
Mar. 21-28	190	5.3	.07	114	56	687	35	148	415	1,020	.5	28	--	2,430	3.30	1,250	515	394	73	13	4,180	7.2	7
Mar. 29-30, Apr. 1-4, 6.....	255	6.9	.09	113	43	380	23	170	371	545	.3	22	--	1,590	2.16	1,090	459	320	63	7.7	2,690	7.4	8
Apr. 7-8	871	7.4	.13	82	25	208	14	160	209	292	.5	9.4	--	926	1.26	2,180	308	176	58	5.1	1,610	7.6	--
Apr. 10 [a].....	726	9.3	--	64	12	--	--	131	--	113	--	5.4	--	--	--	--	210	103	--	--	840	7.6	--
Apr. 11-20	841	9.6	.08	67	16	90	7.7	164	118	122	.3	6.4	.07	518	.70	1,180	233	98	45	2.6	882	7.7	20
Apr. 21-30	840	8.6	.06	59	13	69	5.7	140	99	97	.4	6.0	.09	427	.58	968	200	86	42	2.1	731	7.7	20
May 1-10	630	7.7	.06	66	21	114	7.8	138	158	160	.3	8.7	--	612	.83	1,040	251	138	49	3.1	1,030	7.6	20
May 11-20	1,036	7.5	.06	56	12	52	4.4	134	92	70	.4	4.9	.04	365	.50	1,020	189	79	37	1.6	618	7.8	20
May 21-23, 26-27 [a]	1,030	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	682	--	--
May 24	1,270	10	.10	64	12	34	2.5	154	89	43	.2	2.4	--	333	.45	1,140	209	83	26	1.0	562	7.6	10
June 1-2, 4-6	449	7.3	.10	67	20	112	5.8	118	166	161	.1	9.7	--	607	.83	736	249	152	49	3.1	1,050	7.2	7
June 8-20.....	250	7.0	.09	86	31	261	9.6	109	270	385	.3	14	.05	1,120	1.52	756	342	252	62	6.2	1,920	7.2	5
June 21-30.....	297	7.8	.07	72	24	183	7.7	93	213	260	.3	14	--	828	1.13	664	278	202	58	4.8	1,430	7.4	5
July 1-10	162	6.1	.07	94	37	279	12	73	347	395	.3	29	--	1,240	1.69	542	386	326	60	6.2	2,070	6.8	10
July 11-20	140	6.6	.09	116	46	322	20	86	451	460	.5	34	.09	1,500	2.04	567	478	408	58	6.4	2,460	7.2	7
July 21-31	171	9.8	.08	120	43	258	16	112	420	360	.4	27	.11	1,310	1.78	605	476	384	53	5.1	2,110	7.2	7
Aug. 1-2, 5-7.....	113	6.6	.08	112	40	263	16	98	380	375	.4	33	.07	1,270	1.73	387	444	364	55	5.4	2,090	7.2	8
Aug. 3, 9-10.....	92.0	6.2	.09	154	63	481	27	56	645	675	.4	53	.12	2,130	2.90	529	643	597	61	8.2	3,400	7.0	8
Aug. 11-13, 16....	132	5.9	.06	156	64	464	28	104	655	640	.6	36	.11	2,100	2.86	748	652	567	59	7.9	3,340	7.0	12
Aug. 14, 17, 20 ...	186	11	.07	142	43	222	15	141	488	270	.5	23	.12	1,280	1.74	643	532	416	47	4.2	1,970	7.2	12
Aug. 21-31.....	61.7	6.3	.06	172	75	395	23	79	776	510	.6	63	--	2,060	2.80	343	738	613	53	6.3	3,120	6.7	20
Sept. 1-5, 7-10....	147	5.3	.05	156	71	394	25	98	702	525	.6	45	--	1,970	2.68	782	681	600	55	6.6	3,050	7.0	20
Sept. 6 [a].....	105	--	--	--	--	--	--	136	831	1,980	--	--	--	--	--	--	966	854	--	--	7,240	7.4	--
Sept. 11-13, 15-20.	201	10	.04	167	54	203	13	124	622	230	.4	26	.14	1,390	1.89	754	664	562	39	3.4	2,040	7.5	12
Sept. 14 [a].....	390	--	--	--	--	--	--	141	1,040	530	--	--	--	--	--	--	952	836	--	--	3,500	7.8	--
Sept. 21-30	316	11	.38	177	45	183	11	163	563	218	.4	15	--	1,300	1.77	1,110	626	493	38	3.2	1,920	7.3	12
Weighted average	b307	8.3	0.09	96	32	222	13	136	286	316	0.4	15	--	1,050	1.43	870	371	260	55	5.0	1,730	--	--

a Not included for computation of weighted averages.
b Represents 70 percent of runoff for water year October 1953 to September 1954.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

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.....	38	208	21	164	560	a 250	180	95	a 46
2.....	39	220	23	164	386	171	174	96	45
3.....	38	215	22	169	300	a 140	186	100	a 50
4.....	38	275	28	164	240	106	169	170	78
5.....	38	225	23	160	235	a 100	164	180	a 80
6.....	38	290	30	238	315	202	150	200	a 81
7.....	38	320	33	269	280	a 200	130	200	a 70
8.....	39	260	a 27	240	280	a 180	115	210	65
9.....	39	198	21	233	265	167	100	200	a 54
10.....	40	200	a 22	192	250	a 130	95	170	a 44
11.....	40	200	a 22	180	260	a 130	100	145	39
12.....	46	200	a 25	180	265	129	100	140	a 38
13.....	51	200	a 28	174	260	a 120	95	110	a 28
14.....	79	260	a 54	169	240	a 110	105	100	28
15.....	63	235	40	164	180	a 80	120	120	a 39
16.....	61	220	a 36	164	151	67	135	128	47
17.....	56	200	a 29	169	130	a 60	160	160	a 69
18.....	54	180	a 26	209	122	69	180	200	a 97
19.....	70	302	57	240	160	a 100	180	240	117
20.....	964	32,000	sa130,000	255	215	148	190	220	110
21.....	823	21,100	46,900	221	210	a 120	175	160	76
22.....	373	23,000	a 23,000	186	220	a 110	150	130	a 53
23.....	1,100	52,200	sb301,000	169	225	103	130	101	35
24.....	2,010	74,200	sa442,000	180	220	a 110	115	100	a 31
25.....	690	24,000	a 45,000	169	190	a 87	105	82	a 23
26.....	330	14,800	13,200	169	170	a 78	95	80	a 21
27.....	233	6,200	a 3,900	160	160	a 69	95	85	a 22
28.....	227	4,300	2,640	155	130	a 54	105	85	24
29.....	204	2,700	a 1,500	186	100	a 50	105	120	a 34
30.....	180	1,200	a 580	186	81	41	105	159	45
31.....	169	700	a 320	--	--	--	105	150	a 43
Total.	8,208	--	1,010,607	5,678	--	3,481	4,113	--	1,632
	January			February			March		
1.....	105	150	a 43	164	100	a 44	155	255	107
2.....	105	150	a 43	160	97	42	174	250	a 120
3.....	105	150	a 42	160	100	a 43	164	255	113
4.....	105	148	42	160	100	a 43	155	260	a 110
5.....	110	140	a 42	164	110	49	140	260	a 98
6.....	125	120	40	169	100	a 46	145	258	101
7.....	140	100	a 38	180	82	a 40	136	180	66
8.....	140	71	27	180	80	39	131	187	66
9.....	140	65	a 25	174	78	a 37	136	204	75
10.....	135	65	a 24	180	75	36	140	200	a 76
11.....	135	60	22	180	67	a 33	145	210	82
12.....	135	80	a 29	186	60	30	150	222	90
13.....	135	100	36	180	120	a 58	155	198	83
14.....	140	98	a 37	186	200	a 100	160	210	91
15.....	145	73	29	192	255	132	164	182	81
16.....	140	82	a 31	186	202	101	160	220	95
17.....	135	90	a 33	186	200	a 100	150	240	a 97
18.....	135	91	33	186	200	a 100	145	227	89
19.....	140	100	a 38	192	222	115	145	170	67
20.....	150	160	65	174	220	a 100	145	220	86
21.....	160	150	a 65	164	220	a 97	150	282	114
22.....	170	140	a 64	160	240	a 100	145	265	104
23.....	165	120	a 53	155	250	105	161	242	105
24.....	155	140	a 59	150	230	a 93	195	240	126
25.....	170	140	a 64	145	260	a 100	202	100	55
26.....	180	140	a 68	145	272	106	195	160	84
27.....	180	130	63	145	270	a 110	254	262	180
28.....	174	160	a 75	145	270	a 110	217	302	177
29.....	160	140	a 60	--	--	--	187	275	139
30.....	164	130	a 58	--	--	--	202	150	82
31.....	169	110	a 50	--	--	--	210	220	a 120
Total.	4,447	--	1,398	4,748	--	1,999	5,113	--	3,079

s Computed by subdividing day.
a Computed from estimated concentration graph.
b Computed from partially estimated concentration graph.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--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	247	382	255	515	220	310	546	150	221
2	262	353	250	494	140	187	464	130	163
3	239	380	245	464	140	175	424	120	a140
4	217	305	179	668	425	767	386	79	82
5	239	650	a420	668	406	732	433	80	94
6	433	1,710	2,000	612	340	562	414	67	75
7	784	3,800	8,040	691	300	560	386	40	42
8	958	5,500	14,200	680	320	588	348	45	42
9	808	3,700	a8,100	726	380	745	296	42	a34
10	726	2,580	5,060	784	470	995	262	40	28
11	691	1,300	2,430	1,020	1,460	4,020	254	25	17
12	726	1,090	1,960	1,350	4,350	15,900	239	22	14
13	748	940	1,900	1,150	3,550	11,000	210	25	a14
14	808	1,040	2,270	1,040	1,970	5,530	224	21	a13
15	880	1,280	3,040	958	1,210	3,130	254	23	a16
16	868	1,320	3,090	958	1,150	2,970	224	25	a15
17	796	1,300	2,790	1,010	1,100	3,000	187	28	14
18	772	1,100	a2,300	984	1,010	2,680	180	29	14
19	919	1,400	a3,500	919	940	2,330	262	30	21
20	1,200	2,920	9,460	971	1,200	3,150	314	66	56
21	1,250	3,600	12,200	1,080	1,650	4,810	322	51	44
22	1,040	2,690	7,550	1,130	1,850	5,640	314	28	24
23	971	1,300	a3,400	1,210	2,570	8,400	305	32	26
24	844	950	2,160	1,270	2,600	8,920	305	20	16
25	808	720	1,570	1,140	2,100	a6,500	296	38	30
26	820	610	1,350	945	1,340	3,420	331	210	sb327
27	820	570	1,260	784	620	1,310	280	310	234
28	748	560	1,130	702	310	588	296	122	98
29	579	432	675	680	304	558	288	80	62
30	525	300	425	645	211	367	232	70	44
31	--	--	--	601	211	342	--	--	--
Total	21,726	--	103,209	26,849	--	100,186	9,276	--	2,020

	July			August			September		
1	202	50	27	173	272	127	44	70	8
2	187	40	20	161	200	a87	42	83	9
3	173	42	20	141	163	62	42	90	10
4	161	37	16	105	130	a37	194	15,500	s50,600
5	161	40	17	87	238	56	278	27,000	sa32,000
6	167	110	50	75	130	26	105	2,920	828
7	150	120	49	71	82	16	180	1,640	797
8	137	140	52	73	80	16	190	2,770	1,420
9	141	140	53	71	60	12	210	1,450	822
10	141	123	47	64	89	15	141	880	a340
11	133	117	42	56	95	14	108	600	a180
12	133	38	14	56	108	16	102	280	77
13	121	55	18	236	14,700	sb26,500	136	830	305
14	114	92	28	339	25,800	sb29,200	390	3,050	3,210
15	129	70	24	310	23,000	a19,000	340	4,580	4,200
16	125	75	25	180	3,400	1,650	270	1,600	1,170
17	141	110	42	140	1,100	416	280	850	643
18	133	130	47	110	500	a150	240	540	350
19	173	160	a75	95	250	a64	170	1,200	a550
20	195	115	61	80	180	39	160	2,270	981
21	167	150	a68	76	118	24	141	1,230	468
22	150	185	75	73	97	19	117	439	139
23	133	275	99	70	80	a15	192	10,900	sb14,200
24	137	151	56	66	63	11	262	13,000	9,200
25	167	260	117	70	48	9	275	3,800	2,820
26	254	520	357	53	70	10	994	21,600	s61,300
27	232	320	200	47	60	a8	501	50,800	s77,800
28	187	158	80	55	35	5	300	25,000	20,200
29	150	110	45	68	44	8	210	13,000	7,370
30	133	120	a43	54	37	a5	170	5,400	2,480
31	167	270	122	47	25	3	--	--	
Total	4,894	--	1,989	3,302	--	77,620	6,784	--	291,677

Total discharge for year (cfs-days) 195,158

Total load for year (tons) ..... 1,601,5[illegible]

s Computed by subdividing day.

b Computed from partially estimated concentration graph

a Computed from estimated concentration graph.

DOLORES RIVER BASIN--Continued

DOLORES RIVER NEAR CISCO, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Oct. 26, 1953	11:15 a.m.	330	48	13,800	3,290		75		93	95	100	--	--		--	--	SPWCM
Apr. 6, 1954	9:40 a.m.	443	56	1,270	4,370		37		61	79	95	98	100		--	--	SPWCM
Apr. 8	9:40 a.m.	893	--	5,870	5,110		56		84	92	96	99	100		--	--	SPWCM
Apr. 20	10:00 a.m.	1,270	57	3,100	2,700		27		47	67	81	93	99		100	--	SPWCM
Apr. 30	12:55 p.m.	525	55	270	3,500		58		81	92	95	98	99		99	100	SPWCM
May 11	10:30 a.m.	1,090	62	1,350	3,560		25		42	60	80	91	99		100	--	SPWCM
May 24	9:25 a.m.	1,310	61	2,420	2,800		25		41	57	76	88	98		99	100	SPWCM
June 5	8:45 a.m.	386	64	63	849	52	58	64	75	91	97	99	99		100	--	SBWCM
Sept. 9	8:45 a.m.	224	66	1,480	5,300		74		96	97	100	--	--		--	--	SPWCM
Sept. 26	3:30 p.m.	1,700	63	22,700	5,490		37		61	79	92	98	99		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, 97 miles upstream from Green River, and 235 miles upstream from San Juan River.
DRAINAGE AREA.--24,100 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1928 to September 1954.
Water temperatures: May 1949 to September 1954.
Sediment records: May 1930 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,810 ppm Sept. 1-10; minimum, 452 ppm May 21-30.
Hardness: Maximum, 886 ppm Sept. 1-10; minimum, 251 ppm May 21-30.
Specific conductance: Maximum daily, 2,610 micromhos Sept. 7; minimum daily, 643 micromhos May 23.
Water temperatures: Maximum observed, 77°F July 12-15, Aug. 1; minimum observed, freezing point on several days during December.
Sediment concentrations: Maximum daily, 26,800 ppm Oct. 24; minimum daily, 48 ppm Feb. 8.
Sediment loads: Maximum daily, 720,000 tons Oct. 24; minimum daily, 195 tons Aug. 7.
EXTREMES, 1928-52, 1953-54.--Dissolved solids: Maximum, 2,670 ppm Aug. 11-20, 1940; minimum, 202 ppm June 11-20, 1933.
Hardness (1928-35, 1943-52, 1953-54): Maximum, 1,090 ppm Sept. 1-10, 1934; minimum, 131 ppm June 11-20, 1952.
Specific conductance (1941-52, 1953-54): Maximum daily, 4,100 micromhos Sept. 30, 1946; minimum daily, 310 micromhos June 15, 1952.
Water temperatures (1949-52, 1953-54): Maximum observed, 81°F Aug. 5, 1949; minimum observed, freezing point on several days during winter months.
Sediment concentrations (1930-52, 1953-54): Maximum daily, 66,300 ppm Oct. 27, 1952; minimum daily, 14 ppm Nov. 21, 1949.
Sediment loads (1930-52, 1953-54): Maximum daily, 2,790,000 tons Oct. 14, 1941; minimum daily, 84 tons Apr. 16, 1951.
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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-7, 9, 15, 1953	1,942	14		186	83	231	7.8	214	798	195		14	--	1,630	2.22	8,550	806	630	38	3.5	2,300	7.8
Oct. 19, 21, 23, 26, 28, 30	3,437	15		178	72	187	8.7	210	754	140		11	--	1,470	2.00	13,640	740	568	35	3.0	2,010	7.9
Nov. 2, 4, 6, 9, 12-13	3,503	15		153	65	188	8.1	220	616	170		12	--	1,340	1.82	12,670	649	468	38	3.2	1,910	7.9
Nov. 16, 18, 20, 23, 30	3,458	17		136	56	203	7.6	196	560	188		12	--	1,280	1.74	11,950	570	410	43	3.7	1,880	8.1
Dec. 2, 4, 8, 11, 14	2,828	17		116	58	217	7.6	170	532	210		12	0.16	1,250	1.70	9,540	528	388	47	4.1	1,890	8.1
Dec. 16-17, 19, 21, 23, 28, 30	2,851	17		133	58	231	8.3	217	526	236		13	--	1,330	1.81	10,240	570	392	46	4.2	2,010	7.8
Jan. 4, 6, 8, 11, 13, 15, 1954	2,663	15		133	55	239	9.0	223	497	259		13	.14	1,330	1.81	9,560	558	376	48	4.4	2,030	7.6
Jan. 18, 20-21, 24	2,988	15		119	51	239	8.9	204	470	257		13	--	1,270	1.73	10,250	506	340	50	4.6	1,960	7.7
Feb. 2, 5, 8, 10, 12, 15	2,653	12		114	52	238	8.3	197	470	247		12	.13	1,250	1.70	8,950	498	337	50	4.6	1,930	7.6
Feb. 17, 19, 23, 26	2,525	13		109	52	209	7.4	176	467	216		13	.09	1,170	1.59	7,980	486	342	48	4.1	1,810	8.0
Mar. 1-10	2,628	12		109	48	196	6.7	192	410	210		10	--	1,100	1.50	7,810	470	312	47	3.9	1,690	7.8
Mar. 11-20	2,597	11		103	45	183	6.7	182	400	190		10	.11	1,040	1.41	7,290	442	293	47	3.8	1,620	7.4
Mar. 21-31	2,612	12		108	53	191	7.2	192	426	204		9.8	--	1,110	1.51	7,830	488	330	46	3.8	1,720	7.5

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-7, 1954	2,553	9.9		110	47	197	7.2	186	427	206		11	--	1,110	1.51	7,650	468	316	47	4.0	1,710	7.5
Apr. 9-10	4,260	10		87	31	117	5.4	174	266	122		5.8	--	730	.99	8,400	344	202	42	2.7	1,170	7.4
Apr. 11-20	3,657	17		84	30	103	4.6	173	259	96		5.6	0.09	684	.93	6,750	333	191	40	2.4	1,080	7.7
Apr. 21-30	4,448	16		76	26	85	4.1	160	236	76		4.9	--	603	.82	7,240	296	166	38	2.2	949	7.6
May 1-11	4,108	16		99	36	110	4.1	176	334	95		5.3	--	786	1.07	8,720	395	251	37	2.4	1,200	7.4
May 12-20	8,057	14		70	22	61	3.1	148	190	54		3.6	.09	491	.67	10,680	265	144	33	1.6	779	7.6
May 21-30	9,627	11		66	21	54	2.7	138	180	46		3.8	--	452	.61	11,750	251	138	32	1.5	718	7.6
May 31, June 1-10	4,534	12		94	35	100	3.7	157	329	80		4.4	--	735	1.00	9,000	378	250	36	2.2	1,110	7.5
June 11-20	3,120	9.1		119	48	141	5.5	172	465	117		5.6	.14	995	1.35	8,380	494	354	38	2.8	1,460	7.6
June 21-30	3,404	8.6		114	44	120	4.9	164	417	105		5.3	--	900	1.22	8,270	466	331	36	2.4	1,340	7.4
July 1-10	2,467	12		143	56	161	6.1	184	563	132		9.9	--	1,170	1.59	7,790	588	436	37	2.9	1,680	7.4
July 11-20	2,163	12		158	66	177	6.6	194	645	150		11	.17	1,320	1.80	7,710	666	506	36	3.0	1,890	7.4
July 21-31	2,664	13		158	59	157	6.6	202	610	117		11	--	1,230	1.67	8,850	636	471	35	2.7	1,730	7.4
Aug. 1-10	1,282	13		191	89	235	7.2	187	922	160		14	--	1,720	2.34	5,950	842	690	38	3.5	2,270	7.7
Aug. 11-20	2,010	14		194	81	224	8.3	208	863	162		11	.23	1,660	2.26	9,010	817	646	37	3.4	2,220	7.7
Aug. 21-31	1,521	13		198	85	221	7.8	209	886	155		14	--	1,680	2.28	6,900	844	672	36	3.3	2,250	7.6
Sept. 1-10	2,132	12		210	88	249	8.2	218	946	178		11	--	1,810	2.46	10,420	886	708	38	3.6	2,390	7.3
Sept. 11-20	3,350	15		177	65	176	6.6	220	714	120		9.5	.21	1,390	1.89	12,570	709	528	35	2.9	1,900	7.6
Sept. 21-30	3,155	14		198	65	200	8.1	229	764	150		6.4	--	1,520	2.07	12,950	762	574	36	3.2	2,100	7.6
Weighted average	a3,297	13		120	47	148	5.8	181	457	130		8.0	--	1,020	1.39	9,120	493	344	39	2.9	1,490	--

a Represents 76 percent of runoff for water year October 1953 to September 1954.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

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.....	2,030			3,640	860	a 8,500	3,080	220	a 1,800
2.....	2,030			3,680	500	4,970	2,920	130	1,020
3.....	1,930			3,580	970	a 9,400	2,920	140	a 1,100
4.....	1,880	68	358	3,320	827	7,410	3,010	159	a 1,290
5.....	1,970			3,120	650	a 5,500	3,080	140	a 1,200
6.....	1,920			3,760	970	9,800	2,900	120	a 940
7.....	1,900			4,110	2,600	a 29,000	2,830	120	a 920
8.....	1,920			3,930	2,000	a 21,000	2,900	120	940
9.....	1,880			3,720	1,350	13,600	2,660	110	a 790
10.....	1,880			3,340	500	a 4,500	2,560	100	a 690
11.....	1,930			3,250	250	a 2,200	2,570	110	763
12.....	1,990			3,260	170	1,500	2,590	120	a 840
13.....	2,010			3,300	150	1,340	2,730	160	a 1,200
14.....	2,060	61	339	3,340	150	a 1,400	2,740	182	1,350
15.....	2,040			3,300	150	a 1,300	2,810	180	a 1,400
16.....	2,150			3,320	150	1,340	2,830	163	1,250
17.....	2,200			3,300	250	a 2,200	2,900	222	1,740
18.....	2,200			3,600	2,900	28,200	3,400	260	a 2,400
19.....	2,390			3,680	800	a 7,900	3,380	230	2,100
20.....	4,170	9,750	sa 113,000	3,970	286	3,070	3,280	210	a 1,900
21.....	3,260	6,820	s 60,600	3,870	180	a 1,900	3,260	150	1,320
22.....	3,360	6,500	a 59,000	3,570	150	a 1,400	3,080	120	a 1,000
23.....	3,730	5,550	s 76,600	3,260	117	1,030	2,940	60	476
24.....	9,540	26,800	sb 720,000	3,160	110	a 940	2,570	60	a 420
25.....	5,170	11,000	a 150,000	3,160	120	a 1,000	2,570	90	a 620
26.....	4,200	7,200	81,600	3,360	130	a 1,200	2,250	90	a 550
27.....	3,800	4,000	a 41,000	3,570	190	a 1,800	2,040	90	a 500
28.....	3,530	1,520	14,500	3,260	200	a 1,800	2,250	110	668
29.....	3,450	400	a 3,700	3,400	220	a 2,000	2,350	170	a 1,100
30.....	3,510	700	6,630	3,140	222	1,880	2,400	170	1,100
31.....	3,510	760	a 7,100	--	--	--	2,440	160	a 1,100
Total.	89,460	--	1,340,304	104,250	--	179,080	86,240	--	34,467
	January			February			March		
1.....	2,300	160	a 990	2,690	140	a 1,000	2,610	274	1,930
2.....	2,400	150	a 970	2,540	125	857	2,470	230	a 1,500
3.....	2,350	160	a 1,000	2,520	120	a 820	2,280	150	923
4.....	2,450	135	893	2,400	100	a 650	2,420	180	1,200
5.....	2,500	150	a 1,000	2,440	90	593	2,350	178	1,130
6.....	2,550	150	1,030	2,560	90	a 620	2,620	180	1,270
7.....	2,500	150	a 1,000	2,660	80	a 570	2,890	320	2,500
8.....	2,700	160	1,170	2,610	48	338	2,960	210	1,680
9.....	2,900	180	a 1,400	2,490	50	a 340	2,900	180	1,410
10.....	3,000	200	a 1,620	2,470	60	400	2,780	160	a 1,200
11.....	2,950	197	1,570	2,450	60	a 400	2,760	142	1,060
12.....	2,650	150	a 1,100	2,810	58	440	3,030	180	1,470
13.....	2,570	120	833	2,870	60	a 460	2,990	250	2,020
14.....	2,810	160	a 1,200	2,680	60	a 430	2,590	118	825
15.....	2,760	165	1,230	3,050	220	1,800	2,190	80	473
16.....	2,800	140	a 1,100	2,900	475	3,720	2,440	120	790
17.....	2,750	130	a 970	2,490	360	a 2,400	2,340	130	821
18.....	2,700	105	765	2,350	330	a 2,100	2,470	155	1,030
19.....	2,730	110	a 810	2,350	311	1,970	2,550	150	1,000
20.....	2,850	120	923	2,370	280	a 1,800	2,610	150	1,060
21.....	2,870	170	1,320	2,350	240	a 1,500	2,650	150	1,070
22.....	3,400	190	1,700	2,440	200	a 1,300	2,680	150	1,080
23.....	3,830	210	a 2,200	2,740	150	1,110	2,620	130	920
24.....	3,530	200	a 1,900	2,500	130	a 880	2,780	300	2,250
25.....	3,280	190	1,700	2,420	120	a 780	2,660	500	3,590
26.....	3,400	200	a 1,800	2,520	160	1,100	2,800	660	4,990
27.....	3,620	220	a 2,200	2,730	200	a 1,500	2,690	440	3,200
28.....	3,080	200	a 1,700	2,660	230	a 1,700	2,570	208	1,440
29.....	3,230	200	a 1,700	--	--	--	2,450	155	1,030
30.....	2,850	180	a 1,400	--	--	--	2,560	160	1,110
31.....	2,660	160	a 1,100	--	--	--	2,270	190	1,160
Total.	88,970	--	40,274	72,080	--	31,578	80,980	--	47,132

s Computed by subdividing day.
a Computed from estimated concentration graph.
b Computed from partly estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2,400	207	1,340	4,150	800	8,960	5,190	202	2,830
2	2,470	125	834	3,990	650	7,000	5,080	180	2,470
3	2,320	99	620	3,760	590	5,990	4,640	157	1,970
4	2,340	102	644	3,530	330	3,150	4,170	120	1,350
5	2,370	165	1,060	3,510	280	2,650	3,930	140	1,490
6	2,520	280	1,910	3,260	210	1,850	4,130	140	1,560
7	3,450	840	7,820	3,320	200	1,790	4,510	102	1,240
8	3,990	1,250	13,500	3,580	240	2,320	4,780	120	1,550
9	4,270	920	10,600	4,310	325	3,780	4,130	100	1,120
10	4,250	800	9,180	5,140	520	7,220	3,510	78	739
11	3,660	510	5,040	6,640	1,250	22,400	3,210	75	650
12	3,640	460	4,520	7,400	1,820	36,400	3,050	75	618
13	3,550	400	3,830	7,230	1,500	29,300	2,960	70	a 560
14	3,450	415	3,870	7,180	1,120	21,700	2,870	60	a 500
15	3,410	432	3,980	7,280	910	17,900	3,160	80	a 680
16	3,810	490	5,040	7,590	950	19,500	3,190	82	706
17	3,700	478	4,780	8,470	1,500	34,300	3,120	58	489
18	3,530	450	a 4,300	8,720	1,450	34,100	2,900	60	470
19	3,490	390	3,670	9,130	1,460	36,000	3,170	72	616
20	4,330	890	10,400	9,510	1,620	41,600	3,570	86	829
21	5,230	1,390	19,600	10,300	1,540	42,800	3,780	102	1,040
22	5,060	1,270	17,400	11,200	2,920	88,300	3,720	86	864
23	4,390	830	9,840	12,200	2,750	90,600	3,410	62	571
24	3,950	550	5,870	12,000	2,220	71,900	3,190	60	517
25	3,780	400	4,080	10,600	1,310	37,500	3,050	60	494
26	4,410	472	5,620	9,420	850	21,600	2,990	685	s 7,110
27	5,000	630	8,500	8,780	630	14,900	3,740	1,290	s 12,800
28	4,620	648	8,080	8,030	475	10,300	3,400	1,420	s 12,800
29	4,110	410	4,550	7,380	440	8,770	3,640	1,920	s 18,700
30	3,930	328	3,480	6,360	375	6,440	3,120	885	s 7,570
31	--	--	--	5,800	280	4,380	--	--	--
Total	111,430	--	183,958	219,770	--	735,400	109,310	--	84,902

	July			August			September		
1	2,780	320	2,400	1,700	250	a 1,100	1,240	120	402
2	2,450	218	1,440	1,500	160	648	1,220	158	520
3	2,140	152	878	1,370	95	351	1,250	200	675
4	2,230	155	933	1,200	100	324	1,870	220	1,110
5	2,560	750	5,180	1,110	70	210	2,050	5,800	32,100
6	2,710	2,230	16,300	1,120	72	218	1,970	5,850	31,100
7	2,690	1,760	12,800	1,060	68	195	2,300	2,400	14,900
8	2,500	570	3,850	1,160	69	216	2,800	2,000	15,100
9	2,390	690	4,450	1,270	80	274	3,500	4,600	43,500
10	2,220	700	4,200	1,330			3,120	5,020	42,300
11	2,110	260	1,480	1,300	75	281	2,850	3,800	a 29,000
12	2,010	200	1,090	1,370			2,830	3,600	27,500
13	1,980	300	1,600	1,560			5,080	21,400	s 336,000
14	1,870	280	1,410	3,090	9,170	sc 100,000	4,210	9,500	108,000
15	1,870	1,650	8,330	2,660	11,200	80,400	3,850	4,900	50,900
16	2,150	1,580	9,170	2,340	4,800	30,300	3,490	4,200	39,600
17	2,110	510	2,910	2,150	6,500	37,700	3,140	1,650	14,000
18	2,140	1,060	6,120	1,930	1,200	6,250	2,960	818	6,540
19	2,270	860	5,270	1,920	560	a 2,900	2,620	583	4,120
20	3,120	1,440	12,100	1,780	500	2,400	2,470	520	3,470
21	2,960	1,080	8,630	1,700	395	1,810	2,270	600	3,680
22	2,690	882	6,410	1,700	370	1,700	2,070	295	1,650
23	2,420	860	5,620	1,800	285	1,390	2,860	8,500	sc 188,000
24	2,170	590	3,460	1,650	210	936	4,270	25,600	sc 370,000
25	3,050	866	s 7,290	1,630	250	1,100	2,900	11,500	90,000
26	3,470	740	6,930	1,560	380	1,600	4,050	6,250	68,300
27	3,260	860	7,570	1,470	220	873	3,350	13,500	122,000
28	2,800	630	4,760	1,380	141	525	3,170	7,200	61,600
29	2,400	455	2,950	1,300	129	453	3,250	3,600	31,600
30	2,150	402	2,330	1,280	112	387	3,360	1,600	14,500
31	1,930	315	1,640	1,260	90	306	--	--	--
Total	75,600	--	159,501	49,650	--	275,690	86,370	--	1,752,167

Total discharge for year (cfs-days) 1,174,090
Total load for year (tons) 4,864,453

s Computed by subdividing day.
a Computed from estimated concentration graph.
c Computed from water-sediment discharge curve.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR CISCO, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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
Oct. 21, 1953	2:30 p.m.	3,570	52	7,980	4,080		66		88	96	100	--	--	--		SPWCM
Oct. 26	12:45 p.m.	a4,200	50	6,970	3,540		73		94	96	100	--	--	--		SPWCM
Apr. 10, 1954	6:45 p.m.	4,150	58	750	5,220		52		75	82	87	94	100	--		SPWCM
Apr. 20	6:00 p.m.	4,760	64	997	3,040		31		51	68	81	96	99	100		SPWCM
May 2	8:30 p.m.	4,030	53	630	4,430		64		85	90	93	94	100	100		SPWCM
May 12	9:30 a.m.	7,360	64	1,730	2,840		28		48	68	83	90	99	100		SPWCM
May 27	6:20 a.m.	8,720	61	985	1,970		19		28	35	45	54	67	96	100	SPWCM
June 10	7:30 a.m.	3,620	61	77	1,020	48	59	64	76	86	94	97	99	100		SBWCM
Sept. 9	7:25 a.m.	a3,500	66	6,070	4,710		59		94	98	100	--	--	--		SPWCM
Sept. 24	6:30 a.m.	4,290	60	17,100	4,540		53		82	93	98	100	--	--		SPWCM
Sept. 24	10:25 a.m.	4,450	58	28,600	4,330		63		87	96	98	100	--	--		SPWCM
Sept. 24	3:30 p.m.	3,340	60	24,000	3,140		72		94	99	99	100	--	--		SPWCM
Sept. 24	6:45 p.m.	3,160	63	11,200	3,090		61		89	96	99	100	--	--		SPWCM

a Daily mean discharge.

GREEN RIVER NEAR GREEN RIVER, WYO.

LOCATION.--At bridge on Green River-Linwood highway, about 1 mile upstream from gaging station near Green River, Sweetwater County, which is a quarter of a mile downstream from Bitter Creek, 1 mile southeast of town of Green River and 4 miles upstream from high-water line of proposed Flaming Gorge Reservoir.
DRAINAGE AREA.--10,000 square miles, of which 300 squares miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: May 1951 to September 1954.
Water temperatures: May 1951 to September 1954.
Sediment records: May 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 760 ppm Dec. 8-10; minimum, 159 ppm May 21-31.
Hardness: Maximum, 412 ppm Dec 8-12; minimum, 114 ppm July 1-10.
Specific conductance: Maximum daily, 1,240 micromhos Dec. 13; minimum daily, 219 micromhos May 22.
Water temperatures: Maximum observed, 74°F July 20; minimum observed, freezing point March 3, 5.
Sediment concentrations: Maximum daily, 1,780 ppm Apr. 8; minimum daily, 6 ppm Jan. 21-31.
Sediment loads: Maximum daily, 16,800 tons May 22; minimum daily, 7 tons Jan. 21-31.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 760 ppm Dec. 8-10, 1953; minimum, 159 ppm June 21-30, 1953, May 21-31, 1954.
Hardness: Maximum, 412 ppm Dec. 8-12, 1953; minimum, 114 ppm July 1-10, 1954.
Specific conductance: Maximum daily, 1,240 micromhos Dec. 13, 1953; minimum daily, 219 micromhos May 22, 1954.
Water temperatures: Maximum observed, 75°F on several days during summer months in 1952 and 1953; minimum observed, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 1,780 ppm Apr. 8, 1954; minimum daily, 6 ppm Jan. 21-31, 1954.
Sediment loads: Maximum daily, 32,900 tons July 15, 1952; minimum daily, 7 tons Jan. 21-31, 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953...	514	9.4	0.02	62	27	67	1.9	184	239	9.5		0.5	--	516	0.70	716	266	114	35	1.8	770	8.1
Oct. 11-20	532	9.1	.02	65	29	71	1.9	190	252	9.5		.3	0.08	544	.74	781	281	126	35	1.8	797	7.9
Oct. 21-31	591	10	.02	68	29	71	1.9	200	252	10		.4	--	558	.76	890	288	124	35	1.8	815	8.0
Nov. 1-10	622	11	.02	68	28	67	2.0	202	237	9.8		.5	--	538	.73	904	284	119	34	1.7	791	7.7
Nov. 11-20	622	11	--	71	30	66	1.9	210	246	9.8		.3	.07	553	.75	929	300	128	32	1.7	804	8.0
Nov. 21-23, 26-30.	610	11	--	70	28	57	1.9	219	210	8.9		.2	--	507	.69	835	290	110	30	1.5	748	8.1
Nov. 24-25	514	10	--	85	40	95	2.8	231	360	16		.4	--	a723	.98	1,000	376	187	35	2.1	1,040	8.1
Dec. 1-7	424	11	--	76	31	60	1.8	228	234	9.2		.2	--	548	.75	627	317	130	29	1.5	801	8.0
Dec. 8-10	300	11	--	94	43	95	1.9	263	365	17		.3	--	760	1.03	616	412	196	33	2.0	1,080	8.0
Dec. 11-20	389	12	--	94	39	88	1.9	264	331	12		.3	.12	740	1.01	777	395	178	33	1.9	1,020	8.1
Dec. 21-31	383	11	--	82	32	72	1.9	241	268	8.8		.2	--	620	.84	641	336	138	32	1.7	880	8.0
Jan. 1-10, 1954...	408	12	--	85	34	73	1.8	242	291	12		.2	.09	632	.86	696	352	154	31	1.7	907	8.1
Jan. 11-20	418	10	--	83	31	68	1.8	226	269	11		.1	.08	586	.80	661	334	150	31	1.6	851	8.0
Jan. 21-31	424	9.3	--	79	31	65	1.8	218	258	11		.1	.10	564	.77	646	324	146	30	1.6	828	7.9

a Sum of determined constituents.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Feb. 1-10, 1954 ..	461	10	--	73	29	59	2.0	211	244	7.8		0.4	--	546	0.74	680	301	128	30	1.5	796	7.8
Feb. 11-20	470	11	--	72	29	56	2.0	206	235	7.8		.2	0.08	527	.72	669	298	130	29	1.4	766	8.1
Feb. 21-28	554	10	--	71	29	57	2.0	204	237	8.0		.2	--	524	.71	784	296	129	29	1.4	771	8.0
Mar. 1-10	588	9.1	--	70	29	62	2.3	209	243	8.8		.1	--	538	.73	854	294	122	31	1.6	794	7.7
Mar. 11-20	832	8.9	--	64	25	66	2.0	176	245	8.8		.2	.06	514	.70	1,150	262	118	35	1.8	760	7.8
Mar. 21-31	903	8.3	--	61	24	54	2.0	182	202	8.0		.2	--	452	.61	1,100	250	102	32	1.5	683	7.9
Apr. 1-10	1,327	11	--	58	23	55	1.6	184	192	8.5		.6	--	451	.61	1,620	239	88	33	1.5	674	8.0
Apr. 11-20	1,488	10	--	60	22	43	2.2	189	163	7.8		.4	.08	408	.55	1,640	240	85	28	1.2	619	7.8
Apr. 21-30	1,627	10	--	58	21	31	2.2	200	125	6.0		.4	--	365	.50	1,600	231	67	22	.9	561	7.8
May 1-10	1,694	10	--	62	21	31	2.0	204	134	6.5		.3	--	378	.51	1,730	241	74	22	.9	576	8.0
May 11-14	2,638	10	--	56	19	25	1.6	184	105	5.2		.5	--	317	.43	2,260	218	66	20	.7	495	7.9
May 15-20	4,993	11	--	36	11	11	1.6	120	54	2.5		.8	.05	198	.27	2,670	135	36	15	.4	305	7.8
May 21-31	7,679	7.0	--	32	8.9	9.4	1.6	108	40	2.2		.4	--	159	.22	3,300	116	28	15	.4	259	7.8
June 1-10	3,025	9.8	--	43	15	22	1.5	158	75	3.9		.4	--	252	.34	2,060	169	40	22	.7	404	7.6
June 11-24	2,996	11	--	44	15	23	1.5	169	75	4.0		.4	.07	257	.35	2,080	172	33	22	.8	412	7.9
June 25-30	7,462	10	--	32	9.9	12	1.1	124	37	2.3		.7	--	168	.23	3,390	120	19	18	.5	277	7.5
July 1-10	5,757	9.2	--	30	9.6	12	1.1	121	37	2.1		.5	--	164	.22	2,550	114	16	18	.5	269	7.4
July 11-20	3,736	8.3	--	32	10	15	1.1	126	44	2.8		.4	.05	179	.24	1,810	121	18	21	.6	293	7.7
July 21-31	2,826	11	--	38	14	19	1.4	150	63	3.2		.4	--	224	.30	1,710	152	30	21	.7	359	7.8
Aug. 1-10	1,691	7.7	--	42	16	26	1.4	146	93	4.2		.4	--	262	.36	1,200	171	52	25	.9	413	7.8
Aug. 11-20	1,386	7.6	--	42	17	29	1.4	142	110	5.0		.2	.09	287	.39	1,070	175	58	26	1.0	442	8.0
Aug. 21-31	1,151	8.2	--	46	19	33	1.4	151	130	5.5		.2	--	328	.45	1,020	193	70	27	1.0	499	7.8
Sept. 1-10	970	7.6	--	48	21	43	2.5	158	156	6.2		.2	--	370	.50	969	206	77	31	1.3	560	8.0
Sept. 11-20	780	7.6	--	50	21	43	2.5	159	162	6.2		.1	.05	407	.55	857	212	81	30	1.3	571	8.1
Sept. 21-30	601	7.1	--	56	25	52	2.5	168	201	7.4		.1	--	442	.60	717	242	105	32	1.5	650	8.1
Weighted average.	1,629	9.3	--	45	16	28	1.6	153	103	4.6		0.4	--	289	0.39	1,270	178	53	25	0.9	445	--

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Suspended sediment, water year October 1953 to September 1954

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	504			616			730		
2	504			616			600		
3	504			607			440		
4	510			607			310		
5	510			607			290		
		9	12		20	34		28	29
6	517			625			300		
7	524			634			300		
8	517			652			300		
9	524			643			300		
10	524			616			300		
11	524			598			300		
12	517			607			300		
13	517			643			310		
14	517			643			340		
15	524			643			370		
		21	30		12	20		18	19
16	531			643			400		
17	545			652			410		
18	545			652			450		
19	545			661			490		
20	552			474			520		
21	598			405	34	37	540		
22	552			296			480		
23	559			368			440		
24	566			462			360		
25	580			566			340		
		60	96		52	86		14	14
26	598			690			330		
27	598			760			350		
28	607			710			320		
29	616			770			310		
30	616			878			350		
31	616				--	--	390		
Total	16,961	--	1,476	18,344	--	1,351	11,970	--	634

Day	January			February			March		
1	400			456			530		
2	400			468			530		
3	400			462			550		
4	410			462			570		
5	410			468			580	30	46
		20	22		21	26			
6	410			456			590		
7	410			468			600		
8	410			462			620		
9	410			460			640	130	225
10	420			450			670	200	a360
11	420			450			710	180	a350
12	420			450			760	300	620
13	420			445			810	205	448
14	420			445			850	260	597
15	420			498			870	220	517
		7	8		22	28			
16	420			510			900		
17	420			486			900		
18	420			480			860		
19	410			470			840		
20	410			470			820	169	399
21	410			468			860		
22	410			492			890		
23	410			552	24	35	920		
24	415			545			946		
25	425			634			878		
		6	7						
26	425			607	47	77	890		
27	410			580	111	174	946	119	292
28	425			550	113	168	932		
29	435			--	--	--	904		
30	450			--	--	--	946		
31	450			--	--	--	818		
Total	12,925	--	377	13,744	--	1,134	24,130	--	9,013

a Sum of determined constituents.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Suspended sediment, water year October 1953 to September 1954--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	760	70	144	1,760			4,070		
2	818	60	133	1,780			3,550		
3	794	62	133	1,720	60	278	3,250		
4	854	57	131	1,680			3,010		
5	1,420	280	1,070	1,640			2,690		
								84	686
6	1,900	1,120	5,750	1,530			2,510		
7	1,980	1,700	9,090	1,510			2,550		
8	1,880	1,780	9,040	1,640			2,830		
9	1,490	1,140	4,590	1,800			2,920		
10	1,370	540	2,000	1,880	57	280	2,870		
11	1,230	265	880	1,980			2,900		
12	1,260	237	806	2,400			2,940		
13	1,240	170	569	2,920	320	2,520	2,850		
14	1,260	150	510	3,250	458	4,020	2,620		
15	1,360	148	543	3,660	520	5,140	2,550		
								37	281
16	1,480	185	739	4,100	565	6,250	2,620		
17	1,640	315	1,390	4,630	600	7,500	2,710		
18	1,620	250	1,090	5,240	640	9,050	2,870		
19	1,720	195	906	5,890	670	10,700	3,030		
20	2,070	268	1,500	6,440	600	10,400	3,010		
21	1,940	202	1,060	6,930	545	10,200	2,900		
22	1,700	118	542	7,870	790	16,800	2,940	31	261
23	1,530	80	330	8,740	642	15,100	3,530		
24	1,420	60	230	9,660	610	15,900	4,470	65	784
25	1,420	50	192	10,300	522	14,500	5,190	155	2,170
26	1,490	58	233	9,370	340	8,600	6,010	240	3,890
27	1,570	55	233	8,300	327	7,330	6,740	285	5,190
28	1,680	70	318	7,220	252	4,910	7,670	278	5,780
29	1,720	77	358	6,190	265	4,430	8,980	345	8,360
30	1,800	70	340	5,240	112	1,580	10,300	325	9,040
31	--	--	--	4,630	70	875	--	--	--
Total	44,416	--	44,850	141,920	--	159,155	117,080	--	45,647

	July			August			September		
1	10,100	238	6,490	1,900	--	e100	932		
2	8,040	182	3,950	1,820	--	e74	890		
3	6,190	130	2,170	1,740			918	12	31
4	5,450	115	1,690	1,700			890		
5	5,130	100	1,390	1,660			1,090		
6	4,960	80	1,070	1,600			1,040		
7	4,770	82	1,060	1,590			1,060	16	45
8	4,500	70	850	1,640			1,030		
9	4,310	70	815	1,660			960	40	104
10	4,120	62	690	1,600			890	57	137
					12	50			
11	3,970			1,550			794		
12	3,840			1,490			780		
13	3,790			1,440			794	20	45
14	3,760	48	490	1,440			974		
15	3,660			1,420			890		
16	3,660			1,370			770	45	94
17	3,630	200	1,960	1,340			740	379	757
18	3,660	195	1,930	1,290			730		
19	3,680	62	616	1,260			700	36	67
20	3,710	35	351	1,260			852		
21	3,730	220	2,220	1,260			634		
22	3,550	112	1,070	1,260			607		
23	3,480	60	752	1,260			625	22	36
24	3,250	67	588	1,260	8	25	607		
25	2,990			1,230			589		
26	2,760			1,180			580		
27	2,530	32	224	1,120			580		
28	2,400			1,080			589	16	25
29	2,310			1,040			598		
30	2,130	122	702	1,000			598	--	--
31	1,960	--	e130	974			--		
Total	126,020	--	34,554	43,434	--	1,274	23,511	--	2,113

Total discharge for year (cfs days) 594,455
Total load for year (tons) 301,578

e Estimated.
a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR GREEN RIVER, WYO.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Oct. 2, 1953	11:00 a.m.	510	59	7	--		--		--	--	91	95	97	98	100	S
Apr. 9, 1954	9:25 a.m.	1,490	41	1,000	1,680		76		94	97	99	100	--	--	--	SPWCM
Apr. 17	7:00 a.m.	1,820	45	360	1,200		60		74	83	95	95	98	100	--	SPWCM
Apr. 27	6:45 a.m.	1,570	50	53	412		60		81	87	87	89	93	98	100	SPWCM
May 5	12:00 m.	1,680	58	69	--		--		--	--	91	94	97	100	--	S
May 13	6:30 a.m.	2,870	57	305	4,430		32		59	74	85	94	98	99	100	SPWCM
May 21	5:50 a.m.	6,740	60	457	2,120		28		44	57	67	81	93	98	99	SPWCM
May 29	6:15 a.m.	6,500	46	221	1,360		12		22	30	38	50	74	96	98	SPWCM
June 25	6:45 a.m.	4,990	68	128	1,300		22		34	47	58	74	89	95	100	SPWCM
June 30	6:40 a.m.	10,100	60	385	1,380		14		25	32	38	52	72	90	98	SPWCM
July 1	4:30 p.m.	9,970	61	212	1,480		17		28	37	44	57	79	94	98	SPWCM
July 11	8:40 a.m.	3,970	68	34	--		--		--	--	38	49	66	87	100	S
July 18	6:45 a.m.	3,630	68	243	3,620		69		81	85	86	87	91	97	100	SPWCM

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR MARSTON, WYO.

LOCATION.--At Bonomo Ranch, approximately 5 miles south of U. S. Highway 30, approximately 12 miles west of town of Green River, Sweetwater County, and 12 miles upstream from gaging station near Green River.
DRAINAGE AREA.--3,670 square miles, approximately (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 4,480 ppm Oct. 1-3; minimum, 278 ppm Feb. 12-13.
Hardness: Maximum, 1,180 ppm Oct. 21-31; minimum, 98 ppm Sept. 3-6.
Specific conductance: Maximum daily, 6,010 micromhos Oct. 1; minimum daily, 414 micromhos Feb. 13.
Water temperatures: Maximum observed, 76°F July 9, 16; minimum observed, 34°F Dec. 2, Jan. 6, 12, 20.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 4,480 ppm Oct. 1-3, 1953; minimum, 278 ppm Feb. 12-13, 1954.
Hardness: Maximum, 1,180 ppm Oct. 21-31, 1953; minimum, 48 ppm Jan. 21-22, 26, 1953.
Specific conductance: Maximum daily, 6,010 micromhos Oct. 1, 1953; minimum daily, 414 micromhos Apr. 4, 1952, Feb. 13, 1954.
Water temperatures: Maximum observed, 79°F July 31, 1952; minimum observed, freezing point on many days during winter months.
REMARKS.--Prior to October 1, 1953, samples were collected at gaging station near Green River. During periods of very low flow concentrations are higher at the new sampling site than at the old site (gaging station). This is perhaps due to "pooling" of the slow moving water above and below Bonomo Ranch and to some dilution from inflow "seepage" below the ranch. At all other stages the concentrations are comparable between the two sites. Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for gaging station near Green River for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-3, 1953	0.8	4.1	0.04	9.0	98	1,460	6.1	a1,690	1,840	227	0.2	0.3	0.69	4,480	6.09	9.68	426	0	88	31	5,940	9.4	10
Oct. 5-10	.5	2.9	.05	11	106	1,210	7.8	b990	1,890	237	.4	.7	.70	3,950	5.37	5.33	464	0	85	24	5,310	9.0	8
Oct. 11-16	.3	2.9	.05	44	116	1,040	7.3	c600	1,950	252	.5	1.1	.70	3,710	5.05	3.01	587	96	79	19	4,930	8.4	6
Oct. 18-20	.8	2.9	.08	180	156	796	8.2	276	2,190	244	.5	.6	.72	3,720	5.06	8.04	1,090	864	61	10	4,660	8.0	8
Oct. 21-31	11.8	3.7	.06	256	132	541	6.5	188	1,890	188	.6	.3	.60	3,110	4.23	99.1	1,180	1,030	50	6.8	3,860	7.8	6
Nov. 1-10	21.4	5.9	.08	237	112	447	5.1	222	1,570	172	.7	.2	.48	2,660	3.62	154	1,050	870	48	6.0	3,360	8.0	8
Nov. 11-20	40.6	8.2	.05	165	73	260	4.0	232	914	106	.7	.3	.36	1,650	2.24	181	712	522	44	4.2	2,200	7.9	8
Nov. 21-30	19.0	9.3	.08	156	66	222	2.9	246	795	94	.3	.7	.31	1,470	2.00	75.4	660	459	42	3.8	2,010	7.9	8
Dec. 1-10	18.9	11	.09	173	75	290	4.4	284	926	124	.5	1.3	.34	1,750	2.38	89.3	740	508	46	4.6	2,360	7.9	7
Dec. 11-20	22.9	11	.10	198	86	300	6.0	336	988	144	.5	.9	.41	1,900	2.58	117	848	572	43	4.5	2,540	7.8	10
Dec. 21-31	21.4	10	.09	175	72	245	6.0	348	771	124	.4	.4	.38	1,580	2.15	91.3	732	448	42	3.9	2,170	7.8	15
Jan. 1-10, 1954	24.3	12	.06	174	72	238	5.0	324	802	109	.5	1.5	.30	1,570	2.14	103	730	464	41	3.8	2,140	7.7	9
Jan. 11-16,19-20	33.4	9.7	.05	150	58	191	4.3	266	651	90	.5	2.4	.25	1,290	1.75	116	613	395	40	3.4	1,790	7.7	--
Jan. 17-18	33.5	7.6	.15	68	28	115	3.4	166	319	54	.5	1.1	--	679	.92	61.4	284	148	46	3.0	1,020	7.5	8
Jan. 21-22, 25-26, 28, 30-31	34.9	10	.07	145	54	167	3.4	258	609	76	.5	2.0	.26	1,190	1.62	112	584	372	38	3.0	1,660	7.6	10
Jan. 23-24	34.0	6.7	.05	73	31	104	2.8	139	336	53	.4	2.5	--	678	.92	62.2	310	196	42	2.6	1,020	8.0	7
Jan. 27 d	34.0	--	--	185	83	323		312	1,030	121	--	2.5	--	1,900	2.58	174	803	548	47	5.0	2,520	8.0	--

a Includes equivalent of 393 parts per million of Carbonate (CO_3).
b Includes equivalent of 138 parts per million of Carbonate (CO_3).
c Includes equivalent of 43 parts per million of Carbonate (CO_3).
d Not included for computation of weighted averages.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR MARSTON, WYO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Feb. 1-9, 1954 .	49.0	11	0.08	124	47	146	3.8	250	484	70	0.4	4.9	--	1,010	1.37	134	503	298	38	2.8	1,460	7.7	6
Feb. 10 d	62.0	8.7	--	72	21	--	--	132	--	48	--	15	--	--	--	--	268	160	--	--	923	8.2	--
Feb. 11, 14-20 .	61.9	11	.12	99	40	138	3.5	230	396	71	.5	2.6	0.19	875	1.19	146	412	223	42	3.0	1,300	7.8	7
Feb. 12-13 d ...	64.0	4.3	.04	37	9.1	--	--	88	112	21	--	1.0	--	e 278	.38	48.0	130	58	--	1.6	452	7.4	--
Feb. 21-28.....	61.1	10	.08	98	38	138	4.3	230	392	74	.3	1.3	--	869	1.18	143	400	212	42	3.0	1,300	7.9	8
Mar. 1-9	72.0	11	.07	106	42	138	4.3	252	398	82	.3	1.0	--	907	1.23	176	437	230	40	2.9	1,360	7.8	8
Mar. 10-20	164	9.6	.04	73	26	105	3.4	194	267	57	.4	1.9	.17	639	.87	283	289	130	44	2.7	1,000	7.7	10
Mar. 21-31	173	9.3	.08	92	37	130	4.1	221	355	79	.4	1.5	--	817	1.11	382	382	200	42	2.9	1,240	7.8	7
Apr. 1-10.....	165	13	.04	102	41	154	5.7	250	406	96	.3	.9	.25	942	1.28	420	423	218	44	3.3	1,410	7.8	5
Apr. 11-20.....	172	9.4	.04	92	38	109	4.2	240	311	67	.3	.3	.18	749	1.02	348	386	189	38	2.4	1,140	7.8	5
Apr. 21-30.....	385	10	.03	74	23	46	3.0	219	153	28	.3	1.9	.10	447	.61	465	279	100	26	1.2	710	7.8	12
May 1-10	317	8.0	.03	70	20	44	2.4	212	133	26	.2	.7	.07	409	.56	350	256	83	27	1.2	647	8.0	10
May 11-20.....	442	9.1	.02	69	20	48	3.6	215	138	28	.3	1.6	.12	424	.58	506	254	78	29	1.3	674	7.9	10
May 21-31	451	10	.04	78	24	52	2.8	229	171	27	.3	.9	.12	479	.65	583	293	106	28	1.3	743	8.0	15
June 1-10	228	11	.06	94	35	97	3.3	254	298	52	.3	1.2	--	717	.98	441	378	170	36	2.2	1,070	7.8	--
June 11-20	127	11	.08	104	45	119	3.3	240	412	53	.4	1.1	.23	867	1.18	297	444	248	37	2.5	1,260	7.9	--
June 22 d	81.0	10	---	123	56	166		225	589	70	--	2.4	--	1,130	1.54	247	538	353	40	3.1	1,580	8.0	--
June 23-30	57.8	11	.06	115	55	175	4.8	218	577	74	.4	1.1	--	1,120	1.52	175	513	334	42	3.4	1,590	7.6	--
July 1-10	31.2	9.7	.07	138	69	226	5.1	207	824	77	.5	1.1	--	1,450	1.97	122	628	458	44	3.9	1,970	7.7	--
July 11-20	12.5	8.1	.09	130	73	250	5.6	189	854	92	.5	.8	.42	1,510	2.05	51.0	624	470	46	4.3	2,080	7.6	--
July 22-25, 27-29, 31	46.1	9.1	.07	124	70	285	5.7	172	892	98	.5	1.0	.36	1,570	2.14	195	598	456	51	5.1	2,120	7.8	12
July 30 b.....	37.0	9.9	--	220	114	414		168	1,510	148	--	.6	--	2,500	3.40	250	1,020	880	47	5.6	3,130	7.6	--
Aug. 1-10	10.6	14	.08	73	35	370	7.0	168	746	169	1.4	1.7	.53	1,500	2.04	42.9	326	188	71	8.9	2,180	7.6	22
Aug. 11-20	.5	7.4	.08	109	61	482	7.4	176	1,030	237	1.1	1.7	.62	2,020	2.75	2.73	523	379	66	9.1	2,840	7.6	12
Sept. 1, 8, 10 ...	.2	4.2	.08	135	81	575	9.4	150	1,370	268	.8	1.0	.86	2,520	3.43	1.36	670	547	64	9.7	3,430	6.9	25
Sept. 3-6	77.9	15	.09	26	8.1	203	3.2	177	278	70	1.2	2.8	.30	694	.94	146	98	0	81	8.9	1,100	7.6	20
Sept. 11-20	.3	4.5	.05	132	83	560	8.1	142	1,400	251	.7	1.8	.85	2,510	3.41	2.03	671	554	64	9.4	3,420	7.3	15
Sept. 21-25, 29..	.4	5.5	.05	156	92	624	8.9	172	1,560	279	.7	1.4	.87	2,810	3.82	3.03	768	626	64	9.8	3,720	7.3	10
Weighted average	f99.4	9.9	0.05	90	33	102	3.6	228	309	53	0.3	1.3	--	715	0.97	192	360	173	38	2.3	1,060	--	--

b Includes equivalent of 138 parts per million of Carbonate (CO_3).
d Not included for computation of weighted averages.
e Residue on evaporation at 180°C.
f Represents 98 percent of runoff for water year October 1953 to September 1954.

GREEN RIVER BASIN--Continued

BLACKS FORK NEAR MARSTON, WYO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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.
DRAINAGE AREA.--531 square miles.
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,550 ppm Aug. 21-31, Sept. 1-2; minimum, 844 ppm Apr. 1-10.
Hardness:Maximum, 1,530 ppm Aug. 21-31, Sept. 1-2; minimum, 436 ppm Sept. 4-5.
Specific conductance: Maximum daily, 3,070 micromhos Aug. 20; minimum daily, 1,020 micromhos Mar. 12.
Water temperatures: Maximum observed, 67°F July 1; minimum observed, freezing point on many days from November to March.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 2,550 ppm Aug. 21-31, Sept. 1-2, 1954; minimum, 312 ppm June 1-6, 9-10, 1952.
Hardness: Maximum, 1,530 ppm Aug. 21-31, Sept. 1-2, 1954; minimum, 208 ppm June 1-6, 9-10, 1952.
Specific conductance: Maximum daily, 3,070 micromhos Aug. 20, 1954; minimum daily, 395 micromhos May 15, June 2, 1952.
Water temperatures: Maximum observed, 67°F July 1, 1954; 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	4.3	24		266	144	176	13	318	1,210	72		1.1	--	2,060	2.80	23.9	1,260	995	23	2.2	2,510	--
Oct. 11-20	4.7	25		262	142	172	13	328	1,190	69		1.0	0.53	2,040	2.77	25.9	1,240	968	23	2.1	2,460	--
Oct. 21-31	15.2	23		242	119	135	13	330	982	60		1.0	--	1,740	2.37	71.4	1,090	823	21	1.8	2,140	--
Nov. 1-10	37.1	23		184	91	89	11	300	687	42		.3	--	1,280	1.74	128	833	587	19	1.3	1,640	--
Nov. 11-20	37.2	23		166	88	87	10	300	642	40		.2	.35	1,200	1.63	121	776	530	19	1.4	1,610	8.0
Nov. 21-30	29.1	23		165	87	80	9.8	312	605	39		.4	.28	1,160	1.58	91.1	769	514	18	1.3	1,580	7.9
Dec. 1-10	34.9	22		173	88	81	9.8	320	634	40		.4	.30	1,210	1.65	114	794	532	18	1.2	1,610	7.9
Dec. 11-20	42.7	20		163	84	77	9.0	302	597	38		.2	.28	1,140	1.55	131	752	504	18	1.2	1,520	8.0
Dec. 21-31	38.2	19		166	85	77	9.0	319	603	40		.2	.30	1,160	1.58	120	764	502	18	1.2	1,560	8.0
Jan. 1-10, 1954	38.4	19		161	81	75	8.3	306	574	37		.1	.25	1,110	1.51	115	734	484	18	1.2	1,490	8.0
Jan. 11-20	37.2	19		166	82	79	8.9	312	597	44		.1	.29	1,150	1.56	116	751	496	18	1.3	1,550	7.7
Jan. 21-31	37.3	18		159	79	75	8.7	300	569	42		.1	.28	1,100	1.50	111	722	476	18	1.2	1,480	7.7
Feb. 1-10	42.3	19		135	75	69	8.4	273	507	36		.6	--	984	1.34	112	646	422	19	1.2	1,340	7.9
Feb. 11-20	30.9	18		135	73	69	7.7	276	497	36		.6	.23	972	1.32	81.1	637	411	19	1.2	1,330	8.0
Feb. 21-28	20.6	17		131	70	66	8.2	272	477	36		.5	--	940	1.28	52.3	615	392	19	1.2	1,290	8.1
Mar. 1-10	15.4	18		141	73	74	8.3	291	507	37		.4	--	1,000	1.36	41.6	652	414	20	1.3	1,370	8.0
Mar. 11-20	21.2	19		125	64	61	8.3	268	430	32		1.0	.28	872	1.19	49.9	575	356	18	1.1	1,200	7.9
Mar. 21-31	43.6	18		128	66	62	7.8	272	437	34		.9	.21	888	1.21	105	591	368	18	1.1	1,250	7.9
Apr. 1-10	55.4	18		120	63	63	7.5	265	411	30		1.0	.24	844	1.15	126	558	342	19	1.2	1,190	7.9
Apr. 11-20	41.5	18		124	66	67	8.4	277	434	33		1.0	.21	888	1.21	99.5	581	354	20	1.2	1,250	7.8
Apr. 21-30	34.4	18		121	63	66	8.8	264	428	33		.9	.20	869	1.18	80.7	561	344	20	1.2	1,230	7.9

May 1-10, 1954	21.8	20		134	73	82	8.5	266	318	40		.7	.25	1,010	1.37	59.4	634	416	22	1.4	1,380	7.8
May 11-20	6.4	21		153	80	84	9.4	276	608	44		.6	.26	1,150	1.56	19.9	710	484	22	1.5	1,540	7.6
May 21-23, 27-31	10.8	24		187	100	117	11	310	774	53		.9	.38	1,420	1.93	41.4	878	624	22	1.7	1,840	7.6
May 24-26	21.3	23		121	65	73	9.5	254	458	35		1.0	.28	911	1.24	52.4	570	362	21	1.3	1,260	7.9
June 1-8	7.2	25		229	118	145	13	344	963	67		.8	.43	1,730	2.35	33.6	1,060	774	23	1.9	2,180	7.8
June 9-13	3.3	29		252	133	162	13	338	1,100	74		.5	.45	1,930	2.62	17.2	1,180	898	23	2.1	2,380	7.9
June 14-20	2.5	25		266	133	180	14	359	1,140	79		.6	.51	2,010	2.73	13.6	1,210	916	24	2.3	2,490	7.8
June 21-30	2.6	28		269	138	180	14	304	1,230	82		.4	.56	2,090	2.84	14.7	1,240	990	24	2.2	2,510	7.7
July 1-10	2.3	27		268	134	165	14	330	1,170	76		.5	.52	2,020	2.75	12.5	1,220	949	22	2.1	2,430	7.6
July 11-20	3.5	26		293	143	192	14	344	1,300	83		.5	.56	2,220	3.02	21.0	1,320	1,040	24	2.3	2,670	7.6
July 21-25	56.4	28		211	58	83	16	292	653	35		1.5	.31	1,230	1.67	187	765	526	19	1.3	1,560	7.6
July 26-31	4.2	25		242	110	133	13	319	974	61		.6	.43	1,720	2.34	19.5	1,060	795	21	1.8	2,120	7.7
Aug. 1-10	1.0	27		287	143	190	15	323	1,330	78		.7	.51	2,230	3.03	6.02	1,300	1,040	24	2.3	2,670	7.7
Aug. 11-20	.4	25		317	160	236	15	346	1,510	88		.6	.57	2,520	3.43	2.72	1,450	1,170	26	2.7	2,930	7.8
Aug. 21-31, Sept. 1-2	.5	26		336	169	217	15	333	1,530	89		.6	--	2,550	3.47	3.44	1,530	1,260	23	2.4	2,970	8.0
Sept. 3, 6-10	16.6	29		228	96	127	16	266	924	55		1.3	--	1,610	2.19	72.2	964	746	22	1.8	2,000	8.0
Sept. 4-5	13.5	48		130	27	119		246	437	25		2.6	--	910	1.24	33.2	436	234	37	2.5	1,240	7.6
Sept. 11-20	3.5	27		278	136	172	16	316	1,210	72		1.1	.50	2,070	2.82	19.6	1,250	994	23	2.1	2,480	7.9
Sept. 21-30	5.9	24		240	124	147	15	310	1,030	62		.8	--	1,800	2.45	28.7	1,110	855	22	1.9	2,210	8.0
Weighted average	21.5	20		159	80	81	9.5	292	582	40		0.6	--	1,120	1.52	65.0	726	486	19	1.3	1,500	--

GREEN RIVER BASIN--Continued

HENRYS FORK AT LINWOOD, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, 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 (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1954.
Water temperatures: November 1950 to September 1954.
Sediment records: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 455 ppm Oct. 1-10; minimum, 88 ppm May 11-20.
Hardness: Maximum, 210 ppm Oct. 1-10; minimum, 56 ppm May 11-20.
Specific conductance: Maximum daily, 813 micromhos Oct. 2; minimum daily, 110 micromhos May 22.
Water temperatures: Maximum observed, 80°F on several days during July and August; minimum observed, freezing point on many days during December to March.
Sediment concentrations: Maximum daily, 1,740 ppm Feb. 14; minimum daily, 6 ppm Jan. 13-18.
Sediment loads: Maximum daily, 4,970 tons Apr. 26; minimum daily, 3 tons Dec. 25-31.
EXTREMES, 1950-54.--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, 813 micromhos Oct. 2, 1953; minimum daily, 94.3 micromhos June 19, 1953.
Water temperatures: Maximum observed, 81°F July 30, 1951; minimum observed, freezing point on many 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. 2 to Feb. 4, 1951.
REMARKS.--Prior to Jan. 30, 1951, samples were collected at bridge on U. S. Highway 40, 100 feet upstream from gaging station. Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1343. No appreciable inflow between gaging station and sampling station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	85.6	5.1		43	25	80	3.7	210	127	58		0.5	--	455	0.62	105	210	38	45	2.4	755	7.6
Oct. 11-20	136	5.4		44	23	67	3.0	206	116	44		1.7	0.10	412	.56	151	204	36	41	2.0	675	7.5
Oct. 21-31	226	9.1		41	20	47	2.8	188	89	30		.8	--	342	.47	209	184	30	35	1.5	547	7.6
Nov. 1-10	279	10		40	17	37	2.7	178	74	24		.7	--	299	.41	225	170	24	32	1.2	483	7.6
Nov. 11-20	259	12		40	17	36	2.4	176	72	24		1.1	--	295	.40	206	170	26	31	1.2	485	7.5
Nov. 21-30	255	13		41	18	41	2.5	182	81	24		.4	--	312	.42	215	176	28	33	1.3	509	7.6
Dec. 1-10	198	13		44	20	47	2.6	192	91	32		.4	--	346	.47	185	192	34	34	1.5	568	7.6
Dec. 11-20	199	13		47	21	49	2.9	217	94	30		.4	.09	365	.50	196	204	26	34	1.5	596	7.7
Dec. 21-31	172	13		45	20	47	3.0	212	85	30		.4	--	349	.47	162	194	21	34	1.5	574	7.6
Jan. 1-10, 1954	228	13		44	18	44	3.0	203	75	28		.3	--	326	.44	201	184	18	34	1.4	539	7.6
Jan. 11-20	235	12		42	17	44	2.7	197	73	28		.2	.08	318	.43	202	175	14	35	1.4	527	7.8
Jan. 21-31	247	12		39	17	43	2.4	186	73	24		.8	--	300	.41	200	168	15	35	1.4	506	7.9
Feb. 1-10	251	11		40	19	45	2.5	189	83	24		.6	--	314	.43	213	178	23	35	1.5	528	7.6
Feb. 11-20	286	8.9		46	19	40	3.2	174	104	20		.9	.09	328	.45	253	193	50	31	1.3	534	7.6
Feb. 21-28	280	8.9		43	19	43	2.6	171	104	21		.6	--	324	.44	245	186	46	33	1.4	529	7.8

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Mar. 1-10, 1954...	261	7.7		42	19	45	2.6	175	104	25		0.7	--	326	0.44	230	183	40	34	1.4	539	7.7
Mar. 11-20.....	375	8.9		42	17	37	2.8	158	100	18		.8	0.07	300	.41	304	175	46	31	1.2	485	7.6
Mar. 21-31.....	497	9.1		44	20	45	3.7	176	118	19		.9	--	344	.47	462	192	48	33	1.4	557	7.9
Apr. 1-9.....	802	9.7		46	20	38	3.0	176	112	16		1.3	--	333	.45	721	197	53	29	1.2	536	7.9
Apr. 10-20.....	1,542	12		32	11	16	2.3	124	49	6.0		2.9	.43	200	.27	833	125	24	21	.6	314	7.6
Apr. 21-30.....	2,765	12		23	7.0	8.1	1.7	93	21	2.5		2.1	--	133	.18	993	86	10	17	.4	202	7.6
May 1-10.....	2,528	11		21	6.6	8.8	1.7	84	22	3.5		1.0	--	130	.18	887	80	10	19	.4	189	7.7
May 11-20.....	3,985	9.2		15	4.4	5.0	1.2	60	12	2.3		1.3	.03	88	.12	947	56	6	16	.3	130	7.1
May 21-31.....	3,656	8.9		15	4.8	6.8	1.2	60	16	4.0		1.1	--	95	.13	938	57	8	20	.4	143	6.9
June 1-10.....	1,782	9.2		18	6.4	12	1.3	78	24	5.9		.9	--	121	.16	582	72	8	26	.6	194	7.3
June 11-20.....	1,415	8.5		18	6.4	13	1.3	79	24	6.1		1.0	.04	119	.16	455	72	7	28	.7	197	7.3
June 21-30.....	1,111	8.4		18	6.5	14	1.5	80	23	8.3		.7	--	124	.17	372	72	6	29	.7	206	7.2
July 1-9.....	480	8.3		26	11	25	2.0	109	41	20		.9	.03	189	.26	245	110	20	33	1.0	320	7.6
July 10-20.....	198	4.1		37	15	47	3.1	149	84	32		1.2	.06	301	.41	161	154	32	39	1.6	505	7.6
July 21-31.....	179	3.8		39	17	40	3.1	170	76	25		.8	--	290	.39	140	168	28	34	1.3	485	7.8
Aug. 1-10.....	122	3.0		37	18	49	2.9	179	74	36		.4	.07	309	.42	102	166	20	39	1.7	526	7.8
Aug. 11-20.....	145	4.1		39	17	50	3.3	184	77	32		.2	.12	318	.43	124	168	16	39	1.7	534	7.8
Aug. 21-31.....	99.6	2.8		40	17	60	3.3	190	83	42		.1	--	341	.46	91.7	170	14	43	2.0	577	7.7
Sept. 1-11.....	136	4.4		49	21	77	4.7	198	134	52		.3	--	443	.60	163	209	47	44	2.3	726	7.5
Sept. 12-20.....	240	5.9		40	15	35	3.8	170	64	23		.5	.09	270	.37	175	162	22	31	1.2	450	7.7
Sept. 21-30.....	183	4.8		41	17	47	3.9	176	85	29		.1	--	309	.42	153	172	28	36	1.6	513	7.7
Weighted average.	721	9.7		25	9.4	18	1.9	104	40	9.8		1.2	--	172	0.23	335	101	16	27	0.8	273	--

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1953 to September 1954

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			248			284		
2	77			248			272		
3	81			248	28	19	240		
4	89	19	4	260			184	19	11
5	89			264			170		
6	85			289			170		
7	83			307			180		
8	87			325			170		
9	93			316	14	11	160	12	5
10	97	20	5	284			150		
11	100			256			150		
12	102			256			160	80	35
13	102			264			170	38	17
14	108			268			170		
15	118			264	26	19	200		
16	132	26	10	272			220	8	4
17	155			272			230		
18	167			260			230		
19	184			250			230		
20	188			230			230		
21	188			210	43	27	200	10	5
22	188	36	20	210			180		
23	191			230			170		
24	226			250			170		
25	233			250			170		
26	236			260	55	40	160		
27	248			280			150	7	3
28	248	14	9	289			160		
29	248			289			170		
30	240			284			170		
31	236	28	18	--	--	--	190		
Total	4,894	--	307	7,933	--	717	5,860	--	214

Day	January			February			March		
1	210			250			250		
2	220			250			240		
3	220			250			230		
4	220	7	4	250	9	6	230	44	28
5	220			250			230		
6	230			250			240		
7	240			250			250		
8	250			250			280	83	63
9	240			250			310	180	151
10	220	7	4	260	65	45	350	1,110	1,050
11	220			260			320	1,160	1,000
12	220			260			280	363	274
13	220			280	1,360	1,030	300	300	243
14	230			320	1,740	1,500	350	292	276
15	240			310	1,380	1,160	400	367	396
16	250	6	4	300	998	808	420	395	448
17	250			300	970	786	450	225	273
18	250			290	300	235	400	185	200
19	240			280	120	91	410	175	194
20	230			260	67	47	420	140	159
21	230	7	4	260			430	160	186
22	230			280	83	63	442	95	113
23	240			290	130	102	464	160	200
24	250			300	330	267	558	420	633
25	250			300	620	502	600	320	518
26	250			290	378	296	510	380	523
27	250	10	7	270	175	128	430	477	554
28	260			250	68	46	415	262	294
29	260			--	--	--	442	190	227
30	250			--	--	--	588	190	302
31	250			--	--	--	588	260	413
Total	7,350	--	145	7,610	--	7,375	11,827	--	8,886

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	469	280	355	2,530			2,390		
2	442	180	215	2,200	122	730	2,160	27	148
3	447	147	177	1,920			1,930		
4	594	172	276	1,620			1,660		
5	775	143	299	1,730	104	527	1,600	300	1,300
6	922	230	573	2,280			1,840	60	298
7	1,200	305	988	2,690			1,920		
8	1,300	362	1,270	3,130	231	2,030	1,660		
9	1,070	320	924	3,420			1,400	36	151
10	1,190			3,760			1,260		
11	1,200	146	489	3,980			1,230		
12	1,210			3,690	225	2,330	1,180	180	573
13	1,360			3,860			1,230	60	199
14	1,630	240	1,060	4,080	222	2,460	1,360		
15	1,950	420	2,210	4,120			1,420		
16	1,590	302	1,300	4,080			1,560	43	168
17	1,260			3,820	149	1,610	1,510		
18	1,350	168	685	4,010			1,430		
19	1,920			4,130			1,610		
20	2,300	290	1,800	4,080			1,620		
21	2,440	350	2,310	4,470	189	2,350	1,550		
22	2,180	548	3,230	4,740			1,420	25	90
23	2,030	590	3,230	5,120			1,280		
24	2,420	545	3,560	4,900			1,110		
25	2,910	420	3,300	3,830	195	2,160	1,010		
26	3,230	570	4,970	3,590			974		
27	3,070	430	3,560	3,500			943		
28	3,020	340	2,770	3,010			943	40	102
29	3,200	350	3,020	2,510	43	315	990		
30	3,150	250	2,130	2,270			894		
31	--	--	--	2,280			--	--	--
Total	51,829	--	47,538	105,350	--	47,696	43,084	--	5,775

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	733			146			55		
2	614	32	55	128			52	31	4
3	546			113			52		
4	522	186	262	108			60		
5	480	163	211	106	17	6	67	30	5
6	425	11	12	106			94	--	e 56
7	360			122			87	--	e 38
8	340	15	14	140			145	--	e 490
9	302			132			202	980	534
10	264	18	13	120			233	370	233
11	236			113			446	395	s 550
12	212	50	29	104			320	560	484
13	177			97			289	515	402
14	164			132	15	5	222	510	306
15	161	20	9	158			272	357	262
16	143			174			294	200	159
17	242	116	s 139	236	109	69	233		
18	177	355	170	170	191	88	198		
19	191	240	124	146	71	26	177		
20	216	220	128	122			152	60	28
21	208	150	84	111			138		
22	205			118			128		
23	180	47	23	102			130		
24	167			100			161	130	57
25	174			113			130	480	168
26	174	110	a 52	120	20	5	143	279	108
27	170	220	101	111			216		
28	180			97			272	92	62
29	180	20	9	83			252		
30	167			75			260		
31	167			66			--	--	--
Total	8,477	--	1,706	3,769	--	354	5,480	--	4,312

Total discharge for year (cfs-days) 263,263

Total load for year (tons) 125,025

e Estimated.

a Computed from estimated concentration graph.

s Computed by subdividing day.

GREEN RIVER BASIN--Continued

YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Oct. 1, 1953	5:00 p.m.	72	60	25	370	61	61	72	76	83	85	90	92		93		SPWCM
Nov. 29	4:00 p.m.	298	36	28	--	--	--	--	--	--	89	95	98		98		S
Apr. 14, 1954	5:00 p.m.	1,530	56	195	--	--	--	--	--	--	99	99	100		--		S
May 14	5:00 p.m.	3,900	58	209	1,660	--	52	--	78	93	97	99	99		100		SPWCM
May 29	4:00 p.m.	a2,510	60	36	536	59	68	80	93	97	98	99	100		--		SBWCM
July 27	9:00 a.m.	170	68	287	5,700	--	93	--	96	98	100	--	--		--		SPWCM
Aug. 17	5:00 p.m.	a236	70	95	1,330	83	90	96	97	98	99	99	99		100		SBWCM
Sept. 11	6:00 p.m.	410	68	289	5,040	--	92	--	98	98	100	--	--		--		SPWCM

a Daily mean discharge.

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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.--3,730 square miles, approximately (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,750 ppm (sum) July 20; minimum, 133 ppm May 11-20.
Hardness: Maximum, 664 ppm Sept. 5; minimum, 82 ppm May 11-20.
Specific conductance: Maximum daily, 2,290 micromhos July 20; minimum daily, 178 micromhos May 19.
Water temperatures: Maximum observed, 68°F July 12, 14, 20, 27; minimum observed, freezing point on many days during November to April.
EXTREMES, 1950-54.--Dissolved solids (1950-51, 1952-54): Maximum, 1,750 ppm July 20, 1954; minimum, 116 ppm June 11-20, 1953.
Hardness (1950-51, 1952-54): Maximum, 664 ppm Sept. 5, 1954; minimum, 66 ppm June 11-20, 1953.
Specific conductance (1950-51, 1952-54): Maximum daily, 2,290 micromhos July 20, 1954; minimum daily, 146 micromhos June 17, 1953.
Water temperatures: Maximum observed, 82°F Aug. 16, 1951; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	0.1	21		80	24	120	4.7	209	300	54		0.2	--	747	1.02	0.202	298	126	46	3.0	1,090	8.0
Oct. 11-20	1.6	14		90	29	161	4.9	215	419	60		.2	0.10	904	1.23	3.91	344	168	50	3.8	1,300	7.6
Oct. 21-31	22.6	12		83	29	206	5.1	240	444	81		.5	--	995	1.35	60.7	326	130	57	5.0	1,450	7.6
Nov. 1-10	84.0	15		52	19	90	2.7	231	161	35		.7	--	495	.67	112	208	18	48	2.7	764	7.7
Nov. 11-20	81.9	17		53	17	70	2.2	216	131	26		.4	--	424	.58	93.8	202	25	43	2.1	659	7.7
Nov. 21-30	117	17		59	19	70	3.0	242	139	26		.5	--	448	.61	142	225	26	40	2.0	698	7.6
Dec. 1-10	73.4	19		60	17	84	3.0	248	145	32		.7	--	476	.65	94.3	220	16	45	2.5	739	8.1
Dec. 11-20	76.0	21		67	19	70	2.8	270	134	26		.6	.07	471	.64	96.6	245	24	38	1.9	731	7.9
Dec. 21-31	88.9	22		69	20	71	2.8	265	139	36		.3	--	483	.66	68.2	254	37	38	1.9	761	8.2
Jan. 1-10, 1954	66.5	21		59	16	59	2.7	242	118	20		.3	.08	417	.57	74.9	213	14	37	1.8	644	7.8
Jan. 11-20	78.5	20		55	14	55	2.5	225	106	17		.3	.10	382	.52	81.0	194	10	38	1.7	593	7.9
Jan. 21-31	80.5	22		56	14	48	2.6	215	98	18		.9	--	363	.49	78.9	197	21	34	1.5	570	7.7
Feb. 1-10	86.5	18		49	13	43	2.4	203	83	12		.7	--	320	.44	74.7	176	10	34	1.4	512	7.6
Feb. 11-15, 19-20	125	15		42	11	65	2.3	180	102	32		.6	.05	360	.49	122	150	2	48	2.3	579	7.9
Feb. 16-18	143	14		43	12	117	3.4	183	164	68		.9	--	a512	.70	198	157	7	61	4.1	821	7.9
Feb. 21-28	142	14		42	13	53	2.2	179	98	24		.4	--	331	.45	127	158	12	42	1.8	549	8.1
Mar. 1-10	154	17		50	15	56	2.0	200	108	20		1.2	.09	379	.52	158	186	22	39	1.8	594	8.0
Mar. 11-20	229	15		50	13	51	2.3	190	95	18		1.9	.11	346	.47	214	178	23	38	1.7	545	7.6
Mar. 21-25, 27-31	248	15		47	15	67	3.1	199	128	22		1.8	.10	407	.55	273	179	16	44	2.2	637	7.7
Mar. 26	380	17		46	6.7	131	4.5	234	--	62		3.8	--	--	--	--	142	0	66	4.8	859	7.7

a Sum of determined constituents.

GREEN RIVER BASIN--Continued

LITTLE SNAKE RIVER NEAR LILY, COLO.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-7, 1954...	396	16		44	15	85	2.8	212	140	28		1.7	0.09	446	0.61	477	172	0	51	2.8	693	7.9
Apr. 8-10.....	943	19		47	14	41	2.1	161	92	8.0		2.1	--	300	.41	764	175	43	33	1.3	471	7.7
Apr. 11-20.....	794	15		42	12	25	1.7	154	67	6.0		1.8	.11	262	.36	562	154	28	26	.9	404	7.7
Apr. 21-30.....	1,301	15		32	8.7	10	1.4	122	31	4.0		1.9	--	179	.24	629	116	16	15	.4	267	7.9
May 1-4, 7-10...	1,057	13		24	7.3	7.3	1.2	96	22	3.5		.9	--	146	.20	417	90	12	15	.3	204	7.9
May 5-6.....	804	17		24	7.1	30		114	43	10		1.0	--	a 188	.26	408	89	0	42	1.4	287	8.0
May 11-20.....	1,102	14		25	4.9	9.5	.9	99	18	2.4		.7	.04	133	.18	396	82	2	20	.5	201	7.7
May 21-31.....	1,217	14		28	5.1	13	1.0	110	23	3.1		.8	--	152	.21	499	91	1	24	.6	228	7.6
June 1-10.....	592	15		30	7.0	21	1.6	126	38	5.8		.5	--	188	.26	300	104	1	30	.9	292	7.7
June 11-20.....	244	16		35	9.8	34	2.3	152	63	10		.4	.07	250	.34	165	128	4	36	1.3	392	7.7
June 21-30.....	80.2	16		50	13	62	4.0	192	129	21		.5	--	390	.53	84.5	178	21	42	2.0	606	8.0
July 1-10.....	24.6	20		57	15	137	5.1	238	237	44		1.0	--	628	.85	41.7	204	8	59	4.2	954	8.0
July 11-19.....	7.1	21		72	19	100	5.2	214	252	38		.6	.07	613	.83	11.8	258	82	45	2.7	916	7.8
July 20.....	130	28		92	21	486		336	691	266		2.4	--	a 1,750	2.38	614	316	40	77	12	2,290	7.2
July 21-31.....	31.7	21		78	17	253	6.6	244	462	104		1.2	--	1,060	1.44	90.7	264	64	67	6.8	1,580	7.9
Aug. 1-10.....	.7	21		81	20	128	4.6	228	306	56		.5	--	742	1.01	1.40	284	97	49	3.3	1,100	7.8
Aug. 11-20.....	.03	26		83	22	137	5.4	230	315	64		.3	.11	775	1.05	.063	298	109	49	3.4	1,140	7.9
Sept. 1-4, 6-10..	57.2	25		81	18	168	5.2	244	329	83		.3	--	844	1.15	130	276	76	56	4.4	1,250	7.8
Sept. 5[b].....	171	--		--	--	--	--	462	827	108		--	--	--	--	--	664	285	--	--	2,240	7.0
Sept. 11-12, 14-20	24.4	18		79	15	228	5.2	218	428	88		1.0	.15	971	1.32	64.0	258	80	65	6.1	1,430	7.9
Sept. 13[b].....	21.9	--		--	--	--	--	230	120	20		--	--	--	--	--	146	0	--	--	622	7.2
Sept. 21-30.....	9.7	15		81	18	181	5.3	232	388	65		.5	--	870	1.18	22.8	276	86	58	4.7	1,280	7.8
Weighted average	c 254	15		36	9.6	32	1.7	144	63	11		1.1	--	249	0.34	171	130	12	35	1.2	383	--

a Sum of determined constituents.

b Not included for computation of weighted averages.

c Represents 99.6 percent of runoff for water year October 1953 to September 1954.

GREEN RIVER BASIN--Continued

LITTLE SNAKE RIVER NEAR LILY, COLO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH

LOCATION.--At gaging station, 1 mile below Cub Creek and Chew Ranch, 4 miles southeast of Dinosaur National Monument Headquarters, 6½ miles northeast of Jensen, Uintah County, and 12 miles upstream from Brush Creek.
RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1954.
Sediment records: May 1948 to September 1954.
EXTREMES, 1952-53.--Water temperatures: Maximum observed, 80°F June 23-24, July 18-20; minimum observed, 33°F on many days during December and January.
Sediment concentrations: Maximum daily, 4,400 ppm Sept. 26; minimum daily, 9 ppm Oct. 7-11.
Sediment loads: Maximum daily, 115,000 tons May 24; minimum daily, 19 tons Oct. 7-11.
EXTREMES, 1948-54.--Sediment concentrations: Maximum daily, 15,800 ppm Apr. 9, 1952; minimum daily, 9 ppm Oct. 7-11, 1953.
Sediment loads: Maximum daily, 567,000 tons Apr. 9, 1952; minimum daily, 19 tons Oct. 7-11, 1953.
REMARKS.--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. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

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	763			1,120			1,490	--	e 684
2	758			1,120			1,500	150	608
3	746			1,130			1,370		
4	736	10	20	1,120	50	153	1,250		
5	746			1,130			1,010	70	193
6	758			1,160			708		
7	763			1,140			758		
8	774			1,140			741		
9	774	9	19	1,170			645		
10	768			1,190	153	168	635	31	56
11	768			1,210			655		
12	768			1,210			650		
13	774			1,180			714		
14	785	11	23	1,150			791		
15	803			1,140	51	160	833	86	191
16	803			1,160			952		
17	803			1,190			1,070		
18	815	--	e 40	1,260			1,040		
19	833			1,250	37	109	1,100		
20	858			1,200			1,170	33	100
21	910			952			1,220		
22	931			797			1,200		
23	938			758			1,110		
24	987	24	63	952			900		
25	1,040			966			800	31	79
26	1,010			1,070	--	e 240	700		
27	1,050	--	e 68	1,140			780		
28	1,050	351	995	1,240			700	26	49
29	1,060			1,310			620		
30	1,100	60	176	1,410			640	85	149
31	1,100			--	--	--	660		
Total	26,772	--	2,459	33,965	--	5,191	28,412	--	4,641

Day	January			February			March		
1	700			1,030			1,330	165	593
2	710			1,030			1,210	158	516
3	730	61	119	1,060	38	108	1,270	125	429
4	740			1,090			1,390	120	450
5	740			1,100	--	e 110	1,360	200	734
6	750			1,120			1,420	320	1,230
7	780			1,110			1,450	330	1,290
8	800			1,100	34	102	1,490	335	1,350
9	800			1,100			1,560	360	a 1,500
10	800	72	156	1,100			1,750	500	a 2,400
11	800			1,110			2,070	791	4,420
12	820			1,140	118	377	1,840	790	3,920
13	850			1,160			1,920	645	3,340
14	860			1,320			2,030	525	2,880
15	880			1,490	145	583	2,110	650	3,700
16	890	--	e 140	1,820	315	1,550	2,140	740	4,280
17	880			1,670	315	1,420	2,230	745	4,490
18	880			1,530	355	1,470	2,200	470	2,790
19	880			1,370	290	1,070	2,130	310	a 1,800
20	880			1,250	210	709	1,850	375	1,870
21	890			1,430	130	502	2,070	475	2,650
22	890			1,440	108	420	1,990	485	2,610
23	840	48	115	1,440	115	447	2,080	515	2,890
24	870			1,480	185	739	2,110	515	2,930
25	950			1,620	410	1,790	2,170	525	3,080
26	910			1,730	446	2,080	2,250	570	3,460
27	900			1,690	500	2,280	2,330	585	3,680
28	987	28	73	1,360	205	753	2,150	880	5,110
29	994			--	--	--	2,020	1,100	6,000
30	994			--	--	--	2,010	710	3,850
31	1,020			--	--	--	2,090	610	3,440
Total	26,415		3,836	36,890	--	--	58,020	--	83,682

e Estimated.
a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR JENSEN, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2,190	525	3,100	7,110	1,420	27,300	9,310	2,340	58,800
2	2,100	517	2,930	6,380	1,240	21,400	8,680	4,300	a100,000
3	1,970	560	2,980	5,650	800	12,200	7,950	4,130	88,700
4	1,950	665	3,500	5,160	650	9,060	7,080	1,180	22,600
5	2,160	1,320	7,600	4,730	670	8,560	6,280	2,860	48,500
6	2,580	2,760	19,200	4,480	630	a7,600	5,770	1,600	a25,000
7	2,620	2,160	15,300	4,930	810	10,800	5,450	550	8,090
8	3,490	2,390	22,500	5,470	910	13,400	5,290	296	7,080
9	4,440	2,940	35,200	5,890	860	13,700	4,930		
10	4,140	2,260	25,300	6,320	1,030	17,600	4,750	--	e3,300
11	3,840	1,910	19,800	6,800	1,180	21,700	4,670	--	e2,900
12	3,730	1,800	18,100	7,390	1,140	22,700	4,570	193	2,360
13	3,630	1,530	15,000	7,180	1,070	20,700	4,500		
14	3,620	1,020	9,970	7,550	1,290	26,300	4,520		
15	3,900	560	5,900	8,400	1,400	31,800	4,590	--	e2,300
16	4,280	548	6,330	8,870	1,530	36,600	4,500		
17	4,410	571	6,800	9,340	1,670	42,100	4,370		
18	4,050	574	6,280	9,570	1,520	39,300	4,350	168	1,970
19	4,020	570	6,190	10,100	1,670	45,500	4,320		
20	4,570	540	6,660	10,800	1,880	54,800	4,420		
21	5,340	552	7,960	11,300	1,740	53,100	4,630	195	2,300
22	5,720	552	8,530	12,200	1,830	60,300	4,630		
23	5,770	550	8,570	13,600	2,310	84,800	4,350		
24	5,420	538	7,870	14,800	2,870	115,000	4,070		
25	5,490	554	8,210	15,800	2,650	113,000	4,190		
26	6,100	800	13,200	15,300	1,990	82,200	5,080	250	a3,400
27	6,650	1,700	30,500	15,100	1,880	76,600	6,060	470	a7,700
28	6,550	1,610	28,500	13,900	1,480	55,500	7,110	1,070	b20,500
29	6,680	1,460	26,300	12,600	1,330	45,200	7,920	1,200	a26,000
30	7,000	1,500	28,400	11,300	1,600	a49,000	8,920	1,100	a26,500
31	--	--	--	10,300	1,130	31,400	--	--	--
Total	128,410	--	406,680	288,320	--	1,249,220	167,260	--	488,200

Day	July			August			September		
1	10,500	1,410	40,000	2,410	445	2,900	1,160	130	407
2	11,300	1,910	58,300	2,200	150	891	1,120	146	442
3	10,600	1,500	a43,000	2,100	60	a 340	1,120	--	b500
4	8,540	1,130	26,100	2,080	240	a1,300	1,170	--	
5	6,950	1,300	24,400	2,000	790	4,270	1,420	--	b7,000
6	6,300	710	12,100	1,950	1,570	8,270	1,580	--	b16,000
7	5,820	1,000	15,700	1,850	140	699	1,320	--	
8	5,510	715	10,600	1,800			1,310	--	b2,800
9	5,210	340	4,780	1,750			1,240	--	
10	4,890	360	4,750	1,800			1,260	--	b1,800
11	4,630	285	3,560	1,800	61	293	1,240	--	
12	4,440	205	2,460	1,750			1,310	860	3,040
13	4,260	175	1,980	1,750	165	780	1,440	2,600	10,000
14	4,140			1,680	230	1,040	1,490	3,300	13,300
15	3,960	--	e1,900	1,560	75	316	1,340	3,010	10,900
16	3,960	200	2,140	1,530	85	351	1,220	1,800	5,930
17	3,960	260	2,780	1,520			1,170	690	2,180
18	3,880	335	3,510	1,560			1,260	520	1,770
19	3,830	400	4,140	1,550			1,170	420	1,330
20	3,900	410	4,320	1,540	34	136	1,110	341	1,020
21	4,000	385	4,160	1,480			1,060	223	638
22	4,140	790	8,830	1,430			1,040	167	469
23	4,210	2,450	27,800	1,400			1,100	600	1,780
24	3,910	1,800	a19,000	1,380			1,110	960	2,880
25	3,780	1,010	10,300	1,370			1,220	800	2,640
26	3,580	380	3,670	1,350	--	e120	1,180	4,400	14,000
27	3,350	205	1,850	1,320			1,080	2,100	6,120
28	3,080	180	1,500	1,310			994	620	1,660
29	3,010	175	1,420	1,290			980	300	794
30	2,720	150	1,100	1,260	34	161	1,040	234	657
31	2,550	245	1,690	1,200	80	259	--	--	--
Total	154,910	--	349,820	50,970	--	24,685	36,254	--	116,957

Total discharge for year (cfs-days) 1,036,598
Total load for year (tons) 2,753,744

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

GREEN RIVER NEAR JENSEN, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Dec. 2, 1953	4:40 p.m.	1,540	35	151	3,380	--	0	4	71	91	96	98	100		--	--	SPN
Mar. 5, 1954	11:15 a.m.	1,180	35	179	2,070	--	52	--	83	91	97	99	100		--	--	SPWCM
Mar. 18	2:15 p.m.	2,270	34	391	4,750	--	88	--	100	--	--	--	--		--	--	SPWCM
Apr. 13	2:25 p.m.	3,600	57	1,480	4,140	--	70	--	87	90	93	96	100		--	--	SPWCM
Apr. 30	10:20 a.m.	7,080	52	1,400	3,980	--	27	--	42	49	57	69	95		100	--	SPWCM
May 13	10:15 a.m.	7,210	62	1,040	2,200	--	21	--	31	39	45	57	84		99	100	SPWCM
May 21	12:00 m.	11,200	67	1,760	4,140	--	19	--	31	39	49	62	82		96	100	SPWCM
May 27	11:10 a.m.	15,200	53	1,620	3,140	--	18	--	30	36	49	69	89		98	100	SPWCM
July 1	2:55 p.m.	10,800	70	1,420	5,080	--	19	--	27	34	47	71	96		99	100	SPWCM
July 16	10:50 a.m.	3,930	75	149	313	11	14	18	23	32	47	73	90		98	100	SBWCM
July 28	11:30 a.m.	3,040	70	166	2,390	--	37	--	53	66	78	90	97		99	100	SPWCM
Aug. 13	2:00 p.m.	1,720	70	78	934	51	60	71	81	86	92	96	99		100	--	SBWCM
Aug. 30	2:30 p.m.	1,250	--	20	256	60	72	85	90	93	95	97	99		100	--	SBWCM
Sept. 24	11:45 a.m.	1,100	62	794	1,600	--	57	--	79	92	98	100	--		--	--	SPWCM

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH

LOCATION.--At gaging station, 250 feet downstream from bridge on State Highway 45, 1 mile downstream from Evacuation Creek, and 7 miles north of Watson, Uintah County.
DRAINAGE AREA.--4,020 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,010 ppm (sum) Aug. 16; minimum, 294 ppm May 14-15, 17, 19-20.
Specific conductance: Maximum daily, 1,820 micromhos July 10; minimum daily, 419 micromhos May 26.
Water temperatures: Maximum observed, 88°F Aug. 8; minimum observed, freezing point on many days from December to March.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 1,450 ppm Aug. 1, 1953; minimum 230 ppm June 21-30, 1951.
Specific conductance: Maximum daily, 1,820 micromhos July 10, 1954; minimum daily, 319 micromhos June 29, 1951.
Water temperatures: Maximum observed, 88°F Aug. 8, 1954; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are residues on evaporation, unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953..	272	--	--	--	--	--	--	--	--	--	--	--	--	655	0.89	481	--	--	--	--	1,010	--	--
Oct. 11-20.....	336	17	--	77	21	74	--	205	173	66	--	12	0.05	568	.77	515	276	108	37	1.9	876	7.6	--
Oct. 21-31.....	416	--	--	--	--	--	--	--	--	--	--	--	--	606	.82	681	--	--	--	--	976	--	--
Nov. 1-10.....	432	--	--	--	--	--	--	--	--	--	--	--	--	616	.84	719	--	--	--	--	997	--	--
Nov. 11-20.....	392	17	--	75	24	79	4.2	208	183	66	--	20	.07	594	.81	629	287	116	37	2.0	941	7.5	--
Nov. 21-30.....	392	--	--	--	--	--	--	--	--	--	--	--	--	615	.84	651	--	--	--	--	1,000	--	--
Dec. 1-10.....	365	16	--	81	22	82	2.5	218	194	69	--	10	.05	608	.83	599	294	115	38	2.1	962	7.5	--
Dec. 11-20.....	361	17	--	86	24	95	3.1	235	207	76	--	20	.07	664	.90	647	313	120	39	2.3	1,040	7.4	--
Dec. 21-31.....	319	17	--	91	23	103	--	264	210	84	--	5.4	.09	680	.92	586	322	106	41	2.5	1,110	7.4	--
Jan. 1-10, 1954..	353	17	--	84	23	90	--	232	186	82	--	2.0	.07	622	.85	593	302	112	39	2.2	979	7.9	--
Jan. 11-20.....	395	16	--	80	19	87	--	227	173	75	--	15	.08	574	.78	612	278	92	41	2.3	937	7.5	--
Jan. 21-31.....	359	16	--	77	20	85	--	214	180	71	--	15	--	576	.78	558	276	101	40	2.2	908	7.5	--
Feb. 1-10.....	360	15	--	76	23	88	--	221	200	68	--	1.8	--	598	.81	581	282	101	40	2.3	921	7.8	--
Feb. 11-20.....	537	15	--	73	24	88	--	227	204	57	--	5.6	.09	590	.80	855	283	97	41	2.3	914	7.8	--
Feb. 21-28	490	--	--	--	--	--	--	--	--	--	--	--	--	658	.89	871	--	--	--	--	1,040	--	--
Mar. 1-10.....	352	--	--	--	--	--	--	--	--	--	--	--	--	694	.94	660	--	--	--	--	1,140	--	--
Mar. 11-20.....	394	16	--	77	27	118	--	--	232	84	--	6.9	.08	705	.96	750	306	--	46	2.9	1,180	7.6	--
Mar. 21-31.....	442	--	--	--	--	--	--	--	--	--	--	--	--	727	.99	868	--	--	--	--	1,220	--	--
Apr. 1-10.....	447	--	--	--	--	--	--	--	--	--	--	--	--	694	.94	838	--	--	--	--	1,160	--	--
Apr. 11-20.....	493	16	--	62	20	92	--	307	155	70	--	.3	.11	539	.73	717	240	0	46	2.6	1,020	7.8	--
Apr. 21-30.....	799	20	0.03	59	18	49	2.8	168	113	38	0.2	21	.09	405	.55	874	221	84	32	1.4	637	7.9	7

May 1-3, 9, 1954..	834	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,180	--	--
May 4-8, 10	797	--	--	--	--	--	--	--	--	--	--	--	--	--	461	0.63	992	--	--	--	--	758	--	--
May 11-13,.....	1,188	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	771	--	--
May 14-15, 17, 19-20	1,232	--	--	--	--	--	--	--	--	--	--	--	--	--	294	.40	978	--	--	--	--	451	--	--
May 18.....	1,200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,060	--	--
May 21-26, 31	1,436	14	--	44	13	39	5.1	213	64	33	--	0.8	0.08	300	.41	1,160	161	0	33	1.3	562	7.7	--
May 27-30.....	1,100	16	--	51	13	78	8.0	303	109	53	--	.5	.17	a478	.65	1,420	180	0	47	2.5	853	7.8	--
June 1-9	795	16	0.06	56	18	54	3.0	204	108	44	0.4	5.7	--	400	.54	859	214	46	35	1.6	695	7.4	23
June 10-12, 17-18.	544	21	.12	48	28	111	12	582	91	80	1.0	.4	--	559	.76	821	235	0	49	3.2	1,360	7.8	55
June 13-16, 19-20	488	20	.07	67	25	68	2.1	183	161	55	.4	24	.06	523	.71	689	270	120	35	1.8	815	7.6	23
June 21-30	328	18	.06	88	32	120	7.7	287	246	80	.6	1.0	--	722	.98	639	351	116	42	2.8	1,220	7.8	33
July 1-10.....	280	20	.09	87	40	163	12	478	256	105	.8	.6	--	863	1.17	652	382	0	47	3.6	1,530	7.8	60
July 11-20	362	18	.08	92	43	131	6.3	367	289	82	.5	1.0	.16	832	1.13	813	406	106	41	2.8	1,320	7.6	48
July 21-31.....	253	19	.06	89	41	124	11	446	206	87	.9	5.7	--	802	1.09	548	390	25	40	2.7	1,310	7.4	55
Aug. 1-10	171	16	.05	78	36	140	7.7	300	259	107	.6	1.4	--	785	1.07	362	342	96	46	3.3	1,270	7.5	30
Aug. 11-15, 17-20	292	16	.31	96	34	99	4.7	286	244	76	.4	2.8	.15	733	1.00	578	380	145	36	2.2	1,100	7.6	30
Aug. 16	302	12	--	154	54	109		304	430	104	--	1.2	--	a1,010	1.37	824	606	357	28	1.9	1,490	7.3	--
Aug. 21-28, 31....	192	15	.04	82	31	93	2.8	222	217	88	.3	1.1	--	662	.90	343	332	150	38	2.2	1,010	7.7	18
Aug. 29-30	174	19	--	120	52	124		306	403	80	--	.3	--	a984	1.29	446	514	263	34	2.4	1,380	8.0	--
Sept. 1-3, 6-10 ...	527	14	.13	82	31	102	4.5	243	247	65	.4	1.2	--	616	.93	976	332	133	40	2.4	1,030	7.8	25
Sept. 4-5.....	1,090	15	--	136	54	112		290	463	59	--	1.8	--	a984	1.34	2,920	562	324	30	2.0	1,410	7.7	--
Sept. 11-16, 19-20	432	16	--	91	30	75	3.9	252	213	62	--	.7	.10	616	.84	719	350	144	31	1.7	951	7.7	--
Sept. 17-18.....	335	16	--	76	31	117	--	384	205	116	--	.6	--	a751	1.02	679	317	2	45	2.9	1,380	7.4	--
Sept. 21-30	686	15	--	80	27	79	2.9	250	181	58	--	.7	--	562	.76	1,040	310	106	35	2.0	894	7.8	--
Weighted average	470	--	--	--	--	--	--	--	--	--	--	--	--	584	0.79	741	--	--	--	--	956	--	--

a Sum of determined constituents.

GREEN RIVER BASIN--Continued

WHITE RIVER NEAR WATSON, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH

LOCATION.--At gaging station, 2¾ 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, October 1953 to September 1954.
Sediment records: December 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum observed, 85°F July 15; minimum observed, freezing point on several days in November and December.
Sediment concentrations: Maximum daily, 36,700 ppm Sept. 5.
Sediment loads: Maximum daily, 273,000 tons July 18.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Temperature (°F) of water, water year October 1953 to September 1954

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

Suspended sediment, water year October 1953 to September 1954

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.....	1,080	150	a440	1,810			2,310	570	3,560
2.....	1,060	150	429	1,820	338	1,660	2,360	520	3,310
3.....	1,020			1,830			2,400	440	2,850
4.....	1,020			1,840			2,360	515	3,280
5.....	1,030	150	a420	1,940	431	2,220	2,330	395	2,480
6.....	1,040			1,950			2,160	390	2,270
7.....	1,080			1,930	460	2,400	2,080	405	2,270
8.....	1,100			1,910	460	2,370	2,070	310	1,730
9.....	1,130	150	458	1,920	440	a2,300	1,720	260	1,200
10.....	1,160	150	a470	1,930	400	2,080	1,550	215	900
11.....	1,160			1,930	375	1,950	1,490	233	937
12.....	1,160			1,900	352	1,810	1,000	163	440
13.....	1,170	150	a470	1,850	350	1,750	800	170	367
14.....	1,170	160	a500	1,840			1,000	180	a490
15.....	1,200	170	550	1,890			1,300	170	a600
16.....	1,260	220	748	1,910	349	1,840	1,600	170	a730
17.....	1,280	230	a790	1,920			1,900	176	903
18.....	1,300	230	a810	2,070			2,000	152	821
19.....	1,310	230	a810	2,110			2,100	150	850
20.....	1,330	230	a830	2,110	415	2,360	2,000	133	718
21.....	1,360	230	a840	2,200	595	3,530	1,900	131	672
22.....	1,460	230	a910	2,060	355	1,970	1,750	113	534
23.....	1,510	220	897	1,720	305	1,420	1,650	125	557
24.....	1,650	250	a1,100	2,040	620	3,410	1,550	131	548
25.....	1,710	280	a1,300	2,180	1,050	6,180	1,400	146	552
26.....	1,790	310	a1,500	2,080	1,000	a5,600	1,300	90	316
27.....	1,840	340	a1,700	2,100	780	4,420	1,500	72	292
28.....	1,780	350	a1,700	2,200	590	3,500	1,350		
29.....	1,810	340	a1,700	2,210	580	3,460	1,250		
30.....	1,810	345	1,690	2,280	600	3,690	1,350	55	197
31.....	1,800	340	a1,700	--	--	--	1,350		
Total	41,580	--	25,802	59,480	--	76,880	52,880	--	34,965

Day	January			February			March		
1.....	1,400			1,900	160	872	2,550	860	5,920
2.....	1,400	52	197	1,950	169	890	2,270	870	5,330
3.....	1,400			2,000	160	864	2,150	700	4,060
4.....	1,400			2,050	150	830	2,020	537	2,930
5.....	1,500	100	405	2,050	135	747	2,060	650	3,620
6.....	1,550			2,050	173	958	2,220	750	4,500
7.....	1,550			2,050	200	1,100	2,240	690	4,170
8.....	1,550			2,050	185	1,020	2,340	670	4,230
9.....	1,550	120	500	2,150	180	1,040	2,400	770	4,990
10.....	1,500			2,250	210	1,280	2,550	1,060	7,300
11.....	1,550			2,420	240	1,570	2,750	2,620	19,500
12.....	1,600			2,500	304	2,050	3,000	1,490	12,100
13.....	1,650			2,480	412	2,760	3,040	1,720	14,100
14.....	1,700	77	349	2,600	380	2,670	2,790	1,220	9,190
15.....	1,700			2,570	600	a4,200	2,830	1,200	9,170
16.....	1,750			2,700	1,570	11,400	2,960	960	7,670
17.....	1,780			2,900	2,080	16,300	2,980	1,130	9,090
18.....	1,800			3,300	1,660	14,800	3,100	1,100	9,210
19.....	1,800	103	499	3,100	1,270	10,600	3,180	1,020	8,760
20.....	1,800			2,980	1,350	10,900	3,070	1,170	9,700
21.....	1,800			2,750	1,220	9,060	2,940	900	7,140
22.....	1,800			2,580	900	6,270	2,890	920	7,180
23.....	1,820	121	591	2,660	1,100	7,900	2,960	930	7,430
24.....	1,900	120	a620	2,750	1,410	10,500	3,040	940	7,720
25.....	1,950	120	a630	2,710	1,390	10,200	3,280	1,400	12,400
26.....	2,050	338	1,940	2,860	1,320	10,200	3,280	1,500	13,300
27.....	1,950			2,860	1,960	15,100	3,240	1,230	10,800
28.....	1,900			2,790	2,310	17,400	3,250	1,210	10,600
29.....	1,950	111	577	--	--	--	3,180	1,090	9,360
30.....	1,900			--	--	--	3,080	1,030	8,570
31.....	1,920			--	--	--	3,080	1,430	11,900
Total	52,870	--	15,690	70,010	--	173,481	86,720	--	261,940

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1.....	3,060	1,210	10,000	8,040	1,650	35,800	11,200	1,060	32,100
2.....	3,070	1,100	9,120	8,130	1,650	36,200	10,300	1,020	28,400
3.....	3,070	1,040	8,620	7,700	1,130	23,500	9,570	910	23,500
4.....	2,970	840	6,740	6,820	1,050	19,300	8,930	1,000	24,100
5.....	2,960	1,000	7,990	6,230	960	16,100	8,040	920	20,000
6.....	3,060	1,900	a16,000	5,800	900	14,100	7,380	850	16,900
7.....	3,360	2,250	20,400	5,460	870	12,800	6,880	740	13,700
8.....	3,630	2,040	20,000	5,780	760	11,900	6,510	670	11,800
9.....	3,780	2,500	25,500	6,650	1,250	22,400	6,250		
10.....	4,630	3,350	41,900	7,410	1,370	27,400	5,870		
11.....	4,740	2,950	37,800	8,330	1,500	33,700	5,480	548	8,360
12.....	4,590	2,330	28,900	8,900	1,460	35,100	5,390		
13.....	4,460	2,520	30,300	9,380	1,620	41,000	5,330		
14.....	4,320	2,200	a26,000	9,410	1,550	39,400	5,240	530	a7,500
15.....	4,320	1,780	20,800	9,600	1,020	26,400	5,180	520	7,270
16.....	4,530	1,460	17,900	10,300	1,010	28,100	5,290	580	8,000
17.....	4,840	1,200	a16,000	10,900	1,450	42,700	5,270	450	6,400
18.....	5,140	1,290	17,900	11,500	1,930	59,900	5,020		
19.....	4,880	1,320	17,400	11,900	1,570	50,400	4,960		
20.....	4,760	1,250	16,100	12,900	1,130	39,400	4,860	340	4,510
21.....	5,140	1,300	18,000	14,300	1,710	66,000	4,800		
22.....	5,890	1,460	23,200	15,500	1,900	a80,000	5,000		
23.....	6,230	1,650	27,800	17,100	2,530	117,000	5,100	368	4,880
24.....	6,390	1,650	28,500	18,200	2,240	110,000	4,920		
25.....	6,340	1,500	a26,000	19,100	2,920	151,000	4,640		
26.....	6,460	1,350	23,500	19,100	2,310	119,000	4,490	520	a6,300
27.....	7,080	1,660	31,700	17,600	2,600	124,000	5,180	940	13,100
28.....	7,600	1,940	39,800	16,700	2,150	96,900	6,090	1,070	17,600
29.....	7,570	2,070	42,300	14,900	1,910	76,800	7,000	1,820	34,400
30.....	7,700	1,660	34,500	13,600	1,600	a59,000	7,680	1,450	30,100
31.....	--	--	--	12,100	1,200	39,200	--	--	--
Total.	146,570	--	690,670	349,340	--	1,654,500	187,850	--	380,630

	July			August			September		
1.....	8,510	2,040	46,900	3,100	550	4,600	1,380	200	745
2.....	10,100	1,300	35,500	2,930	650	5,140	1,330	260	934
3.....	11,200	1,370	41,400	2,720	720	5,290	1,370	600	2,220
4.....	10,700	1,040	30,000	2,560	400	2,760	2,120	27,900	160,000
5.....	8,960	830	20,100	2,390	230	1,480	2,390	36,700	246,000
6.....	7,620	650	13,400	2,400	600	3,890	2,250	17,500	106,000
7.....	6,880	2,920	54,200	2,240	1,500	9,070	2,300	14,000	86,900
8.....	6,390	2,600	44,900	2,120	660	3,780	1,900	5,300	27,200
9.....	5,910	2,330	37,200	2,100	680	3,860	2,400	19,500	126,000
10.....	5,630	870	13,200	2,040	410	2,260	2,250	18,500	112,000
11.....	5,330	450	6,480	2,000	350	1,890	1,930	12,000	62,500
12.....	5,100	410	5,650	2,010	220	1,190	1,990	12,000	64,500
13.....	4,880	500	6,590	2,110	530	3,020	1,890	8,100	a41,000
14.....	4,680	640	8,090	2,480	18,000	121,000	1,920	5,400	28,000
15.....	4,550	990	12,200	2,320	13,000	81,400	1,980	3,600	19,200
16.....	4,460	1,100	13,200	2,050	5,300	29,300	1,910	3,500	18,000
17.....	4,320	1,100	12,800	1,930	6,100	31,800	1,710	2,900	13,400
18.....	5,330	19,000	273,000	1,810	3,700	18,100	1,560	2,200	9,270
19.....	4,840	8,800	115,000	1,770	1,700	a8,100	1,530	1,300	a5,400
20.....	4,320	2,570	30,000	1,730	850	3,970	1,530	1,200	4,960
21.....	4,250	2,260	25,900	1,710	550	2,540	1,460	1,100	4,340
22.....	4,270	1,370	15,800	1,680	430	1,950	1,400	1,000	3,780
23.....	4,380	900	10,600	1,630	370	1,630	1,410	2,300	a8,800
24.....	4,510	1,070	13,000	1,610	400	1,740	2,370	25,000	a160,000
25.....	4,400	1,050	12,500	1,560	400	a1,700	2,600	29,800	209,000
26.....	4,440	3,500	a42,000	1,510	330	1,350	2,960	20,700	165,000
27.....	4,640	8,400	105,000	1,460	270	1,060	3,280	20,000	177,000
28.....	4,050	3,600	39,400	1,440			2,330	14,300	90,000
29.....	3,760	1,900	19,300	1,430	146	565	1,910	7,200	37,100
30.....	3,550	865	8,290	1,440			1,660	3,400	15,200
31.....	3,370	530	4,820	1,420			--	--	--
Total.	175,330	--	1,116,420	61,700	--	356,130	59,020	--	2,004,449

Total discharge for year (cfs-days) 1,343,350

Total load for year (tons) 6,791,557

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER NEAR OURAY, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Oct. 23, 1953	12:00 m.	1,470	49	216	552	16	23	28	37	51	63	77	96	99	100		SPWCM
Nov. 1	4:30 p.m.	1,810	50	299	1,570	21	24	31	40	53	67	82	97	100	--		SPWCM
Dec. 1	10:40 a.m.	2,300	35	447	2,170	0	2	11	24	32	39	63	90	100	--		SPN
Feb. 11	11:20 a.m.	a2,420	40	254	1,590	--	32	--	41	47	52	68	88	100	--		SPWCM
Feb. 26	3:15 p.m.	2,980	34	1,270	6,060	--	76	--	95	98	100	--	--	--	--		SPWCM
Mar. 12	2:05 p.m.	3,010	40	1,290	3,290	--	40	--	60	65	70	81	97	100	--		SPWCM
Mar. 26	12:10 p.m.	3,260	46	1,430	3,600	--	48	--	65	71	77	88	98	100	--		SPWCM
Apr. 10	8:10 a.m.	4,590	50	3,230	4,040	--	49	--	64	69	73	81	96	100	--		SPWCM
Apr. 23	5:15 p.m.	6,300	60	1,740	4,080	--	38	--	57	63	70	80	97	100	--		SPWCM
May 7	3:40 p.m.	5,460	66	805	4,370	--	27	--	41	52	67	80	99	100	--		SPWCM
May 14	10:35 a.m.	9,470	67	1,350	4,320	--	29	--	47	60	74	86	98	100	--		SPWCM
May 17	1:45 p.m.	11,100	70	1,460	3,140	--	22	--	39	52	66	82	97	100	--		SPWCM
May 27	1:40 p.m.	17,400	60	2,460	4,940	--	23	--	36	48	62	85	98	99	100		SPWCM
May 28	10:15 a.m.	16,800	56	1,960	3,480	--	20	--	33	45	62	86	99	100	--		SPWCM
May 31	10:30 a.m.	12,200	54	1,220	4,890	--	15	--	26	38	58	85	99	100	--		SPWCM
June 7	1:45 p.m.	6,880	60	761	3,520	--	17	--	27	36	57	87	99	100	--		SPWCM
June 11	5:45 a.m.	14,200	54	501	1,240	14	17	19	23	31	45	80	99	100	--		SBWCM
June 17	4:15 p.m.	5,240	69	342	3,460	--	14	--	25	35	51	94	97	99	100		SPWCM
June 28	2:15 p.m.	6,140	74	1,030	5,580	--	35	--	51	58	67	79	98	100	--		SPWCM
July 7	10:10 a.m.	7,050	75	5,430	4,170	--	59	--	89	92	95	98	100	--	--		SPWCM
July 7	2:45 p.m.	6,850	79	3,930	3,100	--	64	--	87	92	95	98	100	--	--		SPWCM
July 17	6:45 p.m.	4,310	79	827	2,980	--	46	--	66	74	84	95	99	100	--		SPWCM
July 27	8:15 a.m.	4,760	72	9,050	3,680	--	52	--	80	90	95	97	100	--	--		SPWCM

Aug. 3, 1953.....	8:10 a.m.	2,750	73	753	3,520	--	74	--	89	92	94	98	99	100	--		SPWCM
Aug. 6.....	7:00 p.m.	2,390	76	1,100	5,840	--	70	--	93	96	98	99	100	--	--		SPWCM
Aug. 7.....	8:50 a.m.	2,250	72	1,720	5,110	--	71	--	94	98	99	100	--	--	--		SPWCM
Aug. 16.....	9:15 a.m.	2,080	71	5,290	4,280	--	61	--	89	95	98	99	100	--	--		SPWCM
Aug. 27.....	6:10 p.m.	1,460	72	231	1,720	--	43	--	65	83	92	97	99	100	--		SPWCM
Sept. 4.....	9:15 a.m.	2,360	68	22,700	6,380	--	67	--	87	97	98	99	100	--	--		SPWCM
Sept. 4.....	6:15 p.m.	2,140	68	39,300	5,400	--	55	--	86	97	98	99	100	--	--		SPWCM
Sept. 5.....	9:15 a.m.	2,540	68	38,800	5,260	--	53	--	84	97	99	99	100	--	--		SPWCM
Sept. 7.....	8:15 a.m.	a2,300	68	14,900	5,920	--	59	--	89	98	99	100	--	--	--		SPWCM
Sept. 17.....	5:45 p.m.	1,670	68	3,570	5,690	--	71	--	87	94	97	100	--	--	--		SPWCM
Sept. 27.....	4:45 p.m.	3,200	64	17,600	3,470	--	61	--	83	91	97	99	100	--	--		SPWCM
Sept. 28.....	9:15 a.m.	2,380	62	14,900	3,970	--	60	--	87	95	98	100	--	--	--		SPWCM

a Daily mean discharge.

GREEN RIVER BASIN--Continued

WILLOW CREEK NEAR OURAY, UTAH

LOCATION.--At gaging station, 8 miles upstream from mouth and 10 miles south of Ouray, Uintah County.
DRAINAGE AREA.--967 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Specific conductance: Maximum daily, 6,110 micromhos Aug. 12; minimum daily, 746 micromhos Apr. 7.
Water temperatures: Maximum observed, 87°F July 30; minimum observed, freezing point on many days during December to March.
EXTREMES, 1950-54.--Specific conductance: Maximum daily, 8,770 micromhos July 8, 1951; minimum daily, 673 micromhos May 8, 1952.
Water temperatures: Maximum observed, 89°F July 14, 1951; June 8, 1953; minimum observed, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids are sums of determined constituents, unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-2, 1953..	2.7	--		--	--	--		--	--	--		--	--	a2,810	3.82	20.5	--	--	--	--	3,590	--
Oct. 3-10	3.8	--		--	--	--		--	--	--		--	--	a1,930	2.62	19.8	--	--	--	--	2,570	--
Oct. 11-13	8.3	16		79	111	356		586	887	42		1.6	--	1,780	2.42	39.9	654	173	54	6.0	2,480	8.1
Oct. 14-20	9.9	18		70	67	159		445	398	22		1.4	0.95	956	1.30	25.6	448	83	44	3.3	1,420	8.1
Oct. 21-31	25.6	--		--	--	--		--	--	--		--	--	a912	1.24	63.0	--	--	--	--	1,320	--
Nov. 1-10	14.9	--		--	--	--		--	--	--		--	--	a996	1.35	40.1	--	--	--	--	1,430	--
Nov. 11-20	14.3	17		80	73	179		489	454	21		1.0	--	1,070	1.46	41.3	500	99	44	3.5	1,550	8.1
Nov. 21-30	21.4	20		87	65	143		491	370	20		1.3	.74	949	1.29	54.8	484	81	39	2.8	1,410	8.1
Dec. 1-10.....	20.5	21		86	70	166		503	423	21		1.5	.93	1,040	1.41	57.6	504	92	42	3.2	1,530	8.1
Dec. 11-20.....	20.0	21		88	79	201		544	485	25		1.5	1.0	1,170	1.59	63.2	546	100	45	3.7	1,680	8.1
Dec. 21-31.....	20.0	21		92	81	211		568	500	26		1.5	1.0	1,210	1.65	65.3	566	100	45	3.9	1,740	8.0
Jan. 1-10, 1954..	20.0	19		90	70	174		516	431	22		1.5	1.0	1,060	1.44	57.2	512	89	42	3.4	1,540	8.0
Jan. 11-20	20.0	18		82	59	147		455	361	21		1.8	.82	915	1.24	49.4	448	75	42	3.0	1,320	8.1
Jan. 21-27	20.0	16		77	53	136		418	324	18		2.0	--	832	1.13	44.9	408	65	42	2.9	1,190	8.2
Jan. 28-31, Feb. 1-3	20.9	16		88	73	215		461	551	30		2.4	--	1,200	1.63	67.7	522	144	47	4.1	1,700	8.1
Feb. 4-10.....	22.0	16		73	48	118		376	306	18		2.0	--	766	1.04	45.5	380	72	40	2.6	1,120	8.1
Feb. 11-20.....	23.8	17		76	52	131		405	329	15		2.2	.65	822	1.12	52.8	402	70	41	2.8	1,210	8.1
Feb. 21-28	27.0	--		--	--	--		--	--	--		--	--	a754	1.03	55.0	--	--	--	--	1,110	--
Mar. 1-8	31.4	--		--	--	--		--	--	--		--	--	a1,030	1.40	87.3	--	--	--	--	1,470	--
Mar. 9-11	66.3	--		--	--	--		--	--	--		--	--	a610	.83	109	--	--	--	--	888	--
Mar. 12-20.....	31.9	15		77	52	121		405	312	14		2.1	.56	793	1.08	68.3	406	74	39	2.6	1,170	8.2
Mar. 21-31, Apr. 1-3	37.3	--		--	--	--		--	--	--		--	--	a775	1.05	78.1	--	--	--	--	1,150	--
Apr. 4-10	61.3	--		--	--	--		--	--	--		--	--	a564	.77	93.3	--	--	--	--	805	--
Apr. 11-20	61.7	14		74	33	75		308	215	9.0		3.0	.39	575	..78	95.8	320	67	34	1.8	878	7.9
Apr. 21-27.....	34.4	--		--	--	--		--	--	--		--	--	a745	1.01	69.2	--	--	--	--	1,090	--
Apr. 28-30.....	16.0	--		--	--	--		--	--	--		--	--	a1,090	1.48	47.1	--	--	--	--	1,530	--

a Residue on evaporation at 180°C.

May 1-2, 1954 ...	25.0	--		--	--	--		--	--	--		--	--	a926	1.26	62.5	--	--	--	--	1,320	--
May 3-10	10.4	--		--	--	--		--	--	--		--	--	a1,900	2.58	53.4	--	--	--	--	2,480	--
May 11-20.....	6.0	18		83	138	518	6.4	675	1,190	64		1.2	--	2,350	3.20	38.1	775	222	59	8.1	3,090	8.2
May 21-31.....	8.0	--		--	--	--		--	--	--		--	--	a1,710	2.33	36.9	--	--	--	--	2,300	--
June 1-10	6.2	18		64	107	337		586	787	41		.8	2.1	1,650	2.24	27.6	600	119	55	6.0	2,350	8.2
June 11-22	2.5	21		81	118	445		618	1,050	47		.9	2.4	2,070	2.82	14.0	688	181	58	7.4	2,700	8.1
June 23-30	1.2	16		78	229	1,050		1,040	2,340	111		1.6	6.0	4,340	5.90	14.1	1,140	287	67	14	5,230	8.1
July 1-10.....	.5	15		81	245	1,130		1,040	2,580	116		.8	6.5	4,690	6.38	6.33	1,210	357	67	14	5,460	8.1
July 11-14, 16, 19	1.1	14		87	217	1,030		988	2,290	103		1.1	5.8	4,230	5.75	12.6	1,110	300	67	13	4,940	8.1
July 15, 17-18, 20	6.8	26		91	83	338		608	734	43		1.5	1.9	1,620	2.20	29.7	568	69	56	6.2	2,250	7.8
July 21.....	4.0	20		110	130	474		723	1,120	52		1.6	2.0	2,270	3.09	24.5	810	217	56	7.2	2,980	7.6
July 22-24.....	1.3	18		88	233	900		975	2,070	93		1.0	4.3	3,890	5.29	13.7	1,180	380	62	11	4,820	7.8
July 25-27.....	26.7	20		73	52	170		412	382	23		2.2	.84	926	1.26	66.8	398	60	48	3.7	1,370	7.4
July 28-29.....	4.5	18		94	95	337		584	796	38		2.2	1.9	1,670	2.27	20.3	626	147	54	5.9	2,300	7.7
July 30-31.....	.8	19		102	179	655		797	1,580	73		.4	3.5	3,000	4.08	6.48	990	336	69	9.1	3,870	7.7
Aug. 1-10.....	1.0	14		96	265	1,040		1,000	2,450	114		.5	5.2	4,480	6.09	12.1	1,330	510	63	12	5,430	7.8
Aug. 11-12.....	2.0	18		85	259	1,260		b1,030	2,890	125		1.5	7.2	5,150	7.00	27.8	1,280	435	68	15	5,920	8.3
Aug. 13	20.0	22		61	38	121		376	238	16		.8	--	682	.93	36.8	309	1	46	3.0	1,030	7.8
Aug. 14-15.....	6.4	18		87	78	383		554	812	38		2.0	.98	1,690	2.30	29.2	536	82	61	7.2	2,190	8.1
Aug. 16-20.....	.8	19		89	185	874		860	1,930	116		1.0	5.4	3,640	4.95	7.86	984	279	66	12	4,530	8.2
Aug. 21-31.....	.6	--		--	--	--		--	--	--		--	--	a4,430	6.02	7.18	--	--	--	--	5,390	--
Sept. 3, 6-9.....	5.9	--		--	--	--		--	--	--		--	--	a1,770	2.41	28.2	--	--	--	--	2,320	--
Sept. 4-5	15.5	--		--	--	--		--	--	--		--	--	a907	1.23	38.0	--	--	--	--	1,270	--
Sept. 11-20.....	2.8	18		91	143	571		776	1,300	46		.9	3.4	2,560	3.48	19.4	815	179	60	8.7	3,360	8.2
Sept. 23-24, 27-30	12.8	--		--	--	--		--	--	--		--	--	a1,150	1.56	39.7	--	--	--	--	1,580	--
Sept. 25-26	80.0	--		--	--	--		--	--	--		--	--	a714	.97	154	--	--	--	--	1,020	--
Weighted average	17.6	--		--	--	--		--	--	--		--	--	960	1.31	45.6	--	--	--	--	1,370	--

a Residue on evaporation at 180°C.
b Includes equivalent of 55 parts per million of Carbonate (CO_3).

GREEN RIVER BASIN--Continued

WILLOW CREEK NEAR OURAY, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	47	33	32	32	32	49	59	61	70	68	--
2	57	47	33	32	32	34	42	61	61	80	69	--
3	56	49	33	32	32	33	44	69	75	75	72	72
4	55	51	33	32	34	35	54	74	66	72	68	68
5	58	45	33	32	34	37	56	68	70	84	74	69
6	58	45	33	32	34	--	55	69	58	86	75	70
7	62	43	33	32	34	41	47	72	65	85	74	64
8	59	40	33	32	34	42	60	68	60	84	84	72
9	60	40	33	32	35	46	54	69	70	82	72	70
10	52	40	33	32	35	47	55	65	70	76	71	--
11	48	43	33	32	35	38	56	67	71	82	69	62
12	55	43	33	32	35	39	54	70	72	--	70	66
13	45	43	33	32	34	38	56	66	70	82	68	71
14	55	43	33	32	35	42	54	69	74	75	72	56
15	53	44	33	32	35	33	50	75	67	63	70	66
16	55	43	32	32	35	33	45	65	67	75	74	68
17	53	44	32	32	35	37	48	76	70	71	79	63
18	54	36	32	32	37	39	56	80	70	82	69	54
19	54	34	32	32	37	42	57	80	73	78	70	55
20	54	33	32	32	37	41	58	77	57	85	66	56
21	44	33	32	32	40	42	62	--	60	73	64	--
22	44	33	32	32	43	44	65	75	66	78	76	--
23	45	33	32	32	45	47	64	73	79	71	74	62
24	45	33	32	32	47	45	61	75	70	63	68	63
25	46	33	32	32	40	47	57	68	70	74	70	50
26	45	33	32	32	40	51	62	63	73	65	71	58
27	47	33	32	32	39	51	60	67	71	82	75	63
28	48	33	32	32	37	52	59	--	77	73	71	62
29	45	33	32	32	--	54	51	67	74	83	75	60
30	47	33	32	32	--	42	59	57	73	87	80	57
31	47	--	32	32	--	48	--	57	--	77	--	--
Average	52	39	32	32	36	42	55	69	69	77	72	63

PRICE RIVER AT WOODSIDE, UTAH

LOCATION.--At gaging station 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 1954.
Water temperatures: February 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 5,470 ppm Mar. 23-29; minimum, 1,790 ppm Mar. 11-12.
Hardness: Maximum, 1,900 ppm Mar. 23-29; minimum, 728 ppm Mar. 11-12.
Specific conductance: Maximum daily, 6,860 micromhos Mar. 27; minimum daily, 2,290 micromhos Mar. 11.
Water temperatures: Maximum observed, 90°F July 10-11; minimum observed, freezing point Dec. 9.
EXTREMES, 1951-54.--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, 514 micromhos June 1, 1952.
Water temperatures: Maximum observed, 90°F July 10-11, 1954; 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953..	62.4	7.6	--	206	178	548	7.5	287	2,010	65	--	7.4	--	3,170	4.31	534	1,250	1,010	49	6.8	3,850	--	--
Oct. 11-20.....	120	9.0	--	235	165	540	8.6	267	2,020	61	--	4.6	0.30	3,170	4.31	1,030	1,260	1,050	48	6.6	3,810	--	--
Oct. 21-31.....	80.6	9.0	--	253	221	686	9.1	312	2,550	78	--	10	--	3,970	5.40	864	1,540	1,280	49	7.6	4,650	--	--
Nov. 1-10	63.2	5.9	--	244	259	783	8.9	356	2,870	90	--	11	--	4,450	6.05	759	1,670	1,380	50	8.3	5,120	7.9	--
Nov. 11-20.....	68.2	3.9	--	240	261	783	8.1	354	2,870	91	--	11	.38	4,440	6.04	818	1,670	1,380	50	8.3	5,110	7.9	--
Nov. 21-30	58.5	5.7	--	252	268	796	8.5	374	2,900	92	--	11	--	4,520	6.15	714	1,730	1,420	50	8.3	5,200	8.0	--
Dec. 1-10	37.3	8.4	--	276	283	821	8.7	362	3,120	102	--	11	.30	4,810	6.54	484	1,850	1,560	49	8.3	5,460	7.9	--
Dec. 11-20.....	37.5	10	--	278	259	735	8.7	412	2,780	94	--	10	.30	4,380	5.96	443	1,760	1,420	47	7.6	5,050	7.9	--
Dec. 21-31.....	35.5	12	--	262	237	684	7.9	440	2,550	87	--	12	.30	4,070	5.54	390	1,630	1,270	48	7.4	4,730	7.9	--
Jan. 1-10, 1954 .	37.0	11	--	270	244	671	8.7	460	2,570	94	--	12	.34	4,110	5.59	411	1,680	1,300	46	7.1	4,780	7.6	--
Jan. 11-20.....	37.0	10	--	254	231	646	7.9	436	2,450	90	--	12	.35	3,920	5.33	392	1,580	1,230	47	7.1	4,610	7.7	--
Jan. 21-31.....	47.3	11	0.14	212	209	620	8.1	336	2,240	79	0.4	11	--	3,560	4.84	455	1,390	1,110	49	7.2	4,220	7.9	10
Feb. 1-10	81.5	10	.11	215	227	741	8.1	326	2,610	85	.5	12	--	4,070	5.54	896	1,470	1,200	52	8.4	4,810	8.1	15
Feb. 11-20	77.2	10	.13	239	237	753	8.6	376	2,640	83	.5	10	.30	4,170	5.67	869	1,570	1,260	51	8.3	4,870	7.9	20
Feb. 21-28	76.2	9.4	.11	224	225	700	7.8	340	2,490	82	.5	9.9	--	3,920	5.33	807	1,480	1,210	50	7.9	4,620	7.9	18
Mar. 1-10.....	66.5	9.8	.08	210	204	624	8.2	352	2,250	80	.6	11	--	3,570	4.86	641	1,360	1,070	50	7.3	4,310	7.9	--
Mar. 11-12	172	9.4	--	137	94	301	6.2	251	1,080	34	--	7.7	--	1,790	2.43	831	728	523	47	4.8	2,320	7.7	--
Mar. 13-22	62.6	10	--	222	208	675	8.8	351	2,400	78	--	13	.24	3,790	5.15	641	1,410	1,120	51	7.8	4,490	7.8	--
Mar. 23-29	76.0	9.6	--	256	308	1,030	9.7	383	3,540	111	--	20	--	5,470	7.44	1,120	1,900	1,590	54	10	6,110	7.9	--
Mar. 30-31, Apr. 1-14	85.6	11	--	170	149	446	7.6	316	1,620	57	--	9.3	.23	2,630	3.58	608	1,040	778	48	6.0	3,290	7.8	--
Apr. 23-30.....	45.5	4.9	--	197	215	678	11	274	2,480	83	--	5.2	--	3,810	5.18	468	1,380	1,150	51	8.0	4,520	7.9	--

PRICE RIVER AT WOODSIDE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
May 1-10, 1954	68.3	7.8	--	192	217	690	9.0	302	2,480	77	--	3.4	0.34	3,820	5.20	704	1,370	1,120	52	8.1	4,470	7.6	--
May 11-20	49.0	5.6	--	190	198	628	9.0	276	2,260	73	--	2.8	.37	3,500	4.76	463	1,290	1,060	51	7.6	4,160	7.6	--
May 21-31	68.7	9.3	--	170	159	484	8.5	288	1,740	60	--	4.8	.31	2,780	3.78	516	1,080	842	49	6.4	3,380	7.6	--
June 1-10	57.2	6.4	--	180	176	538	8.3	284	1,940	64	--	3.4	.34	3,060	4.16	473	1,170	940	50	6.8	3,660	7.6	--
June 11-20	45.4	7.2	--	216	219	669	8.9	271	2,430	79	--	3.9	.43	3,770	5.13	462	1,440	1,220	50	7.7	4,430	7.6	--
June 21-30	56.1	9.5	--	210	188	581	10	268	2,170	72	--	2.4	.40	3,370	4.58	510	1,300	1,080	49	7.0	4,050	7.4	--
July 1-10	37.6	12	--	256	203	669	12	270	2,450	80	--	7.1	.37	3,820	5.20	388	1,470	1,250	49	7.6	4,400	7.5	--
July 11-17	33.0	9.7	--	238	201	718	12	259	2,540	79	--	4.5	.40	3,930	5.34	350	1,420	1,210	52	8.3	4,620	7.5	--
Aug. 1-5, 7-10	32.2	10	--	255	213	689	12	290	2,530	86	--	7.2	.40	3,950	5.37	343	1,510	1,270	50	7.7	4,570	7.4	--
Aug. 6	40.0	21	--	176	107	309		329	1,200	22	--	.7	--	2,000	2.72	216	879	610	43	4.5	2,590	7.2	--
Aug. 11-20	102	12	--	280	173	586	12	290	2,230	73	--	2.1	.43	3,510	4.77	967	1,410	1,170	47	6.8	4,090	7.7	--
Aug. 21-31	18.6	4.8	--	263	257	846	12	245	3,090	98	--	3.5	--	4,700	6.39	236	1,710	1,510	52	8.9	5,370	7.6	--
Sept. 1-10	320	7.9	--	354	221	749	14	246	3,000	87	--	7.3	--	4,560	6.20	3,940	1,790	1,590	47	7.7	5,130	7.5	--
Sept. 11-20	179	9.6	--	282	169	605	11	260	2,320	68	--	7.2	.40	3,600	4.90	1,740	1,400	1,190	48	7.0	4,210	7.8	--
Sept. 21-30	101	11	--	226	149	510	9.5	250	1,940	59	--	7.2	--	3,030	4.12	826	1,180	972	48	6.5	3,620	7.8	--
Weighted average	a72.2	9.0	--	246	205	653	9.7	306	2,430	77	--	8.0	--	3,790	5.15	739	1,460	1,210	49	7.4	4,430	--	--

a Represents 94 percent of runoff for water year October 1953 to September 1954.

GREEN RIVER BASIN--Continued

PRICE RIVER AT WOODSIDE, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	53	40	34	35	37	46	60	76	80	77	80
2	69	57	39	33	35	41	52	58	72	80	--	72
3	--	52	35	34	35	40	49	69	74	80	72	70
4	68	54	36	34	35	40	46	70	65	80	80	73
5	--	53	33	33	35	45	50	63	70	78	76	68
6	62	--	33	33	38	42	50	71	55	76	81	70
7	63	52	34	33	39	46	56	73	57	78	80	72
8	64	53	35	33	40	50	62	75	60	75	82	71
9	63	51	32	33	37	53	63	74	59	84	80	70
10	65	52	33	33	38	54	64	75	60	90	75	70
11	65	51	--	33	37	36	63	75	60	90	84	--
12	--	50	34	33	40	38	60	--	60	88	82	70
13	--	46	33	34	40	44	62	78	73	86	70	69
14	--	48	34	34	40	48	63	74	74	87	71	69
15	53	47	33	34	45	48	--	77	72	89	77	67
16	--	47	33	35	--	49	--	80	75	87	77	75
17	52	46	33	34	42	43	--	85	75	88	78	75
18	54	41	33	35	40	46	--	85	70	--	77	69
19	52	38	33	35	38	46	--	85	77	--	74	65
20	53	36	33	35	42	45	--	83	79	--	--	62
21	52	36	33	35	46	44	--	75	77	--	72	67
22	52	35	33	35	49	47	--	74	83	--	75	67
23	52	42	33	35	48	41	66	73	75	--	--	68
24	54	40	34	35	48	42	64	65	74	--	76	68
25	50	41	35	34	48	45	--	68	80	--	73	69
26	50	41	35	35	48	43	67	75	81	--	76	71
27	51	40	35	35	40	55	60	80	78	--	75	65
28	51	41	34	35	42	56	59	76	80	--	77	61
29	50	40	34	35	--	56	47	78	79	--	76	67
30	--	39	34	35	--	46	50	76	80	--	75	67
31	51	--	33	35	--	49	--	73	--	--	77	--
Average	--	46	34	34	41	46	--	74	72	--	77	69

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 1954.
Water temperatures: May 1949 to September 1954.
Sediment records: May 1930 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,000 ppm Dec. 13-16, 16, 20; minimum, 237 ppm May 21-31.
Hardness: Maximum, 592 ppm Oct. 13; minimum, 146 ppm May 21-31.
Specific conductance: Maximum daily, 1,840 micromhos Oct. 13; minimum daily, 333 micromhos May 27.
Water temperatures: Maximum observed, 80°F July 11, 13, 14, 30, Aug. 1; minimum observed, freezing point on several days during December to January.
Sediment concentrations: Maximum daily, 62,100 ppm Sept. 13; minimum daily, 40 ppm Oct. 1-6.
Sediment loads: Maximum daily, 748,000 tons Sept. 13; minimum daily, 120 tons Oct. 1-6.
EXTREMES, 1928-54.--Dissolved solids: Maximum, 2,010 ppm Sept. 29, 1943; minimum, 194 ppm June 21-30, 1933.
Hardness: Maximum, 592 ppm Oct. 13, 1953; minimum, 128 ppm June 21-30, 1933.
Specific conductance (1941-54): Maximum daily, 2,420 micromhos Sept. 29, 1943; minimum daily, 321 micromhos May 30, 1948.
Water temperatures (1949-54): Maximum observed, 82°F July 31, Aug. 5, 6, 1949, July 20, 1953; minimum observed, freezing point on many days during winter months.
Sediment concentrations (1930-54): Maximum daily, 63,600 ppm July 11, 1936; minimum daily, 34 ppm Sept. 27, 1951.
Sediment loads (1930-54): 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 residues 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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): Parts per million	Dissolved solids (residue at 180°C): Tons per acre-foot	Dissolved solids (residue at 180°C): Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-10, 1953 ...	1,109	--	--	84	38	131	--	--	--	--	--	--	--	844	1.15	2,530	364	--	44	3.0	1,220	--	--
Oct. 11-12, 14-20 .	1,334	9.2	0.10	82	47	156	5.2	226	444	58	0.4	1.4	--	932	1.27	3,360	398	213	46	3.4	1,340	7.6	8
Oct. 13a.....	1,440	--	--	--	--	--	--	320	--	--	--	--	--	--	--	--	592	330	--	--	1,840	7.1	--
Oct. 21, 23-24, 26 .	1,595	--	--	88	39	134	--	--	--	--	--	--	--	861	1.17	3,710	380	--	43	3.0	1,230	--	--
Nov. 11-20.....	2,193	--	--	87	38	126	--	--	--	--	--	--	--	830	1.13	4,910	374	--	42	2.8	1,190	--	--
Nov. 21-30.....	2,193	--	--	91	40	129	--	--	--	--	--	--	--	872	1.19	5,160	392	--	42	2.8	1,230	--	--
Dec. 1-10.....	2,257	--	--	89	36	109	--	--	--	--	--	--	--	786	1.07	4,790	372	--	39	2.5	1,130	--	--
Dec. 13-16, 18, 20	1,292	--	--	108	46	139	--	--	--	--	--	--	--	1,000	1.36	3,490	460	--	40	2.8	1,400	--	--
Dec. 21-31.....	1,582	--	--	100	42	122	--	--	--	--	--	--	--	862	1.17	3,680	422	--	39	2.6	1,260	7.6	--
Jan. 1-10, 1954 ...	1,510	--	--	105	46	128	--	--	--	--	--	--	--	930	1.26	3,790	452	--	38	2.6	1,330	8.0	--
Jan. 11-20.....	1,750	13	.14	89	43	112	3.9	270	328	53	.4	2.5	0.25	795	1.08	3,760	399	178	38	2.4	1,160	7.7	12
Jan. 21-31.....	1,953	--	--	84	33	95	--	--	--	--	--	--	--	709	.96	3,740	346	--	37	2.2	1,040	7.9	--
Feb. 1-10	2,107	--	--	81	37	108	--	--	--	--	--	--	--	768	1.04	4,370	356	--	40	2.5	1,110	8.1	--
Feb. 11-20	2,715	--	--	81	38	108	--	--	--	--	--	--	--	770	1.05	5,640	360	--	40	2.5	1,110	7.9	--
Feb. 21-28.....	2,676	--	--	80	34	101	--	--	--	--	--	--	--	724	.98	5,230	340	--	39	2.4	1,050	8.0	--

a Not included for computation of weighted averages.

Mar. 1-10 ...	2,350	--	--	81	36	104	--	--	--	--	--	--	--	740	1.01	4,700	348	--	39	2.4	1,080	7.9	--
Mar. 11-20	2,793	--	--	83	38	105	--	--	--	--	--	--	--	772	1.05	5,820	364	--	39	2.4	1,100	8.3	--
Mar. 21-31	3,079	--	--	77	35	103	--	--	--	--	--	--	--	750	1.02	6,230	336	--	40	2.4	1,080	7.9	--
Apr. 1-10.....	3,057	--	--	88	32	104	--	--	--	--	--	--	--	730	.99	6,030	352	--	39	2.4	1,100	7.9	--
Apr. 11-20.....	4,582	12	0.07	74	28	83	4.6	238	231	32	0.5	3.0	0.14	599	.81	7,410	300	104	37	2.1	907	7.8	--
Apr. 21-30.....	5,972	--	--	61	18	55	--	--	--	--	--	--	--	426	.58	6,870	227	--	35	1.6	674	7.8	--
May 1-10.....	6,538	--	--	57	14	42	--	--	--	--	--	--	--	361	.49	6,370	202	--	31	1.3	570	7.8	--
May 11-20	9,493	--	--	49	12	30	--	--	--	--	--	--	--	294	.40	7,540	172	--	27	1.0	470	7.9	--
May 21-31	15,280	--	--	42	9.7	24	--	--	--	--	--	--	--	237	.32	9,780	146	--	26	.9	389	7.9	--
June 1-10.....	8,659	--	--	50	12	30	--	--	--	--	--	--	--	300	.41	7,010	173	--	27	1.0	472	8.0	--
June 11-20.....	5,304	--	--	51	16	43	--	--	--	--	--	--	--	353	.48	5,060	193	--	33	1.3	557	8.1	--
June 21-30, July 1.	5,179	--	--	52	15	46	--	--	--	--	--	--	--	368	.50	5,150	193	--	34	1.4	571	8.0	--
July 2-10	3,156	--	--	47	9.5	27	--	--	--	--	--	--	--	266	.36	5,860	157	--	27	.9	427	8.0	--
July 13-18	4,610	--	--	51	14	35	--	--	--	--	--	--	--	323	.44	4,020	185	--	29	1.1	512	--	--
July 19-20	5,100	--	--	73	20	66	--	--	--	--	--	--	--	517	.70	7,120	268	--	35	1.8	777	--	--
July 21-31	4,084	13	.35	64	23	52	3.7	214	167	20	.4	2.5	.14	440	.60	4,850	254	78	30	1.4	687	7.7	45
Aug. 1-10.....	2,435	--	--	59	17	55	--	--	--	--	--	--	--	412	.56	2,710	218	--	36	1.6	648	--	--
Aug. 11-20.....	1,961	--	--	71	22	74	--	--	--	--	--	--	--	541	.74	2,860	270	--	38	2.0	821	--	--
Aug. 21-31.....	1,488	--	--	69	21	70	--	--	--	--	--	--	--	510	.69	2,050	259	--	37	1.9	781	--	--
Sept. 1-10	1,986	--	--	90	24	90	--	--	--	--	--	--	--	699	.95	3,750	324	--	38	2.2	985	--	--
Sept. 11-20	2,237	--	--	106	28	110	--	--	--	--	--	--	--	796	1.08	4,810	380	--	39	2.5	1,150	--	--
Sept. 21-30	2,537	--	--	95	27	109	--	--	--	--	--	--	--	754	1.03	5,160	348	--	41	2.5	1,080	--	--
Weighted average	b3,689	--	--	65	22	65	--	--	--	--	--	--	--	498	0.68	4,960	252	--	36	1.8	749	--	--

b Represents 94 percent of runoff for water year October 1953 to September 1954.

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	1,140			1,880	180	a910	2,370	305	1,950
2	1,130			1,880			2,350	289	1,830
3	1,100			1,880	160	a810	2,370	255	1,630
4	1,100	40	120	1,880			2,450	266	1,760
5	1,100			1,920	180	a930	2,450	257	1,700
6	1,090			1,900	200	a1,000	2,330	205	1,290
7	1,090	67	210	1,940	180	a940	2,180	200	1,180
8	1,100	67	210	2,000	170	a920	2,080	210	1,180
9	1,110	--	e210	2,020	160	a870	2,040	205	1,130
10	1,130	--	e210	2,040	140	a770	1,950	260	a1,400
11	1,200	--	e740	2,040	145	799	1,600	325	1,400
12	1,330	--	e1,600	2,040	170	936	1,200	260	a840
13	1,440	2,320	9,020	2,060	210	1,170	900	170	413
14	1,330	1,870	6,720	2,100	225	1,280	850	195	448
15	1,270	80	274	2,140	265	1,530	900	255	620
16	1,270	80	274	2,180	190	1,120	1,200	240	778
17	1,270	95	326	2,180	195	1,150	1,500	450	1,820
18	1,280	90	a310	2,540	610	4,180	1,800	355	1,730
19	1,410	380	1,450	2,300	475	2,950	2,000	495	2,670
20	1,650	1,240	5,520	2,350	250	1,590	2,100	305	1,730
21	1,470	550	2,180	2,350	190	1,210	2,100	240	1,360
22	1,590	380	a1,600	2,240	180	a1,100	1,900	121	621
23	1,560	110	463	2,140	163	942	1,800	95	462
24	1,610	85	370	2,060	230	1,280	1,700	157	721
25	1,670	160	a720	1,800	210	1,020	1,600	240	1,040
26	1,740	260	1,220	2,120	195	1,120	1,400	300	1,130
27	1,820	270	a1,300	2,330	210	1,320	1,400	290	1,100
28	1,880	220	a1,100	2,280	226	1,390	1,500	210	850
29	1,900	200	a1,000	2,260	300	1,830	1,400	184	696
30	1,860	200	a1,000	2,350	330	2,090	1,300	210	a740
31	1,860	180	a900	--	--	--	1,300	280	983
Total	43,500	--	39,647	63,200	--	38,777	54,020	--	37,202

Day	January			February			March		
1	1,400	200	756	1,900	120	616	2,810	820	6,220
2	1,400	230	869	1,980	127	679	2,720	995	7,310
3	1,450	250	979	2,080	181	1,020	2,500	915	6,180
4	1,450	230	900	2,120	250	1,430	2,260	750	4,580
5	1,450	255	998	2,120	260	1,490	2,120	660	3,780
6	1,500	195	790	2,140	290	1,680	2,040	570	3,140
7	1,600	195	842	2,160	310	1,810	2,120	450	2,580
8	1,600	200	864	2,140	289	1,670	2,260	310	1,890
9	1,600	210	907	2,180	240	1,410	2,280	321	1,980
10	1,650	265	1,180	2,250	260	1,580	2,390	364	2,350
11	1,650	220	980	2,330	270	1,700	2,480	520	3,480
12	1,650	200	891	2,450	340	2,250	2,560	875	6,050
13	1,650	265	1,180	2,410	295	1,920	2,700	880	6,420
14	1,700	220	1,010	2,590	335	2,340	2,880	750	5,830
15	1,750	200	945	2,500	320	2,160	2,930	950	7,520
16	1,750	130	614	2,520	281	1,910	2,740	875	6,470
17	1,800	160	778	2,700	360	2,620	2,770	960	7,180
18	1,850	210	1,050	3,120	660	5,560	2,860	820	6,330
19	1,850	215	1,070	3,450	1,000	9,320	2,980	795	6,350
20	1,850	200	999	3,080	1,120	9,310	3,050	615	5,060
21	1,850	290	1,450	2,960	855	6,830	3,120	595	5,010
22	1,850	300	1,500	2,650	610	4,360	3,050	660	5,440
23	1,800	204	991	2,520	491	3,340	2,960	620	4,960
24	1,900	180	923	2,520	435	2,960	2,910	660	5,190
25	2,000	210	1,130	2,590	495	3,460	2,980	615	4,950
26	2,150	240	1,390	2,700	580	4,230	3,030	590	4,830
27	2,050	365	2,020	2,680	605	4,380	3,220	545	4,740
28	1,980	200	1,070	2,790	735	5,540	3,180	550	4,720
29	2,020	140	764	--	--	--	3,120	740	6,230
30	1,960	165	873	--	--	--	3,180	1,050	9,020
31	1,920	175	907	--	--	--	3,120	930	7,830
Total	54,080	--	31,620	69,630	--	87,575	85,300	--	163,620

e Estimated.

a Computed from estimated concentration graph.

GREEN RIVER BASIN--Continued

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	3,080	960	7,980	7,110	2,100	40,300	12,300	1,720	57,100
2.....	3,000	865	7,010	7,300	1,930	38,000	11,100	1,510	45,300
3.....	2,960	795	6,350	7,610	1,990	40,900	10,200	1,300	35,800
4.....	2,980	770	a6,200	7,490	1,970	37,800	9,370	1,130	28,600
5.....	2,960	740	5,950	6,850	1,270	23,500	8,750	1,050	24,800
6.....	2,930	1,030	8,150	6,270	1,080	18,300	7,960	1,350	29,000
7.....	2,880	840	6,530	5,820	950	14,900	7,340	900	17,800
8.....	2,960	850	6,790	5,520	683	10,200	6,880	860	16,000
9.....	3,300	1,030	9,180	5,450	540	7,950	6,450	973	16,900
10.....	3,500	1,240	11,700	5,960	540	a8,700	6,240	500	8,420
11.....	3,730	1,680	16,900	6,740	770	a14,000	6,020	450	7,310
12.....	4,820	2,450	31,900	7,530	1,100	a22,000	5,720	531	8,200
13.....	4,970	2,660	35,700	8,280	1,500	a34,000	5,420	340	4,980
14.....	4,670	2,400	30,300	8,860	2,000	46,800	5,320	367	5,270
15.....	4,470	1,820	22,000	8,880	2,380	57,100	5,260	350	4,970
16.....	4,350	1,770	20,800	8,790	2,100	49,800	5,130	301	4,170
17.....	4,380	1,820	19,200	9,190	1,920	47,600	5,100	250	3,440
18.....	4,610	1,530	19,000	9,930	2,440	65,400	5,130	153	2,120
19.....	4,820	1,380	17,700	10,300	2,300	64,000	5,060	250	3,420
20.....	5,000	1,380	18,600	10,700	2,170	62,700	4,680	328	4,320
21.....	4,790	1,100	14,200	11,200	2,260	68,300	4,790	300	3,880
22.....	4,730	1,120	14,300	12,400	2,810	94,100	4,700	198	2,510
23.....	5,190	1,320	18,500	13,400	3,260	119,000	4,730	172	2,200
24.....	5,890	1,730	27,500	15,000	3,620	147,000	4,880	170	2,240
25.....	6,240	2,280	38,400	16,500	4,050	180,000	4,880	110	1,450
26.....	6,270	2,100	35,600	17,700	3,850	184,000	4,700	100	1,270
27.....	6,200	1,840	27,500	18,400	3,570	177,000	4,500	210	2,550
28.....	6,380	1,560	28,900	17,600	3,170	151,000	4,580	200	2,470
29.....	6,850	1,910	35,300	16,800	2,800	127,000	5,720	930	14,400
30.....	7,160	2,330	45,200	15,300	2,440	101,000	6,380	2,350	40,500
31.....	--	--	--	13,800	2,080	77,500	--	--	--
Total.	136,110	--	591,340	322,480	--	2,129,880	189,490	--	401,390

Day	July			August			September		
1.....	7,110	1,700	32,800	3,120	2,880	24,300	1,340	150	543
2.....	7,880	1,970	40,800	2,910	1,700	13,400	1,340	100	362
3.....	8,970	2,030	49,200	2,700	600	4,370	1,360	300	1,100
4.....	10,400	1,700	47,700	2,560	300	2,070	2,170	9,620	s63,600
5.....	10,300	1,490	41,400	2,430	300	1,970	3,110	36,300	s356,000
6.....	9,010	780	18,500	2,330	1,200	7,550	2,350	6,250	52,300
7.....	7,720	420	8,750	2,180	2,950	17,400	2,450	4,250	28,100
8.....	8,880	350	6,500	2,160	1,350	7,870	1,960	4,300	22,800
9.....	6,480	1,170	20,500	2,040	587	3,120	1,880	4,150	20,600
10.....	5,960	5,000	60,500	1,920	320	1,660	1,920	4,750	24,600
11.....	5,680	2,350	36,000	1,860	850	3,260	2,540	3,250	22,300
12.....	5,350	1,600	23,100	1,820	594	2,920	2,480	11,000	sa84,000
13.....	5,080	800	10,900	1,940	3,730	19,500	3,940	62,100	sb748,000
14.....	4,790	417	5,390	2,140	14,400	83,200	2,220	14,400	86,300
15.....	4,610	550	8,850	2,060	4,400	24,500	2,000	7,900	42,700
16.....	4,440	3,100	37,200	2,250	5,350	32,600	1,980	5,100	27,300
17.....	4,350	1,500	17,600	2,200	2,200	13,100	2,000	5,200	a26,000
18.....	4,410	500	5,950	1,900	1,380	7,080	1,660	4,100	a21,000
19.....	4,650	4,200	55,000	1,760	1,020	4,850	1,740	2,600	a12,000
20.....	5,350	3,000	43,300	1,670	1,600	a7,200	1,610	3,400	14,800
21.....	4,470	7,550	92,300	1,630	2,450	10,800	1,560	2,200	9,270
22.....	4,100	7,750	85,800	1,630	1,500	6,600	1,590	1,300	5,580
23.....	4,050	3,900	42,500	1,610	1,010	4,390	1,790	3,630	s22,100
24.....	4,060	2,200	24,200	1,590	931	4,000	1,580	1,590	6,780
25.....	4,210	1,400	15,900	1,540	600	2,490	2,240	12,200	s74,400
26.....	4,300	800	9,290	1,470	325	1,290	3,130	8,150	s69,300
27.....	4,190	1,800	20,400	1,410	220	838	3,730	18,200	183,000
28.....	4,470	1,800	21,700	1,410	171	651	4,000	20,300	219,000
29.....	4,100	2,100	23,200	1,380	400	1,490	3,320	18,500	166,000
30.....	3,630	5,500	53,900	1,360	250	918	2,430	14,800	97,100
31.....	3,320	6,400	57,400	1,340	170	615	--	--	--
Total.	174,320	--	1,034,430	60,330	--	316,002	67,600	--	2,509,335

Total discharge for year (cfs-days)..... 1,320,060
Total load for year (tons)..... 7,380,788

s Computed by subdividing day.
a Computed from estimated concentration graph.
b Computed from partly estimated concentration graph.

GREEN RIVER AT GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Oct. 6, 1953	12:00 m.	1,080	58	25	394	--	42	--	80	87	93	96	98	98	100		SPWCM
Nov. 18	4:50 p. m.	2,430	44	481	3,950	26	32	45	59	78	93	96	99	100			SPWCM
Dec. 16	3:00 p. m.	a1,200	32	187	2,800	--	29	--	56	76	95	98	99	100			SPWCM
Jan. 22, 1954	2:00 p. m.	a1,850	34	318	4,910	--	33	--	65	80	90	94	98	100			SPWCM
Feb. 17	11:45 a. m.	2,650	38	359	5,200	--	46	--	72	61	90	94	99	100			SPWCM
Mar. 3	3:15 p. m.	2,480	41	949	5,740	2	4	10	96	98	99	99	100	--			SPN
Apr. 9	1:45 p. m.	3,350	56	1,010	6,600	--	65	--	87	92	97	96	100	--			SPWCM
Apr. 27	1:45 p. m.	6,160	63	1,520	3,900	--	44	--	71	81	85	94	99	100			SPWCM
May 21	3:00 p. m.	11,200	71	2,270	3,090	--	25	--	44	62	79	92	98	100			SPWCM
May 27	3:00 p. m.	18.300	64	3,590	3,360	--	27	--	45	58	75	89	98	100			SPWCM
June 2	11:40 a. m.	11,100	61	1,450	2,180	--	18	--	27	41	57	79	99	100			SPWCM
June 7	12:50 p. m.	7,340	61	754	745	23	26	28	33	38	47	76	99	100			SBWCM
July 1	4:00 p. m.	7,150	76	1,370	3,860	--	43	--	62	74	82	91	99	100			SPWCM
July 23	9:00 a. m.	4,050	73	3,740	2,990	--	76	--	98	99	99	99	100	--			SPWCM
Sept. 7	11:45 a. m.	2,520	72	3,610	3,900	--	61	--	84	99	100	--	--	--			SPWCM

a Daily mean discharge.

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 1954.
Water temperatures: July to September 1949, October 1950 to September 1954.
Sediment records: March 1948 to September 1949, October 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 5,650 ppm July 11, 13-18; minimum, 1,340 ppm May 12-22.
Hardness: Maximum, 2,280 ppm July 11, 13-18; minimum, 614 ppm May 12-22.
Specific conductance: Maximum daily, 7,230 micromhos July 15; minimum daily, 1,540 micromhos May 17.
Water temperatures: Maximum observed, 95°F July 11; minimum observed, freezing point Dec. 14-17.
Sediment concentrations: Maximum daily, 62,600 ppm Sept. 7; minimum daily, 95 ppm June 20.
Sediment loads: Maximum daily, 104,000 tons Sept. 13; minimum daily, less than 0.50 ton on many days.
EXTREMES, 1948-49, 1950-54.--Dissolved solids: Maximum, 5,650 ppm July 11, 13-18, 1954; minimum, 541 ppm June 11-20, 1952.
Hardness: Maximum, 2,280 ppm July 11, 13-18, 1954; minimum, 330 ppm June 11-20, 1952.
Specific conductance: Maximum daily, 7,230 micromhos July 15, 1954; minimum daily, 756 micromhos June 14, 1952.
Water temperatures (1949, 1950-54): Maximum observed, 95°F July 11, 1954; minimum observed, freezing point on many days during winter months.
Sediment concentrations (1948-54): Maximum daily, 115,000 ppm Aug. 4, 1951; minimum daily, 0 ppm (no flow) Sept. 5 to Oct. 3, 1948.
Sediment loads (1948-54): Maximum daily, 786,000 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953...	15.2	8.0	0.56	346	257	802	12	299	3,100	98	0.2	1.3	--	4,770	6.49	196	1,920	1,680	47	8.0	5,370	7.8	10
Oct. 12-20.....	84.9	11		326	163	540	11	258	2,280	63		3.5	0.35	3,520	4.79	807	1,480	1,270	44	6.1	4,120	--	
Oct. 21-31.....	77.5	11		274	193	540	9.5	308	2,180	60		3.5	--	3,420	4.65	716	1,480	1,220	44	6.1	4,010	--	
Nov. 1-10.....	62.4	9.6		275	191	519	9.5	308	2,150	59		3.4	--	3,370	4.58	568	1,470	1,220	43	5.9	3,940	--	
Nov. 11-20.....	76.0	10		230	173	475	9.1	326	1,930	55		2.5	.23	3,050	4.15	626	1,290	1,020	44	5.8	3,640	7.7	
Nov. 21-30.....	68.7	11		244	185	502	8.4	336	2,050	57		2.5	.25	3,230	4.39	599	1,370	1,090	44	5.9	3,830	7.7	
Dec. 1-10.....	48.4	11		254	177	488	8.4	358	2,000	60		3.9	.25	3,180	4.32	416	1,360	1,070	44	5.8	3,740	7.8	
Dec. 11-20.....	40.0	13		294	214	576	9.4	378	2,380	68		4.4	.28	3,740	5.09	404	1,610	1,300	44	6.2	4,290	7.8	
Dec. 21-31.....	35.5	11		250	165	417	7.6	404	1,750	54		4.1	.21	2,860	3.89	274	1,300	972	41	5.0	3,430	7.7	
Jan. 1-10, 1954...	36.5	12		248	159	386	7.4	416	1,630	54		3.3	.20	2,700	3.67	266	1,270	932	40	4.7	3,260	7.9	
Jan. 11-20.....	47.0	10		228	144	348	5.9	400	1,470	48		3.3	.18	2,450	3.33	311	1,160	833	39	4.4	3,010	7.9	
Jan. 21-31.....	81.2	10		182	128	314	6.1	300	1,340	42		3.9	.18	2,170	2.95	476	980	734	41	4.4	2,720	8.0	
Feb. 1-10.....	90.0	9.6		186	132	343	6.5	311	1,420	44		4.4	.18	2,300	3.13	559	1,010	752	42	4.7	2,860	8.0	
Feb. 11-20.....	77.2	9.4		205	145	389	6.4	333	1,580	48		3.6	.20	2,550	3.47	532	1,110	834	43	5.1	3,130	8.0	
Feb. 21-28.....	63.8	9.3		197	142	377	6.4	323	1,530	46		3.1	.19	2,470	3.36	425	1,080	811	43	5.0	3,060	8.0	

Mar. 3-5, 9-10, 1954	55.2	10		209	165	460	8.1	295	1,810	55		3.4	--	2,870	3.90	428	1,200	958	45	5.8	3,460	7.8
Mar. 11-20	56.8	9.7		218	155	444	8.6	318	1,740	55		3.5	0.23	2,790	3.79	428	1,180	921	45	5.6	3,390	7.6
Mar. 22, 24-27	77.8	9.7		234	175	555	8.9	287	2,120	62		4.8	--	3,310	4.50	695	1,300	1,070	48	6.7	3,920	7.7
Mar. 28, 30-31	44.7	11		279	265	850	11	323	3,120	91		3.6	--	4,790	6.51	578	1,790	1,520	51	8.7	5,400	7.9
Apr. 1-3, 6-8	55.3	8.0		251	206	590	10	320	2,310	68		2.8	--	3,600	4.90	538	1,470	1,210	46	6.7	4,210	7.8
Apr. 11-20	44.8	8.9		219	175	484	8.7	296	1,900	61		2.2	.27	3,000	4.08	363	1,270	1,020	45	5.9	3,630	7.8
Apr. 21-30	48.4	9.6		207	166	500	8.7	294	1,900	61		1.8	.28	3,000	4.08	392	1,200	958	47	6.3	3,580	7.8
May 1-11	51.5	8.8		242	213	668	10	313	2,510	76		1.2	.33	3,880	5.28	540	1,480	1,220	49	7.6	4,500	7.6
May 12-22	185	9.8		116	79	192	5.6	263	779	23		2.1	.17	1,340	1.82	669	614	399	40	3.4	1,780	7.7
May 24, 26-30	131	10		155	117	313	7.0	300	1,230	36		2.4	.22	2,020	2.75	714	868	622	44	4.6	2,530	7.5
June 1-10	43.6	9.4		220	176	485	9.2	294	1,970	58		.9	.32	3,070	4.18	361	1,270	1,030	45	5.9	3,630	7.7
June 11-20	18.7	9.3		278	225	658	11	286	2,570	80		1.2	.39	3,970	5.40	200	1,620	1,380	47	7.1	4,570	7.5
June 21-30	3.8	9.1		330	244	689	12	296	2,780	103		.5	--	4,310	5.86	44.2	1,830	1,580	45	7.0	4,960	7.5
July 1-10	1.7	9.7		380	285	862	13	308	3,380	119		.5	--	5,200	7.07	23.9	2,120	1,870	47	8.1	5,790	7.5
July 11, 13-18	19.1	10		428	294	949	16	302	3,640	166		1.5	.52	5,650	7.68	291	2,280	2,030	47	8.7	6,270	7.3
July 19[a]	136	--		--	--	--	--	248	1,080	26		.9	--	--	--	--	760	557	--	--	2,350	7.1
July 20-31	25.7	13		502	118	359	14	240	2,120	71		2.3	--	3,320	4.52	230	1,740	1,540	31	3.7	3,750	7.2
Aug. 1-10	1.1	10		405	178	543	16	230	2,520	93		1.2	--	3,880	5.28	11.5	1,740	1,550	40	5.7	4,370	7.5
Aug. 11-13	43.0	11		406	244	724	12	328	3,050	113		1.0	--	4,720	6.42	548	2,020	1,750	44	7.0	5,230	7.7
Aug. 14-20	26.4	12		333	101	412	13	227	1,830	58		2.3	.33	2,870	3.90	205	1,250	1,060	42	5.1	3,380	7.5
Aug. 21-31	.7	9.4		373	226	700	12	313	2,910	110		.3	--	4,490	6.11	8.49	1,860	1,600	45	7.1	5,020	7.6
Sept. 1-2, 5-7	63.6	11		442	198	700	13	304	2,950	88		.7	--	4,550	6.19	781	1,920	1,670	44	7.0	5,050	7.3
Sept. 3-4	38.0	11		422	58	142		144	1,380	32		1.7	--	2,120	2.88	218	1,290	1,170	19	1.7	2,290	7.1
Sept. 9-10	14.0	11		434	109	290		252	1,800	56		2.3	--	2,830	3.85	107	1,530	1,320	29	3.2	3,220	7.4
Sept. 13-18, 20	184	14		454	87	266	11	215	1,780	44		1.5	.26	2,760	3.75	1,370	1,490	1,310	28	3.0	3,110	7.6
Sept. 23-24, 28-29	14.4	11		298	106	341	11	210	1,620	59		2.5	--	2,550	3.47	99.1	1,190	1,020	38	4.3	3,060	7.7
Sept. 25-26	21.5	11		379	158	514	12	223	2,390	61		2.5	--	3,640	4.95	211	1,600	1,410	41	5.6	4,100	7.5
Weighted average	b54.0	10	--	249	152	428	8.5	302	1,800	54	--	2.8	--	2,850	3.88	416	1,250	999	43	5.3	3,390	--	--

a Not included for computation of weighted averages.
b Represents 93 percent of runoff for water year October 1953 to September 1954.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	49	36	35	42	40	54	57	--	75	86	85
2	65	48	36	34	37	37	57	52	55	86	--	78
3	59	49	36	34	34	38	59	59	70	80	74	72
4	63	--	--	35	35	42	--	67	67	85	81	78
5	60	50	33	34	42	45	--	71	67	81	83	73
6	60	49	--	33	35	--	61	69	--	85	83	74
7	64	52	34	--	35	--	58	69	66	85	85	71
8	58	--	--	33	40	--	60	71	64	88	90	--
9	--	36	34	33	38	46	--	--	--	83	78	75
10	--	45	33	--	35	--	--	--	67	90	78	70
11	--	45	--	33	40	45	--	74	73	95	86	--
12	55	43	--	33	--	--	55	73	64	--	82	--
13	60	45	--	33	--	--	65	74	--	85	69	65
14	59	42	32	33	--	40	60	72	--	76	71	68
15	62	45	32	--	42	45	62	70	65	80	80	65
16	--	--	32	--	33	47	65	63	68	78	72	68
17	57	45	32	--	40	42	59	75	70	80	75	64
18	54	35	33	36	37	46	65	77	75	78	--	65
19	54	35	34	35	38	47	60	77	72	82	74	--
20	55	35	35	33	34	--	63	77	--	73	74	67
21	49	35	34	35	40	--	67	--	85	87	76	--
22	--	35	33	34	--	48	68	69	86	72	84	--
23	--	37	33	34	48	--	65	--	80	83	76	68
24	--	37	--	36	42	47	56	74	--	79	--	67
25	49	40	--	35	40	50	63	--	81	85	--	65
26	49	34	33	35	--	44	66	70	--	82	--	67
27	44	--	--	36	40	48	64	89	84	73	--	--
28	50	42	33	34	40	54	62	55	87	82	--	67
29	49	35	33	35	--	52	67	70	81	73	--	68
30	--	36	--	--	--	51	57	70	75	86	--	--
31	50	--	34	40	--	50	--	70	--	82	82	--
Average	--	42	--	34	38	--	62	69	--	82	--	--

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	14	190	7	55	590	88	70	532	101
2	14	170	6	54	550	80	64	570	98
3	14	200	8	52	531	75	54	540	79
4	14	170	6	54	560	a85	51	540	a74
5	15	205	8	60	632	102		1,090	
6	15	355	14	62	580	97		485	
7	16	315	14	85	1,700	a390		354	
8	16	400	17	76	1,800	a370		--	
9	17	410	a19	64	1,580	273		389	
10	17	400	a18	62	1,420	238		456	
11	35	1,900	sa410	63	980	167		--	
12	105	17,400	sb10,900	66	720	128		--	
13	173	29,700	s15,100	71	710	136		509	
14	120	11,200	3,630	71	675	129	50	411	63
15	87	3,300	775	68	595	109		457	
16	65	1,400	a250	67	570	a100		365	
17	53	1,300	186	70	619	117		324	
18	49	850	112	123	787	s268		397	
19	46	650	a81	83	690	155		475	
20	66	4,800	sa2,200	78	640	135		464	
21	179	19,500	s10,200	63	450	77		470	
22	108	5,700	a1,700	54	430	63		338	
23	85	3,300	a760	51	365	50		266	
24	72	2,300	a450	58	465	73		--	
25	65	1,940	340	73	600	118		--	
26	63	1,340	228	80	600	130	45	186	27
27	58	1,080	169	81	600	a130		--	
28	56	860	130	77	640	133		241	
29	56	800	121	77	575	120		210	
30	56	620	a94	73	540	106		--	
31	55	574	85	--	--	--		189	
Total	1,804	--	48,038	2,071	--	4,242	1,544	--	1,720

	January			February			March		
1		171		95	1,080	277	55	615	91
2		339			1,830	494	50	500	68
3		262			850	230	48	439	57
4		253			820	221	51	415	57
5		272			1,240	335	53	476	68
6		237			1,360	367	57	430	a66
7		--		100	1,270	343	59	430	a68
8		303			1,180	319	57	420	a65
9		233			1,120	302	62	470	79
10	45	--	32		1,130	305	62	515	86
11		244			1,160	313	67	670	121
12		322			1,100	a300	88	1,700	b400
13		246		107	1,200	a350	76	1,300	a270
14		253		115	1,300	a400	45	660	80
15		--		122	1,500	494	45	480	58
16		--		130	1,290	453	49	790	105
17		--		105	1,130	320	52	890	125
18	48	341	44		1,040	253	52	670	94
19	52	384	54	90	840	204	49	435	58
20	60	330	54		780	190	45	240	a29
21		290		68	725	127	46	280	a35
22	65	448	66	70	630	a120	46	300	37
23		336		95	775	199	57	360	sa58
24		437		100	865	234	71	620	119
25	76	622	128	90	685	166	127	2,300	789
26	88	625	148	87	590	a140	84	1,980	449
27	83	580	130	83	635	142	61	1,850	305
28	102	1,030	284	68	615	108	51	1,350	186
29	101	1,260	344	--	--	--	45	580	70
30	92	1,100	a270	--	--	--	42	470	53
31	91	800	197	--	--	--	41	475	53
Total	1,818	--	2,464	2,089	--	7,706	1,793	--	4,199

s Computed by subdividing day.
a Computed from estimated concentration graph.
b Computed from partly estimated concentration graph.

GREEN RIVER BASIN--Continued

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--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	43	330	38	39	460	48	63	220	a37
2	41	370	41	43	300	35	57	205	32
3	39	270	28	69	500	93	51	265	36
4	38	220	a23	50	315	43	46	210	26
5	43	300	a35	38	210	22	43	180	21
6	61	460	76	34	140	13	39	180	a19
7	72	675	131	30	135	11	39	140	15
8	76	1,580	324	26	150	11	34	110	10
9	71	2,300	a440	44	340	sa44	33	110	a10
10	54	1,600	a230	79	725	155	31	110	9
11	58	1,500	a230	115	1,990	s665	29	110	9
12	54	1,330	194	142	2,890	1,110	24	150	10
13	48	810	105	164	2,640	s1,170	20	120	a6
14	46	700	87	184	2,780	s1,380	19	140	a7
15	44	650	77	226	4,000	s2,460	17	175	8
16	40	520	56	222	3,690	2,210	18	160	8
17	39	420	44	182	2,060	1,010	20	155	8
18	36	385	37	168	1,600	726	17	140	6
19	35	325	31	177	1,820	s886	13	115	4
20	48	467	s65	183	2,040	s1,030	10	95	3
21	58	600	94	192	2,400	sa1,300	9.1	175	4
22	60	640	104	199	2,300	1,240	8.4	250	6
23	57	565	87	264	5,200	a3,700	6.4	255	4
24	46	380	47	214	3,220	1,860	3.7	220	2
25	42	280	a32	159	1,300	a560	2.4	185	1
26	44	200	24	140	970	367	1.6	180	a1
27	56	450	68	135	880	321	1.0	230	1
28	48	330	43	112	665	201	.6	340	1
29	37	510	51	98	535	142	1.6	390	2
30	36	630	61	86	460	a110	3.7	290	3
31	--	--	--	73	320	63	--	--	--
Total	1,470	--	2,903	3,887	--	22,986	661.5	--	309

	July			August			September		
1	4.2	360	4	1.6	90	(t)	0.4	230	(t)
2	3.1	425	4	1.0	40	a(t)	.4	260	(t)
3	2.0	420	2	.7	125	(t)	50	10,100	s2,960
4	1.4	445	2	.7	165	(t)	26	2,510	s911
5	1.2	460	2	.6	170	(t)	233	56,800	37,100
6	1.1	430	1	2.6	215	2	55	57,000	8,780
7	1.0	375	1	2.0	165	1	29	62,600	5,080
8	1.0	300	1	.7	131	(t)	20	37,000	a2,100
9	1.4	220	1	.5	140	(t)	15	12,000	486
10	.9	260	1	.5	235	(t)	13	10,100	355
11	.8	265	1	.5	216	(t)	10	7,500	a200
12	.6	210	(t)	.5	216	(t)	6.9	2,100	a39
13	.6	195	(t)	128	19,500	sa24,200	860	40,800	s104,000
14	.8	205	(t)	80	28,000	6,050	265	62,000	46,000
15	5.5	280	4	45	13,000	1,580	76	46,800	9,960
16	3.6	240	2	26	11,000	772	42	27,500	3,120
17	3.5	210	2	14	3,600	136	21	11,000	624
18	119	24,000	s19,000	10	250	a7	14	3,400	129
19	136	41,100	15,700	6.9	195	4	10	800	a22
20	74	46,600	9,660	2.6	195	1	7.7	350	7
21	35	31,600	2,990	1.7			6.1	210	a4
22	20	11,500	621	1.2			4.8	100	a1
23	13	690	24	.9	149	(t)	6.7	310	a6
24	9.7	265	7	.5			12	680	21
25	8.7	135	3	.5			17	1,650	76
26	24	6,580	sb1,960	.5			26	2,160	152
27	67	52,300	9,810	.4	174	(t)	25	1,900	a130
28	38	35,400	3,770	.4			22	1,310	78
29	10	15,800	427	.4	180	a(t)	17	540	25
30	6.4	3,100	54	.4	170	a(t)	15	275	11
31	2.9	340	3	.4	175	(t)	--	--	--
Total	596.4	--	64,058	331.7	--	32,759	1,906.0	--	22,378

Total discharge for year (cfs-days) 20,581.6

Total load for year (tons) 413,768

s Computed by subdividing day.

t Less than 0.50 ton.

a Computed from estimated concentration graph.

b Computed from partly estimated concentration graph.

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Oct. 5, 1953	2:30 p.m.	15	62	132	2,280	--	71	--	95	98	98	99	99	100			SPWCM
Nov. 21	9:20 a.m.	53	35	370	3,300	2	4	18	92	95	95	98	99	100			SPN
Dec. 15	1:50 p.m.	a50	32	474	4,800	23	34	47	54	58	59	61	77	99	100		SPWCM
Jan. 26, 1954	1:50 p.m.	90	--	683	4,470	36	51	67	80	88	92	95	99	100			SPWCM
Feb. 15	2:40 p.m.	a122	42	1,420	2,530	--	44	--	74	85	95	97	99	100			SPWCM
Mar. 10	2:15 p.m.	61	51	342	2,780	0	2	12	88	99	99	100	--	--			SPN
Apr. 8	3:30 p.m.	70	55	1,530	2,800	--	85	--	94	98	•99	100	--	--			SPWCM
May 7	2:30 p.m.	31	69	345	5,660	--	40	--	66	81	91	98	100	--			SPWCM
May 14	2:25 p.m.	204	72	3,970	7,740	--	37	--	63	73	79	81	92	100			SPWCM
May 24	2:00 p.m.	212	71	2,830	4,820	--	39	--	63	79	91	99	100	--			SPWCM
June 7	3:20 p.m.	44	66	96	1,400	--	36	--	62	78	86	98	100	--			SPWCM
July 22	10:00 a.m.	20	72	12,100	3,980	--	87	--	97	99	99	99	100	--			SPWCM
Aug. 16	2:45 p.m.	25	75	11,700	4,000	--	83	--	97	97	98	98	98	100			SPWCM
Sept. 5	4:00 p.m.	141	75	47,900	4,070	--	63	--	92	98	100	--	--	--			SPWCM
Sept. 6	3:00 p.m.	51	73	63,900	5,520	--	73	--	97	100	--	--	--	--			SPWCM
Sept. 14	2:15 p.m.	221	65	68,900	5,890	--	61	--	92	98	100	--	--	--			SPWCM

a Daily mean discharge.

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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 June 1954.
Water temperatures: May 1949 to June 1954.
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° July 2, 1950; minimum observed, freezing point on several days during winter months.
REMARKS.--Prior to July 8, 1948, samples were collected at gaging station near Hanksville. 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. No discharge records available for this station.

Chemical analyses, in parts per million, October 1953 to June 1954

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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-11, 1953		25	0.07	308	58	141	12	192	929	125	0.5	1.0	0.24	1,690	2.30		1,010	850	23	1.9	2,120	7.5	8
Oct. 12-17		16	.61	558	90	426	13	200	2,010	335	.5	1.4	.37	3,550	4.83		1,760	1,600	34	4.4	4,180	7.3	33
Oct. 19-22		19	.08	448	59	198	12	162	1,350	175	.6	2.4	.24	2,340	3.18		1,360	1,230	24	2.3	2,770	7.4	15
Oct. 23-31		21	.10	420	61	200	12	160	1,320	172	.4	3.1	.25	2,290	3.11		1,300	1,170	25	2.4	2,750	7.6	10
Nov. 2, 4, 6, 10, 12, 14		23	.11	314	55	156	11	178	965	150	.5	2.7	.23	1,770	2.41		1,010	864	25	2.2	2,230	7.6	12
Nov. 16, 19-20, 23-24, 30		21	.09	272	52	155	9.7	182	862	135	.6	2.8	.21	1,600	2.18		892	744	27	2.3	2,050	7.7	10
Dec. 3, 5, 7, 10, 11, 15		28	.08	228	53	122	8.0	189	697	116	.4	2.3	.19	1,350	1.84		787	632	25	1.9	1,810	7.8	15
Dec. 17, 19, 21, 23		28	.09	221	49	110	7.4	192	656	108	.3	2.6	.16	1,280	1.74		753	596	24	1.7	1,700	7.9	9
Jan. 5, 7, 9, 11, 13-14, 1954		27	.23	180	49	117	6.9	200	560	112	.2	3.4	.18	1,150	1.56		650	486	28	2.0	1,600	7.8	9
Jan. 16, 19, 21, 23		28	--	186	41	92	6.8	192	517	90	--	5.1	.18	1,060	1.44		632	475	24	1.6	1,480	7.9	--
Feb. 2, 4, 7, 9, 11		26	--	219	46	131	6.8	189	666	121	--	3.5	.18	1,310	1.78		736	580	28	2.1	1,800	7.7	--
Feb. 16, 18, 20, 22, 25, 27		28	--	192	49	130	7.2	180	622	114	--	3.1	.23	1,230	1.67		680	533	29	2.2	1,700	7.8	--
Mar. 1, 4, 6, 9, 11, 13, 15		28	--	189	52	130	7.9	199	596	123	--	2.7	.19	1,230	1.67		686	522	29	2.2	1,700	7.7	--
Mar. 17, 20		28	--	--	--	--	--	188	583	118	--	2.1	.24	--	--		635	481	--	--	1,670	7.9	--
Mar. 28, 27, 31		22	--	370	73	304	14	172	1,340	208	--	9.5	--	2,430	3.30		1,220	1,080	35	3.8	3,000	7.7	--
Apr. 2, 5, 6, 10, 12 14		30	.08	250	57	193	10	180	852	180	.5	2.6	.31	1,660	2.26		858	711	32	2.9	2,220	7.7	18
Apr. 17, 19, 22, 24		31	.08	258	67	194	12	200	879	198	.5	1.3	.32	1,740	2.37		919	755	31	2.8	2,300	7.6	18
Apr. 26, 28		32	.14	400	110	390	31	380	1,260	520	.8	1.0	.83	2,930	3.98		1,450	1,140	36	4.5	3,900	7.8	10

May 1, 1954	12	--	138	34	94		119	473	70	--	.8	--	888	1.20	484	327	30	1.9	1,260	7.7	--
May 2-5, 8, 10, 13, 15	27	.07	282	76	278	15	209	1,090	250	0.6	2.2	0.41	2,130	2.90	1,040	870	30	3.7	2,770	7.8	15
May 18, 20, 22, 27, 29	33	.08	396	129	378	28	189	1,610	405	.9	1.4	.66	3,080	4.19	1,520	1,360	35	4.2	3,850	7.8	15
May 24, 31	27	.09	540	171	782	53	456	2,020	940	1.0	1.8	1.2	4,760	6.47	2,050	1,680	45	7.5	6,180	7.7	12
June 2, 4, 7, 12, 14	29	.07	580	209	884	65	358	2,240	1,220	.7	1.6	1.5	5,410	7.36	2,310	2,010	45	8.8	7,010	7.5	5
June 16, 19, 21, 23, 25-27, 30	30	.06	604	246	1,660	91	214	2,440	1,660	.4	.8	2.2	6,260	8.51	2,520	2,340	47	9.4	8,260	7.4	5

DIRTY DEVIL RIVER BASIN--Continued

DIRTY DEVIL RIVER NEAR HITE, UTAH--Continued

Temperature (°F) of water October 1953 to June 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	--	--	--	--	41	--	55	--			
2	69	54	--	--	44	--	53	64	62			
3	--	--	40	--	--	--	--	61	--			
4	--	54	--	--	40	41	--	70	66			
5	65	--	36	34	--	--	54	64	--			
6	67	62	--	--	--	44	52	--	--			
7	63	--	37	37	41	--	--	--				
8	62	--	--	--	--	--	--	67	--			
9	--	--	--	37	42	51	--	--	--			
10	59	48	35	--	--	--	65	72	--			
11	59	--	33	35	40	45	--	--	--			
12	57	47	--	--	--	--	67	--	80			
13	--	--	--	38	--	42	--	71	--			
14	58	51	--	35	--	--	61	--	75			
15	60	--	37	--	--	47	--	75	--			
16	61	52	--	36	46	--	--	--	62			
17	57	--	36	--	--	44	65	--	--			
18	--	--	--	--	43	--	--	70	--			
19	58	40	38	39	--	--	68	--	65			
20	56	39	--	--	42	47	--	73	--			
21	52	--	35	39	--	--	--	--	65			
22	52	--	--	--	47	--	70	63	--			
23	53	41	34	38	--	--	--	--	83			
24	49	45	--	--	--	--	68	80	--			
25	--	--	--	--	45	--	--	--	84			
26	49	--	--	--	--	46	75	--	77			
27	50	--	--	--	43	54	--	62	92			
28	52	--	--	--	--	--	68	--	--			
29	--	--	--	--	--	--	--	65	--			
30	57	42	--	--	--	--	--	--	70			
31	--	--	--	--	--	49	--	78	--			
Average	--	--	--	--	--	--	--	--	--			

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 1954.
Water temperatures: May 1949 to September 1954.
Sediment records: October 1948 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,530 ppm Sept. 10-20; minimum, 350 ppm May 21-31.
Hardness: Maximum, 798 ppm Sept. 10-20; minimum, 207 ppm May 21-31.
Specific conductance: Maximum daily, 2,460 micromhos Sept. 11; minimum daily, 483 micromhos May 29.
Water temperatures: Maximum observed, 82°F July 11-12, Aug. 1; minimum observed, freezing point Dec. 23.
Sediment concentrations: Maximum daily, 27,000 ppm Sept. 17; minimum daily, 130 ppm Sept. 4.
Sediment loads: Maximum daily, 451,000 tons Sept. 17; minimum daily, 913 tons Sept. 4.
EXTREMES, 1948-54.--Dissolved solids (1950-54): Maximum, 1,990 ppm Sept. 22, 1952; minimum, 251 ppm June 11-20, 1952.
Hardness (1950-54): Maximum, 1,080 ppm Sept. 22, 1952; minimum, 155 ppm June 11-20, 1952.
Specific conductance (1950-54): Maximum daily, 2,470 micromhos Sept. 22, 1952; minimum daily, 355 micromhos June 19, 1952.
Water temperatures (1949-54): 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 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	3,079	12		152	74	195	5.8	220	699	141		6.8	--	1,390	1.89	11,560	684	503	38	3.2	1,940	7.8
Oct. 11-20	3,715	11		170	68	212	7.4	221	739	151		8.0	--	1,480	2.01	14,850	704	522	39	3.5	2,060	7.8
Oct. 21-31	6,238	12		156	58	183	5.8	214	664	120		5.6	0.20	1,310	1.78	22,060	628	452	39	3.2	1,850	7.6
Nov. 1-10	5,684	14		141	59	171	5.2	230	585	116		5.3	.23	1,210	1.65	18,570	594	406	38	3.1	1,720	7.8
Nov. 11-20	5,940	13		130	56	171	5.2	226	551	122		4.7	.21	1,160	1.58	18,600	555	370	40	3.2	1,680	7.9
Nov. 21-25, 30	6,353	12		130	52	164	5.2	230	519	122		4.7	.18	1,120	1.52	19,210	538	350	40	3.1	1,630	7.7
Dec. 1-10	5,569	13		117	53	164	5.2	232	491	120		4.7	.19	1,080	1.47	16,240	510	320	41	3.2	1,590	7.8
Dec. 11-20	3,874	14		127	56	186	6.2	228	517	158		7.2	.18	1,180	1.60	12,340	548	360	42	3.4	1,760	8.2
Dec. 21-23, 30	4,805	14		135	58	196	6.6	250	532	164		7.4	.18	1,240	1.69	16,090	576	370	42	3.6	1,820	7.9
Jan. 5-9, 1954	3,756	15		143	61	208	6.6	272	577	174		7.9	.18	1,330	1.81	13,490	608	385	42	3.7	1,920	7.8
Jan. 11-20	4,322	14		125	52	177	5.5	250	477	154		7.1	.17	1,130	1.54	13,190	526	321	42	3.4	1,680	7.9
Jan. 21-22, 24-28	5,329	14		109	48	164	5.7	225	421	146		6.6	--	1,030	1.40	14,820	470	285	43	3.3	1,560	7.9
Feb. 1-10	4,756	14		103	46	153	5.2	215	413	128		5.5	--	974	1.32	12,510	446	270	42	3.2	1,490	7.9
Feb. 11, 16-20	5,247	12		102	50	158	5.2	210	441	128		6.6	.20	1,010	1.37	14,310	460	288	42	3.2	1,520	8.1
Feb. 21-28	5,444	11		97	47	145	4.6	218	408	112		5.3	--	937	1.27	13,770	436	257	42	3.0	1,430	8.0
Mar. 1-10	5,150	11		97	46	150	5.1	215	401	128		4.9	--	949	1.29	13,200	431	255	43	3.1	1,470	7.9
Mar. 11-20	5,374	11		96	45	149	5.1	215	389	126		4.7	.23	932	1.27	13,520	424	248	43	3.1	1,440	8.0
Mar. 21,25-29, 31	5,940	11		96	42	150	5.2	204	397	124		4.7	--	930	1.26	14,920	412	245	44	3.2	1,430	8.0

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-13, 1954	6,152	12		93	48	157	4.5	212	407	124		4.9	--	955	1.30	15,860	436	256	44	3.3	1,450	7.8
Apr. 14-20	8,141	12		79	34	107	4.5	206	296	70		3.9	0.13	708	.96	15,560	337	168	40	2.5	1,080	7.8
Apr. 21-30	9,763	11		68	27	81	3.9	178	233	58		4.3	--	574	.78	15,130	280	134	38	2.1	887	7.7
May 1-10	10,870	14		64	25	69	2.8	174	196	47		4.1	--	508	.69	14,910	262	120	36	1.9	795	7.9
May 11-20	15,130	13		66	24	66	3.2	172	196	46		3.9	.10	503	.68	20,550	263	122	35	1.8	782	7.8
May 21-31	24,850	11		55	17	38	2.2	156	121	25		3.5	--	350	.48	23,480	207	78	28	1.2	562	7.7
June 1-10	14,930	11		58	19	46	2.1	148	147	33		2.4	--	389	.53	15,680	218	96	31	1.3	615	7.7
June 11-20	8,772	11		70	27	72	3.3	160	231	54		2.9	.11	550	.75	13,030	286	154	35	1.9	860	7.7
June 21-30	7,990	9.8		79	29	85	3.3	156	257	66		2.6	--	610	.83	13,160	316	186	37	2.1	929	7.8
July 1-10	10,710	13		70	25	68	3.3	161	222	49		2.9	--	552	.72	15,380	278	146	34	1.8	823	7.5
July 11-20	7,120	13		72	27	74	3.3	152	241	58		2.9	.08	586	.77	10,860	290	166	35	1.9	875	7.6
July 21-26, 28-31	7,190	12		100	37	107	4.4	176	363	75		5.3	--	790	1.07	15,340	402	258	36	2.3	1,180	7.7
July 27	6,960	14		174	49	170		238	918	114		6.0	--	1,260	1.71	23,680	636	449	37	2.9	1,770	7.1
Aug. 1-10	4,448	15		101	37	106	5.6	204	341	71		5.1	--	782	1.06	9,390	404	237	36	2.3	1,160	8.0
Aug. 11-20	4,001	14		135	58	143	5.9	186	572	109		5.0	.20	1,130	1.54	12,216	568	415	35	2.6	1,620	8.0
Aug. 21-31	3,305	13		135	53	143	6.4	200	523	111		7.2	--	1,080	1.48	9,730	555	394	36	2.6	1,580	8.0
Sept. 1-9	3,333	11		141	58	151	6.4	194	582	115		5.2	--	1,180	1.60	10,630	594	436	35	2.7	1,680	7.8
Sept. 10-20	6,145	14		219	91	183	7.9	204	834	116		4.0	.23	1,530	2.08	25,300	798	630	33	2.8	2,030	7.8
Sept. 21-30	5,711	14		165	51	153	7.9	206	621	109		7.0	--	1,220	1.66	18,810	621	452	35	2.7	1,700	8.0
Weighted average	a7,094	12		96	38	112	4.3	190	356	83		4.5	--	800	1.09	15,320	396	240	38	2.5	1,190	--

a Represents 95 percent of runoff for water year October 1953 to September 1954.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	3,120	165	1,390	5,540	2,100	31,400	6,020	480	7,800
2	3,120	165	1,390	5,560	1,140	17,100	5,830	445	7,000
3	3,120	210	1,770	5,590	850	12,800	5,740	429	6,650
4	3,130	200	a1,700	5,680	760	11,700	5,570	460	6,920
5	3,120	192	1,620	5,700	700	10,800	5,570	473	7,110
6	3,060	186	1,540	5,430	640	9,380	5,560	445	6,680
7	3,020	155	1,260	5,290	600	8,570	5,570	480	7,220
8	3,020	180	1,470	5,590	630	a9,500	5,470	420	6,200
9	3,040	185	1,520	6,210	830	13,900	5,240	363	5,140
10	3,040	215	1,760	6,250	820	13,800	5,120	360	4,980
11	3,140	720	a6,100	6,130	770	12,700	4,560	390	4,800
12	3,660	3,270	s32,400	5,870	1,010	16,000	4,180	340	a3,800
13	3,840	10,200	106,000	5,680	1,080	16,600	3,740	410	a4,100
14	3,840	5,400	56,000	5,660	920	14,100	3,700	440	4,400
15	3,870	2,500	26,100	5,630	710	10,800	3,570	280	2,700
16	3,830	1,390	14,400	5,650	500	7,630	3,530	280	2,670
17	3,810	1,220	12,600	5,660	480	7,340	3,620	310	3,030
18	3,670	1,000	a9,900	6,150	1,240	20,600	3,740	410	4,140
19	3,590	790	7,660	6,250	1,310	22,100	3,830	430	4,450
20	3,900	720	7,580	6,720	920	16,700	4,270	523	6,030
21	4,610	3,600	44,800	6,650	660	11,900	5,050	650	8,860
22	6,150	7,300	121,000	6,570	1,460	25,900	5,280	640	9,120
23	6,060	2,450	40,100	6,610	1,910	34,100	5,130	560	7,760
24	5,750	3,600	55,900	6,330	1,430	24,400	4,880	460	a6,100
25	7,100	4,400	a84,000	5,880	760	12,100	4,680	400	a5,100
26	9,220	6,450	161,000	5,720	560	a8,600	4,380	360	a4,300
27	6,980	7,250	137,000	5,560	520	a7,800	4,160	320	a3,600
28	6,000	7,050	114,000	5,560	480	a7,200	4,390	280	a3,300
29	5,660	6,100	93,200	6,020	430	a7,000	4,160	260	a2,900
30	5,590	4,950	74,700	6,080	450	7,390	4,110	254	2,820
31	5,500	3,550	52,700	--	--	--	3,760	240	a2,400
Total	136,560	--	1,272,560	177,220	--	429,910	144,410	--	162,080

Day	January			February			March		
1	3,590	240	a2,300	5,120	590	8,160	5,340	484	6,980
2	3,570	240	a2,300	4,790	820	10,600	5,400	474	6,910
3	3,620	230	a2,200	4,760	780	a10,000	5,340	575	8,290
4	3,580	240	a2,300	4,710	680	8,650	5,240	540	7,640
5	3,440	240	2,230	4,710	550	6,990	5,060	524	7,160
6	3,620	283	2,770	4,660	460	5,790	4,960	553	7,410
7	3,760	290	2,940	4,580	480	5,940	4,900	560	a7,400
8	4,020	260	2,820	4,560	500	6,160	5,000	570	7,700
9	3,940	290	3,090	4,860	475	6,230	5,000	562	7,590
10	3,970	310	a3,300	4,810	550	a7,100	5,260	600	8,520
11	3,940	240	2,550	4,740	460	5,890	5,360	530	7,670
12	4,210	210	2,390	4,710	400	a5,100	5,280	530	7,560
13	4,330	219	2,560	4,710	380	a4,800	5,130	472	6,[illegible]0
14	4,550	345	4,240	4,940	410	a5,500	5,430	430	a6,300
15	4,280	333	3,850	5,210	480	a6,800	5,680	510	7,820
16	4,330	270	a3,200	5,080	563	7,720	5,540	460	6,880
17	4,300	205	2,380	5,340	545	7,860	5,280	640	9,120
18	4,300	370	4,300	5,700	580	8,930	5,330	660	9,500
19	4,400	245	2,910	5,360	530	7,670	5,330	600	8,630
20	4,580	490	6,060	5,260	470	6,670	5,380	594	8,630
21	4,700	440	5,580	5,610	640	9,690	5,500	630	9,360
22	4,890	300	3,960	5,830	620	9,760	5,740	700	a11,000
23	4,940	300	a4,000	5,660	680	10,400	6,060	800	a13,000
24	4,930	360	4,790	5,430	748	11,000	6,590	3,600	a64,000
25	5,430	490	7,180	5,520	770	11,500	6,330	4,550	77,800
26	5,750	910	14,100	5,280	685	9,770	6,080	2,100	34,500
27	5,830	720	11,300	5,120	570	7,880	5,960	1,150	18,500
28	5,770	540	8,410	5,100	500	a6,900	5,960	950	15,300
29	5,850	600	a9,500	--	--	--	5,960	830	13,400
30	5,450	760	a11,000	--	--	--	5,980	800	a13,000
31	5,360	660	a9,600	--	--	--	5,790	810	12,700
Total	139,230	--	150,110	142,160	--	219,460	171,190	--	436,810

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT HITE, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	5,810	723	11,300	11,300	1,940	59,200	20,400	2,700	149,000
2.....	5,700	650	10,000	11,700	1,950	61,600	18,700	2,160	109,000
3.....	5,610	640	9,690	12,000	2,350	76,100	17,300	1,630	76,100
4.....	5,740	610	a 9,500	11,800	2,250	71,700	16,100	1,480	64,300
5.....	5,500	660	9,800	11,800	2,360	75,200	14,900	1,480	59,500
6.....	5,400	600	8,750	11,400	2,300	a 71,000	13,800	1,090	40,600
7.....	5,400	610	8,890	10,800	2,020	57,800	12,800	975	33,700
8.....	5,400	610	a 8,900	9,770	1,400	36,900	12,100	1,000	32,700
9.....	6,000	640	10,400	9,230	1,120	27,900	11,700	980	31,000
10.....	6,740	740	13,500	9,100	1,060	26,000	11,500	920	a 29,000
11.....	7,250	940	18,400	9,540	980	25,200	10,700	900	a 26,000
12.....	7,800	1,300	27,400	10,600	1,090	31,200	9,770	820	21,600
13.....	7,620	1,310	27,000	13,200	1,730	61,700	9,160	720	17,800
14.....	7,910	1,300	27,800	14,900	2,570	103,000	8,680	680	15,900
15.....	8,590	1,750	40,600	15,800	2,770	117,000	8,400	670	15,200
16.....	8,400	1,800	40,800	16,200	2,660	116,000	8,090	800	17,500
17.....	8,020	1,730	37,500	16,500	2,580	115,000	8,320	700	15,700
18.....	8,090	1,580	34,500	17,000	2,480	114,000	8,370	530	a 12,000
19.....	8,070	1,470	32,000	18,500	2,520	126,000	8,230	500	11,100
20.....	7,910	1,480	31,600	19,300	2,680	140,000	8,000	600	13,000
21.....	8,050	1,700	a 37,000	20,300	2,720	149,000	7,960	544	11,700
22.....	8,880	1,480	35,500	21,100	2,750	157,000	8,140	520	11,400
23.....	10,100	1,850	50,400	23,600	3,640	232,000	8,250	500	11,100
24.....	9,910	1,750	46,800	25,600	4,000	276,000	8,180	460	10,200
25.....	9,330	1,540	38,800	27,800	4,350	327,000	8,000	390	8,420
26.....	9,410	1,500	38,100	28,000	4,270	323,000	7,910	430	9,180
27.....	9,750	1,600	42,100	27,400	4,200	311,000	7,980	615	13,300
28.....	10,300	1,930	53,700	27,000	3,780	276,000	7,750	375	7,850
29.....	11,000	2,060	61,200	26,100	3,510	247,000	7,930	328	7,020
30.....	10,900	2,020	59,400	24,400	3,680	242,000	7,800	328	6,910
31.....	--	--	--	22,000	3,270	194,000	--	--	--
Total.	234,590	--	881,330	533,340	--	4,246,500	316,920	--	887,780

	July			August			September		
1.....	8,400	460	10,400	6,270	1,450	24,500	2,700	225	1,640
2.....	9,160	1,350	33,400	5,590	1,100	16,600	2,650	160	1,140
3.....	9,830	2,550	67,700	5,100	1,200	16,500	2,650	150	1,070
4.....	10,400	2,200	61,800	4,690	2,300	29,100	2,600	130	913
5.....	12,200	1,750	57,600	4,380	2,800	33,100	2,780	3,300	24,800
6.....	13,200	2,000	71,300	4,090	2,750	30,400	3,010	8,000	65,000
7.....	12,500	1,300	43,900	3,810	1,350	13,900	3,740	2,200	22,200
8.....	11,500	1,000	31,000	3,670	950	9,410	5,100	1,750	24,100
9.....	10,400	900	25,300	3,530	600	5,720	4,770	1,500	19,300
10.....	9,490	720	18,400	3,350	350	3,170	4,860	8,600	113,000
11.....	8,860	681	16,300	3,400	210	1,930	5,260	13,000	185,000
12.....	8,180	750	16,600	3,400	244	2,240	6,410	5,500	95,200
13.....	7,710	720	15,000	3,280	300	2,660	5,500	2,800	41,600
14.....	7,270	1,400	27,500	3,210	400	a 3,500	5,870	21,900	347,000
15.....	7,000	1,000	18,900	3,440	300	2,790	9,880	15,000	400,000
16.....	6,700	1,400	25,300	4,690	425	5,380	7,820	13,800	291,000
17.....	6,350	1,100	18,900	5,010	1,700	23,000	6,190	27,000	451,000
18.....	6,470	900	15,700	4,710	4,000	50,900	5,600	15,800	239,000
19.....	6,390	500	8,630	4,550	2,650	32,600	5,200	11,500	161,000
20.....	6,270	410	6,940	4,320	6,250	72,900	5,000	8,000	108,000
21.....	6,550	1,250	22,100	3,880	3,200	a 34,000	4,690	5,400	68,400
22.....	7,860	1,600	34,000	3,620	1,600	15,600	4,320	3,500	40,800
23.....	7,930	3,550	76,000	3,450	1,600	14,900	4,240	2,250	25,800
24.....	7,040	2,600	49,400	3,330	800	7,190	4,150	5,100	57,100
25.....	6,550	2,550	45,100	3,460	950	8,870	5,720	4,100	63,300
26.....	6,330	6,750	115,000	3,370	1,600	14,600	8,020	6,500	141,000
27.....	6,960	14,700	276,000	3,280	2,200	19,500	5,590	8,500	128,000
28.....	7,710	5,400	112,000	3,190	950	8,180	5,830	13,200	208,000
29.....	7,640	3,500	72,200	3,060	505	4,170	7,360	12,000	238,000
30.....	7,230	1,900	37,100	2,920	375	2,960	7,190	6,800	132,000
31.....	7,060	1,000	19,100	2,800	315	2,380	--	--	--
Total.	257,140	--	1,448,570	120,850	--	512,650	154,700	--	3,694,363

Total discharge for year (cfs-days) 2,528,310

Total load for year (tons) 14,342,123

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 1953 to September 1954
(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	
Oct. 21, 1953	9:45 a.m.	4,580	57	1,120	3,340	42	51	56	64	72	86	96	100	--			SPWCM
Nov. 19	3:50 p.m.	6,230	46	1,210	2,380	2	6	28	63	80	86	97	100	--			SPN
Jan. 6, 1954	11:00 a.m.	3,740	34	300	2,230	15	20	27	32	40	51	80	98	99	100		SPWCM
Feb. 9	10:50 a.m.	4,840	41	430	4,830	25	33	42	52	58	66	83	97	100			SPWCM
Mar. 9	2:10 p.m.	5,030	48	554	3,470	--	58	--	70	75	80	90	98	100			SPWCM
Apr. 12	9:05 a.m.	7,770	60	1,270	3,430	--	40	--	57	68	80	96	100	--			SPWCM
Apr. 25	12:20 p.m.	9,160	66	1,470	3,640	--	41	--	61	71	81	96	100	--			SPWCM
May 11	8:10 a.m.	9,410	67	951	2,980	--	33	--	52	63	73	92	99	100			SPWCM
May 14	7:55 a.m.	14,800	70	2,570	4,570	--	18	--	38	55	75	93	98	100			SPWCM
May 17	8:10 a.m.	16,500	70	2,640	5,180	--	26	--	48	61	80	95	99	100			SPWCM
May 29	8:00 a.m.	26,200	66	3,320	4,080	--	24	--	42	58	78	95	98	100			SPWCM
June 1	11:45 a.m.	20,400	65	2,530	4,860	--	22	--	39	54	72	95	99	100			SPWCM
June 22	7:05 a.m.	8,140	76	477	1,230	12	16	19	23	29	35	61	99	100			SPWCM
July 2	7:50 a.m.	9,080	77	629	4,060	--	39	--	57	66	74	86	99	100			SPWCM
July 6	7:10 p.m.	13,200	80	1,730	3,620	--	40	--	56	68	80	92	99	100			SPWCM
July 9	8:25 a.m.	10,500	78	928	5,920	--	35	--	54	65	74	88	99	100			SPWCM
July 18	7:00 p.m.	6,490	81	1,290	4,160	--	59	--	87	94	96	98	100	--			SPWCM
July 27	7:30 p.m.	6,940	81	9,890	5,970	--	64	--	91	98	99	100	--	--			SPWCM
Aug. 16	6:50 p.m.	5,120	78	555	4,470	--	59	--	86	92	95	98	100	--			SPWCM
Sept. 12	10:50 a.m.	6,110	73	4,830	2,700	--	58	--	89	95	99	100	--	--			SPWCM
Sept. 12	5:40 p.m.	6,110	72	3,750	4,380	--	61	--	90	96	98	99	100	--			SPWCM
Sept. 13	6:30 a.m.	a 5,500	70	3,210	3,360	--	67	--	92	97	99	100	--	--			SPWCM
Sept. 15	1:10 p.m.	10,400	73	13,500	4,170	--	67	--	89	95	99	100	--	--			SPWCM
Sept. 15	6:30 p.m.	9,910	72	14,700	4,660	--	63	--	87	92	98	100	--	--			SPWCM
Sept. 16	6:30 p.m.	7,250	70	11,900	4,900	--	68	--	96	99	99	100	--	--			SPWCM
Sept. 26	7:45 a.m.	8,900	66	4,630	4,880	--	53	--	80	88	96	99	100	--			SPWCM
Sept. 27	6:40 a.m.	5,850	63	7,240	4,740	--	61	--	91	95	98	100	--	--			SPWCM

a Daily mean discharge.

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 1½ miles east of Blanco, San Juan County.
DRAINAGE AREA.--3,560 square miles, approximately (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1954.
Water temperatures: March 1949 to September 1954.
Sediment records: March 1949 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 922 ppm Sept. 25; minimum, 112 ppm May 21-31.
Hardness: Maximum, 553 ppm Sept. 25; minimum, 56 ppm May 21-31.
Specific conductance: Maximum observed, 1,170 micromhos Sept. 25; minimum observed, 146 micromhos May 29.
Water temperatures: Maximum observed, 87°F July 10; minimum, freezing point on several days during winter months.
Sediment concentrations: Maximum daily, 51,300 ppm July 23; maximum observed, 70,700 ppm Sept. 25; minimum daily, 10 ppm Jan. 19.
Sediment loads: Maximum daily, 418,000 tons July 23; minimum daily, 5 tons Jan. 12, 19.
EXTREMES, 1945-54.--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 (1949-54): Maximum observed, 87°F July 10, 1954; minimum, freezing point on many days during winter months.
Sediment concentrations (1949-54): Maximum daily, 51,300 ppm July 23, 1954; minimum daily, 8 ppm Nov. 4, 1952, Jan. 10, 1953.
Sediment loads (1949-54): Maximum daily, 418,000 tons July 23, 1954; minimum daily, 1 ton Sept. 20-25, 1951.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district offices at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343. No appreciable inflow between gaging station and sampling point. Stage discharge relation affected by ice Dec. 9 to Jan. 28.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	97.8	10	0.01	51	9.8	46	4.0	171	117	10	0.4	0.8	0.10	335	0.46	88.5	168	28	37	1.5	521	7.4
Oct. 11-20	309	--	--	52	9.5	44	--	--	--	--	--	--	--	334	.45	279	168	--	36	1.5	531	--
Oct. 21-31	470	--	--	50	10	34	--	--	--	--	--	--	--	306	.42	388	166	--	31	1.1	477	--
Nov. 1-7	352	--	--	47	7.1	39	--	--	--	--	--	--	--	293	.40	278	146	--	37	1.4	465	--
Nov. 8, Dec. 3	276	--	--	48	7.1	38	--	--	--	--	--	--	--	292	.40	218	149	--	36	1.4	462	--
Dec. 4-10	186	--	--	52	9.1	48	--	--	--	--	--	--	--	347	.47	174	167	--	38	1.6	534	--
Dec. 11-20	198	--	--	62	9.2	50	--	--	--	--	--	--	--	385	.52	206	194	--	36	1.6	594	--
Dec. 21-31	184	--	--	61	7.1	49	--	--	--	--	--	--	--	362	.49	180	181	--	37	1.6	561	--
Jan. 1-10, 1954	163	17	.01	59	9.9	46	3.7	171	135	9.0	.4	.2	.10	368	.50	162	188	48	34	1.5	558	7.7
Jan. 11-20	179	--	--	53	9.0	45	--	--	--	--	--	--	--	341	.46	165	169	--	37	1.5	531	--
Jan. 21-31	187	--	--	52	8.0	45	--	--	--	--	--	--	--	334	.45	169	162	--	38	1.5	517	--
Feb. 1-10	313	--	--	50	7.6	45	--	--	--	--	--	--	--	328	.45	277	156	--	39	1.6	517	--
Feb. 11-20	397	--	--	50	10	43	--	--	--	--	--	--	--	342	.47	367	166	--	38	1.5	518	--
Feb. 21-28	365	--	--	50	11	40	--	--	--	--	--	--	--	332	.45	327	170	--	34	1.3	507	--
Mar. 1-10	304	--	--	52	9.2	34	--	--	--	--	--	--	--	316	.43	259	168	--	31	1.1	477	--
Mar. 11-20	390	--	--	49	8.3	31	--	--	--	--	--	--	--	300	.41	316	156	--	30	1.1	447	--
Mar. 21-31	713	--	--	57	14	36	--	--	--	--	--	--	--	361	.49	695	200	--	28	1.1	538	--

SAN JUAN RIVER BASIN--Continued

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

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-4, 1954	471	16	0.02	53	12	24	3.5	157	96	5.8	0.3	1.0	--	297	0.40	378	182	53	22	0.8	455	7.2
Apr. 5-10	1,295	--	--	37	7.6	12	--	120	--	--	--	--	--	196	.27	685	124	25	17	.5	294	7.2
Apr. 11-20	1,609	--	--	26	4.3	9.9	--	--	--	--	--	--	--	146	.20	634	82	--	21	.5	215	--
Apr. 21-30	1,799	--	--	23	3.3	9.2	--	--	--	--	--	--	--	133	.18	646	71	--	22	.5	192	--
May 1-10	1,826	--	--	24	3.8	11	--	--	--	--	--	--	--	149	.20	735	76	--	24	.6	213	--
May 11-20	2,564	--	--	21	3.1	7.6	--	--	--	--	--	--	--	135	.18	935	65	--	20	.4	178	--
May 21-31	2,472	--	--	19	2.1	8.4	--	--	--	--	--	--	--	112	.15	748	56	--	25	.5	157	--
June 1-10	1,536	--	--	21	1.4	10	--	--	--	--	--	--	--	124	.17	514	58	--	27	.6	179	--
June 11-20	929	--	--	26	3.6	16	--	--	--	--	--	--	--	155	.21	389	80	--	30	.8	237	--
June 21-30	616	--	--	33	4.5	21	--	--	--	--	--	--	--	191	.26	318	101	--	31	.9	300	--
July 1, 4-10	643	14	.04	38	7.4	23	3.3	135	56	5.5	.4	.6	--	222	.30	385	126	15	28	.9	340	7.4
July 2-3	584	--	--	58	5.5	46	--	158	--	--	--	--	--	357	.49	563	167	38	37	1.5	•527	7.7
July 11-19	454	--	--	42	5.7	25	--	--	--	--	--	--	--	231	.31	283	128	--	30	1.0	362	--
July 20-24	1,120	--	--	90	18	40	--	--	--	--	--	--	--	476	.65	1,440	298	--	23	1.0	706	--
July 25-31	858	--	--	43	8.0	23	--	--	--	--	--	--	--	239	.33	554	140	--	26	.8	372	--
Aug. 1-10	554	--	--	42	9.2	24	--	--	--	--	--	--	--	235	.32	352	143	--	27	.9	374	--
Aug. 11-20	855	--	--	35	5.0	19	--	--	--	--	--	--	--	191	.26	441	108	--	28	.8	297	--
Aug. 21-31	533	--	--	39	5.7	26	--	--	--	--	--	--	--	225	.31	324	121	--	32	1.0	353	--
Sept. 1-10	374	--	--	42	5.9	30	--	--	--	--	--	--	--	247	.34	249	130	--	33	1.1	390	--
Sept. 11, 14-20	507	--	--	37	5.0	22	--	--	--	--	--	--	--	211	.29	289	113	--	30	.9	327	--
Sept. 12-13	689	--	--	62	5.9	29	--	--	--	--	--	--	--	304	.41	566	179	--	26	.9	472	--
Sept. 21-24, 26, 28-30	636	--	--	39	5.2	23	--	--	--	--	--	--	--	222	.30	381	119	--	30	.9	339	--
Sept. 25	1,900	--	--	187	21	53	--	--	--	--	--	--	--	922	1.25	4,730	553	--	17	1.0	1,170	--
Sept. 27	1,070	--	--	67	8.1	37	--	--	--	--	--	--	--	361	.49	1,040	200	--	29	1.1	539	--
Weighted average	710	--	--	36	5.7	20	--	--	--	--	--	--	--	211	0.29	404	114	--	28	0.8	316	--

SAN JUAN RIVER BASIN--Continued

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

Temperature (°F) of water, water year October 1953 to September 1954
(Once-daily measurement, generally between 11 a. m. and 6 p. m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	54	38	34	36	47	53	50	70	--	71	82
2	--	53	36	33	36	41	56	56	69	b82	b83	75
3	--	50	32	33	36	42	52	54	a61	83	a71	78
4	62	53	35	34	36	47	56	a59	65	79	b81	81
5	65	48	--	34	38	47	51	67	b56	81	69	b82
6	64	48	a32	34	35	40	52	68	a58	b79	a68	84
7	63	44	--	33	37	45	57	73	b67	a70	81	79
8	63	--	--	34	39	48	b58	66	a60	85	b81	78
9	63	43	--	34	38	52	62	65	b68	80	80	81
10	63	40	39	34	40	57	b60	b58	a59	b87	a68	79
11	--	45	--	--	40	42	60	55	b70	82	79	80
12	--	42	--	--	34	52	62	67	a58	85	76	a65
13	58	45	--	36	40	57	64	65	65	84	73	79
14	59	b45	--	36	39	46	62	65	67	84	b79	75
15	59	b40	--	--	39	47	64	68	b68	80	75	73
16	58	48	31	34	41	40	61	68	a65	82	73	77
17	55	47	--	--	38	44	64	a58	b76	82	75	b74
18	57	38	b31	35	39	43	--	61	a65	82	a64	a68
19	55	38	31	33	39	47	--	70	b77	83	a63	--
20	--	38	a31	a34	a40	a42	--	68	65	82	--	68
21	--	38	32	34	--	49	62	--	a75	a71	--	73
22	--	38	32	35	45	47	64	68	b80	83	--	70
23	--	36	32	33	45	--	63	b60	a74	a69	--	65
24	52	38	32	35	46	45	64	65	b80	a68	--	72
25	50	39	32	33	47	47	b60	68	a65	81	77	a51
26	50	38	31	34	40	a49	61	68	81	82	73	58
27	52	38	33	35	37	50	63	69	--	b81	71	60
28	--	b35	32	35	41	51	62	a57	76	82	a61	--
29	54	37	--	35	--	54	60	67	b73	a73	76	60
30	--	40	33	35	--	54	55	65	b81	b78	b72	a55
31	--	--	34	36	--	52	--	66	--	a70	a59	--
Average	--	43	--	34	39	47	60	64	69	80	73	72

a Observation before 11 a. m.
b Observation after 6 p. m.

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

Suspended sediment, water year October 1953 to September 1954

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.....	79	48	10	262	60	42	236	20	a13
2.....	79	50	a 11	243	70	46	250	17	11
3.....	89	50	a 12	236	60	38	290	34	27
4.....	95	56	14	239	50	32	280	31	23
5.....	101	46	13	276	679	506	190	37	19
6.....	103	69	19	742	2,880	s5,870	180	94	46
7.....	108	53	15	465	4,440	5,570	160	61	26
8.....	106	58	17	341	2,200	a 2,000	160	65	32
9.....	108	46	13	294	600	476	160	82	35
10.....	110	53	16	262	170	120	150	85	34
11.....	106	50	a14	283	66	50	170	84	39
12.....	115	60	a19	305	62	51	180	85	41
13.....	243	1,160	s863	287	42	33	170	105	48
14.....	321	650	563	294	48	38	180	100	49
15.....	291	300	236	301	64	52	200	87	47
16.....	227	210	129	305	41	34	200	75	40
17.....	212	180	103	305	37	30	210	93	53
18.....	209	260	147	301	43	35	230	107	66
19.....	198	150	80	337	43	39	230	78	48
20.....	1,170	--	b12,000	349	43	41	210	59	33
21.....	1,240	--	b14,000	309	40	33	210	50	28
22.....	566	--	b2,500	256	40	28	190	49	25
23.....	353	--	b600	182	50	25	190	43	22
24.....	510	798	1,100	195	56	29	180	44	21
25.....	638	1,850	3,190	206	47	26	190	74	38
26.....	403	2,600	2,830	246	55	37	180	57	28
27.....	329	1,050	933	243	43	28	190	47	24
28.....	294	360	a290	266	36	26	180	56	27
29.....	280	160	121	276	28	21	180	50	a24
30.....	280	60	a45	249	25	17	180	40	19
31.....	273	70	a52	--	--	--	150	49	20
Total.	9,236	--	39,955	8,855	--	15,373	6,076	--	1,006
	January			February			March		
1.....	150	44	18	252	120	82	329	1,100	977
2.....	150	46	19	256	150	104	291	510	401
3.....	150	42	17	266	145	104	280	270	204
4.....	160	46	20	291	125	98	262	120	85
5.....	170	61	28	325	150	132	283	85	65
6.....	170	51	23	325	130	114	287	60	46
7.....	170	42	19	329	190	169	273	55	41
8.....	180	65	32	341	220	203	291	175	137
9.....	170	20	9	365	240	237	329	215	191
10.....	160	19	8	377	260	265	416	215	241
11.....	160	18	a8	398	280	301	584	291	459
12.....	160	12	5	445	320	384	614	940	1,560
13.....	170	18	8	485	260	340	408	620	683
14.....	180	20	10	505	190	259	329	250	222
15.....	180	19	a9	435	175	206	298	220	177
16.....	180	17	8	390	185	195	294	120	95
17.....	190	19	a10	365	190	187	341	125	115
18.....	200	18	10	329	135	120	353	110	105
19.....	190	10	5	298	160	129	325	80	70
20.....	180	18	9	317	120	103	349	110	104
21.....	170	22	10	301	120	98	408	120	132
22.....	160	16	7	276	100	75	445	700	842
23.....	160	19	8	325	75	66	1,050	6,600	sa23,000
24.....	170	20	9	353	85	81	1,910	19,800	s103,000
25.....	180	24	12	373	140	141	906	10,500	25,700
26.....	180	29	14	408	890	980	572	2,750	4,250
27.....	190	40	21	450	1,050	1,280	475	1,250	1,600
28.....	200	45	24	435	1,040	1,220	465	850	1,070
29.....	209	46	26	--	--	--	490	970	1,280
30.....	212	45	26	--	--	--	578	1,740	2,720
31.....	224	48	29	--	--	--	542	1,570	2,300
Total.	5,475	--	461	10,015	--	7,673	14,777	--	171,872

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

Suspended sediment, water year October 1953 to September 1954--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.....	398	850	913	1,560	450	1,900	1,920	190	985
2.....	349	490	462	1,560	510	2,150	1,860	200	1,000
3.....	445	570	685	1,420	350	1,340	1,710	180	831
4.....	692	870	1,630	1,460	450	1,770	1,710	200	923
5.....	1,020	1,550	4,270	1,710	700	3,230	1,660	250	1,120
6.....	1,200	1,980	6,420	1,760	585	2,780	1,560	125	527
7.....	1,330	2,230	8,010	1,860	670	3,360	1,460	165	650
8.....	1,380	1,950	7,270	2,030	1,350	7,400	1,240	90	301
9.....	1,380	990	3,690	2,260	2,920	17,600	1,160	60	251
10.....	1,460	1,250	4,930	2,640	2,950	21,000	1,080	70	204
11.....	1,460	1,340	5,280	2,710	2,400	17,600	1,080	62	181
12.....	1,420	850	3,230	2,580	2,650	18,500	1,020	56	154
13.....	1,510	800	3,260	2,360	2,280	14,700	984	63	167
14.....	1,610	1,250	5,430	2,380	1,300	8,350	1,020	79	218
15.....	1,610	1,200	5,220	2,360	1,770	11,400	928	64	160
16.....	1,420	1,550	5,940	2,640	1,410	10,100	878	54	128
17.....	1,510	1,450	5,910	2,640	900	6,420	815	51	112
18.....	1,710	1,200	a5,500	2,510	1,100	7,450	850	56	129
19.....	1,920	1,200	a6,200	2,640	1,320	9,410	878	125	296
20.....	1,920	1,100	a5,700	2,760	1,100	8,260	836	100	226
21.....	1,810	1,200	5,860	2,850	1,100	a8,500	766	39	81
22.....	1,810	1,050	5,130	3,070	1,900	15,700	731	46	91
23.....	1,760	810	3,850	3,140	1,350	11,400	632	37	63
24.....	1,860	1,270	6,380	2,710	600	4,390	602	35	57
25.....	2,030	1,920	10,500	2,380	190	1,220	566	72	110
26.....	1,980	2,350	12,600	2,320	620	3,880	525	60	85
27.....	1,710	840	3,680	2,320	310	1,940	650	150	a260
28.....	1,710	650	3,000	2,200	200	1,190	644	149	259
29.....	1,710	560	2,590	2,140	275	1,590	586	113	173
30.....	1,610	450	1,960	2,030	270	1,480	480	160	a230
31.....	--	--	--	2,030	350	1,920	--	--	--
Total.	43,734	--	145,730	71,090	--	228,130	30,811	--	9,972

Day	July			August			September		
1.....	650	260	456	540	800	a1,200	260	190	133
2.....	596	1,500	2,410	520	990	1,390	270	130	95
3.....	572	2,420	3,740	360	500	486	280	2,500	1,890
4.....	656	240	425	300	300	243	330	4,180	3,720
5.....	626	260	439	1,110	650	1,950	1,080	650	1,910
6.....	638	310	534	710	7,800	15,000	400	250	270
7.....	560	700	1,060	600	8,100	13,100	340	300	275
8.....	602	1,890	3,070	536	4,000	5,790	280	270	204
9.....	692	1,990	3,720	460	1,000	1,240	252	100	68
10.....	717	3,540	6,850	403	1,300	1,410	246	790	525
11.....	650	5,150	9,040	485	2,850	3,730	239	200	129
12.....	638	1,110	1,910	885	3,650	8,720	396	2,450	s4,780
13.....	505	1,100	1,500	815	2,300	5,060	982	8,110	21,500
14.....	412	290	323	1,030	2,850	7,930	829	4,200	9,400
15.....	353	400	361	928	1,200	3,010	614	1,990	3,300
16.....	349	800	754	968	1,300	3,400	515	560	779
17.....	381	520	535	1,060	3,350	9,590	515	399	555
18.....	369	590	588	885	2,450	5,850	505	244	333
19.....	426	490	564	668	900	1,620	450	240	a290
20.....	325	6,100	5,350	828	--	b4,500	390	226	238
21.....	309	5,100	4,250	1,280	--	b20,000	370	64	64
22.....	361	1,200	1,170	899	--	b6,000	350	141	133
23.....	2,760	51,300	s418,000	600	--	b1,300	340	84	77
24.....	1,860	31,000	156,000	500	--	b600	360	1,990	1,930
25.....	1,760	29,000	s153,000	416	290	326	1,900	35,200	187,000
26.....	1,020	3,000	8,260	430	150	174	1,330	41,100	s164,000
27.....	773	339	708	412	220	245	1,070	26,000	75,100
28.....	656	400	708	385	215	223	910	7,900	19,400
29.....	630	290	493	357	500	482	738	1,210	2,410
30.....	550	200	297	310	300	251	692	480	897
31.....	620	350	586	270	130	95	--	--	--
Total.	22,016	--	787,121	19,950	--	124,915	17,233	--	501,395

Total discharge for year (cfs-days)..... 259,268
Total load for year (tons)..... 2,033,603

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, water year October 1953 to September 1954
(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. 24, 1953	11:30 a.m.	460	52	870	2,045		76		97		100	--	--	--		SPWCM
Nov. 6	4:00 p.m.	787	48	3,760	4,150		73		97		100	--	--	--		SPWCM
Feb. 28, 1954	5:30 p.m.	403	41	1,030	5,260		85		98		100	--	--	--		SPWCM
Mar. 2	3:30 p.m.	280	41	430	2,080		91		96		100	--	--	--		SPWCM
Mar. 24	4:30 p.m.	1,660	45	19,600	4,180		67		91		99	99	100	--		VPWCM
Mar. 27	5:20 p.m.	475	50	1,050	4,880		84		97		99	99	100	--		SPWCM
Apr. 4	6:00 p.m.	920	56	992	4,770		46		84		98	100	--	--		SPWCM
Apr. 13	3:30 p.m.	1,460	64	717	2,810		32		58		89	94	98	100		VPWCM
May 10	6:30 p.m.	3,000	58	3,400	3,260		15		34		83	98	100	--		VPWCM
May 23	9:00 a.m.	3,070	57	1,460	1,940		16		32		64	70	89	100		VPWCM
July 11	6:15 a.m.	650	72	5,580	2,940		88		98		99	100	--	--		SPWCM
July 15	10:40 a.m.	341	74	162	1,170		75		93		100	--	--	--		SPWCM
July 23	7:30 p.m.	2,510	76	42,200	3,290		62		87		100	--	--	--		SPWCM
July 25	2:35 p.m.	1,330	--	17,500	3,900		63		83		97	99	100	--		VPWCM
July 26	3:40 p.m.	944	82	2,390	4,120		49		65		84	95	99	100		VPWCM
Sept. 6	10:00 a.m.	305	66	278	1,680		44		60		72	76	78	85	100	SPWCM
Sept. 12	9:10 p.m.	885	65	13,500	3,730		70		91		99	100	--	--		SPWCM
Oct. 5	2:15 p.m.	710	67	1,010	2,280		25		41		69	92	100	--		VPWCM

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ANIMAS 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 1954.
Water temperatures: December 1950 to September 1954.
Sediment records: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 854 ppm Oct. 1-10; minimum, 192 ppm May 21-31.
Specific conductance: Maximum observed, 1,220 micromhos Oct. 13; minimum observed, 249 micrombos May 23.
Water temperatures: Maximum observed, 82°F July 13; minimum, freezing point on several days during December and January.
Sediment concentrations: Maximum daily, 36,100 ppm July 23; minimum daily, 14 ppm Oct. 10.
Sediment loads: Maximum daily, 337,000 tons July 23; minimum daily, 2 tons on several days in October.
EXTREMES, 1940-54.--Dissolved solids (1940-49,1952-54): Maximum, 1,500 ppm Aug. 19, 1949; minimum, 111 ppm June 11-17, 19-20, 1944.
Specific conductance (1941-54): Maximum observed, 1,980 micromhos Aug. 19, 1944; minimum observed, 170 micromhos June 27, 1944.
Water temperatures:(1950-54).--Maximum observed, 88°F July 29, 1951; minimum, freezing point on many days during winter months.
Sediment concentrations: (1950-54).--Maximum daily, 36,100 ppm July 23, 1954; minimum daily, 9 ppm Sept. 28-30, 1951, Sept. 3, 4, 1953.
Sediment loads: (1950-54).--Maximum daily, 337,000 tons July 23, 1954; minimum daily, 1 ton on several days.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343. Stage discharge relation affected by ice Dec. 17, Jan. 6, 13-17.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953..	48.3	--		--	--		--	--	--	--		--		854	1.16	111	--	--	--	--	1,150	--
Oct. 11-20	181	16		127	20		91	206	367	32		1.0		800	1.09	391	399	230	33	2.0	1,080	7.9
Oct. 21-31	342	--		--	--		--	--	--	--		--		606	.82	560	--	--	--	--	880	--
Nov. 1-10	332	--		--	--		--	--	--	--		--		580	.79	520	--	--	--	--	847	--
Nov. 11-20.....	324	12		101	15		56	178	243	26		.8		575	.78	503	314	168	28	1.4	807	7.9
Nov. 21-30	308	--		--	--		--	--	--	--		--		551	.75	458	--	--	--	--	810	--
Dec. 1-10	267	--		--	--		--	--	--	--		--		611	.83	440	--	--	--	--	880	--
Dec. 11-20	260	12		115	16		65	215	264	30		1.6		656	.89	461	353	177	29	1.5	915	7.8
Dec. 21-31	215	--		--	--		--	--	--	--		--		666	.91	387	--	--	--	--	972	--
Jan. 1-10, 1954..	218	--		--	--		--	--	--	--		--		626	.85	368	--	--	--	--	972	--
Jan. 11-20	199	11		115	17		72	200	293	30		1.1		679	.92	265	357	193	30	1.7	937	7.9
Jan. 21-31.....	218	--		--	--		--	--	--	--		--		650	.88	383	--	--	--	--	932	--
Feb. 1-10	239	--		--	--		--	--	--	--		--		634	.86	409	--	--	--	--	917	--
Feb. 11-20	203	11		114	17		73	199	293	32		.8		680	.92	373	354	192	31	1.7	944	8.2
Feb. 21-28	194	--		--	--		--	--	---	--		--		667	.91	349	--	--	--	--	961	--
Mar. 1-10.....	188	--		--	--		--	--	--	--		--		648	.88	329	--	--	--	--	940	--
Mar. 11-20.....	201	11		110	21		61	192	280	32		.5		622	.85	338	361	204	27	1.4	914	7.4
Mar. 21-31.....	273	--		--	--		--	--	--	--		--		634	.86	467	--	--	--	--	914	--

SAN JUAN RIVER BASIN--Continued

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

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954..	383	--		--	--	--		--	--	--		--		494	0.67	511	--	--	--	--	701	--
Apr. 11-20	809	11		67	8.3	24		151	112	8.8		2.0		307	.42	671	201	78	21	0.7	484	7.5
Apr. 21-30	1,034	--		--	--	--		--	--	--		--		244	.33	681	--	--	--	--	391	--
May 1-10.....	962	--		--	--	--		--	--	--		--		267	.36	694	--	--	--	--	421	--
May 11-20.....	1,809	9.0		42	5.5	15		104	63	6.2		1.3		210	.29	1,030	128	42	20	.6	309	7.2
May 21-31.....	1,860	--		--	--	--		--	--	--		--		192	.26	964	--	--	--	--	309	--
June 1-10	1,223	--		--	--	--		--	--	--		--		222	.30	733	--	--	--	--	350	--
June 11-20	934	7.5		48	10	16		100	96	9.2		.2		239	.33	603	161	79	17	.5	385	7.4
June 21-30.....	889	--		--	--	--		--	--	--		--		253	.34	607	--	--	--	--	397	--
July 1-10.....	641	--		--	--	--		--	--	--		--		342	.47	592	--	--	--	--	520	--
July 11-20.....	469	10		72	11	32		141	147	18		1.3		368	.50	466	224	109	24	.9	560	7.5
July 21-31	1,487	--		--	--	--		--	--	--		--		322	.44	1,290	--	--	--	--	499	--
Aug. 1-10.....	367	--		--	--	--		--	--	--		--		464	.63	460	--	--	--	--	685	--
Aug. 11-20.....	300	15		96	13	44		192	191	22		1.1		486	.66	394	293	136	25	1.1	720	7.5
Aug. 21-31.....	239	--		--	--	--		--	--	--		--		524	.71	338	--	--	--	--	765	--
Sept. 1-10.....	96.9	--		--	--	--		--	--	--		--		648	.88	170	--	--	--	--	917	--
Sept. 11-13.....	201	16		118	19	55		215	265	28		.4		628	.85	341	372	196	24	1.2	889	8.1
Sept. 14-20	479	13		83	14	33		169	164	19		1.3		420	.57	543	264	126	22	.9	630	7.6
Sept. 21-30.....	447	--		--	--	--		--	--	--		--		484	.66	584	--	--	--	--	710	--
Weighted average	520	--		--	--	--		--	--	--		--		368	0.50	517	--	--	--	--	550	--

SAN JUAN RIVER BASIN--Continued

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

Temperature (°F) of water, water year October 1953 to September 1954
[Once-daily measurement, generally between 4 p. m. and 8 p. m.]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	b47	41	32	44	47	55	52	65	c75	73	81
2	66	55	38	32	42	43	55	58	61	76	80	80
3	64	52	37	32	43	45	60	64	69	c72	78	76
4	65	54	35	33	44	48	60	64	66	b69	76	78
5	65	50	32	33	43	46	60	66	64	c72	78	71
6	63	54	33	34	42	49	60	67	59	74	75	b61
7	64	50	32	c34	43	50	58	65	64	76	c74	76
8	63	48	33	34	44	43	60	65	65	76	78	73
9	a60	48	32	34	44	55	62	64	67	75	74	75
10	61	47	31	33	46	54	60	64	63	78	68	--
11	62	47	31	34	45	45	62	60	69	79	74	74
12	64	45	32	36	44	40	59	63	70	80	69	72
13	58	46	33	35	47	43	61	64	63	82	79	74
14	64	47	34	34	43	48	60	66	65	78	76	71
15	65	49	35	35	42	43	58	67	71	78	75	68
16	62	48	33	35	42	46	60	59	72	72	71	70
17	57	49	35	34	42	44	60	60	76	78	79	70
18	61	42	35	36	41	47	63	64	76	78	75	69
19	64	42	34	37	40	48	62	63	73	--	75	69
20	62	43	35	36	40	50	61	64	72	79	70	67
21	55	40	35	37	43	53	b49	63	75	80	73	68
22	56	38	33	38	45	53	b50	57	72	80	75	69
23	b50	41	33	38	47	48	61	60	80	67	78	65
24	54	42	32	39	47	46	59	65	80	c72	--	68
25	53	42	32	39	49	46	58	62	77	73	75	64
26	52	43	34	40	48	50	59	64	72	75	78	61
27	53	42	33	40	44	54	61	65	75	75	78	61
28	54	43	--	39	44	55	60	62	--	75	--	65
29	55	42	--	49	--	54	55	64	c70	79	80	65
30	53	42	37	44	--	55	51	62	70	76	78	63
31	53	--	33	45	--	53	--	63	--	77	75	--
Average	60	46	34	36	44	48	59	63	70	76	75	70

a Measurement at 8:45 p. m.
b Measurement between 6 a. m. and 10 a. m.
c Measurement between 10 a. m. and 4 p. m.

SAN JUAN RIVER BASIN--Continued

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

Suspended sediment, water year October 1953 to September 1954

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.....	40	18	2	290	127	99	273	47	35
2.....	50	22	3	295	92	73	299	35	28
3.....	43	17	2	304	72	59	304	30	25
4.....	46	15	2	313	77	65	277	47	35
5.....	52	19	3	346	134	125	295	56	45
6.....	50	19	3	419	288	326	264	89	63
7.....	58	23	4	382	720	743	236	96	61
8.....	45	16	2	342	260	240	236	107	68
9.....	48	18	2	327	84	74	252	115	78
10.....	51	14	2	304	74	61	232	107	67
11.....	55	19	3	318	79	68	240	208	135
12.....	56	21	3	322	74	64	256	117	81
13.....	89	135	32	313	370	313	260	129	91
14.....	128	191	66	318	227	195	244	147	97
15.....	166	247	111	318	84	72	256	150	104
16.....	162	190	83	318	89	76	273	173	128
17.....	162	114	50	322	258	224	280	174	132
18.....	162	105	46	327	111	98	273	187	138
19.....	172	103	48	351	144	136	256	116	80
20.....	662	17,200	s34,600	337	105	96	260	72	51
21.....	513	14,200	19,700	327	78	69	240	66	43
22.....	332	2,350	2,110	299	81	65	228	48	30
23.....	322	750	652	290	50	39	217	57	33
24.....	403	2,300	2,500	295	47	37	182	59	29
25.....	398	1,650	1,770	318	49	42	185	74	37
26.....	337	550	500	308	36	30	199	121	65
27.....	304	190	156	318	38	33	224	144	87
28.....	299	194	157	313	35	30	244	150	a99
29.....	286	179	138	318	24	21	228	90	a55
30.....	277	153	114	299	25	20	220	73	43
31.....	290	141	110	--	--	--	195	101	53
Total.	6,058	--	62,974	9,651	--	3,593	7,628	--	2,116

	January			February			March		
1.....	188	79	40	236	88	56	185	127	63
2.....	195	80	42	224	85	51	182	51	25
3.....	188	140	71	240	107	69	182	51	25
4.....	206	105	58	244	86	57	192	47	24
5.....	213	107	62	244	64	42	192	44	23
6.....	230	202	125	252	113	77	195	55	29
7.....	252	374	254	256	175	121	188	46	23
8.....	240	280	181	240	172	111	185	35	17
9.....	240	126	82	228	129	79	188	48	24
10.....	224	71	43	225	144	87	188	55	28
11.....	206	63	35	220	179	106	202	53	29
12.....	195	67	35	217	223	131	210	69	39
13.....	190	68	35	210	209	119	202	89	49
14.....	190	45	23	210	173	98	188	58	29
15.....	180	45	22	217	112	66	182	34	17
16.....	180	45	22	210	76	43	195	42	22
17.....	190	26	13	195	86	45	210	55	31
18.....	210	38	22	185	71	35	213	55	32
19.....	217	31	18	178	61	29	202	31	17
20.....	232	37	23	188	48	24	206	30	17
21.....	323	41	26	188	22	11	210	34	19
22.....	213	30	17	182	34	17	236	59	38
23.....	195	28	15	185	36	18	308	2,450	2,040
24.....	192	25	13	195	44	23	392	11,500	12,200
25.....	210	22	12	202	40	22	304	11,000	9,030
26.....	220	28	17	202	50	27	264	1,500	1,070
27.....	228	25	15	206	149	83	268	1,050	760
28.....	217	26	15	195	211	111	256	800	553
29.....	224	61	37	--	--	--	260	1,600	1,120
30.....	232	60	38	--	--	--	260	1,410	990
31.....	236	67	43	--	--	--	250	716	483
Total.	6,565	--	1,454	5,973	--	1,758	6,895	--	28,866

s Computed by subdividing day.
a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

ANIMAS RIVER FARMINGTON, N. MEX.--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	240	399	259	846	1,070	2,440	1,380	1,140	4,250
2.....	248	161	108	754	940	1,910	1,340	810	2,930
3.....	244	190	125	618	905	1,510	1,280	590	2,040
4.....	236	110	70	584	760	1,200	1,390	760	2,850
5.....	282	300	228	660	690	1,230	1,450	630	2,470
6.....	356	700	673	716	940	1,820	1,370	430	1,590
7.....	448	1,320	1,600	960	1,510	3,910	1,250	320	1,080
8.....	570	1,850	2,850	1,200	2,250	7,290	990	230	615
9.....	570	1,250	1,920	1,420	2,660	10,200	891	300	722
10.....	639	1,450	2,500	1,860	3,360	16,900	891	190	457
11.....	702	1,590	3,010	1,960	6,760	35,800	950	160	410
12.....	667	1,390	2,500	1,510	12,600	51,400	810	175	383
13.....	762	1,860	3,830	1,560	2,600	11,000	940	195	495
14.....	770	1,920	3,990	1,570	1,650	6,990	1,040	320	899
15.....	786	1,770	3,760	1,550	1,750	7,320	900	150	364
16.....	695	1,230	2,310	1,770	2,300	11,000	702	95	180
17.....	653	920	1,620	1,810	1,900	9,290	723	95	185
18.....	802	1,250	2,710	1,780	2,250	10,800	950	180	462
19.....	1,070	3,130	9,040	2,180	2,100	12,400	1,140	244	754
20.....	1,180	3,400	10,800	2,400	2,900	18,800	1,180	265	844
21.....	1,120	2,500	7,560	2,800	2,820	21,300	1,130	171	522
22.....	1,070	2,000	5,780	2,890	2,370	18,500	1,040	142	399
23.....	1,020	1,810	4,980	2,400	1,620	10,500	1,020	138	380
24.....	1,160	2,450	7,670	1,890	1,100	5,610	930	155	389
25.....	1,180	2,210	7,040	1,620	1,100	4,810	864	270	630
26.....	1,290	2,670	9,300	1,540	830	3,450	778	138	290
27.....	1,000	1,490	4,020	1,510	730	2,980	794	118	253
28.....	810	1,130	2,470	1,460	750	2,960	970	140	a370
29.....	855	1,340	3,090	1,480	830	3,320	746	89	179
30.....	837	1,080	2,440	1,450	760	2,980	618	78	130
31.....	--	--	--	1,420	1,100	4,220	--	--	--
Total.	22,262	--	108,253	48,168	--	303,840	30,457	--	27,522

	July			August			September		
1.....	570	81	125	632	6,700	11,400	80	97	21
2.....	532	123	177	564	1,700	2,590	74	60	12
3.....	513	1,080	1,500	477	545	702	83	30	7
4.....	618	1,400	2,340	418	298	336	94	200	51
5.....	625	300	506	385	264	274	87	590	139
6.....	570	175	269	355	222	213	96	700	181
7.....	495	130	174	300	228	185	104	260	73
8.....	577	570	888	238	92	59	114	150	46
9.....	1,060	4,200	12,000	169	81	37	116	180	56
10.....	846	560	1,280	131	187	66	121	80	26
11.....	674	200	364	175	230	109	111	70	21
12.....	577	125	195	244	5,910	3,890	159	1,800	773
13.....	577	380	592	248	1,460	978	332	2,880	2,580
14.....	495	715	956	232	950	595	810	3,340	7,300
15.....	408	330	364	277	570	426	604	1,110	1,810
16.....	372	245	246	268	365	264	507	590	808
17.....	372	255	256	304	590	484	431	440	512
18.....	471	535	680	454	1,400	1,720	366	300	296
19.....	398	230	247	442	730	871	332	290	260
20.....	346	95	89	356	290	279	304	210	172
21.....	318	80	69	495	6,940	9,280	273	200	147
22.....	507	4,290	s 29,500	403	2,700	2,940	252	150	102
23.....	2,670	36,100	s 337,000	346	360	336	236	60	38
24.....	2,980	7,900	63,600	282	300	a 230	282	400	305
25.....	2,830	17,100	s 156,000	232	167	105	442	2,200	2,630
26.....	1,880	3,000	15,200	228	74	46	590	4,920	7,840
27.....	1,500	2,300	9,320	159	67	29	660	6,420	11,400
28.....	1,210	1,800	5,880	153	60	a 25	618	1,940	3,240
29.....	990	1,330	3,560	139	58	22	577	850	1,320
30.....	762	1,160	2,390	106	40	11	544	780	1,150
31.....	709	3,140	6,010	89	332	80	--	--	--
Total.	27,452	--	651,777	9,301	--	38,582	9,399	--	43,316

Total discharge for year (cfs-days) 189,809
Total load for year (tons) 1,274,051

s 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 1953 to September 1954
(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	
Oct. 20, 1953	5:30 p.m.	864	62	23,200	4,070		56		81		98	99	100		--		VPWCM
Oct. 25	4:15 p.m.	382	53	1,380	3,640		67		92		99	99	100		--		SPWCM
Mar. 23, 1954	6:30 p.m.	332	48	3,180	3,720		68		94		99	100	--		--		SPWCM
Mar. 25	6:55 a.m.	332	40	16,000	4,460		79		99		100	--	--		--		SPWCM
Apr. 6	5:45 p.m.	372	60	836	2,040		38		76		95	99	100		--		SPWCM
Apr. 10	6:10 a.m.	639	47	1,630	3,130		21		46		83	97	100		--		VPWCM
Apr. 21	8:30 a.m.	1,120	--	2,450	2,310		13		23		50	80	98		100		VPWCM
May 10	6:20 a.m.	1,680	56	2,690	3,950		15		29		60	80	97		100		VPWCM
May 12	6:35 a.m.	1,540	50	20,700	5,220		49		75		92	95	98		100		VPWCM
July 14	4:50 p.m.	448	81	914	3,010		63		94		98	99	99		100		SPWCM
July 24	2:50 p.m.	3,250	72	5,230	4,820		27		47		81	92	97		100		VPWCM
July 25	11:00 a.m.	2,640	70	34,000	3,680		45		70		92	98	99		100		
July 26	6:25 a.m.	2,030	66	3,720	3,430		34		46		69	88	97		99	100	VPWCM
July 30	5:45 p.m.	802	76	1,180	2,130		41		60		71	84	98		100		VPWCM
Aug. 21	6:30 a.m.	910	61	4,670	3,850		21		34		71	88	98		100		VPWCM
Aug. 23	4:20 p.m.	327	--	223	1,240		47		68		83	89	94		100		SPWCM
Sept. 27	6:45 a.m.	746	53	6,000	3,380		48		69		86	93	100		--		VPWCM
Sept. 28	5:40 p.m.	646	65	1,310	1,900		22		37		56	75	--		100		VPWCM

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.

LOCATION.--At gaging station on left bank 3 miles west of Shiprock, 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 1954.
Sediment records: December 1950 to September 1954.
EXTREMES, 1953-54.--Water temperature: Maximum observed, 83°F June 25; minimum, freezing point on several days during December.
Sediment concentrations: Maximum daily, 70,600 ppm Sept. 26; maximum observed, 95,200 ppm Sept. 6; minimum daily, 28 ppm Mar. 20.
Sediment loads: Maximum daily, 1,330,000 tons July 24; minimum daily, 36 tons Mar. 20.
EXTREMES, 1950-54.--Water temperatures: Maximum observed, 83°F June 25, 1954; minimum freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 70,600 ppm Sept. 26, 1954; minimum daily, 8 ppm July 13, 1951.
Sediment loads: Maximum daily, 1,330,000 tons July 24, 1954; minimum daily, 5 tons July 21, Aug. 21, Sept. 12-24, 1951.
REMARKS.--Records of specific conductance of daily samples available in district offices at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343. Stage-discharge affected by ice Dec. 7-16, 24, 30-31, Jan. 1-2, 11-13.

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 11 a. m. and 6 p. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a51	52	42	34	42	a34	53	--	67	--	a73	a63
2	61	52	37	34	43	--	55	55	63	--	b80	--
3	b60	50	--	--	43	43	--	62	68	--	80	a63
4	b52	54	--	35	--	41	--	b63	68	75	--	a61
5	b61	51	--	36	--	45	60	66	--	78	76	72
6	66	49	--	35	44	46	59	b63	61	a69	b77	74
7	63	47	--	37	44	--	57	67	65	a70	b74	b72
8	64	47	--	37	--	51	60	b67	68	b77	a67	70
9	61	46	--	37	43	a43	60	a60	67	--	b76	b74
10	62	45	--	33	45	--	b58	--	b63	b80	a67	b70
11	61	64	--	34	46	--	62	64	69	a75	b73	a63
12	--	64	--	--	45	41	60	64	71	b81	b72	75
13	--	47	32	--	46	38	63	b65	--	a72	74	71
14	--	48	--	35	--	45	a61	67	b65	82	78	73
15	59	a45	--	36	46	--	b62	66	b71	a73	a67	b69
16	60	47	--	36	43	47	58	66	a64	a72	b73	b67
17	57	49	31	33	46	a39	b50	66	72	--	a67	71
18	55	--	31	37	--	45	--	66	78	82	b75	b67
19	54	--	31	36	--	46	62	69	79	a71	a67	64
20	--	36	32	37	39	a42	62	a62	a73	a71	b73	68
21	52	36	--	38	32	52	b61	66	76	b77	a66	67
22	54	36	--	39	46	--	63	--	80	b79	b73	67
23	--	38	34	37	--	--	62	59	81	--	73	--
24	--	41	--	39	a44	49	63	66	82	--	a66	--
25	--	43	--	--	a40	--	63	65	83	79	b77	64
26	--	41	33	--	a41	--	62	67	--	76	78	59
27	--	42	32	41	--	51	65	67	73	a71	b74	62
28	52	43	--	40	43	50	63	65	79	b78	a64	b61
29	53	43	34	43	--	a45	a55	66	a74	a70	b78	a60
30	53	42	35	45	--	--	59	a60	--	a74	a69	54
31	53	--	34	47	--	b51	--	--	--	b80	--	--
Average	--	46	--	37	--	--	58	64	72	--	73	67

a Measurement before 11 a. m.
b Measurement after 6 p. m.

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	128	228	79	748	200	404	640	61	105
2	137	182	67	721	195	380	658	71	126
3	142	249	95	703	192	364	667	135	243
4	142	245	94	703	162	307	721	175	341
5	151	173	71	703	240	456	694	136	255
6	180	171	83	1,030	3,250	s 10,300	531	110	158
7	180	175	85	1,350	12,800	46,700	410	117	130
8	185	160	80	1,000	8,700	23,500	440	108	128
9	180	119	58	840	5,080	11,500	410	109	121
10	201	141	77	757	3,020	6,170	385	149	155
11	216	167	97	730	1,630	3,210	415	149	167
12	243	209	137	739	910	1,820	440	133	158
13	446	7,400	s 11,900	739	560	1,120	490	136	180
14	475	5,700	7,310	730	220	434	480	140	181
15	580	1,800	2,820	739	224	447	500	165	223
16	580	960	1,500	730	172	339	550	218	324
17	539	760	1,110	730	181	357	623	182	306
18	507	680	931	730	216	426	614	159	264
19	539	1,260	1,830	775	200	418	658	151	268
20	1,270	14,500	s 63,300	766	169	350	658	170	302
21	2,540	36,500	260,000	766	156	323	640	210	363
22	1,640	15,000	66,400	721	141	274	572	172	266
23	1,320	10,800	38,500	676	136	248	460	109	135
24	1,040	8,400	23,600	606	121	198	410	133	147
25	1,120	5,500	16,600	623	120	202	376	131	133
26	1,150	2,500	7,760	649	102	179	483	118	154
27	940	1,730	4,390	685	90	166	446	96	116
28	830	1,520	3,410	676	88	161	507	108	148
29	766	880	1,820	685	70	129	417	106	119
30	739	460	918	685	59	109	420	85	96
31	757	310	634	--	--	--	430	77	89
Total	19,863	--	515,756	22,735	--	110,991	16,145	--	5,901
	January			February			March		
1	380	77	79	555	60	90	667	377	679
2	375	86	87	598	93	150	572	484	747
3	395	79	84	580	106	166	531	458	657
4	395	81	86	580	110	172	539	313	456
5	424	97	111	572	99	153	507	140	192
6	468	93	118	614	89	148	523	100	141
7	515	97	135	623	90	151	564	70	a 110
8	539	111	162	667	100	a 180	523	47	66
9	475	115	147	667	157	283	523	64	90
10	446	69	83	694	163	305	515	49	68
11	400	70	76	703	198	376	564	37	56
12	445	105	126	721	258	502	712	150	288
13	445	76	91	739	233	465	748	432	872
14	531	70	100	757	300	a 610	589	415	660
15	507	87	119	766	335	693	491	320	424
16	507	100	137	703	230	437	483	178	232
17	499	75	101	623	167	281	475	103	132
18	531	117	168	589	188	299	507	73	100
19	547	208	307	507	248	339	468	39	49
20	555	156	234	531	167	239	475	28	36
21	564	109	166	580	112	175	483	35	46
22	547	78	115	564	81	123	564	205	312
23	491	66	87	531	61	87	676	500	913
24	468	57	72	555	82	123	1,750	6,780	s 39,600
25	491	140	186	589	102	162	1,910	17,400	89,700
26	531	231	331	589	41	65	1,200	14,500	47,000
27	572	250	386	623	67	113	870	10,400	24,400
28	564	170	259	658	173	307	757	6,100	12,500
29	531	110	158	--	--	--	730	3,450	6,800
30	547	305	450	--	--	--	730	4,150	8,180
31	580	135	211	--	--	--	766	2,550	5,270
Total	15,265	--	4,972	17,478	--	7,194	21,412	--	240,776

s Computed by subdividing day.
a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	784	2,080	4,400	2,200	920	5,510	3,200	730	6,310
2.....	694	1,220	2,290	2,280	730	4,490	3,200	780	6,740
3.....	614	430	a 710	2,090	800	4,510	3,000	690	5,590
4.....	667	520	936	1,950	710	3,740	2,810	760	5,770
5.....	960	900	2,330	2,020	820	4,470	3,000	450	3,640
6.....	1,240	1,770	5,930	2,200	1,050	6,240	2,810	560	4,250
7.....	1,510	2,110	8,600	2,380	1,490	9,570	2,720	500	3,670
8.....	1,740	2,940	13,800	2,810	2,000	15,200	2,260	500	3,050
9.....	1,780	2,340	11,200	3,300	2,190	19,500	1,970	440	2,340
10.....	1,820	1,920	9,430	4,100	3,770	41,700	1,870	400	2,020
11.....	2,050	2,000	11,100	4,760	8,700	112,000	1,940	490	2,570
12.....	2,040	1,600	8,810	4,100	6,590	73,000	1,800	290	1,410
13.....	2,070	1,690	9,450	3,740	8,470	85,500	1,730	110	514
14.....	2,220	1,890	11,300	3,740	4,100	41,400	1,740	120	564
15.....	2,300	1,800	11,200	3,520	2,240	21,300	1,860	110	552
16.....	2,150	1,600	9,290	3,980	1,590	17,100	1,530	81	335
17.....	1,980	1,030	5,510	4,350	2,690	31,600	1,400	91	344
18.....	2,110	1,700	a 9,700	4,100	2,010	22,300	1,520	111	456
19.....	2,540	3,190	21,900	4,480	2,200	26,600	1,680	130	590
20.....	2,630	3,600	25,600	4,900	3,020	40,000	1,770	166	793
21.....	2,630	2,360	16,800	5,500	3,240	48,100	1,700	152	698
22.....	2,720	2,100	15,400	5,500	3,500	52,000	1,570	100	424
23.....	2,380	1,500	9,640	5,680	2,670	40,900	1,470	76	302
24.....	2,720	1,990	14,600	4,900	1,990	26,300	1,350	77	281
25.....	2,810	2,010	15,200	3,980	2,110	22,700	1,260	60	204
26.....	3,200	3,100	26,800	3,860	1,230	12,800	1,170	290	916
27.....	2,630	2,100	14,900	3,860	1,200	12,500	1,410	4,210	16,000
28.....	2,460	1,250	8,300	3,630	830	8,130	1,400	1,800	6,800
29.....	2,300	1,200	7,450	3,630	605	5,930	1,430	3,350	12,900
30.....	2,300	1,160	7,200	3,520	700	6,650	1,100	1,560	4,630
31.....	--	--	--	3,300	550	4,900	--	--	--
Total.	60,049	--	319,776	114,380	--	826,640	57,670	--	94,663

	July			August			September		
1.....	1,240	12,100	40,500	1,100	1,500	4,460	330	238	212
2.....	1,130	7,950	24,300	1,150	6,010	18,700	276	300	a 220
3.....	970	5,090	13,300	1,030	3,280	9,120	232	370	232
4.....	2,050	10,100	55,900	880	2,690	6,390	243	219	144
5.....	1,700	12,700	58,300	649	880	1,540	324	2,000	1,750
6.....	1,290	3,400	11,800	555	398	596	954	65,000	s 244,000
7.....	1,130	2,200	6,710	1,010	43,300	122,000	623	48,000	83,700
8.....	1,610	16,500	71,700	950	20,000	51,300	483	11,100	14,500
9.....	1,540	10,500	43,700	766	12,700	26,300	431	2,220	2,580
10.....	1,640	7,000	31,000	890	18,600	s 68,300	395	1,260	1,340
11.....	1,460	5,300	20,900	784	11,600	24,600	402	987	1,070
12.....	1,320	6,500	23,200	766	5,100	10,500	515	5,600	7,790
13.....	1,170	4,200	13,300	1,280	6,800	23,500	1,990	39,700	s 326,000
14.....	1,010	2,500	6,820	1,000	4,010	10,800	3,040	56,600	s 502,000
15.....	840	1,400	3,180	1,240	4,900	16,400	1,690	17,100	78,000
16.....	676	700	1,280	1,240	4,400	14,700	1,240	7,700	25,800
17.....	640	1,000	1,730	1,660	13,000	58,300	1,090	3,350	9,860
18.....	766	5,000	10,300	2,090	44,600	261,000	1,000	1,950	5,260
19.....	880	7,900	18,800	1,460	12,000	47,300	890	1,450	3,480
20.....	739	9,100	18,200	1,170	8,100	25,600	757	737	1,510
21.....	572	3,400	5,250	1,760	13,000	s 77,100	676	566	1,030
22.....	547	2,900	4,280	1,880	32,500	171,000	676	448	818
23.....	7,370	54,000	s1,250,000	1,300	16,100	56,500	807	14,400	s 45,400
24.....	9,000	52,800	1,330,000	930	9,200	23,100	1,870	40,300	211,000
25.....	6,200	42,000	729,000	748	2,500	5,050	1,380	23,300	s 89,700
26.....	4,900	46,000	631,000	694	2,900	5,430	6,350	70,600	1,260,000
27.....	2,810	12,800	97,100	564	6,100	9,290	3,840	55,500	s 629,000
28.....	2,210	3,200	19,100	564	1,090	1,660	1,840	34,000	175,000
29.....	1,780	1,900	9,130	480	523	678	1,540	12,000	49,900
30.....	1,470	1,500	5,950	450	334	406	1,400	5,000	18,900
31.....	1,240	800	2,680	400	290	a 310	--	--	--
Total.	61,900	--	4,558,410	31,440	--	1,151,930	37,284	--	3,790,196

Total discharge for year 475,621

Total load for year 11,627,205

s Computed by subdividing day.

a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER AT SHIPROCK, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Oct. 20, 1953	8:00 p. m.	2,150	--	26,400	3,990		61		85		94	96	99		100	--	VPWCM
Oct. 21	2:15 p. m.	2,810	52	44,700	3,740		69		86		97	98	99		100	--	VPWCM
Nov. 10	2:15 p. m.	757	45	2,980	3,460		93		97		99	100	--		--	--	SPWCM
Feb. 11, 1954	2:30 p. m.	676	45	183	--		--		--		94	96	98		100	--	S
Mar. 1	7:00 a. m.	703	34	335	1,660		80		90		95	97	99		100	--	SPWCM
Mar. 24	1:00 p. m.	1,750	49	6,570	3,390		43		67		93	97	99		100	--	VPWCM
Apr. 1	2:00 p. m.	757	53	1,910	4,250		84		96		99	99	100		--	--	SPWCM
Apr. 11	12:45 p. m.	2,380	59	2,700	5,720		26		49		80	86	95		100	--	VPWCM
Apr. 20	3:30 p. m.	2,810	--	4,090	3,970		26		48		80	90	96		99	100	VPWCM
May 2	1:00 p. m.	2,380	55	726	1,960		19		30		53	71	87		100	--	VPWCM
May 11	10:00 a. m.	4,900	60	11,700	3,480		41		60		85	93	96		98	100	VPWCM
May 12	7:00 p. m.	3,980	62	11,400	3,580		54		81		92	95	97		100	--	VPWCM
June 29	9:00 a. m.	1,400	74	6,060	3,660		84		97		98	99	99		99	100	SPWCM
July 1	7:20 p. m.	1,290	--	26,700	2,910		85		98		100	--	--		--	--	SPWCM
July 14	2:35 p. m.	930	82	1,900	3,120		84		97		99	100	--		--	--	SPWCM
July 24	7:00 p. m.	6,200	--	50,700	4,810		61		80		91	96	99		100	--	VPWCM
July 25	9:05 a. m.	6,200	--	19,200	4,420		52		69		88	94	97		100	--	VPWCM
July 27	6:40 a. m.	2,900	71	14,000	4,020		55		69		78	86	92		95	100	VPWCM
Aug. 18	9:10 a. m.	2,210	67	60,600	4,720		66		82		93	98	100		--	--	VPWCM
Sept. 13	10:15 p. m.	4,350	69	82,500	4,820		41		75		88	92	98		100	--	SPWCM
Sept. 14	7:35 p. m.	2,460	70	28,200	3,370		57		75		91	97	100		--	--	VPWCM
Sept. 27	6:50 a. m.	4,220	55	66,400	3,960		51		66		82	91	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 1954.
Water temperatures: May 1944 to September 1954.
Sediment records: August to September 1928, July 1929 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,570 ppm Sept. 10; minimum, 265 ppm May 21-31.
Hardness: Maximum, 731 ppm Aug. 12-14; minimum, 160 ppm June 1-10.
Specific conductance: Maximum daily, 2,110 micromhos Aug. 13; minimum daily, 370 micromhos May 31.
Water temperatures: Maximum observed, 85°F Aug. 1; minimum observed, freezing point Dec. 6-10.
Sediment concentrations: Maximum daily, 67,000 ppm Sept. 27; minimum daily, 691 ppm Jan. 5.
Sediment loads: Maximum daily, 1,240,000 tons July 24; minimum daily, 347 tons Oct. 4.
EXTREMES, 1929-54.--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 (1941-54): Maximum daily, 2,110 micromhos Aug. 13, 1954; minimum daily, 208 micromhos June 17, 1952.
Water temperatures (1944-54): Maximum observed, 85°F July 21, 1945, July 5, 1953, Aug. 1, 1954; 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 residues on evaporation, unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	179	12	0.05	127	42	161	5.2	174	605	44		2.3	--	1,130	1.54	546	490	347	41	3.2	1,520	7.7
Oct. 11-20	625	13	.05	144	38	145	5.6	196	584	35		4.3	0.13	1,100	1.50	1,860	516	355	38	2.8	1,470	7.6
Oct. 21-23, 25-31	1,515	16	.05	138	29	113	5.6	200	481	24		3.8	--	936	1.27	3,830	464	300	34	2.3	1,260	7.6
Oct. 24 a	3,970	--	--	--	--	--	--	192	256	17		--	--	--	--	--	234	77	--	--	855	7.8
Nov. 1-10	1,111	15	.05	115	31	102	4.5	197	417	24		3.8	--	828	1.13	2,480	414	253	35	2.2	1,150	7.6
Nov. 11-20	859	13	.05	116	32	97	4.3	195	413	25		3.5	--	823	1.12	1,910	421	261	33	2.1	1,140	7.6
Nov. 21-30	799	12	.04	116	35	95	3.8	191	421	26		3.2	--	840	1.14	1,810	434	277	32	2.0	1,160	7.7
Dec. 1-10	667	11	--	122	39	97	3.0	200	449	30		2.7	.11	889	1.21	1,600	465	301	31	2.0	1,210	7.8
Dec. 11-20	506	13	--	148	47	128	3.7	232	563	37		3.5	.09	1,090	1.48	1,490	563	373	33	2.3	1,440	7.7
Dec. 21-22, 27-29, 31	506	12	--	141	44	111	3.7	222	516	36		3.2	.13	1,030	1.40	1,410	533	351	31	2.1	1,370	7.8
Jan. 1-10, 1954	448	11	--	140	44	126	3.7	220	533	39		3.2	.12	1,050	1.43	1,270	530	350	34	2.4	1,390	7.8
Jan. 11-20	530	10	--	125	40	106	3.7	202	471	34		2.8	.09	935	1.27	1,340	476	311	32	2.1	1,250	8.0
Jan. 21-31	592	12	--	126	41	113	2.8	196	495	33		4.8	--	942	1.28	1,510	483	322	34	2.2	1,290	7.8
Feb. 1-10	625	11	--	121	43	108	3.2	194	498	32		3.2	--	938	1.28	1,580	479	320	33	2.1	1,280	8.0
Feb. 11-15	726	11	--	111	35	95	3.7	190	412	28		3.4	.11	800	1.09	1,570	421	266	33	2.0	1,130	7.8
Feb. 21-28	577	11	--	119	38	101	3.7	189	463	32		4.1	--	880	1.20	1,370	453	298	32	2.1	1,210	7.8

a Not included for computation of weighted averages.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Mar. 1-10, 1954..	603	9.7	--	110	35	90	3.7	182	414	28		3.1	--	796	1.08	1,300	418	270	32	1.9	1,120	7.8
Mar. 11-20.....	663	8.9	--	104	33	92	3.2	172	397	28		2.6	0.09	750	1.02	1,340	395	254	33	2.0	1,070	7.8
Mar. 21-31.....	1,049	14		99	29	100	4.6	188	373	25		3.8	--	749	1.02	2,120	366	212	37	2.3	1,060	7.7
Apr. 1-10.....	1,107	15	--	92	26	76	3.8	182	313	20		3.7	--	648	.88	1,940	336	188	33	1.8	932	8.0
Apr. 11-20.....	1,975	15	--	62	13	33	2.9	151	141	9.0		2.8	.40	354	.48	1,890	208	84	25	1.0	543	7.8
Apr. 21-30.....	2,604	14	--	53	11	27	2.2	131	116	8.5		2.6	--	300	.41	2,110	177	70	25	.9	463	7.8
May 1-10	2,357	13	--	55	14	36	2.2	122	154	10		2.2	--	350	.48	2,230	194	94	28	1.1	533	7.9
May 11-20.....	3,882	14	--	54	9.6	25	2.1	142	95	6.1		1.6	.05	284	.39	2,980	174	58	24	.8	434	7.6
May 21-31	4,314	13	--	50	9.3	22	1.7	126	93	6.8		1.4	--	265	.36	3,090	163	60	23	.8	412	7.5
June 1-10	2,777	14	--	48	9.6	25	1.7	110	106	7.2		.9	--	268	.36	2,010	160	70	25	.9	414	7.5
June 11-20	1,728	13	--	54	11	36	2.3	118	139	11		.6	.06	330	.45	1,540	180	83	30	1.2	505	7.4
June 21-27	1,550	11	--	54	11	36	2.3	120	138	12		.3	--	326	.44	1,360	180	81	30	1.2	507	7.4
June 28-30	1,517	15	--	179	33	87	5.8	188	558	26		.9	--	1,030	1.40	4,220	582	428	24	1.6	1,330	7.3
July 1-3, 5, 9-10.	1,283	17	--	81	15	69	5.0	179	239	18		2.0	.08	538	.73	1,860	264	117	36	1.8	784	8.1
July 6-8	1,530	19	--	106	41	76	6.1	217	372	29		2.0	.09	759	1.03	3,140	433	255	27	1.6	1,070	8.0
July 11-20	1,067	14	--	84	25	75	4.5	178	239	62		3.1	.08	602	.82	1,730	312	166	34	1.9	915	7.6
July 21-23, 26, 28-31.....	1,992	16	--	73	12	75	4.3	180	216	17		2.6	.10	510	.69	2,740	232	84	41	2.1	754	7.7
July 24-25, 27....	6,777	22	--	146	43	149	5.0	280	586	18		.5	.11	1,120	1.52	20,490	542	312	37	2.8	1,380	7.3
Aug. 1-9.....	980	14	--	82	16	60	3.7	163	226	19		2.8	.06	504	.69	1,330	270	137	32	1.6	740	7.8
Aug. 10[a]	888	15	--	--	--	96	4.2	207	347	24		4.9	--	--	--	--	--	--	--	--	1,040	7.4
Aug. 11, 15-19 ...	1,425	17	--	88	17	74	4.5	194	248	18		3.9	.12	574	.78	2,210	290	130	35	1.9	837	7.9
Aug. 12-14.....	951	16	--	232	37	114	8.4	170	776	30		4.3	--	1,360	1.85	3,490	731	592	25	1.8	1,640	7.7
Aug. 20[a]	1,330	--	--	170	11	75		277	362	19		1.7	--	--	--	--	469	242	26	1.5	1,140	7.9
Aug. 21-23, 25-31	946	18	--	81	13	83	4.2	199	246	18		2.3	--	566	.77	1,450	256	92	41	2.3	822	7.6
Aug. 24.....	1,310	15	--	110	16	130		275	363	14		.6	--	b 784	1.07	2,770	340	115	45	3.1	1,110	7.4
Sept. 1-5	346	17	--	94	20	87	4.6	173	313	26		4.2	--	661	.90	618	316	174	37	2.1	935	7.7
Sept. 6-9	612	16	--	146	36	141	5.4	230	559	30		5.2	--	1,070	1.46	1,770	512	324	37	2.7	1,420	7.4
Sept. 10	432	16	--	162	25	317		319	868	22		1.2	--	b 1,570	2.14	1,830	507	246	58	6.1	2,070	7.2
Sept. 11, 14.....	1,838	16	--	134	31	147		262	512	24		.9	--	b 994	1.35	4,930	462	248	41	3.0	1,370	7.5
Sept. 16-20.....	1,072	15	--	74	13	76	4.5	170	229	18		2.2	.11	516	.70	1,490	238	98	40	2.1	755	7.7
Sept. 21-24, 30...	1,425	14	--	88	17	72	4.6	180	257	20		2.1	--	564	.77	2,170	290	142	35	1.8	818	7.7
Sept. 25-29.....	3,878	18	--	153	26	135	6.3	231	540	21		.6	--	1,010	1.37	10,580	488	299	37	2.7	1,350	7.4
Weighted average	c 1,378	14	--	88	21	69	3.4	169	280	18		2.2	--	589	0.80	2,191	306	168	33	1.7	830	--

a Not included for computation of weighted averages.
b Sum of determined constituents.
c Represents 96 percent of runoff for water year October 1953 to September 1954.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954

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.....	199	1,050	564	816	2,880	6,350	774	1,900	3,970
2.....	180	1,050	510	810	2,500	5,470	744	1,890	3,800
3.....	166	950	426	810	2,100	4,590	714	1,980	3,820
4.....	143	900	347	798	2,400	5,170	768	2,080	4,310
5.....	148	1,000	a400	846	2,700	6,170	792	2,150	4,600
6.....	183	1,000	a490	2,090	24,200	s162,000	798	2,410	5,190
7.....	180	1,000	490	1,170	10,100	31,900	662	1,660	2,970
8.....	192	994	515	1,580	12,400	52,900	521	1,450	2,040
9.....	196	1,200	635	1,160	13,800	43,200	456	1,320	1,630
10.....	202	1,250	682	1,030	9,400	26,100	442	1,220	1,460
11.....	205	1,220	675	921	7,500	18,700	395	1,200	a1,300
12.....	258	4,000	2,790	864	5,500	12,800	386	1,200	1,250
13.....	296	6,800	5,430	828	4,100	9,170	432	900	1,050
14.....	451	12,000	14,600	870	3,500	8,220	471	1,150	1,460
15.....	490	12,500	16,500	840	2,920	6,620	476	1,200	a1,500
16.....	542	7,540	11,000	804	2,700	5,860	490	1,330	1,760
17.....	557	6,200	a9,300	822	2,660	5,900	536	1,310	1,900
18.....	579	5,400	8,440	852	2,460	5,660	584	1,300	a2,000
19.....	590	5,500	8,760	864	2,730	6,370	628	1,630	2,760
20.....	2,280	22,500	s160,000	928	2,630	6,590	662	1,700	3,040
21.....	2,020	16,800	91,600	935	2,300	5,810	668	1,630	2,940
22.....	2,820	41,000	324,000	963	2,660	6,920	674	1,820	3,310
23.....	2,440	39,800	s281,000	858	2,220	5,140	628	1,700	a2,900
24.....	3,970	41,600	s459,000	822	2,280	5,060	552	1,600	a2,400
25.....	1,510	26,300	107,000	756	2,020	4,120	466	1,500	a1,900
26.....	1,250	14,700	49,600	697	1,730	3,260	466	1,300	a1,600
27.....	1,310	10,800	38,200	714	1,800	3,470	386	1,200	1,250
28.....	1,070	6,500	18,800	759	2,000	4,050	391	1,200	1,270
29.....	970	4,370	11,400	744	1,900	3,820	442	1,010	1,210
30.....	900	4,400	10,700	750	1,740	3,520	495	950	a1,300
31.....	858	3,600	8,340	--	--	--	476	950	1,220
Total.	27,155	--	1,642,194	27,692	--	474,910	17,375	--	73,110
	January			February			March		
1.....	466	1,100	a1,400	608	1,330	2,180	651	1,330	2,340
2.....	409	1,040	1,150	640	1,490	2,570	685	1,280	2,370
3.....	378	1,000	a1,000	623	1,580	2,660	674	1,340	2,440
4.....	344	720	669	617	1,350	2,250	623	1,000	1,680
5.....	386	691	720	628	1,320	2,240	595	1,150	1,850
6.....	409	780	a860	595	1,320	2,120	579	1,200	1,880
7.....	442	900	1,070	601	1,270	2,060	547	1,150	1,700
8.....	495	950	1,270	617	1,400	2,330	568	1,620	2,480
9.....	557	950	1,430	651	1,400	2,460	552	1,100	1,640
10.....	590	1,080	1,720	668	1,400	2,530	552	1,580	2,350
11.....	505	1,000	1,360	702	1,510	2,860	608	1,420	2,320
12.....	521	1,140	1,600	702	1,500	2,840	595	1,000	1,610
13.....	485	1,330	1,740	691	1,500	2,800	685	1,330	2,460
14.....	500	1,430	1,930	732	1,700	3,360	846	1,770	4,040
15.....	505	1,700	2,320	804	1,600	3,470	804	1,610	3,500
16.....	542	1,800	2,630	810	1,500	a3,300	656	1,310	2,320
17.....	536	1,320	1,910	804	1,400	a3,000	606	1,320	2,160
18.....	542	1,550	2,270	732	1,400	a2,800	606	1,390	2,270
19.....	557	1,520	2,290	651	1,300	a2,300	623	1,480	2,490
20.....	606	2,020	3,310	601	1,200	a1,900	601	1,210	1,960
21.....	656	1,990	3,520	552	1,050	1,560	574	1,140	1,770
22.....	617	1,800	3,000	574	1,080	1,670	574	910	1,410
23.....	590	1,460	2,330	595	1,080	1,740	810	2,800	6,120
24.....	563	1,490	2,260	552	1,070	1,590	1,120	6,050	18,300
25.....	526	1,720	2,440	552	1,190	1,770	1,650	11,000	s68,900
26.....	579	1,600	2,500	584	1,230	1,940	1,850	13,100	65,400
27.....	574	1,700	a2,600	595	1,200	1,930	1,420	14,400	55,200
28.....	612	1,880	3,110	612	1,300	2,150	1,050	16,000	45,400
29.....	608	1,670	2,730	--	--	--	907	12,600	30,900
30.....	590	1,580	2,520	--	--	--	798	9,550	20,600
31.....	601	1,300	a2,100	--	--	--	786	6,800	14,400
Total.	16,289	--	61,759	18,091	--	66,380	24,193	--	374,260

s Computed by subdividing day.
a Computed from estimated concentration graph.

SAN JUAN RIVER BASIN--Continued

SAN JUAN RIVER NEAR BLUFF, UTAH--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	870	5,750	13,500	2,370	3,680	23,500	3,300	2,120	18,900
2.....	858	5,100	11,800	2,440	3,320	21,900	3,170	2,400	20,500
3.....	822	4,120	9,140	2,370	3,150	20,200	3,030	2,220	18,200
4.....	798	2,800	a 6,000	2,060	2,150	12,000	2,880	2,810	21,900
5.....	786	1,950	4,140	2,000	2,400	13,000	2,730	2,400	17,700
6.....	888	2,200	5,270	2,010	2,550	13,800	2,850	1,950	15,000
7.....	1,160	4,300	13,500	2,190	2,900	17,100	2,760	1,700	12,700
8.....	1,500	4,900	19,800	2,330	2,700	17,000	2,720	1,620	11,900
9.....	1,640	5,600	24,800	2,640	3,400	24,200	2,340	1,600	10,100
10.....	1,750	5,000	a 24,000	3,160	4,600	39,200	1,990	1,300	6,980
11.....	1,760	3,940	18,700	3,940	7,250	77,100	1,930	1,250	6,510
12.....	1,930	5,000	26,100	4,420	9,900	118,000	1,920	1,150	5,960
13.....	1,870	4,750	24,000	3,930	6,050	64,200	1,880	1,100	5,580
14.....	1,840	4,400	21,900	3,580	6,600	63,800	1,750	1,200	5,670
15.....	1,990	4,200	22,600	3,640	6,500	63,900	1,820	1,450	7,130
16.....	2,200	5,500	32,700	3,370	4,100	37,300	1,880	1,150	5,840
17.....	2,030	5,700	31,200	3,870	4,930	51,500	1,640	950	4,210
18.....	1,860	3,820	19,200	4,130	5,100	56,900	1,430	850	3,280
19.....	1,930	3,900	20,300	3,760	4,000	40,600	1,420	1,350	5,180
20.....	2,340	5,500	34,700	4,180	4,800	54,200	1,610	1,400	6,090
21.....	2,710	7,450	54,500	4,670	4,630	58,400	1,740	1,200	5,640
22.....	2,670	6,800	49,000	5,140	5,820	80,800	1,690	1,120	5,110
23.....	2,560	5,700	39,400	5,600	7,100	107,000	1,550	1,080	4,520
24.....	2,280	4,380	27,000	5,840	5,820	91,800	1,460	820	3,230
25.....	2,580	5,200	36,200	4,820	4,400	57,300	1,370	735	2,720
26.....	2,700	5,150	37,500	3,900	2,850	30,000	1,280	1,100	3,800
27.....	3,200	6,420	55,500	3,810	2,820	29,000	1,760	8,400	39,900
28.....	2,640	4,400	31,400	3,600	3,550	34,500	1,670	22,500	101,000
29.....	2,320	3,250	20,400	3,350	2,900	26,200	1,310	10,900	38,600
30.....	2,380	3,300	21,200	3,370	2,400	21,800	1,570	10,000	42,400
31.....	--	--	--	3,350	1,600	14,500	--	--	--
Total.	56,862	--	755,450	109,840	--	1,380,700	60,450	--	456,250

	July			August			September		
1.....	1,300	12,500	43,900	1,280	2,800	9,680	391	1,600	1,690
2.....	1,050	4,800	13,600	1,180	2,640	8,410	335	1,200	1,090
3.....	1,250	4,300	14,500	1,160	3,000	9,400	389	11,800	12,400
4.....	1,140	4,600	a 14,000	1,080	2,700	7,870	292	3,800	3,000
5.....	1,420	11,700	44,900	935	8,000	20,200	323	8,600	7,500
6.....	2,010	21,800	118,000	876	4,500	10,600	360	11,800	11,500
7.....	1,350	19,800	72,200	691	3,500	6,530	475	10,700	13,700
8.....	1,230	8,500	28,200	617	4,000	6,660	1,010	20,500	55,900
9.....	1,260	10,000	34,000	998	19,000	51,200	601	54,000	90,900
10.....	1,420	9,900	38,000	888	11,500	27,600	432	60,000	72,600
11.....	1,550	18,000	75,300	1,510	26,700	s 125,000	437	31,500	37,200
12.....	1,530	8,100	33,500	1,100	24,500	72,800	466	31,000	a 39,000
13.....	1,290	5,100	17,800	810	22,800	49,900	1,740	35,000	a 170,000
14.....	1,220	5,700	18,800	942	18,000	45,800	3,240	36,500	331,000
15.....	1,050	6,400	18,100	1,120	13,000	39,300	2,640	25,000	a 180,000
16.....	963	6,000	15,600	1,090	6,500	19,100	1,390	17,200	64,600
17.....	786	3,490	7,410	1,340	7,580	27,400	1,130	16,500	50,300
18.....	697	3,200	6,020	1,340	6,300	22,800	998	9,000	24,300
19.....	702	1,800	3,410	2,150	17,200	99,800	921	5,700	14,200
20.....	882	4,600	11,000	1,300	44,000	164,000	921	2,500	6,220
21.....	858	11,000	25,500	1,240	20,500	68,600	828	1,130	2,530
22.....	750	6,700	13,600	1,510	19,000	77,500	738	1,100	2,190
23.....	628	9,500	16,100	1,870	30,000	151,000	1,510	10,100	s 117,000
24.....	7,830	50,000	s1,240,000	1,310	37,800	139,000	2,460	32,000	220,000
25.....	8,240	50,800	1,170,000	1,080	21,500	62,700	2,700	39,000	295,000
26.....	6,270	38,300	672,000	870	14,700	34,500	5,300	50,500	s 823,000
27.....	4,260	47,000	561,000	714	9,500	18,300	6,310	67,000	1,180,000
28.....	2,360	19,500	124,000	656	4,700	8,320	3,290	52,000	479,000
29.....	1,920	8,000	41,500	547	3,200	4,730	1,790	35,000	175,000
30.....	1,700	4,700	21,600	490	9,500	12,600	1,590	25,000	107,000
31.....	1,450	2,500	9,790	485	4,400	5,760	--	--	--
Total.	60,366	--	4,523,330	33,209	--	1,407,060	45,007	--	4,587,820

Total discharge for year (cfs-days) 496,529

Total load for year (tons) 15,803,223

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 1953 to September 1954
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment												Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
Oct. 15, 1953	8:45 a.m.	606	56	18,200	4,500	52	59	69	73	78	85	97	100		--		SPWCM
Oct. 16	10:10 a.m.	516	60	7,790	3,560	43	52	56	63	66	76	93	100		--		SPWCM
Oct. 20	9:00 a.m.	2,030	53	17,400	3,220	20	25	30	39	53	64	86	98		100		SPWCM
Oct. 20	12:15 p.m.	3,750	58	35,000	3,400	25	30	33	42	54	63	85	98		100		SPWCM
Oct. 21	9:15 a.m.	1,580	50	11,000	2,740	56	60	62	75	78	82	90	98		100		SPWCM
Oct. 23	4:50 p.m.	2,050	52	33,400	4,300	55	65	69	79	82	87	92	99		100		SPWCM
Oct. 25	9:30 a.m.	1,530	49	25,700	3,740	44	60	73	79	87	89	94	99		100		SPWCM
Nov. 9	3:50 p.m.	1,140	48	11,700	2,880	58	65	68	74	80	83	91	99		100		SPWCM
Nov. 21	9:40 a.m.	949	34	2,190	2,020	18	19	21	24	30	39	63	92		99		SPWCM
Dec. 16	10:05 a.m.	456	33	1,310	--	--	--	--	--	--	13	40	86		99		S
Jan. 18, 1954	9:50 a.m.	485	34	1,360	718	7	7	8	10	13	17	45	88		99		SPWCM
Feb. 10	9:10 a.m.	645	39	1,190	954	--	11	--	11	17	28	53	93		100		SPWCM
Mar. 8	9:05 a.m.	595	44	1,130	768	--	13	--	14	18	24	45	86		100		SPWCM
Mar. 24	8:30 a.m.	1,260	45	7,110	3,180	--	46	--	62	69	79	90	98		100		SPWCM
Mar. 28	8:35 a.m.	1,090	48	17,000	4,780	--	74	--	87	90	93	96	99		100		SPWCM
Apr. 2	10:45 a.m.	894	52	4,890	4,130	--	59	--	67	72	79	89	98		100		SPWCM
Apr. 13	10:30 a.m.	1,830	60	4,740	3,530	--	25	--	38	49	63	81	97		100		SPWCM
Apr. 21	12:55 p.m.	3,240	53	7,980	3,020	--	20	--	31	46	69	87	97		100		SPWCM
May 3	8:40 a.m.	2,480	58	3,320	4,090	--	24	--	33	41	56	77	96		100		SPWCM
May 12	5:45 p.m.	3,860	68	9,280	4,260	--	40	--	55	67	78	89	97		100		SPWCM
May 14	8:20 a.m.	3,800	66	8,880	3,860	--	40	--	55	62	73	85	96		100		SPWCM
May 22	9:40 a.m.	4,750	66	4,640	3,080	--	19	--	29	40	57	77	93		99		SPWCM
May 24	8:30 a.m.	5,840	63	5,360	3,420	--	19	--	30	40	54	73	89		98	100	SPWCM
June 10	8:10 a.m.	2,040	60	1,120	1,870	--	6	--	11	16	31	60	95		100		SPWCM
June 26	9:10 a.m.	1,310	75	1,360	1,140	--	3	--	5	8	16	35	64		98		SPWCM
June 28	8:15 a.m.	1,820	72	21,900	5,890	--	66	--	88	92	94	97	99		100		SPWCM
July 5	8:10 a.m.	1,050	72	10,400	4,820	--	57	--	71	74	84	95	100		--		SPWCM
July 12	9:15 a.m.	1,610	79	8,630	4,230	--	65	--	85	87	90	94	99		100		SPWCM

Aug. 6, 1954	8:20 a.m.	894	71	3,820	5,600	--	50	--	56	59	64	88	99		100	SPWCM
Aug. 18	10:30 a.m.	1,400	72	5,410	4,120	--	39	--	56	62	66	79	95		100	SPWCM
Aug. 21	6:00 p.m.	1,210	74	13,600	3,900	--	72	--	87	92	94	96	100		--	SPWCM
Aug. 31	11:30 a.m.	490	73	3,330	2,700	--	60	--	70	74	75	81	96		100	SPWCM
Sept. 8	9:00 a.m.	1,040	73	16,700	4,500	--	60	--	84	91	93	96	100		--	SPWCM
Sept. 28	5:30 p.m.	2,560	63	47,900	3,680	--	65	--	84	91	95	97	99		100	SPWCM

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COLORADO RIVER MAIN STEM--Continued

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 1954.
Water temperatures: July 1949 to September 1954.
Sediment records: October 1928 to December 1933, November 1942 to September 1944, October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,350 ppm Oct. 11-20; minimum, 353 ppm May 21-31.
Hardness: Maximum, 662 ppm Sept. 21-30; minimum, 206 ppm May 21-31.
Specific conductance: Maximum observed, 2,040 micromhos Oct. 17, 28; minimum observed, 510 micromhos May 29.
Water temperatures: Maximum observed, 83°F June 24, July 8, 18; minimum observed, 32°F Dec. 24.
Sediment concentrations: Maximum daily, 26,500 ppm July 27; minimum daily, 692 ppm Oct. 8.
Sediment loads: Maximum daily, 1,010,000 tons July 27; minimum daily, 6,050 tons Oct. 8.
EXTREMES, 1928-33, 1942-45, 1947-54.--Dissolved solids (1928-30, 1942-45, 1947-54): Maximum, 1,410 ppm Oct. 11-20, 1928; minimum, 209 ppm June 11-20, 1929.
Hardness (1928-30, 1942-45, 1947-54): Maximum, 720 ppm Oct. 11-20, 1928; minimum, 132 ppm June 11-20, 1944.
Specific conductance (1942-45, 1947-54): Maximum observed, 2,280 micromhos Oct. 15, 1945; minimum observed, 318 micromhos June 9, 1948.
Water temperatures (1949-54): Maximum observed, 84°F Aug. 3, 1952; minimum, freezing point many days during winter months.
Sediment concentrations (1928-33, 1942-44, 1947-54): Maximum daily, 83,300 ppm Aug. 11, 1930; minimum daily, 300 ppm Jan. 8, 1949.
Sediment loads (1928-33, 1942-44, 1947-54): 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 1953 to September 1954 given in WSP 1343. Stage discharge relation affected by ice Dec. 24-26, Dec. 28-Jan. 8.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	3,210	11	0.03	142	64	190	7.7	201	652	133	0.5	4.9	0.24	1,300	1.77	11,270	618	453	40	3.3	1,830	8.0
Oct. 11-20	4,027	11	.00	156	61	194	8.0	208	681	132	.5	6.1	.25	1,350	1.84	14,680	640	470	39	3.3	1,890	7.8
Oct. 21-31	8,118	13	.02	156	52	183	7.9	206	635	118	.5	8.0	.22	1,270	1.73	27,840	603	434	39	3.2	1,780	7.7
Nov. 1-10	6,670	12	.03	144	50	159	7.2	220	590	93	.5	6.5	.19	1,170	1.59	21,070	565	384	38	2.9	1,640	7.6
Nov. 11-20	7,113	12	.02	127	48	155	6.5	224	507	107	.4	5.5	.19	1,080	1.47	20,740	514	331	39	3.0	1,550	7.8
Nov. 21-30	7,084	12	.01	122	49	157	6.2	225	480	112	.4	5.1	.19	1,050	1.43	20,080	506	322	40	3.0	1,540	7.9
Dec. 1-10	6,650	13	.01	118	47	152	6.5	225	474	108	.4	5.4	.22	1,040	1.41	18,670	488	304	40	3.0	1,520	7.9
Dec. 11-20	4,827	14	.01	118	48	158	5.7	240	462	115	.4	5.5	.21	1,040	1.41	13,550	492	296	41	3.1	1,540	7.8
Dec. 21-31	5,190	15	.01	121	51	178	6.5	235	495	141	.4	6.6	.20	1,130	1.54	15,830	512	319	43	3.4	1,670	7.7
Jan. 1-10, 1954	4,240	14	.01	122	50	171	6.3	254	478	134	.4	6.5	.21	1,110	1.51	12,710	510	302	42	3.3	1,640	7.8
Jan. 11-20	5,030	14	.01	121	55	184	6.5	253	489	148	.4	9.4	.24	1,150	1.56	15,620	528	320	43	3.5	1,700	7.8
Jan. 21-31	6,171	13	.02	107	46	154	6.3	234	410	129	.3	5.6	.21	986	1.34	16,430	456	264	42	3.1	1,490	7.6
Feb. 1-10	5,906	13	.01	97	44	144	6.1	215	392	114	.3	5.5	.18	922	1.25	14,700	423	247	42	3.0	1,400	7.7
Feb. 11-20	6,241	14	.01	112	42	156	5.6	226	431	121	.4	4.2	.21	997	1.36	16,800	452	267	42	3.2	1,490	7.6
Feb. 21-28	6,359	12	.01	106	42	146	5.7	229	401	106	.4	3.7	.23	936	1.27	16,070	437	250	42	3.0	1,410	7.5

Mar. 1-10, 1954 ..	5,941	12	.02	105	42	149	6.4	220	406	115	.4	3.4	0.20	947	1.29	15,190	434	254	42	3.1	1,410	7.6
Mar. 11-20	5,861	12	.02	103	39	148	7.0	222	390	121	.5	3.1	.22	933	1.27	14,760	418	236	43	3.1	1,420	7.5
Mar. 21-31	7,273	12	.02	98	36	136	6.2	216	363	104	.4	3.7	.20	865	1.18	16,990	392	216	42	3.0	1,310	7.4
Apr. 1-10.....	6,441	13	.03	98	39	150	5.8	214	394	109	.5	2.8	.19	917	1.25	15,950	405	230	44	3.2	1,380	7.5
Apr. 11-20.....	9,384	11	.05	91	35	128	5.8	203	340	97	.5	3.2	.19	812	1.10	20,570	371	204	42	2.9	1,230	7.6
Apr. 21-30.....	11,720	13	.03	73	23	83	4.9	174	232	55	.5	2.1	.18	573	.78	18,130	276	134	39	2.2	883	7.7
May 1-10	13,820	14	.22	67	22	66	5.5	184	187	36	.3	1.7	.18	490	.67	18,280	258	106	35	1.8	780	7.7
May 11-20	17,700	14	.08	65	20	62	4.7	167	178	38	.4	2.0	22	466	.63	22,270	244	107	35	1.7	731	7.6
May 21-31	29,860	11	.08	56	16	38	4.5	162	121	24	.4	2.3	.17	353	.48	28,460	206	73	28	1.2	563	7.7
June 1-10.....	19,140	14	.07	61	15	40	3.7	172	127	25	.3	1.3	.10	372	.51	19,220	214	72	29	1.2	593	7.6
June 11-20.....	11,040	14	.11	73	21	63	4.3	174	199	44	.3	1.0	.12	506	.69	15,080	268	126	33	1.7	780	7.6
June 21-30.....	9,750	12	.02	78	25	79	4.5	173	244	60	.3	1.7	.13	590	.80	15,530	298	156	36	2.0	910	7.5
July 1-10	12,027	14	.01	85	23	74	4.8	186	240	49	.3	3.1	.14	584	.79	18,960	306	154	34	1.8	898	7.6
July 11-20	12,030	14	.02	79	21	70	4.4	179	219	48	.3	3.3	.12	547	.74	13,650	284	137	34	1.8	843	7.7
July 21-31	10,340	17	.05	113	25	105	5.8	231	337	59	.4	3.4	.17	780	1.06	21,770	385	196	37	2.3	1,150	7.4
Aug. 1-10.....	6,414	18	.00	104	28	97	5.2	210	326	61	.4	6.0	.16	750	1.02	12,990	374	202	36	2.3	1,110	7.5
Aug. 11-20.....	4,523	15	.01	118	33	117	6.6	210	394	77	.4	5.1	.16	869	1.18	10,610	430	258	37	2.5	1,270	7.4
Aug. 21-31.....	4,772	15	.01	135	39	145	7.6	216	481	96	.4	5.3	.17	1,030	1.40	13,270	498	320	38	2.8	1,480	7.5
Sept. 1-10	3,283	14	.01	130	49	149	7.2	202	509	103	.4	6.4	.19	1,070	1.46	9,480	526	360	38	2.8	1,520	7.5
Sept. 11-20	8,466	14	.05	175	52	160	8.7	257	618	97	5	4.6	.19	1,260	1.71	28,800	650	440	34	2.7	1,720	7.5
Sept. 21-30	7,853	16	.06	193	44	144	8.8	248	639	76	.5	5.7	.18	1,250	1.70	26,500	662	460	32	2.4	1,690	7.6
Weighted average.	8,427	13	0.05	98	33	109	5.7	201	337	75	0.4	3.7	0.18	774	1.05	17,630	380	216	38	2.4	1,150	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 8 a.m. and 6 p.m./

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	3,180	981	8,420	6,810	6,650	122,000	6,440	1,970	34,300
2.....	3,180	993	8,530	6,470	6,800	119,000	6,840	2,250	41,600
3.....	3,200	797	6,890	6,600	5,920	105,000	6,740	2,160	39,300
4.....	3,220	755	6,560	6,740	4,380	79,700	6,700	2,040	36,900
5.....	3,220	739	6,420	6,670	3,170	57,100	6,700	1,970	35,600
6.....	3,200	760	a 6,600	6,410	2,800	a 48,000	6,700	1,900	a 34,000
7.....	3,240	777	6,800	6,540	2,700	a 48,000	6,670	1,860	33,500
8.....	3,240	692	6,050	7,150	3,800	73,400	6,600	1,940	34,600
9.....	3,200	954	8,240	6,570	3,410	60,500	6,670	1,900	a 34,000
10.....	3,220	750	6,520	6,740	3,100	56,400	6,440	1,700	29,600
11.....	3,220	830	a 7,200	7,280	3,070	60,300	5,960	1,460	23,500
12.....	3,360	1,220	11,100	7,180	3,350	64,900	5,660	1,170	17,900
13.....	3,620	1,630	15,900	6,870	3,000	a 56,000	5,260	1,150	16,300
14.....	3,940	1,710	18,200	6,670	2,460	44,300	4,820	1,130	14,700
15.....	4,130	1,700	a 19,000	6,500	2,330	40,900	4,220	1,010	11,500
16.....	4,170	2,740	30,800	6,340	2,360	40,400	4,420	1,130	13,500
17.....	4,420	6,530	77,900	6,340	2,300	a 39,000	4,460	1,070	12,900
18.....	4,460	5,250	63,200	7,350	2,600	a 52,000	4,490	1,180	14,300
19.....	4,490	3,750	45,500	8,430	3,300	75,100	4,490	1,530	18,500
20.....	4,460	3,200	38,500	8,170	4,150	91,500	4,490	1,550	18,800
21.....	4,270	3,100	a 36,000	7,380	3,610	71,900	4,490	1,460	17,700
22.....	5,460	4,300	63,400	7,660	2,920	60,400	4,890	1,600	a 21,000
23.....	7,810	8,700	183,000	7,810	2,520	53,100	5,550	2,200	33,000
24.....	9,240	9,800	244,000	7,700	2,390	49,700	6,120	2,180	36,000
25.....	9,800	11,800	312,000	7,660	2,630	54,400	6,020	1,800	29,300
26.....	9,360	14,800	374,000	7,280	2,900	57,000	5,720	1,510	23,300
27.....	9,600	10,700	277,000	6,840	2,400	44,300	5,260	1,380	19,600
28.....	10,400	9,600	270,000	6,340	2,080	35,600	5,070	1,400	19,200
29.....	8,580	7,750	180,000	6,150	1,950	32,400	4,790	1,590	20,600
30.....	7,630	7,450	153,000	6,020	1,870	30,400	4,640	1,460	18,300
31.....	7,150	6,800	131,000	--	--	--	4,540	1,170	14,300
Total.	161,670	--	2,621,730	208,670	--	1,822,700	171,860	--	767,600

Day	January			February			March		
1.....	4,460	1,380	16,600	6,670	2,240	40,900	6,050	1,520	24,800
2.....	4,440	1,470	17,600	6,410	1,780	30,800	5,960	1,680	27,000
3.....	4,150	1,320	14,800	6,410	2,220	38,400	6,050	1,520	24,800
4.....	3,990	1,260	13,600	6,120	1,830	30,200	6,310	1,530	26,100
5.....	4,150	1,310	14,700	5,900	1,800	a 29,000	6,310	1,590	27,100
6.....	4,250	1,510	17,300	5,810	1,910	30,000	6,240	1,410	23,800
7.....	4,220	1,690	19,300	5,600	1,800	27,200	5,990	1,340	21,700
8.....	4,150	1,330	14,900	5,400	1,680	24,500	5,720	1,440	22,200
9.....	4,170	1,320	14,900	5,210	1,520	21,400	5,490	1,350	20,000
10.....	4,420	1,590	19,000	5,430	1,400	20,500	5,290	1,390	19,900
11.....	4,740	1,670	21,400	5,630	1,500	22,800	5,350	1,950	28,200
12.....	4,790	1,650	21,300	5,840	1,630	25,700	5,490	1,860	27,600
13.....	4,720	1,580	20,100	5,900	1,560	24,900	5,630	1,860	28,300
14.....	4,760	1,510	19,400	5,960	1,700	a 27,000	5,780	1,660	25,900
15.....	5,100	1,500	a 21,000	6,120	1,810	29,900	5,660	1,350	20,600
16.....	5,230	1,600	22,600	6,310	1,900	a 32,000	5,900	1,340	21,300
17.....	5,260	1,650	23,400	6,600	1,770	31,500	6,410	1,650	28,600
18.....	5,210	1,750	24,600	6,670	1,700	a 31,000	6,440	1,720	29,900
19.....	5,260	1,840	26,100	6,570	1,800	31,900	6,080	1,470	24,100
20.....	5,230	1,690	23,900	6,810	1,900	34,900	5,870	1,500	23,800
21.....	5,370	1,740	25,200	6,600	1,900	a 34,000	5,870	1,760	27,900
22.....	5,630	1,700	25,800	6,150	1,800	29,900	5,750	1,800	27,900
23.....	5,660	1,670	25,500	6,240	1,700	28,600	6,050	1,730	28,300
24.....	5,810	1,850	29,000	6,640	1,860	33,300	7,560	2,450	50,000
25.....	5,900	1,940	30,900	6,670	1,870	33,700	8,060	2,550	55,500
26.....	6,120	2,200	36,400	6,310	1,620	27,600	8,170	2,650	58,500
27.....	6,440	2,200	38,300	6,050	1,620	26,500	8,320	3,120	70,100
28.....	6,670	2,130	38,400	6,210	1,600	26,800	8,430	3,900	a 89,000
29.....	6,700	2,130	38,500	--	--	--	7,600	3,800	78,000
30.....	6,740	1,960	35,700	--	--	--	7,210	3,730	72,600
31.....	6,840	2,050	37,900	--	--	--	6,980	3,430	64,600
Total.	160,580	--	748,100	172,340	--	824,900	198,020	--	1,118,100

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	6,810	3,220	59,200	14,100	3,730	142,000	26,000	4,350	305,000
2.....	6,770	2,600	47,500	15,700	3,980	169,000	24,500	4,080	270,000
3.....	6,570	2,460	43,600	14,600	3,760	148,000	22,400	3,510	212,000
4.....	6,640	1,990	35,700	14,400	3,740	145,000	20,100	3,020	164,000
5.....	6,540	1,810	32,000	14,400	3,300	a130,000	18,900	3,050	156,000
6.....	6,340	1,700	a29,000	13,900	2,280	85,600	17,700	2,650	127,000
7.....	6,150	1,600	a27,000	13,600	2,750	101,000	16,800	2,360	107,000
8.....	5,870	1,490	23,600	13,100	2,630	93,000	15,700	2,440	103,000
9.....	6,120	1,460	24,100	12,400	2,330	78,000	14,900	2,060	82,900
10.....	6,600	1,720	30,700	12,000	2,260	73,200	14,400	2,030	78,900
11.....	7,150	2,050	39,600	12,000	2,300	74,500	14,100	1,900	72,300
12.....	8,240	2,510	55,800	12,200	2,500	82,400	13,600	1,790	65,700
13.....	8,850	2,070	49,500	13,900	2,890	108,000	12,400	1,700	a57,000
14.....	9,680	2,680	70,000	16,500	3,230	144,000	11,500	1,520	47,200
15.....	9,520	3,000	77,100	18,900	4,000	a200,000	10,200	1,500	a41,000
16.....	9,320	2,640	66,400	19,800	4,350	233,000	9,930	1,540	41,300
17.....	10,600	3,150	90,200	19,800	4,400	235,000	9,680	1,450	37,900
18.....	10,600	3,100	a89,000	20,400	4,690	258,000	9,850	1,380	36,700
19.....	10,000	2,700	a73,000	21,100	4,660	265,000	9,640	1,330	34,600
20.....	9,880	2,850	76,000	22,400	4,680	283,000	9,480	1,270	32,500
21.....	9,880	2,940	78,400	23,100	4,850	302,000	9,240	1,350	33,700
22.....	10,200	2,920	80,400	24,900	4,800	323,000	9,400	1,340	34,000
23.....	10,600	3,220	92,200	27,200	4,900	360,000	9,680	1,330	34,800
24.....	11,100	3,460	104,000	30,000	5,110	414,000	9,890	1,330	35,500
25.....	12,400	3,150	105,000	32,900	5,470	486,000	9,970	1,220	32,800
26.....	12,200	2,900	95,500	33,800	5,780	527,000	10,600	3,000	a86,000
27.....	12,200	2,780	91,600	32,900	5,810	516,000	9,680	3,350	87,600
28.....	12,400	2,820	94,400	32,100	6,340	549,000	9,760	1,670	44,000
29.....	13,100	3,080	109,000	31,600	3,750	320,000	9,560	1,720	44,400
30.....	13,100	3,340	118,000	30,800	4,130	343,000	9,720	1,600	42,000
31.....	--	--	--	29,200	4,590	362,000	--	--	--
Total.	275,430	--	2,007,500	643,700	--	7,549,700	399,280	--	2,546,800
	July			August			September		
1.....	9,360	1,750	44,200	9,080	7,300	179,000	3,490	3,070	28,900
2.....	9,560	2,750	71,000	8,470	5,200	119,000	3,360	1,750	15,900
3.....	9,850	2,380	63,300	7,660	3,400	70,300	3,220	1,250	10,900
4.....	10,600	2,020	57,800	7,010	2,800	a53,000	3,140	1,150	9,750
5.....	11,800	2,600	82,800	6,410	2,200	a38,000	3,060	1,350	11,200
6.....	12,200	4,200	138,000	5,960	1,900	30,600	2,950	1,000	a8,000
7.....	14,900	4,510	181,000	5,490	1,800	26,700	2,950	850	a6,800
8.....	15,400	4,500	187,000	5,070	1,850	25,300	3,020	800	6,520
9.....	13,900	3,870	145,000	4,720	2,450	31,200	3,220	1,600	13,900
10.....	12,700	3,460	119,000	4,270	2,650	30,600	4,420	1,700	20,300
11	12,000	3,270	106,000	4,060	2,100	23,000	5,780	5,100	79,600
12.....	11,100	2,850	85,400	4,130	1,700	19,000	6,410	5,500	95,200
13.....	10,600	2,260	64,700	4,490	2,300	27,900	8,890	15,500	372,000
14.....	10,000	2,630	71,000	4,820	3,900	50,800	9,200	14,600	363,000
15.....	9,360	2,680	67,700	4,010	3,950	42,800	7,660	13,200	273,000
16.....	8,580	2,730	63,200	3,790	3,150	32,200	9,530	10,900	s285,000
17.....	8,020	2,600	a56,000	3,940	3,200	34,000	12,400	17,500	586,000
18.....	7,770	2,420	50,800	4,370	4,500	53,100	9,800	22,000	582,000
19.....	7,810	2,150	45,300	5,750	3,550	55,100	7,950	17,800	382,000
20.....	7,180	2,300	44,600	5,870	3,400	53,900	7,040	18,000	a340,000
21.....	7,080	2,040	39,000	6,370	4,300	a74,000	6,150	20,700	344,000
22.....	6,770	2,000	36,600	6,020	5,300	86,100	5,930	15,500	248,000
23.....	7,040	1,560	29,700	5,350	4,000	57,800	5,600	11,500	174,000
24.....	8,130	2,050	45,000	4,840	6,800	88,900	5,460	10,200	150,000
25.....	11,100	3,020	s94,900	5,230	6,000	84,700	5,930	7,900	126,000
26.....	17,400	16,400	770,000	4,860	6,000	78,700	6,240	11,200	189,000
27.....	14,100	26,500	1,010,000	4,390	5,850	69,300	9,290	13,800	s360,000
28.....	11,300	21,700	662,000	4,150	7,300	81,800	14,600	22,200	875,000
29.....	10,900	14,300	421,000	3,920	5,850	61,900	10,900	23,000	677,000
30.....	10,200	15,700	432,000	3,720	3,700	37,200	8,430	23,300	530,000
31.....	9,680	12,200	319,000	3,640	3,350	32,900	--	--	--
Total.	326,390	--	5,603,000	161,860	--	1,748,800	196,020	--	7,162,970

Total discharge for year (cfs-days)..... 3,075,820

Total load for year (tons)..... 34,521,900

s Computed by subdividing day.

a Computed from estimated concentration graph.

COLORADO RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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
Oct. 3, 1953	11:30 a.m.	3,200	65	745	3,650		22		36		57	91	99		100		VPWCM
Oct. 18	12:25 p.m.	4,460	62	5,180	4,420		62		83		88	99	100		--		VPWCM
Oct. 23	2:30 p.m.	7,700	54	8,900	3,970		50		71		85	97	100		--		VPWCM
Oct. 26	11:50 a.m.	9,160	53	16,300	3,980		59		80		90	97	100		--		VPWCM
Oct. 30	12:15 p.m.	7,520	51	7,340	3,850		56		79		88	97	100		--		VPWCM
Nov. 19	4:05 p.m.	8,510	45	2,900	4,150		27		41		64	91	100		--		VPWCM
Dec. 20	3:35 p.m.	4,540	38	1,640	3,380		15		25		45	86	100		--		VPWCM
Feb. 12, 1954	1:55 p.m.	5,900	45	1,690	3,520		15		23		46	85	100		--		VPWCM
Mar. 18	2:15 p.m.	6,440	47	1,780	3,410		14		23		46	87	100		--		VPWCM
Mar. 25	3:00 p.m.	8,240	50	2,610	4,160		26		39		68	90	100		--		VPWCM
Mar. 31	3:30 p.m.	7,010	54	3,350	5,050		51		67		80	95	100		--		VPWCM
Apr. 22	3:50 p.m.	10,400	68	3,010	4,480		30		44		67	87	98		100		VPWCM
June 11	10:30 a.m.	14,100	67	1,600	4,840		17		31		59	86	99		100		VPWCM
June 27	9:35 a.m.	9,720	77	3,450	3,500		41		55		81	95	99		100		VPWCM
June 30	10:00 a.m.	9,720	78	1,550	4,970		21		34		63	91	99		100		VPWCM
July 5	6:15 p.m.	12,000	83	2,990	5,090		38		47		68	88	99		100		VPWCM
July 8	9:15 a.m.	15,700	80	4,460	3,660		45		60		80	95	100		--		VPWCM
July 26	1:30 p.m.	18,900	80	18,600	4,760		63		85		94	98	100		--		VPWCM
July 28	9:30 a.m.	11,300	81	26,500	3,460		73		90		96	99	100		--		VPWCM
July 30	9:30 a.m.	10,400	81	17,500	4,150		72		91		96	99	100		--		VPWCM
Aug. 22	11:00 a.m.	5,990	74	5,120	4,420		65		86		93	98	100		--		VPWCM
Sept. 13	3:30 p.m.	8,890	73	16,300	3,980		60		82		95	98	100		--		VPWCM
Sept. 15	10:30 a.m.	7,810	72	13,100	3,500		71		89		95	98	100		--		VPWCM
Sept. 17	10:15 a.m.	12,900	71	16,200	3,570		58		80		92	98	100		--		VPWCM
Sept. 18	10:15 a.m.	10,000	68	21,900	4,990		70		91		96	99	100		--		VPWCM
Sept. 28	9:45 a.m.	16,000	66	20,700	4,900		52		76		92	97	100		--		VPWCM
Sept. 30	10:30 a.m.	8,240	65	22,600	4,700		69		90		97	99	100		--		VPWCM

PARIA RIVER BASIN

PARIA RIVER AT LEES FERRY, ARIZ.

LOCATION.--At gaging station half a mile upstream from mouth and one mile northwest of Lees Ferry, Coconino County.
DRAINAGE AREA.--1,570 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to February 1950.
Sediment records: October 1947 to September 1954.
EXTREMES, 1953-54.--Sediment concentrations: Maximum daily, 272,000 ppm July 25; minimum daily, 3 ppm July 14-15.
Sediment loads: Maximum daily, 999,000 tons July 25; minimum daily, less than 0.05 ton July 14-16.
EXTREMES, 1947-54.--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 Aug. 5, 1948; minimum daily, less than 0.05 ton on many days.
REMARKS.--Maximum observed sediment concentration during year, 514,000 ppm July 25.
Records of discharge for water year October 1953 to September 1954 given in WSP 1343.
Stage discharge relation affected by ice Dec. 12-15, Dec. 23 to Jan. 12, Jan. 14-17.

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	5.3	37	0.5	14	50	1.9	22	320	19
2.....	5.7	34	.5	13	26	.9	21	510	29
3.....	5.3	36	a.5	13	20	a .7	16	480	21
4.....	5.7	38	.6	12	12	.4	18	375	18
5.....	5.7	30	a.5	14	35	1.3	20	410	22
6.....	5.7	20	a.3	15	70	a2.8	11	470	14
7.....	6.4	14	.2	18	150	a7.3	8.6	300	7.0
8.....	6.4	28	.5	15	210	8.5	8.8	220	5.2
9.....	6.4	24	.4	13	135	4.7	13	225	7.9
10.....	6.8	20	.4	13	65	2.3	9.9	305	8.2
11.....	7.2	22	.4	13	38	1.3	9.6	385	10
12.....	7.2	28	.5	15	32	1.3	9.5	385	9.9
13.....	8.7	57	1.3	15	44	1.8	12	425	14
14.....	11	66	2.0	14	36	1.4	16	310	13
15.....	9.1	55	a1.4	14	42	1.6	19	588	s38
16.....	7.2	30	.6	14	39	1.5	25	704	s51
17.....	7.2	19	.4	15	70	a2.8	27	838	s63
18.....	6.4	18	.3	.143	61,900	s50,900	28	704	s54
19.....	5.7	8	.1	52	23,200	s 3,530	25	979	s73
20.....	6.1	21	.3	22	8,000	475	23	1,080	67
21.....	6.4	16	.3	19	12,000	616	22	760	45
22.....	14	108	4.1	20	5,000	270	16	580	a25
23.....	18	80	3.9	20	1,610	87	7.3	465	9.2
24.....	20	664	36	21	1,490	84	7.1	210	4.0
25.....	17	1,450	67	23	1,270	79	8.8	150	a3.6
26.....	14	620	23	22	894	53	8.0	171	s4.0
27.....	13	1,920	67	22	413	25	9.4	171	s4.9
28.....	11	1,450	43	22	1,150	68	11	217	s8.6
29.....	13	220	7.7	23	2,030	126	13	171	6.0
30.....	13	111	3.9	21	550	31	14	433	s19
31.....	14	85	3.2	--	--	--	9.8	142	s3.1
Total.	288.6	--	270.8	670	--	56,386.5	468.8	--	676.6

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 1953 to September 1954--Continued

Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	9.8	110	2.9	39	3,550	374	16	2,800	121
2.....	14	245	9.3	29	3,250	254	16	1,260	54
3.....	13	210	7.4	22	6,200	368	13	1,120	39
4.....	11	195	5.8	23	5,600	348	12	700	23
5.....	12	260	8.4	25	3,600	a 240	8.6	280	6.5
6.....	16	390	17	22	2,050	122	8.2	130	2.9
7.....	15	410	17	20	1,180	64	10	200	5.4
8.....	17	550	25	18	1,000	49	10	275	7.4
9.....	16	500	a 22	17	940	43	9.9	350	9.4
10.....	16	440	19	16	940	41	10	150	4.0
11.....	15	210	8.5	16	750	32	14	180	6.8
12.....	16	100	4.3	15	550	22	14	280	11
13.....	15	55	2.2	14	500	19	12	550	18
14.....	17	110	5.0	18	929	s 59	12	1,520	49
15.....	17	200	a 9.2	62	8,000	1,340	14	1,400	a 50
16.....	16	210	9.1	37	5,000	a 500	13	1,120	39
17.....	16	185	8.0	30	3,200	259	12	770	25
18.....	22	235	14	26	2,750	193	14	570	22
19.....	28	570	43	26	7,500	526	14	375	14
20.....	30	575	47	19	2,600	133	14	250	9.4
21.....	30	340	28	20	1,400	a 80	11	185	5.5
22.....	28	450	34	20	1,300	a 70	14	220	8.3
23.....	26	1,340	94	17	740	34	95	12,100	s 4,530
24.....	24	710	46	16	450	19	180	40,800	s 17,100
25.....	28	600	45	17	510	23	59	24,000	3,820
26.....	155	26,500	s 11,700	17	1,320	61	74	11,000	2,200
27.....	47	10,500	s 1,420	17	1,200	55	50	6,500	878
28.....	31	4,000	a 330	17	1,700	78	40	7,000	756
29.....	32	1,900	164	--	--	--	35	25,000	2,360
30.....	34	950	87	--	--	--	30	34,400	2,890
31.....	37	730	73	--	--	--	30	19,500	1,580
Total.	803.8	--	14,305.1	635	--	5,406	864.7	--	36,644.6

Day	April			May			June		
1.....	26	10,200	716	5.3	61	0.9	3.6	353	3.4
2.....	20	2,800	151	21	1,940	s 131	3.6	186	1.8
3.....	18	1,850	90	14	1,300	49	3.4	184	1.7
4.....	19	1,200	62	12	850	28	3.8	143	1.5
5.....	18	1,200	58	9.0	700	a 17	3.6	198	1.9
6.....	18	1,800	a 90	6.0	800	13	3.2	124	1.1
7.....	18	5,000	a 240	5.0	2,280	31	3.4	75	.7
8.....	19	7,800	400	4.3	750	8.7	3.6	85	.8
9.....	17	5,700	262	4.3	144	1.7	3.6	99	1.0
10.....	16	4,700	203	4.3	113	1.3	3.8	93	1.0
11.....	14	5,750	217	4.3	98	1.1	3.8	54	.6
12.....	14	2,300	87	3.6	34	.3	3.6	44	.4
13.....	13	1,160	41	3.8	46	.5	3.8	43	.4
14.....	9.0	1,200	29	3.8	52	.5	4.3	70	.8
15.....	8.6	1,050	24	4.3	30	a .3	4.1	60	a .7
16.....	7.9	920	20	4.3	14	.2	3.8	47	.5
17.....	8.2	870	19	4.1	36	.4	3.2	47	.4
18.....	8.2	800	a 18	4.3	23	.3	3.6	76	.7
19.....	6.0	750	a 12	4.1	27	.3	3.6	91	.9
20.....	5.6	707	11	3.8	25	.3	3.4	31	.3
21.....	5.0	266	3.6	4.3	53	.6	2.7	19	.1
22.....	4.8	116	1.5	7.9	1,700	36	3.2	19	.2
23.....	4.3	105	1.2	24	15,900	s 1,870	3.4	11	.1
24.....	4.1	46	.5	25	21,000	1,420	2.9	12	.1
25.....	3.8	77	.8	13	30,200	1,060	3.4	23	.2
26.....	3.8	48	.5	9.5	28,000	718	94	51,600	s 34,400
27.....	3.8	19	.2	6.0	21,600	350	50	33,800	s 5,910
28.....	3.6	26	.3	4.3	12,000	139	20	62,000	s 3,460
29.....	3.4	32	.3	3.8	4,200	43	8.2	52,500	1,210
30.....	4.5	47	.6	3.6	800	7.8	5.0	25,500	344
31.....	--	--	--	3.6	255	2.5	--	--	--
Total.	324.6	--	2,759.5	230.6	--	5,932.7	265.6	--	45,345.3

s Computed by subdividing day.
a Computed from estimated concentration graph.

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954--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	3.8	4,000	41	2.5	188	1.3	3.4		
2	4.1	395	4.4	3.0	139	1.1	3.4	35	0.3
3	3.8	600	6.2	59	18,500	s7,760	3.9		
4	60	14,700	s7,300	5.3	8,300	119	23	49,900	s10,300
5	20	11,200	s789	5.3	900	a13	41	165,000	20,300
6	8.2	3,300	73	4.4	160	1.9	17	130,000	6,410
7	4.8	1,000	13	4.4	67	.8	13	57,000	a2,100
8	4.3	592	6.9	3.4			6.7	23,000	416
9	3.6	339	3.3	3.0	26	.2	5.3	11,500	165
10	3.4	125	1.1	3.9			4.4	2,800	33
11	3.4	52	.5	4.8	90	1.2	5.8	3,000	47
12	3.4	35	.3	8.2	410	9.1	1,070	126,000	s714,000
13	3.4	6	.1	6.7	650	12	559	103,000	s212,000
14	2.9	3	(t)	5.8	4,540	71	56	67,000	10,500
15	3.2	3	(t)	4.8	9,240	120	24	55,000	3,700
16	3.2	4	(t)	3.9	3,850	41	15	31,000	1,260
17	3.6	10	a.1	3.4	720	6.6	12	7,500	243
18	3.4	15	.1	3.4	300	2.8	10	2,400	65
19	6.9	109	2.0	3.4	140	1.3	8.1	611	13
20	24	39,400	s5,110	3.4	93	.9	7.6	200	a4.1
21	20	125,000	7,250	3.4	70	a.6	7.6	63	1.3
22	9.5	64,000	1,700	3.4	53	.5	7.1	55	1.1
23	6.3	40,000	706	3.9			9.0		
24	9.8	32,500	s1,280	3.9	59	.6	8.1	166	3.8
25	568	272,000	s999,000	3.9			8.1		
26	148	90,500	s 65,800	3.4	51	.5	10	1,000	27
27	40	60,000	6,720	3.4	51	a.5	22	4,800	285
28	16	44,000	1,970	3.4	52	.5	157	61,600	s36,600
29	6.7	22,000	398	3.4	40	.4	35	61,000	s6,220
30	5.3	3,500	50	3.4	97	.9	15	25,500	1,030
31	3.9	284	3.0	3.4	43	.4	--	--	--
Total	1,006.9	--	1,098,228.1	180.9	--	8,169.7	2,167.5	--	1,025,732.8

Total discharge for years (tons) 7,907.0
Total load for year (tons) 2,299,857.7

s Computed by subdividing day.
t Less than 0.05 ton.
a Computed from estimated concentration graph.

PARIA RIVER AT LEES FERRY, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
July 21, 1954	10:45 a.m.	18		125,000	3,770		70		99		100	--	--				SPWCM
July 25	2:45 p.m.	192		215,000	4,300		37		57		84	95	100				SPWCM
Sept. 5	7:00 p.m.	27		162,000	5,060		72		97		100	--	--				SPWCM
Sept. 14	9:45 a.m.	54	74	64,900	4,290		79		98		100	--	--				SPWCM
Sept. 28	12:00 m.	194		64,700	4,200		51		74		94	98	100				VPWCM

LITTLE COLORADO RIVER BASIN

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.

LOCATION.--At gaging station on county bridge in Woodruff, Navajo County, 3¾ miles downstream from Silver Creek.
DRAINAGE AREA.--8,100 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: June 1950 to September 1954.
Water temperatures: June 1950 to September 1954.
Sediment records: June 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 983 ppm Aug 25 to Sept. 1; minimum, 129 ppm Mar. 29 to Apr. 2.
Hardness: Maximum, 316 ppm Aug. 25 to Sept, 1; minimum, 87 ppm Mar. 29 to Apr. 2.
Specific conductance: Maximum observed, 1,650 micromhos Aug. 25; minimum observed, 188 micromhos Mar. 31.
Water temperatures: Maximum observed, 88°F July 15; minimum, 32°F Dec. 22, 26, 27, 29, 30.
Sediment concentrations: Maximum daily, 46,000 ppm July 25; minimum, no flow on many days.
Sediment loads: Maximum daily, 219,000 tons July 24; minimum, 0 tons on many days.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 1,350 ppm June 15, 1953; minimum, 129 ppm Mar. 29 to Apr. 2, 1954.
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, 32°F Dec. 22, 26, 27, 29, 30, 1953.
Sediment concentrations: Maximum daily, 66,400 ppm Aug. 4, 1951; minimum, no flow on many days.
Sediment loads: Maximum daily, 409,000 tons Aug. 28, 1951; minimum, 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 1953 to September 1954 given in WSP 1343. No flow May 27 to June 11, June 14 to July 1. Stage discharge relation affected by ice Dec. 3-15, Dec. 24 to Jan. 6, Jan. 11, 12.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	1.18	19		41	22	28		195	0	62	21		0.3		289	0.39	0.92	193	33	24	0.9	475	7.6
Oct. 11-20	1.32	19		40	23	24		192	0	58	20		.4		278	.38	.99	194	37	21	.7	462	7.7
Oct. 21-31	1.56	18		44	22	24		193	0	62	22		.3		287	.39	1.21	200	42	21	.7	480	7.8
Nov. 1-10	3.60	17		46	22	25		201	0	64	21		.2		294	.40	2.86	206	41	21	.8	486	7.7
Nov. 11-20	3.62	20		46	21	26		195	0	65	21		.2		295	.40	2.88	202	42	22	.8	482	7.7
Nov. 21-30	5.75	30		59	25	35		200	0	60	19		.2		326	.44	5.06	178	14	30	1.1	469	7.8
Dec. 1-10	5.19	28		44	22	34		227	0	59	20		.1		319	.43	4.47	200	14	27	1.1	509	8.1
Dec. 11-20	8.14	24		48	25	32		252	6	49	17		.1		325	.44	7.14	223	6	23	.9	530	8.3
Dec. 21-31	6.75	23		46	24	29		242	0	51	17		.1		309	.42	5.63	214	15	23	.8	510	8.0
Jan. 1-10, 1954	8.42	30		42	26	29		234	6	48	16		.0		312	.42	7.09	212	10	23	.9	500	8.3
Jan. 11-20	6.99	22		41	26	27		239	0	47	16		.1		297	.40	5.61	210	14	22	.8	488	8.2
Jan. 21-31	9.15	20		37	27	27		238	0	44	15		.1		287	.39	7.09	204	8	22	.8	477	8.2
Feb. 1-10	7.94	41		33	25	32		224	0	47	16		.1		304	.41	6.52	186	2	27	1.0	472	--
Feb. 11-20	7.60	21		37	27	30		235	0	49	18		.1		298	.41	6.11	204	11	24	.9	492	8.2
Feb. 21-28	5.59	20		38	25	32		211	7	55	18		.1		299	.41	4.51	198	14	26	1.0	494	8.4

Mar. 1-10, 1954.....	3.77	31		40	23	33	194	0	72	23		.0		317	.43	3.23	194	36	27	1.0	498	8.1
Mar. 11-20.....	2.46	38		44	20	33	203	0	65	21		.2		321	.44	2.13	192	26	27	1.0	497	7.4
Mar. 23-13, 26-28...	14.5	23		25	9.8	38	195	0	47	18		.5		257	.35	10.1	153	0	35	1.3	449	7.9
Mar. 29 - Apr. 2....	46.4	15		29	3.5	9.4	101	0	17	4.5		.7		129	.18	16.2	87	4	19	.4	213	7.5
Apr. 3-10.....	2.18	22		40	9.5	23	149	0	45	14		.2		227	.31	1.34	139	17	26	.8	368	7.7
Apr. 11-20.....	.79	18		50	13	31	194	0	56	19		.8		283	.38	.60	178	20	27	1.0	468	7.9
Apr. 21-30.....	.24	22		44	17	36	199	0	65	20		.4		302	.41	.20	180	17	31	1.2	496	8.0
May 1-10.....	1.83	15		44	19	33	214	0	55	19		.4		290	.39	1.43	188	12	28	1.1	485	8.0
May 11-20.....	1.02	12		40	19	30	197	0	53	19		.2		270	.37	.74	178	16	27	1.0	474	8.0
May 21-28.....	a.12	13		37	19	32 --	168	0	62	24		.7		271	.37	.09	170	33	29	1.1	482	7.7
July 2-11	3.68	17		37	13	20	153	0	46	11		.5		220	.30	21.9	146	20	23	.7	355	7.8
July 12-20	15.6	15		39	9.1	38	133	0	93	7.5		.6		267	.36	11.2	135	26	38	1.4	418	7.8
July 21-25	852	15		46	8.0	55	165	0	109	13		.1		327	.44	752	148	13	45	2.0	508	7.9
July 26-31	138	24		50	13	185	167	0	288	101		.6		744	1.01	277	178	42	69	6.0	1,150	8.1
Aug. 1-10.....	81.2	17		42	9.9	63	180	0	89	29		.9		340	.46	75	146	0	48	2.3	547	7.8
Aug. 11-16, 18-20...	30.0	22		46	14	53	205	0	81	25		.2		342	.47	27.7	172	4	40	1.8	542	7.9
Aug. 17.....	13	22		59	18	148	240	0	214	86		1.0		666	.91	23.4	221	24	59	4.3	1,040	7.8
Aug. 21-24.....	23.5	15		31	4.7	47	114	6	50	30		1.8		242	.33	15.4	97	0	51	2.1	394	8.3
Aug. 25 - Sept. 1....	30.2	17		87	24	209	140	0	429	147		.7		983	1.34	80.2	316	201	59	5.1	1,490	7.7
Sept. 2-3	798	13		57	11	17	143	0	88	11		.4		267	.36	575	187	70	17	.5	429	7.9
Sept. 4-10	126	13		39	6.7	12	124	0	40	5.8		.4		178	.24	60.6	125	24	17	.5	286	8.0
Sept. 11-20	27.8	20		41	13	47	201	0	63	20		.4		303	.41	22.7	156	0	40	1.6	485	8.1
Sept. 21-30	102	18		21	9.1	83	205	0	57	31		.3		320	.44	88.1	90	0	67	3.8	521	8.1
Weighted average...	b36.8	17		44	11	57	168	0	103	23		0.3		339	0.46	30.6	155	18	44	2.0	535	--

a Flow less than 0.05 cubic feet per second May 27-31, June 1-11, 14-30, July 1.
b Represents 95 percent of total flow for water year occuring on 328 days.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 11 a.m. and 6 p.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	55	a 40	33	50	47	b 59	60		--	b 78	81
2	70	a 48	a 38	35	48	44	60	b 62		--	--	66
3	69	a 49	a 34	35	47	48	63	69		68	75	70
4	64	a 47	a 35	36	45	50	63	69		75	72	73
5	63	a 50	a 33	35	48	49	68	77		80	a 68	62
6	67	a 47	35	34	47	50	63	68		81	74	b 69
7	72	a 43	35	35	47	51	68	69		85	75	70
8	68	50	33	38	47	51	64	68		84	76	68
9	68	a 39	34	35	48	55	65	67		b 74	75	75
10	68	a 40	35	38	51	50	64	65		74	73	70
11	61	a 41	33	37	51	42	b 60	73		b 74	80	b 70
12	61	a 40	34	37	51	43	65	78		75	70	b 70
13	64	a 45	36	36	51	44	65	76		80	79	72
14	66	a 46	36	34	47	48	69	b 72		80	78	76
15	a 53	a 42	34	40	47	46	70	70		88	b 79	70
16	60	a 43	35	39	45	51	72	68		76	77	72
17	b 61	a 45	37	38	50	42	75	68		b 75	b 80	72
18	62	a 40	38	40	45	47	74	70		b 76	78	b 73
19	59	a 35	40	40	42	46	68	73		78	76	b 71
20	52	a 35	41	39	45	53	70	78		79	72	b 70
21	58	a 35	39	42	47	52	b 68	71		79	a 68	75
22	a 45	38	a 32	42	48	50	75	62		74	71	74
23	a 48	a 35	35	41	49	52	70	68		70	70	71
24	a 45	45	34	43	44	43	63	79		72	72	64
25	a 44	a 39	34	43	50	44	60	70		69	a 68	a 60
26	a 44	a 39	32	45	50	47	68	70		80	71	65
27	b 54	a 41	32	45	47	60	65	--		b 80	69	68
28	56	a 39	33	44	47	52	65	--		82	b 72	65
29	57	46	32	46	--	54	63	--		78	78	61
30	a 47	a 39	32	45	--	48	55	--		80	b 75	62
31	a 48	--	35	49	--	55	--	--		b 77	80	--
Average	59	43	35	39	48	49	66	70		77	74	70

a Measurement before 11 a.m.
b Measurement after 6 p.m.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954

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.....	1.2	73	0.2	1.8	40	0.2	3.8	76	0.8
2.....	1.0	80	.2	1.8	46	.2	5.1	70	1.0
3.....	1.0	81	.2	1.8	56	.3	5	70	.9
4.....	.8	114	.2	3.2	62	.5	5	62	.8
5.....	.8	106	.2	4.6	81	1.0	5	57	.8
6.....	1.0	68	.2	5.1	98	1.3	5	51	.7
7.....	1.0	51	.1	5.5	82	1.2	5	70	.9
8.....	2.4	70	.5	5.5	79	1.2	6	72	1.2
9.....	1.4	60	.2	3.5	68	.6	6	60	1.0
10.....	1.2	65	.2	3.2	70	.6	6	59	1.0
11.....	1.6	78	.3	3.2	67	.6	7	74	1.4
12.....	2.0	77	.4	2.9	63	.5	7	64	1.2
13.....	1.3	63	.2	3.2	72	.6	7	51	1.0
14.....	1.0	43	.1	2.2	83	.5	7	78	1.5
15.....	1.0	45	.1	2.2	61	.4	8	59	1.3
16.....	1.0	55	.1	2.0	71	.4	8.6	62	1.4
17.....	1.3	57	.2	2.0	65	.4	9.2	59	1.5
18.....	1.3	70	.2	3.8	72	.7	9.2	75	1.9
19.....	1.3	83	.3	6.7	48	.9	9.2	54	1.3
20.....	1.4	79	.3	8.0	66	1.4	9.2	58	1.4
21.....	1.4	49	.2	8.0	61	1.3	8.6	49	1.1
22.....	1.4	47	.2	8.6	69	1.6	8.0	56	1.2
23.....	1.4	51	.2	6.7	57	1.0	7.6	47	1.0
24.....	1.4	64	.2	5.1	41	.6	7	27	.5
25.....	1.4	62	.2	5.5	51	.8	7	48	.9
26.....	1.4	33	.1	5.9	53	.8	6	54	.9
27.....	1.6	38	.2	5.1	55	.8	6	44	.7
28.....	1.8	39	.2	4.6	61	.8	6	39	.6
29.....	1.8	48	.2	4.2	82	.9	6	50	.8
30.....	1.8	50	.2	3.8	56	.6	6	30	.5
31.....	1.8	52	.3	--	--	--	6	38	.6
Total.	42.2	--	6.6	129.7	--	22.7	207.5	--	31.8
	January			February			March		
1.....	7	14	0.3	8.6	81	1.9	4.2	81	0.9
2.....	8	13	.3	8.6	80	1.9	3.2	49	.4
3.....	8	37	.8	8.6	83	1.9	3.2	89	.8
4.....	9	36	.9	8.0	69	1.5	4.2	91	1.0
5.....	9	36	.9	7.6	67	1.4	3.8	98	1.0
6.....	9	38	.9	7.6	64	1.3	3.5	104	1.0
7.....	9.2	36	.9	7.6	64	1.3	3.8	95	1.0
8.....	9.2	37	.9	7.6	58	1.2	3.8	85	.9
9.....	8.6	52	1.2	7.6	62	1.3	4.2	94	1.1
10.....	7.2	37	.7	7.6	68	1.4	3.8	150	1.5
11.....	6.5	34	.6	8.0	86	1.9	3.5	164	1.5
12.....	6	37	.6	7.6	74	1.5	3.5	106	1.0
13.....	6.7	27	.5	7.2	113	2.2	2.9	80	.6
14.....	7.6	28	.6	7.2	95	1.8	2.2	50	.3
15.....	8.0	33	.7	8.0	138	3.0	1.6	43	.2
16.....	7.2	31	.6	7.6	65	1.3	1.0	59	.2
17.....	7.2	36	.7	8.0	62	1.3	3.2	146	1.3
18.....	7.2	54	1.0	7.6	79	1.6	3.5	104	1.0
19.....	6.3	101	1.7	7.6	164	3.4	2.0	99	.5
20.....	7.2	42	.8	7.2	46	.9	1.2	102	.3
21.....	8.6	26	.6	7.2	42	.8	2.0	132	.7
22.....	9.2	24	.6	6.3	54	.9	1.8	82	.4
23.....	9.2	43	1.1	6.3	62	1.1	2.4	134	.9
24.....	9.2	39	1.0	5.9	69	1.1	498	27,700	s43,800
25.....	9.2	151	3.8	5.5	83	1.2	106	18,400	s 5,360
26.....	9.2	55	1.4	5.1	97	1.3	39	11,700	1,230
27.....	9.2	43	1.1	4.2	91	1.0	23	9,500	590
28.....	9.2	44	1.1	4.2	164	1.9	19	11,900	610
29.....	9.2	51	1.3	--	--	--	115	4,010	s979
30.....	9.2	80	2.0	--	--	--	67	1,020	185
31.....	9.2	82	2.0	--	--	--	28	327	25
Total.	254.7	--	31.6	200.1	--	43.3	963.5	--	52,797.5

s Computed by subdividing day.

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1.....	14	225	8.5	1.2	58	0.2	0		
2.....	8.0	132	2.9	2.4	73	.5	0		
3.....	4.6	115	1.4	6.3	70	1.2	0		
4.....	4.2	100	1.1	2.4	67	.4	0		
5.....	3.8	118	1.2	1.4	51	.2	0		
6.....	2.9	98	.8	1.4	70	.3	0		
7.....	.7	62	.1	1.6	48	.2	0		
8.....	.5	53	.1	.7	47	.1	0		
9.....	.4	37	(t)	.5	48	.1	0		
10.....	.3	36	(t)	.4	44	(t)	0		
11.....	.3	30	(t)	.4	29	(t)	0		
12.....	.5	198	.3	.3	33	(t)	.2		
13.....	1.8	70	.3	.4	35	(t)	.1		
14.....	1.6	76	.3	.5	36	(t)	0		
15.....	1.2	40	.1	3.5	97	.9	0		
16.....	.8	21	(t)	1.6	66	.3	0		
17.....	.5	11	(t)	.8	48	.1	0		
18.....	.4	11	(t)	.4	38	(t)	0		
19.....	.3	21	(t)	1.4	71	.3	0		
20.....	.5	27	(t)	.9	57	.1	0		
21.....	.2	11	(t)	.2	50	(t)	0		
22.....	.2	40	(t)	.5	369	.5	0		
23.....	.1	26	(t)	.2	38	(t)	0		
24.....	.1	25	(t)	.1	43	(t)	0		
25.....	.1	24	(t)	.1	37	(t)	0		
26.....	.1	21	(t)	.1	30	(t)	0		
27.....	.1	26	(t)	0	--	0	0		
28.....	.3	42	(t)	0	--	0	0		
29.....	.5	45	.1	0	--	0	0		
30.....	.7	72	.1	0	--	0	0		
31.....	--	--	--	0	--	0	--		
Total.	49.7	--	17.6	29.7	--	5.7	0.3		(et)

Day	July			August			September		
1.....	0	--	0	39	750	79	6.7	400	7.2
2.....	10	--	b 30	29	500	a 39	1,160	20,100	s 97,100
3.....	270	13,000	s 17,000	103	10,400	s 3,780	435	12,800	s 16,300
4.....	50	7,500	1,010	46	7,000	869	82	4,700	s 1,190
5.....	20	1,200	65	477	16,400	s 25,500	638	6,840	s 26,800
6.....	8	400	9	75	10,800	2,190	105	9,350	s 3,280
7.....	4	182	2	25	5,100	344	25	1,800	122
8.....	2	220	1	10	622	17	15	700	28
9.....	1	174	.5	5	283	3.8	10	305	8.2
10.....	1	114	.3	3.2	150	1.3	7	290	5.5
11.....	2	--	b 1	3.5	128	1.2	6	560	11
12.....	59	4,400	sa 4,600	4.2	128	1.5	131	1,770	s 1,560
13.....	78	7,140	s 3,110	5.9	119	1.9	84	3,850	s 961
14.....	2.4	440	2.9	6.7	120	2.2	18	1,000	49
15.....	.2	290	.2	7.6	143	2.9	9.7	130	3.4
16.....	.1	163	(t)	5.9	175	2.8	7.2	104	2.0
17.....	.1	155	(t)	13	165	5.8	6.7	104	1.9
18.....	.1	145	(t)	5.9	107	1.7	5.5	89	1.3
19.....	.1	125	(t)	39	2,680	s 835	4.6	93	1.2
20.....	.1	124	(t)	191	19,200	s 11,400	5.5	95	1.4
21.....	204	5,050	s21,800	37	9,850	s 1,160	5.1	121	1.7
22.....	492	16,800	s32,500	31	5,300	444	5.1	121	1.7
23.....	564	23,400	s52,000	6	1,600	26	109	6,170	s 9,620
24.....	1,490	43,300	s219,000	20	1,130	115	542	43,000	s 64,300
25.....	1,510	46,600	s213,000	65	5,800	1,020	232	35,600	s 24,600
26.....	250	23,700	16,000	57	1,700	262	67	29,700	5,370
27.....	191	11,000	5,670	41	500	55	27	21,300	1,550
28.....	155	7,500	3,140	26	1,700	119	15	4,500	182
29.....	108	5,500	1,600	21	750	43	8.6	228	5.3
30.....	75	3,500	709	15	360	15	6.3	231	3.9
31.....	50	1,400	189	9.7	260	6.8	--	--	--
Total.	5,597.1	--	591,440.1	1,423.6	--	48,343.9	3,779.0	--	253,067.7

Total discharge for year (cfs-days) 12,677.1
Total load for year (tons) 945,808.5

e Estimated.
s Computed by subdividing day.
t Less than 0.05 ton.
a Computed from estimated concentration graph.
b Computed from water-sediment discharge curve.

LITTLE COLORADO RIVER AT WOODRUFF, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Feb. 19, 1954[a]	4:30 p.m.	7.6	42	--	935		98		99		99	100	--		--		SPWCM
Feb. 28[a]	4:30 p.m.	4.2	47	--													
Mar. 24	5:00 p.m.	313	43	24,700	3,790		82		98		99	100	--		--		SPWCM
Mar. 31	5:30 p.m.	24	55	317	928		93		98		100	--	--		--		SPWCM
July 3	8:30 a.m.	520	52	17,800	5,010		63		92		98	99	100		--		SPWCM
July 22	5:00 p.m.	161	74	45,500	3,930		74		97		100	--	--		--		SPWCM
July 24	7:30 a.m.	2,480	65	30,300	3,480		64		79		92	95	98		100		VPWCM
July 25	7:00 a.m.	2,360	64	48,300	3,560		52		72		89	95	99		100		VPWCM
July 26	5:00 p.m.	218	80	26,200	3,740		82		98		100	--	--		--		SPWCM
July 30	5:30 p.m.	65	80	2,670	3,640		82		99		99	99	100		--		SPWCM
Aug. 5	8:30 a.m.	610	66	17,400	4,990		64		88		97	99	100		--		VPWCM
Aug. 10	6:00 p.m.	2.9	73	146	--		--		--		99	100	--		--		S
Aug. 20	4:00 p.m.	128	72	24,300	3,660		75		100		--	--	--		--		SPWCM
Sept. 2	4:30 p.m.	1,230	66	19,800	4,900		49		70		86	95	99		100		VPWCM
Sept. 5	5:00 p.m.	3,020	62	14,900	3,720		36		53		67	80	94		100		VPWCM
Sept. 7	1:00 p.m.	13	70	1,780	4,040		96		100		--	--	--		--		SPWCM
Sept. 7	1:00 p.m.	13	70	1,780	3,300		97		100		--	--	--		--		SPN
Sept. 24	10:00 a.m.	588	62	41,000	5,190		63		85		98	99	100		--		VPWCM

a Feb. 19, 28 composite sample.

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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 9½ miles downstream from Moenkopi Wash.
DRAINAGE AREA.--26,500 square miles, approximately (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1954.
Water temperatures: October 1952 to September 1954.
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 1953 to September 1954 given in WSP 1343. 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 1953 to September 1954

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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Mar. 25, 1954		16		80	13	189		381	0	112	171	0.6	2.3		771	1.05		253	0	62	5.1	1,290	7.4
Mar. 26-31		20		34	6.9	125		218	0	71	94	.5	.8		459	.62		114	0	71	5.1	775	7.7
Apr. 1-4,6-7, 10		17		30	4.5	93		187	0	43	67	.5	1.5		348	.47		94	0	68	4.2	592	7.9
June 26		21		--	--	49		230	0	27	15	.8	.2		--	--		128	0	45	1.9	436	7.8
July 9		30		--	--	132		238	16	58	25	--	1.9		--	--		20	0	93	13	576	8.5
July 17-18, 21-22		30		5.2	.2	143		250	20	52	24	2.0	2.2		402	.55		14	0	96	17	611	8.6
July 23-31		25		42	8.6	216		300	0	180	122	.9	.4		743	1.01		140	0	77	7.9	1,190	7.8
Aug. 1-3, 5-9		27		51	11	230		278	0	239	133	.9	.4		829	1.13		172	0	74	7.6	1,310	7.7
Aug. 10-13		22		35	5.0	158		281	0	109	76	.7	.3		544	.74		108	0	76	6.6	883	7.8
Aug. 15-16		22		182	40	172		471	0	523	57	1.1	.6		1,230	1.67		618	232	38	3.0	1,730	7.3
Aug. 23-26		21		38	6.6	216		330	0	150	110	.8	.5		705	.96		122	0	79	8.5	1,130	7.9
Sept. 4		27		33	5.7	215		296	0	173	102	1.6	1.1		704	.96		106	0	82	9.1	1,100	8.1
Sept. 5, 8-11		18		31	5.4	159		250	0	122	80	.6	1.1		540	.73		100	0	78	6.9	875	7.9
Sept. 12-13		27		44	8.0	137		254	0	180	33	--	2.4		556	.76		143	0	68	5.0	703	8.0
Sept. 14-18, 20		22		50	11	205		363	0	165	105	.6	1.6		739	1.01		170	0	72	6.8	1,180	7.7
Sept. 21, 25, 29-30		20		36	8.1	204		336	0	151	90	.7	1.6		676	.92		124	0	78	8.0	1,070	7.8
Sept. 23-24		29		4.8	2.1	136		220	14	81	18	1.2	1.1		395	.54		20	0	94	13	567	8.5

LITTLE COLORADO RIVER BASIN--Continued

LITTLE COLORADO RIVER AT CAMERON, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
[Once-daily measurement, generally between 11 a. m. and 6 p. m.]

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

a Measurement before 11 a. m.
b Measurement after 6 p. 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 squares miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1925 to November 1942, September 1943 to September 1954.
Water temperatures: October 1936 to October 1942, September 1943 to September 1954.
Sediment records: October 1925 to November 1942, September 1943 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 1,400 ppm Oct. 11-20; minimum, 402 ppm June 1-10.
Hardness: Maximum, 632 ppm Sept. 11-20; minimum, 226 ppm June 1-10.
Specific conductance: Maximum observed, 2,180 micromhos Oct. 23; minimum observed, 591 micromhos June 1.
Water temperatures: Maximum, 83 °F July 17, 19, 30, 31; minimum, 34 °F Dec. 27 to Jan. 5.
Sediment concentrations: Maximum daily, 53,500 ppm Sept. 26; minimum daily, 153 ppm Jan. 7.
Sediment loads: Maximum daily, 1,590,000 tons Sept. 26; minimum daily, 1,730 tons Oct. 12.
EXTREMES, 1925-42, 1943-54.-- 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 (1937-42, 1943-54): Maximum observed, 2,900 micromhos Sept. 6, 1940; minimum observed, 341 micromhos June 15, 1942.
Water temperatures (1936-42, 1943-54): Maximum observed, 88 °F July 17, 1944; minimum, freezing point on several days during winter months.
Sediment concentrations: Maximum daily, 138,000 ppm Sept. 13, 1927; minimum daily, 100 ppm on many days.
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. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	3,518	11	0.00	144	59	224	9.8	250	586	205	0.4	4.3	0.26	1,370	1.86	13,010	602	397	44	4.0	2,020	6.9
Oct. 11-20	4,156	12	.04	151	61	222	11	260	609	198	.4	3.5	.29	1,400	1.90	15,710	628	414	43	3.8	2,060	7.4
Oct. 21-31	7,924	14	.02	164	54	210	10	260	632	163	.4	4.7	.28	1,380	1.88	29,520	631	418	41	3.6	1,990	7.8
Nov. 1-10	6,895	14	.00	157	54	184	9.0	258	600	142	.3	6.4	.29	1,290	1.75	24,020	614	402	39	3.2	1,880	7.9
Nov. 11-20	7,300	14	.02	140	51	180	9.8	276	508	146	.3	5.6	.27	1,190	1.62	23,450	559	333	41	3.3	1,760	7.9
Nov. 21-30	7,403	13	.00	129	50	172	8.4	262	473	141	.3	5.0	.27	1,120	1.52	22,390	528	313	41	3.2	1,670	7.5
Dec. 1-10	6,810	14	.01	118	50	180	6.6	241	460	152	.3	7.1	.27	1,110	1.51	20,410	500	302	44	3.5	1,660	7.9
Dec. 11-20	5,246	15	.00	116	50	182	6.6	247	447	164	.3	4.1	.27	1,110	1.51	15,720	495	292	44	3.6	1,680	7.8
Dec. 21-31	5,516	14	.00	128	52	202	7.6	262	479	192	.3	5.6	.24	1,210	1.65	18,020	534	319	45	3.8	1,830	7.8
Jan. 1-10, 1954	4,461	14	.00	118	53	198	7.6	271	447	187	.3	7.4	.26	1,170	1.59	14,090	512	290	45	3.8	1,770	7.9
Jan. 11-20	5,346	15	.01	132	51	216	7.0	279	488	202	.4	7.6	.24	1,260	1.71	18,190	539	310	46	4.0	1,890	7.7
Jan. 21-31	6,343	14	.01	116	46	182	6.8	253	420	171	.3	7.2	.21	1,190	1.48	18,670	478	271	45	3.6	1,660	7.7
Feb. 1-10	6,227	14	.03	105	42	174	6.3	232	389	163	.3	6.8	.21	1,010	1.37	16,980	434	244	46	3.6	1,570	7.8
Feb. 11-20	6,272	13	.02	106	46	183	6.3	236	416	164	.4	6.1	.21	1,080	1.44	17,950	454	260	46	3.7	1,620	7.8
Feb. 21-28	6,608	13	.02	103	45	178	6.7	236	414	153	.4	5.7	.21	1,030	1.40	18,380	442	248	46	3.7	1,580	7.8
Mar. 1-10	6,275	14	.02	110	43	174	6.1	242	398	152	.3	5.0	.25	1,020	1.39	17,280	452	253	45	3.6	1,560	7.5

Mar. 11-20, 1954..	6,188	15	.02	106	42	179	6.7	233	377	168	.4	4.7	.23	1,010	1.37	16,870	437	246	47	3.7	1,580	7.6
Mar. 21-31	8,080	12	.02	105	36	163	6.4	247	356	141	.3	4.5	.20	945	1.29	20,620	410	208	46	3.5	1,450	7.4
Apr. 1-10.....	7,347	13	.01	104	35	172	6.2	249	360	146	.3	4.4	.20	963	1.31	19,100	404	200	48	3.7	1,480	7.4
Apr. 11-20.....	9,561	13	.03	99	35	150	6.7	238	336	126	.4	4.1	.19	887	1.21	22,900	391	196	45	3.3	1,370	7.4
Apr. 21-30.....	11,620	13	.04	33	26	103	5.2	214	235	84	.5	3.8	.16	659	.90	20,680	314	138	41	2.5	1,040	7.5
May 1-10	13,730	16	.02	79	22	80	4.4	218	191	64	.4	3.6	.15	567	.77	21,020	288	109	37	2.0	895	7.6
May 11-20	16,390	17	.00	79	22	79	4.5	209	194	64	.3	3.5	.13	566	.77	25,050	288	116	37	2.0	890	7.6
May 21-31	28,130	16	.02	72	19	50	3.9	215	133	38	.3	2.7	.12	441	.60	33,490	258	82	29	1.3	703	7.5
June 1-10.....	19,400	14	.02	66	15	49	3.7	181	123	40	.2	2.4	.13	402	.55	21,060	226	78	32	1.4	649	7.6
June 11-20.....	11,330	13	.02	75	20	78	4.2	179	188	70	.3	2.5	.12	530	.73	16,480	269	122	38	2.1	857	7.4
June 21-30.....	9,479	13	.01	87	25	99	5.2	187	249	87	.3	2.9	.14	660	.90	16,890	320	167	40	2.4	1,040	7.4
July 1-10	11,290	13	.01	89	25	92	5.5	209	240	79	.3	3.8	.14	651	.89	19,840	325	154	38	2.2	1,000	7.7
July 11-20	9,493	13	.00	82	22	86	6.0	200	209	76	.4	4.5	.14	597	.81	15,300	295	131	38	2.2	931	7.7
July 21-31	11,720	16	.10	103	23	137	6.4	244	314	93	.4	1.5	.19	814	1.11	25,760	352	152	45	3.2	1,220	7.6
Aug. 1-10.....	7,148	16	.00	121	30	133	7.4	245	353	102	.4	7.0	.16	890	1.21	17,180	426	224	40	2.8	1,320	7.4
Aug. 11-20.....	4,653	14	.02	110	32	144	7.2	231	333	131	.4	5.2	.17	891	1.21	11,190	406	216	43	3.1	1,370	7.4
Aug. 21-31.....	5,276	15	.00	143	40	179	8.4	241	489	144	.5	8.4	.18	1,150	1.56	16,380	522	324	42	3.4	1,680	7.5
Sept. 1-10	3,662	16	.02	135	43	195	8.8	258	449	179	.5	11	.21	1,160	1.58	11,470	514	302	45	3.7	1,740	7.4
Sept. 11-20	8,705	17	.26	171	50	180	9.0	256	596	133	.4	1.6	.23	1,280	1.74	30,080	632	422	38	3.1	1,800	7.5
Sept. 21-30	8,564	18	.24	165	42	172	9.3	274	547	114	.4	.4	.22	1,200	1.63	27,750	584	360	39	3.1	1,690	7.5
Weighted average	8,604	14	0.03	105	34	132	6.3	231	335	111	0.3	4.2	0.19	856	1.16	19,890	402	212	41	2.9	1,300	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	3,510	224	2,120	7,020	5,250	99,500	6,500	770	13,500
2	3,520	217	2,060	6,870	5,050	93,700	6,840	820	15,100
3	3,510	209	1,980	6,730	4,300	78,100	7,020	790	15,000
4	3,510	196	1,860	6,670	1,700	30,600	6,980	850	16,000
5	3,530	195	a1,900	6,660	1,400	a25,000	6,850	800	a15,000
6	3,510	193	a1,800	6,740	1,700	a31,000	6,730	700	12,700
7	3,520	192	1,820	6,840	1,700	a31,000	6,740	607	11,000
8	3,540	199	1,900	7,020	1,900	36,000	6,750	586	10,700
9	3,540	214	2,050	7,530	3,400	69,100	6,770	552	10,100
10	3,490	210	1,980	6,850	1,400	25,900	6,920	589	11,000
11	3,490	196	1,850	7,270	1,920	37,700	6,600	607	10,800
12	3,530	181	1,730	7,620	2,300	47,300	6,170	564	9,400
13	3,640	222	2,180	7,440	2,100	42,200	5,890	493	7,830
14	3,870	176	1,840	7,220	1,480	28,900	5,480	426	6,300
15	4,300	237	2,750	6,890	1,720	32,000	5,150	428	5,950
16	4,470	385	4,650	6,680	1,520	27,400	4,600	353	4,380
17	4,480	550	6,650	6,680	1,350	24,300	4,770	340	4,380
18	4,630	1,550	19,400	6,740	1,430	26,000	4,630	301	3,760
19	4,590	1,700	21,100	7,950	1,700	36,500	4,580	253	3,130
20	4,560	1,650	20,300	8,510	3,600	82,700	4,600	332	4,120
21	4,580	3,700	45,800	8,010	3,300	71,400	4,880	294	3,710
22	4,470	2,600	31,400	7,500	2,300	46,600	4,800	305	3,950
23	5,960	2,200	35,500	7,360	2,440	51,800	5,210	345	4,850
24	8,210	3,400	75,400	7,860	1,520	32,300	6,080	411	6,750
25	9,200	6,300	156,000	7,710	1,210	25,200	6,490	607	10,600
26	9,870	10,000	266,000	7,680	1,080	22,400	6,330	565	9,660
27	8,690	8,700	204,000	7,330	1,120	22,200	5,990	454	7,340
28	10,500	13,000	369,000	6,920	1,450	27,100	5,640	433	6,590
29	9,890	9,700	259,000	6,640	1,490	26,700	5,340	358	5,160
30	8,330	7,250	163,000	6,520	890	15,700	5,120	319	4,410
31	7,440	6,150	124,000	--	--	--	5,000	284	3,830
Total	163,900	--	1,831,020	215,980	--	1,246,300	181,240	--	257,000
	January			February			March		
1	4,800	259	3,360	7,010	913	17,300	6,410	720	12,500
2	4,590	213	2,640	6,870	894	16,600	6,240	670	11,300
3	4,590	189	2,340	6,610	761	13,600	6,190	660	11,000
4	4,320	180	a2,100	6,490	697	12,200	6,370	670	11,500
5	4,140	170	a1,900	6,150	650	a11,000	6,530	600	a11,000
6	4,280	163	1,880	5,950	600	a10,000	6,600	550	9,800
7	4,390	153	1,810	5,880	545	8,650	6,470	570	9,960
8	4,440	156	1,870	5,810	572	8,970	6,230	520	8,750
9	4,420	188	2,240	5,770	695	10,800	5,950	500	8,030
10	4,640	206	2,580	5,730	595	9,210	5,760	490	7,460
11	4,980	233	3,130	5,820	563	8,850	5,630	520	7,900
12	5,170	336	4,690	5,980	490	7,910	5,710	580	8,940
13	5,150	362	5,030	6,080	488	8,010	5,930	640	10,200
14	5,030	327	4,440	6,070	572	9,370	6,160	690	11,500
15	5,150	301	4,190	6,060	574	9,390	6,170	630	10,500
16	5,460	321	4,730	6,250	531	8,960	6,100	550	9,060
17	5,650	369	5,630	6,450	683	11,900	6,330	590	10,100
18	5,670	425	6,510	6,670	753	13,600	6,770	750	13,700
19	5,580	392	5,910	6,640	790	14,200	6,710	830	15,000
20	5,620	391	5,930	6,700	742	13,400	6,370	620	10,700
21	5,590	375	5,660	6,940	679	12,700	6,160	530	8,810
22	5,760	430	6,690	6,640	668	12,000	6,170	500	8,330
23	5,900	490	7,810	6,300	589	10,000	6,300	690	11,700
24	5,990	500	a8,100	6,450	526	9,160	6,870	1,200	22,300
25	6,110	530	8,740	6,780	598	10,900	8,060	1,850	40,300
26	6,190	520	8,690	6,810	648	11,900	11,700	15,400	a491,000
27	6,520	670	11,800	6,520	841	14,800	9,820	11,000	292,000
28	6,800	900	16,500	6,420	670	11,600	9,190	6,900	171,000
29	6,950	1,050	19,700	--	--	--	8,950	5,200	126,000
30	7,010	870	16,500	--	--	--	8,080	4,900	107,000
31	6,950	770	14,400	--	--	--	7,580	4,900	100,000
Total	167,840	--	197,500	177,850	--	316,980	213,510	--	1,587,340

a Computed from estimated concentration graph.

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	7,410	3,900	78,000	13,300	4,100	147,000	26,300	5,100	362,000
2.....	7,470	3,560	71,800	14,300	5,050	195,000	24,200	4,750	310,000
3.....	7,360	3,300	65,600	14,800	4,700	188,000	22,600	3,300	201,000
4.....	7,220	2,700	a53,000	14,200	3,500	a130,000	20,600	2,200	a120,000
5.....	7,400	2,700	a54,000	14,300	3,900	151,000	19,100	2,700	139,000
6.....	7,430	2,750	55,200	14,000	3,700	140,000	18,000	2,400	117,000
7.....	7,460	3,300	66,500	13,700	3,280	121,000	17,100	2,180	101,000
8.....	7,360	3,100	61,600	13,400	3,170	115,000	16,200	2,200	96,200
9.....	7,120	2,550	49,000	12,900	3,030	106,000	15,300	1,750	72,300
10.....	7,240	2,300	45,000	12,400	2,950	98,800	14,600	1,500	59,100
11.....	7,470	1,950	39,300	11,900	2,630	84,500	14,200	1,500	57,500
12.....	7,950	1,960	42,100	12,100	2,500	81,700	13,600	1,350	49,600
13.....	8,880	2,430	58,300	12,700	2,600	89,200	12,700	1,100	a38,000
14.....	9,490	3,090	79,200	14,200	3,250	125,000	11,800	1,000	31,900
15.....	10,000	3,450	93,200	16,200	4,100	179,000	11,300	900	27,500
16.....	9,920	2,900	77,700	18,400	5,140	255,000	10,600	750	21,500
17.....	10,000	2,750	74,200	18,900	5,750	293,000	10,000	730	19,700
18.....	10,900	3,740	110,000	19,100	6,500	335,000	9,870	733	19,500
19.....	10,800	3,460	101,000	19,800	6,010	321,000	9,710	635	16,600
20.....	10,200	2,900	79,900	20,600	5,080	283,000	9,490	591	15,100
21.....	10,200	3,000	82,600	22,000	5,170	307,000	9,340	539	13,600
22.....	10,300	2,750	76,500	22,800	5,400	332,000	9,170	453	11,200
23.....	10,700	2,900	83,800	24,900	6,350	427,000	9,220	457	11,400
24.....	10,900	3,300	97,100	26,900	6,950	505,000	9,340	594	15,000
25.....	11,800	4,000	127,000	30,000	8,300	672,000	9,490	580	14,900
26.....	12,500	4,400	148,000	32,000	9,000	778,000	9,870	700	18,700
27.....	12,100	3,800	124,000	32,000	7,850	678,000	10,200	1,300	35,800
28.....	12,100	3,500	114,000	31,300	7,350	621,000	9,340	7,700	194,000
29.....	12,500	3,750	127,000	30,200	6,150	501,000	9,410	2,900	73,700
30.....	13,100	4,050	143,000	29,300	6,500	514,000	9,410	1,250	31,800
31.....	--	--	--	28,000	6,350	480,000	--	--	--
Total.	285,280	--	2,477,600	610,600	--	9,253,200	402,060	--	2,294,300

Day	July			August			September		
1.....	9,140	800	19,700	9,390	18,500	469,000	3,930	4,300	45,600
2.....	9,020	830	20,200	8,850	12,900	308,000	3,750	3,250	32,900
3.....	9,100	900	a22,000	8,430	7,600	173,000	3,610	2,700	26,300
4.....	9,600	1,400	36,300	7,940	4,900	105,000	3,490	2,100	a20,000
5.....	10,500	2,700	78,700	7,410	5,500	a110,000	3,720	3,700	37,200
6.....	11,500	2,680	83,200	6,740	5,100	92,800	3,880	12,300	129,000
7.....	12,300	2,900	96,300	6,120	4,200	69,400	3,480	11,200	105,000
8.....	14,800	4,150	166,000	5,930	2,800	44,800	3,700	8,100	80,900
9.....	13,900	4,150	156,000	5,590	7,200	109,000	3,510	8,900	84,300
10.....	12,700	3,200	110,000	5,080	3,200	43,900	3,550	5,900	56,600
11.....	11,700	2,800	88,500	4,650	2,350	29,500	4,760	5,680	s81,000
12.....	11,300	2,500	76,300	4,420	2,500	29,800	6,800	12,000	220,000
13.....	10,700	2,150	62,100	4,430	2,500	29,900	8,580	12,900	s327,000
14.....	10,300	1,620	45,100	4,800	3,300	42,800	9,490	22,500	577,000
15.....	9,610	1,400	36,300	5,070	3,000	41,100	9,510	14,200	365,000
16.....	9,000	1,850	45,000	4,320	1,500	17,500	7,960	15,800	340,000
17.....	8,610	2,000	46,500	4,050	2,700	29,500	11,300	15,800	s474,000
18.....	8,210	1,810	40,100	4,190	3,400	38,500	11,800	19,500	621,000
19.....	7,940	1,550	33,200	4,600	2,600	32,300	9,150	20,500	506,000
20.....	7,560	1,700	34,700	6,000	3,400	55,100	7,700	19,800	412,000
21.....	7,370	1,550	30,800	5,980	3,800	61,400	6,950	16,300	306,000
22.....	7,370	1,980	39,400	6,600	3,200	57,000	6,290	16,300	277,000
23.....	7,190	2,730	53,000	6,200	2,800	a47,000	6,100	22,500	371,000
24.....	8,780	6,300	149,000	5,900	5,600	89,200	6,400	27,000	a470,000
25.....	13,200	26,000	927,000	5,280	8,100	115,000	6,300	23,400	sa420,000
26.....	18,000	24,000	1,170,000	5,550	8,400	126,000	10,200	53,500	s1,590,000
27.....	19,600	22,800	1,210,000	5,130	11,400	158,000	7,400	20,000	400,000
28.....	14,500	32,300	1,260,000	4,700	7,600	96,400	11,800	15,400	s505,000
29.....	11,800	28,200	898,000	4,460	6,300	75,900	13,900	20,000	751,000
30.....	11,000	20,100	597,000	4,210	5,500	62,500	10,300	23,500	654,000
31.....	10,100	17,500	477,000	4,030	5,600	60,900	--	--	--
Total.	336,700	--	8,107,400	176,050	--	8,820,200	209,310	--	10,284,800

Total discharge for year (cfs-days) 3,140,320
Total load for year (tons)..... 40,673,940

s Computed by subdividing day.
a Computed from estimated concentration graph.

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Particle-size analyses of suspended sediment for water year October 1953 to September 1954
(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. 24, 1953	11:00 a.m.	7,830	57	2,830	3,460		65		85		99	100	--	--			SPWCM
Oct. 28	9:00 a.m.	10,800	54	12,000	5,080		69		91		99	100	--	--			VPWCM
Nov. 27	10:00 a.m.	7,370	44	988	3,440		53		78		99	100	--	--			SPWCM
Dec. 28	3:00 p.m.	5,670	34	443	3,260		53		80		99	100	--	--			SPWCM
Jan. 27, 1954	3:00 p.m.	6,610	41	597	8,990		42		68		97	99	100	--			SPWCM
Feb. 26	11:00 a.m.	6,770	49	623	4,260		39		62		97	100	--	--			SPWCM
Mar. 25	4:30 p.m.	7,980	50	1,930	4,730		32		51		96	100	--	--			SPWCM
Mar. 26	8:30 a.m.	13,100	50	16,500	4,200		24		42		94	100	--	--			VPWCM
Mar. 30	9:00 a.m.	8,100	53	4,750	3,820		63		82		98	100	--	--			VPWCM
Apr. 28	9:00 a.m.	12,000	66	3,370	4,500		30		47		86	99	100	--			VPWCM
May 18	9:30 a.m.	19,100	71	6,440	3,800		18		29		65	95	100	--			VPWCM
May 28	9:00 a.m.	31,700	69	7,080	4,230		18		31		62	87	99	100			VPWCM
June 3	8:30 a.m.	23,000	68	3,870	3,430		22		34		63	87	100	--			VPWCM
June 14	9:00 a.m.	11,900	68	1,080	2,830		26		37		71	86	95	100			VPWCM
June 28	7:30 a.m.	9,310	77	8,940	4,890		65		89		98	100	--	--			SPWCM
July 2	7:30 a.m.	9,020	78	719	4,990		43		66		90	97	100	--			SPWCM
July 6	7:30 a.m.	11,600	79	3,310	3,620		53		71		91	98	100	--			VPWCM
July 9	11:00 a.m.	13,900	80	3,930	3,860		54		67		85	94	100	--			VPWCM
July 12	7:30 a.m.	11,500	81	2,330	4,030		59		73		88	97	100	--			VPWCM
July 25	10:30 a.m.	12,400	77	37,800	4,570		68		86		97	99	100	--			VPWCM
July 27	8:30 a.m.	22,000	79	22,900	4,460		56		72		87	98	100	--			VPWCM
July 28	8:00 a.m.	15,200	79	32,900	3,800		70		89		95	99	100	--			VPWCM
July 31	7:30 a.m.	10,300	83	16,200	3,700		78		95		98	100	--	--			VPWCM
Aug. 20	5:00 a.m.	5,650	75	4,000	3,760		82		97		99	100	--	--			SPWCM
Aug. 26	5:00 p.m.	5,650	74	10,100	3,710		86		99		100	--	--	--			SPWCM
Sept. 6	5:45 p.m.	3,890	76	14,900	3,960		73		97		100	--	--	--			SPWCM
Sept. 9	8:30 a.m.	3,490	76	9,360	4,640		81		99		100	--	--	--			SPWCM
Sept. 11	8:30 a.m.	3,880	76	3,010	3,610		84		97		100	--	--	--			SPWCM

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR GRAND CANYON, ARIZ.--Continued

Particle-size analyses of suspended sediment for water year October 1953 to September 1954--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	2.000	
Sept. 12, 1954.....	8:30 a.m.	6,470	75	20,300	3,430		67		87		99	100	--	--			VPWCM
Sept. 13.....	4:00 p.m.	9,310	73	13,700	3,900		58		82		96	98	100	--			VPWCM
Sept. 15.....	5:15 p.m.	9,340	73	10,800	3,370		71		92		98	100	--	--			VPWCM
Sept. 18.....	8:30 a.m.	12,400	71	17,700	4,310		63		86		96	99	100	--			VPWCM
Sept. 22.....	4:30 p.m.	6,170	70	16,200	3,900		80		98		100	--	--	--			VPWCM
Sept. 26.....	7:45 a.m.	11,400	68	62,300	4,020		60		80		96	100	--	--			VPWCM
Sept. 27.....	8:00 a.m.	7,050	68	21,000	5,070		73		91		99	100	--	--			VPWCM
Sept. 30.....	8:15 a.m.	10,700	68	22,100	3,490		65		87		96	99	100	--			VPWCM

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.--934 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1954.
Water temperatures: October 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,710 ppm Aug. 4; minimum, 296 ppm Apr. 21-30.
Specific conductance: Maximum daily, 2,870 micromhos Aug. 4; minimum daily, 447 micromhos Apr. 22.
Water temperatures: Maximum observed, 87°F June 22; minimum observed, 36°F Dec. 8.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 2,710 ppm Aug. 4, 1954; minimum, 245 ppm May 1-10, 1952.
Specific conductance: Maximum daily, 2,870 micromhos Aug. 4, 1954; minimum daily, 383 micromhos 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 residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. No discharge records available for this station during 1953-54 water year.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953		--		--	--	--	--	--	--	--		--	--	582	0.79		--	--	--	--	889	--
Oct. 11-20		14		90	28	54	--	205	202	64		3.0	0.11	596	.81		340	135	26	1.3	907	8.0
Oct. 21, 23-31		--		--	--	--	--	--	--	--		--	--	565	.77		--	--	--	--	859	--
Oct. 22		--		--	--	--	--	--	--	--		--	--	1,450	1.97		--	--	--	--	1,740	--
Nov. 1-10		--		--	--	--	--	--	--	--		--	--	566	.77		--	--	--	--	857	--
Nov. 11-20		13		99	29	48	--	228	198	56		1.9	--	600	.82		364	177	22	1.1	895	7.9
Nov. 21-30		--		--	--	--	--	--	--	--		--	--	554	.75		--	--	--	--	849	--
Dec. 1-10		--		--	--	--	--	--	--	--		--	--	564	.79		--	--	--	--	892	--
Dec. 11-20		13		88	27	49	--	238	168	58		1.4	.16	550	.75		333	138	24	1.2	865	8.1
Dec. 21-31		14		88	28	52	--	229	176	61		1.9	.09	563	.77		336	148	25	1.2	868	8.0
Jan. 1-10, 1954		13		87	29	53	--	236	171	56		1.7	.10	556	.76		338	144	25	1.3	854	8.0
Jan. 11-20		13		68	28	54	--	187	168	59		2.1	.10	508	.69		286	133	29	1.4	783	8.2
Jan. 21-31		--		--	--	--	--	--	--	--		--	--	543	.74		--	--	--	--	827	--
Feb. 1-10		--		--	--	--	--	--	--	--		--	--	504	.69		--	--	--	--	785	--
Feb. 11-20		11		86	26	56	--	218	190	54		2.1	.10	558	.76		320	141	28	1.4	846	8.0
Feb. 21-28		--		--	--	--	--	--	--	--		--	--	507	.69		--	--	--	--	784	--
Mar. 1-10		--		--	--	--	--	--	--	--		--	--	500	.68		--	--	--	--	774	--
Mar. 11-20		11		78	28	46	--	227	158	50		1.9	.11	507	.69		312	126	24	1.1	776	8.1
Mar. 21-24, 28-31		11		76	25	45	3.5	194	169	36		1.1	--	478	.65		292	134	25	1.2	728	8.1
Mar. 25-27		11		106	18	71	4.5	173	292	36		2.0	--	a 626	.85		340	198	31	1.7	944	8.0
Apr. 1-10		11		71	26	35	3.5	207	141	35		1.4	--	440	.60		285	115	21	.9	699	8.0
Apr. 11-20		9.9		72	18	22	2.8	191	113	22		2.1	.08	371	.50		255	98	16	.6	591	7.8
Apr. 21-30		9.1		63	12	20	2.7	174	74	22		2.4	--	296	.40		206	63	17	.6	486	7.9

a Sum of determined constituents.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT VIRGIN, UTAH--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
May 1-10, 1954....		9.9		69	14	26	2.5	186	91	26		1.6	0.06	340	0.46		230	77	20	0.7	537	8.0
May 11-20		11		77	18	35	3.3	198	125	38		1.1	.06	415	.56		268	106	22	.9	659	7.9
May 21-31		12		75	26	48	3.8	204	153	52		.9	.08	486	.66		295	128	26	1.2	760	7.7
June 1-10.....		12		80	26	55	4.2	203	172	60		.8	.05	527	.72		308	142	28	1.4	824	7.8
June 11-20.....		12		73	30	55	--	200	175	61		.8	.09	535	.73		304	140	28	1.4	818	7.9
June 21-25, 27-30 .		--		--	--	--	--	--	--	--		--	--	562	.76		--	--	--	--	862	--
June 26.....		--		--	--	--	--	--	--	--		--	--	1,770	2.41		--	--	--	--	1,940	--
July 1-10		--		--	--	--	--	--	--	--		--	--	537	.73		--	--	--	--	826	--
July 11-17, 19-20..		13		78	31	54	--	193	190	60		1.1	.08	514	.70		324	166	27	1.3	811	7.3
July 18		--		--	--	49	--	443	374	36		4.4	--	--	--		702	339	--	--	1,390	--
July 21-23, 27-31..		14		96	24	55	--	217	191	60		2.1	.09	562	.76		340	162	26	1.3	869	7.2
July 24-26		15		390	26	55	--	244	899	39		.6	.16	1,690	2.30		1,080	880	10	.7	1,880	7.1
Aug. 1-3, 5-10....		--		--	--	--	--	--	--	--		--	--	615	.84		--	--	--	--	933	--
Aug. 4		--		--	--	--	--	--	--	--		--	--	2,710	3.69		--	--	--	--	2,870	--
Aug. 11.....		14		229	53	64	--	428	500	54		.4	--	a 1,130	1.53		790	439	15	1.0	1,520	7.5
Aug. 12-20.....		13		85	26	61	--	217	176	67		3.4	.11	561	.76		321	143	29	1.5	872	7.8
Aug. 21-31.....		--		--	--	--	--	--	--	--		--	--	569	.77		--	--	--	--	888	--
Sept. 1-10		--		--	--	--	--	--	--	--		--	--	557	.76		--	--	--	--	867	--
Sept. 11-12		14		227	37	52	--	253	543	43		2.3	.15	1,070	1.46		720	513	14	.8	1,370	7.7
Sept. 13-20		13		104	26	56	--	225	211	62		2.5	.11	610	.83		366	182	25	1.3	920	7.7
Sept. 21-30		--		--	--	--	--	--	--	--		--	--	573	.78		--	--	--	--	880	--

a Sum of determined constituents.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT VIRGIN, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	58	41	38	51	51	59	57	74	81	84	78
2	66	55	42	39	50	51	61	60	76	82	83	77
3	66	57	42	41	49	54	61	66	77	82	78	81
4	68	59	37	40	49	52	61	66	74	78	--	75
5	--	59	41	43	51	55	62	67	72	82	82	78
6	68	55	45	44	51	51	62	68	69	83	81	78
7	68	53	41	44	48	55	57	67	72	83	83	76
8	68	52	36	44	51	53	63	66	66	83	83	81
9	66	54	40	42	49	52	62	65	62	84	74	81
10	65	54	39	40	52	55	59	62	71	81	78	77
11	60	54	40	38	52	--	61	71	75	82	79	69
12	63	56	39	39	51	47	63	70	74	84	79	67
13	65	57	43	43	48	49	64	72	74	85	80	77
14	65	54	44	43	44	51	64	73	72	85	81	79
15	64	59	45	42	47	55	63	73	76	79	82	78
16	63	57	45	44	52	55	63	71	76	81	82	74
17	63	52	48	43	52	--	62	68	80	83	79	74
18	61	--	44	44	48	52	61	77	82	78	79	76
19	58	45	46	42	49	52	59	75	81	81	78	75
20	55	41	46	43	50	51	58	74	81	83	78	76
21	56	44	--	47	54	52	61	74	81	83	79	76
22	51	45	41	46	53	49	62	66	87	79	79	74
23	52	47	39	46	55	50	62	74	82	82	81	74
24	52	49	39	44	56	44	58	74	82	78	75	72
25	55	51	41	43	56	48	58	68	80	76	75	72
26	55	48	40	46	49	52	60	70	--	78	75	73
27	57	50	38	48	48	58	58	73	77	84	75	75
28	58	51	40	48	53	54	62	75	80	83	80	72
29	59	49	39	50	--	57	61	72	82	81	82	73
30	58	50	39	55	--	50	64	73	79	83	80	71
31	57	--	39	54	--	--	--	74	--	84	81	--
Average	61	52	41	44	51	52	61	70	76	82	80	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 1954.
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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 13, 20,1953		22		198	55	377	--	268	579	520		4.4	0.78	1,890	2.57		720	500	53	6.1	2,990	7.7
Oct. 28		21		--	--	230	--	275	412	310		3.9	.54	--	--		580	354	--	4.2	2,060	7.9
Nov. 3, 9, 16		19		187	27	230	--	269	409	312		3.0	.54	1,320	1.80		580	359	46	4.2	2,120	--
Dec. 1, 9,17, 22		18		159	43	229	--	288	384	305		2.9	.53	1,280	1.74		575	339	46	4.2	2,080	7.6
Jan. 4, 13, 19, 25, 1954		14		163	34	168	--	240	394	215		3.1	.49	1,110	1.51		548	351	40	3.1	1,720	7.9
Feb. 1, 18, 15, 23		16		136	31	163	--	255	306	205		3.0	.46	986	1.34		466	257	43	3.3	1,600	7.8
Mar. 3, 10, 15		15		133	39	191	--	264	328	250		3.5	.54	1,090	1.48		492	276	46	3.8	1,770	7.7
Mar. 23, 29		13		94	19	88	--	192	211	104		2.1	.23	626	.85		315	158	38	2.2	1,020	7.8
Apr. 10		33		61	13	--	--	232	29	24		1.8	--	--	--		206	16	--	--	479	7.9
Apr. 13		14		130	42	136	12	262	266	198		4.2	.26	931	1.27		497	282	37	2.7	1,440	7.5
Apr. 16, 26		11		95	18	70	6.8	220	149	95		2.1	.13	555	.75		310	130	32	1.7	922	7.6
May 4, 11		13		110	23	106	9.9	244	204	150		3.1	.23	739	1.01		370	170	38	2.4	1,200	8.0
May 16, 24		16		137	34	198	17	243	330	285		2.8	.03	1,140	1.55		482	283	46	3.9	1,830	7.6
June 2, 7, 14, 22, 28		18		177	51	338	--	249	525	482		.4	.77	1,710	2.33		652	448	53	5.8	2,750	7.6
July 7,14, 17,26-27		22		322	42	253	--	312	648	418		6.0	.49	1,860	2.53		980	724	36	3.5	2,790	7.1
Aug. 3, 5, 9, 17, 24		22		204	53	432	--	220	648	582		4.2	.76	2,050	2.79		728	548	56	7.0	3,200	7.5
Sept. 1, 7,12, 20, 27		20		290	53	382	--	252	832	535		4.0	.87	2,240	3.05		945	738	47	5.4	3,290	7.4

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 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation, unless otherwise noted. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6,12, 26, 1953.	10.3	31		54	16	19	--	222	32	25		0.6	0.14	a287	0.39	7.98	200	18	17	0.6	487	--
Nov. 4,10, 16, 25..	11.6	34		64	11	19	--	228	33	23		.6	.14	304	.41	9.52	205	18	17	.6	489	7.9
Dec. 1, 8, 16, 21...	14.0	34		61	16	22	--	240	34	24		.9	.10	314	.43	11.9	218	21	18	.6	505	7.9
Jan. 4, 12, 19, 26, 1954	21.2	33		58	15	21	3.3	229	33	25		1.1	.10	305	.41	17.5	208	20	18	.6	488	7.9
Feb. 8, 15, 22	16.7	32		60	17	21	3.5	239	34	28		.7	--	a314	.43	14.2	222	26	17	.6	508	7.5
Mar. 3, 9, 15, 23, 25, 29	71.2	33		50	16	18	3.3	216	27	21		.8	.10	a276	.38	53.1	191	14	17	.6	443	7.7
Apr. 12, 19, 26 ...	24.0	36		53	15	19	2.6	214	29	22		.4	.06	287	.39	18.6	194	19	17	.6	458	8.2
May 5, 11, 17, 25 .	27.5	28		45	11	15	3.0	172	22	17		.4	.10	227	.31	16.9	156	15	17	.5	365	7.7
June 2, 7, 14, 23 .	14.2	29		40	12	16	--	168	24	18		3.1	.10	236	.32	9.05	152	14	19	.6	372	7.9
July 6, 14, 17, 27 .	13.0	38		57	12	20	--	211	33	22		1.2	.09	284	.39	9.97	193	20	19	.6	453	7.5
Aug. 3, 9, 18, 24..	7.8	36		53	15	22	--	212	36	24		.8	.10	284	.39	5.98	192	18	20	.7	450	8.0
Sept. 1, 6, 13, 20, 28-29	8.8	34		56	17	20	--	224	33	24		.8	.06	295	.40	7.01	208	24	17	.6	488	7.5

a Sum of determined constituents.

VIRGIN RIVER BASIN--Continued

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 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 12, 20, 28, 1953	0.6	39		284	85	133	--	342	915	78		1.0	0.45	1,700	2.31	2.75	1,060	780	21	1.8	2,170	7.9
Nov. 3, 9, 16, 22	1.8	38		242	63	102	--	325	693	59		.4	.38	1,360	1.85	6.61	865	598	20	1.5	1,770	7.9
Dec. 1, 9, 16, 23	7.5	32		181	39	72	--	334	416	44		.6	.22	949	1.29	19.2	615	341	20	1.3	1,340	7.7
Jan. 5, 13, 19 1954	6.6	30		341	60	101	--	381	619	58		2.3	.41	1,290	1.75	23.0	825	513	21	1.5	1,700	7.8
Jan. 20, 25	51.5	28		111	27	59	--	281	230	37		1.3	.22	632	.86	87.9	390	160	25	1.3	934	7.8
Feb. 1, 9, 15, 23	13.5	33		162	38	58	--	318	354	42		1.4	.25	845	1.15	30.8	560	299	18	1.1	1,190	8.0
Mar. 3, 9, 15	3.4	32		271	64	101	--	380	714	60		1.4	.43	1,430	1.94	13.1	940	628	19	1.4	1,850	7.6
Mar. 23, 27, 29	130	28		71	13	22	--	210	77	20		2.1	--	336	.46	118	232	60	17	.6	528	7.8
Apr. 10	9.9	35		157	34	--	--	a288	327	40		2.5	--	--	--	--	532	296	--	--	1,120	8.3
Apr. 12, 19, 26	3.1	42		343	94	125	7.8	439	654	83		.4	.37	1,880	2.56	15.7	1,240	883	18	1.5	2,260	7.7
May 5, 12, 17, 24	4.2	37		280	67	102	8.4	364	786	70		.9	.33	1,530	2.08	17.4	975	677	18	1.4	1,890	7.8
June 2, 7, 14, 22, 28	2.2	40		309	82	111	--	387	898	70		1.0	.38	1,700	2.31	10.1	1,110	793	18	1.4	2,060	7.7
July 6, 13	4.8	35		462	55	86	--	248	1,240	52		1.1	.32	2,050	2.79	26.6	1,380	1,180	12	1.0	2,350	7.7
July 17, 27	24.0	--		99	14	22	--	278	105	14		1.3	--	392	.53	25.4	306	78	14	.5	660	7.4
July 26	5.4	19		188	124	48	--	260	786	34		1.0	--	1,330	1.81	19.4	980	767	10	.7	1,250	7.3
Aug. 3, 9, 18, 24	.4	39		365	96	150	--	412	1,140	90		.6	.44	2,080	2.83	2.25	1,310	972	20	1.8	2,510	7.6
Sept. 1-2, 7, 13-14, 20, 28	12.9	32		458	82	115	--	370	1,290	70		1.3	.38	2,230	3.03	77.7	1,480	1,180	14	1.3	2,580	7.4

a Includes equivalent of 10 parts per million of carbonate (CO_3).

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 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 12, 1953	12.5	27		493	126	575	--	217	1,730	735		3.4	1.60	3,800	5.17	128	1,750	1,570	42	6.0	5,090	7.8
Oct. 27	127	17		350	60	255	--	271	970	322		4.5	1.40	2,110	2.87	724	1,120	898	33	3.3	2,920	7.6
Nov. 3, 9, 16, 22	114	20		271	60	272	--	265	782	380		3.9	.64	1,920	2.61	591	925	708	39	3.9	2,860	7.6
Dec. 2, 7, 16, 22	116	20		235	59	264	--	276	670	348		3.3	.54	1,740	2.37	545	830	604	41	4.0	2,600	7.5
Jan. 4, 13, 25, 1954	535	17		267	43	193	--	262	696	232		2.7	.48	1,580	2.15	2,280	845	630	33	2.9	2,210	7.4
Feb. 1, 9, 16, 23	187	15		187	43	194	--	256	503	242		3.5	.68	1,310	1.78	661	645	435	40	3.3	2,000	7.8
Mar. 2, 9, 15	104	16		189	51	243	--	259	536	315		3.5	.69	1,480	2.01	416	682	470	44	4.1	2,260	7.7
Mar. 23, 29	556	12		114	17	77	--	171	256	86		2.1	.27	648	.88	973	355	215	32	1.8	1,020	7.7
Apr. 12	144	16		165	58	183	18	249	494	242		3.5	.45	1,300	1.77	505	650	446	37	3.1	1,930	7.5
Apr. 19, 26	510	11		123	22	87	8.4	215	251	108		1.8	.18	718	.98	989	400	224	32	1.9	1,130	7.5
May 5, 17, 24	102	17		183	52	214	17	238	538	302		3.1	.51	1,440	1.96	397	670	475	40	3.6	2,140	7.9
July 6, 17, 26	358	26		590	48	161	--	260	1,480	215		1.6	.35	2,650	3.60	2,560	1,670	1,460	17	1.7	3,160	7.6
Aug. 4, 10	1,115	24		667	49	124	--	224	1,700	148		1.2	.37	2,820	3.84	8,490	1,870	1,690	13	1.2	3,120	7.6
Sept. 12, 14	910	18		636	37	150	--	282	1,580	170		1.0	.39	2,730	3.71	6,710	1,740	1,510	16	1.6	3,160	7.4
Sept. 28	12.0	24		526	120	516	--	234	1,770	685		2.8	1.01	3,760	5.11	122	1,810	1,620	38	5.3	4,870	7.4

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VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.

LOCATION.--At gaging station, three-eighths of a mile downstream from Beaverdam Wash, three-eighths of a mile upstream from Littlefield, Mohave County, and 36 miles upstream from water line of Lake Mead at elevation 1,221 feet above mean sea level.
DRAINAGE AREA.--5,090 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1949 to September 1954.
Water temperatures: October 1947 to September 1954.
Sediment records: October 1947 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,660 ppm Sept. 11-20; minimum, 1,030 ppm Apr. 19-30.
Hardness: Maximum, 1,580 ppm Sept. 11-20; minimum, 588 ppm Apr. 19-30.
Specific conductance: Maximum daily, 3,960 micromhos July 14; minimum daily, 1,320 micromhos Mar. 24.
Water temperatures: Maximum observed, 90°F July 3; minimum observed, 43°F Jan. 4, 26.
Sediment concentrations: Maximum daily, 78,200 ppm Sept. 12; minimum daily, 365 ppm Aug. 30.
Sediment loads: Maximum daily, 491,000 tons Aug. 4; minimum daily, 64 tons Aug. 30.
EXTREMES, 1947-54.--Dissolved solids (1949-50),1953-54): Maximum, 2,660 ppm Sept. 11-20, 1954; minimum, 1,030 ppm Apr. 19-30, 1954.
Hardness (1949-50, 1953-54): Maximum, 1,580 ppm Sept. 11-20, 1954; minimum, 588 ppm Apr. 19-30, 1954.
Specific conductance (1949-54): Maximum daily, 3,960 micromhos July 14, 1954; minimum daily, 734 micromhos Apr. 28, 1952.
Water temperatures: Maximum observed, 92°F July 7, 1953; minimum observed, 35°F Jan. 4, 1949, Jan. 4, 1950.
Sediment concentrations: Maximum daily, 104,000 ppm Aug. 28, 1953; minimum daily, 150 ppm Oct. 13, 1948.
Sediment loads: Maximum daily, 706,000 tons Aug. 4, 1951; minimum daily, 30 tons Oct. 3, 1947 (revised).
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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953a..	64.4	--		--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	3,260	--
Oct. 11-20.....	77.7	24		377	107	287	--	278	1,190	402		2.0	--	2,530	3.44	531	1,380	1,150	31	3.4	3,440	7.6
Oct. 21-31a.....	199	--		--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	3,190	--
Nov. 1-10a.....	149	--		--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	3,110	--
Nov. 11-20.....	165	22		310	93	264	24	292	975	375		2.0	0.76	2,210	3.01	985	1,160	916	33	3.4	3,040	7.8
Nov. 21-30a.....	163	--		--	--	--	--	--	--	--		--	--	--	--	--	--	--	--	--	3,030	--
Dec. 1-10.....	180	21		298	93	268	23	304	936	375		2.0	.74	2,170	2.95	1,050	1,130	877	34	3.5	2,990	7.7
Dec. 11-20.....	184	21		290	86	258	23	326	858	355		2.1	.69	2,050	2.79	1,020	1,080	810	34	3.4	2,850	7.6
Dec. 21-31.....	174	21		284	84	254	22	334	852	342		2.5	.72	2,030	2.76	954	1,050	780	34	3.4	2,820	7.7
Jan. 1-10, 1954...	169	19		279	83	248	22	332	830	338		2.5	.71	1,990	2.71	908	1,040	766	34	3.3	2,770	7.6
Jan. 11-20.....	178	19		275	85	250	22	328	828	348		2.1	.66	1,990	2.71	956	1,040	766	34	3.4	2,800	7.5
Jan. 21-25, 28-31..	297	17		267	74	228	19	304	775	310		2.3	.53	1,840	2.50	1,480	970	722	33	3.2	2,590	7.7
Jan. 26-27.....	662	12		270	41	102	11	186	713	132		1.3	.35	1,370	1.86	2,450	842	690	21	1.5	1,830	7.5
Feb. 1-10.....	213	20		252	79	212	21	300	735	302		2.4	--	1,770	2.41	1,020	954	708	32	3.0	2,520	7.9
Feb. 11-20.....	264	19		242	75	204	19	288	710	280		2.7	.62	1,690	2.30	1,200	912	676	32	2.9	2,420	7.8
Feb. 21-28.....	190	19		246	80	216	21	299	728	305		2.7	--	1,760	2.39	903	943	698	33	3.1	2,530	7.9
Mar. 1-10	147	20		268	91	250	23	302	827	340		2.9	.84	1,970	2.68	782	1,040	795	34	3.4	2,770	7.7

a Not included for computation or weighted averages.

Mar. 11-22, 1954..	130	22		302	101	256	25	325	926	350		3.0	.90	2,150	2.92	755	1,170	902	32	3.3	2,970	7.6
Mar. 23-31	603	20		169	46	131	12	240	454	165		2.7	.38	1,120	1.52	1,820	610	414	31	2.3	1,660	7.7
Apr. 1-10.....	339	18		196	62	159	15	286	533	212		3.1	.47	1,340	1.82	1,230	744	510	31	2.5	1,980	7.6
Apr. 11-18.....	296	17		216	68	176	17	289	603	240		4.0	.53	1,480	2.01	1,180	818	582	31	2.7	2,140	7.7
Apr. 19-30.....	504	13		163	44	115	11	241	412	152		4.0	.42	1,030	1.40	1,400	588	390	29	2.1	1,550	7.7
May 1-10	284	16		191	64	161	16	265	547	228		2.0	.54	1,360	1.85	1,040	740	522	32	2.6	1,960	7.8
May 11-20	119	18		296	101	240	23	289	928	335		2.6	.88	2,090	2.84	672	1,150	917	31	3.1	2,790	7.7
May 21-31	77.3	19		354	123	260	27	321	1,130	375		1.5	1.0	2,450	3.33	511	1,390	1,130	28	3.0	3,180	7.6
June 1-10.....	68.6	20		340	123	267	26	257	1,160	375		1.1	1.0	2,440	3.32	452	1,350	1,140	29	3.2	3,150	7.7
June 11-20.....	64.1	19		354	124	263	26	285	1,160	370		1.0	1.0	2,460	3.35	426	1,390	1,160	29	3.1	3,190	7.5
June 21-30.....	142	18		380	113	256	25	305	1,190	355		1.3	.99	2,490	3.39	955	1,410	1,160	28	3.0	3,160	7.5
July 1-10	71.0	25		351	115	266	28	262	1,180	352		1.1	.49	2,450	3.33	470	1,350	1,130	29	3.1	3,240	7.6
July 11-16, 18-20..	99.6	24		414	109	255	27	240	1,320	340		2.0	.45	2,610	3.55	702	1,480	1,280	27	2.9	3,360	7.7
July 17.....	226	22		237	69	168	15	335	687	192		1.0	.15	1,560	2.12	952	875	600	29	2.5	2,140	8.0
July 21-31.....	179	20		436	100	242	25	310	1,310	318		1.2	.40	2,600	3.54	1,260	1,500	1,240	26	2.7	3,340	7.5
Aug. 1-10.....	323	22		436	108	235	26	286	1,350	300		1.6	.41	2,620	3.56	2,280	1,530	1,300	25	2.6	3,320	7.3
Aug. 11-12, 14-20.	88.6	22		383	113	250	27	318	1,200	332		1.4	.44	2,480	3.37	593	1,420	1,160	27	2.9	3,280	7.3
Aug. 13.....	181	36		285	58	160	16	906	316	192		1.0	.37	1,510	2.05	738	950	207	26	2.3	2,260	7.3
Aug. 21-31.....	67.8	21		344	120	260	29	284	1,160	365		1.1	.48	2,440	3.32	447	1,350	1,120	29	3.1	3,280	7.4
Sept. 1-10	86.4	23		393	112	266	26	290	1,250	345		1.7	1.0	2,560	3.48	597	1,440	1,200	28	3.0	3,270	7.4
Sept. 11-20	296	21		477	96	225	21	295	1,380	295		1.9	.85	2,660	3.62	2,130	1,580	1,340	23	2.5	3,270	7.3
Sept. 21-30	65.0	23		354	120	270	25	271	1,190	365		1.3	1.0	2,480	3.37	435	1,380	1,150	29	3.2	3,280	7.5
Weighted average	b 194	19		281	80	207	20	287	835	281		2.4	0.60	1,870	2.54	980	1,030	795	30	2.8	2,560	--

b Represents 91 percent of runoff for water year October 1953 to September 1954.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 7 a. m. and 10 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	59	54	46	55	53	54	55	a66	72	a89	75
2	65	61	52	44	55	a61	a67	67	64	69	a81	74
3	63	62	52	48	53	50	58	62	65	a90	75	74
4	62	59	55	43	51	53	a67	a72	--	a80	74	73
5	64	60	46	45	a59	a63	59	65	68	--	72	a81
6	64	58	a52	47	51	51	a69	65	64	72	74	71
7	62	59	50	47	51	52	59	69	65	70	71	a84
8	62	55	50	48	51	56	58	67	68	71	a88	a80
9	65	55	47	48	51	60	57	66	66	72	74	a85
10	64	56	47	46	a59	62	a68	a74	a78	a85	70	a82
11	66	57	47	46	52	55	59	a81	66	a88	73	70
12	62	57	46	48	54	49	62	a77	65	72	73	69
13	63	58	52	49	a59	52	63	66	67	a89	73	--
14	63	63	47	47	54	a65	69	66	70	a74	84	67
15	65	61	47	49	51	52	a75	66	68	73	a82	66
16	62	a63	50	48	52	--	62	a76	74	a86	68	a79
17	63	59	51	49	52	55	63	67	70	72	71	a73
18	61	56	53	49	53	59	62	68	69	77	a80	65
19	a68	50	52	55	53	56	64	73	68	74	69	a80
20	a68	49	51	52	50	59	61	76	a88	74	73	64
21	a68	49	50	54	51	59	62	70	69	a84	69	71
22	a63	a56	48	50	54	60	68	a77	70	a80	73	64
23	60	50	48	51	55	56	66	a82	72	69	a85	77
24	55	a58	45	55	55	50	62	66	72	76	68	a80
25	56	55	47	55	56	50	61	69	74	a78	68	a80
26	58	55	48	43	50	50	60	65	a79	75	a81	67
27	57	56	49	47	53	52	62	67	70	76	a83	66
28	60	56	46	51	a59	54	60	67	73	76	a81	66
29	61	52	44	51	--	53	62	66	69	72	a84	66
30	60	52	47	53	--	a56	64	a78	70	70	78	65
31	60	--	44	55	--	52	--	a66	--	77	73	--
Average	62	57	49	49	54	55	63	69	70	76	76	73

a Measurement between 10 a. m. and 7 p. m.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954

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.....	65	564	99	158	2,860	1,220	154	2,250	936
2.....	67	550	99	154	2,550	1,060	156	2,690	1,130
3.....	67	540	98	151	2,940	1,200	154	1,720	715
4.....	67	530	96	154	2,630	1,090	176	1,900	903
5.....	63	560	95	149	2,670	1,070	243	4,870	3,200
6.....	63	680	116	149	2,500	1,010	189	3,260	1,660
7.....	63	510	87	139	2,280	856	186	2,760	1,390
8.....	63	510	87	139	2,230	837	186	3,370	1,690
9.....	63	580	95	144	2,390	929	186	3,260	1,640
10.....	63	530	90	151	2,490	1,020	174	3,170	1,490
11.....	63	560	95	166	3,140	1,410	176	2,380	1,130
12.....	63	660	112	168	2,960	1,340	194	2,900	1,520
13.....	63	640	109	161	2,740	1,190	189	2,960	1,510
14.....	63	670	114	146	2,030	800	189	3,020	1,540
15.....	82	1,190	263	154	2,060	857	189	3,070	1,570
16.....	82	1,100	244	164	2,700	1,200	181	2,540	1,240
17.....	82	1,260	279	158	2,600	1,110	181	3,570	1,740
18.....	93	1,320	331	154	1,890	786	186	3,710	1,860
19.....	93	1,050	264	202	5,210	2,840	176	2,720	1,290
20.....	93	1,210	304	174	3,060	1,440	181	2,880	1,410
21.....	102	1,870	515	174	3,210	1,510	186	2,570	1,290
22.....	149	2,770	1,110	164	2,450	1,080	181	2,900	1,420
23.....	325	11,100	s12,200	168	2,400	1,090	181	2,250	1,100
24.....	301	10,400	8,450	164	2,200	974	168	2,520	1,140
25.....	232	7,170	4,490	166	2,330	1,040	161	2,300	1,000
26.....	210	5,900	3,350	161	2,390	1,040	174	2,620	1,230
27.....	197	4,770	2,540	166	2,300	1,030	179	2,690	1,300
28.....	174	2,970	1,400	161	2,010	874	181	2,700	1,320
29.....	168	3,130	1,420	156	2,680	1,130	179	3,120	1,510
30.....	171	2,860	1,320	154	1,970	819	164	2,600	1,150
31.....	161	2,850	1,240	--	--	--	156	2,500	1,050
Total.	3,611	--	41,112	4,769	--	33,852	5,556	--	43,074
	January			February			March		
1.....	151	2,200	897	243	3,710	2,430	174	2,310	1,090
2.....	171	2,870	1,330	232	3,380	2,120	161	2,150	935
3.....	179	2,340	1,130	213	2,700	1,550	156	2,120	893
4.....	179	2,450	1,180	210	2,280	1,280	149	3,080	1,240
5.....	181	3,570	1,740	216	2,680	1,580	146	2,800	1,020
6.....	168	3,140	1,420	213	2,520	1,450	137	1,820	673
7.....	168	2,360	1,070	202	2,660	1,450	141	2,010	765
8.....	164	2,850	1,280	202	2,580	1,410	146	2,000	788
9.....	166	3,750	1,680	199	2,580	1,390	129	1,970	686
10.....	166	5,270	2,360	197	2,660	1,410	132	2,300	820
11.....	179	4,380	2,110	186	2,210	1,110	129	2,280	794
12.....	156	2,660	1,120	174	2,010	944	137	2,650	980
13.....	168	2,870	1,300	161	2,360	1,030	122	2,130	702
14.....	156	2,430	1,020	326	9,900	s10,400	116	1,900	595
15.....	161	2,300	1,000	503	12,800	17,400	132	1,700	606
16.....	154	2,260	940	354	5,600	5,350	127	1,760	(a)
17.....	158	2,340	998	254	4,720	3,240	116	1,480	464
18.....	161	2,480	1,070	235	3,700	2,350	118	1,450	462
19.....	199	3,190	1,710	237	3,350	2,140	106	1,600	458
20.....	289	7,430	5,800	207	3,230	1,810	120	1,310	424
21.....	277	8,000	5,980	199	3,430	1,840	132	1,700	606
22.....	213	5,100	2,930	202	3,200	1,750	210	4,700	2,680
23.....	194	2,590	1,360	194	2,960	1,550	756	18,800	s43,900
24.....	184	3,000	1,490	184	3,510	1,740	1,010	18,400	s53,200
25.....	882	23,100	s108,000	192	3,350	1,740	483	9,400	12,300
26.....	982	20,700	s65,300	189	3,680	1,880	441	8,410	s10,200
27.....	341	7,600	7,000	184	2,800	1,390	493	9,620	s13,600
28.....	251	4,200	2,850	176	3,000	1,430	623	12,000	s21,300
29.....	232	3,300	2,070	--	--	--	572	9,480	s15,000
30.....	221	3,180	1,900	--	--	--	517	7,820	s11,200
31.....	221	3,600	2,150	--	--	--	529	8,300	11,900
Total.	7,472	--	232,165	6,284	--	75,144	8,460	--	210,865

s Computed by subdividing day.
a Computed from estimated concentration graph.

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Suspended sediment, water year October 1953 to September 1954--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.....	387	4,100	4,280	584	7,320	s12,500	70	830	157
2.....	357	3,250	3,130	307	3,590	2,980	70	880	166
3.....	367	4,150	4,110	246	2,500	1,660	70	860	163
4.....	370	3,650	3,650	221	2,220	1,320	70	830	157
5.....	357	4,470	4,310	229	2,420	1,500	69	840	156
6.....	338	4,320	3,940	254	2,620	1,800	69	950	177
7.....	335	4,890	4,420	251	2,600	1,760	69	1,090	203
8.....	325	4,600	4,040	257	2,800	1,940	68	770	141
9.....	277	4,200	3,140	246	2,650	1,760	66	640	114
10.....	280	2,650	2,000	240	2,530	1,640	65	630	111
11.....	221	2,600	1,550	199	2,000	1,070	64	720	124
12.....	210	2,910	1,650	151	1,600	652	64	910	157
13.....	202	2,820	1,450	137	1,800	666	64	1,020	176
14.....	240	3,400	2,200	118	1,700	542	64	750	130
15.....	307	5,000	4,140	106	1,100	318	64	675	117
16.....	332	5,100	4,570	88	1,080	257	64	720	124
17.....	373	6,740	6,790	83	880	197	64	790	136
18.....	486	8,130	s11,800	80	860	186	64	990	171
19.....	625	9,950	s17,300	112	775	234	64	865	149
20.....	669	10,600	s20,000	112	860	266	65	725	127
21.....	648	9,700	s17,300	93	920	231	66	770	137
22.....	627	8,780	s15,900	84	730	166	64	720	124
23.....	612	7,210	s12,600	79	760	a170	63	750	128
24.....	580	7,790	s12,600	94	1,600	406	63	810	138
25.....	506	6,430	s9,000	79	1,000	213	64	800	138
26.....	437	5,200	6,140	72	940	183	122	9,250	s9,350
27.....	387	4,380	4,580	69	910	170	593	39,200	s83,300
28.....	335	3,660	3,310	70	910	a170	206	17,200	s10,200
29.....	313	3,150	2,660	70	840	159	105	5,900	1,670
30.....	313	3,600	3,040	70	700	132	77	2,900	603
31.....	--	--	--	70	700	132	--	--	--
Total.	11,816	--	195,690	4,871	--	35,380	2,750	--	108,744

Day	July			August			September		
1.....	68	1,100	202	68	750	138	65	840	147
2.....	68	900	165	68	750	138	110	9,480	s3,680
3.....	66	750	134	68	700	129	183	30,600	s16,900
4.....	66	700	125	1,680	73,500	s491,000	76	9,000	1,850
5.....	84	8,900	sa3,900	640	58,400	s127,000	76	2,100	431
6.....	97	22,300	s6,430	188	16,400	8,240	72	850	165
7.....	66	2,300	410	132	3,900	1,390	67	850	154
8.....	65	1,000	176	116	1,400	438	67	1,050	190
9.....	65	800	140	118	900	287	72	900	175
10.....	65	700	123	151	11,800	s7,410	76	850	174
11.....	64	650	112	171	18,900	s9,520	80	650	140
12.....	64	750	130	134	2,900	1,050	1,700	78,200	s476,000
13.....	68	850	156	181	29,400	s20,300	554	40,700	s63,800
14.....	199	31,100	s28,700	102	10,600	s3,260	145	21,200	9,310
15.....	69	2,500	466	65	2,000	351	93	6,800	1,710
16.....	68	1,100	202	63	760	129	86	2,900	673
17.....	226	39,300	s42,700	67	675	122	84	2,150	488
18.....	186	29,000	s17,500	65	575	101	82	1,730	383
19.....	90	6,400	s1,650	65	485	85	69	1,170	218
20.....	88	6,900	1,640	65	485	85	69	1,070	199
21.....	92	2,900	720	67	600	109	65	835	147
22.....	68	2,900	532	69	665	124	65	725	127
23.....	65	1,300	228	72	1,110	216	65	915	161
24.....	65	900	158	72	550	107	67	845	153
25.....	146	13,100	s14,200	72	435	85	67	650	118
26.....	680	76,500	s201,000	69	575	107	65	675	118
27.....	482	66,300	s103,000	65	410	72	65	700	123
28.....	146	23,100	9,110	65	475	83	63	720	122
29.....	86	6,300	1,460	65	490	86	63	650	111
30.....	69	1,750	326	65	365	64	65	625	110
31.....	68	850	156	65	420	74	--	--	--
Total.	3,799	--	435,951	4,951	--	672,300	4,476	--	578,077

Total discharge for year (cfs-days)..... 68,815
Total load for year (tons)..... 2,662,350

s Computed by subdividing day.
a Computed from estimated concentration graph.

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	
Oct. 15, 1953	8:00 a.m.	82	65	1,050	1,960	15	21	23	26	31	37	45	63	89	--		SPWCM
Oct. 31	7:30 a.m.	161	60	2,620	4,760	18	26	34	46	65	78	83	93	99	--		SPWCM
Nov. 16	11:00 a.m.	161	63	2,460	3,990	0	1	9	24	43	71	82	93	100	--		SPN
Nov. 30	8:00 a.m.	151	52	1,910	2,610	12	14	16	22	36	60	76	89	99	--		SPWCM
Dec. 16	8:00 a.m.	179	50	2,460	3,130	8	11	12	16	28	53	85	95	99	--		SPWCM
Dec. 31	8:00 a.m.	156	44	2,520	2,870	8	10	12	15	23	49	83	95	100	--		SPWCM
Jan. 16, 1954	8:00 a.m.	146	48	2,000	2,000	--	11	--	17	24	44	79	96	100	--		SPWCM
Jan. 25	5:30 p.m.	2,130	56	62,300	2,600	3	6	10	15	33	64	88	97	99	--		SPN
Jan. 26	8:00 a.m.	1,140	43	22,300	3,920	--	17	--	31	42	55	76	95	99	--		SPWCM
Jan. 29	8:00 a.m.	249	51	2,880	1,960	--	21	--	31	44	57	77	95	99	--		SPWCM
Jan. 30	8:00 a.m.	226	53	4,160	3,800	--	13	--	22	29	38	50	71	99	--		SPWCM
Feb. 15	8:00 a.m.	475	51	15,100	3,540	--	43	--	56	64	73	87	96	99	100		SPWCM
Feb. 28	6:00 p.m.	169	59	2,660	3,110	--	16	--	25	33	51	80	96	99	100		SPWCM
Mar. 15	8:00 a.m.	104	52	1,100	1,370	--	25	--	33	38	52	79	97	100	--		SPWCM
Mar. 23	5:30 p.m.	1,310	55	22,800	5,360	--	27	--	45	54	69	87	96	100	--		SPWCM
Mar. 24	8:00 a.m.	1,080	50	17,700	2,700	--	19	--	30	37	50	73	94	99	100		SPWCM
Mar. 31	8:00 a.m.	445	52	6,420	2,750	--	13	--	21	32	35	57	87	97	99		SPWCM
Apr. 15	3:00 p.m.	263	75	3,620	5,210	--	32	--	45	50	60	81	96	99	--		SPWCM
Apr. 25	12:00 m.	380	--	4,940	6,520	--	23	--	33	39	49	68	94	99	100		SPWCM
Apr. 25	5:10 p.m.	642	69	7,080	4,040	--	14	--	23	34	53	77	96	100	--		SPWCM
Apr. 27	12:00 p.m.	319	68	2,960	3,600	--	17	--	23	30	42	69	96	100	--		SPWCM
Apr. 30	8:00 a.m.	292	64	2,390	2,500	--	13	--	22	30	45	75	96	100	--		SPWCM
May 30	5:00 p.m.	70	78	458	1,100	--	13	--	21	24	29	50	86	99	--		SPWCM
May 31	8:00 a.m.	70	66	803	1,170	--	8	--	13	15	18	35	85	99	--		SPWCM
June 26	6:30 p.m.	818	71	47,800	3,840	--	33	--	53	69	82	91	98	99	--		SPWCM
June 27	2:00 p.m.	897	76	55,800	4,420	--	38	--	70	81	86	93	98	100	--		SPWCM
June 30	8:00 a.m.	87	70	2,510	4,580	--	57	--	68	71	76	88	99	100	--		SPWCM

VIRGIN RIVER BASIN--Continued

VIRGIN RIVER AT LITTLEFIELD, ARIZ.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954--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)

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 14, 1954	6:00 a.m.	328	74	61,000	5,060	--	42	--	82	93	96	98	100	--	--		SPWCM
July 17	5:00 p.m.	487	80	83,700	3,100	--	43	--	74	89	93	97	99	100	--		SPWCM
July 25	6:00 p.m.	703	78	64,800	4,090	--	29	--	60	76	88	95	99	100	--		SPWCM
July 26	11:00 a.m.	1,910	75	110,000	3,330	--	30	--	54	71	80	91	99	100	--		SPWCM
July 31	9:00 a.m.	73	77	733	2,260	--	21	--	33	40	49	73	94	99	--		SPWCM
Aug. 4	6:00 a.m.	1,070	74	102,000	4,100	--	31	--	66	81	90	95	99	100	--		SPWCM
Aug. 4	7:30 p.m.	3,830	72	114,000	6,440	--	29	--	48	62	74	86	97	100	--		SPWCM
Aug. 13	11:00 a.m.	460	79	77,700	5,100	--	45	--	72	81	87	92	98	100	--		SPWCM
Aug. 30	7:00 a.m.	59	70	299	953	32	36	36	36	40	45	61	91	99	--		SBWCM
Aug. 31	7:00 a.m.	63	73	430	883	18	20	22	23	25	29	41	81	99	--		SBWCM
Sept. 12	7:00 a.m.	1,960	69	82,900	5,220	--	24	--	48	64	83	93	99	100	--		SPWCM
Sept. 12	7:00 a.m.	1,960	69	82,900	2,790	18	25	34	47	62	83	93	99	100	--		SBWCM
Sept. 12	2:00 p.m.	3,980	71	121,000	3,210	--	27	--	49	62	74	87	97	100	--		SPWCM
Sept. 12	2:00 p.m.	3,980	71	121,000	3,320	16	26	36	48	58	74	87	97	100	--		SBWCM
Sept. 12	4:30 p.m.	1,970	75	104,000	5,800	--	30	--	50	62	77	88	97	100	--		SPWCM
Sept. 12	7:30 p.m.	1,600	73	89,100	5,160	--	36	--	58	71	84	92	98	100	--		SPWCM
Sept. 13	12:30 p.m.	566	75	38,800	5,520	--	50	--	73	82	89	93	97	100	--		SPWCM
Sept. 13	12:30 p.m.	566	75	38,800	2,680	40	51	61	72	82	89	93	97	100	--		SBWCM
Sept. 29	8:00 a.m.	63	67	409	1,530	--	23	--	30	35	44	59	90	99	--		SPWCM
Sept. 30	8:00 a.m.	63	65	449	1,580	--	16	--	27	33	40	56	92	99	--		SPWCM

LAKE MEAD NEAR BOULDER CITY, NEV.

Chemical analyses, in parts per million, water year October 1953 to September 1954

/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)	Specific conductance (micromhos at 25°C)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
AT LINE OF DEMARCATION BETWEEN TURBID AND CLEAR WATER, MILE 281												
Apr. 6, 1954	0	1,134	58.0	1,340	12	102	31	209	349	121	3.4	382
GRAND WASH, MILE 284.7												
Apr. 6, 1954	5	1,129	61.2	1,070	10	92	26	172	293	81	2.0	334
Apr. 6	50	1,084	56.7	1,080	11	89	26	171	293	83	--	330
Apr. 6	100	1,034	55.4	1,180	12	--	--	185	308	96	2.7	356
Apr. 6	112	1,022	54.8	1,230	11	--	--	195	321	107	3.3	366
Apr. 6	115	1,019	54.8	1,230	12	96	30	197	321	108	3.2	364
ICEBERG CANYON, MILE 287.5												
Apr. 6, 1954	5	1,129	59.2	1,050	12	89	25	170	286	78	1.9	328
Apr. 6	50	1,084	58.0	1,100	12	91	27	175	293	87	2.1	338
Apr. 6	100	1,034	56.6	1,180	10	--	--	189	312	98	2.7	342
Apr. 6	134	1,000	56.4	1,210	10	--	27	192	313	106	3.4	348
Apr. 6	135	999	56.4	1,350	12	106	32	227	350	121	2.8	398
VIRGIN CANYON, MILE 305.5												
Apr. 6, 1954	5	1,129	60.0	997	11	89	26	164	275	71	2.3	328
Apr. 6	50	1,084	55.1	1,000	12	--	--	164	--	70	--	316
Apr. 6	100	1,034	54.7	1,010	11	--	--	164	--	71	--	324
Apr. 6	150	984	54.7	1,030	12	91	26	169	295	77	2.4	332
Apr. 6	200	934	54.7	1,150	11	--	--	183	--	93	--	344
Apr. 6	250	884	54.7	1,170	11	93	28	184	307	96	2.6	350
Apr. 6	280	854	54.7	1,150	11	93	28	183	307	95	3.0	350
Apr. 6	290	844	54.7	1,340	16	--	--	431	--	89	--	444

COLORADO RIVER MAIN STEM--Continued

LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Specific conductance (micromhos at 25°C)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
OVERTON ARM OF LAKE AT LINE OF DEMARCATION BETWEEN TURBID AND CLEAR WATER, 27 MILES ABOVE MOUTH OF VIRGIN RIVER												
Apr. 8, 1954	0	1,133	58.6	1,340	12	125	32	176	386	119	1.7	444
OVERTON ARM OF LAKE OPPOSITE SALT MINE, 22 MILES ABOVE MOUTH OF VIRGIN RIVER												
Apr. 8, 1954	0	1,133	58.6	1,030	17	93	25	167	289	74	2.2	336
OVERTON ARM OF LAKE, 9.3 MILES ABOVE MOUTH OF VIRGIN RIVER (LOWER VIRGIN NARROWS)												
Apr. 8, 1954	5	1,128	58.3	997	12	88	24	162	282	70	--	320
Apr. 8	50	1,183	56.1	1,000	11	91	23	162	282	72	2.0	322
Apr. 8	100	1,028	54.4	1,010	12	--	--	161	288	72	1.8	328
Apr. 8	150	983	54.1	1,020	13	--	--	163	296	75	--	326
Apr. 8	200	933	53.9	1,080	14	92	26	174	307	82	2.1	338
Apr. 8	234	899	53.9	993	11	98	18	160	283	70	2.1	320
Apr. 8	234.5	899	53.9	1,090	19	97	25	178	304	82	1.7	344
BOULDER CANYON, MILE 334												
Apr. 8, 1954	5	1,128	60.8	982	12	--	--	162	--	67	--	314
Apr. 8	50	1,083	57.0	985	12	94	21	162	272	--	2.2	320
Apr. 8	100	1,033	54.8	991	12	--	--	163	--	69	--	320
Apr. 8	150	983	54.2	1,020	--	91	24	165	278	--	2.5	326
Apr. 8	200	933	54.0	1,050	12	--	--	172	--	77	--	330
Apr. 8	250	883	53.7	1,090	14	92	29	181	299	--	3.0	348
Apr. 8	300	833	53.6	1,110	11	--	--	177	--	85	--	342
Apr. 8	350	783	53.6	1,100	11	--	--	176	--	86	--	346
Apr. 8	370	763	53.6	1,100	14	94	27	176	297	--	3.0	346
Apr. 8	372	761	53.6	1,230	15	--	--	325	--	94	--	392

NEAR INTAKE TOWERS, MILE 354.7

Oct. 29, 1953	5	1,146	70.6	852	12	72	20	140	229	56	0.7	260
Oct. 29	50	1,101	70.2	835	--	--	--	142	--	--	--	--
Oct. 29	100	1,051	67.8	866	--	--	--	154	--	--	--	--
Oct. 29	150	1,001	62.4	848	--	--	--	148	--	--	--	--
Oct. 29	200	951	57.9	887	--	--	--	157	--	--	--	--
Oct. 29	250	901	54.8	945	12	84	24	164	258	68	1.4	308
Oct. 29	300	851	54.3	983	--	--	--	172	--	--	--	--
Oct. 29	350	801	53.9	1,000	11	88	25	172	272	74	2.2	322
Oct. 29	400	751	53.7	1,020	--	--	--	176	--	--	--	--
Oct. 29	424	727	53.7	986	11	90	23	170	267	72	2.2	320
Oct. 29	427	724	--	1,030	--	--	--	214	--	--	--	--
Dec. 1	5	1,145	63.7	855	16	76	22	147	234	58	1.8	278
Dec. 1	50	1,100	63.7	855	--	--	--	147	--	--	--	--
Dec. 1	100	1,050	63.3	854	--	--	--	146	--	--	--	--
Dec. 1	150	1,000	62.8	876	--	--	--	150	--	--	--	--
Dec. 1	200	950	58.0	919	11	84	23	160	254	62	1.4	302
Dec. 1	250	900	55.0	956	--	--	--	188	--	--	--	--
Dec. 1	300	850	54.2	1,000	--	--	--	170	--	--	--	--
Dec. 1	350	800	54.0	1,010	11	89	24	178	275	74	2.1	324
Dec. 1	400	750	53.8	992	20	89	23	176	267	72	1.9	318
Dec. 1	423	727	53.8	1,020	12	91	25	182	275	75	2.2	332
Dec. 1	424	726	53.8	1,050	--	--	--	248	--	--	--	--
Jan. 6, 1954	5	1,140	57.1	883	10	73	30	150	238	60	1.3	304
Jan. 6	50	1,095	57.1	887	--	--	--	150	--	--	--	--
Jan. 6	100	1,045	57.1	878	--	--	--	150	--	--	--	--
Jan. 6	150	995	57.1	879	--	--	--	149	--	--	--	--
Jan. 6	200	945	56.2	906	--	--	--	156	--	--	--	--
Jan. 6	250	895	55.2	975	11	87	24	168	261	66	1.9	316
Jan. 6	300	845	54.2	985	--	--	--	171	--	--	--	--
Jan. 6	350	795	53.8	979	--	--	--	166	--	--	--	--
Jan. 6	400	745	53.8	1,000	--	--	--	179	--	--	--	--
Jan. 6	417	728	53.8	1,020	12	90	26	179	274	73	2.1	330
Jan. 6	419	726	53.8	1,010	--	--	--	186	--	--	--	--

COLORADO RIVER MAIN STEM--Continued

LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Specific conductance (micromhos at 25°C)	Silica (SiO_3)	Calcium (Ca)	Magnesium (Mg)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
NEAR INTAKE TOWERS, MILE 354.7--Continued												
Jan. 27, 1954	5	1,137	55.0	942	11	81	23	157	250	63	1.3	298
Jan. 27	50	1,092	54.8	927	--	--	--	155	--	63	--	--
Jan. 27	100	1,042	54.8	922	--	--	--	156	--	--	--	--
Jan. 27	150	992	54.8	920	11	81	23	156	253	62	1.4	298
Jan. 27	200	942	54.8	920	--	--	--	157	--	--	--	--
Jan. 27	250	892	54.5	1,010	--	--	--	172	--	--	--	--
Jan. 27	300	842	54.1	1,020	--	--	--	172	--	--	--	--
Jan. 27	350	792	54.0	1,020	14	86	26	173	269	72	2.1	324
Jan. 27	400	742	53.9	1,040	--	--	--	178	--	--	--	--
Jan. 27	414	728	53.9	1,030	16	87	27	173	273	79	3.4	328
Jan. 27	416	726	53.9	1,070	--	--	--	217	--	--	--	--
Feb. 25	5	1,134	56.8	937	10	84	23	159	259	64	1.9	304
Feb. 25	50	1,089	54.8	935	--	--	--	155	--	--	--	--
Feb. 25	100	1,039	54.6	935	--	--	--	156	--	--	--	--
Feb. 25	150	989	54.5	938	--	--	--	156	--	--	--	--
Feb. 25	200	939	54.3	1,060	11	92	26	174	292	78	2.7	338
Feb. 25	250	889	54.1	1,100	--	--	--	180	--	--	--	--
Feb. 25	300	839	53.4	1,110	--	--	--	178	--	--	--	--
Feb. 25	350	789	53.4	1,130	11	95	29	180	311	86	2.6	356
Feb. 25	400	739	53.4	1,120	--	--	--	179	--	--	--	--
Feb. 25	411	728	53.4	1,120	--	--	--	179	--	--	--	--
Feb. 25	413	726	53.4	1,190	18	105	34	254	284	90	3.4	402
Mar. 30	5	1,129	54.4	982	12	85	24	164	265	69	.8	312
Mar. 30	50	1,084	54.2	976	--	--	--	162	--	--	--	--
Mar. 30	100	1,034	54.2	976	--	--	--	160	--	--	--	--
Mar. 30	150	984	54.2	973	11	85	24	159	--	70	.9	314
Mar. 30	200	934	53.5	1,040	11	90	25	169	--	77	1.1	330
Mar. 30	250	884	53.1	1,110	--	--	--	178	--	--	--	--
Mar. 30	300	834	53.0	1,100	11	92	28	175	299	85	1.5	346
Mar. 30	350	784	53.0	1,050	--	--	--	171	--	--	--	--
Mar. 30	407	727	53.0	1,120	11	92	28	179	300	87	1.8	346
Mar. 30	410	724	53.4	1,120	--	--	--	204	--	--	--	--

May 6, 1954	5	1,125	66.6	974	12	85	24	160	268	68	1.1	312
May 6	50	1,080	61.3	968	--	--	--	159	--	--	--	--
May 6	100	1,030	55.3	971	--	--	--	159	--	--	--	--
May 6	150	980	54.2	985	11	86	25	160	269	71	1.6	316
May 6	200	930	53.2	1,070	--	--	--	170	--	--	--	--
May 6	250	880	53.2	1,080	11	94	26	172	--	81	2.1	342
May 6	300	830	53.1	1,100	--	--	--	176	--	--	--	--
May 6	350	780	53.1	1,100	11	95	27	174	301	85	1.9	344
May 6	403	727	53.1	1,100	--	--	--	177	--	--	--	--
May 6	405	725	53.2	1,150	19	99	32	245	273	87	5.3	380
May 27	5	1,124	65.0	974	11	85	24	154	283	67	1.3	310
May 27	50	1,079	64.0	970	--	--	--	156	--	--	--	--
May 27	100	1,029	57.4	977	--	--	--	156	--	--	--	--
May 27	150	979	55.1	974	13	85	23	154	272	69	1.3	308
May 27	200	929	54.1	980	13	87	23	158	278	69	1.3	314
May 27	250	879	53.7	987	--	--	--	157	--	--	--	--
May 27	300	829	53.6	1,020	11	87	25	163	279	73	1.8	320
May 27	350	779	53.5	1,100	--	--	--	177	--	--	--	--
May 27	403	726	53.4	1,100	12	94	25	174	298	81	2.2	340
May 27	405	724	53.4	1,080	--	--	--	186	--	--	--	--
June 29	5	1,125	77.1	987	15	83	26	141	304	71	.9	316
June 29	50	1,080	71.6	987	11	87	24	147	304	71	1.6	314
June 29	100	1,030	59.6	978	11	86	24	157	285	69	1.5	314
June 29	150	980	56.0	987	12	87	25	160	288	69	1.5	320
June 29	200	930	54.9	1,010	12	88	26	161	297	73	1.5	326
June 29	250	880	54.5	1,070	11	90	28	170	301	80	2.1	340
June 29	300	830	54.2	1,060	11	93	25	169	305	80	1.8	336
June 29	350	780	54.0	1,110	11	94	27	174	318	84	2.3	348
June 29	404	726	53.8	1,080	--	92	28	180	314	82	2.4	342
June 29	405	725	53.8	1,110	15	95	29	198	300	83	2.9	358
Aug. 5	5	1,121	78.2	1,000	11	82	26	139	295	75	.8	312
Aug. 5	50	1,076	75.6	1,010	--	--	--	143	--	--	--	--
Aug. 5	100	1,026	63.5	994	15	88	25	155	280	71	1.7	322
Aug. 5	150	976	55.2	1,010	--	--	--	159	--	--	--	--

COLORADO RIVER MAIN STEM--Continued

LAKE MEAD NEAR BOULDER CITY, NEV.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Depth (feet)	Elevation (feet)	Temperature (°F)	Specific conductance (micromhos at 25°C)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Total hardness as $CaCO_3$
NEAR INTAKE TOWERS, MILE 354.7--Continued												
Aug. 5, 1954	200	926	54.2	1,050	9.8	92	24	165	293	80	2.0	326
Aug. 5	250	876	54.0	1,080	--	--	--	171	--	--	--	--
Aug. 5	300	826	53.5	1,090	11	97	25	173	302	83	2.4	346
Aug. 5	350	776	53.5	1,100	--	--	--	174	--	--	--	--
Aug. 5	399	727	53.4	1,110	13	96	27	181	303	88	--	352
Aug. 5	401	725	53.7	1,150	21	104	29	338	223	83	4.0	380
Sept. 8	5	1,114	77.4	1,020	14	82	25	136	299	77	.8	308
Sept. 8	50	1,069	77.3	1,010	--	--	--	140	--	--	--	--
Sept. 8	100	1,019	65.6	997	12	90	23	157	284	73	1.4	322
Sept. 8	150	969	58.5	983	--	--	--	156	--	--	--	--
Sept. 8	200	919	54.5	1,030	10	93	25	161	295	77	2.0	334
Sept. 8	250	869	54.1	1,050	--	--	--	175	--	--	--	--
Sept. 8	300	819	53.9	1,020	9.7	90	25	154	295	77	1.3	328
Sept. 8	350	769	53.7	1,070	--	--	--	174	--	--	--	--
Sept. 8	393	726	53.7	1,080	10	96	24	176	303	83	2.9	340
Sept. 8	394	725	54.4	1,110	--	--	--	220	--	--	--	--

COLORADO RIVER BELOW HOOVER DAM, ARIZ.-NEV.

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, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1939 to September 1954.
Water temperatures: October 1941 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 717 ppm Mar. 1-10; minimum, 616 ppm Dec. 21-31.
Hardness: Maximum, 368 ppm July 11-20; minimum, 298 ppm Dec. 11-20, 21-31.
Specific conductance: Maximum, 1,090 micromhos Mar. 15-17; minimum daily, 903 micromhos Dec. 23.
EXTREMES, 1939-54.--Dissolved solids (1939-44, 1945-54): Maximum, 824 ppm Mar. 1-10, 1941; minimum, 477 ppm Nov. 21, 24-26, 28, 1952.
Hardness (1939-44, 1950-54): 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 residues 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 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953..	12,780	--	--	85	23	81	--	--	--	--	--	--	--	630	0.86	21,740	306	--	36	2.0	939	--	--
Oct. 11-20.....	12,540	--	--	86	22	82	--	--	--	--	--	--	--	633	.86	21,430	306	--	37	2.0	941	--	--
Oct. 21-31.....	13,730	12	0.04	81	26	80	4.1	162	256	62	0.3	1.8	0.14	628	.85	23,280	309	176	36	2.0	932	7.9	8
Nov. 1-10.....	12,690	--	--	84	23	82	--	--	--	--	--	--	--	634	.86	21,720	306	--	37	2.0	939	--	--
Nov. 11-20.....	13,520	--	--	85	23	82	--	--	--	--	--	--	--	630	.86	23,000	306	--	37	2.0	936	--	--
Nov. 21-30.....	11,540	--	--	86	22	83	--	--	--	--	--	--	--	636	.86	19,820	306	--	37	2.1	947	--	--
Dec. 1-10.....	14,520	--	--	84	23	83	--	--	--	--	--	--	--	630	.86	24,700	306	--	37	2.1	940	--	--
Dec. 11-20.....	12,590	--	--	83	22	81	--	--	--	--	--	--	--	619	.84	21,040	298	--	37	2.0	927	--	--
Dec. 21-31.....	12,640	--	--	83	22	81	--	--	--	--	--	--	--	616	.84	21,020	298	--	37	2.0	927	--	--
Jan. 1-10, 1954..	12,280	--	--	81	25	77	--	--	--	--	--	--	--	638	.87	21,150	304	--	35	1.9	940	--	--
Jan. 11-20.....	14,940	12	.03	81	27	82	4.7	161	256	70	.4	1.9	.13	630	.86	25,410	313	181	36	2.0	945	7.7	12
Jan. 21-31.....	13,570	--	--	83	26	85	--	--	--	--	--	--	--	664	.90	24,330	312	--	37	2.1	963	--	--
Feb. 1-10.....	12,750	--	--	83	26	88	--	--	--	--	--	--	--	674	.92	23,200	314	--	38	2.2	984	--	--
Feb. 11-20.....	13,460	--	--	88	25	84	--	--	--	--	--	--	--	690	.94	25,080	322	--	36	2.0	1,010	--	--
Feb. 21-28.....	12,700	--	--	87	28	91	--	--	--	--	--	--	--	702	.95	24,070	332	--	37	2.2	1,040	--	--
Mar. 1-10	15,940	--	--	89	28	91	--	--	--	--	--	--	--	717	.98	30,860	336	--	37	2.2	1,060	--	--
Mar. 11-20	14,630	--	--	92	26	98	--	--	--	--	--	--	--	693	.94	27,370	338	--	39	2.3	1,070	--	--
Mar. 21-31	13,950	--	--	92	25	96	--	--	--	--	--	--	--	687	.93	25,880	334	--	39	2.3	1,060	--	--

COLORADO RIVER MAIN STEM--Continued

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

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Apr. 1-10, 1954....	14,890	--	--	93	25	96	--	--	--	--	--	--	--	699	0.95	28,100	336	--	38	2.3	1,060	--	--
Apr. 11-20	16,640	12	0.10	86	31	95	5.6	173	286	78	0.3	2.5	0.14	690	.94	31,000	342	200	37	2.2	1,060	7.7	7
Apr. 21-30	17,610	--	--	91	26	95	--	--	--	--	--	--	--	693	.94	32,950	332	--	38	2.3	1,050	--	--
May 1-10	16,400	--	--	90	27	93	--	--	--	--	--	--	--	689	.94	30,510	334	--	38	2.2	1,050	--	--
May 11-20	19,800	--	--	93	24	93	--	--	--	--	--	--	--	692	.94	37,140	332	--	38	2.2	1,050	--	--
May 21-31	17,460	--	--	92	24	92	--	--	--	--	--	--	--	676	.92	31,870	328	--	38	2.2	1,030	--	--
June 1-10.....	15,540	--	--	91	25	94	--	--	--	--	--	--	--	683	.93	28,660	329	--	38	2.3	1,040	--	--
June 11-20.....	14,560	--	--	90	26	94	--	--	--	--	--	--	--	683	.93	26,850	332	--	38	2.3	1,040	--	--
June 21-30.....	16,750	--	--	87	28	94	--	--	--	--	--	--	--	700	.95	31,660	332	--	38	2.3	1,040	--	--
July 1-10	15,650	--	--	92	25	94	--	--	--	--	--	--	--	676	.92	28,560	333	--	38	2.3	1,030	--	--
July 11-20	17,650	13	.05	88	36	86	4.0	168	295	76	.3	2.2	.16	681	.93	32,450	368	230	33	1.9	1,030	7.8	7
July 21-31	16,800	--	--	91	25	94	--	--	--	--	--	--	--	706	.96	32,020	330	--	38	2.3	1,050	--	--
Aug. 1-10.....	14,280	--	--	93	24	94	--	--	--	--	--	--	--	712	.97	27,450	332	--	38	2.3	1,040	--	--
Aug. 11-20.....	14,660	--	--	91	26	94	--	--	--	--	--	--	--	711	.97	28,140	334	--	38	2.2	1,040	--	--
Aug. 21-31.....	14,390	--	--	92	25	93	--	--	--	--	--	--	--	707	.96	27,470	332	--	38	2.2	1,040	--	--
Sept. 1-10	16,180	--	--	93	24	93	--	--	--	--	--	---	--	710	.97	31,020	330	--	38	2.2	1,040	--	--
Sept. 11-20	15,420	--	--	93	24	94	--	--	--	--	--	--	--	712	.97	29,640	332	--	38	2.3	1,040	--	--
Sept. 21-30	15,440	--	--	92	25	93	--	--	--	--	--	--	--	714	.97	29,770	332	--	38	2.2	1,040	--	--
Weighted average..	14,760	--	--	88	25	90	--	--	--	--	--	--	--	677	0.92	26,980	322	--	38	2.2	1,010	--	--

COLORADO RIVER MAIN STEM--Continued

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

Temperature (°F) of water, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57	--	58	--	57	56	55	--	56	56	--	57
2	57	58	57	--	56	56	55	--	56	56	57	57
3	--	58	58	--	56	56	--	56	56	--	57	57
4	--	58	58	57	56	56	--	56	56	--	57	--
5	57	58	--	57	56	56	55	56	--	--	57	--
6	57	58	--	57	--	--	55	56	--	56	57	--
7	57	--	58	57	--	--	55	55	56	56	--	57
8	57	--	58	58	56	56	56	--	56	56	--	57
9	57	58	58	--	56	55	56	--	56	56	57	57
10	--	58	58	--	56	56	--	56	56	--	57	57
11	--	--	58	58	--	56	--	56	56	--	57	--
12	--	58	--	57	58	55	56	56	--	56	57	--
13	--	57	--	56	--	--	56	56	--	56	57	57
14	--	--	58	56	--	--	56	56	56	56	--	57
15	--	--	58	56	55	56	56	--	56	56	--	57
16	58	58	58	--	56	56	56	--	56	56	57	57
17	--	58	58	--	56	55	--	56	56	--	57	57
18	--	58	58	56	56	56	--	55	56	--	57	--
19	57	57	--	56	56	56	56	56	--	56	57	--
20	57	58	--	56	--	--	56	56	--	56	57	57
21	58	--	58	56	--	--	56	56	56	56	--	57
22	58	--	58	56	--	55	56	--	56	57	--	57
23	58	58	59	--	56	55	56	--	56	57	57	57
24	--	58	58	--	56	55	--	56	56	--	57	57
25	--	58	--	56	56	56	--	56	56	--	57	--
26	58	--	--	56	56	56	56	56	--	56	57	--
27	58	58	--	56	--	--	55	56	--	--	57	57
28	58	--	58	56	--	--	56	56	56	57	--	57
29	58	--	57	56	--	56	56	--	56	57	--	57
30	58	58	57	--	--	55	56	--	--	57	57	57
31	--	--	57	--	--	55	--	--	--	--	57	--
Average	--	--	--	--	--	--	--	--	--	--	--	--

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER NEAR TOPOCK, ARIZ.

LOCATION.--Temperature recorder at gaging station in Mohave Canyon, 2.7 miles downstream from Topock, 39.5 miles upstream from Parker Dam, and 49 miles downstream from Davis Dam, Mohave County.
DRAINAGE AREA.--172,300 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 75°F July 28, 29; minimum, 49°F Dec. 28, 29.
EXTREMES, 1952-54.--Water temperatures: Maximum, 75°F several days in each year; minimum, 49°F Dec. 28, 29, 1953.
REMARKS.--Recorder equipped with thermograph June 17, 1952. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Temperature (°F) of water, water year October 1953 to September 1954

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	66	64	64	58	57	50	50	55	54	56	55	61	60	63	62	68	68	73	72	72	71	74	73
2	67	67	64	64	57	55	50	50	55	54	57	55	61	61	65	63	69	68	73	72	72	71	73	72
3	67	65	64	64	55	55	50	50	54	54	56	55	61	61	67	65	71	68	72	71	71	70	73	72
4	67	65	65	64	56	55	50	50	54	54	57	56	61	61	67	66	71	70	71	70	71	70	74	73
5	69	67	64	64	56	54	50	50	54	54	58	57	62	61	68	66	71	68	71	70	71	70	74	73
6	69	68	64	62	54	54	50	50	54	54	57	57	62	61	68	66	69	65	73	71	71	69	73	72
7	69	68	62	61	54	54	50	50	54	54	58	57	61	62	67	66	69	67	73	70	71	69	73	72
8	68	68	61	61	54	53	51	51	54	54	58	58	61	61	67	66	69	68	72	71	72	71	73	71
9	68	68	61	61	53	53	51	51	55	54	59	58	63	62	67	66	69	67	72	70	72	71	72	71
10	68	68	62	61	53	53	51	50	55	55	59	58	63	63	67	65	67	66	72	69	71	71	72	71
11	68	67	62	62	53	51	50	50	55	55	59	56	63	63	67	65	69	67	72	70	71	71	72	71
12	67	66	62	62	52	51	50	50	56	56	58	55	65	63	67	66	70	69	73	71	70	70	71	71
13	66	66	63	63	52	52	51	50	56	56	56	55	65	64	67	66	69	68	74	72	71	70	71	70
14	66	66	63	62	53	52	51	51	56	55	57	55	65	65	67	66	69	68	74	71	70	69	70	69
15	66	66	62	62	53	53	51	51	56	56	57	56	66	65	67	66	69	68	74	71	69	69	70	69
16	66	65	62	62	53	53	51	51	56	56	58	57	65	65	67	66	69	69	74	72	71	69	70	69
17	65	65	63	62	53	53	51	51	56	56	58	57	66	65	67	67	69	68	73	70	71	70	69	68
18	66	65	62	59	53	52	51	51	56	56	57	56	67	66	68	67	69	68	73	70	71	70	69	68
19	66	64	59	58	54	53	51	51	56	54	58	57	67	66	68	67	70	69	73	70	71	70	69	69
20	63	62	58	57	54	54	52	51	54	54	57	57	66	64	68	67	71	69	73	70	71	70	70	69
21	64	63	57	57	54	53	52	52	55	54	58	58	65	63	68	67	71	70	72	70	70	69	69	69
22	64	61	57	57	53	51	52	52	56	55	59	58	65	63	67	65	72	71	72	70	70	69	70	69
23	64	61	58	57	51	51	52	52	56	56	58	57	65	64	68	65	72	71	72	70	71	69	71	70
24	64	64	58	58	51	51	52	52	56	56	57	57	65	64	68	67	71	69	72	70	71	70	71	68
25	63	63	59	58	51	51	53	52	57	56	59	57	65	63	69	68	71	69	71	69	71	69	72	68
26	63	62	59	59	51	51	53	52	57	57	59	58	65	64	69	67	71	69	73	71	69	68	72	71
27	63	62	59	59	51	51	53	52	57	55	59	58	64	62	68	67	71	69	73	71	68	68	72	71
28	63	63	59	59	51	49	53	53	55	55	60	59	63	62	68	67	70	69	75	74	70	68	72	70
29	64	63	59	58	50	49	53	53	--	--	59	59	63	62	68	67	71	69	75	72	72	71	71	69
30	64	64	58	57	50	50	53	53	--	--	60	59	64	63	68	68	73	71	73	70	74	72	69	67
31	64	64	--	--	50	50	54	53	--	--	60	59	--	--	68	67	--	--	72	71	--	--	--	--
Average	66	65	61	60	53	52	51	51	55	55	58	57	64	63	67	66	70	68	72	71	71	70	71	70

COLORADO RIVER BELOW PARKER DAM, ARIZ.-CALIF.

LOCATION.--Temperature recorder at gaging station, 3.9 miles downstream from Parker Dam, 10.4 miles upstream from Headgate Rock Dam, and 11 miles northeast of Parker, Ariz.
DRAINAGE AREA.--178,800 square miles approximately.
RECORDS AVAILABLE.--Water temperatures: February to September 1954.
REMARKS.--Thermograph first put into operation Feb. 8, 1954. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

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

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1									--	--	57	57	59	59	69	68	73	73	--	--	78	78	78	77
2									--	--	57	57	59	59	69	69	75	74	75	75	78	78	77	77
3									--	--	57	57	59	59	69	69	75	75	75	75	78	77	78	77
4									--	--	57	57	59	59	69	69	75	74	--	--	78	78	78	78
5									--	--	57	57	60	59	69	69	74	73	--	--	78	78	78	78
6									--	--	57	57	60	60	69	69	74	73	--	--	79	78	78	78
7									--	--	57	57	62	60	69	69	75	74	--	--	79	78	78	78
8									55	55	57	57	63	62	69	69	75	74	--	--	79	79	78	78
9									55	55	57	57	63	62	69	68	74	73	--	--	79	79	79	78
10									55	55	57	57	63	62	70	68	74	73	--	--	79	79	79	79
11									55	55	57	57	63	63	70	70	74	74	--	--	79	79	79	78
12									55	55	57	57	64	63	70	70	74	74	76	76	79	79	78	78
13									55	55	57	57	65	64	70	70	74	74	76	75	79	79	78	78
14									55	55	57	57	65	64	70	70	74	74	77	76	79	79	79	78
15									56	55	57	57	64	64	71	70	74	74	78	77	79	79	79	78
16									57	56	57	57	67	64	71	71	--	--	78	77	79	79	78	77
17									57	57	57	57	67	67	--	--	--	--	77	77	79	79	77	77
18									57	57	57	57	67	66	--	--	--	--	77	77	79	79	77	77
19									57	56	57	57	66	66	72	71	--	--	77	77	79	78	77	77
20									56	56	57	57	67	66	72	72	74	73	77	77	78	78	78	77
21									56	56	57	57	67	66	72	71	74	74	77	77	78	78	78	78
22									57	57	57	57	68	67	74	71	74	74	77	77	78	78	78	77
23									57	57	57	57	68	68	75	74	74	74	77	77	78	78	77	77
24									57	57	57	57	68	68	75	74	74	73	78	76	78	78	77	77
25									57	57	57	57	68	68	75	73	73	73	78	77	78	77	77	77
26									57	57	57	57	68	68	74	73	73	73	78	77	77	77	77	77
27									57	57	58	57	69	68	73	73	74	74	79	78	77	77	77	77
28									57	57	58	58	69	68	74	73	75	74	79	79	78	77	77	76
29									--	--	58	58	70	69	74	73	76	75	79	78	78	77	76	76
30									--	--	58	57	70	68	73	73	76	76	78	78	78	78	76	75
31									--	--	59	58	--	--	73	73	--	--	78	78	78	78	--	--
Average									--	--	57	57	65	64	71	71	74	74	77	76	78	78	78	77

GILA RIVER BASIN

GILA RIVER AT KELVIN, ARIZ.

LOCATION.--Just above mouth of Mineral Creek, 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.--18,011 square miles, of which 5,125 square miles is below Coolidge Dam.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,000 ppm Oct. 1-10; minimum, 294 ppm Sept. 24.
Hardness: Maximum, 1,330 ppm Oct. 1-10, 21-31; minimum, 182 ppm Apr. 11-20.
Specific conductance: Maximum observed, 2,660 micromhos Feb. 1; minimum observed, 476 micromhos Sept. 24.
Water temperatures: Maximum observed, 92 °F July 17; minimum observed, 44 °F Dec. 27.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 2,010 ppm July 1-7, 1953; minimum, 294 ppm Sept. 24, 1954.
Hardness: Maximum, 1,330 ppm Oct. 1-10, 21-31, 1953; minimum, 174 ppm Aug. 26, 1953.
Specific conductance: Maximum observed, 2,790 micromhos June 12, 1953; minimum observed, 407 micromhos Jan. 20, 1952.
Water temperatures: Maximum observed, 98 °F July 25, Aug. 20, 1953; minimum observed, 41 °F Dec. 15, 25, 1950.
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 1953 to September 1954 given in WSP 1343. 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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953..	1.42	42		384	91	106	--	309	1,120	101	0.6	0.8		2,000	2.72	7.67	1,330	1,080	15	1.3	2,430	7.4
Oct. 11-20.....	1.32	43		381	90	109	--	309	1,110	104	.5	.4		1,990	2.71	7.09	1,320	1,070	15	1.3	2,420	7.3
Oct. 21-31	1.26	45		383	91	106	--	296	1,120	98	.5	.5		1,990	2.71	6.77	1,330	1,090	15	1.3	2,420	7.4
Nov. 1-10.....	1.49	62		338	83	143	--	270	1,030	150	.7	.2		1,940	2.64	7.81	1,180	964	21	1.8	2,420	7.4
Nov. 11-20.....	3.16	62		236	54	224	--	226	728	250	1.3	1.2		1,670	2.27	14.2	811	626	38	3.4	2,320	7.5
Nov. 21-30.....	4.71	47		214	47	245	--	244	669	272	1.4	.8		1,620	2.20	20.6	728	528	42	3.9	2,310	7.6
Dec. 1-10.....	6.55	47		226	44	237	--	243	716	242	1.5	1.0		1,630	2.22	28.8	745	546	41	3.9	2,290	7.5
Dec. 11-20.....	7.80	34		212	38	239	--	246	649	242	2.1	1.0		1,540	2.09	32.4	685	484	43	4.0	2,220	7.6
Dec. 21-31	10.2	35		202	38	239	--	244	634	240	2.5	.8		1,510	2.05	41.6	660	460	44	4.0	2,180	7.6
Jan. 1-10, 1954..	8.50	33		197	41	249	--	255	614	250	1.9	.7		1,510	2.05	34.7	660	451	45	4.2	2,200	7.6
Jan. 11-20	8.64	36		175	46	236	15	232	616	240	1.9	1.3		1,480	2.01	34.5	626	436	44	4.1	2,160	7.9
Jan. 21-31.....	10.5	48		156	45	236	15	218	584	235	1.9	1.2		1,430	1.94	40.5	574	396	46	4.3	2,090	7.8
Feb. 1-10.....	25.1	59		102	40	254	--	232	338	315	1.5	1.9		1,230	1.67	83.3	419	229	57	5.4	1,950	7.9
Feb. 11-20.....	28.6	44		99	36	238	--	231	310	292	1.4	1.0		1,120	1.52	86.5	395	206	57	5.2	1,860	8.0
Feb. 21-28.....	32.6	25		108	37	256	--	234	309	338	1.4	.8		1,200	1.63	106	422	230	57	5.4	1,980	7.8
Mar. 1-10.....	36.4	27		116	35	275	--	236	299	372	1.3	2.4		1,240	1.69	122	434	240	58	5.7	2,060	7.8
Mar. 11-21.....	26.5	27		120	36	275	--	229	333	360	1.4	2.0		1,270	1.73	90.9	448	260	57	5.6	2,080	7.9

Mar. 22-25, 1954	2,251	27		67	12	38	--	195	84	35	.7	2.3		362	.49	2,200	216	56	28	1.1	581	7.6
Mar. 26-28	170	30		121	25	137	--	230	259	168	.9	4.2		858	1.17	394	405	216	42	3.0	1,350	8.0
Mar. 29-Apr. 2..	57.6	32		165	40	207	--	299	397	258	1.0	2.6		1,250	1.70	194	576	331	44	3.8	1,920	8.1
Apr. 3-10	216	21		56	13	88	--	154	99	106	.8	4.2		464	.63	271	193	67	50	2.8	791	7.8
Apr. 11-20	317	20		55	11	84	--	152	85	108	.7	4.0		443	.60	379	182	58	50	2.7	756	7.7
Apr. 21-30	234	22		58	13	91	--	162	83	130	.6	3.1		480	.65	303	198	66	50	2.8	858	7.6
May 1-10.....	138	22		69	14	109	--	184	110	145	.6	2.1		561	.76	209	230	78	51	3.1	986	7.5
May 11-20.....	107	22		71	15	113	--	185	125	150	.7	2.1		589	.80	170	238	87	51	3.2	1,010	7.5
May 21-31.....	181	24		64	18	104	--	182	102	141	.9	1.2		544	.74	266	234	84	49	3.0	930	7.6
June 1-10	257	22		61	17	102	--	185	90	141	.8	1.3		526	.72	365	222	70	50	3.0	911	7.7
June 11-20	238	12		64	16	110	6.4	196	95	154	.7	1.3		555	.75	357	226	65	51	3.2	975	7.4
June 21-26	293	17		74	18	108	--	247	93	148	.7	.6		580	.79	459	258	56	48	2.9	1,010	7.5
June 27-30	77.5	25		121	25	154	--	325	214	187	1.0	4.1		891	1.21	186	405	138	45	3.3	1,450	7.6
July 1-10	120	22		94	23	147	--	293	145	190	1.0	3.1		769	1.05	249	329	89	49	3.5	1,300	7.6
July 11-19.....	146	29		119	22	89	--	418	98	97	.6	1.5		662	.90	261	388	45	33	2.0	1,090	7.4
July 20-27.....	1,220	34		83	17	54	--	382	50	20	.7	1.0		448	.61	1,480	277	0	30	1.4	718	7.4
July 28-31.....	131	31		125	21	112	--	268	288	86	1.0	2.7		799	1.09	283	398	179	38	2.4	1,190	7.5
Aug. 1-10	2,650	29		81	16	66	--	301	122	29	.8	.6		492	.67	3,520	268	22	38	2.4	766	7.5
Aug. 11-20	944	28		77	15	67	--	265	143	28	.8	1.0		490	.67	1,250	254	36	36	1.8	752	7.5
Aug. 22,24-26,28-31	500	27		62	12	66	--	235	99	38	.8	2.6		423	.58	571	204	12	41	2.0	670	7.6
Aug. 21, 23,.27..	326	28		83	17	90	--	255	178	61	.9	2.0		585	.80	515	277	68	41	2.4	903	7.7
Sept. 1-10.....	330	27		62	12	82	--	237	95	63	.9	3.5		462	.63	412	204	10	47	2.5	743	7.5
Sept. 11-20	273	22		55	12	90	--	221	99	72	.9	2.6		462	.63	341	186	6	51	2.9	747	7.5
Sept. 21-23, 25-30	287	26		58	12	95	--	225	100	81	.9	2.3		486	.66	377	194	10	52	3.0	787	7.5
Sept. 24.....	942	25		61	12	30	--	284	10	15	--	.8		294	.40	748	202	0	24	.9	476	7.2
Weighted average	257	27		76	16	78	--	261	114	65	0.8	1.6		506	0.69	351	256	42	40	2.1	813	--

GILA RIVER BASIN--Continued

GILA RIVER AT KELVIN, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
[Once-daily measurement, generally in afternoon]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	77	58	54	62	64	76	--	82	91	a77	89
2	74	72	59	54	62	63	--	74	82	87	87	86
3	69	70	59	55	60	68	--	77	84	88	83	84
4	74	--	50	55	61	--	72	80	--	91	76	84
5	81	70	52	57	63	66	74	80	82	91	--	82
6	74	71	--	58	61	70	73	83	a76	a82	78	88
7	74	70	57	57	a49	71	74	81	a74	a81	80	82
8	71	67	57	60	60	72	72	--	82	a82	85	84
9	79	69	57	--	62	69	74	a65	81	a78	88	86
10	77	70	58	--	63	84	72	75	82	84	82	87
11	77	70	57	65	a57	--	a62	79	83	--	86	87
12	72	70	58	63	64	a49	72	86	82	a82	a78	64
13	78	69	--	64	64	62	74	64	69	86	78	86
14	79	71	49	58	56	63	76	85	86	a81	a80	85
15	--	71	56	60	62	59	69	68	83	90	a84	87
16	77	--	54	62	60	64	79	82	84	a87	a79	83
17	74	a67	60	--	62	54	78	74	84	92	87	83
18	77	60	57	59	60	65	78	80	82	87	82	84
19	73	63	59	53	57	--	80	89	86	90	80	84
20	74	56	--	62	58	64	80	87	86	91	a80	64
21	78	69	58	63	--	66	80	81	87	82	84	84
22	70	69	55	64	64	60	--	a69	86	79	86	62
23	67	60	52	63	66	58	78	a67	88	81	89	83
24	67	72	51	53	65	--	77	a75	90	84	80	78
25	68	--	53	54	69	54	74	a74	82	86	a77	83
26	69	64	56	58	65	63	a69	a75	84	87	80	79
27	74	62	44	62	63	64	71	--	--	90	82	80
28	69	71	56	57	a50	70	76	a75	88	89	82	81
29	72	66	55	64	--	72	72	a68	64	--	83	78
30	80	64	54	64	--	72	a69	a73	82	a91	--	81
31	74	--	56	64	--	--	--	--	--	a84	84	--
Average	74	68	55	59	61	64	74	77	83	86	82	64

a Measurement made in morning.

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.--6,211 square miles. (revised).
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 590 ppm Apr. 21-30; minimum, 444 ppm Dec. 21-31.
Hardness: Maximum, 184 ppm Aug. 1-20; minimum, 152 ppm Dec. 11-20.
Specific conductance: Maximum observed, 1,030 micromhos Apr. 1, Aug. 22; minimum observed, 773 micromhos Oct. 3, 18-19.
Water temperatures: Maximum observed, 70°F Oct. 1-2, 5, Sept. 30; minimum observed, 50°F several days during month of January.
EXTREMES, 1950-54.--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 offices at Albuquerque, N. Mex. Records of discharge for gaging station below Stewart Mountain Dam for water year October 1953 to September 1954 given in WSP 1343. No inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953....	749	25		43	12	99	--	158	0	41	147		1.5		455	0.62	920	157	28	58	3.4	793	7.5
Oct. 11-20	4.41	17		46	12	97	--	160	0	41	146		1.8		448	.61	5.33	164	34	56	3.3	796	7.3
Oct. 21-31	431	17		45	11	98	--	161	0	41	146		1.6		445	.61	518	158	26	57	3.4	791	7.4
Nov. 1-10	398	18		44	11	95	--	154	0	36	141		1.2		452	.61	486	155	29	57	3.3	789	6.7
Nov. 11-20	278	17		45	11	95	--	159	0	37	143		1.3		459	.62	345	158	27	57	3.3	789	6.8
Nov. 21-30	275	17		45	11	95	3.8	158	0	37	141		.9		451	.61	335	158	28	56	3.3	789	7.1
Dec. 1-10	355	--		43	12	95	--	161	0	36	143		.9		466	.63	447	157	25	57	3.3	791	7.4
Dec. 11-20	471	15		45	9.7	97	3.8	158	0	38	143		1.3		448	.61	570	152	23	57	3.4	789	7.2
Dec. 21-31	764	13		44	11	95	--	159	0	36	143		.9		444	.60	916	155	24	57	3.3	783	7.3
Jan. 1-10, 1954....	224	16		46	9.7	95	--	156	0	37	143		1.0		450	.61	272	155	27	57	3.3	784	7.4
Jan. 11-20	151	17		44	13	95	--	161	0	36	145		1.2		452	.61	184	164	32	56	3.2	787	7.4
Jan. 21-31.....	63.3	15		44	13	95	--	159	0	36	150		.9		458	.62	78.3	164	33	56	3.2	807	7.4
Feb. 1-10	185	14		46	11	111	--	158	0	40	166		2.5		474	.64	237	160	30	60	3.8	854	7.8
Feb. 11-20	458	14		46	12	124	--	158	0	42	188		2.2		514	.70	636	164	35	62	4.2	931	7.8
Feb. 21-28	459	14		48	12	135	--	161	0	43	208		2.3		546	.74	677	170	38	63	4.5	992	7.9

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Mar. 1-10, 1954	880	13		48	12	136	--	161	0	43	208		2.4		546	0.74	1,300	170	38	64	4.5	992	8.0
Mar. 11-20	1,067	15		48	12	138	--	166	0	44	204		1.8		559	.76	1,610	170	34	64	4.6	1,020	7.1
Mar. 21-31	744	14		51	11	138	--	166	0	46	207		1.3		572	.78	1,150	172	36	64	4.6	1,010	7.5
Apr. 1-10	422	19		50	10	140	--	167	0	49	205		1.8		573	.78	653	166	29	65	4.7	1,010	7.6
Apr. 11-20	966	27		48	10	134	--	164	0	44	196		1.8		549	.75	1,430	161	26	64	4.6	976	7.7
Apr. 21-30	970	50		42	13	139	--	166	0	44	199		1.6		590	.80	1,550	158	22	66	4.8	979	8.1
May 1-10	646	46		42	13	140	--	165	0	44	203		1.5		578	.79	1,010	158	24	66	4.8	991	--
May 11-20	654	15		50	12	137	--	163	0	44	204		2.2		547	.74	966	174	41	63	4.5	994	7.6
May 21-31	870	15		49	12	138	--	164	0	44	205		2.3		554	.75	1,300	172	38	64	4.6	997	7.7
June 1-10	1,109	17		48	12	136	--	164	0	43	200		1.9		547	.74	1,640	170	35	64	4.5	980	7.8
June 11-20	1,107	13		48	12	131	--	159	0	43	196		.6		530	.72	1,580	170	39	63	4.4	963	7.6
June 21-30	1,074	12		48	11	130	--	159	0	43	197		2.5		528	.72	1,530	165	34	63	4.4	960	7.6
July 1-10	793	13		48	11	132	--	157	0	43	198		2.6		531	.72	1,140	165	36	63	4.5	966	7.6
July 11-20	835	15		48	12	134	--	158	0	44	200		3.2		538	.73	1,210	170	40	63	4.5	977	7.6
July 21-31	926	17		48	12	135	--	160	0	43	203		2.3		544	.74	1,360	170	38	63	4.5	988	7.7
Aug. 1-10	1,326	14		47	16	134	--	159	0	43	209		1.8		542	.74	1,940	184	53	61	4.3	989	7.6
Aug. 11-20	1,125	16		47	16	140	--	162	0	44	215		2.6		558	.76	1,695	184	51	62	4.5	1,010	7.5
Aug. 21-31	1,334	16		48	14	137	--	159	0	43	213		2.1		553	.75	1,990	178	47	63	4.5	1,000	7.5
Sept. 1-10	1,096	15		46	13	137	--	155	0	44	212		2.2		542	.74	1,600	168	42	64	4.6	983	7.5
Sept. 11-20	1,128	16		47	12	140	--	158	0	43	216		2.7		556	.76	1,690	167	38	65	4.7	1,010	7.6
Sept. 21-30	755	15		48	13	142	--	155	0	43	217		2.1		557	.76	1,140	174	46	64	4.7	1,010	7.5
Weighted average	699	18		47	12	125	--	160	0	43	195		1.9		533	0.72	1,010	167	36	62	4.2	954	--

GILA RIVER BASIN--Continued

SALT RIVER AT STEWART MOUNTAIN DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 6 a. m. and 9 a. m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	63	60	a 50	--	54	55	58	63	68	66	68
2	70	63	58	50	57	54	55	58	63	68	67	69
3	68	64	57	56	58	54	55	60	63	68	66	68
4	69	63	57	56	52	54	55	60	64	68	66	69
5	70	64	56	50	52	56	55	60	62	68	66	69
6	69	63	55	53	52	56	55	60	62	68	66	69
7	69	63	55	50	52	56	55	60	62	68	67	68
8	68	63	55	51	53	55	55	60	62	69	67	68
9	68	63	55	51	53	55	55	60	62	69	67	68
10	68	63	55	51	53	56	55	61	62	65	67	68
11	68	62	a 55	a 51	53	56	55	61	63	65	67	68
12	68	62	a 55	50	52	55	54	60	63	65	68	68
13	68	62	a 55	50	53	54	55	62	63	65	67	68
14	68	62	a 55	51	53	54	55	61	63	65	67	68
15	69	62	55	52	52	55	55	60	63	65	67	68
16	69	62	55	a 52	51	54	55	60	63	65	67	68
17	69	63	55	a 52	51	55	57	60	64	65	67	68
18	69	62	54	51	51	55	57	61	64	65	67	69
19	68	63	54	--	51	55	57	60	64	--	67	69
20	67	61	54	54	51	55	57	61	65	65	67	69
21	67	60	54	51	53	55	57	61	64	66	68	69
22	--	60	54	51	52	55	58	63	65	65	68	69
23	67	61	--	51	53	55	58	62	65	65	68	69
24	66	61	--	52	54	55	58	63	65	65	68	69
25	66	--	--	52	54	55	58	63	65	65	69	68
26	67	60	53	52	53	55	58	63	68	65	69	69
27	66	60	52	53	54	55	58	63	68	65	69	69
28	67	60	52	52	54	55	58	63	68	65	68	69
29	67	60	52	52	--	55	58	64	68	66	68	69
30	67	60	52	52	--	55	58	63	68	66	69	70
31	63	--	52	53	--	55	--	63	--	67	69	--
Average	68	82	55	52	53	55	56	61	64	66	67	69

a Measurement between 9 a. m. and 10:30 a. m.

GILA RIVER BASIN--Continued

OAK CREEK NEAR CORNVILLE, ARIZ.

LOCATION.--Temperature recorder at gaging station on county highway bridge, 0.2 mile upstream from Page Springs, 4 miles northeast of Cornville, Yavapai County, and 15 miles upstream from mouth.
DRAINAGE AREA.--357 square miles.
RECORDS AVAILABLE.--Water temperatures: June 29 to Sept. 30, 1954.
REMARKS.--Recorder equipped with thermograph June 29, 1954. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

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

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																	--	--	80	71	83	75	78	72
2																	--	--	79	72	84	71	78	73
3																	--	--	77	73	80	66	75	73
4																	--	--	79	72	80	74	78	71
5																	--	--	82	72	76	70	77	72
6																	--	--	82	72	79	72	79	71
7																	--	--	82	73	82	76	78	71
8																	--	--	80	73	80	74	78	71
9																	--	--	82	73	82	74	79	70
10																	--	--	84	73	77	74	78	72
11																	--	--	84	75	78	72	77	72
12																	--	--	83	76	76	73	76	70
13																	--	--	81	76	80	71	77	70
14																	--	--	85	76	82	72	77	70
15																	--	--	81	76	82	73	76	70
16																	--	--	79	74	82	73	75	68
17																	--	--	75	70	81	72	75	67
18																	--	--	78	74	80	71	76	67
19																	--	--	82	74	81	73	77	69
20																	--	--	85	75	80	73	77	69
21																	--	--	79	76	80	73	76	68
22																	--	--	76	71	78	72	75	69
23																	--	--	75	73	79	71	73	69
24																	--	--	77	74	79	71	71	65
25																	--	--	84	75	78	71	73	67
26																	--	--	85	77	77	69	74	67
27																	--	--	87	77	78	68	75	68
28																	--	--	90	78	78	70	75	67
29																	82	70	86	77	78	70	72	66
30																	80	71	86	77	78	72	72	65
31																	--	--	84	78	76	72	--	--
Average																	--	--	82	74	79	72	76	69

VERDE RIVER BELOW BARTLETT DAM, ARIZ.

LOCATION.--At gaging station 2¼ miles downstream from Bartlett Dam, Maricopa County, and 3¼ miles upstream from Camp Creek.
DRAINAGE AREA.--6,188 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 440 ppm Nov. 1-10; minimum, 184 ppm June 21-30.
Hardness: Maximum, 276 ppm Oct. 21-31, Dec. 1-10, 21-31; minimum, 124 ppm June 21-30.
Specific conductance: Maximum observed, 701 micromhos Oct. 30, Nov. 3; minimum observed, 289 micromhos June 22, 25-27.
Water temperatures: Maximum observed, 83°F Aug. 4; minimum observed, 43°F Jan. 8, 10-11.
EXTREMES, 1950-54.--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 residues on evaporation, unless otherwise noted. Records of specific conductance of daily samples available in district offices at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	179	29		38	31	38	--	247	0	71	27		0.7		357	0.49	173	222	20	27	1.1	581	7.8
Oct. 11-20	672	23		40	32	39	--	253	0	77	27		.8		365	.50	662	232	24	27	1.1	600	7.6
Oct. 21-31	88.4	24		48	38	45	--	300	0	87	30		.9		425	.58	101	276	30	26	1.2	689	7.6
Nov. 1-10	55.2	47		36	38	52	--	264	13	86	30		.5		440	.60	65.6	246	8	31	1.4	668	--
Nov. 11-20	51.1	39		35	38	51	--	250	15	86	31		.6		416	.57	57.4	244	14	31	1.4	653	--
Nov. 21-30	52.0	23		45	38	45	--	295	0	84	30		.6		409	.56	57.4	268	27	27	1.2	674	7.8
Dec. 1-10	54.5	23		46	39	44	--	279	11	82	29		.4		408	.55	60.0	276	29	26	1.2	673	--
Dec. 11-20	52.6	22		45	38	43	--	280	9	80	28		.3		400	.54	56.8	268	24	26	1.1	661	--
Dec. 21-31	52.0	23		48	38	44	--	303	0	78	29		.2		407	.55	57.1	276	28	26	1.2	670	7.8
Jan. 1-10, 1954	53.5	21		46	37	42	--	281	10	74	28		.3		395	.54	57.1	267	20	26	1.1	654	--
Jan. 11-20	50.9	29		47	36	44	--	296	0	75	28		.3		403	.55	55.4	266	23	26	1.2	656	8.2
Jan. 21-31	51.2	22		45	35	44	--	285	0	76	27		.4		384	.52	53.1	256	23	27	1.2	641	8.2
Feb. 1-10	50.0	23		50	34	43	--	299	0	75	27		.4		396	.54	53.5	265	20	26	1.1	658	8.2
Feb. 11-20	50.2	23		50	34	43	--	298	0	75	27		.6		395	.54	53.5	265	21	26	1.1	656	8.2
Feb. 21-28	49.9	23		49	35	43	--	296	0	74	27		.4		395	.54	53.2	266	24	26	1.1	649	8.2
Mar. 1-10	49.7	23		52	34	43	--	302	0	73	26		.9		395	.54	53.0	270	22	26	1.1	657	--
Mar. 11-20	52.2	25		46	37	43	--	308	0	74	26		.5		408	.55	57.5	267	14	26	1.1	656	7.9
Mar. 21-31	169	42		45	36	40	--	288	0	73	25		.4		401	.55	183	260	24	25	1.1	632	7.9

GILA RIVER BASIN--Continued

VERDE RIVER BELOW BARTLETT DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954	1,790	20		37	23	27	--	225	0	43	16		0.4		281	0.38	1,360	187	2	24	0.9	462	7.1
Apr. 11-20	824	20		33	18	20	--	184	0	33	13		.7		259	.35	576	156	6	22	.7	386	7.6
Apr. 21-30[a]	349	19		32	16	21	--	179	0	29	11		1.3		a217	.39	271	146	0	24	.8	365	7.6
May 1-10	174	17		32	17	18	2.3	176	0	31	12		.8		216	.29	101	150	6	20	.6	362	7.7
May 11-20	176	41		35	17	23	2.7	197	0	28	13		.4		280	.38	133	158	0	24	.8	394	7.2
May 21-31	172	47		34	14	29	2.8	192	0	30	14		.3		284	.39	132	142	0	30	1.1	386	7.7
June 1-10	514	18		32	16	17	2.4	171	0	30	12		1.1		214	.29	297	146	6	20	.6	352	7.7
June 11-20	878	18		30	14	14	--	153	0	24	9.5		1.2		192	.26	455	132	7	19	.5	316	7.7
June 21-30	1,238	19		30	12	12	--	146	0	22	9.0		1.1		184	.25	615	124	5	17	.5	293	7.7
July 1-10	1,601	20		34	15	16	--	176	0	29	10		.6		216	.29	934	146	2	19	.6	351	7.8
July 11-20	1,151	20		42	23	27	--	220	0	52	18		.4		295	.40	917	200	19	23	.8	487	7.9
July 21-31	573	21		44	27	34	--	240	0	65	23		.6		332	.45	514	221	24	25	1.0	550	8.0
Aug. 1-10	598	29		44	27	35	--	235	0	72	23		1.2		344	.47	555	221	28	26	1.0	553	7.9
Aug. 11-20	690	21		42	24	30	--	217	0	62	19		1.6		305	.41	568	204	26	24	.9	500	7.8
Aug. 21-31	625	21		44	24	30	--	223	0	61	20		1.4		308	.42	520	208	26	24	.9	511	7.8
Sept. 1-10	679	24		41	27	35	--	232	0	69	24		1.0		332	.45	609	214	24	26	1.0	545	7.9
Sept. 11-20	687	23		41	27	35	--	231	0	70	24		1.1		332	.45	616	214	24	26	1.0	545	7.8
Sept. 21-30	172	23		45	29	35	--	251	0	70	24		1.3		343	.47	159	232	26	25	1.0	568	7.8
Weighted average	408	22		38	22	26	--	210	--	48	17		0.8		281	0.38	312	186	14	23	0.8	457	--

a Sum of determined constituents.

GILA RIVER BASIN--Continued

VERDE RIVER BELOW BARTLETT DAM, ARIZ.

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 7 a. m. and 9 a. m./

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

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.

LOCATION.--At water stage recorder on canal 1¼ miles downstream from Lake Pleasant Dam on Agua Fria River, 19 miles north of Marinette, Maricopa County, and 23 miles upstream from New River.
DRAINAGE AREA.--1,459 square miles (above Lake Pleasant Dam).
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 281 ppm Apr. 19-30; minimum, 233 ppm July 11-20.
Hardness: Maximum, 174 ppm Sept. 21-30; minimum, 150 ppm June 11-20.
Specific conductance: Maximum observed, 600 micromhos Sept. 26; minimum observed, 370 micromhos July 19.
Water temperatures: Maximum observed, 82°F Sept. 3; minimum observed, not determined.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 297 ppm Sept. 11-18, 1953; minimum, 168 ppm Jan. 29-Feb. 10, 1952.
Hardness: Maximum, 192 ppm Sept. 11-18, 1953; minimum, 108 ppm June 21-30, 1952.
Specific conductance: Maximum observed 600 micromhos Sept. 26, 1954; minimum observed, 241 micromhos Jan. 29, 1952.
Water temperatures: Maximum observed, 82°F Sept. 3, 1954; minimum observed, not determined.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values shown as extremes relate to canal samples only. Samples collected from canal when there is flow, otherwise from Lake Pleasant at headgates. Records of discharge for water year October 1953 to September 1954 furnished by Maricopa Water District through Surface Water Branch, Tucson District. Monthly diversions to canal below Lake Pleasant diversion dam are published as Agua Fria River at Lake Pleasant Dam in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 2, 9, 16, 23, 30, 1953 a	--	--		38	17	35		--	--	--		--		322	0.44	--	165	--	32	1.2	462	--
Nov. 6, 13, 20, 27 a	--	--		44	17	29		--	--	--		--		295	.40	--	180	--	26	.9	456	--
Dec. 4, 11, 18, 25 a	--	--		40	18	34		--	--	--		--		324	.44	--	174	--	30	1.1	463	--
Jan. 1, 8, 15, 22, 29, 1954 a	--	--		49	18	26		--	--	--		--		282	.38	--	196	--	22	.8	467	--
Feb. 5, 12, 19, 26 a	--	--		49	18	27		--	--	--		--		283	.38	--	196	--	23	.8	476	--
Mar. 5, 12, 19, 26 a	--	--		51	14	28		--	--	--		--		288	.39	--	184	--	25	.9	485	--
Apr. 2, 9, 16 a	--	--		44	13	24		--	--	--		--		259	.35	--	164	--	24	.8	429	--
Apr 19-30	47.9	15		43	14	31	4.7	204	37	22		4.6		281	.38	36.3	165	0	28	1.1	462	7.3
May 1-10	44.0	14		39	13	22		180	34	16		3.4		245	.33	29.1	151	4	24	.8	396	7.3
May 11-14	13.2	15		40	13	25		187	34	18		2.5		250	.34	8.91	154	0	26	.9	414	7.4
May 21-28, June 4 a	--	--		44	13	26		--	--	--		--		263	.36	--	164	--	26	.9	436	--

a No flow Oct 1 to Apr. 18. May 15 - June 4.

June 5-10, 1954	51.2	9.7		43	14	26		200	36	19		2.4		271	.37	37.5	165	1	26	.9	439	7.7
June 11-20	75.9	7.8		37	14	24		179	33	17		1.6		238	.32	48.8	150	4	26	.8	394	7.7
June 21-30	127	13		39	13	23		181	33	17		2.0		249	.34	85.4	151	2	25	.8	400	7.6
July 1-10	130	12		38	14	22		179	32	17		3.4		242	.33	84.9	152	6	24	.8	393	7.4
July 11-20	133	11		40	14	22		182	31	17		1.8		233	.32	83.7	158	8	23	.8	395	7.5
July 21-31	127	14		39	14	24		186	31	17		2.3		243	.33	83.3	155	2	25	.8	401	7.6
Aug. 1-10	121	13		40	14	25		191	32	19		1.6		247	.34	80.7	158	1	26	.9	414	7.6
Aug. 11-20	138	14		41	13	24		187	32	18		3.3		247	.34	92.0	156	3	25	.8	410	7.5
Aug. 21-31	118	16		39	14	25		184	33	18		2.9		248	.34	79.0	155	4	26	.9	406	7.5
Sept. 1-10	126	16		37	16	27		183	41	20		1.8		252	.34	85.7	158	8	27	.9	421	7.2
Sept. 11-20	106	17		38	18	29		195	39	20		1.5		260	.35	74.4	169	9	27	1.0	435	7.7
Sept. 21-30	29.8	19		40	18	32		221	37	22		1.5		279	.38	22.4	174	0	29	1.1	473	7.5
Weighted average b	96.8	14		39	14	25		187	34	18		2.4		249	0.34	65.1	155	2	26	0.9	411	--

b Average for 144 days of flow.

GILA RIVER BASIN--Continued

AGUA FRIA RIVER BELOW LAKE PLEASANT DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
(Once-daily measurement, generally at 7:30 a.m. 1/)

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

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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.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 6,240 ppm Nov. 11-20; minimum, 524 ppm Sept. 27-28.
Hardness: Maximum, 1,650 ppm Dec. 11-20, Feb. 21-28; minimum, 242 ppm Mar. 27-28.
Specific conductance: Maximum observed, 9,680 micromhos Nov. 6; minimum observed, 767 micromhos Sept. 28.
Water temperatures: Maximum observed, 89°F July 4; minimum observed, 42°F Dec. 27.
EXTREMES, 1950-54.--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.--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. 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 separate and combined discharge for the river and canals for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Mean discharge (cfs) [a]	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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953....	13.6	27	0.00	364	163	1,500	12	335	0	1,300	2,310	2.6	33	3.7	5,880	8.00	216	1,580	1,300	67	16	8,920	7.7
Oct. 11-20	13.5	29	.00	370	165	1,520	12	349	0	1,290	2,330	2.6	32	3.9	5,920	8.05	216	1,600	1,320	67	17	9,050	7.8
Oct. 21-31.....	14.3	36	.00	365	162	1,580	11	358	0	1,270	2,380	2.8	33	3.6	6,020	8.19	232	1,580	1,280	68	17	9,220	7.7
Nov. 1-10	16.8	34	.00	385	154	1,580	11	374	0	1,320	2,380	2.6	35	3.6	6,090	8.28	276	1,590	1,290	68	17	9,270	7.8
Nov. 11-20	18.2	34	.01	401	150	1,630	12	409	0	1,340	2,430	2.8	37	3.5	6,240	8.49	307	1,620	1,280	68	18	9,470	7.8
Nov. 21-30	19.3	32	.01	397	157	1,590	12	400	0	1,320	2,410	2.6	39	3.5	6,160	8.38	321	1,640	1,310	68	17	9,390	7.7
Dec. 1-10	22.4	30	.00	397	159	1,570	12	414	0	1,310	2,400	2.8	40	3.5	6,120	8.32	370	1,640	1,310	67	17	9,320	7.8
Dec. 11-20	24.2	32	.01	409	154	1,600	12	431	0	1,330	2,410	2.8	38	4.2	6,200	8.43	405	1,650	1,300	68	17	9,470	7.8
Dec. 21-31	29.4	33	.00	389	147	1,500	11	398	0	1,290	2,280	2.8	46	3.2	5,890	8.01	468	1,580	1,250	67	16	9,060	7.7
Jan. 1-10, 1954....	28.9	30	.01	409	145	1,540	12	420	0	1,300	2,330	2.6	42	3.3	6,020	8.19	470	1,620	1,270	67	17	9,220	7.8
Jan. 11-20	29.9	29	.01	393	157	1,560	12	420	0	1,310	2,390	2.6	42	3.5	6,100	8.30	492	1,630	1,280	67	17	9,300	7.9
Jan. 21.....	85.0	11	--	110	28	289	9.6	136	0	256	446	--	19	.80	1,240	1.69	285	390	278	61	6.4	2,140	7.6
Jan. 22-31	40.5	28	.01	385	138	1,430	12	390	0	1,190	2,200	2.4	42	3.2	5,620	7.64	615	1,530	1,210	67	16	8,660	7.8
Feb. 1-10	36.4	29	.00	385	154	1,470	11	384	0	1,270	2,280	2.6	42	3.4	5,830	7.93	573	1,590	1,280	67	16	8,840	7.8
Feb. 11-20	35.9	27	.00	397	159	1,540	11	392	0	1,310	2,380	2.4	38	3.1	6,060	8.24	587	1,640	1,320	67	17	9,220	7.8
Feb. 21-28	35.2	31	.00	401	157	1,520	12	395	0	1,300	2,350	2.4	40	3.1	6,010	8.17	571	1,650	1,320	67	16	9,170	7.8
Mar. 1-10.....	37.4	29	.01	377	164	1,490	11	372	0	1,280	2,320	2.4	40	2.9	5,900	8.02	596	1,620	1,310	67	16	8,980	7.9
Mar. 11-20.....	36.4	49	.01	365	164	1,510	12	339	0	1,280	2,340	2.4	39	3.2	5,930	8.06	583	1,580	1,310	67	16	9,030	7.8
Mar. 21-25, 30-31 .	53.0	37	.02	353	147	1,330	11	360	0	1,150	2,060	2.2	37	3.3	5,300	7.21	758	1,480	1,190	66	15	8,110	7.9
Mar. 26, 29	105	21	.02	109	36	286	6.8	168	0	295	428	1.0	12	1.1	1,280	1.74	363	420	282	59	6.1	2,190	7.7
Mar. 27-28.....	169	19	.03	74	14	97	4.7	171	0	134	122	.8	6.0	.24	556	.76	254	242	102	46	2.7	947	7.8

a Combined discharge in cfs of Gila River below Gillespie Dam and Gila Bend, and Enterprise Canals at Gillespie Dam, Ariz.

GILA RIVER BASIN--Continued

GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--Continued

Date of collection	Mean discharge (cfs) [a]	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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954	40.8	46	0.01	365	162	1,390	11	357	0	1,200	2,200	2.4	40	3.2	5,590	7.60	616	1,580	1,280	66	15	8,560	7.8
Apr. 11-20	36.6	31	.01	393	157	1,490	12	390	0	1,270	2,290	2.6	42	5.0	5,880	8.00	581	1,630	1,310	66	16	8,890	7.7
Apr. 21-30	33.5	26	.01	385	159	1,500	12	380	0	1,280	2,280	2.4	44	4.5	5,880	8.00	532	1,610	1,300	67	16	8,870	7.7
May 1-10	28.9	47	.10	373	159	1,510	12	352	0	1,280	2,290	2.6	43	4.0	5,890	8.01	460	1,580	1,300	67	16	8,850	7.8
May 11-20	27.2	25	.02	365	155	1,430	12	360	0	1,240	2,160	2.8	38	4.0	5,600	7.62	411	1,550	1,250	67	16	8,540	7.7
May 21-31	21.8	26	.01	361	147	1,500	13	350	0	1,260	2,230	3.0	34	3.2	5,750	7.82	338	1,500	1,220	68	17	8,760	7.8
June 1-10.....	19.6	26	.00	349	147	1,480	13	340	0	1,240	2,170	3.0	35	3.1	5,630	7.66	298	1,480	1,200	68	17	8,560	7.7
June 11-20.....	18.9	48	.01	330	147	1,450	13	306	0	1,220	2,120	3.0	33	3.5	5,510	7.49	281	1,430	1,180	69	17	8,350	7.8
June 21-30	17.2	38	.01	337	145	1,480	13	316	0	1,250	2,150	2.8	31	3.3	5,600	7.62	260	1,440	1,180	69	17	8,480	7.8
July 1-10	16.2	24	.00	341	143	1,460	13	314	0	1,250	2,150	2.8	31	3.3	5,570	7.58	.244	1,440	1,180	69	17	8,440	7.7
July 11-23.....	15.3	26	.04	333	147	1,450	12	306	0	1,240	2,120	2.8	28	3.3	5,510	7.49	228	1,440	1,180	68	17	8,370	7.7
July 24	50	30	.83	230	78	650	12	450	0	509	975	1.0	4.2	1.7	2,710	3.69	366	894	526	61	9.4	4,340	7.2
July 25-31	197	31	.18	79	18	113	6.7	293	0	125	104	.8	3.1	.29	625	.85	332	271	31	47	3.0	1,030	7.6
Aug. 1-4	36.5	38	.04	306	114	1,070	13	347	0	960	1,610	2.0	37	2.4	4,320	5.88	426	1,230	948	65	13	6,650	7.6
Aug. 5-10	509	32	.49	106	20	100	7.6	302	0	207	78	1.2	.9	.24	702	.95	965	346	99	38	2.3	1,070	7.5
Aug. 11-14, 17-20 ..	646	28	.02	83	15	92	6.8	278	0	148	62	1.0	2.6	.22	575	.78	1,000	268	40	42	2.4	894	7.5
Aug. 15-16	348	34	.02	114	24	178	8.2	304	0	205	228	1.2	1.1	.26	943	1.28	886	383	134	50	3.9	1,520	7.6
Aug. 21, 24-26.....	136	31	.01	226	74	687	11	268	0	646	1,040	1.6	29	1.3	2,880	3.92	1,060	868	649	63	10	4,540	7.6
Aug. 22-23	438	26	.02	64	17	120	6.4	234	0	156	134	1.2	3.8	.21	663	.90	784	280	88	48	3.1	1,100	7.7
Aug. 27-31	57.8	35	.01	369	152	1,290	13	351	0	1,120	2,010	2.0	44	2.5	5,210	7.09	813	1,550	1,260	64	14	7,850	7.6
Sept. 1-4, 6-10	48.0	26	.00	365	150	1,330	13	342	0	1,140	2,070	2.4	46	2.9	5,310	7.22	688	1,530	1,250	65	15	8,010	7.7
Sept. 5	67.0	32	.04	204	58	524	11	258	0	484	830	1.2	27	.98	2,300	3.13	416	748	536	60	8.3	3,700	7.6
Sept. 11-20.....	34.6	40	.01	377	154	1,410	13	324	0	1,220	2,180	2.6	45	2.9	5,600	7.62	523	1,570	1,310	66	15	8,440	7.6
Sept. 21-24, 26, 29-30	49.3	32	.03	361	150	1,370	12	326	0	1,190	2,120	2.4	46	3.0	5,440	7.40	724	1,520	1,250	66	15	8,180	7.6
Sept. 25	70.0	16	.07	135	36	305	11	170	0	258	508	1.2	21	.42	1,380	1.88	261	485	346	57	6.0	2,330	7.5
Sept. 27-28.....	104	19	.03	73	15	88	6.0	212	0	113	101	.8	3.8	.19	524	.71	147	244	70	43	2.4	872	7.7
Weighted average ..	60.3	31	0.09	214	76	697	9.2	315	0	635	1,030	1.7	19	1.6	2,870	3.90	467	846	588	64	10	4,380	--

a Combined discharge in cfs of Gila River below Gillespie Dam and Gila Bend, and Enterprise Canals at Gillespie Dam, Ariz.

GILA RIVER BASIN--Continued

GILA RIVER BELOW GILLESPIE DAM, ARIZ.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement, generally between 6 a.m. and 10 a.m./

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	a66	53	a45	56	a62	a65	61	70	79	84	82
2	74	a75	a55	a44	a60	57	60	62	71	80	83	81
3	77	--	a53	43	58	61	60	66	78	80	83	79
4	70	--	--	a50	54	64	a65	69	74	89	82	80
5	a73	63	a57	a48	a60	65	64	a75	72	80	83	82
6	67	60	45	49	55	64	65	70	66	81	82	81
7	70	54	--	52	60	63	63	71	65	79	82	82
8	75	54	45	50	60	a64	65	70	65	79	85	69
9	75	58	46	51	61	67	68	69	68	82	83	78
10	65	60	49	47	62	70	66	a75	66	83	82	79
11	70	56	49	53	61	62	68	74	66	80	82	83
12	60	57	45	54	57	a62	65	77	75	84	83	82
13	a73	59	--	a55	62	56	67	71	69	79	83	79
14	69	58	49	a56	60	55	70	72	75	80	79	75
15	a72	62	a50	a54	58	56	68	71	75	81	78	74
16	a74	63	a54	48	63	60	66	72	81	81	81	74
17	a73	59	50	48	64	a61	70	75	72	84	80	72
18	59	--	a55	a50	64	60	70	74	72	83	80	78
19	a66	--	47	52	62	56	68	74	74	81	81	82
20	a65	a50	50	a55	62	59	70	75	--	82	81	80
21	62	a50	48	49	63	65	68	73	80	80	82	72
22	a63	42	49	a53	56	a65	70	74	77	79	81	79
23	63	a50	45	52	65	a66	68	74	81	79	82	77
24	58	a55	46	a55	64	59	72	72	82	80	79	a80
25	a64	a55	45	55	65	54	66	73	79	81	78	76
26	a65	a55	43	53	65	60	65	73	78	79	81	69
27	60	54	42	53	60	67	64	73	75	81	a77	74
28	58	a55	a50	51	60	68	68	78	76	83	76	74
29	a70	a59	45	53	--	60	70	70	77	82	77	72
30	a65	a57	44	55	--	63	66	a75	76	87	78	a73
31	a65	--	45	a62	--	a64	--	69	--	85	78	--
Average	68	57	48	51	61	62	67	72	74	81	81	77

a Measurement between 10 a.m. and 12 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 wasteway, 5 miles 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 boundry.
RECORDS AVAILABLE.--Chemical analyses: September 1926 to September 1928, October 1942 to February 1943, June 1947 to July 1952, November 1952 to September 1953. Water temperatures: February to September 1954.
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 1953 to September 1954 given in WSP 1343. Recorder with thermograph attachment installed Feb. 10, 1954. Thermograph out of operation Feb. 16-26, Mar. 1, 2.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953.....	2,420	15		54	27	118		85	288	94		0.1		638	0.87	4,170	246	176	51	3.3	1,000	--
Nov. 4.....	1,140	5.7		87	23	121		181	281	109		.2		721	.98	2,220	332	184	44	2.9	1,170	--
Dec. 7.....	3,780	9.5		80	28	111		173	277	89		.1		680	.92	6,940	314	172	43	2.7	1,070	--
Feb. 5, 1954.....	5,960	13		81	26	104		175	268	78		2.5		658	.89	10,600	309	166	42	2.6	1,030	--
Mar. 8.....	2,480	13		84	27	112		180	277	90		1.1		693	.94	4,640	320	173	43	2.7	1,080	--
Apr. 21.....	2,020	--		84	30	129		174	301	112		.2		742	1.01	4,050	333	190	46	3.1	1,170	8.0
May 5.....	3,230	--		72	28	118		125	300	96		.1		675	.92	5,890	294	192	47	3.0	1,060	8.1
June 7.....	4,780	--		89	35	112		181	308	98		1.7		733	1.00	9,460	366	218	40	2.5	1,150	7.8
July 6.....	6,380	--		86	29	111		173	289	93		1.2		694	.94	12,000	334	192	42	2.6	1,120	7.7
Aug. 9.....	5,120	--		89	30	116		174	305	97		.8		724	.98	10,000	346	203	42	2.7	1,130	8.0
Sept. 7.....	3,920	--		92	29	123		176	311	104		1.4		747	1.02	7,910	348	204	43	2.8	1,170	7.8

COLORADO RIVER MAIN STEM--Continued

COLORADO RIVER AT YUMA, ARIZ.--Continued

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

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1									--	--	--	56	69	61	71	63	81	75	89	81	89	84	92	83
2									--	--	--	--	70	62	72	65	84	75	91	81	90	84	92	83
3									--	--	64	57	71	63	76	67	84	76	89	83	90	84	90	83
4									--	--	64	57	71	64	76	69	83	75	95	84	90	83	91	83
5									--	--	63	58	71	65	80	70	80	73	94	83	91	82	90	83
6									--	--	64	58	72	64	80	71	78	72	91	83	91	82	90	82
7									--	--	64	57	73	65	80	72	81	72	91	82	91	83	90	82
8									--	--	64	58	75	66	80	72	78	72	91	82	92	83	90	82
9									--	--	65	60	76	68	79	72	76	70	90	82	92	84	89	81
10									--	--	64	59	74	68	77	70	79	70	91	82	91	82	89	82
11									61	57	62	56	76	68	78	71	81	71	90	82	90	83	88	82
12									61	56	59	55	77	68	79	72	80	73	91	82	89	83	88	81
13									61	56	60	54	77	69	80	72	80	72	91	82	88	80	87	79
14									61	58	61	54	77	69	81	73	83	73	94	84	88	79	86	78
15									60	55	61	55	77	70	78	73	82	74	95	85	89	80	86	78
16									--	55	61	56	79	71	80	72	84	75	89	83	89	80	86	77
17									--	55	60	56	81	71	80	74	85	75	90	83	88	79	86	77
18									--	55	63	56	82	72	81	75	86	76	90	84	88	81	87	78
19									--	--	59	55	80	72	83	75	88	78	91	84	88	81	88	80
20									--	--	63	56	78	72	84	76	89	79	91	85	88	81	89	81
21									--	--	62	59	79	70	83	77	89	80	91	84	88	81	88	79
22									--	--	62	60	79	71	82	76	88	80	91	83	88	80	84	81
23									--	--	61	59	77	71	83	76	90	80	87	83	88	80	88	80
24									--	--	64	57	74	70	84	76	86	80	91	82	88	79	88	80
25									--	--	61	57	75	68	82	76	88	81	91	83	88	80	86	80
26									--	--	62	56	74	69	82	75	89	80	92	83	87	79	85	78
27									64	58	64	58	74	68	81	74	88	78	93	84	85	78	84	78
28									63	57	65	60	74	68	82	74	89	79	95	86	88	78	82	76
29									--	--	66	61	75	66	81	74	89	79	93	85	89	80	83	76
30									--	--	65	60	72	68	81	74	90	80	94	85	90	81	82	74
31									--	--	68	60	--	--	82	74	--	--	94	86	89	82	--	--
Average									--	--	63	57	75	68	80	73	84	76	92	83	89	81	88	80

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 downstream from siphon-drop powerplant, 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 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 784 ppm May 21-31; minimum, 670 ppm Apr. 1-10.
Hardness: Maximum, 350 ppm May 11-20; minimum, 274 ppm Nov. 21-30.
Specific conductance: Maximum observed, 1,210 micromhos Aug. 26-27; minimum observed, 960 micromhos Mar. 30.
EXTREMES, 1943-54.--Dissolved solids: Maximum, 784 ppm May 21-31, 1954; 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, 1,210 micromhos Aug. 26-27, 1954; minimum observed, 795 micromhos Jan. 5, 1953.
REMARKS.--Samples collected prior to February 1943 were from the gaging station on the Colorado River at Yuma. Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district offices at Albuquerque, N. Mex. Records of discharge for water year October 1953 to September 1954 given in WSP 1343.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	Fluorids (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)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	450	13	0.00	83	26	102	4.3	170	0	277	83	0.4	1.2	0.13	697	0.95	847	314	174	41	2.5	1,040	7.7
Oct. 11-20	506	13	.00	84	25	102	4.3	168	0	279	84	.4	1.2	.15	707	.96	966	312	175	41	2.5	1,050	7.7
Oct. 21-31	363	13	--	83	26	104	4.3	172	0	280	85	.4	1.2	.14	705	.96	691	314	173	41	2.5	1,050	7.7
Nov. 1-10	395	14	.01	86	26	102	4.3	171	0	279	86	.4	1.2	.16	706	.96	753	322	182	40	2.5	1,060	7.7
Nov. 11-20	264	34	.01	75	26	107	4.4	157	0	276	85	.4	1.1	.21	711	.97	507	294	166	44	2.7	1,030	7.9
Nov. 21-30	320	57	.02	67	26	110	4.5	122	10	277	84	.4	1.0	.27	713	.97	616	274	158	46	2.9	1,020	--
Dec. 1-10	216	22	.00	83	25	106	4.4	165	0	281	84	.4	1.0	.18	697	.95	406	310	175	42	2.6	1,040	7.8
Dec. 11-20	251	13	.01	87	25	100	4.2	173	0	277	83	.4	1.2	.15	700	.95	474	320	178	40	2.4	1,040	7.7
Dec. 21-31	267	25	.00	79	27	99	4.3	164	0	276	80	.4	1.3	.17	693	.94	500	308	174	41	2.4	1,020	7.8
Jan. 1-10, 1954	234	12	.01	85	25	97	4.2	170	0	271	78	.4	1.2	.15	689	.94	435	315	176	40	2.4	1,020	7.7
Jan. 11-20	230	14	.01	83	26	95	4.0	171	0	274	77	.4	1.2	.15	691	.94	429	314	174	39	2.3	1,020	8.0
Jan. 21-31	337	15	.01	82	27	94	4.0	173	0	272	76	.4	1.3	.16	691	.94	629	316	174	39	2.3	1,010	8.0
Feb. 1-10	392	13	.01	83	26	94	4.0	171	0	270	76	.4	1.3	.15	689	.94	729	314	174	39	2.3	1,010	8.0
Feb. 11-20	398	13	.01	82	27	94	4.0	170	0	272	78	.4	1.2	.15	693	.94	745	316	176	39	2.3	1,020	8.1
Feb. 21-28	518	15	.01	83	26	97	4.1	172	0	273	79	.4	1.1	.20	702	.95	982	314	173	40	2.4	1,040	8.2
Mar. 1-10	591	13	.02	87	26	97	3.9	173	0	272	80	.4	1.4	.14	694	.94	1,110	324	182	39	2.3	1,030	7.9
Mar. 11-20	522	11	.01	86	26	98	4.0	175	0	273	80	.4	1.3	.17	697	.95	982	322	178	39	2.4	1,030	7.8
Mar. 21-31	411	13	.01	84	26	97	4.1	171	0	266	80	.4	1.2	.14	685	.93	760	316	176	40	2.4	1,010	7.8
Apr. 1-10	462	12	.02	83	26	96	4.1	170	0	262	79	.4	1.2	.15	670	.91	836	314	174	40	2.3	1,000	7.8
Apr. 11-20	548	12	.02	85	27	99	4.1	174	0	272	82	.4	1.1	.17	691	.94	1,020	323	180	40	2.4	1,030	7.9
Apr. 21-30	557	12	.01	86	28	101	4.2	177	0	282	84	.4	1.2	.18	714	.97	1,070	330	184	40	2.4	1,060	7.9
May 1-10	449	13	.01	90	29	104	4.7	178	0	291	87	.4	1.3	.25	761	1.03	923	344	198	39	2.4	1,080	8.0
May 11-20	523	12	.01	91	30	105	4.7	177	0	294	88	.2	1.2	.22	772	1.05	1,090	350	206	39	2.4	1,090	8.1
May 21-31	545	13	.01	91	29	106	4.8	179	0	291	90	.4	1.4	.23	784	1.07	1,150	346	200	40	2.5	1,110	8.0

June 1-10, 1954	571	15	.00	90	29	107	4.8	178	0	299	92	.2	1.6	0.19	757	1.03	1,170	344	198	40	2.5	1,120	7.9
June 11-20	540	14	.01	89	29	110	4.8	177	0	302	95	.2	1.5	.17	757	1.03	1,100	341	196	41	2.6	1,130	7.8
June 21-30	556	17	.01	89	30	108	4.8	175	0	301	93	.2	1.3	.18	752	1.02	1,130	346	202	40	2.5	1,120	7.9
July 1-10	488	14	.02	88	29	106	4.8	171	0	298	92	.2	1.3	.18	744	1.01	980	338	198	40	2.5	1,110	7.9
July 11-20	600	16	.01	88	29	106	4.7	172	0	299	92	.2	1.1	.17	745	1.01	1,210	338	198	40	2.5	1,110	7.9
July 21-31	706	16	.00	88	28	112	4.8	171	0	300	94	.4	1.6	.18	743	1.01	1,420	334	194	42	2.7	1,110	7.8
Aug. 1-10	644	19	.00	88	28	112	4.9	171	0	299	92	.4	2.0	.18	751	1.02	1,310	334	194	42	2.7	1,110	7.8
Aug. 11-20	606	19	.00	69	28	110	4.8	171	0	301	94	.4	1.4	.18	749	1.02	1,230	337	197	41	2.6	1,110	7.9
Aug. 21-31	501	19	.01	88	29	117	5.0	167	0	314	97	.4	1.6	.20	770	1.05	1,040	338	202	42	2.8	1,140	7.9
Sept. 1-10	544	14	.01	89	29	113	4.8	168	0	300	96	.2	1.6	.18	753	1.02	1,110	341	204	41	2.7	1,120	7.9
Sept. 11-20	635	14	.01	87	31	111	5.0	169	0	304	95	.2	1.4	.18	740	1.01	1,270	344	206	41	2.6	1,120	7.9
Sept. 21-30	705	15	.04	85	33	112	5.0	172	0	303	96	.2	1.0	.20	747	1.02	1,420	348	206	41	2.6	1,120	8.0
Weighted average	467	16	0.01	86	28	105	4.5	171	0	287	87	0.3	1.3	0.18	726	0.99	915	330	190	41	2.5	1,070	--

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 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,880 ppm Dec. 21-31, Jan. 1-10; minimum, 867 ppm July 27-29.
Hardness: Maximum, 1,050 ppm Jan. 1-10; minimum, 433 ppm July 27-29.
Specific conductance: Maximum daily, 4,590 micromhos Jan. 3; minimum daily, 1,450 micromhos July 29.
Water temperatures: Maximum observed, 79°F July 15-16, 20; minimum observed, 36°F on several days during December and January.
EXTREMES, 1951-54.--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, 424 ppm Mar. 29-31, 1952.
Specific conductance: Maximum daily, 5,630 micromhos Mar. 13, 1953; minimum daily, 1,340 micromhos Mar. 30, 1952.
Water temperatures: Maximum observed, 81°F Aug. 3, 1952; minimum observed, 33°F on many days during December to February 1952.
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 1953 to September 1954 given in WSP 1344.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	73.9	21		96	107	351	7.4	333	444	498		2.6	--	1,690	2.30	337	680	406	53	5.9	2,780	8.0
Oct. 11-20	35.8	19		124	135	477	7.7	328	614	705		1.4	0.55	2,250	3.06	217	864	596	54	7.1	3,580	7.8
Oct. 21-31	33.7	19		130	134	472	7.8	341	615	695		1.4	--	2,240	3.05	204	876	596	54	6.9	3,560	7.9
Nov. 1-10	48.5	17		94	92	257	5.5	306	353	390		2.4	--	1,360	1.85	178	613	362	47	4.5	2,230	7.9
Nov. 11-20	64.1	17		100	103	293	5.7	314	403	445		2.0	--	1,520	2.07	263	673	416	48	4.9	2,490	8.1
Nov. 21-30	28.8	22		150	144	527	7.8	378	689	795		1.8	--	2,520	3.43	196	966	657	54	7.4	3,940	7.9
Dec. 1-10	25.2	24		161	149	579	8.2	388	754	850		1.8	--	2,720	3.70	185	1,010	696	55	7.9	4,230	8.0
Dec. 11-20	24.2	24		166	148	586	8.4	412	754	840		2.0	--	2,730	3.71	178	1,020	685	55	8.0	4,190	8.0
Dec. 21-31	20.0	27		160	157	636	7.9	398	802	885		3.5	.54	2,880	3.92	156	1,040	718	57	8.6	4,430	8.0
Jan. 1-10, 1954	20.0	25		168	154	618	7.9	416	812	880		4.7	.58	2,880	3.92	156	1,050	711	56	8.3	4,350	7.9
Jan. 11-20	18.8	24		149	137	540	7.1	380	688	760		3.6	.50	2,500	3.40	127	936	624	55	7.7	3,840	8.1
Jan. 21-31	19.3	23		148	144	515	7.5	374	694	760		3.5	.48	2,480	3.37	129	962	655	54	7.2	3,910	8.0
Feb. 1-10	20.0	24		155	160	582	8.0	372	789	850		3.1	.50	2,750	3.74	148	1,040	740	55	7.8	4,270	8.0
Feb. 11-20	20.7	22		153	156	582	8.1	375	772	850		2.6	.54	2,730	3.71	153	1,020	716	55	7.9	4,280	8.0
Feb. 21-28	17.8	22		156	157	606	8.8	380	788	870		1.8	.56	2,800	3.81	135	1,030	723	56	8.2	4,360	8.0
Mar. 1-3	23.7	26		130	142	511	8.5	329	658	760		3.5	.52	2,400	3.26	154	908	639	55	7.4	3,820	7.9
Mar. 4-10	33.7	19		102	103	306	5.9	308	407	460		4.0	.31	1,560	2.12	142	678	426	49	5.1	2,540	7.8
Mar. 11, 13-19	37.0	19		102	114	308	6.5	296	455	472		4.2	.33	1,630	2.22	163	723	480	48	5.0	2,650	8.0
Mar. 12	38.0	23		130	144	500	7.8	313	673	745		3.9	--	2,380	3.24	244	916	660	54	7.2	3,740	7.9
Mar. 20-31	21.7	20		134	148	511	8.7	329	667	750		3.5	.49	2,400	3.26	141	943	674	54	7.2	3,830	7.7

Apr. 1-10, 1954...	27.2	18		113	120	369	7.9	318	507	575		2.8	.38	1,870	2.54	137	776	515	51	5.8	3,020	7.9
Apr. 11-20.....	46.2	21		89	98	288	6.9	296	375	430		2.8	.30	1,450	1.97	181	616	374	50	5.0	2,390	7.8
Apr. 21-30.....	533	28		86	95	358	7.6	333	435	455		10	.46	1,640	2.23	2,360	605	332	56	6.3	2,640	8.1
May 1-10	614	26		88	97	368	8.1	341	450	460		7.9	.46	1,670	2.27	2,770	618	339	56	6.4	2,690	7.8
May 11-20.....	646	24		82	95	368	7.6	336	440	455		9.4	.46	1,650	2.24	2,880	595	320	57	6.6	2,680	8.0
May 21-31.....	477	23		84	97	368	7.6	329	446	465		8.2	.46	1,660	2.26	2,140	608	339	56	6.5	2,700	7.9
June 1-10.....	203	22		85	101	372	8.0	323	456	490		8.2	.48	1,700	2.31	932	628	363	56	6.4	2,700	8.1
June 11-20.....	303	23		80	99	372	8.0	314	449	478		8.8	.47	1,670	2.27	1,370	606	349	57	6.6	2,680	8.0
June 21-30.....	623	23		80	100	386	8.1	315	465	502		9.3	.48	1,730	2.35	2,910	610	352	57	6.8	2,730	8.0
July 1-10	578	23		77	102	393	8.1	312	468	508		9.0	.47	1,740	2.37	2,720	612	356	58	6.9	2,770	8.1
July 11-20	421	26		74	103	388	8.6	317	460	485		7.3	.31	1,710	2.33	1,940	608	348	58	6.8	2,810	7.9
July 21-26, 30-31..	197	22		78	102	386	9.0	309	468	515		5.8	.30	1,740	2.37	926	614	361	57	6.8	2,840	8.1
July 27-29	148	18		60	69	150	6.0	280	191	232		3.2	.11	867	1.18	346	433	204	43	3.1	1,500	7.8
Aug. 1-10.....	355	21		73	106	401	8.6	312	475	510		7.3	.30	1,760	2.39	1,690	618	362	58	7.0	2,870	8.0
Aug. 11-20.....	258	21		73	104	418	8.6	305	498	535		7.4	.30	1,820	2.48	1,270	610	360	59	7.4	2,970	8.0
Aug. 21-31.....	337	20		69	108	419	9.7	302	497	535		7.0	.31	1,810	2.46	1,650	616	368	59	7.3	2,960	8.0
Sept. 1-10	215	23		75	103	395	8.2	311	482	530		7.1	.49	1,780	2.42	1,030	610	356	58	7.0	2,850	8.1
Sept. 11-20	89.3	17		80	99	336	7.1	295	418	468		3.5	.47	1,570	2.14	379	606	365	54	5.9	2,570	8.1
Sept. 21-30	84.4	17		82	100	341	6.3	297	430	475		3.5	.37	1,600	2.18	365	616	372	54	6.0	2,580	7.9
Weighted average	182	23		84	102	384	8.0	322	467	499		7.6	0.42	1,730	2.35	850	629	365	57	6.7	2,800	--

SEVIER LAKE BASIN--Continued

SEVIER RIVER NEAR LYNNDYL, UTAH--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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, Douglas, County.
DRAINAGE AREA.--344 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 73°F July 31 to Aug. 4; minimum, freezing point Dec. 12-13, 31, Feb. 16.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1344.

Temperature (°F) of water, water year October 1953 to September 1954

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

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, (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: December 1951 to September 1954.
Water temperatures: December 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 2,190 ppm Sept. 1-5; minimum, 670 ppm June 21-30.
Hardness: Maximum, 482 ppm Sept. 1-5; minimum, 196 ppm June 21-30.
Specific conductance: Maximum daily, 4,010 micromhos Sept. 2; minimum daily, 1,020 micromhos June 27.
Water temperatures: Maximum observed, 75°F Sept. 5; minimum observed, 38°F Dec. 23-24.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 2,190 ppm Sept. 1-5, 1954; minimum, 512 ppm Dec. 21-31, 1951.
Hardness: Maximum, 482 ppm Sept. 1-5, 1954; minimum, 171 ppm May 1-10, 1953.
Specific conductance: Maximum daily, 4,010 micromhos Sept. 2, 1954; 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 residues on evaporation. Records of specific conductance of daily samples available in district office at Salt Lake City, Utah. Records of discharge for gaging station near Rye Patch for water year October 1952 to September 1953 given in WSP 1344. No appreciable inflow between gaging station and sampling point except during periods of local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	157	52		43	24	161	20	334	16	108	119		0.6	--	696	0.94	295	206	0	60	4.9	1,120	8.3
Oct. 11-20	92.2	51		44	24	161	20	360	0	111	119		.6	0.66	692	.93	172	208	0	60	4.8	1,110	8.2
Oct. 21-31	5.7	48		43	23	164	20	362	0	109	118		.6	--	694	.94	10.7	202	0	61	5.0	1,110	8.2
Nov. 1-10	35.7	46		43	23	164	20	360	0	109	119		.4	--	697	.94	67.2	202	0	61	5.0	1,110	8.2
Nov. 11-20	25.4	51		42	23	161	19	310	24	105	121		.5	--	702	.95	48.1	200	0	61	5.0	1,110	8.6
Nov. 21-30	13.1	51		42	23	161	19	358	0	105	121		.4	--	701	.95	24.8	200	0	61	5.0	1,110	8.2
Dec. 1-10	12.9	49		43	23	161	19	340	8	105	121		.4	--	700	.95	24.4	202	0	61	4.9	1,110	8.3
Dec. 11-20	29.5	48		42	23	162	20	337	10	105	122		.4	--	702	.95	55.9	200	0	61	5.0	1,110	8.3
Dec. 21-24	20.4	48		43	23	162	19	328	14	105	124		.3	--	704	.96	38.8	202	0	61	5.0	1,110	8.4
Mar. 22-31, 1954	162	48		42	25	168	19	342	10	110	126		.3	.73	721	.98	315	208	0	61	5.0	1,140	8.3
Apr. 1-10	191	49		42	26	168	20	340	10	111	128		.3	.70	724	.98	373	212	0	61	5.0	1,140	8.2
Apr. 11-20	314	48		42	25	165	20	336	12	111	130		.3	.71	724	.98	614	208	0	61	4.9	1,150	8.3
Apr. 21-30	459	43		43	25	165	18	330	12	108	128		.2	.67	708	.96	877	210	0	61	4.9	1,130	8.3
May 1-10	435	36		44	24	162	18	322	14	106	124		.2	.66	698	.95	820	208	0	60	4.9	1,110	8.4
May 11-20	455	37		44	24	159	18	328	11	108	123		.9	.79	692	.94	850	208	0	60	4.8	1,100	8.2
May 21-31	370	36		46	24	156	18	332	5	105	120		.9	.73	676	.92	675	214	0	59	4.6	1,080	8.2
June 1-10	193	36		44	24	158	18	342	0	109	120		.8	.74	676	.92	352	208	0	60	4.7	1,070	8.1
June 11-20	142	36		44	25	156	18	320	10	108	121		.7	.73	679	.92	260	213	0	59	4.6	1,080	8.2
June 21-30	356	47		39	24	159	17	330	0	111	122		.6	.51	670	.91	644	196	0	61	4.9	1,090	8.0

July 1-10, 1954.....	482	48		42	23	163	18	336	0	112	126		.9	.51	690	.94	898	200	0	61	5.0	1,110	8.0
July 11-20.....	414	48		43	24	164	20	342	0	115	134		1.2	.51	713	.97	797	206	0	61	5.0	1,150	7.9
July 21-31.....	138	49		44	25	174	20	344	0	124	154		.9	.60	762	1.04	284	213	0	61	5.2	1,230	8.1
Aug. 1-10.....	84.3	51		42	26	187	22	346	0	128	174		.9	.64	796	1.08	181	212	0	63	5.6	1,300	8.0
Aug. 11-20.....	198	53		43	29	217	23	352	0	135	198		1.7	.87	878	1.19	469	226	0	65	6.3	1,390	8.1
Aug. 21-23, 26-27...	237	58		46	33	256	27	372	0	151	257		1.1	1.1	1,010	1.37	646	250	0	66	7.0	1,620	8.1
Aug. 29, 31	301	60		54	41	362	36	406	0	182	434		1.1	--	a1,370	1.86	1,110	303	0	69	9.0	2,270	8.1
Sept. 1-5.....	119	56		106	53	602	47	504	0	184	885		2.6	3.4	2,190	2.98	704	482	70	71	12	3,680	7.7
Weighted average..	b 203	45		44	25	175	20	339	--	114	145		0.7	0.72	740	1.01	406	213	0	61	5.2	1,190	--

a Sum of determined constituents.
b Represents 97 percent of runoff for water year October 1953 to September 1954.

HUMBOLDT RIVER BASIN--Continued

HUMBOLDT RIVER NEAR RYE PATCH, NEV.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

MISCELLANEOUS ANALYSES OF STREAMS AND LAKES IN PYRAMID AND WINNEMUCCA LAKES BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
LAKE TAHOE (SOUTH END) BIJOU (SEC. 35, T. 13 N., R. 18 E.)																						
Oct. 9, 1953	--	--	9.3	2.4	6.7	1.5	54	--	2.0	--	--	0.00	--	--		33	0	29		96.2	7.9
Nov. 12	--	--	10	1.9	6.5	1.7	53	--	1.8	--	--	.03	--	--		33	0	29		93.1	7.5
Dec. 14	--	--	9.7	2.1	9.2	1.6	53	--	2.2	--	--	.04	--	--		33	0	36		95.0	7.7
Apr. 13, 1954	--	--	9.5	2.3	6.1	1.4	51	--	1.5	--	--	.01	--	--		33	0	27		93.2	7.7
May 3	13	0.00	8.8	2.1	5.4	1.7	50	2.2	1.5	0.0	0.2	.01	60	0.08		31	0	26		88.4	7.9
June 10	--	--	9.6	2.5	5.6	1.7	51	--	2.2	--	--	.05	--	--		34	0	25		90.9	7.7
July 13	--	--	9.1	2.5	6.3	1.7	56	--	2.2	--	--	.00	--	--		33	0	28		95.4	7.9
Aug. 17	--	--	9.7	2.0	6.4	1.7	56	--	3.0	--	--	.16	--	--		32	0	29		96.2	7.9
Sept. 14	13	.00	9.6	2.1	6.4	1.8	54	2.2	1.5	.0	.1	.02	63	.09		33	0	28		94.2	7.9
LAKE TAHOE (NORTH END) TAHOE VISTA (SEC. 14, T. 16 N., R. 17 E.)																						
Oct. 9, 1953	--	--	10	1.7	6.5	1.8	56	--	1.5	--	--	0.02	--	--		32	0	29		95.2	7.8
Nov. 12	--	--	9.3	2.2	6.3	1.6	53	--	1.8	--	--	.09	--	--		32	0	29		95.1	7.7
Apr. 13, 1954	--	--	9.9	2.1	6.5	1.5	53	--	1.5	--	--	.02	--	--		33	0	29		97.3	7.8
May 3	13	0.00	9.3	2.4	5.8	1.7	53	2.2	1.2	0.0	0.1	.03	62	0.08		33	0	26		93.7	8.0
June 10	--	--	10	1.9	6.5	1.6	54	4.0	2.5	--	--	--	--	--		33	0	29		95.1	7.6
July 13	--	--	9.3	2.5	6.2	1.7	56	--	2.5	--	--	.08	--	--		34	0	27		95.5	7.9
Aug. 17	--	--	8.9	2.4	6.3	1.8	56	--	2.8	--	--	.39	--	--		32	0	29		96.2	7.9
Sept. 14	13	.00	9.9	2.0	6.2	1.7	54	2.3	2.0	.0	.1	.02	64	.09		33	0	28		94.7	7.8
LAKE TAHOE (WEST SIDE) TAHOE CITY (SEC. 7, 15 N., R. 17 E.)																						
Oct. 9, 1953	--	--	9.2	2.2	6.5	1.8	55	--	1.8	--	--	0.01	--	--		32	0	29		93.8	7.9
Nov. 12	--	--	9.3	2.4	5.4	1.5	53	--	.5	--	--	.04	--	--		33	0	25		92.0	7.7
Apr. 13, 1954	--	--	9.0	2.4	6.7	1.2	51	--	1.5	--	--	.06	--	--		32	0	30		94.5	7.5
May 3	12	0.00	9.3	2.3	5.6	1.7	53	2.6	1.2	0.0	0.1	.00	61	0.08		33	0	26		93.6	7.9
June 10	--	--	10	2.4	5.8	1.7	54	--	2.2	--	--	.15	--	--		35	0	25		102	7.6
July 13	--	--	9.5	2.0	6.2	1.6	55	--	2.5	--	--	.07	--	--		32	0	28		94.7	7.9
Aug. 17	--	--	9.7	2.1	6.4	1.8	56	--	3.0	--	--	.04	--	--		33	0	28		96.8	8.0
Sept. 14	13	.00	9.6	2.2	6.2	1.9	54	2.1	2.0	.0	.2	.02	64	.09		33	0	28		93.9	7.8

PYRAMID AND WINNEMUCCA LAKES BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS AND LAKES IN PYRAMID AND WINNEMUCCA LAKES BASIN IN CALIFORNIA--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
TRUCKEE RIVER NEAR TRUCKEE (SEC. 28, T. 17 N., R. 16 E.)																						
Oct. 9, 1953	302	--	--	9.7	2.2	5.4	1.8	55	--	1.5	--	--	0.02	--	--		33	0	25		99.0	7.2
Nov. 12	330	--	--	9.7	2.4	6.9	1.0	53	--	.8	--	--	.01	--	--		34	0	30		94.0	7.6
Dec. 14	316	--	--	9.7	2.4	6.1	1.5	52	--	2.0	--	--	.05	--	--		34	0	27		94.3	7.7
Apr. 13, 1954	191	--	--	7.7	1.9	3.4	.8	35	--	.5	--	--	.03	--	--		27	0	21		72.5	7.4
May 3	224	17	0.01	7.1	1.8	3.1	.9	34	4.7	.6	0.0	0.2	.00	52	0.07		25	0	20		65.6	7.7
June 10	101	--	--	9.6	1.5	3.9	1.2	42	--	1.2	--	--	.14	--	--		30	0	21		82.2	7.5
July 13	135	--	--	8.9	3.3	6.2	1.8	55	--	2.2	--	--	.12	--	--		36	0	26		97.7	7.9
Aug. 17	425	--	--	10	2.0	6.5	1.7	56	--	3.2	--	--	.00	--	--		33	0	29		97.9	8.0
Sept. 14	455	13	.00	9.9	2.0	6.1	1.6	54	2.3	1.8	.0	.0	.03	63	.09		33	0	27		95.2	7.8
TRUCKEE RIVER AT FARAD (SEC. 29, T. 18 N., R. 18 E.)																						
Oct. 8, 1953	541	--	--	8.3	2.2	5.0	1.5	48	--	2.2	--	--	0.00	--	--		30	0	26		86.0	7.9
Nov. 12	475	--	--	10	2.6	6.0	1.5	54	--	1.0	--	--	.09	--	--		36	0	26		99.7	7.6
Dec. 14	441	--	--	10	2.6	6.1	1.6	54	--	1.8	--	--	.05	--	--		36	0	26		98.7	7.8
Apr. 13, 1954	600	--	--	7.9	2.4	3.4	.8	40	--	.5	--	--	.00	--	--		30	0	19		74.9	7.7
May 4	711	18	0.01	7.1	1.8	3.0	1.0	36	2.6	.7	0.0	0.2	.00	52	0.07		25	0	20		63.6	7.6
June 10	531	--	--	7.9	2.5	3.7	1.8	41	4.5	1.4	--	--	--	--	--		30	0	20		70.0	7.2
July 13	527	--	--	7.5	2.1	4.1	1.3	44	--	1.2	--	--	.00	--	--		27	0	23		74.5	7.8
Aug. 17	524	--	--	9.9	2.5	6.3	1.8	55	--	3.0	--	--	.03	--	--		35	0	27		98.0	7.7
Sept. 14	514	15	.01	10	2.3	6.4	1.8	56	2.6	2.2	.0	.2	.02	68	.09		34	0	27		98.8	7.8

HONEY LAKE BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN HONEY LAKE BASIN IN CALIFORNIA

SUSAN RIVER AT SUSANVILLE (SEC. 31, T. 30 N., R. 12 E.)

Oct. 8, 1953	7.0	--	--	17	7.9	6.5	2.0	107	--	0.8	--	--	0.24	--	--		75	0	15		167	8.3
Nov. 11	17	--	--	16	7.1	5.8	1.8	96	--	.2	--	--	.02	--	--		69	0	15		153	7.8
Dec. 15	16	--	--	15	7.4	5.4	1.5	93	--	1.0	--	--	.06	--	--		68	0	14		148	7.7
Apr. 14, 1954	276	--	--	8.6	3.1	3.1	.6	48	--	.0	--	--	.00	--	--		34	0	16		81.7	7.5
May 4	249	17	0.02	7.3	2.5	2.0	.6	40	2.3	.3	0.0	0.2	.00	52	0.07		28	0	13		65.9	7.7
June 7	45	--	--	11	3.7	3.4	1.0	61	--	1.0	--	--	.11	--	--		43	0	14		98.0	8.0
July 14	128	--	--	5.7	2.8	2.1	.6	37	--	1.0	--	--	.08	--	--		26	0	15		60.1	7.1
Aug. 9	117	--	--	7.1	3.0	1.8	.4	43	--	.5	--	--	.11	--	--		30	0	11		68.2	7.4
Sept. 15	7.0	35	.09	17	8.6	5.8	2.0	110	1.1	1.0	.0	.1	.01	125	.17		78	0	14		170	8.0

PART 11. PACIFIC SLOPE BASINS IN CALIFORNIA

CARMEL RIVER BASIN

CARMEL RIVER NEAR CARMEL, CALIF.

LOCATION.--At right bank approximately 30 feet below Rancho San Carlos Bridge, 2 miles east of Carmel, Monterey County, and 4.5 miles from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953		--	--	63	19	47	3.7	176	--	62	--	--	0.08	--	--		235	91	30		665	8.4
Dec. 17		--	--	59	19	43	3.5	170	--	54	--	--	.06	--	--		225	86	29		630	7.7
Jan. 14, 1954		--	--	54	16	39	3.3	159	--	48	--	--	.00	--	--		200	70	29		577	7.9
Feb. 16		--	--	26	7.3	13	2.1	96	--	13	--	--	.07	--	--		95	16	22		260	7.9
Mar. 9		--	--	40	12	25	2.6	132	--	30	--	--	.04	--	--		149	41	26		430	7.9
Apr. 14		--	--	28	8.6	17	1.7	104	--	17	--	--	.02	--	--		105	20	26		287	7.8
May 11		22	0.00	35	11	22	2.2	122	45	23	0.2	1.7	.05	222	0.30		133	33	26		346	7.7
June 15		--	--	47	16	32	3.2	152	65	38	--	--	--	--	--		184	59	27		503	8.0
July 21		--	--	59	18	45	3.6	178	--	54	--	--	.05	--	--		221	75	30		620	8.1
Aug. 18		--	--	61	19	45	4.0	186	--	56	--	--	.05	--	--		230	78	29		643	8.2

SALINAS RIVER BASIN

MISCELLANEOUS ANALYSES OF STREAMS IN SALINAS RIVER BASIN IN CALIFORNIA

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

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
SALINAS RIVER NEAR SPRECKLES (SEC. 8, T. 15 S., R. 3 E.)																						
Jan. 28, 1954	1.0	--	--	132	37	118	34	658	--	121	--	--	0.31	--	--		482	0	33		1,490	7.7
Feb. 8	1.0	--	--	93	58	127	31	642	--	125	--	--	.31	--	--		470	0	35		1,500	7.8
Mar. 18	1.0	--	--	96	42	116	21	475	--	107	--	--	.21	--	--		412	23	36		1,250	7.6
Apr. 28	1.0	--	--	74	37	79	9.8	a348	--	65	--	--	.22	--	--		336	51	33		938	8.7
May 19	2.0	35	0.00	85	52	139	13	465	172	128	1.0	19	.39	873	1.19		426	45	41		1,440	7.4

a Includes equivalent of 21 parts per million of carbonate (CO_3).

PAJARO RIVER BASIN

UVAS CREEK NEAR MORGAN HILL, CALIF.

LOCATION.--At gaging station 500 feet upstream from Uvas Dam, 0.6 mile downstream from Eastman Canyon, and 4.8 miles southwest of Morgan Hill, Santa Clara County.
DRAINAGE AREA.--30.2 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	0.3	--	--	47	19	14	0.8	a224	--	6.5	--	--	0.00	--	--		195	12	13		411	8.6
Dec. 18	1.5	--	--	44	18	13	.7	201	--	7.5	--	--	.13	--	--		184	19	13		396	7.7
Feb. 15, 1954	95	--	--	26	11	8.9	1.0	118	--	4.5	--	--	.10	--	--		110	13	15		249	8.1
Mar. 8	14	--	--	38	17	11	.6	187	--	6.2	--	--	.12	--	--		165	11	13		369	8.1
Apr. 14	40	--	--	38	16	12	.6	174	--	7.0	--	--	.05	--	--		161	18	14		342	8.1
May 10	16	20	0.00	43	18	12	.9	194	33	6.5	0.1	0.0	.13	229	0.31		181	22	13		384	8.0
June 15	4.9	--	--	41	19	13	1.1	b202	35	7.0	--	--	--	--	--		180	15	13		375	8.6
July 21	.9	--	--	46	20	14	.8	220	--	7.5	--	--	.12	--	--		197	17	13		407	8.0
Aug. 18	.4	--	--	48	19	15	.8	224	--	7.0	--	--	.10	--	--		198	14	14		425	7.6
Sept. 20	.2	22	.04	52	17	14	.8	228	34	7.0	.1	.1	.04	259	.35		198	11	13		435	8.1

a Includes equivalent of 10 parts per million of carbonate (CO_3).

b Includes equivalent of 12 parts per million of carbonate (CO_3).

PAJARO RIVER NEAR CHITTENDEN, CALIF.

LOCATION.--At gaging station on State highway bridge in Salsipuedes Grant, 0.6 mile downstream from Pescadero Creek, 1 mile southeast of Chittenden, Santa Cruz County, and 2.5 miles downstream from San Benito River.
DRAINAGE AREA.--1,188 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	2.2	--	--	58	77	219	7.7	a541	--	185	--	--	0.85	--	--		461	18	50		1,730	8.7
Dec. 18	6.6	--	--	73	52	118	4.2	416	--	115	--	--	.71	--	--		396	55	39		1,220	8.0
Jan. 15, 1954	9.7	--	--	72	56	98	3.2	386	--	97	--	--	.55	--	--		410	94	34		1,130	8.0
Feb. 16	157	--	--	30	22	29	2.8	146	--	21	--	--	.29	--	--		165	46	27		438	7.9
Mar. 9	13	--	--	66	51	75	2.7	330	--	80	--	--	.60	--	--		374	104	30		1,040	8.1
Apr. 14	52	--	--	50	31	37	1.7	222	--	32	--	--	.21	--	--		252	70	24		626	8.0
May 11	16	23	0.00	89	64	106	3.4	353	277	94	0.3	0.3	.56	831	1.13		485	196	32		1,300	7.9
June 14	4.8	--	--	89	50	166	3.9	492	--	152	--	--	1.2	--	--		428	24	45		1,630	8.1
July 21	.6	--	--	94	50	260	4.6	539	--	338	--	--	1.7	--	--		440	0	56		1,940	8.1
Aug. 18	1.0	--	--	86	66	231	4.2	517	--	249	--	--	1.2	--	--		436	12	53		1,770	8.2
Sept. 20	.6	26	.05	83	67	231	4.4	564	181	232	.4	3.0	.92	1,110	1.51		482	20	51		1,850	8.0

a Includes equivalent of 34 parts per million of carbonate (CO_3).

SOQUEL CREEK BASIN

SOQUEL CREEK AT SOQUEL, CALIF.

LOCATION.--At gaging station, 0.2 mile upstream from highway bridge in town of Soquel, Santa Cruz County.
DRAINAGE AREA.--40.4 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	4.7	--	--	74	21	48	4.5	244	--	68	--	--	0.20	--	--		271	71	27		726	8.3
Dec. 17	4.7	--	--	75	25	53	4.3	248	--	65	--	--	.14	--	--		290	87	28		750	8.1
Jan. 15, 1954	7.5	--	--	77	22	53	5.3	246	--	66	--	--	.03	--	--		282	81	28		736	8.0
Feb. 16	83	--	--	47	14	25	3.6	140	--	20	--	--	.13	--	--		175	60	23		453	7.9
Mar. 9	84	--	--	44	11	20	2.7	134	--	14	--	--	.11	--	--		155	45	22		416	8.0
Apr. 15	56	--	--	61	17	30	2.8	177	--	22	--	--	.07	--	--		222	77	22		541	8.2
May 11	26	20	0.00	69	19	33	3.2	a204	106	30	0.3	0.0	.14	381	0.52		250	82	22		610	8.5
June 15	12	--	--	72	22	44	4.0	b232	102	41	--	--	--	--	--		270	80	26		678	8.6
July 21	4.8	--	--	76	22	49	4.4	248	--	59	--	--	.12	--	--		280	77	27		732	7.9
Aug. 19	4.1	--	--	76	2.7	50	4.7	c 250	--	66	--	--	.08	--	--		200	0	34		751	8.3
Sept. 21	2.4	39	.01	77	23	47	4.8	d254	91	65	.2	.4	.10	472	.64		286	78	26		742	8.4

a Includes equivalent of 5 parts per million of carbonate (CO_3).
b Includes equivalent of 14 parts per million of carbonate (CO_3).
c Includes equivalent of 2 parts per million of carbonate (CO_3).
d Includes equivalent of 10 parts per million of carbonate (CO_3).

SAN LORENZO RIVER AT BIG TREES, CALIF.

LOCATION.--In Canada del Rincon Grant at Sequoia Picnic and Camp Grounds at Big Trees, Santa Cruz County, about 0.5 mile above gaging station and 4 miles north of Santa Cruz.
DRAINAGE AREA.--110 square miles (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953	21	--	--	39	6.9	20	2.0	136	--	23	--	--	0.07	--	--		126	14	25		340	7.8
Dec. 17	26	--	--	40	8.5	22	1.7	137	--	23	--	--	.07	--	--		135	22	26		364	8.4
Jan. 15, 1954	30	--	--	40	8.7	22	2.7	135	--	24	--	--	.04	--	--		136	25	26		363	7.9
Feb. 16	218	--	--	32	6.3	15	1.6	92	--	14	--	--	.10	--	--		106	30	23		282	7.8
Mar. 9	245	--	--	26	5.8	13	2.7	81	--	12	--	--	.09	--	--		89	22	23		256	7.5
Apr. 15	124	--	--	38	8.8	18	1.5	113	--	16	--	--	.05	--	--		131	38	23		339	7.6
May 11	72	23	0.03	40	7.7	18	1.8	123	49	18	0.2	0.0	.09	218	0.30		131	31	23		352	8.2
June 15	40	--	--	40	8.3	20	1.8	a138	--	20	--	--	.07	--	--		134	21	24		356	8.4
July 21	b21	--	--	37	8.1	20	1.8	138	--	22	--	--	.05	--	--		126	12	25		348	7.8
Aug. 19	b17	--	--	37	6.3	22	2.4	135	--	24	--	--	.11	--	--		118	8	28		334	8.1
Sept. 21	17	26	.00	39	6.3	21	1.9	135	30	24	.1	.5	.08	216	.29		123	12	27		345	8.0

a Includes equivalent of 4 parts per million of carbonate (CO_3).
b Daily mean discharge.

GUADALUPE RIVER BASIN

LOS GATOS CREEK AT LOS GATOS, CALIF.

LOCATION.--At gaging station 0.3 mile downstream from Trout Creek, 0.5 mile downstream from Lexington Reservoir, and 1.0 mile south of Los Gatos, Santa Clara County.
DRAINAGE AREA.--38.9 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chlorids (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	94	--	--	41	16	14	1.2	a 189	--	10	--	--	0.11	--	--		168	13	15		371	8.5
Dec. 17	3.7	--	--	55	22	17	1.7	230	--	11	--	--	.15	--	--		228	39	14		484	8.1
Jan. 14, 1954	1.8	--	--	67	20	21	1.4	264	--	17	--	--	.00	--	--		249	32	15		555	8.3
Feb. 15	20	--	--	30	12	10	3.9	124	--	10	--	--	.11	--	--		124	23	14		203	7.9
Mar. 8	27	--	--	33	12	10	1.8	116	--	8.0	--	--	.06	--	--		132	37	14		319	8.0
Apr. 15	24	--	--	37	14	13	1.5	132	--	9.0	--	--	.05	--	--		150	42	16		346	7.8
May 11	12	13	0.05	39	14	12	1.8	132	55	8.5	0.3	0.9	.11	210	0.29		155	47	14		353	7.9
June 15	43	--	--	42	15	14	1.8	b 164	--	9.0	--	--	.10	--	--		166	32	15		374	8.5
July 21	6.6	--	--	73	8.7	18	3.1	226	--	13	--	--	.05	--	--		218	33	15		515	7.8
Aug. 19	.9	--	--	64	18	24	2.8	a 250	--	16	--	--	.00	--	--		234	30	18		566	8.4
Sept. 21	.5	13	.00	71	27	23	2.6	c 295	77	18	.2	.5	.18	377	.51		290	48	15		609	8.4

a Includes equivalent of 6 parts per million of carbonate (CO_3).
b Includes equivalent of 4 parts per million of carbonate (CO_3).
c Includes equivalent of 7 parts per million of carbonate (CO_3).

COYOTE CREEK NEAR MADRONE, CALIF.

LOCATION.--At gaging station near southeast corner of Laguna Seca Grant, 1.2 miles downstream from Anderson Dam at mouth of canyon and 1.8 miles northeast of Madrone, Santa Clara County.
DRAINAGE AREA.--194 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	44	--	--	35	15	14	2.0	172	--	10	--	--	0.11	--	--		149	8	17		345	8.4
Dec. 18	65	--	--	35	16	15	2.3	182	--	9.0	--	--	.08	--	--		153	4	17		360	7.9
Jan. 15, 1954	22	--	--	38	15	15	2.2	181	--	12	--	--	.03	--	--		156	8	17		340	7.9
Feb. 15	22	--	--	32	14	16	2.2	182	--	10	--	--	.12	--	--		137	0	20		377	8.2
Mar. 8	18	--	--	35	19	15	2.3	186	--	11	--	--	.12	--	--		165	13	16		392	8.1
Apr. 14	17	--	--	37	18	18	2.1	184	--	12	--	--	.08	--	--		166	16	19		385	8.2
Apr. 20	64	3.6	--	38	18	15	2.2	180	37	10	0.1	0.5	.19	213	0.29		169	21	16		386	7.7
May 10	104	4.5	0.01	38	18	17	2.3	181	35	11	.1	.9	.09	216	.29		169	20	18		385	8.0
June 15	60	--	--	39	19	17	2.4	a192	--	12	--	--	.12	--	--		175	18	17		396	8.7
July 21	42	--	--	38	18	17	2.1	188	--	11	--	--	.03	--	--		169	15	18		387	7.6
Aug. 18	44	--	--	40	16	17	2.6	196	--	12	--	--	.12	--	--		166	5	18		394	8.2
Sept. 20	48	6.9	.05	41	16	17	2.5	194	30	12	.1	.5	.02	222	.30		169	10	18		385	7.4

a Includes equivalent of 12 parts per million of carbonate (CO_3).

ALAMEDA CREEK BASIN

ALAMEDA CREEK NEAR NILES, CALIF.

LOCATION.--At gaging station 0.3 mile downstream from railroad bridge and 1.2 miles northeast of Niles, Alameda County.
DRAINAGE AREA.--633 square miles.
RECORDS AVAILABLE.--Chemical analyses: February 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	0.5	--	--	54	46	90	4.8	a342	--	84	--	--	0.90	--	--		324	43	37		980	8.4
Dec. 17	4.0	--	--	82	45	91	7.1	414	--	103	--	--	.86	--	--		390	50	33		1,090	8.2
Jan. 14, 1954	3.9	--	--	80	44	84	4.8	409	--	101	--	--	.90	--	--		380	46	32		1,060	8.2
Feb. 15	44	--	--	40	18	36	8.0	164	--	39	--	--	.41	--	--		174	40	30		509	7.8
Mar. 8	3.4	--	--	70	40	69	5.5	360	--	78	--	--	.84	--	--		339	44	30		966	8.3
Apr. 15	4.4	--	--	68	35	61	4.0	332	--	54	--	--	.63	--	--		314	42	29		821	8.0
May 10	2.9	15	0.01	67	45	74	4.7	376	99	68	0.1	0.2	.85	558	0.76		352	44	31		952	8.1
June 16	1.5	--	--	83	38	79	5.8	b356	--	85	--	--	1.8	--	--		363	71	32		950	8.5
July 21	1.9	--	--	96	50	89	6.9	461	--	96	--	--	1.3	--	--		445	67	30		1,150	8.0
Aug. 18	1.4	--	--	89	52	87	6.7	c467	--	89	--	--	.94	--	--		436	81	30		1,130	8.5
Sept. 21	.6	19	.04	91	46	91	6.1	d446	111	100	.4	.5	.90	685	.93		418	52	32		1,130	8.3

a Includes equivalent of 9 parts per million of carbonate (CO_3).
b Includes equivalent of 11 parts per million of carbonate (CO_3).
c Includes equivalent of 17 parts per million of carbonate (CO_3).
d Includes equivalent of 7 parts per million of carbonate (CO_3).

KERN RIVER NEAR BAKERSFIELD, CALIF.

LOCATION.--At gaging station at diversion weir at mouth of lower canyon, approximately 2 miles east of Oil City and 5 miles northeast of Bakersfield, Kern County.
DRAINAGE AREA.--2,420 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 9, 1953	192	--	--	20	2.8	25	2.2	92	--	14	--	--	0.15	--	--		61	0	46		234	7.8
Nov. 17	285	--	--	20	3.4	22	2.2	97	--	10	--	--	.22	--	--		64	0	42		231	7.8
Dec. 8	287	--	--	21	3.8	27	2.0	108	--	11	--	--	.34	--	--		68	0	45		241	7.9
Jan. 13, 1954	239	--	--	22	4.1	25	2.5	111	--	12	--	--	.19	--	--		72	0	42		264	8.0
Feb. 16	810	--	--	15	2.8	13	1.8	75	--	5.8	--	--	.46	--	--		49	0	36		153	7.8
Mar. 15	663	--	--	15	2.1	15	1.4	74	--	6.8	--	--	.12	--	--		46	0	40		167	7.5
Apr. 7	1,125	--	--	15	2.8	15	1.4	78	--	6.2	--	--	.30	--	--		49	0	39		165	7.7
May 19	1,322	11	0.02	6.6	.9	5.6	1.0	32	5.0	2.0	0.1	0.2	.08	48	0.07		20	0	36		71.0	7.5
June 16	1,342	--	--	7.6	1.3	6.1	1.1	38	4.0	2.0	--	--	--	--	--		24	0	34		81.2	7.7
July 14	3,125	--	--	11	.9	9.3	1.3	45	--	8.0	--	--	.22	--	--		31	0	38		107	6.9
Aug. 12	674	--	--	13	2.0	12	2.2	65	--	5.2	--	--	.12	--	--		41	0	38		138	7.9
Sept. 14	360	13	.03	19	2.7	18	3.0	89	14	9.5	.3	1.3	.15	125	.17		58	0	39		197	7.8

TULARE LAKE BASIN

TULE RIVER NEAR PORTERVILLE, CALIF.

LOCATION.--At gaging station on downstream side of highway bridge, 1 mile upstream from South Fork and 6 miles east of Porterville, Tulare County.
DRAINAGE AREA.--266 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 8, 1953	5.9	--	--	48	7.8	25	3.3	224	--	12	--	--	0.15	--	--		152	0	26		386	8.0
Nov. 17	36	--	--	54	7.8	23	3.4	236	--	13	--	--	.16	--	--		167	0	23		411	8.0
Dec. 8	49	--	--	51	6.3	22	3.0	217	--	11	--	--	.00	--	--		153	0	23		374	8.2
Jan. 13, 1954	34	--	--	52	7.6	22	4.1	225	--	9.2	--	--	.12	--	--		161	0	22		392	8.2
Feb. 16	200	--	--	27	4.2	12	2.2	122	--	6.8	--	--	.11	--	--		85	0	23		206	8.0
Mar. 16	118	--	--	28	4.3	12	1.8	128	--	6.0	--	--	.08	--	--		88	0	23		227	8.1
Apr. 7	336	--	--	19	3.1	8.4	1.1	81	--	3.5	--	--	.01	--	--		60	0	23		143	7.8
May 18	234	19	0.03	19	2.0	6.1	1.3	78	2.6	2.0	0.2	0.0	.00	91	0.12		56	0	19		139	8.1
June 16	73	--	--	32	4.9	11	2.0	138	6.3	7.3	--	--	--	--	--		100	0	19		237	8.2
July 14	15	--	--	41	9.4	18	3.2	178	--	10	--	--	.00	--	--		141	0	21		342	8.1
Aug. 11	1.0	--	--	53	8.5	24	3.2	a248	--	10	--	--	.09	--	--		167	0	23		409	8.3
Sept. 14	.5	33	.00	56	7.1	24	2.8	b244	4.1	14	.1	.4	.00	262	.36		169	0	23		397	8.3

a Includes equivalent of 4 parts per million of carbonate (CO_3).
b Includes equivalent of 5 parts per million of carbonate (CO_3).

KAWEAH RIVER NEAR THREE RIVERS, CALIF.

LOCATION.--Just below gaging station 2.5 miles downstream from South Fork and 3 miles southwest of Three Rivers Post Office, Tulare County.
DRAINAGE AREA.--520 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 8, 1953	33	--	--	17	2.2	8.7	1.7	67	--	7.0	--	--	0.00	--	--		51	0	26		145	7.6
Nov. 17	79	--	--	18	1.2	6.9	1.4	67	--	7.0	--	--	.01	--	--		50	0	23		138	7.6
Dec. 8	96	--	--	14	2.6	7.8	1.3	63	--	5.8	--	--	.56	--	--		46	0	26		133	7.7
Jan. 13, 1954	60	--	--	19	2.6	8.2	1.8	74	--	8.2	--	--	.02	--	--		58	0	23		154	7.9
Feb. 16	360	--	--	12	1.9	4.5	1.3	50	--	2.5	--	--	.24	--	--		38	0	20		93.5	7.7
Mar. 16	350	--	--	9.3	1.4	3.4	.8	39	--	2.2	--	--	.06	--	--		29	0	20		73.7	7.5
Apr. 6	752	--	--	8.6	1.6	3.8	.7	37	--	1.5	--	--	.05	--	--		28	0	22		68.0	7.5
May 18	1,390	6.2	0.02	3.6	.4	1.2	.5	13	2.1	.0	0.2	0.1	.00	21	0.03		11	0	19		27.3	7.0
June 16	778	--	--	5.2	.6	1.9	.6	22	1.6	1.7	--	--	--	--	--		15	0	20		38.0	7.3
July 13	176	--	--	8.7	.8	3.4	1.0	37	--	2.5	--	--	.00	--	--		25	0	22		71.9	7.5
Aug. 11	47	--	--	14	2.9	5.8	1.4	51	--	6.8	--	--	.00	--	--		47	5	21		104	7.7
Sept. 14	35	14	.01	16	1.6	7.7	1.7	64	4.0	7.8	.0	.2	.02	84	.11		46	0	26		135	7.9

TULARE LAKE BASIN--Continued

KINGS RIVER ABOVE NORTH FORK, CALIF.

LOCATION.--About 0.75 mile below gaging station on downstream side of bridge, 0.15 mile upstream from North Fork, Fresno County, and 10 miles southeast of Trimmer.
DRAINAGE AREA.--956 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 8, 1953.....	130	--	--	6.6	1.1	5.4	1.0	27	--	2.8	--	--	0.04	--	--		21	0	35		66.5	7.3
Nov. 17.....	176	--	--	6.6	.9	3.8	.8	27	--	1.0	--	--	.05	--	--		20	0	28		63.8	7.2
Dec. 8.....	202	--	--	7.0	.6	4.5	.7	28	--	1.5	--	--	.00	--	--		20	0	32		66.4	7.3
Jan. 14, 1954	131	--	--	7.7	.8	4.5	1.0	28	--	3.0	--	--	.02	--	--		22	0	29		73.4	7.5
Feb. 16	685	--	--	7.1	.8	3.2	.8	27	--	1.5	--	--	.17	--	--		21	0	24		56.3	7.4
Mar. 16	804	--	--	4.8	.5	3.0	.8	23	--	2.0	--	--	.05	--	--		14	0	30		47.9	7.3
Apr. 6.....	1,260	--	--	6.0	.7	3.1	.5	24	--	1.5	--	--	.05	--	--		18	0	27		49.2	7.2
May 18	6,450	3.2	0.00	1.8	.1	1.5	.2	9	0.7	.0	0.0	0.1	.00	12	0.02		5	0	39		16.6	7.0
June 15.....	2,510	--	--	2.2	.3	1.2	.4	10	.9	.0	--	--	--	--	--		7	0	26		19.6	7.1
July 13	1,190	--	--	3.5	.3	2.1	.9	13	--	1.8	--	--	.00	--	--		10	0	29		29.8	7.1
Aug. 11.....	300	--	--	5.4	.9	3.3	.8	20	--	2.2	--	--	.01	--	--		17	1	28		46.8	7.2
Sept. 14	141	9.9	.01	6.9	.4	3.6	.8	26	4.6	2.0	.0	.2	.01	41	.06		19	0	28		62.1	7.1

KINGS RIVER AT PIEDRA, CALIF.

LOCATION.--About 0.5 mile above gaging station, at highway bridge at Piedra, Fresno County, 1.5 miles downstream from Mill Creek and about 12 miles northeast of Sangor.
DRAINAGE AREA.--1,694 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 8, 1953	145	--	--	7.5	1.5	5.4	1.1	34	--	2.2	--	--	0.03	--	--		25	0	31		74.4	7.4
Nov. 17	268	--	--	7.9	.8	4.5	1.2	31	--	2.2	--	--	.04	--	--		23	0	29		71.8	7.1
Dec. 8	283	--	--	7.0	1.3	4.5	.9	31	--	2.5	--	--	.06	--	--		23	0	29		71.9	7.5
Jan. 14, 1954	163	--	--	7.5	1.8	5.2	1.2	34	--	4.0	--	--	.00	--	--		26	0	29		78.8	7.6
Feb. 16	298	--	--	8.8	2.0	4.3	1.5	39	--	3.2	--	--	.26	--	--		30	0	23		79.9	7.5
Mar. 16	1,320	--	--	4.8	.5	2.8	.8	21	--	1.8	--	--	.06	--	--		14	0	29		44.8	7.2
Apr. 6	1,230	--	--	6.4	1.5	3.8	.7	30	--	2.0	--	--	.10	--	--		22	0	26		60.3	7.3
May 18	2,160	6.5	0.00	2.7	.2	1.4	.6	12	1.7	.0	0.0	0.1	.11	19	0.03		8	0	27		23.7	6.9
June 15	6,160	--	--	2.2	.0	1.0	.4	9	1.2	.8	--	--	--	--	--		6	0	26		16.6	7.1
July 13	4,140	--	--	2.6	.4	1.2	.5	10	--	1.5	--	--	.05	--	--		8	0	23		22.6	6.8
Aug. 11	1,930	--	--	3.6	.2	1.6	.4	14	--	.8	--	--	.02	--	--		10	0	25		27.7	7.2
Sept. 14	298	11	.05	6.7	.8	2.8	1.0	26	2.6	1.8	.0	1.2	.00	41	.06		20	0	22		54.8	7.1

TULARE LAKE BASIN--Continued

KINGS RIVER AT PEOPLES WEIR NEAR KINGSBURG, CALIF.

LOCATION.--About 0.25 mile below gaging station located on diversion weir, about 12 miles northeast of Hanford and 2 miles south of Kingsburg, Kings County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for diseolved solids are sums of determined constituents. Gaging station maintained and operated by the Kings River Water Association. Records of discharge for water year October 1953 to September 1954 furnished by the State of California Division of Water Resources.

(rev.)

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 9, 1953	7	--	--	15	3.8	9.8	1.7	74	--	6.0	--	--	0.04	--	--		53	0	28		152	7.4
Nov. 18	116	--	--	11	2.3	7.2	1.5	51	--	4.0	--	--	.00	--	--		37	0	29		109	7.4
Dec. 7	105	--	--	11	3.6	8.5	1.4	59	--	4.0	--	--	.00	--	--		42	0	30		126	7.7
Jan. 13, 1954	115	--	--	15	5.0	11	1.8	80	--	5.8	--	--	.00	--	--		58	0	28		164	7.7
Feb. 15	468	--	--	11	3.1	6.0	1.5	54	--	4.2	--	--	.31	--	--		40	0	24		106	7.5
Mar. 15	339	--	--	5.7	1.4	3.6	1.0	29	--	2.0	--	--	.04	--	--		20	0	27		61.2	7.4
Apr. 8	114	--	--	18	4.6	13	1.6	92	--	6.5	--	--	.14	--	--		64	0	30		183	7.7
May 19	539	9.5	0.00	4.7	1.5	2.8	.8	26	2.6	.5	0.0	0.6	.00	36	0.05		18	0	24		53.0	7.5
June 16	1,197	--	--	3.3	.4	2.1	.6	17	--	2.0	--	--	.09	--	--		10	0	30		39.1	7.3
July 14	1,381	--	--	3.5	.8	2.1	.5	8	--	.8	--	--	.19	--	--		12	6	26		38.8	6.5
Aug. 12	1,376	--	--	5.2	.5	2.4	.6	23	--	.2	--	--	.32	--	--		15	0	26		44.3	7.4
Sept. 15	19	13	.03	9.2	2.2	4.9	1.2	46	3.6	2.5	.0	.8	.01	60	.08		32	0	24		88.6	7.2

SAN JOAQUIN RIVER BELOW FRIANT, CALIF.

LOCATION.--At gaging station 0.5 mile west of Friant, Fresno County, 1.5 miles downstream from Cottonwood Creek, 2 miles downstream from Friant Dam, and at mile 268.1.
DRAINAGE AREA.--1,675 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as San Joaquin River at Friant, Calif.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chlorids (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	984	--	--	3.1	0.6	3.1	0.6	16	--	2.0	--	--	0.06	--	--		10	0	38		41.3	6.8
Dec. 7	246	--	--	3.5	.8	4.1	.7	20	--	3.0	--	--	.00	--	--		12	0	41		49.0	7.0
Jan. 11, 1954	286	7.4	--	4.4	.0	4.8	1.1	18	2.5	4.2	--	0.1	.05	33	0.04		11	0	46		43.2	7.3
Jan. 14	432	--	--	4.0	.5	3.8	.8	10	--	3.2	--	--	.00	--	--		12	4	39		44.1	7.3
Feb. 15	92	--	--	5.8	1.8	5.6	1.0	30	--	5.0	--	--	.34	--	--		22	0	35		70.1	7.3
Mar. 15	100	--	--	4.4	.7	4.8	.8	22	--	5.0	--	--	.06	--	--		14	0	41		54.7	7.4
Apr. 6	108	--	--	5.1	1.0	5.4	.6	25	--	3.8	--	--	.08	--	--		17	0	40		73.3	7.3
May 17	1,560	8.6	0.03	3.6	.8	4.0	.7	20	2.0	2.5	0.1	.2	.00	32	.04		12	0	40		47.0	7.5
June 15	175	--	--	3.3	1.2	4.5	.8	20	3.6	3.1	--	--	--	--	--		13	0	41		43.6	7.2
July 13	198	--	--	4.9	.2	4.4	.7	22	--	4.0	--	--	.00	--	--		13	0	41		47.6	7.4
Aug. 10	171	--	--	4.5	.4	4.4	.8	21	--	3.5	--	--	.03	--	--		13	0	41		46.0	7.4
Sept. 13	153	13	.01	4.0	.5	4.2	.6	20	1.5	2.5	.1	.2	.00	36	.05		12	0	42		42.0	7.1

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR BIOLA, CALIF.

LOCATION.--At Skaggs 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 1954.
Water temperatures: November 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 76 ppm Apr. 1-10; minimum, 34 ppm Oct. 11-20.
Hardness: Maximum, 32 ppm Apr. 1-10; minimum, 14 ppm Oct. 1-10, 11-20, 21-31.
Specific conductance: Maximum daily, 124 micromhos Apr. 3; minimum daily, 36.1 micromhos Oct. 12.
Water temperatures: Maximum, 93°F June 21, 22; minimum, 42°F Dec. 27.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 117 ppm Jan. 3-10, 1953; minimum, 34 ppm Oct. 11-20, 1953.
Hardness: Maximum, 53 ppm Jan. 11-13, 1953; minimum, 10 ppm Nov. 1-5, 7-10, 1952.
Specific conductance: Maximum daily, 170 micromhos Jan. 3, 1953; minimum daily, 36.1 micromhos Oct. 12, 1953.
Water temperatures: Maximum, 93°F June 21, 22, 1954; minimum, 36°F Feb. 23-24, 28, Mar. 1, 2, 1953.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953...	808	6.4	0.04	3.0	1.6	3.4	0.8	18	2.1	4.0	0.2	0.9	0.10	35	0.05	76	14	0	33	0.4	42.2	6.6
Oct. 11-20.....	832	7.5	.02	3.0	1.6	3.1	.7	17	2.1	3.5	.2	.5	.08	34	.05	76	14	0	31	.4	39.5	6.8
Oct. 21-31.....	579	7.7	.01	3.6	1.2	4.1	1.0	20	1.8	4.0	.1	.7	.03	35	.05	55	14	0	37	.5	43.9	6.9
Nov. 1-10.....	480	8.8	.02	4.0	1.2	4.5	1.0	19	2.2	5.2	.1	.6	.08	38	.05	49	15	0	38	.5	51.3	6.8
Nov. 11-20.....	359	8.4	.07	4.4	1.2	5.4	.5	23	1.7	6.0	.0	.0	.06	44	.06	43	16	0	41	.6	56.8	6.9
Nov. 21-30.....	192	5.8	.04	6.0	1.7	6.1	1.3	32	2.0	5.2	.2	1.5	.03	51	.07	26	22	0	36	.6	75.3	6.8
Dec. 1-10.....	228	6.4	.04	5.4	1.6	5.4	1.1	28	1.7	5.8	.1	2.0	.02	48	.07	30	20	0	35	.5	69.5	7.0
Dec. 11-20.....	261	6.6	.03	5.2	1.5	5.8	1.1	27	2.3	6.0	.1	.9	.05	47	.06	33	19	0	38	.6	68.2	7.0
Dec. 21-31.....	176	10	.03	6.2	1.3	6.9	1.2	31	2.6	6.0	.1	1.6	.06	54	.07	26	21	0	40	.7	76.2	7.1
Jan. 1-10, 1954 ..	347	6.5	.06	5.0	1.4	5.0	1.5	25	2.1	6.2	.1	.8	.09	45	.06	42	18	0	35	.5	63.2	7.2
Jan. 11-20.....	385	6.2	.06	4.5	1.4	5.0	1.4	23	2.1	6.0	.1	.4	.09	42	.06	44	17	0	37	.5	60.8	7.2
Jan. 21, 26-29....	304	--	--	5.4	2.1	6.1	1.2	27	2.6	8.2	--	.3	--	65	.09	53	22	0	36	.6	75.3	6.9
Jan. 22-25, 30-31.	434	--	--	4.5	1.1	5.0	1.0	23	2.2	5.2	--	.0	--	55	.07	64	16	0	39	.6	55.3	7.0
Feb. 1-10.....	488	8.5	.04	4.5	.9	6.0	1.1	22	2.2	6.2	.1	.5	.08	41	.06	54	15	0	44	.7	60.4	6.8
Feb. 11-15.....	587	--	--	4.7	1.0	5.0	1.4	24	2.3	5.2	--	.3	--	44	.06	70	16	0	38	.6	65.8	7.0
Feb. 16-20.....	149	--	--	7.3	1.6	7.8	1.4	38	3.6	6.8	--	.9	--	66	.09	27	25	0	39	.7	96.5	7.2
Feb. 21-28.....	124	13	.03	7.5	2.2	8.7	1.8	41	4.1	7.5	.3	1.1	.13	66	.09	22	28	0	39	.7	97.7	7.0
Mar. 1-10.....	115	12	.06	6.9	2.1	8.7	2.0	41	3.4	6.8	.3	.8	.09	64	.09	20	26	0	40	.7	93.3	7.1
Mar. 11-20.....	118	9.6	.06	6.7	1.8	9.6	1.6	38	4.4	7.2	.2	1.7	.04	63	.09	20	24	0	44	.9	91.6	7.1
Mar. 21-31.....	119	10	.05	8.2	2.1	10	1.5	46	4.1	7.5	.2	.5	.04	71	.10	23	29	0	41	.8	116	7.4

Apr. 1-10, 1954..	123	5.5	.08	8.6	2.6	10	1.9	48	4.4	7.5	.3	.7	0.09	76	.10	25	32	0	39	.8	112	7.0
Apr. 11-20.....	145	7.1	.06	6.2	2.1	8.7	1.4	38	3.0	6.5	.2	1.0	.11	52	.07	20	24	0	42	.8	87.7	7.2
Apr. 21-30.....	464	8.0	.09	4.7	1.5	5.4	1.5	25	1.9	5.2	.4	1.3	.15	49	.07	61	18	0	37	.6	66.0	6.6
May 1-10.....	1,252	11	.08	4.5	1.7	4.5	1.4	23	2.1	5.2	.3	.5	.09	46	.06	155	18	0	33	.5	57.2	6.7
May 11-20.....	1,690	9.2	.05	4.5	1.7	4.1	1.3	23	2.4	4.5	.3	.0	.12	46	.06	210	18	0	31	.4	52.8	6.8
May 21-31.....	847	12	.04	4.7	1.3	6.9	1.5	26	3.1	5.2	.3	.3	.08	48	.07	110	17	0	44	.7	67.8	6.7
June 1-10.....	218	11	.03	5.5	1.3	7.0	2.1	32	2.6	5.5	.3	1.1	.08	53	.07	31	19	0	41	.7	75.6	6.7
June 11-20.....	161	11	.03	5.7	2.1	7.0	2.0	36	2.6	5.8	.3	.5	.10	56	.08	24	23	0	37	.6	76.8	7.0
June 21-30.....	119	11	.03	6.3	2.2	7.2	1.8	38	2.5	5.5	.5	.3	.04	57	.08	18	25	0	37	.6	79.5	7.0
July 1-10.....	110	11	.02	6.3	1.7	7.4	1.6	38	2.6	5.2	.3	.1	.04	58	.08	17	23	0	39	.7	82.0	7.1
July 11-20.....	109	12	.01	5.9	2.2	7.0	1.5	36	2.4	5.2	.2	1.0	.09	54	.07	16	24	0	37	.6	79.3	7.2
July 21-31.....	102	11	.04	5.7	2.1	6.6	1.5	36	2.6	5.0	.3	.4	.08	55	.07	15	23	0	37	.6	75.5	7.1
Aug. 1-10.....	122	10	.03	5.7	1.9	6.4	1.7	34	2.4	5.2	.3	.8	.08	52	.07	17	22	0	37	.6	74.1	7.1
Aug. 11-20.....	112	11	.03	4.9	1.8	6.7	1.5	34	2.5	4.5	.3	1.0	.03	54	.07	16	20	0	40	.7	76.5	6.8
Aug. 21-31.....	116	11	.04	5.1	1.5	6.8	1.6	33	2.9	4.2	.3	.8	.00	54	.07	17	19	0	41	.7	74.9	6.7
Sept. 1-10.....	117	12	.02	4.0	2.2	6.7	1.4	33	2.3	4.2	.3	.9	.04	53	.07	17	19	0	41	.7	73.3	6.7
Sept. 11-20.....	112	11	.04	5.3	2.1	6.2	1.1	35	2.4	4.2	.1	.3	.06	50	.07	15	22	0	37	.6	71.4	7.0
Sept. 21-30.....	89.5	11	.01	5.8	1.8	6.4	1.1	35	2.5	4.5	.1	.5	.03	53	.07	13	22	0	37	.6	73.7	7.1
Weighted average [a]	344	b 9.0	b 0.05	4.7	1.6	5.3	1.3	25	2.4	5.1	b 0.2	0.6	b 0.08	46	0.06	43	18	0	37	0.6	61.4	--

a Represents 100 percent of runoff for water year October 1953 to September 1954.
b Represents 94 percent of runoff for water year October 1953 to September 1954.

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SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR BIOLA, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
(Once-daily measurement at approximately 3 p.m. to 5 p.m.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	59	53	49	52	67	70	66	76	80	75	91
2	--	63	55	51	50	65	76	66	83	88	77	--
3	60	65	50	50	50	66	70	70	76	90	88	85
4	60	64	51	48	50	66	70	70	75	86	84	80
5	59	60	52	47	48	67	74	69	74	83	85	83
6	66	60	49	48	48	68	67	68	77	70	87	79
7	70	61	52	53	49	64	69	60	76	71	89	76
8	66	58	45	46	49	62	70	60	70	87	88	75
9	66	58	53	52	49	67	69	57	72	84	89	85
10	64	59	49	50	50	58	68	58	76	84	88	80
11	62	65	44	52	54	55	74	60	81	86	85	79
12	64	65	51	50	50	61	77	63	74	82	73	75
13	64	--	45	48	51	63	77	61	78	92	79	80
14	63	62	50	50	52	66	79	60	82	88	78	--
15	63	59	49	50	55	66	82	60	75	87	79	75
16	60	60	49	52	52	51	85	59	80	74	--	78
17	58	55	53	51	59	61	88	63	81	75	74	76
18	62	55	51	50	57	51	86	--	77	90	77	76
19	--	47	53	49	58	52	83	65	73	--	85	74
20	59	52	50	51	59	55	82	61	89	88	82	78
21	57	54	53	52	62	--	74	59	93	88	85	80
22	57	54	47	51	61	--	77	61	93	88	85	82
23	60	52	52	53	65	--	76	64	80	88	85	78
24	60	57	51	49	65	64	70	67	--	75	81	78
25	59	55	50	51	65	65	68	70	--	89	75	82
26	59	52	49	52	67	67	72	73	80	90	82	82
27	59	53	42	53	66	70	62	75	84	92	81	80
28	66	55	50	51	65	70	68	76	92	89	83	78
29	66	52	50	54	--	59	72	65	90	90	78	75
30	60	57	49	51	--	53	64	72	86	88	82	73
31	65	--	50	52	--	70	--	78	--	88	85	--
Average	62	58	50	51	56	62	74	65	80	85	82	79

SAN JOAQUIN RIVER NEAR MENDOTA, CALIF.

LOCATION.--At gaging station 2.5 miles downstream from Mendota Dam and 4 miles north of Mendota, Fresno County.
DRAINAGE AREA.--4,310 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	157	--	--	19	8.4	42	2.4	81	--	53	--	--	0.15	--	--		82	16	52		379	7.1
Dec. 9	250	--	--	8.3	3.9	17	1.3	47	--	17	--	--	.00	--	--		37	0	49		154	7.3
Jan. 12, 1954	91	--	--	5.0	1.1	5.4	1.0	27	--	3.5	--	--	.01	--	--		17	0	39		62.5	7.4
Feb. 17	1,380	--	--	33	14	67	3.3	102	--	94	--	--	.29	--	--		140	56	50		587	7.8
Mar. 17	244	--	--	35	16	75	3.0	106	--	117	--	--	.26	--	--		154	66	51		688	8.0
Apr. 8	170	--	--	16	6.7	28	1.6	61	--	32	--	--	.17	--	--		67	17	47		267	7.5
May 19	346	9.9	0.06	4.2	.9	4.5	1.0	22	2.7	3.2	0.1	0.2	.07	38	0.05		14	0	39		54.0	7.3
June 17	417	--	--	17	4.9	23	1.9	59	--	38	--	--	.07	--	--		63	14	43		268	7.9
July 14	475	--	--	21	7.1	29	1.8	89	--	34	--	--	.00	--	--		82	9	43		308	7.6
Aug. 12	410	--	--	23	14	66	3.3	98	--	100	--	--	.15	--	--		115	34	55		555	8.1
Sept. 16	298	20	.11	27	15	86	3.6	110	49	128	.2	1.9	.08	385	.52		129	39	58		686	7.9

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR DOS PALOS, CALIF.

LOCATION.--At gaging station 0.7 mile downstream from Temple Slough and 7 miles east of Dos Palos, Fresno County.
DRAINAGE AREA.--5,630 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	2.0	--	--	7.9	2.2	8.7	1.0	36	--	7.0	--	--	0.00	--	--		29	0	39		97.0	7.0
Dec. 9	339	--	--	12	3.5	17	2.1	53	--	16	--	--	.13	--	--		44	1	44		185	7.1
Jan. 12, 1954	2.6	--	--	5.9	1.7	7.8	1.5	30	--	5.2	--	--	.04	--	--		22	0	42		87.5	7.5
Feb. 17	1,070	--	--	30	13	64	3.0	98	--	92	--	--	.42	--	--		128	48	51		519	7.9
Mar. 17	2.0	--	--	32	13	64	2.8	96	--	87	--	--	.26	--	--		134	55	50		599	7.9
Apr. 8	2.6	--	--	17	7.6	34	1.7	65	--	40	--	--	.30	--	--		74	20	49		321	7.6
May 19	6.2	9.5	0.05	6.5	1.5	9.0	1.1	32	5.8	8.5	0.1	0.3	.07	58	0.08		22	0	45		96.8	7.4
June 17	a7.5	--	--	18	6.9	28	1.6	61	35	37	--	--	--	--	--		73	23	45		291	7.6
July 14	5.2	--	--	22	7.8	32	1.8	89	--	38	--	--	.00	--	--		87	14	44		327	7.3
Aug. 12	1.8	--	--	23	14	67	3.2	100	--	99	--	--	.30	--	--		115	33	55		554	8.1
Sept. 16	1.7	19	.05	33	17	92	4.0	124	57	138	.3	.5	.17	422	.57		151	49	56		760	7.9

a Daily mean discharge.

BEAR CREEK NEAR STEVINSON, CALIF.

LOCATION.--At gaging station 1 mile above confluence with San Joaquin River and 4.5 miles southeast of Stevinson, Merced County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by U. S. Bureau of Reclamation. Records of discharge for September to December, 1953 given in State of California Report of Sacramento-San Joaquin Water Supervision for 1953.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	70	--	--	20	8.6	35	3.0	156	--	14	--	--	0.03	--	--		85	0	46		313	7.5
Nov. 18	36	--	--	25	12	51	4.1	178	--	36	--	--	.06	--	--		112	0	49		430	7.6
Dec. 9	25	--	--	24	12	52	3.7	172	--	41	--	--	.00	--	--		109	0	50		435	8.0
Jan. 12, 1954	58	--	--	28	12	46	4.3	210	--	22	--	--	.04	--	--		119	0	45		426	7.7
Feb. 17	1,700	--	--	17	7.8	28	3.2	90	--	28	--	--	.37	--	--		74	1	44		276	7.6
Mar. 17	51	--	--	39	15	81	3.4	194	--	92	--	--	.14	--	--		159	0	52		701	8.1
Apr. 9	51	--	--	20	8.9	32	2.8	139	--	20	--	--	.03	--	--		86	0	44		295	7.7
May 13	107	18	1.6	21	6.8	20	2.6	102	14	19	0.0	1.1	.08	153	0.21		80	0	34		255	7.8
June 17	39	--	--	15	6.0	42	2.8	135	16	20	--	--	--	--	--		62	0	58		304	7.7
July 15	5.0	--	--	35	15	255	2.5	238	--	297	--	--	.49	--	--		149	0	78		1,470	7.6
Aug. 13	3.0	--	--	62	30	602	3.0	a 318	--	785	--	--	.28	--	--		278	17	82		3,350	8.3
Sept. 16	8.0	35	.07	31	15	110	2.4	284	36	80	.3	1.3	.09	451	.61		139	0	63		749	8.1

a Includes equivalent of 8 parts per million of carbonate (CO_3).

SAN JOAQUIN RIVER BASIN--Continued

MERCED RIVER AT EXCHEQUER, CALIF.

LOCATION.--At gaging station at Exchequer, Mariposa County, 0.65 mile downstream from Lake McClure and 5 miles northeast of Merced Falls.
DRAINAGE AREA.--1,035 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Merced River at Exchequer Dam.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	Fluorids (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	63	--	--	11	1.8	3.0	0.8	44	--	2.5	--	--	0.00	--	--		35	0	15		84.8	7.7
Nov. 16	43	--	--	12	2.0	3.1	.9	48	--	1.8	--	--	.00	--	--		38	0	15		91.4	7.6
Dec. 10	46	--	--	14	3.1	4.3	.9	55	--	3.2	--	--	.73	--	--		48	3	16		115	7.6
Jan. 12, 1954	45	--	--	15	2.4	3.4	2.5	54	--	3.5	--	--	.00	--	--		47	3	13		112	7.5
Feb. 18	51	--	--	11	2,6	3.0	1.2	42	--	1.5	--	--	.16	--	--		38	4	14		90.1	7.4
Mar. 18	34	--	--	6.6	2.1	2.8	.8	31	--	1.8	--	--	.05	--	--		25	0	19		65.0	7.0
Apr. 5	1,460	--	--	8.1	3.8	3.1	.6	37	--	2.0	--	--	.21	--	--		36	6	16		78.9	7.3
May 20	5,300	6.8	0.00	4.0	1.2	1.2	.4	18	2.2	.2	0.0	0.1	.01	25	0.03		15	0	14		38.7	7.1
June 14	1,690	--	--	3.7	.7	1.4	.5	16	1.6	1.4	--	--	--	--	--		12	0	19		29.2	7.1
July 12	2,730	--	--	2.6	.6	1.4	.2	14	--	.5	--	--	.00	--	--		9	0	25		24.7	7.2
Aug. 10	1,770	--	--	4.0	.7	1.8	.4	18	--	1.5	--	--	.01	--	--		13	0	23		33.4	7.2
Sept. 13	59	8.8	.03	19	3.4	3.4	1.4	75	3.9	2.5	.0	2.0	.00	81	.11		61	0	10		141	7.2

MERCED RIVER NEAR STEVINSON, CALIF.

LOCATION.--At gaging station 5 miles upstream from mouth and 6 miles northwest of Stevinson, Merced County.
DRAINAGE AREA.--1,274 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953.....	147	--	--	18	6.1	29	1.8	111	--	20	--	--	0.00	--	--		70	0	47		267	7.5
Nov. 18.....	147	--	--	20	6.7	32	2.8	133	--	18	--	--	.03	--	--		77	0	46		294	7.8
Dec. 9.....	150	--	--	19	7.0	31	2.6	129	--	18	--	--	.00	--	--		76	0	46		267	7.9
Jan. 12, 1954.....	141	--	--	20	5.9	27	2.3	123	--	16	--	--	.00	--	--		74	0	43		274	7.9
Feb. 17.....	272	--	--	12	6.3	12	2.8	78	--	6.5	--	--	.31	--	--		56	0	31		161	7.6
Mar. 17.....	211	--	--	11	3.5	14	1.5	70	--	6.2	--	--	.30	--	--		42	0	41		153	7.9
Apr. 9.....	1,020	--	--	9.9	3.3	5.8	.8	48	--	3.2	--	--	.11	--	--		38	0	24		99.6	7.3
May 13	3,190	7.5	0.17	7.0	1.7	2.0	.8	30	4.8	1.0	0.0	0.0	.06	40	0.05		24	0	15		61.1	7.2
June 17.....	216	--	--	16	5.0	20	1.6	92	8.2	16	--	--	--	--	--		60	0	41		215	7.8
July 15	117	--	--	15	5.6	26	1.9	98	--	23	--	--	.10	--	--		60	0	47		249	7.4
Aug. 13.....	154	--	--	15	4.3	22	1.7	92	--	16	--	--	.02	--	--		55	0	46		213	8.0
Sept. 16	117	34	.03	22	6.2	33	2.3	130	9.7	23	.1	2.7	.00	197	.27		80	0	46		301	7.6

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR GRAYSON, CALIF.

LOCATION.--At gaging station at Laird Slough Bridge 1.8 miles east of Grayson, Stanislaus County, 5 miles above the confluence of the Tualumne River, and 14 miles southwest of Modesto.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by City of San Francisco in cooperation with the State of California Division of Water Resources, Modesto Irrigation District and Turlock Irrigation District. Records of discharge for water year October 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954 as San Joaquin River at Grayson (Laird Slough). Flow is San Joaquin River diversion into Laird Slough which returns to San Joaquin River main channel 2.1 miles downstream.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	620	--	--	37	16	90	2.8	160	--	106	--	--	0.30	--	--		158	28	55		727	7.7
Dec. 10	360	--	--	56	30	164	4.2	195	--	216	--	--	.34	--	--		263	103	57		1,240	7.9
Jan. 11, 1954	370	--	--	60	32	187	2.9	202	--	255	--	--	.32	--	--		281	116	59		1,440	7.8
Feb. 18	810	--	--	25	12	60	3.4	97	--	70	--	--	.52	--	--		112	32	53		517	7.6
Mar. 18	2,020	--	--	34	16	89	2.9	130	--	114	--	--	.20	--	--		151	44	56		749	8.0
Apr. 9	1,640	--	--	19	8.7	38	1.6	85	--	46	--	--	.15	--	--		83	14	49		344	7.6
May 13	2,940	11	0.12	10	3.8	14	1.2	48	11	14	0.1	0.8	.04	90	0.12		41	1	42		151	7.7
June 17	620	--	--	39	18	91	3.1	144	59	115	--	--	--	--	--		172	54	53		762	8.0
July 15	290	--	--	54	26	136	3.4	a180	--	185	--	--	.27	--	--		242	94	55		1,120	8.4
Aug. 13	290	--	--	51	25	135	3.6	192	--	171	--	--	.32	--	--		230	72	56		1,080	8.2
Sept. 17	370	26	.01	52	22	131	3.2	184	108	170	.1	4.4	.12	607	.83		220	69	56		1,050	8.0

a Includes equivalent of 6 parts per million of carbonate (CO_3).

TUOLUMNE RIVER ABOVE LA GRANGE DAM, NEAR LA GRANGE, CALIF.

LOCATION.--0.5 mile above gaging station at Don Pedro Dam, 4.0 miles upstream from La Grange Dam and 5.5 miles upstream from La Grange, Stanislaus County.
DRAINAGE AREA.--1,540 square miles, (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953.....	1,740	--	--	2.6	0.6	1.0	0.3	14	--	0.5	--	--	0.05	--	--		9	0	19		28.3	6.6
Dec. 10.....	1,460	--	--	3.5	1.3	2.0	.6	18	--	.5	--	--	.00	--	--		14	0	23		34.0	7.1
Jan. 12, 1954	1,150	--	--	3.3	.6	1.9	1.2	14	--	.0	--	--	.00	--	--		11	0	25		30.0	7.2
Feb. 18.....	594	--	--	5.0	1.8	1.5	.8	25	--	1.0	--	--	.18	--	--		20	0	13		50.1	7.3
Mar. 18.....	5,800	--	--	3.5	1.3	1.7	.6	20	--	.5	--	--	.12	--	--		14	0	20		37.8	7.4
Apr. 5.....	3,290	--	--	5.1	2.2	1.9	.5	28	--	1.5	--	--	.03	--	--		22	0	16		51.0	7.2
May 20.....	5,040	7.2	0.01	2.7	.8	1.8	.4	15	2.0	.0	0.1	0.1	.00	22	0.03		10	0	27		27.8	7.2
June 14.....	2,280	--	--	3.5	1.3	1.5	.4	18	1.4	.6	--	--	--	--	--		14	0	18		32.5	7.3
July 12	2,330	--	--	3.0	1.1	1.5	.3	16	--	1.0	--	--	.00	--	--		12	0	21		31.7	7.3
Aug. 10.....	2,260	--	--	3.4	.6	1.8	.4	17	--	1.0	--	--	.01	--	--		11	0	25		31.1	7.2
Sept. 13.....	1,330	6.0	.01	3.6	.8	1.6	.5	18	1.6	.5	.0	.2	.00	24	.03		12	0	21		31.7	7.0

SAN JOAQUIN RIVER BASIN--Continued

TUOLUMNE RIVER AT HICKMAN, CALIF.

LOCATION.--At gaging station about 0.6 mile south of Waterford and 1 mile north of Hickman, Stanislaus County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954 as Tuolumne River at Hickman Bridge.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953.....	a690	--	--	9.7	4.1	12	1.5	44	--	22	--	--	0.02	--	--		41	5	38		148	7.2
Dec. 10.....	735	--	--	7.4	3.3	11	1.2	34	--	18	--	--	.06	--	--		32	4	42		128	7.3
Jan. 12, 1954	700	--	--	7.5	2.7	8.7	1.2	32	--	16	--	--	.00	--	--		30	4	38		108	7.4
Feb. 18.....	680	--	--	8.8	2.9	8.2	1.2	36	--	16	--	--	.26	--	--		34	4	34		115	7.6
Mar. 18	5,580	--	--	4.4	1.5	2.2	.6	23	--	2.5	--	--	.05	--	--		17	0	21		45.5	7.3
Apr. 5.....	a1,640	--	--	6.4	3.9	5.8	.8	35	--	7.2	--	--	.18	--	--		32	3	28		83.3	7.4
May 20	a2,640	6.8	0.00	3.1	1.3	1.6	.5	18	1.7	.5	0.0	0.1	.02	24	0.03		13	0	20		36.9	6.9
June 14.....	a114	--	--	28	10	52	4.7	97	9.6	102	--	--	--	--	--		111	31	49		493	8.0
July 12	a119	--	--	28	9.6	54	5.3	98	--	108	--	--	.26	--	--		110	29	50		501	7.2
Aug. 10.....	a108	--	--	37	5.8	64	6.0	104	--	132	--	--	.13	--	--		116	32	53		606	8.1
Sept. 13.....	a108	45	.02	30	9.3	54	5.3	103	3.5	108	.1	.5	.08	304	.41		113	28	49		522	7.8

a Daily mean discharge.

SAN JOAQUIN RIVER BASIN--Continued

TUOLUMNE RIVER AT TUOLUMNE CITY, CALIF.

LOCATION.--At gaging station at downstream side of bridge at Tuolumne City, Stanislaus County, and 3.4 miles from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by City of San Francisco in cooperation with the State of California Division of Water Resources. Records of discharge for water year October 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	441	--	--	39	13	67	5.3	134	--	125	--	--	0.10	--	--		151	41	48		648	7.4
Dec. 10	813	--	--	21	6.0	34	2.8	63	--	35	--	--	.17	--	--		77	25	48		343	7.3
Jan. 11, 1954	817	--	--	21	5.4	34	3.0	59	--	70	--	--	.04	--	--		75	26	49		348	7.5
Feb. 18	1,010	--	--	19	6.1	30	2.8	61	--	63	--	--	.35	--	--		72	22	46		317	7.5
Mar. 18	5,950	--	--	5.7	1.4	5.6	.9	24	--	10	--	--	.04	--	--		20	0	37		76.8	7.3
Apr. 9	2,130	--	--	11	3.7	15	1.3	42	--	28	--	--	.03	--	--		43	8	42		162	7.3
May 13	3,620	6.5	0.04	6.2	1.6	6.5	1.0	22	2.3	13	0.0	0.0	.09	48	0.07		22	4	38		86.8	7.1
June 17	373	--	--	46	13	83	5.7	134	16	171	--	--	--	--	--		168	58	51		768	7.9
July 15	--	--	--	48	12	80	5.8	a161	--	148	--	--	.00	--	--		170	38	50		749	8.4
Aug. 13	288	--	--	48	14	81	6.4	a166	--	149	--	--	.12	--	--		178	42	49		755	8.3
Sept. 17	315	40	.01	47	14	85	5.9	164	10	154	.0	2.7	.10	439	.60		175	40	50		780	7.4

a Includes equivalent of 3 parts per million of carbonate (CO_3).

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE, NEAR MODESTO, CALIF.

LOCATION.--At downstream side of Maze Road Bridge, 0.2 mile below gaging station at Hetch Hetchy Crossing 2.7 miles upstream from Stanislaus River and 12 miles west of Modesto, Stanislaus County.

RECORDS AVAILABLE.--October 1953 to September 1954.

REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by City of San Francisco in cooperation with the State of California Division of Water Resources. Discharge records for gaging station at Hetch Hetchy Crossing for water year October 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954. Sampling station formerly designated as San Joaquin River at Maze Road Bridge.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	a1,190	--	--	35	15	74	3.8	146	--	103	--	--	0.18	--	--		149	30	51		655	7.4
Dec. 10	1,310	--	--	32	15	74	3.2	106	--	120	--	--	.73	--	--		142	54	53		631	7.6
Jan. 11, 1954	a1,170	--	--	33	16	83	3.3	102	--	128	--	--	.13	--	--		148	65	54		696	7.7
Feb. 18	a3,210	--	--	30	13	68	3.4	115	--	81	--	--	.28	--	--		128	34	53		577	7.5
Mar. 18	a5,840	--	--	8.4	3.2	15	1.2	34	--	22	--	--	.00	--	--		34	6	48		154	7.5
Apr. 9	a3,930	--	--	18	5.9	25	1.4	63	--	36	--	--	.13	--	--		69	18	43		258	7.4
May 13	a6,220	9.3	0.19	8.3	2.7	10	1.2	34	5.3	16	0.1	0.0	.07	70	0.10		32	4	39		125	7.4
June 17	--	--	--	46	18	100	4.2	150	79	157	--	--	--	--	--		189	66	53		869	8.1
July 15	510	--	--	37	21	124	5.4	b111	--	217	--	--	.51	--	--		179	88	59		932	8.8
Aug. 13	480	--	--	57	23	124	5.4	178	--	206	--	--	.27	--	--		236	90	53		1,070	8.2
Sept. 16	--	--	--	--	--	124	--	186	--	201	--	--	--	--	--		--	--	--		1,050	7.4
Sept. 17	630	31	.00	56	22	128	4.6	185	77	194	.1	4.5	.20	608	.83		230	78	54		1,050	7.9

a Daily mean discharge.
b Includes equivalent of 19 parts per million of carbonate (CO_3).

STANISLAUS RIVER NEAR MOUTH, NEAR VERNALIS, CALIF.

LOCATION.--At gaging station 2.9 miles above mouth, Stanislaus County, and about 6 miles northeast of Vernalis.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954. Sampling station formerly designated as Stanislaus River at mouth.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	170	--	--	22	7.8	13	2.1	119	--	7.0	--	--	0.06	--	--		87	0	24		232	7.6
Dec. 10	423	--	--	16	6.7	9.4	1.5	83	--	4.8	--	--	.00	--	--		67	0	23		162	7.9
Jan. 11, 1954	191	--	--	26	10	15	2.3	140	--	12	--	--	.04	--	--		106	0	23		279	7.9
Feb. 19	580	--	--	12	5.8	5.4	1.2	67	--	3.2	--	--	.36	--	--		54	0	18		131	7.7
Mar. 18	1,580	--	--	7.5	3.0	3.4	1.3	36	--	1.0	--	--	.04	--	--		31	2	18		85.3	7.5
Apr. 9	1,250	--	---	9.9	3.3	3.8	.7	47	--	2.2	--	--	.11	--	--		38	0	17		89.0	7.6
May 13	3,090	9.3	0.26	5.5	1.7	1.5	.7	28	2.0	.6	0.0	0.0	.06	35	0.05		21	0	13		49.8	7.5
June 17	124	--	--	21	9.1	13	2.2	124	10	6.2	--	--	--	--	--		90	0	23		230	7.8
July 16	101	--	--	23	9.1	14	2.0	a 134	--	9.0	--	--	.00	--	--		95	0	24		246	8.4
Aug. 13	57	--	--	27	7.6	15	2.1	139	--	9.5	--	--	.37	--	--		99	0	24		259	8.1
Sept. 17	86	37	.01	28	9.8	17	2.3	151	9.1	8.0	.1	2.1	.00	188	.26		110	0	25		281	8.0

a Includes equivalent of 3 parts per million of carbonate (CO_3).

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 AVAILAVLE.--Chemical analyses: March 1951 to September 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 633 ppm July 21-31; minimum, 77 ppm May 11-20.
Hardness: Maximum, 244 ppm Aug. 1-10; minimum, 28 ppm May 21-24.
Specific conductance: Maximum daily, 1,090 micromhos July 30; minimum daily, 87.9 micromhos May 21.
Water temperatures: Maximum, 78°F June 22, July 29; minimum, 40°F Feb. 8.
EXTREMES, 1951-54: Dissolved solids: Maximum, 633 ppm July 21-31, 1954; minimum 54 ppm June 1-10, 1952.
Hardness: Maximum, 244 ppm Aug. 1-10, 1954; minimum, 23 ppm June 1-10, 1952.
Specific conductance: Maximum daily, 1,090 micromhos July 30, 1954; minimum daily, 60.0 micromhos June 21, 1953.
Water temperatures: Maximum, 78°F July 19, 1951, June 22, July 29, 1954; minimum, 39°F Jan. 10, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953 ...	1,464	25	0.01	35	14	69	3.8	135	39	99	0.2	2.1	0.24	377	0.51	1,490	145	34	50	2.5	622	7.4
Oct. 5[a]	1,500	--	--	34	14	65	3.7	150	--	90	--	--	.18	--	--	--	142	20	49	2.4	603	7.8
Oct. 11-20.....	1,938	18	.01	28	11	56	2.9	101	38	80	.1	1.9	.19	306	.42	1,600	115	32	51	2.3	507	7.3
Oct. 21-31.....	1,500	28	.00	34	15	69	3.7	113	46	107	.1	1.3	.17	371	.50	1,500	146	54	50	2.5	625	7.3
Nov. 1-10.....	1,567	13	.02	33	14	65	3.5	109	43	102	.1	1.4	.17	355	.48	1,500	140	50	49	2.4	604	7.3
Nov. 11-20.....	1,696	26	.00	33	14	62	2.7	109	42	101	.1	1.5	.14	350	.48	1,600	140	50	48	2.3	600	7.3
Nov. 21-30.....	1,723	22	.03	31	12	56	2.5	107	38	89	.0	1.3	.15	323	.44	1,500	127	40	48	2.2	548	7.5
Dec. 1-10.....	1,906	25	.03	30	11	60	3.4	104	42	91	.1	1.4	.11	331	.45	1,700	120	35	51	2.4	556	7.5
Dec. 10[a]	1,800	--	--	30	12	54	2.7	103	--	89	--	--	.11	--	--	--	124	40	48	2.1	524	7.8
Dec. 11-20.....	1,718	15	.03	29	15	64	3.0	106	44	99	.1	1.6	.19	347	.47	1,610	134	47	50	2.4	587	7.9
Dec. 21-31.....	1,671	14	.02	29	14	65	3.2	103	45	100	.1	1.7	.17	356	.48	1,610	130	46	51	2.5	585	7.4
Jan. 1-10, 1954 ...	1,524	13	.03	31	14	67	3.0	104	48	108	.1	1.5	.20	355	.48	1,460	135	50	51	2.5	613	7.4
Jan. 11-20.....	1,518	12	.05	34	15	75	3.3	112	57	113	.2	1.8	.22	389	.53	1,590	146	54	52	2.7	664	7.5
Jan. 11[a]	1,400	--	--	33	14	69	3.0	108	--	112	--	--	.10	--	--	--	140	52	51	2.5	638	7.8
Jan. 12[a]	1,420	22	--	31	16	75	2.9	112	50	110	--	1.2	.23	b363	.49	1,390	144	52	53	2.7	650	7.5
Jan. 21-31.....	1,903	19	.05	28	11	70	3.1	107	50	93	.1	2.1	.19	350	.48	1,800	115	28	56	2.8	573	7.2
Feb. 1-10	1,693	22	.08	30	14	67	3.2	110	51	95	.1	2.1	.21	371	.50	1,700	132	42	52	2.5	590	7.6
Feb. 11-14, 16....	1,950	--	--	30	13	71	3.6	106	52	99	--	2.4	--	355	.48	1,870	128	42	54	2.7	600	7.4
Feb. 15, 17-20....	3,434	--	--	25	10	52	3.0	94	42	70	--	2.1	--	284	.39	2,630	104	26	51	2.2	473	7.4

a Not included for computation of weighted averages.
b Sum of determined constituents.

Feb. 19, 1954[a]	3,910	--	--	20	9.2	41	2.8	82	--	54	--	--	.30	--	--	--	88	21	49	1.9	377	7.7
Feb. 21-28	2,774	20	0.08	26	12	52	3.0	97	40	73	0.1	1.8	.21	292	0.40	2,190	114	35	49	2.1	477	7.5
Mar. 1-5	1,820	29	.04	27	12	52	2.9	94	40	79	.2	1.5	.23	294	.40	1,440	117	40	48	2.1	532	7.5
Mar. 6-10	869	35	.05	43	19	87	3.5	126	54	152	.2	3.2	.28	497	.68	1,170	186	82	50	2.8	832	7.7
Mar. 11, 15-16	3,007	--	--	18	7.0	31	2.0	62	21	49	--	.6	--	186	.25	1,510	74	23	47	1.6	311	7.4
Mar. 12-13, 18-19	7,048	--	--	8.9	3.6	12	1.4	36	8.1	18	--	.7	--	89	.12	1,690	37	8	40	.9	140	7.3
Mar. 18[a]	7,690	--	--	8.8	3.2	13	1.2	36	--	18	--	--	.05	--	--	--	35	6	44	1.0	143	7.4
Mar. 14, 17, 20	5,500	--	--	12	4.8	19	1.6	46	15	30	--	.7	--	126	.17	1,870	50	12	44	1.2	232	7.4
Mar. 21-31	6,462	19	.08	12	4.8	20	1.7	54	13	27	.1	1.6	.11	128	.17	2,230	50	5	46	1.2	209	7.1
Apr. 1-10	6,247	8.9	.08	13	5.1	19	1.7	54	13	26	.3	1.3	.12	124	.17	2,090	53	9	43	1.1	202	7.0
Apr. 9[a]	5,490	--	--	15	5.2	21	1.2	60	--	28	--	--	.24	--	--	--	59	10	43	1.2	212	7.5
Apr. 11-20	4,100	10	.07	15	5.7	23	1.7	57	16	34	.2	1.1	.12	146	.20	1,620	61	14	44	1.3	238	7.1
Apr. 21-30	4,830	12	.03	11	4.4	15	1.9	44	9.5	25	.1	.9	.09	114	.16	1,490	46	10	40	1.0	174	6.9
May 1, 7-10	6,738	--	--	9.9	3.3	13	1.5	40	8.6	19	--	.7	--	100	.14	1,820	38	5	41	.9	144	7.3
May 2-6	4,954	--	--	14	4.3	18	2.1	57	11	26	--	1.3	--	134	.18	1,790	53	6	41	1.1	200	7.4
May 11-20	8,761	6.6	.08	7.7	3.8	8.7	1.5	35	5.6	14	.2	.8	.05	77	.10	1,820	35	6	34	.6	116	7.1
May 13[a]	9,260	10	.03	7.5	3.0	8.7	1.1	34	6.0	12	.1	.4	.02	b66	.09	1,650	31	3	37	.7	107	7.3
May 21-24	9,372	--	--	7.3	2.4	9.6	1.6	32	5.6	12	--	.0	--	102	.14	2,580	28	2	41	.8	104	6.9
May 25-26	5,135	--	--	14	4.6	23	2.0	54	17	29	--	.0	--	136	.18	1,890	54	10	47	1.4	220	7.4
May 27-31	2,872	--	--	23	9.1	41	2.6	87	26	58	--	1.0	--	219	.30	1,700	95	24	48	1.8	379	7.8
June 1-10	1,676	24	.03	36	13	67	3.7	123	44	104	.3	1.4	.20	378	.51	1,710	144	42	50	2.4	622	7.4
June 11-20	1,356	27	.02	38	16	74	4.3	139	46	122	.4	1.6	.21	417	.57	1,530	161	47	49	2.5	687	7.1
June 17	1,190	--	--	42	19	86	4.0	144	66	132	--	--	--	--	--	--	183	65	50	2.8	800	8.1
June 21-30	825	30	.02	45	22	98	5.3	155	58	170	.4	3.2	.24	552	.75	1,230	203	76	50	3.0	888	7.1
July 1-10	728	30	.06	52	18	93	5.3	163	58	160	.4	2.0	.28	b499	.68	981	204	70	49	2.8	857	7.3
July 11-20	556	30	.10	56	21	93	5.3	160	55	172	.4	2.7	.23	554	.75	832	226	95	46	2.7	886	7.4
July 16[a]	494	--	--	54	19	98	4.4	c172	--	178	--	--	.21	--	--	--	212	72	49	2.9	936	8.4
July 21-31	360	31	.01	59	22	107	5.5	168	56	198	.1	2.7	.31	633	.86	615	238	100	49	3.0	980	7.5

a Not included for computation of weighted averages.
b Sum of determined constituents.
c Includes equivalent of 7 parts per million of carbonate (CO_3).

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Aug. 1-10, 1954...	385	31	0.02	55	26	104	5.5	170	58	185	0.1	3.5	0.30	607	0.83	631	244	104	47	2.9	953	7.6
Aug. 11-20.....	560	32	.10	50	23	104	5.6	172	62	165	.2	1.5	.31	548	.75	829	220	78	50	3.0	903	7.5
Aug. 13[a]	504	--	--	51	21	104	4.4	168	--	168	--	--	.28	--	--	--	214	76	51	3.1	923	8.2
Aug. 21-31.....	682	31	.00	47	21	102	4.4	172	59	150	.2	3.3	.29	514	.70	946	205	64	51	3.1	886	7.4
Sept. 1-10	669	32	.00	49	21	102	4.8	172	58	155	.2	3.4	.30	522	.71	943	210	69	51	3.1	898	7.3
Sept. 11-20	755	34	.00	48	19	102	5.0	175	56	155	.3	3.7	.31	522	.71	1,060	200	56	52	3.1	893	7.4
Sept. 17[a]	707	31	.00	54	21	117	4.6	180	66	163	.1	4.5	.24	b570	.78	1,090	221	74	53	3.4	966	7.7
Sept. 21-30	838	34	.00	47	21	100	4.0	173	58	148	.3	2.4	.30	510	.69	1,150	205	63	51	3.0	872	7.4
Weighted average[d]	2,371	e17	e0.05	21	8.9	40	2.5	79	27	61	e0.2	1.4	e0.15	232	0.32	1,490	89	24	49	1.7	381	--

a Not included for computation of weighted averages.
b Sum of determined constituents.
d Represents 100 percent of runoff for water year October 1953 to September 1954.
e Represents 77 percent of runoff for water year October 1953 to September 1954.

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER NEAR VERNALIS, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at 7:30 a.m./

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

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER AT MOSSDALE, CALIF.

LOCATION.--At boat landing on left bank at Mossdale Bridge at Mossdale, San Joaquin County, opposite tidal gaging station and 7.6 miles northeast of Tracy.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gaging station on right bank 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. Sampling station formerly designated as San Joaquin River at Mossdale Bridge.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953		--	--	30	13	62	3.2	118	--	90	--	--	0.07	--	--		128	32	50		565	8.0
Nov. 17		--	--	29	13	62	2.6	106	--	90	--	--	.14	--	--		126	39	51		559	7.5
Dec. 15		--	--	31	16	68	3.0	112	--	105	--	--	.01	--	--		144	52	50		630	7.8
Jan. 19, 1954		--	--	30	16	81	3.4	120	--	102	--	--	.22	--	--		141	42	55		650	7.9
Feb. 9		--	--	33	16	79	3.2	116	--	111	--	--	.27	--	--		148	54	53		674	7.8
Mar. 9		--	--	44	21	89	3.5	128	--	155	--	--	.20	--	--		196	92	49		815	8.1
Apr. 20		--	--	12	4.6	18	1.2	47	--	24	--	--	.46	--	--		49	10	44		186	7.8
May 12		9.3	0.26	7.2	2.4	7.6	1.1	32	4.9	10	0.0	0.0	.07	58	0.08		28	2	36		102	7.3
June 9		--	--	39	15	73	4.2	137	--	113	--	--	.14	--	--		159	46	49		657	7.8
June 14		28	--	37	13	66	3.6	142	35	95	.2	2.1	.15	350	.48		146	30	49		610	8.0
June 27		--	--	47	18	86	4.0	160	43	152	--	2.9	.25	--	--		191	60	49		818	7.5
July 13		31	--	49	21	86	3.8	173	56	148	.4	2.3	.28	483	.66		209	67	47		841	7.8
July 22		--	--	56	21	102	5.2	182	--	176	--	--	.25	--	--		226	77	49		940	7.4
Aug. 17		--	--	51	18	92	4.2	180	--	144	--	--	.27	--	--		201	54	49		855	8.1
Aug. 20		31	--	50	24	104	4.0	177	63	170	.6	3.7	.30	537	.73		224	79	50		951	7.9
Sept. 17		28	.00	54	20	109	4.4	180	61	172	.2	3.7	.28	541	.74		216	69	52		947	7.9

SAN JOAQUIN RIVER AT GARWOOD BRIDGE, NEAR STOCKTON, CALIF.

LOCATION.--At boat landing on left bank by Garwood Bridge on State Highway 4 opposite tidal gaging station and 1.8 miles west of Stockton, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: September 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gaging station maintained and operated by United States Bureau of Reclamation. No discharge records available for this station due to tidal effects from Suisun Bay. Sampling station formerly designated as San Joaquin River at Garwood bridge.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953		--	--	28	14	58	4.0	133	--	78	--	--	0.29	--	--		128	18	49		541	7.4
Nov. 17		--	--	34	15	70	3.4	124	--	58	--	--	2.1	--	--		146	45	50		639	7.7
Dec. 15		--	--	32	14	62	3.2	119	--	100	--	--	.04	--	--		138	40	49		600	7.7
Jan. 19, 1954		--	--	33	18	87	3.3	124	--	119	--	--	.23	--	--		156	55	54		733	7.9
Feb. 9		--	--	31	14	69	3.6	120	--	94	--	--	.23	--	--		135	36	52		613	7.7
Mar. 9		--	--	27	14	57	3.0	108	--	86	--	--	.20	--	--		125	36	49		536	7.9
Apr. 20		--	--	13	4.6	20	1.4	51	--	26	--	--	.38	--	--		51	10	45		199	7.8
May 12		12	0.10	8.4	2.5	11	1.2	37	6.7	14	0.1	0.6	.05	75	0.10		31	1	42		123	7.5
June 9		--	--	34	12	63	3.5	140	--	90	--	--	.23	--	--		134	20	50		578	7.7
June 10		23	--	33	13	66	3.8	138	34	86	.1	3.3	.20	330	.45		134	21	51		558	7.8
July 22		--	--	32	14	67	4.2	138	--	98	--	--	.27	--	--		138	24	50		594	7.5
Aug. 17		--	--	34	14	73	6.4	174	--	92	--	--	.20	--	--		142	0	51		614	7.7
Aug. 19		11	--	39	12	72	5.1	181	21	93	.5	4.0	.24	347	.47		145	0	51		615	7.8
Sept. 17		2.9	.00	46	16	95	6.0	174	32	148	.1	3.8	.14	436	.59		181	38	52		803	7.5

SAN JOAQUIN RIVER BASIN--Continued

STOCKTON SHIP CHANNEL NEAR RINDGE PUMP ON RINDGE TRACT, CALIF.

LOCATION.--At boat landing on right bank of ship channel just below confluence of Fourteen Mile slough below tidal gaging station and about 9.6 miles northwest of Stockton, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal 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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	41	17	83	6.3	155	--	116	--	--	0.24	--	--		172	46	50		735	7.3
Nov. 17		--	--	37	16	74	4.2	130	--	112	--	--	.18	--	--		158	52	50		682	7.6
Dec. 15		--	--	34	17	67	1.2	114	--	108	--	--	.06	--	--		155	62	48		647	7.6
Jan. 19, 1954		--	--	44	21	83	3.6	106	--	132	--	--	.17	--	--		196	110	47		807	7.6
Feb. 9		--	--	35	17	74	3.2	110	--	104	--	--	.23	--	--		158	68	50		669	7.7
Mar. 10		--	--	28	13	52	2.7	94	--	76	--	--	.16	--	--		123	46	47		506	7.9
Apr. 20		--	--	16	7.4	26	1.8	68	--	36	--	--	.43	--	--		70	15	44		273	7.8
May 20		10	0.16	9.2	4.2	13	1.4	42	9.1	19	0.1	0.8	.03	88	0.12		40	6	40		157	7.0
June 9		--	--	17	5.0	23	2.6	56	--	35	--	--	.11	--	--		63	17	43		242	7.4
July 19		--	--	24	8.6	31	2.1	91	--	46	--	--	.01	--	--		95	21	41		349	8.0
Aug. 18		--	--	26	9.1	43	2.2	100	--	66	--	--	.02	--	--		102	20	47		424	8.0
Sept. 22		11	.09	27	13	54	3.0	120	30	80	.4	.4	1.6	279	.38		120	22	49		503	7.6

OLD RIVER AT SOUTH TIP OF FABIAN TRACT, NEAR TRACY, CALIF.

LOCATION.--At southern tip of Fabian Tract on left bank at trash rack of pump intake at end of Lammers Road, about 3 miles east of Bethany and 6.1 miles north of Tracy, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953		--	--	34	14	68	4.6	138	--	94	--	--	0.19	--	--		142	30	50		613	7.4
Nov. 17		--	--	38	17	78	4.9	134	--	118	--	--	.21	--	--		165	55	50		710	7.6
Dec. 16		--	--	37	14	69	3.5	123	--	108	--	--	.00	--	--		150	49	49		639	7.7
Jan. 19, 1954		--	--	35	18	87	3.1	74	--	128	--	--	.25	--	--		162	101	53		751	7.9
Feb. 9		--	--	34	16	75	3.4	120	--	104	--	--	.26	--	--		151	52	51		649	7.7
Mar. 9		--	--	30	13	58	2.7	104	--	92	--	--	.17	--	--		128	44	49		557	7.8
Apr. 20		--	--	15	6.0	22	1.6	56	--	34	--	--	.48	--	--		62	16	43		247	7.7
May 12		11	0.30	9.2	3.2	12	1.2	38	9.1	17	0.0	0.0	.10	81	0.11		36	5	41		135	7.3
June 9		--	--	39	15	73	3.1	128	--	109	--	--	.26	--	--		159	54	49		669	8.0
July 22		--	--	53	22	104	4.5	177	--	167	--	--	.32	--	--		222	78	50		930	7.5
Aug. 17		--	--	66	9.7	104	5.8	178	--	177	--	--	.28	--	--		204	58	52		954	8.2
Sept. 17		25	.02	56	22	110	4.9	187	65	178	.1	3.0	.19	556	.76		230	77	50		988	7.9

SAN JOAQUIN RIVER BASIN--Continued

DELTA-MENDOTA CANAL NEAR TRACY, CALIF.

LOCATION.--On left bank 1.1 miles above gaging station near Tracy, and 9.2 miles northwest of Tracy, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for gaging station near Tracy, for water year October 1953 to September 1954 given in WSP 1345. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	Fluorids (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953	357	--	--	32	15	69	3.5	134	--	94	--	--	0.20	--	--		142	32	51		617	7.5
Nov. 18	0	--	--	34	17	82	3.6	128	--	117	--	--	.37	--	--		155	50	53		701	7.8
Dec. 16	0	--	--	38	18	113	3.6	153	--	153	--	--	.41	--	--		169	44	59		865	8.0
Jan. 20, 1954	276	--	--	35	19	89	3.0	124	--	131	--	--	.37	--	--		166	64	53		767	8.0
Feb. 10	1,742	--	--	32	16	73	3.5	112	--	103	--	--	.29	--	--		146	54	51		639	7.7
Mar. 9	1,447	--	--	34	17	71	2.9	100	--	98	--	--	.28	--	--		155	73	49		646	7.9
Apr. 20	2,625	--	--	15	6.9	25	1.6	60	--	38	--	--	.10	--	--		66	17	44		270	7.8
May 12	297	13	0.96	10	4.1	15	1.2	39	13	24	0.0	0.3	.09	100	0.14		42	10	43		173	7.5
June 9	2,856	--	--	29	13	52	2.7	98	--	86	--	--	.17	--	--		126	46	47		501	7.7
July 22	3,288	--	--	17	9.9	30	1.8	90	--	40	--	--	.02	--	--		83	9	43		310	7.6
Aug. 17	2,682	--	--	25	15	77	3.8	98	--	126	--	--	.17	--	--		124	44	56		635	8.1
Sept. 13	1,612	18	.13	25	14	75	3.8	104	33	118	.3	.7	.17	339	.46		121	36	56		627	7.9

SAN JOAQUIN RIVER BASIN--Continued

DELTA-MENDOTA CANAL NEAR MENDOTA, CALIF.

LOCATION.--One mile upstream from control gates into Mendota Pool and 2 miles north of Mendota, Fresno County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954.

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953		--	--	41	4.6	87	4.3	160	--	117	--	--	0.34	--	--		122	0	60		776	7.7
Nov. 18		--	--	43	20	100	3.8	156	--	118	--	--	.43	--	--		190	62	53		851	7.9
Dec. 9		--	--	41	17	96	3.2	146	--	104	--	--	.00	--	--		172	53	54		766	8.1
Jan. 12, 1954		--	--	48	20	120	3.3	152	--	115	--	--	.52	--	--		202	78	56		922	8.0
Feb. 17		--	--	36	16	80	3.4	116	--	114	--	--	.43	--	--		156	61	52		662	7.9
Mar. 17		--	--	36	23	89	3.6	124	--	152	--	--	.25	--	--		184	83	51		825	8.2
Apr. 8		--	--	17	6.9	31	1.6	64	--	36	--	--	.15	--	--		71	18	48		292	7.6
May 19		16	0.12	19	7.7	34	2.5	70	44	39	0.1	1.5	.17	198	0.27		79	22	47		341	7.8
June 17		--	--	16	5.8	21	1.6	52	--	31	--	--	.21	--	--		64	21	41		243	7.8
July 14		--	--	20	7.4	27	1.8	87	--	32	--	--	.29	--	--		80	9	42		292	7.3
Aug. 12		--	--	23	14	69	3.5	97	--	105	--	--	.14	--	--		115	36	56		568	8.0
Sept. 16		19	.05	36	18	97	4.3	131	62	150	.4	.6	.26	452	.61		166	59	55		821	7.8

SAN JOAQUIN RIVER BASIN--Continued

OLD RIVER AT CLIFTON COURT FERRY, CALIF.

LOCATION.--At Clifton Court Ferry Crossing, 0.3 mile below tidal gaging station, 2.1 miles east of Herdlyn and 3.6 miles north of Bethany, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gaging station maintained and operated by United States Bureau of Reclamation. No discharge records available for this station due to tidal effects from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	31	13	64	3.3	125	--	90	--	--	0.17	--	--		131	28	51		576	7.6
Nov. 18		--	--	35	13	69	3.3	114	--	112	--	--	.16	--	--		141	48	51		643	7.8
Dec. 16		--	--	33	15	67	3.0	114	--	106	--	--	.01	--	--		144	50	50		619	7.8
Jan. 20, 1954		--	--	37	19	88	3.4	112	--	132	--	--	.26	--	--		170	78	52		770	7.9
Feb. 10		--	--	32	16	70	3.4	108	--	97	--	--	.25	--	--		146	58	50		637	7.7
Mar. 9		--	--	36	17	73	3.1	100	--	103	--	--	.29	--	--		160	78	49		670	7.7
Apr. 20		--	--	13	5.8	21	1.6	53	--	30	--	--	.00	--	--		56	13	44		219	7.7
May 12		12	0.22	9.4	3.8	13	1.2	40	11	19	0.0	0.1	.09	89	0.12		39	6	41		157	7.5
June 8		--	--	13	5.0	17	1.5	45	--	27	--	--	.15	--	--		53	16	40		194	7.3
July 22		--	--	20	7.7	29	1.8	86	--	40	--	--	.04	--	--		82	11	43		308	7.6
Aug. 17		--	--	24	15	82	4.2	97	--	122	--	--	.10	--	--		122	42	58		625	7.9
Sept. 22		20	.05	37	15	83	4.1	139	43	128	.3	2.0	.10	400	.54		156	42	53		702	7.8

SAN JOAQUIN RIVER BASIN--Continued

ITALIAN SLOUGH NEAR BYRON, CALIF.

LOCATION.--At pumping plant number 1 of Byron-Bethany Irrigation District adjacent to Byron-Bethany road, 3.9 miles southeast of Byron, Contra Costa County, and 15 milee northwest of Tracy.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for diesolved solide are sums of determined constituents. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	36	18	87	4.0	150	--	128	--	--	0.63	--	--		164	41	53		744	7.7
Nov. 18		--	--	40	19	185	3.6	172	--	258	--	--	2.9	--	--		178	37	69		1,260	7.9
Dec. 16		--	--	56	29	290	4.6	190	--	415	--	--	6.2	--	--		258	103	70		1,930	7.8
Jan. 20, 1954		--	--	72	34	219	5.0	116	--	335	--	--	4.1	--	--		320	224	59		1,710	7.7
Feb. 10		--	--	68	35	344	4.8	194	--	465	--	--	6.9	--	--		314	154	70		2,190	7.8
Mar. 9		--	--	38	19	90	3.4	100	--	131	--	--	.56	--	--		173	91	52		770	7.8
Apr. 20		--	--	19	9.2	40	2.0	65	--	60	--	--	.62	--	--		85	32	50		367	7.8
May 12		13	0.70	26	12	54	2.6	58	47	94	0.1	5.4	.52	283	0.38		114	67	50		524	7.3
June 8		--	--	13	4.2	20	1.6	48	--	31	--	--	.20	--	--		50	10	46		209	7.4
July 22		--	--	18	9.1	31	1.8	88	--	40	--	--	.21	--	--		82	10	44		320	7.8
Aug. 17		--	--	31	10	79	4.0	96	--	128	--	--	.38	--	--		118	40	58		650	8.1
Sept. 13		18	.01	26	17	89	3.6	101	45	140	.1	4.6	.25	393	.53		135	52	58		712	7.7

SAN JOAQUIN RIVER BASIN--Continued

ITALIAN SLOUGH AT MOUTH, NEAR BYRON, CALIF.

LOCATION.--On right bank at confluence of Italian Slough and Old River, 3.6 miles east of Byron, Contra Costa County, and 12 miles northwest of Tracy.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station. Sampling station formerly designated as Italian Slough near mouth.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	33	16	69	3.5	138	--	97	--	--	0.21	--	--		148	36	50		628	8.1
Nov. 18		--	--	35	16	73	3.5	120	--	118	--	--	.24	--	--		154	55	50		678	7.8
Dec. 16		--	--	34	16	67	3.2	110	--	104	--	--	.05	--	--		151	61	48		634	7.8
Jan. 20, 1954		--	--	48	22	96	3.7	102	--	142	--	--	.31	--	--		210	127	49		876	7.8
Feb. 10		--	--	36	17	78	3.4	110	--	106	--	--	.30	--	--		160	70	51		685	7.7
Mar. 9		--	--	36	16	71	3.0	100	--	101	--	--	.30	--	--		156	74	49		665	7.9
Apr. 20		--	--	15	7.7	26	1.6	61	--	38	--	--	.17	--	--		69	19	44		277	7.8
May 12		12	0.09	9.3	3.6	13	1.2	39	11	18	0.1	0.5	.06	88	0.12		38	6	42		149	7.7
June 8		--	--	12	5.2	18	1.6	46	--	26	--	--	.08	--	--		51	14	42		198	7.3
July 22		--	--	17	9.4	30	1.9	90	--	41	--	--	.00	--	--		81	7	44		314	7.5
Aug. 17		--	--	24	15	82	3.6	94	--	136	--	--	.47	--	--		122	44	59		671	8.0
Sept. 22		17	.06	23	14	66	3.2	109	32	102	.3	.2	.02	312	.42		117	28	54		568	7.6

SAN JOAQUIN RIVER BASIN--Continued

INDIAN SLOUGH NEAR BRENTWOOD, CALIF.

LOCATION.--At East Contra Costa Irrigation District Pump number 1 on Bixler Road, 3 miles north of Byron and 4.1 miles southeast of Brentwood, Contra Costa County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954,

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	51	36	159	2.7	218	--	203	--	--	1.7	--	--		275	96	55		1,260	7.6
Nov. 18		--	--	71	37	118	2.1	314	--	140	--	--	1.9	--	--		329	72	44		1,140	8.2
Dec. 16		--	--	74	34	148	2.6	a310	--	184	--	--	1.6	--	--		324	70	50		1,290	8.4
Jan. 20, 1954		--	--	68	39	174	3.3	246	--	170	--	--	2.0	--	--		330	128	53		1,240	7.9
Feb. 10		--	--	62	40	172	2.7	252	--	210	--	--	1.6	--	--		319	112	54		1,350	8.1
Mar. 9		--	--	48	28	114	3.5	156	--	162	--	--	.88	--	--		235	107	51		1,010	7.9
Apr. 21		--	--	15	8.1	29	1.8	65	--	41	--	--	.10	--	--		71	18	46		297	7.6
May 12		15	0.23	16	8.8	30	1.8	66	27	42	0.1	0.8	.21	174	0.24		76	22	45		311	7.8
June 8		--	--	13	4.7	19	1.5	50	--	28	--	--	.15	--	--		52	11	43		203	7.5
July 23		--	--	19	9.9	37	2.2	90	--	48	--	--	.15	--	--		88	14	47		350	7.3
Aug. 17		--	--	27	20	112	4.4	105	--	181	--	--	.28	--	--		150	64	61		866	8.0
Sept. 22		18	.10	25	19	89	3.6	121	45	138	.4	.9	.31	399	.54		139	40	57		737	7.4

a Includes equivalent of 7 parts per million of carbonate (CO_3).

SAN JOAQUIN RIVER BASIN--Continued

OLD RIVER AT OROWOOD BRIDGE, NEAR MIDDLE RIVER, CALIF.

LOCATION.--At right bank at Atchison, Topeka and Santa Fe Railroad bridge, 1.6 miles west of the town of Middle River, San Joaquin County, and 7.9 miles east of Brentwood.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station. Sampling station formerly designated as Old River at Orowood Bridge.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	24	12	43	2.7	111	--	62	--	--	0.15	--	--		107	18	45		439	7.3
Nov. 18		--	--	34	15	70	3.3	116	--	110	--	--	.18	--	--		146	52	50		655	7.6
Dec. 16		--	--	35	15	66	3.1	111	--	104	--	--	.00	--	--		149	58	48		640	7.6
Jan. 20, 1954		--	--	55	26	91	3.5	98	--	140	--	--	.31	--	--		244	164	44		932	7.5
Feb. 10		--	--	42	19	84	3.3	110	--	120	--	--	.32	--	--		183	93	49		769	7.7
Mar. 9		--	--	40	19	72	2.8	96	--	106	--	--	.23	--	--		178	100	46		702	7.7
Apr. 21		--	--	16	7.4	26	1.7	61	--	37	--	--	.09	--	--		70	20	44		278	7.7
May 12		11	0.54	13	4.5	15	1.4	42	19	23	0.0	0.2	.10	108	0.15		51	17	38		190	7.5
June 8		--	--	13	4.7	15	1.4	49	--	28	--	--	.06	--	--		52	12	38		180	7.4
July 23		--	--	18	10	36	2.2	87	--	50	--	--	.11	--	--		86	15	47		347	7.5
Aug. 17		--	--	26	18	101	4.2	94	--	170	--	--	.21	--	--		139	62	60		803	8.0
Sept. 22		17	.08	22	15	69	3.5	108	35	104	.1	.8	.13	320	.44		116	28	55		582	7.3

ROCK SLOUGH NEAR KNIGHTSEN, CALIF.

LOCATION.--At Contra Costa Canal intake at the end of Tule Lane, 2 miles northeast of Knightsen, Contra Costa County, and 4.2 miles southeast of Oakley.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	21	12	36	2.1	106	--	46	--	--	0.14	--	--		102	15	43		377	7.6
Nov. 18		--	--	32	17	67	3.3	120	--	99	--	--	.28	--	--		150	52	49		633	7.7
Dec. 16		--	--	33	18	72	3.3	125	--	109	--	--	.00	--	--		156	54	49		622	7.9
Jan. 20, 1954		--	--	53	25	84	3.7	140	--	122	--	--	.32	--	--		235	120	43		876	7.5
Feb. 10		--	--	45	23	99	3.2	120	--	136	--	--	.41	--	--		207	108	50		880	7.8
Mar. 9		--	--	37	20	77	2.9	102	--	106	--	--	.28	--	--		174	91	48		721	7.8
Apr. 21		--	--	16	7.9	29	1.8	84	--	36	--	--	.14	--	--		72	20	46		286	7.6
May 12		16	0.14	18	9.7	29	1.9	70	30	39	0.1	0.9	.12	179	0.24		85	27	42		319	7.6
June 8		--	--	17	2.4	16	1.4	49	--	23	--	--	.14	--	--		52	12	39		186	7.3
July 23		--	--	18	11	38	2.2	88	--	52	--	--	.12	--	--		90	18	47		357	7.9
Aug. 17		--	--	26	18	110	4.9	95	--	186	--	--	.08	--	--		139	61	62		743	8.0
Sept. 22		17	.08	25	13	69	3.3	110	31	106	.2	.1	.00	319	.43		117	27	55		535	7.6

SAN JOAQUIN RIVER BASIN--Continued

MOKELUMNE RIVER AT LANCHA PLANA, CALIF.

LOCATION.--500 feet below gaging station 1 mile east of Lancha Plana, Amador County, 3 miles downstream from Pardee Dam and 5 miles upstream from Camanche Creek.
DRAINAGE AREA.--584 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Mokelumne River near Lancha Plana.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 13, 1953.....	660	--	--	3.3	0.9	2.8	0.6	17	--	0.8	--	--	0.04	--	--		12	0	32		34.3	7.3
Dec. 14.....	676	--	--	3.3	1.4	1.8	.6	18	--	.2	--	--	.03	--	--		14	0	21		39.6	7.1
Jan. 18, 1954.....	687	--	--	3.3	1.7	1.8	.8	18	--	1.5	--	--	.09	--	--		15	0	19		37.2	7.3
Feb. 8.....	682	--	--	4.0	1.0	2.2	.6	20	--	1.5	--	--	.03	--	--		14	0	24		42.6	7.5
Mar. 10	676	--	--	4.4	1.5	2.0	.6	22	--	2.5	--	--	.06	--	--		17	0	20		49.3	7.3
Apr. 19.....	908	--	--	4.7	1.3	3.1	.7	22	--	2.8	--	--	.35	--	--		17	0	27		47.1	7.5
May 13.....	1,030	6.5	0.09	4.9	1.2	1.7	.7	21	2.4	2.2	0.0	0.0	.07	30	0.04		17	0	17		45.6	7.4
June 7.....	632	--	--	4.8	1.0	2.2	.8	22	--	2.5	--	--	.00	--	--		16	0	22		43.7	7.4
July 23	649	--	--	4.5	.4	2.1	.6	20	--	1.5	--	--	.00	--	--		13	0	25		38.3	7.1
Aug. 18	654	--	--	4.5	.4	4.1	.7	20	--	1.8	--	--	.03	--	--		13	0	39		36.9	7.2
Sept. 23	676	9.1	.01	3.8	.7	2.1	.9	18	1.8	1.0	.0	.2	.00	28	.04		12	0	25		34.0	7.1

MOKELUMNE 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 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 45 ppm Mar. 1-10; minimum, 31 ppm Jan. 1-10.
Hardness: Maximum, 26 ppm Dec. 5; minimum, 14 ppm Oct. 1-10, Sept. 1-10, 11-20, 21-30.
Specific conductance: Maximum daily, 84.6 micromhos Dec. 5; minimum daily, 36.2 micromhos Oct. 2.
Water temperatures: Maximum, 72°F July 29; minimum, 35°F Jan. 29, 30.
EXTREMES, 1951-54.--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, 35°F Jan. 29, 30, 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953....	283	8.6	0.04	3.6	1.2	2.4	1.1	19	2.8	1.2	0.1	0.3	0.11	32	0.04	24	14	0	25	0.3	39.0	6.8
Oct. 11-20.....	321	8.6	.03	3.8	2.1	1.8	.8	20	2.8	2.8	.1	.5	.09	33	.04	29	18	2	17	.2	39.4	6.8
Oct. 21-31.....	354	9.1	.03	4.0	1.4	2.4	1.1	20	2.7	2.8	.1	.4	.03	34	.05	32	16	0	23	.3	42.8	6.7
Nov. 1-10.....	375	9.9	.04	3.8	1.6	2.0	.6	19	2.1	2.8	.0	.0	.02	39	.05	40	16	1	21	.2	42.5	6.9
Nov. 11-18.....	468	6.2	.03	4.1	1.7	2.0	1.0	19	2.6	3.2	.0	.4	.00	34	.05	43	17	2	19	.2	42.0	6.9
Dec. 1-4, 6-10	544	5.0	.04	4.3	1.7	2.0	1.0	16	2.5	5.2	.0	.7	.05	36	.05	53	18	5	19	.2	47.9	6.6
Dec. 5	646	--	--	--	--	1.8	1.4	10	--	5.5	--	--	--	--	--	--	26	--	--	--	84.6	6.2
Dec. 11-20	506	6.8	.04	4.3	1.7	2.0	.9	18	2.4	4.2	.0	.6	.02	35	.05	48	18	3	19	.2	47.3	6.9
Dec. 21-31	505	4.7	.03	4.3	1.3	2.8	.7	19	3.2	2.5	.0	.2	.03	33	.04	45	16	1	26	.3	44.3	7.2
Jan. 1-10, 1954 ...	555	6.6	.04	4.1	1.4	3.1	.9	20	2.6	3.0	.1	.6	.07	31	.04	46	16	0	28	.3	42.9	7.2
Jan. 11-20.....	469	3.6	.06	4.5	1.9	2.0	.9	20	3.0	3.0	.1	.0	.06	35	.05	44	19	3	18	.2	46.9	7.0
Jan. 21-31.....	401	5.7	.05	4.3	1.7	3.1	.7	19	4.4	3.8	.1	.2	.06	36	.05	39	18	2	27	.3	54.9	6.8
Feb. 1-10.....	460	8.1	.06	4.7	1.5	3.1	.8	20	3.9	3.0	.1	.3	.05	38	.05	47	18	2	26	.3	53.0	6.8
Feb. 11-20	507	7.1	.25	4.7	1.3	2.8	.9	21	4.2	2.2	.1	.5	.04	40	.05	55	17	0	25	.3	54.8	7.2
Feb. 21-28	463	8.7	.07	4.7	1.7	3.8	.7	23	3.4	2.8	.1	.2	.04	42	.06	53	19	0	24	.3	55.8	7.2
Mar. 1-10	434	11	.08	5.0	1.8	2.8	1.0	22	3.8	3.8	.1	.4	.06	45	.06	53	20	2	22	.3	57.9	6.8
Mar. 11-20	471	8.9	.07	5.0	1.8	3.4	9	22	4.3	4.2	.1	.6	.05	44	.06	56	20	2	26	.3	55.6	6.8
Mar. 21-31.....	416	15	.05	5.2	2.0	2.3	8	22	4.5	3.2	.1	.4	.06	43	.06	48	21	3	22	.3	55.4	6.9
Apr. 1-10.....	848	11	.08	4.7	2.2	2.8	7	23	3.7	2.5	.1	.4	.10	42	.06	96	21	2	22	.3	51.5	6.9
Apr. 11-20.....	734	7.4	.07	4.9	1.4	3.4	1.0	23	2.8	3.0	.2	.6	.02	42	.06	83	18	0	28	.3	51.3	6.9
Apr. 21-30.....	819	10	.04	4.9	1.9	2.8	1.1	23	2.8	3.2	.1	.2	.04	42	.06	93	20	1	22	.3	49.9	7.0

SAN JOAQUIN RIVER BASIN--Continued

MOKELUMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
May 1-10, 1954 ...	688	7.6	0.06	4.9	1.9	2.8	1.1	23	3.0	4.0	0.1	0.4	0.05	43	0.06	80	20	1	22	0.3	53.1	7.0
May 11-20	955	8.3	.04	4.9	1.4	2.0	1.3	23	2.8	2.5	.1	.0	.08	40	.05	103	18	0	18	.2	49.6	6.9
May 21-31	696	9.6	.04	5.1	1.7	2.8	1.2	24	2.9	2.8	.0	.0	.03	38	.05	71	20	0	22	.3	48.1	6.9
June 1-10	97.7	9.1	.03	4.9	1.4	2.8	1.1	23	2.8	2.8	.0	.0	.04	37	.05	9.8	18	0	24	.3	49.8	6.9
June 11-20	52.1	11	.00	4.8	1.7	2.5	1.2	24	2.4	2.8	.0	.1	.06	38	.05	5.4	19	0	21	.3	46.7	6.9
June 21-30	37.0	13	.01	4.4	2.0	2.5	1.0	24	2.3	2.8	.0	.1	.08	38	.05	3.8	19	0	21	.3	49.9	7.0
July 1-10	37.9	13	.02	4.6	2.3	2.5	1.1	26	2.6	2.8	.0	.2	.05	41	.06	4.2	21	0	20	.2	60.0	7.0
July 11-20	39.2	11	.01	4.4	2.0	2.4	1.0	22	2.1	2.8	.1	.0	.07	37	.05	3.9	19	1	20	.2	45.1	6.9
July 21-31	24.9	12	.01	4.4	2.2	2.4	1.0	24	2.1	2.8	.0	.0	.08	38	.05	2.6	20	0	20	.2	46.6	7.0
Aug. 1-10.....	33.5	10	.04	4.2	1.6	2.7	1.5	22	2.2	2.5	.1	.2	.00	36	.05	3.3	17	0	24	.3	43.9	7.0
Aug. 11-20.....	69.9	12	.02	3.9	2.0	2.3	1.0	22	2.2	2.0	.0	.3	.00	37	.05	7.0	18	0	21	.2	43.2	7.4
Aug. 21-31.....	123	11	.01	3.8	1.8	2.2	.8	21	1.9	2.2	.2	.9	.10	36	.05	12	17	0	21	.2	45.7	6.8
Sept. 1-10	138	11	.02	3.5	1.2	2.2	.8	20	1.4	1.5	.2	.2	.00	34	.05	13	14	0	25	.3	39.1	6.9
Sept. 11-20	200	11	.02	4.0	1.0	2.2	.8	20	1.7	1.5	.2	.1	.00	34	.05	18	14	0	24	.3	38.4	7.0
Sept. 21-30	210	11	.02	3.5	1.4	2.1	.7	20	1.7	1.8	.2	.0	.00	33	.04	19	14	0	23	.2	39.2	6.6
Weighted average [a]	380	8.5	0.06	4.6	1.7	2.6	0.9	21	3.1	3.0	0.1	0.3	0.05	38	0.05	39	18	2	22	0.3	49.5	--

a Represents 95 percent of runoff for water year October 1953 to September 1954.

SAN JOAQUIN RIVER BASIN--Continued

MOKELUMNE RIVER AT WOODBRIDGE, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
(Once-daily measurement at 6:30 a.m.)

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

SAN JOAQUIN RIVER BASIN--Continued

COSUMNES RIVER AT MICHIGAN BAR, CALIF.

LOCATION.--At gaging station on highway bridge at Michigan Bar, Sacramento County, 5.5 miles southwest of Latrobe and 12 miles downstream from confluence of North and Middle Forks.
DRAINAGE AREA.--537 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Vslues reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Cosumnes River near Michigan Bar.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 13, 1953	18	--	--	9.3	4.1	5.0	1.1	51	--	2.0	--	--	0.01	--	--		40	0	21		94.8	8.0
Nov. 16	136	--	--	7.5	2.3	3.4	1.6	34	--	1.5	--	--	.07	--	--		28	0	20		71.7	7.2
Dec. 14	83	--	--	7.9	4.7	4.1	1.0	47	--	2.5	--	--	.00	--	--		39	1	18		99.0	7.6
Jan. 18, 1954	436	--	--	9.3	4.5	3.4	1.8	47	--	2.0	--	--	.04	--	--		42	3	14		100	7.5
Feb. 8	178	--	--	7.5	4.2	3.4	.8	42	--	1.8	--	--	.08	--	--		36	2	17		84.9	7.6
Mar. 10	3,580	--	--	5.9	2.1	2.6	1.1	32	--	.8	--	--	.02	--	--		23	0	19		62.2	7.5
Apr. 19	1,050	--	--	4.7	2.7	2.8	.6	28	--	1.0	--	--	.25	--	--		23	0	21		50.3	7.6
May 14	436	16	0.07	5.7	2.7	2.8	.8	33	4.4	.8	0.1	0.1	.02	50	0.07		25	0	19		63.5	7.5
June 7	146	--	--	6.4	2.7	3.2	1.0	37	--	2.5	--	--	.18	--	--		27	0	20		71.5	7.7
July 23	18	--	--	8.8	2.8	3.9	1.3	47	--	1.5	--	--	.01	--	--		33	0	19		83.9	7.6
Aug. 18	7.9	--	--	11	3.3	5.1	1.3	60	--	2.2	--	--	.02	--	--		41	0	21		108	7.8
Sept. 23	8.5	16	.00	11	4.5	5.3	1.2	65	2.8	3.0	.0	.2	.07	76	.10		46	0	19		112	8.0

SAN JOAQUIN RIVER BASIN--Continued

DELTA CROSS-CHANNEL NEAR WALNUT GROVE, CALIF.

LOCATION.--At left bank 0.2 mile downstream from control gates, 0.5 mile north of Walnut Grove, Sacramento County and 7.5 miles south of Courtland.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953		--	--	15	8.0	14	1.5	88	--	13	--	--	0.00	--	--		70	0	30		201	7.7
Nov. 19		--	--	13	6.3	12	1.4	70	--	11	--	--	.12	--	--		58	1	30		172	7.6
Dec. 15		--	--	8.3	3.9	6.1	1.1	43	--	5.5	--	--	.00	--	--		37	2	26		101	7.4
Jan. 21, 1954		--	--	6.6	3.5	5.2	1.1	38	--	4.0	--	--	.04	--	--		31	0	26		87.3	7.5
Feb. 11		--	--	12	5.8	7.1	1.2	68	--	4.2	--	--	.09	--	--		54	0	22		143	7.5
Mar. 8		--	--	13	6.6	7.1	.9	72	--	6.0	--	--	.05	--	--		60	1	20		147	7.7
Apr. 22		--	--	9.0	3.8	6.1	.5	48	--	3.5	--	--	.05	--	--		38	0	26		100	7.7
May 11		15	0.05	8.4	3.9	5.2	.7	46	6.6	4.5	0.0	0.3	.03	67	0.09		37	0	23		103	7.6
June 17		--	--	14	8.4	19	1.4	90	19	11	--	--	--	--	--		69	0	37		217	8.2
July 20		--	--	17	8.1	18	1.5	96	--	16	--	--	.08	--	--		76	0	34		228	7.2
Aug. 16		--	--	17	9.5	21	1.3	110	--	16	--	--	.10	--	--		81	0	35		252	8.0
Sept. 22		22	.00	20	9.9	24	1.6	123	15	19	.1	2.1	.59	175	.24		90	0	36		280	8.2

SAN JOAQUIN RIVER BASIN--Continued

LITTLE POTATO SLOUGH NEAR TERMINOUS, CALIF.

LOCATION.--At tidal gaging station at bridge on State Highway 12, about 0.2 mile from confluence with South Fork Mokelumne River and about 0.5 mile north of Terminous, San Joaquin County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No dishcarge records available for this station due to tidal effects from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953		--	--	16	7.4	15	1.5	82	--	21	--	--	0.06	--	--		70	0	31		209	7.4
Nov. 17		--	--	15	9.1	17	1.3	60	--	40	--	--	.09	--	--		75	26	33		249	7.1
Dec. 15		--	--	14	8.3	14	1.2	55	--	35	--	--	.00	--	--		69	24	30		224	7.6
Jan. 19, 1954		--	--	15	8.4	14	1.2	59	--	28	--	--	.08	--	--		72	24	29		231	7.3
Feb. 9		--	--	12	5.8	7.4	1.2	60	--	9.5	--	--	.10	--	--		54	5	23		148	7.6
Mar. 10		--	--	12	6.6	7.4	.9	69	--	5.5	--	--	.13	--	--		57	1	22		148	7.6
Apr. 19		--	--	8.1	4.3	6.7	.7	42	--	9.0	--	--	.36	--	--		38	4	27		102	7.8
May 20		11	0.09	9.2	4.5	8.0	1.0	37	5.0	18	0.0	0.6	.04	76	0.10		41	11	29		134	7.7
June 8		--	--	15	7.0	16	1.3	76	--	21	--	--	.05	--	--		66	4	34		210	7.7
July 22		--	--	17	9.9	19	1.4	100	--	25	--	--	.03	--	--		83	1	33		256	7.6
Aug. 18		--	--	24	9.5	26	1.6	112	--	38	--	--	.12	--	--		99	7	36		330	8.0
Sept. 22		20	.20	22	9.4	25	1.5	118	18	24	.2	.1	1.1	179	.24		94	0	36		298	7.3

SAN JOAQUIN RIVER BASIN--Continued

SAN JOAQUIN RIVER AT ANTIOCH, CALIF.

LOCATION.--At tidal gage at Antioch, Contra Costa County, 4.5 miles from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gaging station maintained and operated by State of California Division of Water Resources. No dishcarge records available for this station due to tidal effects from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 15, 1953		--	--	19	16	71	4.4	112	--	100	--	--	0.09	--	--		114	22	56		573	8.2
Dec. 16		--	--	17	11	44	2.8	80	--	68	--	--	.00	--	--		88	22	51		389	7.7
Jan. 20, 1954		--	--	20	14	55	3.3	82	--	89	--	--	.12	--	--		107	40	52		506	7.9
Feb. 10		--	--	20	10	26	1.8	70	--	38	--	--	.12	--	--		91	34	38		323	7.7
Mar. 8		--	--	18	11	25	1.7	72	--	35	--	--	.08	--	--		90	31	37		308	7.7
Mar. 19		16	0.63	15	6.7	15	1.3	60	20	22	0.1	1.0	.10	127	0.17		65	16	33		216	7.4
Apr. 21		--	--	12	5.9	13	1.0	58	--	14	--	--	.07	--	--		54	7	34		169	7.7
May 11		14	.11	10	5.6	10	1.2	52	11	14	.0	.4	.07	92	.13		48	5	31		156	7.7
June 16		--	--	20	18	100	4.9	66	--	174	--	--	.07	--	--		124	70	62		747	7.9
July 20		--	--	53	104	840	34	84	--	1,525	--	--	.29	--	--		560	490	75		5,180	7.7
Aug. 16		--	--	54	105	840	34	96	--	1,500	--	--	.40	--	--		566	488	75		5,120	7.9
Sept. 22		17	.02	25	29	187	8.8	117	54	310	.1	2.6	1.1	693	.94		182	86	68		1,260	7.7

SAN JOAQUIN RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SAN JOAQUIN RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, December 1953 to August 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
CALAVERAS RIVER AT JENNY LIND (SEC. 27, T. 3 N., R. 10 E.)																						
Dec. 14, 1953	35			24	9.0	8.0	1.6	104		6.0			0.00				97	12	15		221	8.0
Jan. 18, 1954	354			25	9.8	6.5	1.6	110		5.0			.02				103	13	12		231	8.2
Feb. 8	56			24	8.2	6.9	1.2	51		5.5			.07				94	52	14		214	8.0
Mar. 10	22			17	8.0	5.8	1.2	86		4.2			.06				75	5	14		174	7.9
Apr. 19	186			18	5.9	6.1	1.3	80		3.2			.04				69	4	16		161	8.0
May 14	121	18	0.02	18	6.7	4.8	1.3	83	9.9	2.0	0.1	0.1	.09	102	0.14		72	4	12		165	8.0
June 7	206			19	5.7	4.9	1.3	84		3.2			.06				71	2	13		161	7.8
July 23	209			23	7.0	5.7	1.8	102		3.0			.01				86	3	12		191	7.7
Aug. 18	165			26	5.2	6.6	1.8	106		4.5			.00				86	0	14		200	8.1

SACRAMENTO RIVER AT DELTA, CALIF.

LOCATION.--On right bank just above gaging station 0.2 mile downstream from Dog Creek, 0.6 mile southeast of Delta, Shasta County, and 2.8 miles south of Lamoine.
DRAINAGE AREA.--427 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1953 to September 1954.
Water temperatures: June to September 1951, October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 73°F July 13-16, 27; minimum, 39°F Jan. 1-4, 13-16.
EXTREMES, 1951, 1953-54.--Water temperatures: Maximum, 75°F Aug. 20, 1951.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, December 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Dec. 9, 1953	743	--	--	7.9	6.1	6.1	0.7	59	--	4.0	--	--	0.08	--	--		45	0	22		110	7.8
Jan. 20, 1954	1,870	--	--	6.2	5.0	3.0	.5	46	--	2.5	--	--	.08	--	--		36	0	15		82.6	7.7
Feb. 18	3,550	--	--	4.8	4.3	1.8	.2	39	--	.8	--	--	.04	--	--		30	0	12		68.4	7.6
Mar. 15	2,080	--	--	5.3	5.1	3.1	.3	44	--	1.0	--	--	.05	--	--		34	0	16		79.0	7.5
Apr. 23	2,800	--	--	4.3	5.7	2.4	.1	41	--	1.0	--	--	.00	--	--		34	1	13		69.8	7.7
May 26	924	19	0.00	5.2	5.7	3.8	.5	50	3.0	1.5	0.0	0.2	.01	64	0.09		36	0	18		89.5	7.4
June 22	456	--	--	6.7	7.2	5.8	.8	64	3.2	2.8	--	--	--	--	--		46	0	21		114	8.0
July 14	308	--	--	7.8	7.4	8.1	.8	70	--	7.5	--	--	.05	--	--		50	0	26		133	7.4
Aug. 12	225	--	--	9.0	7.2	10	1.2	76	--	8.0	--	--	.15	--	--		52	0	29		144	8.0
Sept. 14	257	29	.00	9.1	6.9	9.9	1.2	76	3.7	6.5	.0	.2	.15	104	.14		51	0	29		144	7.8

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT DELTA, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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	59	59	50	46	45	40	39	44	44	46	46	48	47	47	45	56	53	65	61	72	68	64	62
2	59	56	52	50	45	45	39	39	44	44	46	44	47	47	49	47	57	55	66	63	72	68	64	62
3	57	54	52	51	45	45	39	39	44	44	46	45	47	47	51	49	57	55	68	64	71	67	64	62
4	57	53	51	50	45	45	40	39	44	44	47	46	47	47	52	50	55	53	68	65	69	67	64	62
5	57	54	50	49	45	44	40	40	44	44	47	46	47	47	52	50	53	52	67	64	67	65	64	61
6	57	54	49	49	44	44	40	40	44	44	48	47	47	45	52	50	54	51	65	63	68	64	62	60
7	58	55	49	48	44	44	40	40	44	44	48	47	46	45	52	49	55	53	66	62	69	65	62	59
8	59	56	48	47	44	44	40	40	45	44	47	47	46	46	51	50	55	54	68	65	70	66	62	60
9	58	57	47	47	45	44	40	40	45	45	47	47	46	46	51	49	55	51	67	64	70	66	62	60
10	58	57	47	47	45	44	41	40	45	45	47	46	46	46	52	49	53	51	68	65	70	66	62	59
11	57	55	49	47	44	42	41	41	45	45	46	45	48	46	53	51	55	53	70	66	69	65	59	56
12	56	53	50	49	42	42	41	40	45	45	46	45	48	47	53	50	56	55	72	68	67	64	59	57
13	55	54	50	50	42	42	40	39	45	45	46	46	48	48	53	50	56	54	73	69	65	63	59	57
14	54	53	50	49	42	42	39	39	45	45	46	46	48	47	53	51	58	56	73	70	65	63	59	57
15	54	53	49	49	43	42	39	39	45	45	46	46	48	47	54	52	59	57	73	70	65	62	59	56
16	53	52	49	49	44	43	43	39	45	45	46	45	48	48	55	52	58	56	73	69	65	62	57	57
17	52	51	49	46	44	44	43	43	46	45	45	44	48	47	56	53	58	56	72	68	66	62	57	56
18	52	51	46	45	45	44	43	43	47	46	44	44	48	47	57	54	58	56	71	68	67	63	57	55
19	52	50	45	45	46	45	43	42	47	47	44	42	48	47	57	55	60	58	70	67	65	63	57	55
20	51	50	45	44	46	46	43	42	47	47	42	42	48	47	57	55	64	60	70	66	65	62	58	55
21	50	49	44	44	46	43	42	42	47	47	44	42	49	48	56	53	67	63	68	65	67	64	57	55
22	50	48	44	44	43	41	42	41	48	47	45	44	49	48	55	52	67	65	69	65	68	64	57	54
23	49	48	47	44	41	41	43	41	48	47	46	44	49	48	57	54	69	66	70	65	68	64	57	55
24	49	48	48	47	41	40	43	43	48	47	46	45	49	49	57	55	68	66	71	67	67	64	58	55
25	48	48	48	48	40	40	43	41	48	47	46	44	49	48	56	53	68	66	71	68	65	62	59	56
26	50	48	48	48	40	40	41	40	48	47	46	45	48	48	55	53	66	65	71	67	62	58	59	57
27	51	50	48	48	42	40	40	40	47	45	47	46	48	48	55	53	67	64	73	69	58	58	59	57
28	51	50	48	47	42	42	41	40	46	46	47	46	48	48	55	53	66	63	72	68	58	58	59	57
29	50	49	47	46	42	41	42	41	--	--	46	46	48	47	56	55	66	63	72	67	60	58	57	54
30	50	49	46	46	41	40	44	42	--	--	47	46	47	47	56	53	67	65	72	67	63	60	54	53
31	51	49	--	--	40	40	44	42	--	--	48	47	--	--	57	56	--	--	72	67	64	61	--	--
Average	54	52	48	47	43	43	41	41	46	45	46	45	48	47	54	52	60	58	70	66	66	63	60	57

PIT RIVER NEAR MONTGOMERY CREEK, CALIF.

LOCATION.--At gaging station 1 mile upstream from Cow Canyon Creek and 3.5 mile west of town of Montgomery Creek, Shasta County.
DRAINAGE AREA.--5,170 square miles, approximately, excluding Goose Lake basin.
RECORDS AVAILABLE.--Water temperatures: June 1951 to September 1951, October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 71°F Aug. 1.
EXTREMES, 1951, 1953-54.--Water temperatures: Maximum, 80°F July 22, 1951.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 11, 1953	1,350			12	6.4	10	2.0	88		1.5			0.10				56	0	27		157	7.9
Dec. 11	4,040			12	6.1	12	2.3	87		4.5			.08				55	0	31		161	7.8
Feb. 11, 1954	3,510			14	4.1	6.1	1.2	73		1.2			.05				52	0	20		133	7.7
Mar. 27	5,640			12	4.9	9.8	1.5	78		2.0			.06				50	0	29		139	7.8
Apr. 23	5,660			12	4.4	7.5	1.5	69		3.0			.16				48	0	25		120	8.0
June 22	4,040			12	6.0	13	2.2	96		4.2			.00				55	0	33		183	8.0
July 13	3,900			12	5.3	11	2.2	91		3.0			.00				52	0	30		156	8.1
Aug. 11	3,170			12	6.3	11	2.2	89		4.5			.08				56	0	29		152	7.6
Sept. 15	4,020	33	0.06	11	6.5	11	2.0	90	2.7	4.5	0.0	0.1	.06	115	0.16		54	0	30		152	7.8

SACRAMENTO RIVER BASIN--Continued

PIT RIVER NEAR MONTGOMERY CREEK, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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	59	53	51	--	--			--	--	46	46	50	50	54	53	60	58	65	64	71	67	62	61
2	60	54	52	52	--	--			--	--	47	46	50	50	55	54	60	58	65	64	68	67	62	61
3	59	57	52	52	--	--			--	--	48	47	50	50	55	54	60	60	66	63	68	67	62	61
4	62	53	52	52	--	--			--	--	48	47	50	50	55	54	60	59	67	64	68	67	62	61
5	59	57	52	52	--	--			45	44	48	48	50	49	56	54	59	57	66	64	68	66	62	61
6	58	57	52	51	--	--			45	44	48	48	50	48	56	55	59	56	64	63	68	66	62	61
7	58	57	52	50	--	--			45	45	48	48	51	49	57	56	59	58	65	63	69	66	62	61
8	58	57	51	48	--	--			45	45	48	48	51	50	58	56	59	59	65	64	70	66	62	61
9	58	58	51	50	--	--			45	45	48	47	51	50	58	56	59	58	65	64	69	66	62	61
10	58	57	51	50	46	46			45	45	47	46	51	49	58	54	58	57	66	64	68	66	62	60
11	58	56	51	50	46	45			45	45	47	46	52	50	59	58	59	57	68	63	67	66	62	61
12	57	53	51	51	46	45			45	45	47	46	52	50	59	57	59	58	66	64	67	65	62	59
13	57	56	51	51	45	44			45	45	47	46	52	52	59	57	60	57	66	65	66	65	61	60
14	56	56	51	50	45	44			45	45	46	44	53	52	60	58	59	58	67	66	66	65	61	60
15	56	55	51	50	46	45			45	45	46	44	54	52	60	58	59	59	67	66	66	64	60	60
16	56	54	50	50	46	45			45	45	45	44	55	53	60	58	60	58	67	66	66	65	60	60
17	56	54	50	50	46	45			45	45	45	44	55	54	61	59	60	59	67	65	65	64	60	60
18	56	55	--	--	46	46			45	44	45	45	56	54	62	60	60	59	68	64	65	64	60	59
19	55	54	--	--	46	46			44	44	45	44	56	54	63	61	61	59	68	63	65	64	60	59
20	55	53	--	--	46	46			45	44	45	44	56	55	63	61	65	60	66	65	64	64	60	59
21	54	53	--	--	--	--			45	45	46	46	55	54	62	60	63	61	67	65	65	63	59	58
22	54	53	--	--	--	--			45	44	47	46	56	55	62	59	63	62	67	66	66	62	58	58
23	53	52	--	--	--	--			45	45	48	47	57	55	62	59	64	62	67	66	65	62	59	58
24	53	51	--	--	--	--			45	45	48	47	57	56	62	59	64	63	70	66	64	62	59	58
25	53	51	--	--	--	--			46	45	48	47	56	55	62	58	65	63	69	66	63	62	59	59
26	52	50	--	--	--	--			46	46	49	48	56	56	60	58	66	64	68	66	62	62	59	58
27	52	51	--	--	--	--			46	46	49	49	56	55	60	57	67	63	68	67	62	62	59	58
28	52	51	--	--	--	--			47	46	49	49	55	55	60	58	65	62	68	67	62	61	59	58
29	52	51	--	--	--	--			--	--	49	49	55	54	60	59	66	64	67	67	63	60	59	58
30	52	51	--	--	--	--			--	--	50	49	55	54	60	57	66	65	67	67	62	61	--	--
31	52	51	--	--	--	--			--	--	50	50	--	--	60	58	--	--	68	67	62	61	--	--
Average	56	54	--	--	--	--			45	45	47	47	53	52	59	57	61	60	67	65	66	64	61	60

McCLOUD RIVER ABOVE SHASTA LAKE, CALIF.

LOCATION (revised).--At gaging station just upstream from Shasta Lake, 0.2 mile downstream from Bollibokka Creek and 11.3 miles east of La Moine, Shasta County.
DRAINAGE AREA.--606 square miles.
RECORDS AVAILABLE.--Water temperatures: June to September 1951, October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 55°F July 26-27; minimum, 42°F Dec. 30-31, Jan. 1, Mar. 10-11.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as McCloud River above Shasta Reservoir.

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

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 23, 1954	1,140			9.4	2.3	3.8	0.6	46		1.0			0.00				33	0	20		79.0	7.8
June 24.....	1,420			9.6	3.2	4.9	1.6	55		3.0			.00				37	0	21		91.5	7.4
July 14.....	1,290			9.3	3.0	5.0	1.4	56		1.5			.00				36	0	23		93.9	7.7
Aug. 16.....	1,170			9.5	3.0	5.3	1.4	56		2.0			.03				36	0	23		93.2	7.6
Sept. 15.....	1,130	35	0.07	10	2.6	5.3	1.4	57	1.9	1.0	0.0	0.4	.72	86	0.12		36	0	24		95.1	7.3

SACRAMENTO RIVER BASIN--Continued

McCLOUD RIVER ABOVE SHASTA LAKE, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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	50	48	48	46	45	43	42	46	46	45	44	47	47	48	48	51	49	53	50	54	52	51	50
2	51	49	50	48	46	46	43	43	46	46	45	44	48	47	50	47	52	49	53	50	54	52	52	50
3	49	48	50	48	46	46	43	43	46	46	44	44	48	48	51	49	52	50	53	50	54	52	52	50
4	49	49	48	48	46	45	45	43	46	45	45	44	48	48	52	50	50	49	53	50	54	52	52	50
5	49	48	48	48	45	45	45	44	45	45	46	45	48	47	52	50	49	48	52	50	53	51	51	50
6	49	49	48	48	45	45	44	43	45	45	46	45	47	46	52	50	51	48	52	50	53	51	51	50
7	49	49	48	47	45	45	43	43	45	45	46	45	47	46	52	50	51	49	53	50	53	51	51	50
8	50	49	47	47	45	45	43	43	45	45	46	46	47	47	52	50	51	50	53	51	54	52	51	50
9	50	50	47	47	46	45	43	43	45	45	46	46	47	46	52	50	51	49	53	50	54	52	51	50
10	50	50	48	47	46	45	44	43	46	45	46	42	48	46	52	50	50	49	53	50	54	52	51	50
11	50	49	49	48	45	44	44	44	46	46	43	42	48	46	53	51	51	49	53	51	53	51	51	50
12	49	49	49	49	44	44	45	44	46	46	43	43	49	48	52	50	51	50	54	51	53	50	51	49
13	49	49	49	49	44	44	44	44	46	46	44	43	50	49	52	50	52	50	54	51	52	50	50	50
14	49	49	49	49	44	44	45	44	46	45	44	43	50	48	52	50	52	50	54	52	52	51	50	50
15	49	49	49	49	44	44	45	45	46	46	45	44	50	48	53	51	52	51	54	51	52	51	51	50
16	49	48	49	48	44	44	47	45	46	46	45	43	50	48	53	51	52	50	53	51	52	50	50	50
17	49	48	48	47	45	44	47	47	46	46	44	44	50	49	53	51	52	50	53	51	52	50	50	50
18	50	49	47	46	45	45	47	46	46	46	44	44	50	49	54	52	52	49	53	50	52	50	50	49
19	49	48	46	46	46	45	46	46	46	46	44	43	50	49	54	52	53	50	53	50	52	51	50	49
20	48	48	46	45	46	45	46	45	46	46	44	43	50	48	54	52	54	51	53	50	53	51	50	49
21	48	47	46	45	46	44	46	45	47	46	44	44	50	48	52	50	54	52	53	50	51	50	50	49
22	48	47	47	46	44	43	46	44	47	46	45	44	50	48	51	49	54	52	53	51	51	50	50	49
23	48	47	48	47	43	43	47	46	46	46	46	45	50	49	52	49	54	52	54	51	52	50	50	49
24	47	47	49	48	43	43	47	46	46	46	47	46	51	50	52	50	54	52	54	51	52	50	50	49
25	47	47	49	48	43	43	46	44	46	46	47	45	51	50	51	49	54	52	54	51	51	49	50	50
26	48	47	48	48	44	43	44	44	46	46	47	45	50	50	51	49	54	52	55	52	49	49	50	50
27	48	48	48	47	44	44	45	44	46	45	47	47	50	49	51	48	54	52	55	52	49	49	50	50
28	48	48	47	47	44	43	46	44	45	45	47	46	50	48	51	49	54	51	54	52	50	49	50	50
29	48	48	47	46	43	43	46	46	--	--	47	47	50	48	51	50	53	50	54	52	51	49	50	48
30	48	48	46	46	43	42	47	46	--	--	47	47	49	47	51	49	53	52	54	51	51	49	49	48
31	48	48	--	--	42	42	47	46	--	--	47	47	--	--	51	50	--	--	54	51	51	50	--	--
Average	49	48	48	47	45	44	45	44	46	46	45	45	49	48	52	50	52	50	53	51	52	51	50	50

SACRAMENTO RIVER AT KESWICK, CALIF.

LOCATION.--At gaging station 0.6 mile downstream from Keswick Dam, Shasta County, 0.6 mile upstream from Middle Creek, and 10 miles downstream from Shasta Dam.
DRAINAGE AREA.--6,710 square miles excluding Goose Lake basin.
RECORDS AVAILABLE.--Chemical analyses: December 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Sacramento River near Keswick.

Chemical analyses, in parts per million, December 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Dec. 10, 1953	8,120	--	--	9.7	5.5	7.8	1.7	66	--	2.8	--	--	0.04	--	--		47	0	26		122	7.8
Jan. 21, 1954	14,100	--	--	11	4.7	6.7	1.5	65	--	3.0	--	--	.06	--	--		47	0	23		122	7.5
Feb. 27	8,060	--	--	11	4.3	5.4	1.1	58	--	2.0	--	--	.02	--	--		45	0	20		116	7.4
Mar. 26	3,970	--	--	11	3.4	6.3	.7	58	--	1.0	--	--	.06	--	--		41	0	24		113	7.3
Apr. 22	8,240	--	--	9.9	4.5	6.5	.8	56	--	1.5	--	--	.05	--	--		43	0	24		109	7.9
May 27	7,990	21	0.06	11	3.2	6.5	.9	56	6.1	3.5	0.1	0.2	.05	80	0.11		42	0	25		115	7.4
June 23	10,600	--	--	9.4	4.3	4.5	1.1	56	4.1	.5	--	--	--	--	--		41	0	19		102	7.8
July 13	11,200	--	--	10	4.6	5.5	.9	59	--	3.0	--	--	.00	--	--		44	0	21		110	7.4
Aug. 11	11,900	--	--	10	3.9	5.6	1.1	58	--	2.0	--	--	.01	--	--		41	0	22		108	7.3
Sept. 14	8,060	21	.00	10	3.7	5.3	1.0	58	4.4	1.0	.1	.2	.04	76	.10		40	0	22		101	7.4

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER NEAR REDDING, CALIF.

LOCATION.--Near gaging station 2.5 miles south of Redding, Shasta County, and 3.3 miles upstream from Clear Creek.
RECORDS AVAILABLE.--Chemical analyses: December 1953 to September 1954.
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 January to September, 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, December 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Dec. 9, 1953	a6,140	--	--	9.7	5.3	7.8	1.6	66	--	1.8	--	--	0.06	--	--		46	0	26		122	7.8
Jan. 20, 1954	a14,200.	--	--	11	4.7	7.4	1.3	65	--	3.0	--	--	.02	--	--		47	0	25		122	7.8
Feb. 27	a8,120	--	--	11	4.0	5.4	1.1	58	--	2.0	--	--	.03	--	--		44	0	21		115	7.6
Mar. 23	4,300	--	--	9.9	4.3	6.3	.9	57	--	1.8	--	--	.04	--	--		42	0	24		112	7.5
Apr. 22	7,730	--	--	10	4.4	6.5	.8	56	--	1.8	--	--	.14	--	--		43	0	24		111	7.7
May 25	7,620	21	0.10	10	3.9	5.0	1.0	54	5.8	1.0	0.1	0.3	.02	75	0.10		41	0	20		105	7.5
June 23	9,790	--	--	10	3.6	5.5	.8	60	--	2.5	--	--	.16	--	--		40	0	23		107	7.6
July 13	10,700	--	--	15	2.8	5.6	1.2	54	--	4.0	--	--	.05	--	--		49	5	19		128	7.6
Aug. 11	11,200	--	--	11	3.1	5.4	1.0	58	--	2.5	--	--	.03	--	--		40	0	22		105	7.3
Sept. 13	8,280	21	.00	10	3.7	5.0	.9	58	4.6	1.0	.0	.2	.03	75	.10		40	0	21		101	7.4

a Daily mean discharge.

COTTONWOOD CREEK NEAR COTTONWOOD, CALIF.

LOCATION.--At gaging station 2 miles east of Cottonwood, Shasta County, and 2.4 miles upstream from mouth.
DRAINAGE AREA.--945 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	95	--	--	16	9.1	10	1.5	103	--	5.0	--	--	0.07	--	--		77	0	22		189	8.0
Dec. 8	326	--	--	26	11	12	1.0	122	--	15	--	--	.05	--	--		110	10	19		270	8.0
Jan. 12, 1954	177	--	--	37	14	18	.8	148	--	37	--	--	.14	--	--		150	29	21		389	8.2
Feb. 10	1,450	--	--	21	9.3	6.1	.8	107	--	3.8	--	--	.03	--	--		91	3	13		201	8.2
Mar. 9	9,980	--	--	15	6.0	4.1	1.8	74	--	1.0	--	--	.08	--	--		62	1	12		135	7.7
Apr. 15	1,630	--	--	23	11	7.4	1.1	119	--	3.0	--	--	.00	--	--		103	5	13		226	7.6
May 6	894	20	0.03	23	9.7	6.7	1.0	114	12	5.2	0.0	0.4	.01	134	0.18		97	4	13		216	8.2
June 8	372	--	--	26	8.1	7.3	1.4	a119	--	6.5	--	--	.18	--	--		98	1	14		216	8.3
July 15	120	--	--	23	11	8.4	1.2	126	--	6.0	--	--	.06	--	--		103	0	15		227	8.0
Aug. 10	76	--	--	21	10	8.9	1.4	120	--	5.0	--	--	.02	--	--		94	0	17		219	8.1
Sept. 16	134	23	.01	17	8.8	7.7	1.0	103	6.7	5.0	.1	.4	.03	120	.16		79	0	17		191	7.4

a Includes equivalent of 1 part per million of carbonate (CO_3).

SACRAMENTO RIVER BASIN--Continued

MILL CREEK NEAR LOS MOLINOS, CALIF.

LOCATION.--At bridge on U. S. Highway 99, 4.5 miles below gaging station near Los Molinos, Tehama County.
DRAINAGE AREA.--134 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for gaging station near Los Molinos for water year October 1953 to September 1954 given in WSP 1345. Considerable diversion between gaging station and sampling point.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	118	--	--	12	5.2	14	2.2	63	--	16	--	--	0.45	--	--		51	0	36		179	8.0
Nov. 10	142	--	--	11	5.4	16	2.5	58	--	20	--	--	.60	--	--		50	2	40		204	7.4
Dec. 8	165	--	--	12	4.5	15	2.0	55	--	18	--	--	.46	--	--		48	3	39		175	7.8
Jan. 12, 1954	142	--	--	12	5.2	14	2.4	60	--	18	--	--	.60	--	--		51	2	36		189	7.8
Feb. 10	237	--	--	10	3.6	11	1.7	50	--	12	--	--	.34	--	--		40	0	36		145	7.9
Mar. 9	2,370	--	--	6.2	1.7	4.1	1.2	29	--	3.0	--	--	.16	--	--		22	0	27		70.0	7.2
Apr. 15	511	--	--	6.8	2.9	7.4	1.1	36	--	4.8	--	--	.11	--	--		29	0	35		94.1	7.7
May 13	504	26	0.02	7.5	2.5	6.5	1.5	32	12	5.5	0.0	0.3	.12	78	0.11		29	3	31		97.7	7.4
June 9	354	--	--	10	3.0	9.4	1.9	40	--	10	--	--	.27	--	--		37	4	34		145	7.8
July 15	185	--	--	12	3.5	11	2.2	48	--	12	--	--	.42	--	--		44	5	34		145	7.4
Aug. 10	130	--	--	17	4.7	14	3.2	77	--	16	--	--	.31	--	--		62	0	32		202	8.1
Sept. 16	132	37	.02	13	4.8	16	2.5	62	13	18	.0	.2	.48	135	.18		52	1	39		180	7.7

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DEER CREEK NEAR VINA, CALIF.

LOCATION.--At gaging station downstream from U. S. Highway 99, 1 mile north of Vina, Tehama County and 2.6 miles from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	2.8	--	--	19	14	14	2.3	151	--	4.0	--	--	0.71	--	--		105	0	22		247	8.4
Nov. 10	76	--	--	11	6.2	10	1.8	83	--	4.2	--	--	.18	--	--		53	0	28		148	7.7
Dec. 8	140	--	--	11	7.9	9.2	1.5	77	--	3.8	--	--	.09	--	--		60	0	24		134	7.8
Jan. 12, 1954	99	--	--	11	6.2	9.0	1.6	82	--	3.0	--	--	.14	--	--		53	0	26		147	8.0
Feb. 10	240	--	--	8.8	4.9	6.5	1.1	63	--	3.0	--	--	.08	--	--		42	0	25		110	8.0
Mar. 9	2,220	--	--	4.8	2.5	2.2	1.2	34	--	.0	--	--	.07	--	--		22	0	17		56.0	7.3
Apr. 15	649	--	--	5.3	3.7	4.0	.7	44	--	.2	--	--	.00	--	--		28	0	23		74.9	7.7
May 13	259	29	0.01	6.6	3.9	4.5	1.2	50	2.2	1.0	0.1	0.0	.09	73	0.10		32	0	22		87.8	7.7
June 9	69	--	--	9.5	5.2	6.8	1.8	67	--	4.5	--	--	.19	--	--		45	0	24		128	8.1
July 15	3.3	--	--	18	10	12	2.2	a133	--	3.2	--	--	.32	--	--		86	0	23		216	8.3
Aug. 10	3.8	--	--	20	12	13	2.8	148	--	4.5	--	--	.16	--	--		99	0	22		244	8.2
Sept. 16	3.2	38	.01	22	14	13	2.5	160	3.5	5.0	.0	.5	.13	177	.24		112	0	20		262	8.2

a Includes equivalent of 3 parts per million of carbonate (CO_3).

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER NEAR HAMILTON CITY, CALIF.

LOCATION.--At gaging station on bridge, State Highway 32, 1.3 miles northeast of Hamilton City, Glenn County, and 2.4 miles above Pine Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Station maintained and operated by State of California Division of Water Resources. Records of discharge for water year October 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	6,780	--	--	10	4.6	6.9	1.4	66	--	3.0	--	--	0.35	--	--		44	0	25		123	7.9
Dec. 8	10,500	--	--	11	4.5	6.1	1.1	61	--	2.0	--	--	.10	--	--		46	0	22		122	7.4
Jan. 12, 1954	6,070	--	--	14	5.0	8.2	1.6	78	--	4.2	--	--	.00	--	--		56	0	24		149	7.8
Feb. 10	19,300	--	--	12	4.9	6.1	1.2	68	--	3.0	--	--	.03	--	--		50	0	20		133	7.7
Mar. 9	33,600	--	--	12	4.7	5.0	1.4	62	--	2.0	--	--	.08	--	--		49	0	18		123	7.7
Apr. 16	15,700	--	--	12	5.0	6.1	.7	67	--	1.8	--	--	.10	--	--		50	0	20		128	7.7
May 13	9,530	21	0.12	12	4.6	5.2	1.0	62	6.7	2.2	0.0	0.2	.13	83	0.11		49	0	18		121	7.8
June 9	7,630	--	--	11	4.6	6.0	1.4	64	--	3.5	--	--	.12	--	--		46	0	21		126	8.0
July 15	9,040	--	--	11	4.0	9.8	1.0	65	--	4.0	--	--	.07	--	--		44	0	32		124	7.7
Aug. 11	9,270	--	--	11	4.0	6.3	1.0	64	--	3.2	--	--	.09	--	--		44	0	23		120	8.0
Sept. 16	7,260	23	.04	10	4.4	5.6	1.1	61	4.1	2.5	.1	.9	.03	82	.11		43	0	22		116	7.7

BIG CHICO CREEK NEAR CHICO, CALIF.

LOCATION.--At gaging station in Arroyo Chico Grant 1 mile upstream from golf clubhouse in Municipal Park and 6 miles northeast of Chico, Butte County.
DRAINAGE AREA.--68.3 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 20, 1953	29	--	--	14	7.8	12	1.0	94	--	10	--	--	0.15	--	--		67	0	28		181	7.3
Nov. 12	65	--	--	15	7.4	12	1.3	95	--	10	--	--	.20	--	--		68	0	27		189	7.9
Dec. 9	67	--	--	13	6.3	9.2	.8	80	--	6.5	--	--	.09	--	--		58	0	25		153	7.8
Jan. 11, 1954	63	--	--	13	5.6	8.2	.8	78	--	6.5	--	--	.15	--	--		56	0	24		148	8.1
Feb. 10	150	--	--	11	5.0	6.5	.7	67	--	4.2	--	--	.07	--	--		48	0	22		126	8.0
Mar. 9	705	--	--	6.8	3.0	2.2	.4	40	--	.8	--	--	.06	--	--		29	0	14		69.8	7.6
Apr. 16	208	--	--	9.3	4.2	5.2	.5	56	--	2.0	--	--	.01	--	--		40	0	22		104	7.8
May 13	102	32	0.00	12	5.6	7.5	.8	75	4.0	5.0	0.0	0.4	.06	104	0.14		53	0	23		141	7.8
June 9	92	--	--	14	6.5	9.2	1.1	85	--	7.5	--	--	.12	--	--		62	0	24		165	8.2
July 15	31	--	--	15	8.1	13	1.2	102	--	10	--	--	.19	--	--		71	0	28		192	8.2
Aug. 11	28	--	--	16	8.2	14	1.2	a109	--	10	--	--	.14	--	--		74	0	29		206	8.3
Sept. 15	32	38	.02	16	8.0	13	1.3	108	3.0	9.5	.1	.1	.13	142	.19		73	0	28		201	8.1

a Includes equivalent of 3 parts per million of carbonate (CO_3).

SACRAMENTO RIVER BASIN--Continued

STONY CREEK NEAR HAMILTON CITY, CALIF.

LOCATION.--At gaging station in Capay Grant 2.3 miles southwest of Hamilton City, Glenn County, 6 miles upstream from mouth and 8 miles east of Orland.
DRAINAGE AREA.--764 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	8.3	--	--	33	14	16	1.1	a171	--	16	--	--	0.13	--	--		140	0	20		336	8.5
Dec. 8	50	--	--	32	8.7	12	.8	122	--	15	--	--	.10	--	--		116	16	18		276	8.1
Jan. 12, 1954	2.4	--	--	32	16	14	.8	164	--	17	--	--	.15	--	--		146	11	17		346	8.2
Feb. 10	517	--	--	30	9.0	12	.7	121	--	14	--	--	.08	--	--		112	13	19		276	8.2
Mar. 9	1,510	--	--	26	8.8	10	2.3	111	--	14	--	--	.13	--	--		101	10	17		259	8.0
Apr. 16	780	--	--	27	9.7	11	.6	119	--	10	--	--	.06	--	--		107	10	18		252	8.0
May 13	41	12	0.00	28	14	12	.8	146	16	11	0.0	0.0	.10	166	0.23		127	8	17		297	8.2
June 9	50	--	--	34	11	14	1.3	b156	--	16	--	--	.24	--	--		130	2	19		312	8.5
July 15	7.8	--	--	31	14	15	.9	164	--	16	--	--	.25	--	--		135	0	19		318	7.8
Aug. 11	19	--	--	35	13	16	.9	c174	--	16	--	--	.64	--	--		141	0	20		334	8.3
Sept. 16	28	14	.00	35	14	16	1.0	a177	13	16	.0	.3	.19	196	.27		145	0	19		344	8.3

a Includes equivalent of 5 parts per million of carbonate (CO_3).
b Includes equivalent of 4 parts per million of carbonate (CO_3).
c Includes equivalent of 3 parts per million of carbonate (CO_3).

BUTTE CREEK NEAR CHICO, CALIF.

LOCATION.--At gaging station 0.7 mile downstream from Little Butte Creek and 7.5 miles east of Chico, Butte County.
DRAINAGE AREA.--148 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 20, 1953	202	--	--	11	4.2	4.1	0.8	62	--	1.0	--	--	0.01	--	--		45	0	16		106	7.4
Nov. 12	170	--	--	13	4.6	4.1	1.0	66	--	.8	--	--	.02	--	--		51	0	14		114	7.5
Dec. 9	240	--	--	12	3.2	3.4	.8	59	--	.5	--	--	.04	--	--		43	0	14		99.9	7.6
Jan. 11, 1954	226	--	--	11	4.3	3.1	.8	62	--	.2	--	--	.06	--	--		45	0	13		103	7.9
Feb. 10	362	--	--	7.9	3.7	2.8	.5	48	--	.8	--	--	.04	--	--		35	0	15		83.5	7.8
Mar. 10	2,260	--	--	4.8	2.2	1.2	.5	29	--	.5	--	--	.05	--	--		21	0	11		47.3	7.5
Apr. 16	952	--	--	5.9	3.0	2.0	.3	36	--	.0	--	--	.00	--	--		27	0	14		60.7	7.6
May 13	485	18	0.00	7.1	2.7	2.4	1.1	29	12	1.0	0.0	0.4	.00	59	0.08		29	5	23		76.3	6.5
June 9	348	--	--	8.4	4.4	4.1	.9	53	--	1.5	--	--	.21	--	--		39	0	18		90.0	7.9
July 15	178	--	--	11	4.0	3.9	.9	55	--	1.2	--	--	.00	--	--		44	0	16		103	8.0
Aug. 11	136	--	--	12	3.6	4.1	1.0	66	--	1.5	--	--	.01	--	--		45	0	16		106	8.0
Sept. 17	155	23	.02	12	4.6	3.7	1.0	66	1.2	.5	.0	.1	.01	79	.11		49	0	14		109	7.9

SACRAMENTO RIVER BASIN--Continued

COLUSA TROUGH NEAR COLUSA, CALIF.

LOCATION.--At gaging station 3 miles west of Colusa, Colusa County, on State Highway 20, and 6 miles northeast of Williams.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954. This water is the drainage from Colusa basin passing down the Back Barrow Pitt and enters the Sacramento River just above Knights Landing gaging station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	397	--	--	26	19	51	2.9	a179	--	28	--	--	0.37	--	--		143	0	43		503	8.5
Nov. 10	329	--	--	27	22	64	2.4	192	--	40	--	--	.20	--	--		158	0	46		598	8.2
Dec. 8	110	--	--	68	47	183	2.7	320	--	142	--	--	.29	--	--		363	101	52		1,470	7.9
Jan. 12, 1954	249	--	--	47	40	174	3.2	298	--	133	--	--	.32	--	--		282	38	57		1,300	8.1
Feb. 10	159	--	--	33	73	222	2.1	b338	--	172	--	--	.34	--	--		382	106	56		1,670	8.5
Mar. 9	213	--	--	63	52	203	1.9	324	--	152	--	--	.37	--	--		371	106	54		1,560	8.2
Apr. 16	183	--	--	51	38	135	1.8	260	--	102	--	--	.28	--	--		283	70	51		1,130	8.2
May 13	--	17	0.03	37	34	135	3.0	227	199	91	0.4	0.4	.27	629	0.86		232	46	55		1,010	7.6
June 9	1,080	--	--	35	21	112	3.3	c243	--	60	--	--	.25	--	--		174	0	58		730	8.6
July 22	390	--	--	32	24	86	1.1	260	--	49	--	--	.14	--	--		178	0	51		693	8.2
Aug. 11	693	--	--	49	17	94	1.2	305	--	44	--	--	.36	--	--		192	0	51		747	8.1
Sept. 20	1,730	15	.00	29	16	52	1.7	207	40	26	.0	.8	.35	282	.38		138	0	45		484	8.2

a Includes equivalent of 5 parts per million of carbonate (CO_3).
b Includes equivalent of 10 parts per million of carbonate (CO_3).
c Includes equivalent of 8 parts per million of carbonate (CO_3).

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 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 173 ppm June 1-10; minimum, 95 ppm Mar. 11-20.
Hardness: Maximum, 88 ppm June 1-10; minimum, 46 ppm Jan. 21-31.
Specific conductance: Maximum daily, 346 micromhos June 10; minimum daily, 99.8 micromhos Jan. 19.
Water temperatures: Maximum, 71°F July 28; minimum, 44°F Jan. 31.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 244 ppm May 12, 19, 1953; minimum, 91 ppm Apr. 11-20, 1952.
Hardness: Maximum, 114 ppm Sept. 1-10, 1952; minimum, 44 ppm Jan. 26-27, 1952.
Specific conductance: Maximum daily, 447 micromhos Sept. 9, 1952; minimum daily, 99.1 micromhos Mar. 17, 1952.
Water temperatures: Maximum, 78°F July 23, 1952; minimum, 42°F Jan. 3, 9-11, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Considerable inflow during irrigation season of irrigation return 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 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	7,260	24	0.02	14	8.2	14	1.5	91	13	7.8	0.1	0.5	0.13	127	0.17	2,490	69	0	30	0.7	198	7.5
Oct. 11-20	7,262	22	.03	13	7.3	11	1.4	80	12	8.0	.1	.5	.11	118	.16	2,310	62	0	27	.6	173	7.6
Oct. 21-31	7,297	28	.02	14	6.8	13	1.6	80	12	8.8	.1	.3	.10	118	.16	2,320	63	0	30	.7	178	7.4
Nov. 1-10	7,356	25	.05	13	7.4	12	1.3	82	10	7.8	.0	.1	.08	119	.16	2,360	63	0	29	.7	177	7.4
Nov. 11-20	8,700	22	.10	13	7.1	13	1.2	75	13	9.5	.1	.3	.08	128	.17	3,010	62	0	31	.7	178	7.3
Nov. 21-30	10,010	26	.07	13	6.2	12	1.4	75	11	8.5	.1	.6	.11	115	.16	3,110	58	0	30	.7	174	7.4
Dec. 1-10	9,646	17	.05	13	6.2	9.6	1.4	76	9.1	7.5	.1	1.0	.06	112	.15	2,920	58	0	26	.6	162	7.8
Dec. 11-20	8,729	26	.05	13	6.5	10	1.4	78	9.6	7.8	.1	.4	.11	119	.16	2,800	59	0	26	.6	172	7.7
Dec. 21-31	8,196	15	.02	15	6.7	12	1.3	82	11	8.8	.1	.5	.11	119	.16	2,630	65	0	28	.6	177	7.8
Jan. 1-10, 1954	7,144	15	.03	14	7.7	13	1.4	86	11	9.5	.1	.3	.07	125	.17	2,410	67	0	29	.7	187	7.7
Jan. 11-16	7,047	--	--	15	8.1	16	1.7	92	16	13	--	.5	--	168	.23	3,200	71	0	32	.8	224	7.5
Jan. 17-20	18,900	--	--	11	5.4	6.5	1.5	62	7.0	5.5	--	.5	--	124	.17	6,330	50	0	22	.4	136	7.3
Jan. 21-31	23,710	22	.31	11	4.4	6.9	1.2	60	7.2	4.5	.2	.9	.13	107	.15	6,850	46	0	24	.4	132	7.2
Feb. 1-10	23,230	22	.20	12	5.1	6.9	1.3	67	7.0	5.0	.1	.5	.09	97	.13	6,080	51	0	22	.4	146	7.4
Feb. 11-20	23,190	23	.27	12	4.6	6.5	1.5	62	7.5	4.8	.2	.5	.06	103	.14	6,450	49	0	22	.4	135	7.3
Feb. 21-28	22,820	23	.14	12	5.3	6.1	1.5	66	7.4	4.5	.1	.7	.07	96	.13	5,910	52	0	20	.4	137	7.3
Mar. 1-10	16,240	28	.10	14	6.2	6.5	1.5	75	8.0	4.5	.1	.5	.09	106	.14	4,650	60	0	18	.4	149	7.5
Mar. 11-20	21,200	25	.21	12	5.1	6.5	.9	64	7.7	4.5	.2	.7	.09	99	.13	5,440	51	0	21	.4	128	7.5
Mar. 21-31	19,820	18	.16	13	5.8	6.7	1.1	69	8.4	4.8	.1	.7	.09	109	.15	5,830	56	0	20	.4	143	7.3

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954...	18,280	31	0.17	14	6.0	6.9	1.1	73	8.3	5.0	0.1	0.6	0.11	108	0.15	5,330	60	0	20	0.4	158	7.5
Apr. 11-20	18,230	7.4	.20	14	5.0	6.9	1.0	68	8.3	4.2	.2	.5	.10	103	.14	5,070	56	0	21	.4	141	7.4
Apr. 21-30	13,490	17	.09	13	5.5	8.2	1.5	70	8.9	5.2	.1	.7	.10	103	.14	3,750	55	0	24	.5	145	7.4
May 1-10	11,270	10	.12	14	6.0	10	1.2	74	11	6.8	.1	.4	.12	113	.15	3,440	60	0	26	.6	161	7.8
May 11-20	8,026	23	.05	15	7.4	12	1.4	82	15	9.5	.1	.4	.12	127	.17	2,750	68	1	27	.6	192	7.5
May 21-31	7,016	25	.02	15	8.1	15	1.4	88	16	13	.0	.5	.16	142	.19	2,690	71	0	31	.8	225	7.5
June 1-10.....	7,108	22	.04	17	11	28	1.8	108	31	18	.3	.0	.17	173	.24	3,320	88	0	40	1.3	289	7.4
June 11-20.....	7,616	24	.02	18	8.8	26	1.8	106	27	16	.4	.4	.13	158	.21	3,250	81	0	40	1.3	276	7.2
June 21-30.....	6,397	26	.07	14	6.3	14	1.6	83	15	8.5	.4	.1	.13	126	.17	2,180	61	0	33	.8	190	7.1
July 1-10	6,734	24	.05	14	5.8	13	1.3	76	13	8.5	.2	.1	.10	118	.16	2,150	59	0	32	.7	181	7.3
July 11-20	7,137	26	.06	15	5.8	14	1.4	83	15	8.5	.4	.1	.06	126	.17	2,430	61	0	33	.8	188	7.3
July 21-31	7,465	24	.03	14	6.8	16	1.4	87	15	10	.1	.3	.00	128	.17	2,580	63	0	35	.9	194	7.5
Aug. 1-10	8,256	22	.04	12	9.6	18	1.4	95	17	11	.1	.5	.02	136	.18	3,030	69	0	35	.9	211	7.6
Aug. 11-20	8,473	24	.10	14	9.0	19	1.4	102	18	11	.1	.3	.14	130	.18	2,970	72	0	36	1.0	230	7.7
Aug. 21-31	8,765	25	.02	15	9.4	21	1.2	107	18	12	.3	.3	.12	152	.21	3,600	76	0	37	1.0	239	7.4
Sept. 1-10	8,451	24	.02	15	10	22	1.5	110	19	13	.3	.5	.19	159	.22	3,630	80	0	37	1.1	254	7.4
Sept. 11-20	8,494	24	.02	16	10	24	1.6	116	21	14	.3	.4	.25	167	.23	3,830	83	0	38	1.1	266	7.3
Sept. 21-30	8,709	24	.02	15	11	20	1.5	112	18	12	.3	.3	.08	155	.21	3,640	81	0	34	1.0	246	7.4
Weighted average[a]	11,430	b 22	b 0.12	13	6.5	11	1.3	78	11	7.5	b 0.2	0.5	b 0.10	118	0.16	3,640	59	0	28	0.6	173	--

a Represents 100 percent of runoff for water year October 1953 to September 1954.
b Represents 97 percent of runoff for water year October 1953 to September 1954.

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT KNIGHTS LANDING, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at approximately 10 a.m./

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

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO SLOUGH NEAR KNIGHTS LANDING, CALIF.

LOCATION.--At gaging station on levee near Reclamation District 1,500 pumping plant 5.4 miles southeast of Knights Landing, Sutter County, and 1 mile above mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Gaging station maintained and operated by the State of California Division of Water Resources. Records of discharge for water year October 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954. This water is the entire outflow of the Sutter bypass area and Reclamation District 1,500.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 19, 1953	0	--	--	30	21	28	2.6	216	--	30	--	--	0.09	--	--		161	0	27		432	8.1
Dec. 10	340	--	--	28	19	25	2.4	194	--	26	--	--	.11	--	--		148	0	26		392	7.9
Jan. 15, 1954	0	--	--	32	22	30	1.9	230	--	28	--	--	.11	--	--		170	0	27		455	8.1
Feb. 18	--	--	--	11	4.9	5.8	1.1	60	--	3.5	--	--	.13	--	--		48	0	20		119	7.5
Mar. 11	--	--	--	16	8.6	10	1.2	92	--	11	--	--	.10	--	--		75	0	22		201	7.7
Apr. 12	--	--	--	13	6.7	8.2	.9	75	--	9.5	--	--	.04	--	--		60	0	23		157	7.4
May 10	0	20	0.29	16	9.2	9.2	1.5	101	7.0	5.5	0.0	0.8	.10	119	0.16		78	0	20		192	7.9
June 11	898	--	--	28	18	25	1.9	180	15	22	--	--	.00	--	--		144	0	27		388	8.2
July 22	569	--	--	38	29	47	1.6	250	--	66	--	--	.11	--	--		214	9	32		592	8.1
Aug. 16	777	--	--	33	25	36	1.6	249	--	34	--	--	.08	--	--		186	0	30		495	7.8
Sept. 24	1,180	15	.07	27	19	64	2.5	216	54	37	.4	.5	.00	325	.44		146	0	48		555	7.9

FEATHER RIVER NEAR OROVILLE, CALIF.

LOCATION.--At gaging station 75 feet upstream from bridge on Feather River Highway, 1.9 miles downstream from North Fork, and 4 miles northeast of Oroville business district, Butte County.
DRAINAGE AREA.--3,611 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
Water temperatures: October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 72°F July 27-29, Aug. 2, 3; minimum, 39°F Dec. 30, 31, Jan. 14.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 20, 1953	2,530	--	--	11	3.3	4.1	1.2	59	--	1.5	--	--	0.05	--	--		41	0	17		105	7.3
Dec. 9	3,010	--	--	11	3.7	5.0	1.9	59	--	1.5	--	--	.00	--	--		43	0	19		103	7.6
Jan. 11, 1954	1,380	--	--	11	3.8	4.1	.9	57	--	1.0	--	--	.06	--	--		43	0	17		101	7.8
Feb. 11	3,190	--	--	8.8	3.4	3.4	.6	49	--	1.0	--	--	.01	--	--		36	0	17		84.3	7.8
Mar. 10	47,000	--	--	4.8	2.4	1.2	.7	28	--	.2	--	--	.08	--	--		22	0	10		48.0	7.4
Apr. 13	12,200	--	--	7.3	2.6	2.6	.5	40	--	1.5	--	--	.01	--	--		29	0	16		72.0	7.4
May 14	7,880	16	0.00	7.3	3.1	2.0	.7	38	2.1	1.2	0.0	0.0	.04	51	0.07		31	0	12		68.6	7.3
June 7	4,220	--	--	9.7	3.4	3.9	1.1	54	--	2.5	--	--	.14	--	--		38	0	18		93.7	7.7
July 15	2,880	--	--	10	3.7	4.1	1.2	58	--	.8	--	--	.01	--	--		40	0	18		98.3	7.8
Aug. 9	2,700	--	--	12	3.6	5.1	1.2	64	--	1.8	--	--	.05	--	--		45	0	19		108	7.8
Sept. 23	2,670	13	.04	11	4.0	4.6	1.1	62	1.9	1.4	.2	.1	.02	68	.09		44	0	18		106	7.4

SACRAMENTO RIVER BASIN--Continued

FEATHER RIVER NEAR OROVILLE, CALIF --Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

SOUTH HONCUT CREEK NEAR BANGOR, CALIF.

LOCATION.--At gaging station 2.3 miles southeast of Bangor, Butte County and 3.3 miles upstream from Tennessee Creek.
DRAINAGE AREA.--30.5 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chlorids (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 20, 1953	3.4	--	--	12	6.1	17	0.2	74	--	7.5	--	--	0.06	--	--		55	0	40		183	7.5
Nov. 20	13	--	--	14	5.9	12	.3	70	--	8.0	--	--	.11	--	--		59	2	30		176	7.7
Dec. 9	5.5	--	--	12	5.9	12	.4	70	--	6.2	--	--	.12	--	--		54	0	32		157	7.7
Jan. 11, 1954	5.5	--	--	11	5.7	10	.2	69	--	6.0	--	--	.07	--	--		51	0	30		154	7.9
Feb. 11	5.3	--	--	11	6.0	11	.2	64	--	5.0	--	--	.04	--	--		52	0	31		152	7.4
Mar. 10	177	--	--	6.6	3.0	3.1	.3	40	--	.2	--	--	.07	--	--		29	0	19		72.2	7.5
Apr. 12	38	--	--	9.5	5.2	7.2	.2	63	--	4.0	--	--	.01	--	--		45	0	26		115	7.8
May 13	12	27	0.02	12	5.7	8.7	.1	74	9.7	3.0	0.0	2.8	.00	106	0.14		53	0	26		146	7.7
June 11	3.9	--	--	15	6.0	13	.4	87	--	7.5	--	--	.14	--	--		62	0	31		170	8.2
July 16	.2	--	--	22	9.3	26	.4	119	--	18	--	--	.25	--	--		93	0	38		289	7.8
Aug. 12	.0	--	--	25	11	34	.6	144	--	22	--	--	.17	--	--		108	0	41		352	8.2

SACRAMENTO RIVER BASIN--Continued

YUBA RIVER NEAR SMARTSVILLE, CALIF.

LOCATION.--About 0.5 mile downstream from State Highway 20 bridge, 5 miles below Englebright Dam, 4 miles below Deer Creek and 2.3 miles northwest of Smartsville, Yuba County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Discharge records for gaging station at Englebright Dam and Deer Creek near Smartsville are combined to give the flow at this station.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 20, 1953	624	--	--	14	3.6	3.0	0.6	63	--	1.5	--	--	0.05	--	--		50	0	11		110	7.6
Dec. 9	692	--	--	13	2.5	3.1	.6	50	--	1.5	--	--	.00	--	--		43	2	13		96.5	7.4
Jan. 15, 1954	676	--	--	12	2.7	2.6	.5	53	--	2.0	--	--	.00	--	--		41	0	12		99.4	7.6
Feb. 11	1,600	--	--	8.4	2.7	2.0	.4	40	--	.8	--	--	.03	--	--		32	0	12		75.9	7.7
Mar. 10	20,600	--	--	6.6	1.8	1.2	.4	31	--	1.0	--	--	.08	--	--		24	0	10		56.4	7.4
Apr. 13	5,080	--	--	6.4	2.4	1.6	.3	32	--	1.5	--	--	.00	--	--		26	0	12		63.6	7.2
May 14	4,090	11	0.02	6.2	1.3	1.1	.3	26	3.1	.0	0.0	0.2	.00	36	0.05		21	0	10		49.9	7.6
June 11	1,440	--	--	8.1	1.9	2.0	.4	35	4.7	1.7	--	--	--	--	--		28	0	10		62.5	7.1
July 16	731	--	--	7.0	4.7	2.7	.5	46	--	2.5	--	--	.07	--	--		37	0	14		83.7	7.6
Aug. 12	684	--	--	14	2.7	3.4	1.0	59	--	2.0	--	--	.03	--	--		46	0	14		107	8.0
Sept. 23	342	14	.02	16	3.7	3.6	.6	66	6.3	2.5	.2	.2	.00	80	.11		55	1	12		123	7.7

YUBA RIVER AT MARYSVILLE, CALIF.

LOCATION.--At gaging station at Simpson Lane Bridge in Marysville, Yuba County, about 2 miles upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 19, 1953	539	--	--	13	4.6	4.5	0.7	60	--	2.2	--	--	0.14	--	--		51	2	16		115	7.5
Dec. 10	640	--	--	12	3.7	3.4	.6	52	--	2.0	--	--	.00	--	--		45	3	14		104	7.6
Jan. 15, 1954	689	--	--	13	3.6	2.6	.5	57	--	1.0	--	--	.02	--	--		47	1	11		111	8.0
Feb. 11	1,620	--	--	9.3	2.9	2.4	.4	42	--	.2	--	--	.01	--	--		35	1	13		81.3	7.8
Mar. 10	32,500	--	--	6.6	2.6	1.5	.6	33	--	.2	--	--	.08	--	--		27	0	10		60.7	7.5
Apr. 16	5,760	--	--	7.3	2.1	1.9	.2	34	--	2.0	--	--	.01	--	--		27	0	13		62.2	7.4
May 14	3,810	10	0.04	6.2	2.0	1.2	.3	30	2.7	.0	0.1	0.3	.00	38	0.05		24	0	10		56.3	7.6
June 11	1,140	--	--	8.3	2.7	2.1	.5	38	6.1	1.4	--	--	--	--	--		32	1	12		68.9	7.4
July 16	300	--	--	12	3.0	3.2	.7	53	--	2.8	--	--	.10	--	--		42	0	14		98.5	7.7
Aug. 13	280	--	--	13	4.0	3.4	1.2	60	--	2.2	--	--	.00	--	--		49	0	13		114	8.1
Sept. 17	109	18	.03	15	4.9	3.6	.7	66	11	1.5	.0	.2	.02	87	.12		58	4	12		132	7.8

SACRAMENTO RIVER BASIN--Continued

BEAR RIVER NEAR WHEATLAND, CALIF.

LOCATION.--Near gaging station on downstream side of bridge on U. S. Highway 99E, 1 mile southwest of Wheatland, Yuba County, and 6.5 miles downstream from Rock Creek.
DRAINAGE AREA.--295 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 19, 1953	108	--	--	26	9.7	8.2	1.6	103	--	9.0	--	--	0.00	--	--		105	20	14		242	7.5
Nov. 20	405	--	--	12	3.5	3.8	1.5	42	--	3.8	--	--	.00	--	--		44	10	15		106	7.2
Dec. 10	590	--	--	11	2.5	2.4	.7	38	--	1.8	--	--	.00	--	--		38	7	12		82.1	7.5
Jan. 15, 1954	60	--	--	19	12	6.5	1.9	95	--	7.5	--	--	.15	--	--		97	19	12		228	8.0
Feb. 11	178	--	--	20	5.7	4.5	1.8	73	--	4.0	--	--	.04	--	--		73	14	11		171	8.0
Mar. 11	2,890	--	--	8.4	2.2	1.6	.7	34	--	1.0	--	--	.06	--	--		30	2	10		71.2	7.5
Apr. 16	313	--	--	11	4.9	3.1	.4	48	--	3.0	--	--	.01	--	--		48	8	12		105	7.5
May 14	165	11	0.00	11	4.4	2.7	.5	48	9.3	2.3	0.0	0.3	.00	65	0.09		46	6	11		109	7.8
June 11	10	--	--	25	14	4.1	.8	93	24	6.7	--	--	--	--	--		120	44	7		209	7.2
July 16	8.4	--	--	36	16	7.0	1.4	156	--	7.0	--	--	.13	--	--		156	28	9		320	8.2
Aug. 12	3.2	--	--	37	16	7.9	1.2	a158	--	7.0	--	--	.01	--	--		158	28	10		328	8.4
Sept. 17	6.0	20	01	35	15	7.9	1.2	157	28	8.5	.0	.2	.01	193	.26		149	20	10		320	8.2

a Includes equivalent of 6 parts per million of carbonate (CO_3).

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FEATHER RIVER AT NICOLAUS, CALIF.

LOCATION.--At highway bridge at Nicolaus, Sutter County, 0.4 mile upstream from gaging station and 1.2 miles downstream from Bear River.
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 92 ppm Aug. 1-10; minimum, 52 ppm Apr. 21-30.
Hardness: Maximum, 114 ppm June 21; minimum, 23 ppm Mar. 11.
Specific conductance: Maximum daily, 245 micromhos June 21; minimum daily, 54.6 micromhos Mar. 11.
Water temperatures: Maximum, 82°F July 28, minimum, 38°F Nov. 18.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 111 ppm Aug. 1-10, 1951; minimum, 45 ppm June 1-3, 8, 10, 1952.
Hardness: Maximum, 114 ppm June 21, 1954; minimum, 22 ppm June 1-3, 8, 10, 1952.
Specific conductance: Maximum daily, 245 micromhos June 21, 1954; minimum daily, 50.0 micromhos May 28, 1952.
Water temperatures: Maximum, 82°F July 28, 1954; minimum, 38°F Nov. 18, 1953.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	2,993	11	0.01	13	4.7	5.0	1.2	65	4.4	5.8	0.1	0.6	0.04	79	0.11	638	52	0	17	0.3	126	7.4
Oct. 11-20	3,135	14	.01	13	4.7	5.0	1.0	65	5.3	3.5	.1	.3	.09	77	.10	652	52	0	17	.3	121	7.4
Oct. 19[a]	3,350	--	--	12	2.0	5.5	1.2	66	--	1.8	--	--	.12	--	--	--	38	0	23	.4	122	7.3
Oct. 21-31	2,814	13	.02	12	5.0	4.5	1.1	63	4.4	3.0	.1	.3	.08	75	.10	570	50	0	16	.3	116	7.2
Nov. 1-10	2,764	12	.01	12	5.2	5.8	1.4	66	4.6	3.2	.1	.6	.02	76	.10	567	51	0	19	.3	120	7.4
Nov. 11-20	4,556	14	.07	11	4.5	4.1	1.4	57	4.8	3.2	.1	.3	.06	73	.10	898	46	0	16	.3	108	7.3
Nov. 21-30	5,050	11	.06	10	4.5	5.0	.6	56	3.9	3.0	.0	.3	.05	69	.09	941	43	0	20	.3	105	7.4
Dec. 1-10	5,044	11	.09	11	4.4	4.5	1.2	58	4.2	3.5	.1	.6	.08	71	.10	967	46	0	17	.3	113	7.3
Dec. 10[a]	5,400	--	--	11	3.8	4.5	1.0	55	--	1.5	--	--	.04	--	--	--	43	0	18	.3	99.5	7.6
Dec. 11-20	4,165	12	.08	11	4.9	5.0	1.1	61	4.5	3.8	.1	.6	.09	74	.10	832	48	0	18	.3	146	7.3
Dec. 23[a]	3,970	--	.25	8.8	3.9	--	--	--	--	2.0	--	--	--	--	--	--	--	--	--	--	91.0	--
Dec. 21-31	3,405	9.4	.03	11	4.6	4.1	1.0	59	4.9	2.8	.1	.3	.05	72	.10	662	46	0	16	.3	115	7.4
Jan. 1-10, 1954	2,988	9.4	.06	12	4.6	6.5	1.1	64	4.5	3.2	.1	.4	.01	77	.10	621	49	0	22	.4	117	7.7
Jan. 11-17, 19-20	5,218	8.6	.18	12	4.3	6.5	1.0	61	5.6	3.8	.1	.6	.08	86	.12	1,210	48	0	22	.4	119	7.5
Jan. 18	19,100	--	--	--	--	4.1	1.5	39	--	2.8	--	--	--	--	--	--	34	--	--	--	84.8	7.1
Jan. 21-31	11,250	13	.22	9.3	4.1	3.4	1.0	47	5.7	3.0	.2	.4	.04	80	.11	2,430	40	2	15	.2	95.3	7.1
Feb. 1-10	7,693	16	.10	9.3	3.9	4.1	.7	51	4.4	3.0	.1	.0	.07	73	.10	1,520	39	0	18	.3	99.5	7.2
Feb. 11-20	22,230	9.8	.17	8.9	3.4	3.1	.9	45	4.6	2.0	.2	.5	.03	69	.09	4,140	36	0	15	.2	89.8	7.0
Feb. 18[a]	28,100	--	--	7.0	3.0	1.8	.6	38	--	.5	--	--	.11	--	--	--	30	0	11	.1	70.8	7.4
Feb. 21-28	14,090	14	.14	8.4	3.6	3.1	.9	45	4.3	2.2	.2	.3	.06	65	.09	2,470	36	0	15	.2	85.6	7.3
Mar. 1-10	14,630	13	.07	4.3	6.4	3.1	.9	47	4.2	1.8	.1	.6	.14	65	.09	2,570	37	0	15	.2	88.7	7.2
Mar. 11-20	30,670	9.0	.12	7.1	3.2	3.4	.9	38	3.5	2.0	.3	.7	.07	59	.08	4,890	31	0	19	.3	72.8	7.0
Mar. 11[a]	78,000	--	--	5.7	2.1	1.5	.9	31	--	.2	--	--	.08	--	--	--	23	0	12	.1	54.6	7.4
Mar. 21-23, 30-31	15,200	--	--	8.9	4.1	3.4	.7	46	5.4	2.2	--	.5	--	69	.09	2,830	39	1	16	.2	93.5	7.6
Mar. 24-29	12,720	--	--	9.1	4.0	4.1	.6	48	5.6	2.5	--	.6	--	72	.10	2,470	39	0	18	.3	122	7.6

a Not included for computation of weighted averages.

SACRAMENTO RIVER BASIN--Continued

FEATHER RIVER AT NICOLAUS, CALIF.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-5, 1954....	14,020	--	--	9.2	3.9	3.8	0.3	47	4.4	3.0	--	0.4	--	66	0.09	2,500	39	0	17	0.3	96.0	7.8
Apr. 6-10	31,720	--	--	6.8	3.1	2.8	.3	36	3.0	1.2	--	.7	--	58	.08	4,970	30	0	17	.2	72.0	7.3
Apr. 11-20	19,690	11	0.10	7.3	2.9	2.8	.4	38	2.9	1.5	0.3	.3	0.03	56	.08	2,980	30	0	17	.2	69.1	7.2
Apr. 16[a]	19,500	--	--	7.3	2.6	2.6	.5	40	--	1.5	--	--	.00	--	--	--	29	0	16	.2	70.3	7.4
Apr. 21-30	21,070	10	.08	6.4	2.7	2.4	.9	34	2.6	2.0	.1	.0	.03	52	.07	2,960	27	0	16	.2	64.6	7.1
May 1-10	14,260	12	.07	6.8	2.9	2.4	1.0	37	2.7	2.2	.1	.2	.03	53	.07	2,040	29	0	15	.2	68.3	7.0
May 11-20	9,616	12	.04	7.5	2.7	2.0	.8	39	3.0	1.5	.1	.0	.04	54	.07	1,400	30	0	12	.2	69.5	7.1
May 13[a]	10,800	14	.00	7.5	3.2	2.0	.5	38	2.9	1.8	.0	.0	.04	b 51	.07	1,490	32	1	12	.2	73.6	7.7
May 21-31	4,928	13	.04	8.8	3.4	2.8	1.2	45	3.4	2.5	.0	.5	.05	60	.08	798	36	0	14	.2	90.2	7.1
June 1-10.....	3,009	16	.02	10	4.0	4.1	1.3	54	4.5	3.2	.1	.4	.04	69	.09	561	41	0	17	.3	108	7.2
June 11-20.....	3,220	16	.03	11	5.0	4.2	1.3	59	3.9	3.5	.1	.1	.06	72	.10	626	48	0	16	.3	108	7.0
June 11[a]	3,610	--	--	10	4.6	2.7	.8	50	7.2	2.5	--	--	--	--	--	--	44	3	12	.2	90.1	7.5
June 21.....	2,140	--	--	--	--	5.6	1.4	108	--	4.0	--	--	--	--	--	--	114	--	--	--	245	7.1
June 22-30.....	1,490	18	.02	13	6.4	5.1	1.4	72	4.9	4.5	.1	.8	.06	86	.12	346	59	0	15	.3	141	7.2
July 1-10	1,171	16	.03	9.0	9.6	4.5	1.6	74	5.2	3.4	.3	.1	.02	89	.12	281	62	1	13	.3	136	7.3
July 11-20	975	16	.02	11	7.8	5.0	1.6	75	6.0	3.4	.3	.1	.10	89	.12	234	60	0	15	.3	138	7.3
July 16[a]	961	--	--	15	5.5	5.6	1.2	77	--	4.5	--	--	.07	--	--	--	60	0	17	.3	138	8.0
July 21-31	796	18	.03	14	6.8	5.6	1.6	77	5.4	4.0	.1	.6	.00	90	.12	193	63	0	16	.3	139	7.3
Aug. 1-10	792	17	.03	23	.8	6.0	1.7	79	5.6	3.8	.1	.3	.00	92	.13	197	61	0	17	.3	144	7.4
Aug. 11-20	924	18	.01	14	6.1	5.3	1.7	75	5.4	3.0	.1	.7	.16	91	.12	227	60	0	16	.3	142	7.6
Aug. 12[a]	857	--	--	15	5.5	5.8	1.3	78	--	3.8	--	--	.06	--	--	--	60	0	17	.3	141	7.8
Aug. 21-31	1,151	18	.00	14	5.8	5.3	1.4	77	4.8	3.5	.2	.9	.15	90	.12	280	59	0	16	.3	141	7.3
Sept. 1-10	1,245	17	.00	14	5.6	5.4	1.5	76	4.4	3.8	.2	1.0	.09	89	.12	299	58	0	16	.3	141	7.3
Sept. 11-20	1,347	16	.01	13	5.7	5.5	1.4	75	4.4	3.2	.1	1.0	.09	88	.12	320	56	0	17	.3	141	7.3
Sept. 17[a].....	1,380	15	.01	13	5.2	6.0	1.3	75	3.9	2.5	.0	.5	.05	b 84	.11	313	54	0	19	.4	135	7.9
Sept. 21-30	1,803	16	.00	13	5.2	5.1	1.4	73	3.5	3.5	.1	.6	.13	83	.11	404	54	0	17	.3	130	7.5
Weighted average[c]	7,379	d12	d0.10	e8.5	e3.8	3.5	0.9	46	e4.0	2.4	d 0.2	e 0.4	d0.06	e 65	e 0.09	e 1,290	36	e 0	e 17	e 0.2	89.6	--

a Not included for computation of weighted averages.
b Sum of determined constituente.
c Represents 100 percent of runoff for water year October 1953 to September 1954.
d Represents 85 percent of runoff for water year October 1953 to September 1954.
e Represents 99 percent of runoff for water year October 1953 to September 1954.

SACRAMENTO RIVER BASIN--Continued

FEATHER RIVER AT NICOLAUS, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
(Once-daily measurement at approximately 7 a.m.)

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

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 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 83 ppm Aug. 11-20; minimum, 32 ppm May 11-20.
Hardness: Maximum, 41 ppm Aug. 11-20; minimum, 17 ppm Apr. 21-30, May 11-20.
Specific conductance: Maximum daily, 106 micromhos Aug. 20, 21; minimum daily, 33.6 micromhos May 21.
Water temperatures: Maximum, 81°F July 27, Aug. 3; minimum, 41°F Jan. 13, 22, Mar. 21.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 83 ppm Aug. 11-20, 1954; minimum, 29 ppm June 1-10, 1952, June 21-30, 1953.
Hardness: Maximum, 41 ppm Aug. 1 to Sept. 10, 1951, Nov. 21-30, 1952, Aug. 11-20, 1954; minimum, 14 ppm June 21-30, 1953.
Specific conductance: Maximum daily, 112 micromhos Aug. 28, 1951; minimum daily, 29.1 micromhos June 3, 1952.
Water temperatures: Maximum, 81°F July 27, Aug. 3, 1954; minimum, 40°F Jan. 3, 4, 10, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Sacramento, Calif. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	376	10	0.03	7.7	2.6	3.4	1.0	35	3.5	4.0	0.1	0.8	0.05	52	0.07	53	30	1	19	0.3	77.6	7.0
Oct. 11-20	560	11	.00	8.8	2.5	3.6	1.0	38	4.6	3.2	.0	.4	.05	56	.08	85	32	1	19	.3	87.5	6.9
Oct. 21-31	725	12	.04	7.6	2.7	3.4	.8	33	4.3	4.0	.1	.2	.04	52	.07	102	30	3	19	.3	68.8	7.1
Nov. 1-10	456	12	.06	8.5	2.6	3.8	.4	37	4.1	5.0	.0	.0	.02	58	.08	71	32	2	20	.3	79.5	7.2
Nov. 11-20	1,198	11	.11	8.9	3.1	4.1	.4	39	5.2	5.0	.1	.1	.03	66	.09	214	35	3	20	.3	85.3	7.2
Nov. 21-30	1,529	11	.03	7.5	3.2	3.1	.7	34	4.4	3.8	.0	.8	.06	50	.07	206	32	4	17	.2	77.0	7.0
Dec. 1-10	1,736	8.3	.09	7.3	2.8	2.8	.7	33	4.6	3.8	.1	.6	.07	54	.07	253	30	3	17	.2	77.7	7.3
Dec. 11-20	1,295	6.9	.02	7.3	2.4	2.8	1.5	33	3.9	4.0	.1	.2	.00	48	.07	168	28	1	17	.2	69.0	7.3
Dec. 21-31	1,212	7.3	.00	7.1	2.2	3.1	.7	32	4.0	3.2	.1	.4	.01	47	.06	154	27	1	20	.3	67.6	7.3
Jan. 1-10, 1954	1,036	6.4	.03	7.5	2.5	3.2	.7	34	4.3	3.5	.1	.0	.04	51	.07	143	29	1	19	.3	73.8	7.2
Jan. 11-20	1,828	5.8	.12	8.2	3.1	3.8	.7	38	5.3	3.5	.1	.5	.03	61	.08	301	33	2	19	.3	83.6	7.4
Jan. 21-31	3,835	12	.06	7.3	3.3	2.6	.7	36	5.0	3.2	.1	.3	.01	60	.08	621	32	2	15	.2	74.2	7.1
Feb. 1-10	1,921	11	.03	7.8	2.3	3.4	.6	34	4.4	3.2	.1	.2	.02	50	.07	259	29	1	20	.3	69.0	7.1
Feb. 11-20	6,227	9.7	.07	7.3	3.1	2.4	.7	35	4.8	2.8	.1	.4	.03	55	.07	925	31	2	14	.2	72.3	7.0
Feb. 21-28	3,692	9.7	.01	6.9	2.9	2.8	.7	35	4.0	3.2	.0	.3	.00	50	.07	498	29	0	17	.2	69.3	7.3
Mar. 1-10	8,082	7.3	.06	6.4	2.6	2.0	.7	31	3.2	2.8	.1	.1	.07	48	.07	1,050	27	1	14	.2	61.5	7.2
Mar. 11-20	8,480	9.6	.06	6.4	2.9	2.4	.6	31	3.4	2.5	.1	.7	.01	49	.07	1,120	28	2	15	.2	65.6	7.2
Mar. 21-31	5,634	12	.05	7.3	3.3	3.1	.7	36	5.0	3.5	.1	.2	.06	56	.08	852	32	2	17	.2	76.9	7.1

Apr 1-10, 1954...	9,082	16	0.04	6.7	3.0	2.4	.7	34	3.5	2.5	.1	.2	.03	51	.07	1,250	29	1	15	.2	65.8	7.1
Apr. 11-20.....	8,992	7.1	.03	4.9	2.4	1.8	.8	26	2.4	2.0	.1	.0	.00	46	.06	1,120	22	1	14	.2	48.6	7.0
Apr. 21-30.....	9,483	6.0	.03	4.3	1.5	1.5	1.0	21	1.7	1.8	.1	.0	.03	36	.05	922	17	0	15	.2	41.9	7.0
May 1-10.....	7,440	6.1	.03	4.3	2.3	1.2	.6	22	2.2	1.5	.0	.5	.06	34	.05	683	20	2	11	.1	43.5	6.9
May 11-20.....	6,733	8.2	.03	3.8	1.8	1.2	.6	20	1.6	1.5	.0	.0	.04	32	.04	582	17	0	13	.1	36.9	6.8
May 21-31.....	3,541	9.8	.01	4.7	1.7	1.8	.8	23	2.4	2.0	.1	.0	.04	35	.05	335	19	0	16	.2	46.6	6.8
June 1-10.....	2,178	13	.01	7.4	2.0	2.2	.8	27	3.0	5.5	.0	.5	.00	50	.07	294	27	5	15	.2	50.8	6.8
June 11-20.....	1,878	13	.01	6.1	2.4	2.4	.8	30	2.2	2.5	.0	.2	.00	43	.06	218	25	0	17	.2	55.0	7.4
June 21-30.....	1,167	13	.01	6.8	2.0	2.7	.9	32	2.6	2.8	.0	.0	.03	47	.06	148	25	0	18	.2	65.8	7.1
July 1-10.....	607	15	.02	8.5	3.1	3.0	.9	38	3.3	4.0	.0	.0	.00	54	.07	89	34	3	16	.2	78.6	7.1
July 11-20.....	434	16	.01	9.6	3.4	3.6	1.1	44	4.0	5.0	.0	.3	.04	62	.08	73	38	2	17	.3	92.2	7.3
July 21-31.....	308	16	.05	11	2.6	4.1	1.4	46	4.4	5.2	.0	.3	.00	65	.09	54	38	0	18	.3	94.2	7.3
Aug. 1-10.....	232	16	.04	11	3.1	4.7	1.5	48	4.7	6.0	.0	.6	.00	69	.09	43	40	1	20	.3	101	7.1
Aug. 11-20.....	222	14	.10	11	3.2	4.7	1.4	49	4.9	6.2	.1	.3	.06	83	.11	50	41	0	19	.3	102	7.2
Aug. 21-31.....	273	13	.01	11	2.8	3.8	1.2	46	4.5	5.5	.1	.2	.06	65	.09	48	39	1	17	.3	99.8	7.0
Sept. 1-10.....	303	12	.00	9.6	2.9	3.5	1.2	42	4.0	5.0	.1	.7	.13	59	.08	48	36	2	17	.3	90.1	7.0
Sept. 11-20.....	337	12	.01	8.9	2.6	3.4	.9	39	3.8	4.8	.0	.8	.09	57	.08	52	33	1	18	.3	86.8	7.1
Sept. 21-30.....	405	13	.00	8.0	2.9	3.2	.8	37	3.2	4.2	.1	.1	.04	54	.07	59	32	2	17	.2	75.1	7.2
Weighted average [a]	2,856	9.6	0.04	6.2	2.5	2.3	0.7	30	3.3	2.7	0.1	0.2	0.03	47	0.06	362	26	2	16	0.2	60.6	--

a Represents 100 percent of runoff for water year October 1953 to September 1954.

SACRAMENTO RIVER BASIN--Continued

AMERICAN RIVER AT FAIR OAKS, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/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	65	57	49	43	46	50	50	52	65	74	75	72
2	64	58	49	42	42	51	53	54	65	76	75	71
3	64	56	48	--	46	50	53	55	66	77	81	71
4	63	59	47	--	47	50	54	57	65	75	72	70
5	65	56	46	44	46	51	54	59	63	73	70	70
6	66	56	48	45	45	50	51	59	61	78	76	70
7	65	55	49	45	45	50	50	59	61	72	74	71
8	65	57	46	46	45	50	56	57	62	72	74	68
9	70	55	45	44	46	51	58	56	59	70	74	71
10	65	55	47	43	45	46	52	56	60	72	76	67
11	63	55	45	45	46	45	54	57	64	75	70	70
12	64	58	45	45	49	45	55	59	62	76	71	60
13	61	56	46	41	48	43	56	61	64	79	70	68
14	61	55	46	42	47	45	55	60	65	79	69	70
15	64	55	45	45	45	48	55	60	68	75	69	66
16	60	54	45	46	46	45	58	61	66	75	70	66
17	63	54	48	45	48	45	56	61	68	76	76	68
18	60	50	49	45	46	44	55	65	70	76	78	65
19	58	49	49	45	45	45	55	65	69	75	72	65
20	58	49	51	44	46	45	56	63	72	75	70	65
21	62	49	48	45	45	41	55	61	74	73	71	70
22	56	50	50	41	48	48	56	62	76	76	74	65
23	55	50	45	46	55	48	56	62	72	75	78	65
24	56	52	46	45	49	48	55	64	75	74	70	68
25	56	54	44	45	50	48	55	64	75	75	66	68
26	56	52	44	45	51	49	54	63	71	76	68	69
27	56	51	43	45	48	49	55	64	74	81	74	68
28	58	50	45	45	50	50	53	66	74	79	70	70
29	58	51	44	45	--	50	51	63	76	79	70	66
30	56	50	44	45	--	50	55	62	74	80	76	65
31	56	--	43	45	--	49	--	64	--	76	76	--
Average	61	54	46	44	47	48	54	60	68	76	73	68

SACRAMENTO RIVER BASIN--Continued

AMERICAN RIVER AT SACRAMENTO, CALIF.

LOCATION.--At gaging station on H Street Bridge, just east of Sacramento, Sacramento County, 6.5 miles upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953	578	--	--	7.9	2.5	2.6	0.8	37	--	2.8	--	--	0.03	--	--		30	0	15		79.6	7.5
Dec. 17	1,280	--	--	7.4	2.8	2.4	.6	34	--	1.8	--	--	.00	--	--		30	2	14		69.7	7.5
Dec. 23	1,320	--	0.11	7.9	2.0	--	--	--	--	2.2	--	--	--	--	--		--	--	--		69.5	--
Jan. 13, 1954	1,050	9.6	.05	8.4	2.2	2.8	.7	35	4.7	3.5	0.0	0.0	.03	49	0.07		30	1	16		86.9	7.4
Feb. 11	1,950	--	--	6.8	2.4	2.2	.5	32	--	1.0	--	--	.03	--	--		27	1	15		69.5	7.6
Mar. 11	23,100	--	--	5.7	1.3	1.1	.6	25	--	.5	--	--	.05	--	--		20	0	11		47.6	7.4
Apr. 22	9,470	--	--	4.4	.9	1.5	.1	20	--	.2	--	--	.04	--	--		15	0	18		37.2	7.4
May 21	6,250	8.6	.01	3.5	1.1	1.5	.4	18	2.4	.0	.0	.2	.03	27	.04		13	0	19		34.5	6.8
June 11	1,810	--	--	3.5	3.2	2.2	.7	28	--	2.8	--	--	.12	--	--		22	0	17		56.7	7.4
July 23	287	--	--	10	3.9	3.8	.9	54	--	3.0	--	--	.00	--	--		41	0	17		96.1	7.9
Aug. 9	215	--	--	11	2.9	4.9	1.2	49	--	6.0	--	--	.04	--	--		39	0	21		104	7.8
Sept. 27	408	11	.00	8.4	2.2	3.3	.8	36	3.0	2.8	.1	.4	.00	50	.07		30	0	19		73.6	7.6

SACRAMENTO RIVER BASIN--Continued

SACRAMENTO RIVER AT SACRAMENTO, CALIF.

LOCATION.--At Tower Bridge, 0.4 mile downstream from gaging station at Sacramento, Sacramento County, approximately 1.3 miles downstream from confluence of the American River.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
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 1953 to September 1954 given in Report of Sacramento-San Joaquin Water Supervision for 1953 and Report of Sacramento-San Joaquin Water Supervision for 1954.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 19, 1953	10,900	--	--	13	6.6	9.6	1.1	78	--	7.5	--	--	0.09	--	--		60	0	25		164	8.1
Dec. 17	14,300	--	--	12	7.9	12	1.2	77	--	8.0	--	--	.00	--	--		62	0	29		169	7.7
Dec. 23	14,400	--	0.19	12	5.4	--	--	--	--	6.5	--	--	--	--	--		--	--	--		142	--
Jan. 13, 1954	10,600	22	.06	16	7.9	15	1.4	91	17	12	0.0	0.1	.07	136	0.18		72	0	31		216	7.7
Feb. 18	67,800	--	--	10	4.1	5.0	1.3	53	--	3.5	--	--	.10	--	--		42	0	20		107	7.4
Mar. 12	73,300	--	--	6.8	3.2	2.4	1.2	38	--	1.5	--	--	.06	--	--		30	0	14		74.0	7.5
Apr. 16	52,300	--	--	12	4.6	6.3	.7	62	--	7.2	--	--	.04	--	--		49	0	22		124	7.5
May 21	22,000	18	.05	11	5.7	8.4	.8	62	8.9	6.8	.1	.1	.07	90	.12		51	0	26		144	7.5
June 18	11,400	--	--	17	11	19	1.1	102	20	20	--	--	--	--	--		88	4	32		257	7.6
July 16	8,010	--	--	17	8.0	18	1.1	98	--	17	--	--	.09	--	--		75	0	34		230	8.1
Aug. 9	8,590	--	--	16	9.3	21	.6	108	--	16	--	--	.32	--	--		78	0	37		249	8.2
Sept. 23	12,400	22	.04	19	12	24	1.5	132	17	18	.0	.4	.08	179	.24		97	0	35		296	7.6

CLEAR LAKE (NORTH END) CLEAR LAKE OAKS, CALIF.

LOCATION.--At boat pier at Glen Haven Fish Harbor Motel, 3.6 miles above Clear Lake Oaks, Lake County.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953		--	--	24	17	12	2.6	a 159	--	6.8	--	--	0.78	--	--		130	0	16		287	8.4
Nov. 10		--	--	25	16	11	2.1	158	--	6.2	--	--	.86	--	--		128	0	15		294	7.4
Dec. 7		--	--	25	15	12	2.1	159	--	6.8	--	--	.86	--	--		124	0	17		286	7.8
Jan. 12, 1954		--	--	26	15	11	2.1	164	--	6.0	--	--	.94	--	--		127	0	16		296	7.9
Feb. 9		--	--	24	14	10	2.0	153	--	6.0	--	--	.79	--	--		117	0	15		275	8.2
Mar. 9		--	--	23	14	9.2	1.9	149	--	5.8	--	--	.79	--	--		115	0	15		270	8.1
Apr. 20		--	--	21	14	10	1.9	135	--	4.0	--	--	.56	--	--		110	0	16		247	8.2
May 12		17	0.00	24	13	9.6	2.2	139	10	5.5	0.1	0.9	.68	151	0.21		113	0	15		260	7.8
June 10		--	--	25	14	10	2.2	b 149	--	7.5	--	--	.80	--	--		120	0	15		266	8.5
July 12		--	--	24	14	11	2.0	150	--	8.2	--	--	1.1	--	--		117	0	17		270	7.5
Aug. 13		--	--	25	16	12	2.3	160	--	6.0	--	--	.76	--	--		128	0	17		284	8.1
Sept. 21		10	.00	27	14	12	2.2	162	9.6	6.5	.0	1.1	.85	162	.22		126	0	17		288	8.2

a Includes equivalent of 5 parts per million of carbonate (CO_3).
b Includes equivalent of 3 parts per million of carbonate (CO_3).

SACRAMENTO RIVER BASIN--Continued

CLEAR LAKE AT LAKEPORT, CALIF.

LOCATION.--At foot of 3rd Street near municipal wharf in Lakeport, Lake County.
DRAINAGE AREA.--528 square miles, including water surface of lake (65 square miles).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of gage height for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Clear Lake (West Side) Lakeport.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953		--	--	25	15	12	2.1	160	--	6.0	--	--	0.72	--	--		124	0	17		284	8.4
Nov. 9		--	--	26	15	12	2.2	156	--	6.5	--	--	.81	--	--		127	0	17		293	7.3
Dec. 7		--	--	25	16	12	2.1	156	--	6.2	--	--	.81	--	--		128	0	17		281	7.5
Jan. 13, 1954		--	--	24	15	11	2.1	155	--	6.0	--	--	.91	--	--		122	0	16		283	7.8
Feb. 9		--	--	22	14	9.6	2.1	146	--	5.5	--	--	.67	--	--		112	0	15		261	8.3
Mar. 8		--	--	21	12	7.8	1.9	132	--	4.8	--	--	.62	--	--		102	0	14		241	7.8
Apr. 20		--	--	22	13	10	1.4	133	--	5.5	--	--	.53	--	--		108	0	16		246	7.9
May 12		9.1	0.00	22	13	9.0	2.0	136	9.5	6.0	0.1	1.5	.67	139	0.19		108	0	15		252	8.0
June 10		--	--	24	14	8.7	2.1	142	11	6.8	--	--	.60	--	--		117	1	14		260	7.9
July 12		--	--	23	15	11	1.9	150	--	7.2	--	--	.92	--	--		119	0	16		269	7.3
Aug. 13		--	--	25	16	12	2.2	160	--	6.0	--	--	.71	--	--		128	0	17		285	7.9
Sept. 21		14	.02	28	14	11	2.0	163	9.7	6.8	.1	1.0	.78	167	.23		128	0	16		290	8.1

CACHE CREEK NEAR LOWER LAKE, CALIF.

LOCATION.--At gaging station 500 feet downstream from Clear Lake Dam, 1.5 miles downstream from Copsey Creek, and 2.5 miles northeast of Lower Lake, Lake County.
DRAINAGE AREA.--528 square miles including water surface of Clear Lake (65 square miles).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	41	--	--	23	16	12	2.0	163	--	7.0	--	--	0.86	--	--		123	0	17		284	8.3
Nov. 9	.6	--	--	26	18	13	2.1	176	--	7.8	--	--	.92	--	--		139	0	17		316	7.6
Dec. 7	3.0	--	--	27	26	25	3.8	203	--	36	--	--	2.2	--	--		174	8	23		447	7.8
Jan. 13, 1954	2.6	--	--	29	31	25	3.9	241	--	34	--	--	2.1	--	--		200	2	21		490	8.1
Feb. 9	.5	--	--	21	14	13	2.4	131	--	12	--	--	.67	--	--		110	3	20		276	8.1
Mar. 8	.6	--	--	21	12	11	2.1	112	--	8.5	--	--	.39	--	--		102	10	19		259	7.5
Apr. 20	8.4	--	--	24	16	12	1.9	158	--	6.0	--	--	.86	--	--		126	0	17		287	8.1
May 12	408	8.7	0.00	24	16	10	2.2	152	9.9	6.5	0.1	0.6	.83	153	0.21		126	1	14		282	7.6
June 10	324	--	--	25	15	11	2.2	158	9.7	7.5	--	--	.93	--	--		124	0	16		278	8.1
July 12	474	--	--	24	16	12	2.1	150	--	7.8	--	--	1.1	--	--		126	3	17		281	7.4
Aug. 13	394	--	--	30	13	12	2.0	161	--	7.8	--	--	1.2	--	--		128	0	17		293	--
Sept. 21	190	1.0	.00	27	15	12	2.2	168	9.6	7.0	.1	.9	1.2	159	.22		130	0	16		296	7.7

SACRAMENTO RIVER BASIN--Continued

NORTH FORK CACHE CREEK NEAR LOWER LAKE, CALIF.

LOCATION.--At bridge on State Highway 20, 2.7 miles below gaging station, 4.3 miles northeast of Lower Lake, Lake County, and 3 miles above confluence with Cache Creek.
DRAINAGE AREA.--198 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Inflow between gaging station and sampling point during rainy season.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	2.6	--	--	41	36	35	1.7	236	12	--	68	--	--	2.8	--	--		250	37	23		616	8.5
Nov. 10	4.6	--	--	41	36	39	1.6	248	0	--	80	--	--	3.8	--	--		252	48	25		653	8.1
Dec. 7	128	--	--	27	21	31	1.2	142	19	--	42	--	--	3.0	--	--		154	6	30		421	8.5
Jan. 12, 1954	62	--	--	29	26	32	1.5	197	8	--	42	--	--	3.1	--	--		179	4	28		481	8.5
Feb. 9	180	--	--	22	17	15	.9	157	0	--	14	--	--	.95	--	--		125	0	21		309	8.4
Mar. 9	534	--	--	22	18	12	.8	161	0	--	12	--	--	.85	--	--		129	0	17		306	8.1
Apr. 20	178	--	--	23	20	14	.7	170	0	--	10	--	--	.69	--	--		140	0	18		315	8.2
May 12	77	13	0.00	29	23	17	1.5	188	6	13	18	0.1	0.2	1.4	215	0.29		167	3	18		388	8.5
June 9	40	--	--	34	31	23	1.6	202	14	13	34	--	--	2.3	--	--		212	47	19		456	8.6
July 12	5.5	--	--	35	28	30	1.8	236	0	--	43	--	--	3.1	--	--		202	9	24		506	7.6
Aug. 13	1.9	--	--	38	30	37	2.0	224	10	--	58	--	--	3.6	--	--		218	18	27		571	8.4
Sept. 21	2.3	21	.00	45	29	33	1.6	235	9	12	64	.1	.2	2.9	334	.45		232	25	23		587	8.5

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 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953	19	--	--	41	29	52	2.7	a260	--	68	--	--	1.6	--	--		222	8	33		636	8.5
Nov. 13	18	--	--	48	32	62	2.4	286	--	85	--	--	2.0	--	--		252	17	35		729	8.2
Dec. 11	108	--	--	38	32	64	2.8	b244	--	93	--	--	2.9	--	--		226	26	38		713	8.3
Jan. 14, 1954	67	--	--	41	34	81	3.4	268	--	115	--	--	3.6	--	--		242	23	42		836	8.3
Feb. 8	267	--	--	30	25	35	1.7	204	--	44	--	--	1.2	--	--		178	10	30		501	8.3
Mar. 12	1,910	--	--	20	18	14	2.0	151	--	12	--	--	.77	--	--		124	0	19		299	8.1
Apr. 12	1,590	--	--	27	20	18	1.7	178	--	14	--	--	.78	--	--		150	4	21		351	8.1
May 7	369	10	0.00	32	27	29	2.3	223	26	30	0.1	0.0	1.3	268	0.36		191	8	25		486	8.4
June 10	377	--	--	30	19	23	2.3	192	16	26	--	--	1.2	--	--		153	0	24		394	7.9
July 22	486	--	--	27	17	15	2.1	178	--	11	--	--	1.0	--	--		137	0	19		323	8.2
Aug. 16	361	--	--	28	18	18	2.1	185	--	15	--	--	.99	--	--		144	0	21		346	8.2
Sept. 23	138	6.4	.06	33	18	24	2.5	207	14	23	.1	.2	1.1	224	.30		158	0	24		400	7.9

a Includes equivalent of 10 parts per million of carbonate (CO_3).
b Includes equivalent of 6 parts per million of carbonate (CO_3).

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.--577 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	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 (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 14, 1953	1.1	--	--	40	63	42	2.0	421	14	--	32	--	--	1.0	--	--		359	0	20		774	8.3
Nov. 13	30	--	--	40	61	46	1.6	426	0	--	32	--	--	1.6	--	--		351	2	22		784	8.2
Dec. 11	96	--	--	19	33	12	.9	217	0	--	9.2	--	--	.40	--	--		183	5	12		383	8.2
Jan. 14, 1954	90	--	--	22	41	13	.9	262	0	--	10	--	--	.50	--	--		224	9	11		461	8.3
Feb. 8	213	--	--	19	33	11	1.0	200	6	--	8.0	--	--	.26	--	--		183	9	11		375	8.5
Mar. 12	733	--	--	15	27	8.2	.9	170	0	--	5.5	--	--	.17	--	--		148	9	11		304	8.2
Apr. 12	756	--	--	20	35	12	.9	218	0	--	8.5	--	--	.29	--	--		194	15	12		393	8.2
May 7	188	27	0.03	25	46	14	1.1	289	0	26	11	0.2	0.5	.28	293	0.40		252	15	11		495	8.3
June 10	38	--	--	22	52	22	1.5	296	15	28	18	--	--	.70	--	--		269	2	15		555	8.6
July 12	1.9	--	--	35	62	34	2.2	382	10	--	28	--	--	1.1	--	--		342	13	18		703	8.3
Aug. 16	3.4	--	--	113	16	40	2.7	391	35	--	28	--	--	1.2	--	--		348	0	20		768	8.5
Sept. 21	.4	25	.00	59	49	45	2.0	388	20	46	30	.0	.6	1.3	469	64		348	0	22		751	8.5

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 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Tidal gaging station maintained and operated by State of California Division of Water Resources. No discharge records available for this station due to tidal effect from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953		21	--	14	7.1	9.2	1.3	81	7.8	9.2	0.1	0.7	0.10	110	0.15		64	0	23		176	8.0
Nov. 9		18	--	13	6.2	8.9	1.4	78	8.4	5.5	.1	.5	.13	100	.14		58	0	24		159	7.4
Nov. 19		18	--	12	6.1	13	1.4	70	14	8.5	.1	.8	.13	108	.15		55	0	30		167	7.8
Dec. 4		20	--	12	5.7	9.2	1.3	72	8.3	6.2	.0	.9	.08	99	.13		53	0	27		152	7.8
Dec. 15		18	--	12	6.2	10	1.3	74	10	6.2	.1	.3	.14	101	.14		55	0	28		158	7.7
Jan. 5, 1954		20	--	13	6.9	9.6	1.1	79	8.4	8.2	.0	.5	.08	107	.15		61	0	25		157	7.7
Jan. 18		14	--	13	5.8	6.5	1.3	67	9.5	5.8	.1	1.1	.07	90	.12		56	1	20		145	7.7
Feb. 5		21	--	12	4.7	6.7	1.5	64	7.7	4.0	.1	.5	.05	90	.12		49	0	22		145	7.6
Feb. 18		15	--	9.7	4.8	4.8	1.3	54	5.5	3.5	.1	.2	.12	72	.10		44	0	19		112	7.3
Mar. 8		20	--	12	5.4	5.8	1.0	66	7.2	4.5	.1	.1	.02	89	.12		52	0	19		137	7.8
Mar. 22		14	--	10	4.6	5.4	1.0	57	5.8	4.2	.1	.1	.08	73	.10		44	0	21		116	7.7
Apr. 2		19	--	12	5.8	6.5	.8	66	7.4	5.0	.1	.5	.02	90	.12		54	0	21		165	7.3
Apr. 22		16	--	8.6	3.5	4.0	.8	47	4.8	2.5	.0	.2	.48	64	.09		36	0	19		91.3	7.8
May 11		15	0.07	8.6	4.0	5.0	.7	46	6.0	4.0	.1	.4	.06	66	.09		38	0	22		99.8	7.5
May 20		15	.02	9.7	4.2	7.6	.8	51	6.6	7.8	.0	.3	.07	77	.10		41	0	28		125	7.4
June 3		21	--	15	7.6	15	1.2	84	16	16	.1	.7	.08	134	.18		69	0	32		218	7.5
June 17		20	--	16	8.2	18	1.2	92	18	16	.1	.9	.06	144	.20		74	0	34		233	8.2
July 8		--	--	14	8.9	16	1.3	90	--	14	--	--	.24	--	--		72	0	32		214	7.4
July 20		--	--	16	8.4	17	1.3	96	--	15	--	--	.07	--	--		74	0	33		222	8.0
Aug. 20		--	--	18	10	22	1.4	118	--	18	--	--	.06	--	--		86	0	35		270	8.1
Sept. 8		19	.00	18	10	23	1.3	119	16	16	.3	.8	.00	163	.22		87	0	36		280	8.1

SACRAMENTO RIVER BASIN--Continued

LINDSAY SLOUGH NEAR RIO VISTA, CALIF.

LOCATION.--Near tidal gaging station 6 miles north of Rio Vista, Solano County, and 1.1 miles upstream from confluence with Cache Slough.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station due to tidal effect from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953		--	--	16	10	19	1.5	106	--	17	--	--	0.14	--	--		81	0	33		250	8.0
Nov. 19		--	--	14	8.5	14	1.4	88	--	12	--	--	.14	--	--		70	0	30		211	7.4
Dec. 17		--	--	13	8.1	11	1.4	82	--	9.8	--	--	.07	--	--		66	0	26		182	7.8
Jan. 21, 1954		--	--	14	12	15	2.3	97	--	14	--	--	.18	--	--		84	5	27		237	7.9
Feb. 11		--	--	16	10	15	1.8	96	--	13	--	--	.20	--	--		81	2	28		237	7.9
Mar. 8		--	--	18	13	21	1.9	110	--	17	--	--	.17	--	--		98	8	31		284	7.9
Apr. 21		--	--	18	13	21	2.1	113	--	16	--	--	.28	--	--		98	6	31		280	8.1
May 11		15	0.21	12	8.0	11	1.1	70	15	9.2	0.0	0.5	.13	106	0.14		63	6	27		179	8.0
June 14		19	--	15	10	19	1.4	98	16	19	.0	.8	.15	148	.20		79	0	34		248	8.0
June 16		--	--	15	11	23	1.4	101	24	18	--	--	--	--	--		83	0	37		262	8.2
July 19		--	--	17	11	19	1.5	105	--	16	--	--	.10	--	--		88	2	32		254	7.7
Aug. 16		--	--	20	12	22	1.8	a 114	--	18	--	--	.15	--	--		99	6	32		271	8.3
Sept. 22		20	.08	22	13	32	1.7	139	25	29	.0	.8	.02	212	.29		110	0	38		359	7.9

a Includes equivalent of 2 parts per million of carbonate (CO_3).

SACRAMENTO RIVER NEAR RIO VISTA, CALIF.

LOCATION.--On pier 1,500 feet above tidal gaging station 1 mile south of Rio Vista, Solano County, and approximately 3.1 miles below Steamboat Slough.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station due to tidal effect from Suisun Bay.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 16, 1953		--	--	15	8.7	16	1.6	92	--	12	--	--	0.10	--	--		73	0	32		211	7.8
Dec. 17		--	--	13	6.9	9.6	1.1	73	--	6.5	--	--	.00	--	--		61	1	25		159	7.7
Jan. 21, 1954		--	--	9.7	5.1	5.8	2.9	54	--	4.5	--	--	.13	--	--		45	1	21		119	7.6
Feb. 11		--	--	12	6.0	8.2	1.2	71	--	5.0	--	--	.12	--	--		55	0	24		150	7.7
Mar. 8		--	--	15	8.4	11	1.2	84	--	8.8	--	--	.10	--	--		72	3	25		197	7.8
Apr. 21		--	--	11	6.8	9.6	.9	67	--	6.8	--	--	.10	--	--		55	0	27		157	7.8
May 11		15	0.09	9.7	4.3	6.9	.8	52	8.1	6.0	0.0	0.3	.10	77	0.10		42	0	26		118	7.8
June 16		--	--	15	8.3	20	1.2	96	--	19	--	--	.19	--	--		72	0	37		235	8.2
July 20		--	--	19	7.0	17	1.3	95	--	18	--	--	.06	--	--		76	0	32		232	7.7
Aug. 16		--	--	19	9.1	21	1.3	106	--	9.0	--	--	.24	--	--		85	0	35		257	8.2
Sept. 22		20	.06	20	11	26	1.6	128	17	21	.3	1.0	.05	181	.25		94	0	37		298	8.0

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SACRAMENTO RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN SACRAMENTO RIVER BASIN IN CALIFORNIA

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
PIT RIVER NEAR CANBY (SEC. 10, T. 41 N., R. 9 E.)																						
Oct. 7, 1953	113	--	--	18	6.1	20	5.0	130	--	4.8	--	--	0.00	--	--		70	0	36		235	8.2
Dec. 15	133	--	--	19	7.9	34	4.5	138	--	8.5	--	--	.14	--	--		80	0	46		299	7.9
Apr. 15, 1954	307	--	--	14	5.9	14	2.3	89	--	3.0	--	--	.03	--	--		59	0	33		175	8.0
May 6	216	30	0.17	18	6.1	17	4.0	114	9.1	4.8	0.0	0.8	.09	146	0.20		70	0	33		214	8.0
June 8	146	--	--	20	7.5	23	5.0	a143	--	5.0	--	--	.25	--	--		81	0	36		255	8.4
July 14	62	--	--	26	5.2	25	4.7	154	--	4.8	--	--	.17	--	--		86	0	37		257	7.4
Sept. 15	41	29	.03	21	8.6	19	4.9	144	6.8	3.5	.1	.9	.08	165	.22		88	0	31		246	7.5
BURNEY CREEK NEAR BURNEY (SEC. 18, T. 35 N., R. 3 E.)																						
Oct. 7, 1953		--	--	10	5.3	6.0	1.3	68	--	0.2	--	--	0.01	--	--		47	0	21		108	7.9
Dec. 16		--	--	8.8	4.6	3.8	1.0	58	--	.5	--	--	.03	--	--		41	0	16		94.8	7.4
Apr. 15, 1954		--	--	4.6	1.7	1.9	.4	28	--	.0	--	--	.00	--	--		18	0	18		45.2	7.3
May 6		19	0.00	4.7	2.1	1.8	.5	30	0.7	.3	0.0	0.2	.01	44	0.06		20	0	16		48.9	7.7
June 8		--	--	7.2	3.4	3.4	1.1	47	--	2.0	--	--	.14	--	--		32	0	18		79.4	7.9
July 14		--	--	15	1.9	4.2	1.1	65	--	1.0	--	--	.02	--	--		45	0	16		99.9	7.6
Aug. 10		--	--	11	5.1	4.7	1.1	70	--	.5	--	--	.00	--	--		48	0	17		113	8.0
Sept. 15		30	.20	11	4.9	4.6	1.4	68	.3	.5	.1	.2	.01	86	.12		48	0	17		108	7.8
INDIAN CREEK NEAR CRESCENT MILLS (SEC. 25, T. 26 N., R. 9 E.)																						
Oct. 5, 1953	36	--	--	19	5.1	10	1.4	101	--	4.8	--	--	0.12	--	--		68	0	24		181	7.5
Dec. 15	131	--	--	18	5.1	7.6	1.2	89	--	3.0	--	--	.09	--	--		66	0	20		163	7.4
Apr. 14, 1954	1,490	--	--	9.0	2.1	3.4	.9	44	--	.0	--	--	.02	--	--		31	0	19		77.0	7.6
May 4	795	21	0.10	9.3	2.8	3.4	.9	49	2.9	1.0	0.0	0.3	.00	66	0.09		35	0	17		85.3	7.8
June 7	217	--	--	15	4.4	6.2	1.7	78	--	3.5	--	--	.16	--	--		56	0	19		163	8.0
July 14	13	--	--	27	7.4	13	2.2	136	--	5.0	--	--	.12	--	--		98	0	22		243	8.0
Aug. 9	12	--	--	31	9.1	14	3.1	160	--	5.0	--	--	.13	--	--		115	0	20		277	7.6
Sept. 15	14	27	.07	26	8.3	14	1.6	137	9.8	6.0	.1	.3	.11	161	.22		99	0	23		248	7.5

a Includes equivalent of 3 parts per million of carbonate (CO_3).

NAPA RIVER NEAR ST. HELENA, CALIF.

LOCATION.--At highway bridge 0.2 mile downstream from gaging station, 1.2 miles northeast of Zinfandel, and 2.6 miles east of St. Helena, Napa County.
DRAINAGE AREA.--81.3 square miles above gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	0.0	--	--	33	16	16	2.8	182	--	11	--	--	0.32	--	--		148	0	19		357	8.3
Dec. 7	53	--	--	19	8.7	23	4.7	105	--	20	--	--	.58	--	--		83	0	36		273	7.2
Jan. 13, 1954	21	--	--	18	7.5	26	4.3	104	--	27	--	--	1.0	--	--		76	0	41		289	7.4
Feb. 9	58	--	--	15	6.2	14	2.2	80	--	10	--	--	.24	--	--		63	0	32		201	7.8
Mar. 8	57	--	--	15	7.7	12	2.2	89	--	9.0	--	--	.26	--	--		69	0	27		205	7.7
Apr. 20	66	--	--	15	7.9	12	1.8	91	--	6.8	--	--	.10	--	--		70	0	27		197	7.8
May 12	37	34	0.00	20	8.7	14	2.4	102	13	11	0.3	3.0	.32	157	0.21		86	2	26		240	7.2
June 10	12	--	--	26	9.3	17	2.7	a 126	--	15	--	--	.38	--	--		103	0	26		282	8.4
July 12	6.2	--	--	32	15	17	2.2	b 170	--	12	--	--	.57	--	--		142	2	20		328	8.8
Aug. 13	3.0	--	--	36	17	17	2.2	185	--	9.0	--	--	.35	--	--		160	8	19		367	8.1
Sept. 21	8.0	29	.00	36	16	19	2.4	c 196	18	10	.1	1.0	.28	229	.31		156	0	21		368	8.3

a Includes equivalent of 2 parts per million of carbonate (CO_3).
b Includes equivalent of 26 parts per million of carbonate (CO_3).
c Includes equivalent of 5 parts per million of carbonate(CO_3).

RUSSIAN RIVER BASIN

EAST FORK RUSSIAN RIVER AT POTTER VALLEY POWERHOUSE, CALIF.

LOCATION.--At gaging station at powerhouse of Pacific Gas & Electric Co., 3 miles northwest of Potter Valley, Mendacino County, and 16 miles above mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345, and are listed as Potter Valley powerhouse tailrace near Potter Valley, Calif. Sampling station formerly designated as East Fork Russian River at Potter Valley.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	322	--	--	20	6.2	5.4	0.5	94	--	3.5	--	--	0.32	--	--		75	0	13		169	8.2
Dec. 7	314	--	--	18	4.1	5.8	.9	76	--	3.0	--	--	.38	--	--		62	0	17		146	7.4
Jan. 4, 1954	306	--	--	20	6.1	6.1	.8	92	--	5.5	--	--	.46	--	--		75	0	15		176	7.7
Feb. 1	310	--	--	12	3.2	2.8	1.4	55	--	1.8	--	--	.10	--	--		43	0	12		103	7.5
Mar. 1	308	--	--	13	3.7	4.1	.7	57	--	.5	--	--	.08	--	--		48	1	15		108	7.6
Apr. 5	308	--	--	16	4.4	4.0	1.0	69	--	1.0	--	--	.20	--	--		58	1	13		131	7.6
May 3	320	11	0.02	16	4.0	4.4	.7	68	7.1	1.9	0.1	0.1	.16	79	0.11		56	1	14		141	7.8
June 3	269	--	--	16	3.5	4.0	.6	68	6.7	2.8	--	--	.15	--	--		54	0	14		127	7.3
July 12	171	--	--	18	4.7	4.6	.6	77	--	2.5	--	--	.06	--	--		64	1	13		140	7.5
Aug. 2	172	--	--	18	5.1	4.9	1.0	80	--	2.5	--	--	.19	--	--		66	0	14		150	7.1
Sept. 13	314	9.0	.00	20	5.4	5.6	.7	89	6.1	3.5	.1	.4	.32	95	.13		72	0	14		163	7.5

EAST FORK RUSSIAN RIVER NEAR CALPELLA, CALIF.

LOCATION.--Approximately 0.2 mile below gaging station, 1.6 miles downstream from Cold Creek, and 3 miles east of Calpella, Mendocino County.
DRAINAGE AREA.--94.0 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	280	--	--	21	7.8	6.7	0.7	1	--	68	--	--	0.27	--	--		84	84	15		266	4.7
Dec. 7	432	--	--	17	7.3	6.5	1.3	84	--	4.0	--	--	.32	--	--		72	4	16		164	7.7
Jan. 4, 1954	330	--	--	19	7.4	6.1	.8	97	--	5.2	--	--	.48	--	--		78	0	14		182	7.6
Feb. 1	491	--	--	15	6.4	4.1	1.2	79	--	2.8	--	--	.14	--	--		64	0	12		152	7.7
Mar. 1	392	--	--	17	6.4	5.8	.6	81	--	1.8	--	--	.12	--	--		69	2	15		152	7.8
Apr. 5	1,040	--	--	15	6.9	5.2	1.0	78	--	1.5	--	--	.11	--	--		66	2	14		151	7.4
May 3	370	17	0.07	18	5.9	4.4	.6	82	10	1.9	0.1	0.1	.19	98	0.13		69	2	12		157	8.1
June 3	270	--	--	19	5.1	4.9	.9	82	7.9	3.5	--	--	.12	--	--		68	1	13		145	7.3
July 12	151	--	--	17	6.2	5.6	1.0	88	--	3.8	--	--	.21	--	--		68	0	15		167	7.9
Aug. 2	149	--	--	19	5.8	5.8	1.0	91	--	2.0	--	--	.22	--	--		71	0	15		164	7.6
Sept. 13	253	8.6	.01	21	5.5	5.8	.9	94	6.3	3.5	.1	.3	.29	98	.13		75	0	14		172	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 1954.
Water temperatures: December 1952 to September 1954.
Sediment records: December 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 119 ppm Jan. 1-15; minimum, 68 ppm Jan. 16, 23.
Hardness: Maximum, 82 ppm Jan. 1-15; minimum, 34 ppm Jan. 16, 23.
Specific conductance: Maximum observed, 234 micromhos Oct. 29; minimum observed, 72.8 micromhos Jan. 16.
Water temperatures: Maximum observed, 68°F several days during June, July, and August; minimum observed, 40°F Dec. 25, Jan. 8, 13, 14.
Sediment concentrations: Maximum daily, 3,510 ppm Jan. 17; minimum daily, 3 ppm Oct. 26.
Sediment loads: Maximum daily, 57,700 tona Jan. 17; minimum daily, less than 0.50 ton Oct. 27, 28.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 150 ppm Jan. 23-31, Feb. 1-10, 1953; minimum, 68 ppm Jan. 16, 23, 1954.
Hardness: Maximum, 113 ppm Jan. 23-31, Feb. 1-10, 1953; minimum, 34 ppm Jan. 16, 23, 1954.
Specific conductance: Maximum observed, 279 micromhos Feb. 10, 1953; minimum observed, 72.8 micromhos Jan. 16, 1954.
Water temperatures: Maximum observed, 75°F Aug. 9, Sept. 3, 10, 1953; minimum observed, 40°F Dec. 25, 1953, Jan. 8, 13, 14, 1954.
Sediment concentrations: Maximum daily, 3,510 ppm Jan. 17, 1954; minimum daily, 1 ppm Jan. 29, 1953.
Sediment loads: Maximum daily, 57,700 tons Jan. 17, 1954; minimum daily, less than 0.50 ton Oct. 27, 28, 1953.
REMARKS.--Records of specific conductance of daily samples available in district office at Sacramento, Calif. Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1, 5, 8, 10, 12, 14, 16, 18, 19, 22, 26, 29, 1953.	286	8.3	0.00	21	6.0	5.4	0.8	95	7.5	2.5	0.1	2.3	0.30	105	0.14		77	0	13		178	7.4
Nov. 2, 5, 9, 12, 14, 16, 19-20, 23-24, 26-30.	355	8.3	.02	21	6.6	6.1	1.2	98	9.4	2.5	.1	.5	.38	115	.16		80	0	14		189	7.8
Dec. 1-31.	344	9.3	.04	20	6.7	7.4	1.2	96	9.2	4.8	.1	.8	.47	113	.15		77	0	17		197	7.8
Jan. 1-15, 1954	342	9.8	.04	20	7.7	7.4	.7	99	9.4	5.5	.1	.0	.42	119	.16		82	0	16		191	7.9
Jan. 16, 23	3,185	7.6	.49	7.8	3.5	2.8	2.4	43	3.7	1.0	.1	1.2	.14	68	.09		34	0	14		80.3	7.2
Jan. 17-22, 24-31	983	12	.29	13	7.0	5.4	1.3	74	7.5	3.0	.1	1.0	.20	93	.13		61	1	16		152	7.5
Feb. 1-6, 21-28	392	9.0	.02	18	7.8	5.4	.9	87	9.6	3.8	.1	.3	.13	103	.14		77	6	13		168	8.0
Feb. 7-20.	716	8.0	.06	15	7.7	4.5	.9	81	9.0	2.8	.2	1.0	.16	100	.14		69	3	12		156	7.8
Mar. 1-16	446	12	.04	18	7.6	5.0	.7	85	9.6	3.5	.2	.8	.14	104	.14		76	6	12		171	7.9
Mar. 17, Apr. 6	628	11	.05	17	8.1	5.0	.8	86	9.6	2.8	.2	.4	.13	105	.14		76	5	12		167	7.9
Apr. 7-30.	416	9.5	.02	19	7.5	5.4	1.0	90	9.5	3.2	.2	.2	.17	106	.14		78	4	13		157	8.1

May 1-22, 1954....	316	3.2	.02	18	6.3	4.5	1.0	82	8.2	3.0	.1	.5	.16	103	.14		71	4	13		157	8.2
May 23-31	287	--	--	18	5.9	5.8	.8	79	11	2.5	--	.0	--	95	.13		69	4	15		152	7.9
June 1-20.....	215	11	.01	18	6.4	4.5	.9	85	7.9	2.5	.1	.0	.19	97	.13		71	2	12		159	8.1
June 21-30.....	115	--	--	18	7.8	6.9	1.3	95	7.9	2.8	--	.2	--	104	.14		77	0	16		179	8.0
July 1-7	164	11	.02	18	6.1	4.5	1.2	87	7.1	2.5	.1	.0	.23	98	.13		70	0	12		160	8.2
July 9-30	174	--	--	20	6.1	6.0	1.1	89	11	3.8	--	.8	.24	105	.14		75	2	15		189	7.3
Aug. 3-31.....	200	15	.01	20	6.6	6.0	1.0	95	7.0	3.5	.2	.8	.38	104	.14		77	0	14		176	7.3
Sept. 3-28	267	11	.00	20	6.3	6.4	.7	98	7.6	3.2	.1	.8	.42	104	.14		76	0	15		176	7.2

RUSSIAN RIVER BASIN--Continued

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at approximately 10 a. m./

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

RUSSIAN RIVER BASIN--Continued

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Suspended sediment, water year October 1953 to September 1954

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	304	8		246	--		317	14	12
2	294	--		252	6	5	317	16	.14
3	297	--		302	--		462	137	s441
4	300	--	5	300	--		535	227	s453
5	297	5		313	8		348	29	27
6	297	--		317	--	7	434	110	s201
7	304	--		313	--		466	90	s128
8	310	6	5	310	--		362	22	22
9	317	--		310	6		341	17	16
10	341	14	13	313	--	5	334	15	14
11	334	12	11	313	--		327	18	16
12	330	10		334	22	20	324	14	12
13	330	--		404	159	s341	320	12	10
14	327	10		572	382	s853	317	13	11
15	327	--	9	324	55	48	317	12	10
16	327	9		310	46	38	313	11	9
17	327	--		310	--	e33	313	13	11
18	330	12	11	304	--	e25	317	15	13
19	327	22	19	317	25	21	327	13	11
20	320	--	e16	324	54		373	27	27
21	320	--	e12	310	--	47	334	15	14
22	320	9		344	--		327	12	11
23	324	--	8	585	183	s346	320	10	9
24	320	--		426	71	82	320	--	e8
25	205	--	e4	344	--	e30	317	8	7
26	86	3	1	327	26	23	317	9	8
27	18	--	(e t)	317	20	17	317	10	9
28	11	--	(e t)	310	16	13	313	10	8
29	128	20	7	313	19	16	313	9	8
30	240	10	6	317	21	18	304	9	7
31	240	--	e5	--	--	--	310	8	7
Total	8,552	--	228	10,081	--	2,128	10,656	--	1,554

	January			February			March		
1	313	8	7	498	61	82	358	43	42
2	313	8	7	431	60	70	318	30	26
3	341	25	23	434	64	75	312	28	24
4	324	16	14	418	66	74	300	28	23
5	320	8	7	406	60	66	300	26	21
6	320	8	7	393	39	41	297	24	19
7	369	20	20	386	43	45	294	20	16
8	355	20	19	380	42	43	427	186	s377
9	337	10	9	377	42	43	1,390	386	s1,190
10	327	11	10	371	35	35	689	116	s232
11	341	--	e23	368	39	39	501	48	65
12	362	40	39	1,330	1,380	s8,170	428	36	42
13	334	9	8	1,440	1,030	s5,630	393	29	31
14	327	6	5	1,360	760	s3,680	371	26	26
15	447	69	s171	689	144	268	361	28	27
16	4,540	2,340	s33,700	523	91	129	396	35	37
17	4,300	3,510	s57,700	1,050	640	s2,440	406	37	41
18	970	580	1,520	752	205	s470	352	25	24
19	689	265	493	535	65	94	707	201	s413
20	571	155	239	460	55	68	840	279	s717
21	512	115	159	409	60	66	865	245	s699
22	1,070	890	s3,080	371	57	57	643	56	97
23	1,830	1,590	s9,490	349	71	67	559	34	51
24	779	350	736	327	75	66	494	28	37
25	615	200	332	309	60	50	480	23	30
26	647	260	s479	386	69	72	441	23	27
27	675	160	292	380	45	46	437	18	21
28	921	391	s1,120	374	33	33	428	12	14
29	862	352	s1,010	--	--	--	421	16	18
30	643	120	208	--	--	--	412	22	24
31	512	79	109	--	--	--	402	22	24
Total	25,266	--	111,036	15,506	--	22,019	15,022	--	4,435

e Estimated.
s Computed by subdividing day.
t Less than 0.50 ton.

RUSSIAN RIVER BASIN--Continued

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Suspended sediment, water year October 1953 to September 1954--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	396	14	15	352	15	14	294	14	11
2	386	21	22	349	16	15	243	12	8
3	977	433	s1,480	349	13	12	228	15	9
4	1,540	740	s4,010	343	17	16	240	11	7
5	1,200	517	s1,840	337	14	13	234	7	4
6	792	175	374	337	17	15	258	9	6
7	623	77	130	330	22	20	264	10	7
8	595	72	116	327	20	18	270	14	10
9	527	50	71	330	23	20	291	14	11
10	487	38	50	321	21	18	279	9	7
11	464	38	48	321	25	22	270	7	5
12	441	32	38	312	21	18	273	8	6
13	431	41	48	312	19	16	273	10	7
14	421	38	43	297	19	15	169	9	4
15	409	55	61	294	19	15	134	8	3
16	396	44	47	309	22	18	136	8	3
17	390	41	43	309	19	16	134	7	3
18	380	34	35	282	14	11	110	7	2
19	374	22	22	267	24	17	101	6	2
20	377	22	22	273	21	15	103	5	1
21	374	22	22	294	22	17	97	6	2
22	364	20	20	309	25	21	86	4	1
23	361	25	24	315	11	9	88	6	1
24	361	20	19	294	14	11	94	6	2
25	358	17	16	294	15	12	101	6	2
26	352	19	18	294	13	10	108	4	1
27	386	31	32	285	11	8	129	9	4
28	386	32	33	270	11	8	138	10	4
29	361	21	20	273	13	10	153	14	6
30	355	21	20	276	11	8	153	13	5
31	--	--	--	285	12	9	--	--	--
Total	15,264	--	8,739	9,540	--	447	5,451	--	144

	July			August			September		
1	153	12	5	199	--	e5	231	--	
2	153	12	5	174	--		228	--	
3	180	15	7	171	8	4	231	10	6
4	194	20	10	188	--		234	--	
5	169	14	6	182	--		234	--	
6	151	16	7	174	10	5	208	--	5
7	151	12	5	205	--		223	9	
8	151	--		199	--		273	--	
9	148	11	4	188	--		273	--	
10	146	--		177	10	5	267	15	11
11	151	--		174	--		288	--	
12	158	--	5	180	--		294	--	
13	146	13		188	10	5	276	--	17
14	164	--		199	--		264	23	
15	180	--		214	--		270	--	
16	177	15	8	208	--		279	--	
17	185	--		202	--		297	--	
18	205	--		220	11	6	279	--	
19	211	--		208	--		279	14	
20	205	16	9	185	7	3	276	--	10
21	182	--		214	--		267	--	
22	171	--		202	--		264	--	
23	166	15		188	--		285	--	
24	164	--	7	174	10	5	279	20	
25	180	--		169	--		273	--	15
26	174	--		196	--		276	--	
27	177	12	6	202	13	7	282	--	
28	177	--		267	38	27	278	13	
29	171	--		243	26	a17	280	--	10
30	177	11	5	237	23	a15	282	--	
31	191	--		234	21	13	--	--	--
Total	5,308	--	197	6,161	--	209	7,970	--	321

Total discharge for year (cfs-days) 134,777
Total load for year (tons) 151,457

e Estimated.
s Computed by subdividing day.
a Computed from estimated concentration graph.

EAST FORK RUSSIAN RIVER NEAR UKIAH, CALIF.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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	0.500	1.000	
Nov. 15, 1953	1:45 p.m.	324	56	50	--		--		--		98	100	--	--			S
Nov. 21	4:10 p.m.	310	50	21	--		--		--		92	100	--	--			S
Dec. 5	1:00 p.m.	341	50	27	--		--		--		98	100	--	--			S
Jan. 17, 1954	3:50 p.m.	2,030	46	2,140	3,830		21		35		55	74	95	100			VPWCM
Jan. 22	4:00 p.m.	1,040	46	602	3,030		27		42		63	78	98	100			VPWCM
Jan. 24	3:15 p.m.	742	45	347	1,790		31		45		64	84	99	100			VPWCM
Jan. 27	3:50 p.m.	663	46	133	772		49		64		76	88	99	100			SPWCM
Jan. 29	3:10 p.m.	1,290	51	900	3,980		23		37		58	74	93	100			VPWCM
Feb. 13	12:20 p.m.	1,080	48	504	2,440		29		46		63	78	96	100			VPWCM
Apr. 5	5:00 p.m.	1,030	55	336	1,950		32		52		74	86	99	100			VPWCM

RUSSIAN RIVER BASIN--Continued

RUSSIAN RIVER NEAR UKIAH, CALIF.

LOCATION.--On right bank below Talmadge Road bridge, 1 mile east of Ukiah, Mendacino County, and 0.1 mile below Middle Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station. Sampling station formerly designated as Russian River at Ukiah.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953		--	--	20	6.9	6.9	0.9	98	--	2.0	--	--	0.27	--	--		78	0	16		178	8.2
Dec. 7		--	--	17	7.1	7.4	1.6	84	--	4.2	--	--	.26	--	--		72	3	18		172	7.6
Jan. 4, 1954		--	--	20	7.1	7.4	.8	96	--	6.0	--	--	.61	--	--		79	0	17		177	7.8
Feb. 1		--	--	15	6.5	5.8	1.0	79	--	3.0	--	--	.14	--	--		64	0	16		153	7.6
Mar. 1		--	--	17	6.8	6.9	.7	88	--	2.8	--	--	.20	--	--		70	0	17		169	7.6
Apr. 5		--	--	24	5.4	6.5	1.1	102	--	2.8	--	--	.04	--	--		82	0	14		187	7.7
May 3		11	0.04	20	6.6	6.0	.6	89	9.7	2.5	0.1	0.1	.19	100	0.14		77	4	14		170	7.9
June 3		--	--	20	6.9	4.7	.8	90	8.1	3.5	--	--	.25	--	--		78	4	11		168	7.2
July 12		--	--	19	6.7	6.4	1.4	98	--	3.8	--	--	.17	--	--		75	0	15		175	8.1
Aug. 2		--	--	19	6.2	5.7	1.0	93	--	2.5	--	--	.24	--	--		73	0	14		168	7.5
Sept. 13		9.7	.00	21	5.7	6.0	.8	95	7.1	3.8	.1	.2	.30	101	.14		76	0	14		174	7.5

RUSSIAN RIVER NEAR HOPLAND, CALIF.

LOCATION.--At gaging station in Rancho de Sanel Grant, 0.2 mile downstream from McNab Creek, 4 miles north of Hopland, Mendacino County, and 17 miles upstream from Sulfur Creek.
DRAINAGE AREA.--362 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	269	--	--	20	7.6	8.2	0.8	103	--	3.5	--	--	0.33	--	--		81	0	18		186	8.0
Dec. 7	1,070	--	--	15	6.9	7.4	1.6	80	--	4.8	--	--	.22	--	--		66	0	19		160	7.8
Jan. 4, 1954	420	--	--	20	7.6	7.4	1.0	100	--	5.5	--	--	.28	--	--		81	0	16		188	7.6
Feb. 1	1,220	--	--	16	7.1	5.8	1.0	85	--	4.0	--	--	.13	--	--		69	0	15		166	7.7
Mar. 1	684	--	--	18	8.7	7.8	.8	96	--	3.5	--	--	.16	--	--		81	2	17		186	7.8
Apr. 5	4,330	--	--	12	5.7	5.6	1.2	64	--	2.0	--	--	.13	--	--		53	1	18		126	7.4
May 3	537	14	0.02	20	8.0	6.4	.8	98	9.4	3.3	0.1	0.4	.23	111	0.15		83	2	14		184	8.1
June 3	240	--	--	25	13	8.7	1.3	138	11	6.0	--	--	.58	--	--		116	3	14		252	7.5
July 12	146	--	--	20	8.0	7.4	1.2	106	--	4.5	--	--	.32	--	--		83	0	16		194	7.5
Aug. 2	174	--	--	21	7.4	6.8	1.1	99	--	3.5	--	--	.26	--	--		83	2	15		188	8.0
Sept. 13	289	10	.01	21	6.7	6.4	.9	99	6.7	4.0	.1	.7	.33	106	.14		80	0	15		185	7.4

RUSSIAN RIVER BASIN--Continued

RUSSIAN RIVER NEAR HEALDSBURG, CALIF.

LOCATION.--At gaging station in Sotoyome Grant, 2 miles east of Healdsburg, Sonoma County, and 3.5 miles upstream from Dry Creek.
DRAINAGE AREA.--791 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	247	--	--	24	11	10	1.0	132	--	5.0	--	--	0.73	--	--		105	0	17		237	8.3
Dec. 7	1,670	--	--	22	12	8.2	1.1	120	--	5.5	--	--	.43	--	--		104	16	14		235	7.8
Jan. 4, 1954	608	--	--	24	12	8.4	1.0	133	--	7.8	--	--	.63	--	--		109	0	14		248	7.9
Feb. 1	2,590	--	--	19	10	5.8	1.0	106	--	3.2	--	--	.19	--	--		88	2	12		200	8.0
Mar. 1	1,390	--	--	22	13	8.2	.8	126	--	3.5	--	--	.21	--	--		108	5	14		237	7.7
Apr. 5	14,500	--	--	12	6.0	5.2	2.7	66	--	1.5	--	--	.17	--	--		55	0	16		128	7.3
May 3	926	14	0.01	25	12	7.8	.8	135	11	3.6	0.1	0.4	.38	141	0.19		112	1	13		249	8.2
June 10	406	--	--	27	12	6.9	1.2	138	10	6.2	--	--	.78	--	--		117	4	11		254	7.5
July 12	142	--	--	29	15	12	1.4	a 168	--	8.5	--	--	1.1	--	--		134	0	16		291	8.5
Aug. 2	152	--	--	29	14	14	1.5	166	--	9.0	--	--	2.2	--	--		130	0	19		313	7.8
Sept. 13	310	13	.01	25	12	14	1.3	145	9.3	9.8	.1	.3	2.9	159	.22		112	0	21		273	7.9

a Includes equivalent of 6 parts per million of carbonate (CO_3).

RUSSIAN RIVER AT GUERNEVILLE, CALIF.

LOCATION.--On right bank near gaging station on downstream side of bridge on State Highway 12 in Guerneville, Sonoma County, and 6.5 miles upstream from Austin Creek.
DRAINAGE AREA.--1,346 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 5, 1953	222	--	--	24	7.8	11	1.2	141	--	1.0	--	--	0.40	--	--		92	0	20		245	8.4
Oct. 16	309	--	--	--	--	--	--	--	--	6.5	--	--	--	--	--		110	--	--		248	--
Dec. 7	1,280	--	--	21	11	9.6	1.4	115	--	6.5	--	--	.42	--	--		98	3	17		227	7.9
Jan. 4, 1954	650	--	--	25	11	9.2	1.2	131	--	8.0	--	--	.88	--	--		108	0	15		243	8.0
Feb. 1	4,050	--	--	19	11	6.5	1.2	109	--	4.2	--	--	.16	--	--		93	3	13		210	7.9
Mar. 1	2,080	--	--	22	14	9.4	.9	128	--	5.0	--	--	.19	--	--		112	8	15		245	7.7
Apr. 5	20,800	--	--	12	5.6	4.3	2.6	61	--	1.8	--	--	.18	--	--		53	3	14		122	7.2
May 3	121	15	0.02	25	13	8.6	1.0	138	12	5.7	0.2	0.7	.29	149	0.20		116	3	14		263	7.9
June 10	177	--	--	27	13	8.8	1.1	144	11	6.8	--	--	.63	--	--		121	3	14		264	7.8
July 12	209	--	--	30	15	11	1.2	171	--	7.0	--	--	.83	--	--		137	0	15		306	7.6
Aug. 12	375	--	--	35	13	12	1.4	174	--	8.5	--	--	1.1	--	--		141	0	15		314	7.7
Sept. 13	122	15	.00	28	13	13	1.4	154	10	9.5	.1	.8	2.2	169	.23		123	0	18		289	8.0

EEL RIVER BASIN

EEL RIVER AT McCANN, CALIF.

LOCATION.--On right bank below Summer bridge, about 0.5 mile northwest of McCann, Humboldt County, and 6.5 miles above confluence of the South Fork.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. No discharge records available for this station. Sampling station formerly designated as Eel River near McCann.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953		--	--	35	8.3	9.2	1.1	134	--	7.0	--	--	0.13	--	--		122	12	14		269	8.4
Dec. 8		--	--	15	4.3	4.0	1.4	64	--	1.5	--	--	.07	--	--		55	3	13		123	7.8
Jan. 5, 1954		--	--	19	5.2	5.0	.8	79	--	4.2	--	--	.22	--	--		69	4	13		161	7.7
Feb. 2		--	--	30	9.1	6.5	1.2	125	--	6.0	--	--	.13	--	--		112	10	11		248	7.7
Mar. 1		--	--	17	5.9	4.7	.7	78	--	1.5	--	--	.07	--	--		67	3	13		149	7.8
Apr. 6		--	--	14	3.1	4.3	2.0	57	--	1.2	--	--	.14	--	--		48	1	16		107	7.7
May 4		14	0.02	22	5.5	4.0	.5	87	11	1.9	0.0	0.1	.12	102	0.14		78	6	10		170	8.1
June 3		--	--	26	7.7	4.5	.9	106	13	4.5	--	--	.08	--	--		96	10	9		206	7.7
July 13		--	--	34	6.5	6.8	1.1	a 130	--	4.5	--	--	.12	--	--		112	3	12		246	8.4
Aug. 3		--	--	37	8.5	9.4	2.0	144	--	6.0	--	--	.15	--	--		127	9	14		279	7.8
Sept. 14		10	.00	36	8.8	8.6	1.3	138	21	8.0	.1	.3	.21	162	.22		126	13	13		281	7.9

a Includes equivalent of 3 parts per million of carbonate (CO_3).

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EEL RIVER BASIN--Continued

SOUTH FORK EEL RIVER NEAR MIRANDA, CALIF.

LOCATION.--At gaging station at Sylvandale campgrounds on U. S. Highway 101, 0.5 mile upstream from Rocky Glen Creek, 6 miles south of Miranda, Humboldt County, and 20 miles upstream from mouth.
DRAINAGE AREA.--547 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	86	--	--	24	9.7	10	1.1	126	--	6.2	--	--	0.34	--	--		100	0	18		228	8.2
Dec. 8	4,080	--	--	10	3.6	5.4	.9	51	--	3.5	--	--	.06	--	--		40	0	22		102	7.7
Jan. 5, 1954	882	--	--	13	4.9	5.4	.8	68	--	5.0	--	--	.38	--	--		53	0	18		131	7.5
Feb. 2	5,230	--	--	11	4.3	4.1	.9	57	--	2.8	--	--	.02	--	--		45	0	16		109	7.6
Mar. 1	1,370	--	--	14	5.1	6.7	.6	70	--	2.5	--	--	.09	--	--		56	0	20		133	7.6
Apr. 6	12,800	--	--	9.3	2.9	5.2	1.2	46	--	1.8	--	--	.05	--	--		35	0	24		88.1	7.4
May 4	610	15	0.10	16	5.5	5.9	.5	79	7.4	3.5	0.1	0.1	.00	93	0.13		62	0	17		151	8.1
June 3	244	--	--	18	7.0	6.1	.9	73	7.2	5.2	--	--	.00	--	--		74	14	15		180	7.5
July 13	138	--	--	22	8.4	8.3	.9	113	--	6.2	--	--	.12	--	--		89	0	17		205	7.5
Aug. 3	70	--	--	24	8.6	8.8	1.1	122	--	6.0	--	--	.11	--	--		95	0	17		221	8.1
Sept. 14	74	8.6	.00	24	8.5	9.0	1.1	119	8.2	7.5	.1	.5	.14	126	.17		95	0	17		224	7.8

EEL RIVER BASIN--Continued

EEL RIVER AT SCOTIA, CALIF.

LOCATION.--On left bank near gaging station on bridge on U. S. Highway 101, 0.5 mile north of Scotia, Humboldt County, and 6 miles upstream from Van Duzen River.
DRAINAGE AREA.--3,113 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	182	--	--	33	9.9	8.7	1.1	166	--	8.0	--	--	0.14	--	--		123	0	13		269	8.2
Dec. 8	15,600	--	--	14	4.3	5.0	1.4	59	--	3.5	--	--	.07	--	--		53	4	17		121	7.6
Jan. 5, 1954	4,180	--	--	22	5.8	8.2	.9	89	--	10	--	--	.11	--	--		79	6	18		194	7.7
Feb. 2	23,400	--	--	17	5.1	3.8	1.4	75	--	2.2	--	--	.07	--	--		63	2	11		148	7.5
Mar. 1	7,660	--	--	25	8.4	6.7	1.6	111	--	3.0	--	--	.06	--	--		97	6	13		217	7.4
Apr. 6	a45,000	--	--	14	3.0	3.6	1.5	57	--	1.0	--	--	.08	--	--		47	1	14		107	7.7
May 4	a2,940	9.0	0.01	21	6.5	4.8	.7	91	9.9	3.0	0.1	0.1	.14	100	0.14		79	5	12		176	8.1
June 3	960	--	--	35	12	8.4	1.3	166	14	6.5	--	--	.03	--	--		137	0	12		268	7.8
July 13	440	--	--	33	8.6	8.7	.9	143	--	5.8	--	--	.21	--	--		118	1	14		260	7.7
Aug. 3	214	--	--	33	9.2	9.5	1.7	144	--	6.5	--	--	.11	--	--		120	2	14		273	8.0
Sept. 14	208	14	.02	42	9.5	12	1.3	172	17	8.5	.1	.7	.13	190	.26		144	3	15		323	8.2

a Daily mean discharge.

KLAMATH RIVER BELOW FALL CREEK, NEAR COPCO, CALIF.

LOCATION.--At gaging station 500 feet downstream from Fall Creek, half a mile downstream from Copco No. 2 plant of The California Oregon Power Co., and 1 mile south of Copco, Siskiyou County.
DRAINAGE AREA.--4,370 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345. Sampling station formerly designated as Klamath River near Copco.

Chemical analyses, in parts per million, water year October 1953 to September 1954

Date of collection	Daily 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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	2,290	--	--	8.4	5.9	14	2.4	68	--	2.5	--	--	0.08	--	--		45	0	39		146	7.0
Dec. 2	2,720	--	--	11	5.0	14	2.4	63	--	2.8	--	--	.05	--	--		48	0	37		162	7.1
Jan. 4, 1954	2,600	--	--	10	5.5	12	2.1	73	--	3.0	--	--	.06	--	--		48	0	34		158	7.5
Feb. 1	1,960	--	--	12	5.4	11	2.0	65	--	1.5	--	--	.06	--	--		52	0	30		168	7.5
Mar. 4	4,580	--	--	12	5.7	15	2.2	68	--	2.2	--	--	.06	--	--		53	0	37		175	7.6
Apr. 5	3,540	--	--	10	5.6	13	1.8	65	--	3.8	--	--	.04	--	--		48	0	36		157	7.3
May 3	4,100	20	0.07	9.3	3.6	9.0	1.8	54	9.4	2.5	0.0	2.0	.07	84	0.11		38	0	33		121	7.2
June 7	2,440	--	--	8.3	4.2	11	1.9	61	--	2.5	--	--	.16	--	--		38	0	37		121	8.0
July 6	2,030	--	--	12	6.6	19	2.8	78	--	5.5	--	--	.03	--	--		57	0	40		214	6.9
Aug. 6	1,970	--	--	10	4.7	12	2.8	66	--	1.5	--	--	.05	--	--		44	0	35		149	7.0
Sept. 3	2,420	37	.10	12	5.8	17	3.0	84	15	4.0	.3	4.1	.09	139	.19		54	0	39		185	7.8

KLAMATH RIVER BASIN--Continued

KLAMATH RIVER AT SOMESBAR, CALIF.

LOCATION.--100 feet below gaging station, 400 feet downstream from Salmon River and 1 mile west of Somesbar Post Office, Siskiyou County.
DRAINAGE AREA.--8,480 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	2,210	--	--	16	9.3	14	2.0	111	--	5.0	--	--	0.06	--	--		78	0	27		215	8.1
Jan. 6, 1954	8,260	--	--	13	6.1	7.6	1.2	77	--	3.5	--	--	.06	--	--		58	0	22		150	7.6
Feb. 3	22,400	--	--	12	6.4	3.4	.8	70	--	1.0	--	--	.05	--	--		56	0	11		128	7.5
Mar. 7	14,400	--	--	13	11	7.4	.8	73	--	1.5	--	--	.04	--	--		78	18	17		145	7.8
Apr. 7	20,500	--	--	11	5.3	4.5	.7	62	--	1.0	--	--	.04	--	--		49	0	16		118	7.7
May 5	12,100	16	0.04	11	4.2	4.1	.8	58	5.0	1.6	0.0	0.6	.10	72	0.10		45	0	16		106	7.8
May 28	9,080	--	--	14	3.2	5.7	1.2	68	4.8	2.2	--	--	.00	--	--		48	0	20		122	7.4
July 14	1,980	--	--	15	7.0	8.8	1.4	84	--	4.2	--	--	.00	--	--		66	0	22		174	7.2
Aug. 4	2,390	--	--	15	6.8	10	1.9	90	--	4.0	--	--	.08	--	--		65	0	24		179	7.3
Sept. 15	4,280	33	.04	15	7.9	16	2.8	98	14	5.2	.3	2.1	.11	144	.20		70	0	32		210	7.4

TRINITY RIVER AT LEWISTON, CALIF.

LOCATION.--At gaging station on downstream side of left pier of highway bridge at Lewiston, Trinity County, and 0.8 mile downstream from Deadwood Creek.
DRAINAGE AREA.--727 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: December 1953 to September 1954.
Water temperatures: September 1951 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 74°F July 27, 29, 30, Aug. 1, 2; minimum, 37°F Dec. 25-28, Jan. 22-25, 27-29.
EXTREMES, 1951-54.--Water temperatures: Maximum, 74°F Aug. 12-14, 1953, July 27, 29, 30, Aug. 1-2, 1954; minimum, 33°F Jan. 10-26, 1952.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, December 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Dec. 10, 1953	880	--	--	6.6	8.4	3.2	0.4	62	--	2.0	--	--	0.03	--	--		51	0	12		109	7.8
Jan. 21, 1954	1,180	--	--	7.1	7.4	2.8	.4	60	--	2.5	--	--	.00	--	--		48	0	11		105	7.7
Feb. 19	3,890	--	--	5.7	6.5	1.8	.7	53	--	.8	--	--	.01	--	--		41	0	9		91.7	7.6
Mar. 23	2,380	--	--	5.7	6.4	2.8	.2	55	--	1.0	--	--	.05	--	--		40	0	13		94.0	7.6
Apr. 22	7,550	--	--	5.6	4.6	1.1	.3	40	--	.8	--	--	.20	--	--		33	0	7		65.6	7.8
May 20	2,640	12	0.00	4.0	5.6	1.2	.2	42	2.1	.0	0.1	0.2	.00	46	0.06		33	0	7		70.5	7.4
June 23	1,800	--	--	4.0	5.6	1.2	.4	42	1.1	.0	--	--	--	--	--		33	0	7		71.3	7.8
July 13	670	--	--	7.0	6.7	2.7	.5	56	--	3.5	--	--	.00	--	--		45	0	11		93.4	7.9
Aug. 12	219	--	--	8.1	9.7	5.6	1.3	72	--	4.8	--	--	.05	--	--		60	1	16		128	7.5
Sept. 13	268	16	.04	9.3	9.2	4.2	.8	74	3.0	4.5	.0	.6	.10	84	.11		61	0	13		137	7.6

KLAMATH RIVER BASIN--Continued

TRINITY RIVER AT LEWISTON, CALIF.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
(Temperature recorder at gaging station)

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

TRINITY RIVER NEAR HOOPA, CALIF.

LOCATION.--At gaging station in Hoopa Indian Reservation, Humboldt County, 0.5 mile downstream from Campbell Creek and 2 miles southeast of Hoopa.
DRAINAGE AREA.--2,840 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 6, 1953	756	--	--	23	8.9	5.0	0.5	111	--	7.0	--	--	0.04	--	--		94	3	10		203	8.2
Jan. 6, 1954	3,330	--	--	16	7.6	2.2	.5	82	--	4.2	--	--	.00	--	--		71	4	6		151	7.8
Feb. 3	19,900	--	--	15	5.5	1.8	.5	73	--	1.0	--	--	.07	--	--		60	0	6		128	7.8
Mar. 7	9,880	--	--	14	6.9	2.8	.3	75	--	1.2	--	--	.02	--	--		63	2	9		133	7.7
Apr. 7	20,100	--	--	13	5.8	2.4	.5	66	--	.5	--	--	.06	--	--		56	2	8		116	7.8
May 5	9,370	11	0.04	11	5.7	1.4	.3	60	4.4	1.1	0.0	0.1	.10	65	0.09		51	2	6		107	7.9
May 28	4,830	--	--	14	5.1	2.5	.4	66	4.5	2.8	--	--	.00	--	--		56	2	9		118	7.2
July 13	1,820	--	--	20	4.9	3.8	.8	82	--	4.2	--	--	.04	--	--		70	3	10		151	8.2
Aug. 4	885	--	--	22	7.8	4.7	.9	99	--	5.0	--	--	.03	--	--		87	6	10		189	7.4
Sept. 14	747	14	.02	22	8.8	5.1	.8	103	7.7	6.4	.1	1.2	.04	117	.16		91	7	11		196	7.6

KLAMATH RIVER BASIN--Continued

KLAMATH RIVER NEAR KLAMATH, CALIF.

LOCATION.--At gaging station 2.8 miles upstream from Turwar Creek and 5.1 miles upstream from town of Klamath, Del Norte County.
DRAINAGE AREA.--12,100 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 7, 1953	4,170	--	--	16	6.9	9.4	1.4	93	--	5.0	--	--	0.09	--	--		68	0	23		178	8.1
Dec. 8	31,400	--	--	11	5.0	4.1	.7	58	--	2.2	--	--	.05	--	--		48	0	15		112	7.5
Jan. 7, 1954	18,400	--	--	13	4.8	5.8	.8	69	--	3.2	--	--	.39	--	--		52	0	19		125	7.6
Feb. 4	50,100	--	--	13	5.6	2.8	.6	68	--	1.2	--	--	.02	--	--		56	0	10		124	7.9
Mar. 10	a 111,000	--	--	9.7	4.2	2.6	.5	51	--	.2	--	--	.06	--	--		41	0	12		91.0	7.6
Apr. 8	44,000	--	--	12	5.2	3.6	.4	61	--	1.0	--	--	.05	--	--		51	1	13		114	7.7
May 5	24,600	15	0.03	12	5.9	3.2	.6	64	5.4	1.6	0.0	0.3	.07	76	0.10		54	2	11		120	7.7
May 30	12,900	--	--	13	5.4	3.4	1.1	68	4.5	2.0	--	--	.00	--	--		55	0	12		124	7.3
July 14	5,540	--	--	14	7.1	6.8	1.1	82	--	4.0	--	--	.00	--	--		64	0	18		159	7.3
Aug. 4	4,530	--	--	18	5.9	6.8	1.4	86	--	4.5	--	--	.08	--	--		69	0	17		166	7.6
Aug. 19	a 4,470	22	.01	16	7.5	7.6	1.5	89	9.0	4.3	.2	1.3	.02	113	.15		71	0	18		173	7.5
Sept. 15	5,520	25	.03	17	7.2	11	1.8	94	11	4.8	.2	1.3	.06	125	.17		72	0	24		192	7.8

a Daily mean discharge.

SMITH RIVER NEAR CRESCENT CITY, CALIF.

LOCATION.--At gaging station 0.5 mile downstream from South Fork and 8 miles east of Crescent City, Del Norte County.
DRAINAGE AREA.--613 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1954.
REMARKS.--Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1953 to September 1954 given in WSP 1345.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 8, 1953	330	--	--	7.0	11	2.8	0.2	75	--	3.0	--	--	0.06	--	--		63	1	9		133	8.0
Dec. 9	14,900	--	--	4.4	6.6	1.8	.2	47	--	1.8	--	--	.01	--	--		38	0	9		80.9	7.7
Jan. 7, 1954	6,980	--	--	4.4	7.0	1.5	.3	49	--	2.2	--	--	.00	--	--		40	0	7		81.3	7.5
Feb. 4	10,700	--	--	4.0	5.6	1.8	.2	42	--	1.8	--	--	.04	--	--		33	0	10		72.3	7.7
Mar. 10	15,900	--	--	3.3	6.1	1.5	.1	38	--	.8	--	--	.01	--	--		33	2	9		64.7	7.6
Apr. 8	9,680	--	--	4.0	5.5	1.2	.0	40	--	1.2	--	--	.07	--	--		33	0	7		70.4	7.7
May 6	18,500	11	0.00	5.2	7.3	1.5	.2	52	2.6	1.5	0.0	0.0	.09	55	0.07		43	0	7		90.9	7.4
May 30	18,400	--	--	9.0	9.4	1.8	.5	66	3.3	3.2	--	--	.00	--	--		61	7	6		112	7.2
July 15	18,400	--	--	6.5	9.9	5.8	.2	73	--	5.5	--	--	.00	--	--		57	0	18		122	7.7
Aug. 5	1,170	--	--	8.1	10	3.3	.6	76	--	3.5	--	--	.00	--	--		61	0	10		128	7.5
Sept. 16	1,170	13	.00	7.7	11	2.7	.2	75	2.7	3.5	.1	.3	.00	78	11		63	1	8		131	7.6

PART 12, PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

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.--Water temperatures: March 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 62°F July 31, Aug. 1, 2; minimum, 34°F Jan. 21.
EXTREMES, 1952-54.--Water temperatures: Maximum, 67°F July 9-11, 14, 15, Aug. 4, 5, 1952; minimum, 34°F Nov. 28-30, Dec. 1, 1952, Jan. 21, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

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	53	51	47	47	43	43	40	40	43	43	47	45	51	44	55	53	57	55	62	61	60	58
2	54	52	51	47	47	47	43	40	40	40	43	42	48	46	51	48	54	52	58	55	62	61	60	59
3	54	52	47	45	47	47	41	38	40	40	44	43	48	46	51	48	55	54	58	55	61	59	59	56
4	55	53	48	45	47	47	40	39	40	40	43	43	48	47	51	50	55	54	59	57	59	59	58	58
5	55	52	48	48	47	46	41	40	41	40	43	43	48	46	52	49	54	53	60	58	59	58	58	58
6	55	54	48	47	46	45	42	41	41	41	43	43	46	45	55	48	54	54	60	60	59	59	58	57
7	56	54	48	47	45	45	41	41	41	41	43	43	47	44	58	52	55	54	60	59	61	59	58	57
8	56	56	48	48	45	45	41	41	41	41	43	43	46	45	58	55	55	55	59	57	61	60	59	58
9	56	56	48	48	45	45	41	41	41	41	44	43	46	44	56	53	57	55	58	57	60	58	59	58
10	57	56	48	48	45	45	41	41	41	41	44	44	48	43	53	51	57	57	57	57	59	57	60	59
11	56	53	49	48	45	45	41	41	41	41	44	44	49	44	53	52	57	56	57	56	59	59	60	57
12	54	51	49	49	45	45	41	41	42	41	44	44	49	47	53	51	56	56	59	55	59	58	57	57
13	55	53	50	49	46	45	41	41	42	42	44	44	47	47	53	51	56	55	61	58	58	58	58	57
14	55	53	50	49	45	45	41	41	43	42	44	43	48	44	56	50	55	54	61	60	58	58	57	57
15	54	54	50	50	45	45	41	41	43	43	44	44	48	45	57	54	55	54	60	57	59	58	57	56
16	54	54	50	49	45	45	41	40	43	42	45	44	51	44	58	54	54	52	57	56	59	59	56	55
17	55	54	49	48	45	45	40	40	43	43	45	45	50	47	61	56	53	51	59	57	59	58	55	55
18	55	54	48	48	45	45	41	40	43	42	45	44	48	44	61	58	55	50	59	59	59	59	55	54
19	54	51	48	48	45	45	41	39	43	42	45	44	47	45	60	58	55	54	59	59	60	59	54	54
20	52	52	48	47	45	45	39	39	43	43	45	45	49	45	60	57	57	54	59	57	60	60	56	54
21	52	49	48	47	45	45	39	34	43	43	45	45	50	45	57	55	60	55	57	56	61	60	56	54
22	50	48	47	47	45	45	39	36	43	43	45	44	50	47	58	54	60	56	60	57	61	61	56	56
23	49	47	47	47	45	45	39	39	43	43	45	45	50	44	58	56	58	56	60	60	61	59	56	56
24	49	48	47	47	45	45	39	39	43	43	45	45	50	46	58	56	58	55	60	59	59	57	58	56
25	49	48	48	47	45	43	39	39	43	43	47	45	50	47	56	55	58	56	61	60	57	56	58	57
26	49	47	47	47	43	43	39	39	43	43	47	46	48	45	56	55	57	56	61	60	57	57	59	58
27	50	48	47	47	43	43	40	39	43	43	47	46	48	43	56	53	56	55	60	59	58	56	58	55
28	50	49	47	46	43	43	40	40	43	43	47	43	48	44	56	52	57	53	59	57	60	58	55	53
29	51	49	47	46	43	43	40	40	--	--	45	41	47	44	53	52	59	56	60	59	61	60	54	52
30	53	51	47	47	43	43	40	40	--	--	45	41	49	44	53	52	59	57	60	60	61	60	52	49
31	53	53	--	--	43	43	40	40	--	--	46	44	--	--	55	53	--	--	62	60	60	59	--	--
Average	53	52	48	48	45	45	40	40	42	42	45	44	48	45	56	53	56	54	59	58	60	59	57	56

CHEHALIS RIVER NEAR GRAND MOUND, WASH.

LOCATION.--Temperature recorder at gaging station on highway bridge 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 1952 to August 1953, July to September 1954 (fragmentary).
EXTREMES, June to September 1954.--Water temperatures: Maximum, 68°F Aug. 1, 7; minimum, 55°F June 18.
EXTREMES, 1952-54.--Water temperatures: Maximum, 74°F July 11, 1953; minimum, 38°F Nov. 27-30, Dec. 1, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

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

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	60	68	64	66	65
2																	--	--	62	60	66	64	67	66
3																	--	--	62	59	64	63	66	65
4																	--	--	64	60	64	63	65	65
5																	--	--	64	62	65	63	65	65
6																	--	--	64	64	67	64	65	64
7																	--	--	64	64	68	64	65	64
8																	58	58	65	63	66	64	65	64
9																	59	56	64	62	64	62	65	63
10																	59	58	62	62	66	62	64	63
11																	58	58	62	61	64	63	63	62
12																	60	58	62	60	64	63	63	62
13																	61	59	63	60	64	63	63	63
14																	60	59	63	62	64	63	63	61
15																	59	59	62	62	64	63	61	61
16																	59	57	63	61	65	63	61	61
17																	57	56	64	63	65	63	61	60
18																	57	55	64	64	64	63	60	59
19																	57	56	64	63	64	63	59	59
20																	58	56	63	62	65	63	59	58
21																	61	57	63	61	65	63	59	58
22																	62	59	64	62	65	64	59	59
23																	63	61	64	63	64	64	59	59
24																	64	62	65	62	64	63	59	58
25																	64	62	65	63	64	63	59	59
26																	63	62	64	63	64	64	59	58
27																	62	62	65	63	64	63	58	58
28																	62	60	66	63	65	64	58	58
29																	62	60	67	63	65	64	58	57
30																	62	61	66	64	65	64	57	56
31																	--	--	67	63	65	63	--	--
Average																	--	--	64	62	65	63	62	61

NISQUALLY RIVER BASIN

NISQUALLY RIVER NEAR NATIONAL, WASH.

LOCATION.--Temperature recorder at gaging station, 100 ft 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 September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 58°F Aug. 7; minimum, 34°F Mar. 29.
EXTREMES, 1951-54.--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 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	46	45	45	42	42	40	42	41	39	37	39	36	41	38	50	38	45	40	45	45	57	46	55	45
2	46	43	42	39	42	41	41	40	39	37	38	35	40	39	45	41	48	40	53	43	53	46	55	46
3	49	43	40	37	42	40	40	39	39	37	40	35	42	40	50	43	45	44	54	44	51	46	51	47
4	49	43	42	39	40	38	39	38	39	38	41	36	41	40	47	42	47	42	55	43	50	46	49	46
5	51	45	42	41	40	38	40	38	40	39	41	36	41	40	47	43	46	42	52	45	49	47	52	47
6	49	45	42	41	38	37	41	40	40	38	42	39	41	39	52	40	43	41	54	45	56	47	54	45
7	51	45	43	41	39	37	41	41	40	38	39	36	44	39	52	42	44	42	49	45	58	48	52	48
8	51	48	43	41	39	39	41	41	40	38	41	39	42	38	48	43	47	43	51	45	55	48	54	48
9	49	48	44	42	39	38	41	40	40	38	41	38	40	38	44	42	45	43	47	45	56	47	56	47
10	48	46	43	42	40	38	41	40	39	37	39	37	45	37	49	42	44	43	48	46	56	46	52	47
11	47	45	44	42	40	39	41	39	38	36	39	37	47	38	43	42	48	44	54	45	57	46	49	47
12	47	43	44	43	41	40	39	37	38	38	40	36	42	40	46	41	46	44	56	46	55	49	49	47
13	48	45	44	43	41	40	38	37	38	38	38	36	43	41	50	43	47	44	57	46	54	48	53	46
14	48	43	44	44	42	40	38	38	38	38	41	37	44	38	48	41	46	44	56	46	52	48	52	49
15	48	46	44	42	42	41	38	37	38	38	42	38	44	38	46	39	44	42	55	48	50	48	51	49
16	47	44	42	40	42	41	37	37	39	38	42	39	48	39	47	38	44	41	56	47	51	48	50	48
17	47	46	40	40	41	40	38	37	39	38	40	38	44	42	47	38	44	41	57	46	54	48	48	47
18	46	45	40	40	41	41	37	36	38	37	42	38	44	40	47	39	49	40	57	47	53	47	49	47
19	46	44	40	40	41	41	37	35	37	37	41	37	42	39	46	39	46	44	54	48	54	49	50	47
20	45	43	41	40	41	40	35	35	39	37	41	38	47	39	41	39	47	43	48	46	52	49	53	46
21	44	41	40	40	40	40	35	35	39	38	44	37	48	39	43	39	51	42	49	45	54	48	53	47
22	44	40	41	40	40	40	36	35	40	38	44	37	46	39	49	40	51	44	56	45	52	48	53	49
23	43	40	41	40	40	40	37	36	40	38	42	37	48	39	47	40	51	43	57	46	50	46	50	47
24	43	40	42	41	41	40	37	36	40	39	42	40	46	39	43	40	53	43	56	46	49	44	54	47
25	45	41	42	41	41	40	36	36	39	38	44	37	42	39	42	39	49	44	56	45	51	45	53	47
26	45	41	42	41	41	41	37	36	38	38	42	39	42	41	42	40	47	45	55	45	51	47	52	46
27	46	41	42	41	42	41	37	37	40	37	39	38	48	41	44	40	45	44	55	47	53	45	51	46
28	46	43	42	41	42	41	39	37	39	38	42	36	46	40	45	39	50	43	55	44	54	48	48	44
29	46	45	44	42	41	41	39	38	--	--	43	34	44	40	43	41	55	43	56	45	55	49	47	41
30	45	45	44	42	41	41	40	39	--	--	44	36	44	39	44	41	49	45	57	45	51	49	47	41
31	45	45	--	--	42	41	40	39	--	--	41	37	--	--	44	42	--	--	57	45	53	48	--	--
Average	47	44	42	41	41	40	39	38	39	38	41	37	44	39	46	41	47	43	54	45	53	47	51	46

MINERAL CREEK NEAR MINERAL, WASH.

LOCATION.--Temperature recorder at gaging station, three-eighths of a mile downstream from railroad bridge, 1 mile upstream from mouth, and 2½ miles northeast of Mineral.
DRAINAGE AREA.--74.3 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1951 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 61°F July 17-19, Aug. 2; minimum, 35°F Jan. 20.
EXTREMES, 1951-54.--Water temperatures: Maximum, 70°F July 14, Aug. 3, 4, 9-13, 1952; minimum, 35°F Jan. 20, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	50	48	48	44	43	43	41	41	38	38	39	37	42	40	46	42	49	47	54	52	60	59	57	55
2	52	47	45	43	44	43	41	40	38	38	39	37	41	41	46	44	50	47	56	52	61	58	57	55
3	53	47	44	41	44	43	40	39	38	38	40	36	42	41	47	45	50	49	56	53	60	59	56	55
4	53	47	45	42	43	42	39	39	38	38	40	37	42	42	47	46	49	48	57	55	59	57	55	54
5	54	47	45	44	42	42	40	39	39	38	40	37	42	42	47	46	50	48	57	56	57	57	55	54
6	53	48	44	44	42	40	41	40	39	38	40	38	42	41	50	44	50	48	58	56	57	57	55	54
7	54	49	46	44	41	40	41	40	39	38	39	37	43	41	51	47	48	47	58	57	58	56	56	55
8	54	51	46	44	41	41	40	40	39	38	40	39	43	41	51	48	48	48	57	56	58	58	57	55
9	52	52	46	45	41	41	41	40	39	38	40	38	42	40	49	48	49	48	57	57	59	57	57	55
10	52	50	46	45	42	41	41	40	39	37	39	38	44	40	50	47	49	49	57	55	59	57	57	55
11	52	49	46	45	42	41	40	39	37	36	39	38	46	42	50	48	50	49	57	55	58	56	55	54
12	51	46	48	46	42	41	39	37	37	37	39	37	45	44	48	47	50	50	59	57	58	58	55	54
13	52	48	46	46	42	41	39	38	38	37	38	37	45	44	50	47	50	49	59	57	58	57	55	53
14	52	47	47	46	42	42	39	39	38	38	39	37	44	43	51	47	50	49	59	58	58	57	55	54
15	53	49	47	45	42	42	39	37	38	38	40	38	44	43	51	49	49	49	60	59	57	56	55	54
16	51	48	45	43	42	42	38	37	38	38	39	39	46	44	52	48	49	47	60	59	56	56	54	54
17	50	50	43	42	42	41	38	38	38	38	39	38	46	45	52	49	49	47	61	59	57	56	54	53
18	50	48	43	42	42	42	38	36	38	37	40	38	45	44	52	50	51	47	61	60	57	56	53	52
19	50	46	43	43	42	42	37	36	37	37	39	38	45	44	52	49	51	49	61	60	56	56	53	52
20	48	46	43	42	42	42	36	35	38	37	40	38	46	44	52	49	51	50	60	58	56	54	54	53
21	47	44	44	43	42	41	36	36	38	38	42	39	48	44	49	48	56	51	58	57	56	54	54	53
22	47	44	44	44	41	41	37	36	39	38	43	39	46	44	53	49	56	52	58	56	56	55	54	53
23	47	42	45	44	41	41	38	37	39	38	41	39	46	44	53	50	56	52	60	58	55	55	54	53
24	46	43	45	44	41	40	37	37	39	38	42	41	46	44	53	51	56	52	60	59	55	53	55	53
25	47	44	45	44	41	40	37	37	38	38	42	39	46	44	51	49	56	52	59	58	54	53	56	53
26	48	44	45	44	41	41	37	37	38	38	41	40	44	44	49	48	54	53	59	58	54	54	56	54
27	48	43	45	43	41	41	37	37	40	38	40	39	46	44	49	47	53	52	59	59	54	53	55	54
28	49	44	44	43	41	41	37	36	39	39	41	38	46	44	49	47	53	50	59	57	55	54	54	53
29	48	47	45	44	41	41	38	37	--	--	41	37	46	44	48	48	56	52	59	58	57	55	53	51
30	48	48	45	43	41	41	38	38	--	--	41	38	44	43	48	47	56	54	59	58	57	56	52	50
31	50	48	--	--	41	41	38	38	--	--	41	40	--	--	49	48	--	--	60	58	57	55	--	--
Average	50	47	45	44	42	41	39	38	38	38	40	38	44	43	50	47	51	50	59	57	57	56	55	54

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 4 miles southeast of Palmer, King County.
DRAINAGE AREA.--230 square miles at gaging station.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1954.
Sediment records: August 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum observed, 54°F July 25; minimum observed, freezing point Jan. 21-23.
Sediment concentrations: Maximum daily, 1,350 ppm Dec. 9; minimum daily, 0.9 ppm Sept. 11-20.
Sediment loads: Maximum daily, 49,000 tons Dec. 9; minimum daily, 0.7 ton Sept. 1-10.
EXTREMES, 1950-54.--Water temperatures: Maximum observed, 61°F Sept. 6, 1950; minimum, freezing point on several days in March 1951, January 1952 and 1954.
Sediment concentrations: Maximum daily, 1,350 ppm Dec. 9, 1953; minimum daily, 0.5 ppm Nov. 1-30, 1952.
Sediment loads: Maximum daily, 49,000 tons Dec. 9, 1953; minimum daily, 0.2 ton Oct. 1 to Nov. 30, 1952, Sept. 1-27, 1953.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at approximately 8:30 a. m./

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

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Suspended sediment, water year October 1953 to September 1954

Day	October			November			December		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	477			1,360			2,060		
2	368			1,160			2,530		
3	309			824			2,630	3	19
4	255			644			2,340		
5	228			557			3,370	42	s411
					4.2	8.3			
6	208			600			3,680	21	s225
7	197			648			2,520	3	20
8	204			557			2,130	2	12
9	201			502			11,700	1,350	s49,000
10	393			473			7,970	350	s7,870
11	351			443			5,230	175	s2,930
12	296			427			9,430	400	s10,800
13	263			397			4,860	80	1,050
14	243			389			3,520	--	a330
15	231			536			3,110	--	a170
					3.2	5.0			
16	220			811			2,620	--	a 57
17	235			829			2,190	--	a 35
18	284			714			1,940	--	a 16
19	276			679			2,330	--	a 94
20	359			652			4,140	--	a450
21	372			776			3,580	--	a140
22	330			1,900			2,710	--	a 37
23	301			1,880			2,160		
24	276			1,640			1,800		
25	259			1,770	4.5	19	1,520		
26	247			1,900			1,520		
27	235			1,690			1,410	1.7	9
28	228			1,540			2,370		
29	228			1,630			2,530		
30	280			1,820			2,030		
31	557			--	--	--	2,330		
Total	8,911	--	a 80	29,748	--	337	104,260	--	73,804

Day	January			February			March		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	2,410			749			1,500		
2	2,080			806			1,300		
3	1,800			824			1,160		
4	1,990			865			1,060		
5	2,630			932			997	2.8	8.8
		14	86		6.3	18			
6	2,930			1,090			951		
7	2,640			1,290			896		
8	2,490			1,390			1,090		
9	2,090			1,360			1,510		
10	1,760			1,300			1,740		
11	1,510			1,180			1,500		
12	1,310			1,250			1,280		
13	1,260			1,290			1,150		
14	2,000			1,250			1,060		
15	1,800			1,130			992	2.7	7.9
		3.0	11		3.3	12			
16	1,470			1,280			946		
17	1,270			1,550			888		
18	1,140			1,470			838		
19	1,030			1,520			802		
20	914			2,920	--	a 340	784		
21	892			3,400	--	a260	758		
22	906			2,970	--	a 72	749		
23	865			2,290	--	a 31	754		
24	806			2,680	--	a110	745		
25	758			2,730			732		
		2.1	4.3					1.8	4.0
26	736			2,640	5.4	34	865		
27	696			2,080			1,140		
28	683			1,790			946		
29	652			--	--	--	852		
30	648			--	--	--	793		
31	692			--	--	--	762		
Total	44,858	--	1,017.3	46,026	--	1,237	31,540	--	210.1

s Computed by subdividing day.

a Computed on basis of turbidity-concentration relation, daily turbidity readings, and concentrations of composites of daily samples.

DUWAMISH RIVER BASIN--Continued

GREEN RIVER NEAR PALMER, WASH.--Continued

Suspended sediment, water year October 1953 to September 1954--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	780		a 6	850			1,850		
2	820		a 7	810			1,720		
3	1,600		a 50	805			1,620	5.6	26
4	2,180		a 150	940			1,690		
5	2,570		a 100	1,070	2.5	7.0	1,580		
6	2,150		a 40	1,220			2,160	--	a 190
7	1,740		a 24	1,580			3,180	--	a 340
8	1,580		a 17	2,340	--	a 160	2,540	--	a 90
9	1,510		a 16	2,910	--	a 240	2,080	--	a 45
10	1,370		a 11	2,800	--	a 300	1,830	--	a 25
11	1,290		a 10	2,640	--	a 210	1,670		
12	1,440		a 19	2,470	--	a 100	1,650		
13	2,810		a 140	2,130	--	a 60	1,650		
14	2,820		a 120	1,940	--	a 35	1,500		
15	2,190		a 60	2,070	--	a 50	1,830		
								6.4	33
16	1,910		a 35	2,510	--	a 100	2,290		
17	2,440		a 80	2,800	--	a 200	2,250		
18	2,390		a 70	3,130	--	a 410	2,080		
19	2,110		a 50	3,230	--	a 450	1,900		
20	1,830		a 35	2,640	--	a 240	2,080		
21	1,640			2,210			2,120		
22	1,590			1,870			2,010		
23	1,520			1,790			1,840		
24	1,480			1,960			1,650		
25	1,400			1,900			1,500		
		4.1	15		7.8	36		3.7	16
26	1,330			1,760					
27	1,200			1,540			1,550		
28	1,090			1,320			1,500		
29	1,000			1,240			1,320		
30	925			1,370			1,340		
31	--			1,630			--	--	--
Total	50,705	--	1,190	59,475	--	3,000.0	55,490	--	1,310

Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	1,580			344			254		
2	1,520			340			246		
3	1,320			335			246		
4	1,210			331			271		
5	1,170			318			254		
		2.1	6.7		1.1	0.9		1.1	0.7
6	1,090			310			242		
7	1,070			301			234		
8	1,000			288			254		
9	910			284			238		
10	945			280			234		
11	880			275			288		
12	800			267			263		
13	750			259			246		
14	730			263			234		
15	715			271			238		
		2.3	4.3		1.1	.8		.9	.8
16	680			288			250		
17	640			275			335		
18	590			259			532		
19	566			263			434		
20	551			297			384		
21	581			297			344		
22	523			292			322		
23	485			393			301		
24	461			357			288		
25	438			331			275		
		2.9	3.4		1.3	1.1		1.9	1.4
26	420			322			263		
27	411			310			254		
28	393			288			250		
29	375			271			242		
30	366			263			238		
31	357			254			--	--	--
Total	23,527	--	147.4	9,226	--	29.1	8,454	--	29.0

Total discharge for year (cfs-days) 472,220
Total load for year (tons) 82,390.9

a Computed on basis of turbidity-concentration relation, daily turbidity readings, and concentrations of composites of daily samples.

GREEN RIVER NEAR PALMER, WASH.--Continued

Particle-size analyses of suspended sediment, water year October 1953 to September 1954
(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. 9, 1953.....	3:00 a.m.	3,700		81	490	19	23	29	44	47	63	74	87	100	--		VPWCM
Dec. 9.....	9:00 p.m.	16,500		690	4,710	15	20	30	41	50	65	79	93	99	100		VPWCM
Dec. 10.....	3:00 a.m.	12,200		428	2,600	13	20	30	43	53	67	79	90	99	100		VPWCM

49:1369 O - 59 - 23

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 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, not determined, occurred during period of no record; minimum, 39°F Jan. 7-30.
EXTREMES, 1952-54.--Water temperatures: Maximum, 62°F July 10-12, 1953; minimum, 38°F Nov. 29, 30, Dec. 1, 2, 25, 1952.
REMARKS.--Records of discharge for water year October 1953 to September given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	56	55	49	49	44	44	41	40	40	40	41	41	44	44									--	--
2	55	54	49	49	44	44	40	40	40	40	42	41	44	44									--	--
3	54	54	49	47	44	44	40	40	40	40	42	42	44	44									--	--
4	54	54	47	47	44	44	40	40	40	40	42	42	44	44									--	--
5	54	54	47	47	44	44	40	40	40	40	42	42	44	44									--	--
6	54	54	47	47	44	44	40	40	40	40	42	42	44	44									--	--
7	54	54	47	47	44	44	40	39	--	--	42	42	44	44									--	--
8	55	54	47	47	44	44	39	39	--	--	42	42	44	44									--	--
9	55	55	47	47	44	43	39	39	--	--	42	42	44	44									--	--
10	55	55	47	46	43	42	39	39	40	40	43	42	44	44									--	--
11	55	55	46	46	43	42	39	39	40	40	43	43	44	43									--	--
12	55	55	46	46	42	42	39	39	40	40	43	43	43	43									--	--
13	55	54	46	46	42	42	39	39	40	40	43	43	43	43									--	--
14	54	54	46	46	42	42	39	39	40	40	43	43	43	43									--	--
15	54	54	46	46	42	42	39	39	40	40	43	43	43	43									--	--
16	54	54	46	46	42	42	39	39	40	40	43	43	43	43									--	--
17	54	54	46	45	42	42	39	39	41	40	43	43	43	43									55	55
18	54	54	45	45	42	42	39	39	41	41	44	43	43	43									55	55
19	54	53	45	45	42	42	39	39	41	41	44	44	43	43									55	54
20	53	52	45	45	42	42	39	39	41	41	44	44	43	43									59	54
21	52	52	45	45	42	42	39	39	41	41	44	44	43	43									58	55
22	52	51	45	45	42	41	39	39	41	41	44	44	43	43									58	56
23	51	50	45	45	41	41	39	39	41	41	44	44	43	43									58	56
24	50	50	45	45	41	41	39	39	41	41	44	44	43	43									58	56
25	50	50	45	45	41	41	39	39	41	41	44	44	43	43									58	56
26	50	50	45	44	41	41	39	39	41	41	44	44	43	43									58	56
27	50	49	44	44	41	41	39	39	41	41	44	44	43	43									58	55
28	49	49	44	44	41	41	39	39	41	41	44	44	43	43									56	54
29	49	49	44	44	41	41	39	39	--	--	44	44	43	43									56	53
30	49	49	44	44	41	41	40	39	--	--	44	44	43	43									55	52
31	49	49	--	--	41	41	40	40	--	--	44	44	--	--									--	--
Average	53	53	46	46	42	42	39	39	40	40	43	43	43	43									--	--

CEDAR RIVER NEAR LANDSBURG, WASH.

LOCATION.--Temperature recorder at gaging station, 2 miles upstream from Seattle municipal water-supply intake at Landsburg, King County, 4¾ miles east of Maple Valley, 5 miles downstream from Taylor Creek, and 12 miles downstream from Cedar Lake.
DRAINAGE AREA.--125 square miles, excludes that of Rock Creek.
RECORDS AVAILABLE.--Water temperatures: August 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 56°F Aug. 1, 7-25, 29; minimum, 38°F Jan. 19-22.
EXTREMES, August 1953 to September 1954.--Water temperatures: Maximum 64°F Aug. 19, 1953; minimum, 38°F Jan. 19-22, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, August 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
2																					--	--	51	50
3																					--	--	51	51
4																					--	--	52	50
5																					--	--	53	51
6																					55	51	53	52
7																					53	52	53	53
8																					53	52	55	52
9																					52	52	55	52
10																					58	52	52	50
11																					55	53	51	50
12																					55	53	51	51
13																					55	52	51	50
14																					62	52	51	50
15																					58	53	51	50
16																					54	53	51	50
17																					62	53	50	49
18																					63	54	50	49
19																					64	54	50	49
20																					61	55	50	49
21																					63	54	50	49
22																					58	54	50	50
23																					54	54	50	49
24																					61	54	49	49
25																					61	54	49	48
26																					60	54	48	48
27																					59	55	48	48
28																					56	52	48	48
29																					55	52	48	48
30																					52	51	48	48
31																					59	51	--	--
Average																					58	53	51	50

LAKE WASHINGTON BASIN--Continued

CEDAR RIVER NEAR LANDSBURG, WASH.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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	48	48	48	48	45	45	42	42	42	40	41	41	43	43	48	45	51	51	51	50	56	51	55	53
2	48	48	48	48	45	45	42	41	41	40	41	41	43	43	47	46	52	49	51	50	55	54	54	53
3	48	48	48	48	--	--	42	42	41	40	41	41	44	43	47	46	52	52	51	50	55	54	53	53
4	48	48	48	48	--	--	42	42	42	40	42	41	44	44	46	46	52	52	51	50	55	54	53	53
5	48	48	48	48	--	--	42	42	42	40	41	41	44	43	47	46	52	51	51	51	55	55	53	53
6	48	48	48	48	--	--	42	42	43	42	42	41	43	43	50	46	51	51	54	51	55	54	53	53
7	48	48	48	48	--	--	42	42	44	43	43	41	44	43	49	47	51	51	52	52	56	55	53	53
8	48	48	48	48	--	--	42	42	43	43	43	42	44	44	50	48	51	51	52	52	56	56	53	52
9	48	48	48	48	--	--	42	42	43	43	43	42	44	44	49	48	51	51	52	52	56	54	--	--
10	48	48	48	48	--	--	42	42	43	43	42	41	47	44	48	48	51	51	52	51	56	54	--	--
11	48	48	48	48	--	--	42	41	43	43	42	41	45	44	48	48	51	51	51	50	56	56	52	51
12	48	48	48	48	--	--	41	41	43	43	41	41	44	44	48	48	51	51	52	50	56	56	52	51
13	48	48	48	48	--	--	41	41	43	43	41	41	45	44	49	48	51	51	52	50	56	56	53	50
14	48	48	48	48	--	--	41	41	43	43	44	41	45	43	50	47	51	51	52	51	56	56	52	51
15	48	48	48	48	42	42	41	41	43	43	43	43	44	43	50	48	51	51	52	51	56	56	51	51
16	48	48	48	47	42	42	41	40	43	43	43	43	47	44	51	48	51	51	51	51	56	56	51	51
17	48	48	47	45	42	42	40	39	43	43	43	43	47	47	51	49	51	51	54	51	56	56	51	51
18	48	48	45	45	42	42	39	39	43	42	43	43	47	46	50	50	51	50	52	50	56	56	51	51
19	48	48	45	45	42	42	39	38	43	43	44	43	46	44	50	50	50	50	51	51	56	56	51	51
20	48	48	45	45	42	42	38	38	43	43	45	43	46	45	50	50	50	50	51	51	56	56	51	51
21	48	48	45	45	42	42	38	38	43	43	47	43	47	45	50	50	51	50	51	51	56	56	52	51
22	48	48	45	45	42	42	39	38	43	43	46	43	46	45	51	50	51	51	55	51	56	56	52	52
23	48	48	45	45	42	42	41	39	43	42	43	43	48	45	51	50	51	51	54	51	56	56	52	52
24	48	48	45	45	42	42	41	41	42	42	45	43	48	46	52	51	51	50	54	51	56	55	52	52
25	48	48	45	45	42	42	41	40	42	42	44	43	48	46	52	51	51	51	54	51	56	55	52	52
26	48	48	45	45	42	42	41	40	42	42	44	44	46	46	52	50	51	51	53	51	55	54	52	52
27	48	48	45	45	42	42	40	40	42	42	44	44	46	46	51	51	51	51	52	51	54	54	52	52
28	48	48	45	45	42	42	41	40	42	41	44	43	46	46	51	51	51	51	55	51	54	54	52	52
29	48	48	45	45	42	42	41	40	--	--	43	43	46	46	51	51	51	50	55	51	56	54	52	51
30	48	48	45	45	42	42	43	40	--	--	43	42	46	45	51	51	51	51	55	50	55	55	50	49
31	48	48	--	--	42	42	42	40	--	--	43	43	--	--	51	51	--	--	55	53	55	54	--	--
Average	48	48	47	47	--	--	41	40	43	42	43	42	45	44	50	49	51	51	53	51	56	55	52	52

JIM CREEK NEAR ARLINGTON, WASH.

LOCATION.--Temperature recorder at gaging station, 1¼ 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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 67°F Aug. 1, 1954; minimum, not determined, occurred during period of no record.
EXTREMES, 1951-54.--Water temperatures: Maximum, 71°F July 10, 11, 1953; minimum, freezing point on many days during winter months.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

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

STILLAGUAMISH RIVER BASIN--Continued

NORTH FORK STILLAGUAMISH RIVER NEAR DARRINGTON, WASH.

LOCATION.--Temperature recorder at gaging station at highway bridge, 1 mile downstream from Squire Creek and 5 miles west of Darrington, Snohomish County.
DRAINAGE AREA.--82.2 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 55°F Aug. 9-14, Sept. 1-3, 9-12; minimum, 36°F Jan. 24-26.
EXTREMES, 1952-54.--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 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

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	48	47	46	46	45	44	--	--	38	38	40	40	42	41	45	43	46	45	51	51	54	53	55	53
2	47	47	46	45	44	44	--	--	38	38	41	40	41	41	45	44	47	45	51	50	53	53	55	54
3	47	47	45	44	44	44	--	--	38	38	41	40	41	41	47	45	47	47	50	50	53	51	55	54
4	47	47	44	44	44	44	--	--	38	38	41	40	41	41	47	46	47	45	52	50	51	50	54	53
5	47	47	45	44	44	43	40	40	38	38	41	40	41	41	46	46	46	45	52	51	51	50	54	52
6	47	47	45	45	43	43	40	40	38	38	41	41	41	40	46	44	45	45	52	51	52	51	53	52
7	48	47	45	45	43	43	41	40	38	38	41	41	42	41	46	44	46	45	52	52	54	52	54	53
8	49	48	45	44	43	43	41	41	39	38	41	41	42	41	46	43	47	46	52	51	54	54	54	53
9	49	49	45	44	43	42	41	41	39	39	41	41	41	40	45	43	47	47	52	51	55	53	55	54
10	49	49	45	45	--	--	41	41	39	38	41	39	43	41	43	43	47	47	51	51	55	53	55	55
11	49	48	45	45	--	--	41	40	38	38	40	40	44	42	43	43	47	46	51	50	55	53	55	55
12	48	47	45	45	--	--	40	40	38	38	41	40	44	43	43	43	47	47	52	51	55	53	55	54
13	48	47	45	45	--	--	40	40	38	38	40	40	43	42	43	43	47	47	53	51	55	54	54	53
14	48	47	45	45	--	--	40	40	39	38	41	40	42	42	45	43	48	47	53	52	55	54	54	53
15	48	48	45	45	--	--	40	39	39	38	41	41	43	42	45	44	48	47	53	52	54	53	54	53
16	48	47	45	45	--	--	39	39	39	39	41	40	43	43	45	43	47	46	53	52	53	53	54	53
17	47	47	45	44	--	--	39	39	39	39	41	41	43	43	45	44	46	46	54	52	53	53	53	53
18	47	47	44	44	--	--	39	39	39	39	42	41	43	42	45	44	48	46	54	53	54	53	53	52
19	47	47	44	44	--	--	39	38	39	38	42	40	42	42	45	44	48	47	53	52	54	53	52	52
20	47	47	44	44	--	--	38	38	39	38	42	41	44	42	45	44	47	47	52	51	54	54	53	52
21	47	46	44	44	--	--	38	37	39	39	42	41	44	43	45	44	48	47	51	50	54	53	53	52
22	46	45	44	43	--	--	37	37	39	39	42	41	44	43	46	44	49	48	51	50	53	53	53	52
23	45	45	44	44	--	--	37	37	40	39	42	41	44	43	46	45	49	48	52	50	53	53	53	52
24	45	45	44	44	--	--	37	36	40	40	41	40	44	43	46	45	50	49	53	52	53	52	54	52
25	45	45	45	44	--	--	37	36	40	40	41	40	44	44	45	44	50	49	53	51	54	51	54	52
26	45	45	45	44	--	--	37	36	40	40	41	41	44	43	45	44	50	49	54	52	53	53	54	53
27	45	45	45	44	--	--	37	37	40	40	41	41	45	42	45	44	49	49	53	52	53	51	54	52
28	45	45	45	45	--	--	38	37	40	40	40	39	45	43	46	44	49	49	53	51	53	52	53	51
29	45	45	45	45	--	--	38	37	--	--	42	40	44	43	46	46	51	49	53	51	54	53	52	49
30	45	45	45	45	--	--	38	38	--	--	42	40	45	42	46	45	51	51	53	52	54	54	50	49
31	46	45	--	--	--	--	38	38	--	--	42	41	--	--	46	46	--	--	54	52	54	53	--	--
Average	47	47	45	44	--	--	39	39	39	39	41	40	43	42	45	44	48	47	52	51	54	53	54	53

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.
RECORDS AVAILABLE.--Water temperatures: March 1952 to July 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 65°F Aug. 1; minimum, 34°F Jan. 19.
EXTREMES, 1952-54.--Water temperatures: Maximum, 65°F Aug. 1, 1954; minimum, 34°F Jan. 19, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

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

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.--1,260 square miles, approximately, of which 400 square miles is in Canada.
RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 52°F July 25; minimum, 37°F Feb. 17-20.
EXTREMES, 1953-54.--Water temperatures: Maximum, 52°F Sept. 12, 13, 15, 19-23, 1953, July 25, 1954; minimum 37°F Feb. 17-20, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	49	49	48	48	44	44	42	42	39	39	38	38	39	39	43	41	46	46	--	--	50	49	49	49
2	49	49	48	48	44	44	43	42	39	39	38	38	39	39	42	42	48	46	--	--	50	50	50	49
3	49	49	48	47	44	44	42	42	39	39	38	38	39	39	43	42	48	47	--	--	49	49	49	49
4	50	49	47	45	44	44	42	41	39	39	38	38	39	39	42	42	48	47	49	49	49	49	49	49
5	50	50	47	47	44	43	41	41	39	39	38	38	39	39	43	42	47	47	50	49	49	49	49	49
6	50	50	47	47	43	43	41	41	39	39	38	38	39	39	44	42	47	47	49	49	49	49	49	48
7	50	50	47	47	43	43	41	41	39	39	38	38	39	39	44	42	48	47	49	49	50	49	49	49
8	51	50	47	46	43	43	41	41	39	39	38	38	39	39	44	42	48	47	50	49	50	49	49	49
9	51	51	47	47	43	43	41	41	39	39	38	38	39	39	43	43	47	47	50	49	50	49	49	49
10	51	51	47	47	43	43	41	41	39	39	38	38	40	39	44	43	49	47	49	49	50	49	49	49
11	51	50	47	47	43	43	41	41	39	38	38	38	40	40	43	43	47	47	50	49	49	49	49	49
12	50	49	47	47	43	43	41	41	39	38	38	38	40	40	44	43	49	47	51	49	50	49	49	49
13	50	50	47	47	43	43	41	41	39	38	38	38	40	40	44	44	49	47	51	49	50	49	49	49
14	50	50	47	47	43	43	41	41	38	38	38	38	40	40	45	44	48	47	51	49	50	49	49	49
15	50	50	47	46	43	43	41	40	38	38	38	38	40	40	44	44	49	47	51	49	49	49	49	49
16	50	50	46	46	43	43	40	39	38	38	38	38	40	40	45	44	48	47	50	49	49	49	49	49
17	50	50	47	46	43	43	40	40	38	37	38	38	40	40	45	44	48	47	49	49	49	49	49	49
18	50	50	47	47	43	43	40	40	37	37	38	38	40	40	45	44	48	48	50	49	49	49	49	49
19	50	50	47	47	43	43	40	40	37	37	38	38	40	40	45	44	48	48	49	49	49	49	49	49
20	50	50	47	47	43	41	40	39	38	37	38	38	40	40	45	45	49	48	49	49	49	49	49	49
21	50	49	47	47	42	41	39	38	38	38	38	38	40	40	45	44	--	--	49	49	49	49	49	49
22	50	49	47	47	42	42	39	38	38	38	38	38	40	40	45	44	--	--	49	49	49	49	49	49
23	50	49	47	46	42	42	39	39	38	38	38	38	41	40	45	45	--	--	50	49	49	49	49	49
24	50	49	46	45	42	42	39	39	38	38	38	38	41	41	45	45	--	--	51	49	49	49	50	49
25	50	50	46	45	42	42	39	38	38	38	38	38	41	41	45	45	--	--	52	50	49	49	50	49
26	50	50	45	44	42	42	39	38	38	38	38	38	41	41	45	45	--	--	50	50	49	49	50	49
27	50	49	44	44	42	42	39	39	38	38	38	38	41	41	45	45	--	--	50	50	49	48	50	49
28	49	49	44	44	42	42	39	39	38	38	39	38	41	41	46	45	--	--	50	49	49	48	50	49
29	49	49	44	44	42	42	39	39	--	--	39	39	41	41	48	46	--	--	50	49	49	48	50	49
30	49	49	44	44	42	42	39	39	--	--	39	39	42	41	46	46	--	--	50	49	49	49	49	49
31	49	48	--	--	42	42	39	39	--	--	39	39	--	--	46	46	--	--	51	49	49	49	--	--
Average	50	50	47	46	43	43	40	40	38	38	38	38	40	40	44	44	--	--	50	49	49	49	49	49

SKAGIT RIVER BASIN--Continued

CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION.--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.
RECORDS AVAILABLE.--Water temperatures: May 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 52°F Aug. 13; minimum, 34°F Jan. 21-23.
EXTREMES, 1952-54.--Water temperatures: Maximum, 57°F July 9, 11-14, 29-31, Aug. 2-5, 9-13, 1952; minimum, 34°F Nov. 29-30, 1952; minimum, 34°F Nov. 29-30, 1952, Jan. 21-23, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Temperature (°F) of water, water year October 1953 to September 1954

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	48	48	46	44	42	41	40	40	37	37	37	37	40	40	42	40	45	43	47	45	51	47	50	48
2	48	47	44	43	42	41	40	40	37	37	37	36	40	40	42	41	47	42	49	45	49	47	51	49
3	48	48	43	43	42	41	40	40	37	37	36	36	40	40	43	42	46	44	50	45	48	46	50	48
4	49	48	44	43	41	41	40	39	37	37	37	36	40	40	43	42	44	43	51	45	47	46	48	48
5	50	49	44	44	41	40	39	39	38	37	38	37	40	40	44	42	43	42	49	46	47	46	49	48
6	50	49	44	44	40	40	40	39	38	38	38	38	40	40	44	42	42	42	49	46	48	47	49	48
7	51	50	44	44	40	40	40	40	38	38	38	38	40	40	43	42	44	42	48	46	51	47	49	49
8	51	51	45	44	40	40	40	40	38	38	38	38	40	40	43	41	49	43	48	45	49	47	50	49
9	51	51	45	45	40	40	40	40	38	38	38	38	40	40	42	40	47	44	46	45	50	47	50	49
10	51	50	45	45	40	40	40	40	38	37	38	38	42	40	42	40	44	43	46	45	50	47	50	49
11	50	49	45	45	40	39	40	39	37	37	38	38	42	41	42	41	45	43	47	45	49	47	50	49
12	49	48	45	45	39	39	39	39	38	37	38	38	42	42	41	41	46	44	49	45	51	47	49	48
13	49	48	45	45	39	39	39	37	38	38	38	38	42	41	43	41	45	44	50	45	52	48	49	48
14	49	48	45	45	40	39	37	37	38	38	38	38	41	41	44	41	47	44	50	45	51	49	49	48
15	48	48	45	44	40	40	37	36	38	38	38	38	41	40	44	42	46	44	50	45	48	47	49	49
16	48	48	44	43	40	40	36	36	38	38	38	38	41	41	44	42	44	43	50	46	48	47	50	49
17	48	48	43	42	40	40	36	36	38	38	38	38	41	41	45	41	44	43	50	46	49	47	50	49
18	48	48	42	42	40	40	36	36	38	38	39	38	41	41	45	41	48	44	50	46	48	47	49	48
19	48	47	42	42	40	40	36	35	38	38	40	39	41	41	45	41	46	44	48	46	49	48	48	48
20	48	47	42	42	40	40	35	35	38	38	40	40	42	41	42	41	46	45	47	46	49	48	49	47
21	47	46	42	42	40	40	35	34	38	38	40	40	42	41	42	41	49	44	46	45	48	47	49	47
22	46	44	42	42	40	39	34	34	39	38	40	39	42	41	46	42	48	44	49	45	48	48	49	48
23	45	44	42	42	39	39	35	34	38	38	40	39	42	41	44	41	48	44	49	46	48	46	49	48
24	45	44	43	42	40	39	35	35	38	38	41	39	42	41	44	43	49	44	49	45	48	47	49	48
25	46	45	43	42	40	40	35	35	38	37	41	40	42	42	43	42	47	44	50	45	49	46	49	48
26	46	46	42	42	40	40	36	35	37	37	40	40	42	41	43	42	46	45	49	45	49	48	49	48
27	46	45	42	42	40	40	37	36	37	37	40	39	42	40	43	42	46	45	48	46	50	48	49	47
28	46	46	42	42	40	40	36	36	37	37	40	39	42	41	47	42	46	44	49	45	50	48	48	47
29	46	46	42	42	40	40	36	36	--	--	39	39	41	40	48	44	49	44	50	45	51	49	47	45
30	46	46	42	42	40	40	37	36	--	--	40	39	42	40	46	44	49	46	50	46	51	50	46	44
31	46	46	--	--	41	40	37	37	--	--	40	40	--	--	45	43	--	--	51	46	50	49	--	--
Average	48	47	43	43	40	40	38	37	38	38	39	38	41	41	44	42	46	44	49	45	49	47	49	48

COLUMBIA RIVER MAIN STEM

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY

LOCATION.--At cableway, 2.2 miles downstream from 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 to January 1911, November 1951 to September 1954.
Water temperatures: November 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 107 ppm Feb. 1-10; minimum, 73 ppm July 21-31, Aug. 1-10.
Hardness: Maximum, 90 ppm Mar. 21-31; minimum, 66 ppm Aug. 1-10, Sept. 1-10.
Specific conductance: Maximum daily, 180 micromhos Jan. 22; minimum daily, 130 micromhos Aug. 4.
Water temperatures: Maximum observed, 61°F Aug. 15; minimum observed, 33°F Jan. 22-26.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 110 ppm Apr. 11-20, 1953; minimum, 73 ppm July 21-31, Aug. 1-10, 1954.
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, 130 micromhos Aug. 4, 1954.
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 residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	63,860	6.1		23	5.9	1.7	1.0	86	14	0.7		0.4	--	95	0.13	16,380	82	11	4	0.1	161	7.4
Oct. 11-20	65,910	6.1		23	5.9	1.7	1.0	82	15	1.3		.3	0.05	94	.13	16,730	82	14	4	.1	160	7.4
Oct. 21-31	66,910	6.5		23	5.8	1.7	1.0	81	14	2.0		.2	--	96	.13	17,340	81	15	4	.1	160	7.4
Nov. 1-10	65,630	7.2		22	6.0	2.5	1.0	83	14	1.9		.2	--	98	.13	17,370	80	12	6	.1	164	7.4
Nov. 11-20	59,430	7.1		24	5.6	1.5	.9	79	17	1.1		.3	.05	96	.13	15,400	83	18	4	.1	162	7.4
Nov. 21-30	54,030	7.4		24	5.9	1.6	.9	82	16	.7		.3	--	97	.13	14,150	84	17	4	.1	164	7.6
Dec. 1-5	50,280	6.7		23	6.3	1.4	.5	82	18	1.5		.8	--	98	.13	13,300	83	16	4	.1	166	7.4
Dec. 18-31	42,500	8.1		24	5.9	1.6	.5	84	19	1.0		.7	.02	103	.14	11,820	84	15	4	.1	171	7.4
Jan. 1-2, 22-31, 1954	34,510	7.4		25	6.2	1.7	1.0	84	18	.9		.8	.02	105	.14	9,780	86	19	4	.1	173	7.4
Feb. 1-10	34,830	7.3		25	6.0	1.7	1.0	86	20	1.2		.8	--	107	.15	10,060	87	17	4	.1	177	7.8
Feb. 11-20	34,310	6.9		25	6.2	1.7	1.0	86	19	.9		.4	.02	106	.14	9,820	88	17	4	.1	178	7.7
Feb. 21-28	37,690	6.9		25	6.1	1.7	1.0	82	20	.9		.3	--	106	.14	10,790	88	20	4	.1	176	7.7
Mar. 1-10	46,410	7.0		25	6.3	1.9	1.0	87	19	.6		.6	--	104	.14	13,030	88	17	4	.1	177	7.4
Mar. 11-20	50,600	7.4		26	5.8	2.4	1.0	86	19	.9		.4	.08	104	.14	14,210	89	18	5	.1	176	7.4
Mar. 21-31	48,730	7.6		26	6.0	2.4	.6	85	20	.8		.4	--	104	.14	13,680	90	20	5	.1	173	7.4
Apr. 1-10	39,160	7.9		24	5.8	2.2	.8	85	18	1.1		.8	--	106	.14	11,210	84	14	5	.1	174	7.6
Apr. 11-20	51,490	7.9		23	5.4	2.2	.8	82	17	.9		.7	.03	100	.14	13,900	80	12	6	.1	168	7.5
Apr. 21-30	70,400	7.7		22	5.6	2.0	.8	83	15	.9		.5	--	98	.13	18,630	78	10	5	.1	163	7.4

May 1-10, 1954..	83,260	6.9		22	5.4	2.1	.8	81	15	1.0		.5	--	96	.13	21,580	77	11	6	.1	162	7.4
May 11-20	160,200	6.9		20	4.9	1.8	.8	74	13	1.0		.7	0.05	90	.12	38,930	70	9	5	.1	147	7.3
May 21-31	312,000	6.8		20	4.8	1.8	.8	73	11	1.3		.6	--	86	.12	72,450	70	10	5	.1	143	7.3
June 1-10	339,400	7.3		21	5.1	1.8	.9	77	11	.8		.5	--	84	.11	76,980	73	10	5	.1	147	7.2
June 11-20	334,600	7.1		21	4.7	1.7	.9	76	10	1.0		.6	.04	84	.11	75,890	72	9	5	.1	146	7.3
June 21-30	321,500	7.3		20	4.9	1.6	.9	74	11	1.0		.8	--	83	.11	72,050	70	9	5	.1	143	7.1
July 1-10	360,400	6.4		20	4.8	1.5	.9	73	9.9	.7		1.1	--	82	.11	79,790	70	10	4	.1	141	7.1
July 11-20	378,200	5.4		20	4.7	1.4	.9	72	9.7	.7		.8	.04	78	.11	79,650	69	10	4	.1	137	7.1
July 21-31	282,800	5.0		19	4.7	1.1	.7	71	9.4	.8		.8	--	73	.10	55,740	67	9	3	.1	135	7.1
Aug. 1-10	192,200	5.0		19	4.4	1.1	.7	71	10	.8		.7	--	73	.10	37,880	66	7	3	.1	134	7.1
Aug. 11-20	155,300	4.4		20	4.3	1.1	.7	71	11	.8		.5	.02	74	.10	31,030	68	9	3	.1	136	7.1
Aug. 21-31	138,900	4.7		20	4.4	1.2	.7	70	10	.8		.5	--	76	.10	28,500	68	11	4	.1	135	7.2
Sept. 1-10	130,600	4.6		19	4.4	1.2	.7	70	10	.8		.5	--	75	.10	26,450	66	8	4	.1	136	7.2
Sept. 11-20	97,790	5.2		20	4.5	1.3	.9	70	11	.8		.8	.06	78	.11	20,590	68	11	4	.1	136	7.2
Sept. 21-30	75,440	4.5		21	4.6	1.3	.9	70	13	1.0		.8	--	78	.11	15,890	71	14	4	.1	140	7.2
Weighted average	a 130,400	6.3		21	5.0	1.6	0.8	75	12	0.9		0.7	--	85	0.12	29,930	73	12	5	0.1	147	--

a Represents 97 percent of runoff for water year October 1953 to September 1954.

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT INTERNATIONAL BOUNDARY--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1954.
Water temperatures: October 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 98 ppm Oct. 21-31; minimum, 40 ppm May 11-20.
Hardness: Maximum, 59 ppm Oct. 11-20, 21-31; minimum, 18 ppm May 11-20.
Specific conductance: Maximum daily, 178 micromhos Oct. 29; minimum daily, 39.2 micromhos May 19.
Water temperatures: Maximum observed, 68°F July 16-19; minimum observed, freezing point January 20.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 98 ppm Oct. 21-31, 1953; minimum, 38 ppm May 1-10, 11-20, 1953.
Hardness: Maximum, 61 ppm Sept. 11-20, 1953; minimum, 18 ppm May 11-20, 1954.
Specific conductance: Maximum daily, 178 micromhos Oct. 29, 1953; minimum daily, 39.2 micromhos May 19, 1954.
Water temperatures: Maximum observed, 72°F July 13, 1953; minimum observed, freezing point on several days during winter months.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953 ..	358	10	0.02	14	5.7	3.3	2.3	38	35	0.8	0.1	1.0	--	92	0.13	88.9	58	27	10	0.2	143	7.2	7
Oct. 11-20	324	10	.03	14	5.9	2.9	2.3	38	36	.9	.1	1.0	0.06	94	.13	82.2	59	28	9	.2	146	7.0	5
Oct. 21-31	330	10	.02	14	5.9	3.8	2.4	38	40	1.0	.1	1.0	--	98	.13	87.3	59	28	12	.2	153	7.1	7
Nov. 1-10	363	9.9	.03	13	5.1	3.3	2.3	36	32	1.0	.1	1.0	--	86	.12	84.3	53	24	11	.2	134	6.9	8
Nov. 11-20.....	508	9.9	.05	14	5.3	2.4	1.4	39	33	1.2	.3	.9	.01	91	.12	125	57	25	8	.1	136	7.1	20
Nov. 21-30.....	683	9.6	.10	13	4.5	2.3	1.6	35	26	1.8	.3	.8	--	81	.11	149	51	22	9	.1	120	6.9	7
Dec. 1-9	890	9.6	.11	12	4.4	2.8	1.2	34	29	1.2	.3	.7	--	78	.11	187	48	20	11	.2	120	7.0	10
Dec. 10-20.....	2,231	10	.13	9.8	3.3	1.9	1.2	29	19	1.0	.3	.7	.02	63	.09	379	38	14	9	.1	91.5	6.8	5
Dec. 21-31.....	2,225	10	.05	9.5	3.5	1.8	.8	27	19	.8	.1	.6	--	61	.08	366	38	16	9	.1	90.0	6.9	4
Jan. 1-10, 1954 ..	1,978	9.9	.07	8.8	3.6	2.6	.8	28	21	1.0	.1	.5	--	64	.09	341	37	14	13	.2	96.1	6.9	4
Jan. 11-20	1,620	10	.11	9.7	4.1	2.0	.8	28	22	.9	.1	.7	.03	63	.09	276	41	18	9	.1	97.9	6.9	7
Jan. 21-31	1,582	10	.05	11	4.2	2.1	.9	28	25	1.3	.2	.6	--	70	.10	299	45	22	9	.1	107	6.8	7
Feb. 1-10.....	1,609	10	.27	11	4.3	2.4	1.3	28	26	1.0	.1	.6	.02	70	.10	304	45	22	10	.2	104	6.8	5
Feb. 11-13, 19-20	3,180	10	.07	11	4.2	2.4	1.3	26	25	1.5	.1	.6	--	68	.09	584	45	23	10	.2	99.4	6.8	7
Feb. 21-28.....	4,665	11	.06	8.8	3.2	1.5	1.3	24	18	1.0	.2	.3	--	57	.08	718	35	15	8	.1	80.5	6.8	5
Mar. 1-10	3,311	10	.08	8.4	3.6	1.9	1.3	25	19	1.0	.1	.2	--	59	.08	527	36	15	10	.1	93.5	6.7	5
Mar. 11-20	4,229	11	.05	6.6	3.1	2.0	.8	24	15	.6	.1	.5	.02	53	.07	605	29	10	13	.2	75.1	7.0	10
Mar. 21-31, Apr.1	2,698	10	.05	7.2	3.4	2.0	.7	25	16	.8	.1	.6	--	55	.07	401	32	11	12	.2	79.6	7.0	8

SPOKANE RIVER BASIN--Continued

COEUR D'ALENE RIVER AT CATALDO, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Apr. 2-10, 1954 ..	5,760	10	0.09	6.7	2.7	1.7	0.8	24	13	0.8	0.1	0.3	--	53	0.07	824	28	8	11	0.1	69.4	6.9	12
Apr. 11-20	10,550	9.4	.17	5.7	2.2	1.4	.6	21	8.7	1.1	.1	.3	0.03	43	.06	1,220	23	6	11	.1	54.3	6.9	11
Apr. 21-30	8,758	9.3	.09	5.6	2.1	1.4	.4	21	8.0	.6	.2	.4	--	43	.06	1,020	23	5	12	.1	53.2	6.8	5
May 1-10	10,020	9.2	.12	5.0	2.1	1.7	.4	21	8.1	.9	.1	.5	--	46	.06	1,240	21	4	15	.2	53.8	6.6	7
May 11-20	14,830	8.4	.13	4.4	1.8	1.7	.4	18	7.2	1.2	.2	.2	.02	40	.05	1,600	18	4	16	.2	48.6	6.6	8
May 21-31	8,032	8.3	.05	5.3	1.9	1.8	.6	21	9.7	.9	.1	.4	--	41	.06	889	21	4	14	.2	58.3	6.7	4
June 1-10	4,666	8.9	.06	6.1	1.8	1.8	.6	23	11	.6	.1	.3	--	44	.06	554	23	4	13	.2	63.1	6.8	4
June 11-20	4,122	8.7	.06	5.8	1.7	1.8	.6	23	11	.6	.2	.2	.03	44	.06	490	21	3	13	.2	62.7	6.7	4
June 21-30	2,900	8.7	.13	7.0	3.6	2.2	1.3	26	16	.6	.2	.4	--	45	.06	352	32	11	12	.2	76.8	6.8	10
July 1-10	1,960	10	.04	7.8	3.7	2.2	1.3	24	17	.4	.2	.4	--	51	.07	270	35	15	12	.2	79.8	6.8	5
July 11-20	1,389	10	.04	9.0	4.1	2.0	1.3	30	19	.8	.2	.6	.02	58	.08	218	39	15	10	.1	90.7	6.7	5
July 21-31	947	10	.04	10	4.7	1.9	1.3	30	22	.8	.2	.5	--	63	.09	161	44	20	8	.1	100	6.8	5
Aug. 1-10.....	746	10	.08	11	4.7	2.3	1.3	33	25	1.0	.2	.3	--	68	.09	137	47	20	9	.1	114	6.8	5
Aug. 11-20.....	675	9.5	.05	12	5.0	2.3	1.3	34	27	.8	.1	.6	.02	73	.10	133	50	23	9	.1	119	6.6	15
Aug. 21-31.....	780	9.5	.05	11	4.9	2.3	1.3	33	25	1.2	.1	.4	--	71	.10	150	48	21	9	.1	114	6.6	10
Sept. 1-10	612	11	.08	12	4.9	2.8	1.0	34	27	1.0	.1	.9	--	75	.10	124	50	22	11	.2	120	7.1	5
Sept. 11-20	658	10	.17	13	4.7	3.1	1.0	34	28	1.0	.1	.9	.03	77	.10	137	52	24	11	.2	122	6.9	5
Sept. 21-30	538	10	.04	13	4.8	3.8	1.4	34	32	.9	.1	.8	--	83	.11	121	52	24	13	.2	129	6.8	5
Weighted average	a 3,047	9.4	0.10	6.9	2.7	1.8	0.8	24	14	0.9	0.1	0.4	--	51	0.07	420	28	9	12	0.1	70.8	--	--

a Represents 98 percent of runoff for water year October 1953 to September 1954.

SPOKANE RIVER BASIN--Continued

COEUR D'ALENE RIVER AT CATALDO, IDAHO--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
Water temperatures: November 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 106 ppm May 1-10; minimum, 77 ppm Oct. 11-20.
Specific conductance: Maximum daily, 174 micromhos Jan. 11; minimum daily, 126 micromhos May 30-31, June 1.
Water temperatures: Maximum observed, 62°F on many days during October and September; minimum observed, 39°F on several days during March.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 110 ppm Apr. 1-10, 11-20, 1952, May 11-20, 1953; minimum, 77 ppm Oct. 11-20, 1953.
Specific conductance: Maximum daily, 183 micromhos Apr. 13, 21, 1952, May 11, 13, 1953; minimum daily, 126 micromhos May 30-31, June 1, 1954.
Water temperatures: Maximum observed, 65°F Aug. 19, 1951; minimum observed, 35°F Mar. 3-4, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953...	65,380	--		--	--	--	--	--	--	--		--	--	79	0.11	13,950	--	--	--	--	141	--
Oct. 11-20	69,120	--		--	--	--	--	--	--	--		--	--	77	.10	14,370	--	--	--	--	145	--
Oct. 21-31	70,760	--		--	--	--	--	--	--	--		--	--	85	.12	16,240	--	--	--	--	151	--
Nov. 1-10.....	66,350	--		--	--	--	--	--	--	--		--	--	87	.12	15,590	--	--	--	--	153	--
Nov. 11-20.....	62,980	--		--	--	--	--	--	--	--		--	--	89	.12	15,130	--	--	--	--	157	--
Nov. 21-30.....	56,420	6.8		23	3.8	2.1	--	83	11	1.1		0.6	0.05	90	.12	13,710	74	6	6	0.1	156	7.7
Dec. 1-10.....	60,070	6.6		23	4.2	2.3	--	80	13	1.3		.6	.03	91	.12	14,760	75	9	6	.1	161	7.5
Dec. 11-20.....	52,290	6.8		22	4.3	2.0	--	80	13	.9		.6	.03	91	.12	12,850	74	8	6	.1	156	7.3
Dec. 21-31.....	51,830	5.9		22	4.3	1.8	--	78	13	1.4		.5	.04	91	.12	12,730	74	10	5	.1	157	7.4
Jan. 1-10, 1954...	54,060	6.6		22	4.5	1.8	--	78	13	1.1		.6	.03	91	.12	13,280	74	10	5	.1	159	7.6
Jan. 11-20.....	67,460	5.9		22	5.1	2.6	--	78	13	1.2		.7	.06	92	.13	16,760	76	12	7	.1	161	7.4
Jan. 21-31.....	63,250	5.5		23	4.5	2.0	--	80	13	1.0		.7	.08	88	.12	15,030	75	9	5	.1	159	7.3
Feb. 1-10	63,700	--		--	--	--	--	--	--	--		--	--	95	.13	16,340	--	--	--	--	162	--
Feb. 11-20.....	54,020	6.7		23	5.1	2.0	--	82	15	1.4		.9	.03	95	.13	13,860	78	11	5	.1	163	7.3
Feb. 21-28.....	49,460	--		--	--	--	--	--	--	--		--	--	97	.13	12,950	--	--	--	--	166	--
Mar. 1-10	60,980	--		--	--	--	--	--	--	--		--	--	98	.13	16,140	--	--	--	--	165	--
Mar. 11-20	66,950	7.7		23	5.1	2.0	--	82	15	1.3		.9	.04	98	.13	17,710	78	11	5	.1	164	7.4
Mar. 21-31	69,790	--		--	--	--	--	--	--	--		--	--	102	.14	19,220	--	--	--	--	165	--
Apr. 1-10.....	63,150	--		--	--	--	--	--	--	--		--	--	101	.14	17,220	--	--	--	--	167	--
Apr. 11-20.....	51,380	8.3		23	4.6	2.3	--	79	17	1.2		1.3	.06	102	.14	14,150	76	11	6	.1	166	7.4
Apr. 21-30.....	60,750	--		--	--	--	--	--	--	--		--	--	104	.14	17,060	--	--	--	--	171	--
May 1-10.....	107,300	8.9		23	5.7	2.7	0.8	81	17	1.4		1.0	.00	106	.14	30,710	81	14	5	.1	165	7.4
May 11-20.....	218,100	9.5		23	5.7	2.7	.8	81	16	1.1		.7	.01	103	.14	60,650	81	14	7	.1	163	7.5
May 21-31.....	359,400	8.6		20	5.1	2.6	.9	72	13	1.2		.6	.02	89	.12	86,360	71	12	7	.1	144	7.5

June 1-10, 1954...	379,300	8.5		19	4.5	2.6	.8	67	11	1.1		.6	0.02	86	.12	88,070	66	11	8	.1	132	7.3
June 11-20.....	364,700	8.0		19	5.7	2.6	.8	70	13	1.2		.8	.01	83	.11	81,730	71	14	7	.1	136	7.3
June 21-30.....	330,200	7.1		19	4.0	2.2	--	71	11	1.0		.6	.04	84	.11	74,890	65	7	7	.1	143	7.5
July 1-10.....	329,900	6.7		20	4.0	1.8	--	71	9.4	.8		.5	.01	84	.11	74,820	66	8	6	.1	144	7.3
July 11-20.....	371,600	6.6		19	4.4	1.9	--	74	11	1.1		.8	.00	84	.11	84,280	66	5	6	.1	139	7.8
July 21-31.....	291,100	--		--	--	--	--	--	--	--		--	--	81	.11	63,660	--	--	--	--	138	--
Aug. 1-10.....	193,800	--		--	--	--	--	--	--	--		--	--	81	.11	42,380	--	--	--	--	138	--
Aug. 11-20.....	158,300	5.8		19	4.4	1.6	--	74	11	1.1		.8	.04	82	.11	35,050	66	5	5	.1	137	7.4
Aug. 21-31	142,900	--		--	--	--	--	--	--	--		--	--	78	.11	30,090	--	--	--	--	136	--
Sept. 1-10.....	134,800	--		--	--	--	--	--	--	--		--	--	78	.11	28,390	--	--	--	--	135	--
Sept. 11-20.....	100,300	4.7		19	4.3	1.5	--	72	10	1.0		.8	.00	80	.11	21,660	65	6	5	.1	136	7.5
Sept. 21-30.....	86,000	--		--	--	--	--	--	--	--		--	--	82	.11	19,040	--	--	--	--	136	--
Weighted average	135,400	--		--	--	--	--	--	--	--		--	--	87	0.12	31,810	--	--	--	--	146	--

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COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT GRAND COULEE DAM, WASH.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at 10 a.m./

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

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.
RECORDS AVAILABLE.--Chemical analyses: February 1910 to January 1911, December 1952 to September 1954.
Water temperatures: December 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 52 ppm Oct. 21-31, Apr. 1-10; minimum, 30 ppm Sept. 21-30.
Hardness: Maximum, 35 ppm Nov. 11-21; minimum, 17 ppm Sept. 21-30.
Specific conductance: Maximum daily, 89.5 micromhos Nov. 12; minimum daily, 42.3 micromhos Oct. 21.
Water temperatures: Maximum, 59°F Aug. 2; minimum, freezing point on several days during January and February.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 52 ppm Oct. 21-31, 1953, Apr. 1-10, 1954; minimum, 30 ppm Sept. 21-30, 1954.
Hardness: Maximum, 35 ppm Nov. 11-21, 1953; minimum, 17 ppm Sept. 21-30, 1954.
Specific conductance: Maximum daily, 89.5 micromhos Nov. 12, 1953; minimum daily, 42.3 micromhos Oct. 21, 1953.
Water temperatures: Maximum, 61°F July 12, 18, 1953; minimum, freezing point on several days during January and February 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953..	1,206	6.0	0.11	5.2	2.1	2.5	0.5	29	1.4	1.2	0.1	1.0	--	36	0.05	117	22	0	20	0.2	52.1	7.1	1
Oct. 11-20	905	5.6	.04	4.8	2.1	2.3	.5	28	1.6	1.0	.1	.8	0.06	47	.06	115	21	0	19	.2	52.9	7.2	1
Oct. 21-31	591	6.0	.04	6.4	1.9	2.8	.7	33	1.5	1.8	.2	.7	--	52	.07	83	24	0	20	.3	59.3	7.1	2
Nov. 1-10.....	164	11	.00	8.7	2.4	3.5	.7	44	1.6	2.0	.1	.5	--	48	.07	21	32	0	19	.3	78.4	7.4	2
Nov. 11-21	156	11	.03	9.1	3.0	3.6	1.2	45	1.6	2.2	.1	.6	.04	48	.07	20	35	0	18	.3	83.3	7.3	1
Nov. 22-30	229	10	.04	9.1	1.8	3.5	.8	39	1.7	2.2	.1	.6	--	40	.05	25	30	0	20	.3	71.3	7.2	2
Dec. 1-10.....	723	10	.00	6.9	1.5	2.9	.6	34	1.7	1.2	.2	.7	--	42	.06	82	23	0	21	.3	61.8	7.7	0
Dec. 11-20.....	1,346	10	.00	6.7	1.3	2.9	.8	32	1.6	1.0	.2	.8	.01	42	.06	153	22	0	21	.3	58.4	7.7	0
Dec. 21-31	1,181	10	.00	6.7	1.5	2.9	.8	32	1.6	1.0	.2	.9	--	41	.06	131	23	0	21	.3	59.5	7.2	1
Jan. 1-10, 1954..	1,744	7.6	.00	6.0	.9	2.6	.8	28	1.7	1.8	.2	1.0	--	40	.05	188	19	0	22	.3	54.3	6.9	3
Jan. 11-20	2,254	6.8	.00	5.6	1.2	2.2	.8	25	1.6	1.8	.2	1.0	.07	41	.06	250	19	0	19	.2	50.5	6.9	3
Jan. 21-31	2,180	6.5	.00	5.4	1.2	2.3	.8	25	1.6	1.2	.3	1.0	--	36	.05	212	18	0	20	.2	49.2	7.1	2
Feb. 1-14.....	1,749	7.5	.02	6.4	.8	2.3	.7	27	1.2	2.0	.1	.5	.04	32	.04	151	19	0	20	.2	51.7	7.4	--
Feb. 15-28	1,220	8.4	.00	8.5	1.0	2.8	.9	34	1.9	1.2	.2	1.1	--	46	.06	152	25	0	19	.2	61.5	7.1	1
Mar. 1-10.....	1,243	7.4	.00	6.6	2.0	2.7	.9	36	1.5	1.2	.1	.1	--	45	.06	151	25	0	18	.2	64.1	7.4	1
Mar. 11-20.....	1,467	7.8	.00	6.4	2.5	2.6	.8	35	1.6	1.2	.1	.0	--	44	.06	174	26	0	17	.2	61.4	7.5	2
Mar. 21-31.....	1,122	7.8	.00	6.2	2.5	3.0	.8	36	1.2	1.2	.1	.8	--	47	.06	142	26	0	20	.3	64.0	7.4	2
Apr. 1-10.....	1,147	7.8	.00	6.7	1.9	3.1	.9	35	2.0	1.0	.1	.8	--	52	.07	161	24	0	21	.3	70.5	7.3	0
Apr. 11-20.....	2,051	8.0	.00	6.4	1.6	2.8	.8	33	1.8	1.0	.1	.8	.22	48	.07	266	22	0	21	.3	67.5	7.2	0
Apr. 21-30	2,373	7.2	.00	6.0	2.0	2.4	.9	30	1.8	1.0	.2	.8	--	44	.06	282	23	0	18	.2	62.4	7.1	0

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT CLE ELUM, WASH.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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)	Chlorids (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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
May 1-10, 1954	2,035	8.4	0.03	6.0	2.0	2.3	0.9	33	1.5	0.8	0.2	0.7	--	42	0.06	231	23	0	17	0.2	61.1	7.8	5
May 11-20	2,013	9.3	.09	6.0	1.6	2.6	1.0	30	1.5	1.0	.2	.8	0.05	48	.07	261	21	0	20	.2	60.4	7.4	0
May 21-31	2,135	7.3	.04	6.2	1.8	2.2	.8	33	1.7	1.0	.1	.8	--	44	.06	254	23	0	17	.2	61.4	7.6	5
June 1-10	2,596	9.1	.11	6.0	1.7	1.7	--	31	1.4	1.2	.1	.5	--	37	.05	259	22	0	14	.2	55.6	7.2	2
June 11-20	3,248	8.6	.15	5.6	1.7	1.5	--	28	1.4	1.2	.1	.5	--	36	.05	316	21	0	13	.1	51.4	7.1	2
July 21-30	4,375	7.9	.17	5.6	1.5	1.5	--	27	1.4	1.0	.1	.5	--	32	.04	378	20	0	14	.1	48.6	7.1	0
July 1-10	4,940	7.1	.00	5.2	1.4	1.8	.6	27	1.3	1.0	.1	.7	--	37	.05	494	19	0	17	.2	47.9	7.0	--
July 11-20	3,679	7.1	.00	5.0	1.6	1.7	.5	28	1.2	.8	.1	.6	.09	36	.05	358	19	0	16	.2	47.6	6.9	--
July 21-31	2,673	6.5	.01	5.0	1.6	1.7	.5	27	1.1	.8	.1	.6	--	36	.05	260	19	0	16	.2	47.5	6.9	--
Aug. 1-10	2,868	7.1	.00	5.0	1.5	1.8	.4	28	.9	.8	.1	.6	--	36	.05	279	19	0	17	.2	48.2	6.8	--
Aug. 11-20	3,185	6.5	.00	5.0	1.5	1.7	.6	27	1.0	1.0	.1	.6	.05	37	.05	318	19	0	16	.2	47.4	6.8	--
Aug. 21-31	2,709	6.5	.00	4.8	1.6	1.7	.4	27	1.1	.8	.1	.7	--	39	.05	285	19	0	16	.2	46.7	6.8	--
Sept. 1-10	2,058	11	.00	4.8	1.6	1.9	.8	27	1.2	1.0	.1	.4	--	33	.04	183	19	0	17	.2	49.5	7.7	0
Sept. 11-20	2,378	8.7	.00	5.6	1.3	1.8	.8	26	1.2	1.0	.1	.3	.02	31	.04	199	19	0	16	.2	47.3	7.6	0
Sept. 21-30	2,548	8.2	.00	5.0	1.2	1.7	.7	26	1.1	.8	.1	.3	--	30	.04	206	17	0	17	.2	44.8	7.4	0
Weighted average	1,943	7.7	0.03	5.7	1.6	2.1	0.7	29	1.4	1.1	0.1	0.6	--	39	0.05	205	21	0	17	0.2	53.4	--	--

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT CLE ELUM, WASH.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT KIONA, WASH.

LOCATION.--At highway bridge just downstream from gaging station 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 1954.
Water temperatures: December 1952 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 226 ppm Sept. 11-20; minimum 89 ppm July 1-10.
Hardness: Maximum, 133 ppm Oct. 11-20; minimum, 49 ppm June 18, 22-30, July 1-10.
Specific conductance: Maximum daily, 367 micromhos Sept. 11; minimum daily, 118 micromhos May 20.
Water temperatures: Maximum, 78°F Aug. 5; minimum, freezing point on several days during January.
EXTREMES, 1952-54.--Dissolved solids: Maximum, 236 ppm Sept. 11-20, 1953; minimum, 89 ppm July 1-10, 1954.
Hardness: Maximum, 145 ppm Sept. 11-20, 21-30, 1953; minimum, 49 ppm June 18, 22-30, July 1-10, 1954.
Specific conductance: Maximum daily, 385 micromhos Sept. 18, 1953; minimum daily, 118 micromhos May 20, 1954.
Water temperatures: Maximum, 78°F July 18, Aug. 15, 1953, Aug. 5, 1954; minimum, freezing point on several days during January 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1346.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953...	1,937	32	0.06	31	12	23	4.0	182	21	6.0	0.2	1.8	0.09	193	0.26	1,010	127	0	28	0.9	352	7.7	4
Oct. 11-20	2,010	32	.06	32	13	25	3.6	189	23	7.0	.3	2.1	.06	207	.28	1,120	133	0	28	.9	366	7.8	4
Oct. 21-31.....	2,902	26	.04	26	9.4	19	3.0	150	16	6.0	.2	2.0	.01	156	.21	1,220	104	0	28	.8	288	7.7	2
Nov. 1-10.....	2,145	33	.32	29	11	21	3.3	166	19	7.5	.3	2.6	--	206	.28	1,190	118	0	27	.8	320	8.1	3
Nov. 11-20.....	2,118	32	.13	29	11	22	3.5	166	20	8.2	.3	3.0	.08	200	.27	1,140	118	0	28	.9	321	7.8	4
Nov. 21-30.....	2,223	30	.04	27	10	21	3.2	154	19	8.0	.2	3.1	--	197	.27	1,180	108	0	29	.9	302	7.7	4
Dec. 1-11, 18	2,772	27	.00	24	10	18	2.8	135	16	5.8	.2	3.0	--	168	.23	1,260	101	0	27	.8	262	8.1	4
Dec. 12-17, 19-31.	4,313	20	.00	17	4.6	12	2.0	92	9.8	3.5	.2	2.3	.02	116	.16	1,350	61	0	29	.7	179	7.8	5
Jan. 1-10, 1954 ..	4,276	22	.00	16	5.4	12	2.2	89	8.5	3.8	.3	1.8	--	116	.16	1,340	62	0	29	.7	177	7.9	5
Jan. 11-20	4,746	16	.00	13	6.0	9.2	1.9	78	9.2	3.5	.3	1.6	.07	103	.14	1,320	57	0	25	.5	153	7.7	3
Jan. 21-31	4,251	19	.00	13	6.2	9.5	2.0	80	8.4	3.8	.2	1.8	.--	106	.14	1,220	58	0	25	.5	157	7.8	2
Feb. 1-7, 9-10, 23-27.....	5,368	21	.02	14	6.6	11	2.1	86	8.9	3.5	.3	2.3	.02	116	.16	1,680	62	0	27	.6	170	7.7	3
Feb. 8, 11-22, 28.	4,637	20	.02	15	6.7	12	2.4	92	11	4.5	.3	2.3	--	127	.17	1,590	65	0	28	.6	189	7.9	2
Mar. 1-10.....	5,088	25	.04	16	6.8	11	2.2	93	8.8	4.2	.2	1.8	--	129	.18	1,770	68	0	25	.6	180	8.1	4
Mar. 11-20.....	5,436	23	.00	14	6.8	9.6	2.0	86	7.6	3.2	.2	1.7	--	123	.17	1,810	63	0	24	.5	164	7.8	3
Mar. 21-31.....	4,013	25	.03	16	7.1	11	1.9	95	9.0	4.0	.2	1.5	--	128	.17	1,390	69	0	25	.6	182	8.0	3
Apr. 1-10.....	3,877	18	.00	17	5.4	11	2.0	94	8.0	3.8	.2	1.2	--	122	.17	1,280	65	0	26	.6	175	7.7	0
Apr. 11-17, 28-30	4,169	18	.01	16	5.4	11	1.9	89	8.3	3.5	.3	1.4	.10	118	.16	1,330	62	0	27	.6	173	7.7	0
Apr. 18-27.....	6,569	18	.01	14	4.5	8.3	1.9	75	6.3	3.2	.3	1.4	--	103	.14	1,830	53	0	24	.5	144	7.8	0

May 1-10, 1954 ...	4,285	25	.09	18	6.6	12	--	102	12	4.5	.1	1.6	--	133	.18	1,540	72	0	27	.6	199	7.2	5
May 11-20.....	8,764	21	.00	14	4.1	7.9	2.0	72	6.3	3.5	.2	1.4	--	95	.13	2,250	52	0	24	.5	140	7.4	3
May 21-31.....	7,571	23	.00	15	4.6	8.9	2.2	80	7.4	3.5	.1	1.5	--	104	.14	2,130	56	0	25	.5	155	7.4	5
June 1-10	5,730	25	.00	17	6.3	10	2.5	95	9.0	3.8	.1	1.4	--	120	.16	1,860	68	0	23	.5	181	7.9	3
June 11-17, 19-21.	6,689	23	.00	16	4.9	10	2.5	87	8.2	3.2	.2	1.7	--	111	.15	2,000	60	0	26	.6	164	7.8	3
June 18, 22-30....	8,341	21	.00	13	4.1	8.0	2.0	70	6.5	2.8	.1	1.0	--	91	.12	2,050	49	0	25	.5	134	7.7	2
July 1-10.....	8,324	19	.00	13	4.1	7.9	2.0	70	6.5	2.5	.1	1.4	--	89	.12	2,000	49	0	25	.5	133	7.6	5
July 11-20.....	5,540	21	.00	15	4.8	10	2.1	84	8.6	3.0	.3	1.6	0.06	110	.15	1,650	57	0	27	.6	161	7.3	--
July 21-31.....	2,609	28	.00	23	8.3	16	2.9	132	14	5.0	.3	1.7	--	168	.23	1,180	92	0	27	.7	247	7.8	--
Aug. 1-31.....	2,266	31	.00	27	9.7	20	3.9	157	17	6.2	.3	1.6	.04	200	.27	1,220	107	0	28	.8	296	7.8	0
Sept. 1-10.....	2,042	37	.00	30	11	23	4.4	177	19	6.5	.3	1.6	--	225	.31	1,240	120	0	29	.9	327	8.0	0
Sept. 11-20.....	2,406	38	.00	30	11	23	3.9	174	20	6.8	.1	2.2	.05	226	.31	1,470	120	0	29	.9	328	8.0	0
Sept. 21-30.....	3,060	31	.00	25	8.8	18	3.2	142	15	5.8	.3	1.8	--	183	.25	1,520	99	0	28	.8	271	7.9	0
Weighted average	4,269	23	0.02	18	6.4	12	2.4	100	10	4.1	0.2	1.7	--	129	0.18	1,490	71	0	26	0.6	193	--	--

YAKIMA RIVER BASIN--Continued

YAKIMA RIVER AT KIONA, WASH.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

SNAKE RIVER MAIN STEM

SNAKE RIVER NEAR HEISE, IDAHO

LOCATION.--At Eagle Rock canal headgate, 1¼ miles upstream from Heise, Bonneville County, 1 5/8 miles downstream from Anderson canal headgate, 1¾ miles downstream from gaging station, about 4¾ 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 1953 to September 1954.
Water temperatures: January 1953 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 358 ppm Dec. 21-31; minimum, 161 ppm July 1-10.
Hardness: Maximum, 274 ppm Mar. 1-10; minimum, 126 ppm July 1-10.
Specific conductance: Maximum daily, 628 micromhos Dec. 25; minimum daily, 240 micromhos June 27.
Water temperatures: Maximum observed, 62°F Aug. 10; minimum observed, freezing point on many days from November to April.
EXTREMES, January 1953 to September 1954.--Dissolved solids: Maximum, 358 ppm Dec. 21-31, 1953; minimum, 161 ppm July 1-10, 1954.
Hardness: Maximum, 274 ppm Mar. 1-10, 1954; minimum, 126 ppm July 1-10, 1954.
Specific conductance: Maximum daily, 628 micromhos Dec. 25, 1953; minimum daily, 240 micromhos June 27, 1954.
Water temperatures: Maximum observed, 64°F Aug. 1, 1953; minimum, freezing point on many days from November 1953 to April 1954.
REMARKS.--Values reported for dissolved solids are residues 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 1953 to September 1954 given in WSP 1347. 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, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953	3,116	11	0.02	68	18	13	2.2	202	72	16	0.3	0.9	--	304	0.41	2,560	238	73	11	0.4	490	7.6	7
Oct. 11-20	2,920	10	.02	69	19	14	2.3	211	76	17	.3	.9	0.08	318	.43	2,510	250	77	11	.4	513	7.6	7
Oct. 21-31	2,954	10	.02	68	19	14	2.5	214	76	18	.3	.9	--	320	.44	2,550	248	72	11	.4	514	7.6	7
Nov. 1-10	2,870	9.9	.02	68	20	14	2.5	215	75	18	.3	1.0	--	324	.44	2,510	252	76	11	.4	519	7.6	7
Nov. 11-20	2,732	10	.03	69	21	15	2.5	218	79	18	.3	1.0	.08	328	.45	2,420	258	80	11	.4	528	7.6	5
Nov. 21-30	2,697	11	.04	72	19	15	2.0	214	79	20	.5	.8	--	332	.45	2,420	258	82	11	.4	534	7.8	5
Dec. 1-10	2,573	11	.04	72	19	15	2.1	220	81	21	.5	.4	--	335	.46	2,330	258	77	11	.4	534	8.1	5
Dec. 11-20	2,478	10	.03	72	20	16	2.5	224	80	21	.3	1.6	.10	340	.46	2,270	262	78	12	.4	553	7.6	4
Dec. 21-31	2,265	11	.05	74	21	17	2.5	232	87	22	.2	1.5	--	358	.49	2,190	271	81	12	.5	580	7.7	3
Jan. 1-10, 1954	2,345	11	.04	71	20	17	2.5	222	82	20	.3	1.3	--	342	.47	2,170	259	77	12	.5	553	7.8	3
Jan. 11-20	2,315	11	.04	72	20	17	2.5	222	83	22	.3	1.3	.08	347	.47	2,170	262	80	12	.5	555	7.7	3
Jan. 21-31	2,335	11	.02	72	20	17	2.4	220	83	20	.3	.7	--	339	.46	2,140	262	81	12	.5	553	7.8	5
Feb. 1-10	2,252	11	.02	73	21	17	2.5	229	86	22	.2	1.2	--	352	.48	2,140	268	81	12	.5	569	7.9	5
Feb. 11-20	2,255	11	.02	71	20	16	2.5	219	83	22	.4	1.3	.10	342	.47	2,080	259	80	12	.4	552	7.7	7
Feb. 21-28	2,190	10	.02	72	20	17	2.5	221	84	23	.4	1.3	--	342	.47	2,020	262	80	12	.5	556	7.8	7
Mar. 1-10	2,176	11	.02	75	21	17	2.5	229	86	24	.2	1.1	--	354	.48	2,080	274	86	12	.4	573	7.9	7
Mar. 11-20	2,453	11	.03	69	19	17	2.6	214	76	22	.4	1.3	.08	330	.45	2,190	250	74	13	.5	532	7.6	12
Mar. 21-31	2,274	11	.05	70	19	18	2.6	218	81	24	.3	.9	--	340	.46	2,090	252	74	13	.5	553	7.7	8

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR HEISE, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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)	Chlorids (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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Apr. 1-10, 1954...	2,695	10	0.08	68	19	18	2.6	215	76	23	0.3	0.8	--	326	0.44	2,370	248	72	13	0.5	534	7.7	8
Apr. 11-20	4,738	9.3	.05	60	16	15	2.2	198	58	18	.3	.7	0.06	281	.38	3,590	216	54	13	.4	464	7.7	10
Apr. 21-30	7,865	12	.05	54	13	11	1.8	178	45	11	.4	1.8	--	243	.33	5,160	188	42	11	.3	398	7.6	10
May 1-10	9,423	11	.05	51	12	9.3	1.5	172	40	8.4	.3	1.2	--	226	.31	5,750	177	36	10	.3	371	7.8	10
May 11-20	18,350	10	.07	43	9.7	5.7	1.2	147	27	5.0	.4	1.7	.04	180	.24	8,920	147	27	8	.2	300	7.6	15
May 21-31	21,780	10	.08	37	8.8	6.1	1.4	132	24	5.2	.3	1.0	--	166	.23	9,760	128	20	9	.2	270	7.7	15
June 1-10.....	12,390	11	.05	41	11	7.7	1.5	144	33	6.8	.3	.8	--	189	.26	6,320	148	30	10	.3	312	7.6	15
June 11-20.....	11,270	11	.03	44	12	8.2	1.3	161	35	7.0	.1	.8	.04	202	.27	6,150	159	27	10	.3	336	8.0	7
June 21-30.....	20,980	12	.04	39	9.0	6.7	1.5	137	25	5.1	.1	1.0	--	168	.23	9,520	134	22	10	.3	279	7.7	8
July 1-10	17,170	11	.03	36	8.8	7.0	1.7	127	26	5.2	.2	.8	--	161	.22	7,460	126	22	11	.3	268	7.4	7
July 11-20	13,900	11	.03	36	9.3	7.6	1.7	127	28	6.5	.3	.8	.05	168	.23	6,300	128	24	11	.3	282	7.5	9
July 21-31	11,570	11	.03	37	9.6	8.7	1.8	130	32	7.1	.4	.4	--	176	.24	5,500	132	25	12	.3	291	7.5	7
Aug. 1-10	10,650	14	.03	37	9.9	9.5	2.3	126	34	7.4	.5	.5	--	176	.24	5,060	133	30	13	.4	295	7.4	7
Aug. 11-20.....	8,923	13	.03	41	11	10	1.8	134	38	8.2	.5	.5	.07	188	.26	4,530	148	38	13	.4	312	7.4	6
Aug. 21-31.....	8,138	14	.03	40	11	10	1.9	134	39	9.2	.6	.5	--	190	.26	4,170	145	35	13	.4	318	7.5	7
Sept. 1-10	9,009	14	.03	38	10	11	1.9	126	36	9.2	.6	.7	--	179	.24	4,350	136	33	15	.4	302	7.4	8
Sept. 11-20	7,840	15	.02	38	9.9	12	2.0	133	37	12	.7	.2	.12	191	.26	4,040	136	26	16	.4	318	7.3	3
Sept. 21-30	5,173	13	.02	48	13	13	2.0	160	52	14	.6	.6	--	236	.32	3,300	173	42	14	.4	389	7.2	3
Weighted average	6,898	11	0.04	46	12	9.8	1.8	156	41	9.9	0.3	0.9	--	214	0.29	3,990	164	36	11	0.3	352	--	--

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR HEISE, IDAHO--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

HENRYS FORK BASIN

HENRYS FORK NEAR REXBURG, IDAHO

LOCATION.--Temperature recorder at gaging station, 200 feet downstream from highway bridge, downstream from all tributaries, and 7 miles west of Rexburg, Madison County.
DRAINAGE AREA.--2,920 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum 76°F July 13; minimum, 33°F on many days.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1347.

Temperature (°F) of water, water year October 1953 to September 1954

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

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 River.
DRAINAGE AREA.--35,800 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1954.
Water temperatures: March 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 358 ppm Oct. 11-20; minimum, 308 ppm Apr. 21-30, May 11-20.
Hardness: Maximum, 220 ppm Nov. 1-10, Nov. 21-30; minimum, 182 ppm May 11-20.
Specific conductance: Maximum daily, 574 micromhos Oct. 21; minimum daily, 472 micromhos Mar. 9.
Water temperatures: Maximum observed, 69°F July 15; minimum observed, 46°F on several days during December and January.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 359 ppm Sept. 1-10, 1952; minimum, 252 ppm May 1-10, 1952.
Hardness: Maximum, 220 ppm Nov. 1-10, Nov. 21-30, 1953; 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, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1347.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953..	9,202	41		49	23	39	4.4	234	65	29		3.0	--	354	0.48	8,800	217	26	28	1.2	556	8.2
Oct. 11-20.....	9,419	39		48	23	39	4.6	230	63	30		3.1	0.13	358	.48	9,100	214	26	28	1.2	558	8.2
Oct. 21-31.....	9,444	38		49	23	37	3.4	230	64	28		3.0	--	351	.47	8,950	217	28	27	1.1	555	7.9
Nov. 1-10	9,237	39		40	23	37	3.4	228	67	28		3.3	--	350	.47	8,730	220	32	26	1.1	554	8.0
Nov. 11-20	9,264	36		48	23	37	3.0	226	62	29		3.1	--	348	.47	8,700	214	30	27	1.1	551	8.0
Nov. 21-30	10,050	35		50	23	37	3.0	228	63	30		3.1	--	345	.47	9,360	220	32	26	1.1	551	8.0
Dec. 1-10	9,974	35		48	22	36	4.5	225	59	30		3.9	--	346	.47	9,320	210	26	27	1.1	552	7.9
Dec. 11-20	10,890	35		49	21	36	4.5	225	58	30		3.6	.09	354	.48	10,410	209	24	27	1.1	550	7.9
Dec. 21-31	10,310	34		47	22	35	4.5	224	57	30		3.7	--	340	.46	9,460	208	24	26	1.0	544	7.9
Jan. 1-10, 1954..	10,330	37		48	21	34	4.7	224	58	30		3.4	--	343	.47	9,570	206	23	26	1.0	546	8.0
Jan. 18-25.....	10,160	37		50	21	34	4.6	222	59	30		3.4	.14	342	.47	9,380	212	30	25	1.0	542	8.0
Feb. 1-10	10,230	34		48	20	32	4.5	216	57	28		3.7	--	329	.45	9,090	202	25	25	1.0	527	7.9
Feb. 11-20	10,370	34		47	20	32	4.5	215	55	28		3.5	.14	328	.45	9,180	200	24	25	1.0	519	8.0
Feb. 21-28	10,500	33		48	20	32	4.5	216	55	28		3.0	--	324	.44	9,190	202	25	25	1.0	519	8.1
Mar. 1-10.....	10,840	32		46	20	31	4.5	210	55	28		2.7	--	320	.44	9,370	197	25	25	1.0	511	7.9
Mar. 11-20.....	10,320	31		47	19	33	3.7	210	54	27		3.2	.37	318	.43	8,860	196	24	26	1.0	519	7.8
Mar. 21-31.....	10,090	32		48	19	33	3.7	212	54	27		3.3	--	322	.44	8,770	198	24	26	1.0	516	7.7
Apr. 1-10	12,080	30		47	19	31	4.0	212	54	27		2.8	--	318	.43	10,370	196	22	25	1.0	518	7.7
Apr. 11-20	10,220	28		48	19	30	4.0	209	53	26		2.9	.41	313	.43	8,640	198	26	24	.9	509	7.7
Apr. 21-30	8,943	27		46	18	30	4.0	208	54	26		2.9	--	308	.42	7,440	189	18	25	.9	504	7.9

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER AT KING HILL, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
May 1-10, 1954 ...	7,636	27		45	19	30	4.0	206	53	26		2.4	--	310	0.42	6,390	190	22	25	0.9	506	8.0
May 11-20	6,965	31		40	20	32	4.5	200	55	26		3.0	0.09	308	.42	5,790	182	18	27	1.0	499	7.8
May 21-31	11,320	33		46	20	32	4.5	210	56	27		2.8	--	319	.43	9,750	197	25	26	1.0	517	7.9
June 1-10.....	9,015	34		48	20	30	4.2	212	54	25		2.6	--	318	.43	7,740	202	28	24	.9	510	8.0
June 11-20.....	9,477	30		47	20	32	4.5	216	57	26		2.6	.14	328	.45	8,390	200	22	25	1.0	523	8.0
June 21-30.....	8,100	38		45	21	34	4.6	218	57	26		2.9	--	336	.46	7,350	199	20	27	1.0	516	8.0
July 1-10	8,113	38		45	22	35	4.1	218	56	28		3.0	--	341	.46	7,470	203	24	27	1.1	530	8.0
July 11-20	7,642	37		45	22	32	4.5	216	56	26		2.9	.09	333	.45	6,870	203	26	25	1.0	519	7.9
July 21-31	7,968	37		46	22	35	4.5	221	58	28		2.9	--	342	.47	7,360	206	24	26	1.1	528	8.1
Aug. 1-10	8,028	38		46	21	35	4.5	221	58	28		3.2	--	341	.46	7,390	202	20	27	1.1	531	8.1
Aug. 11-20	8,043	37		46	22	34	4.5	221	57	27		3.0	.08	338	.46	7,340	206	24	26	1.0	539	8.1
Aug. 21-31	8,412	43		46	21	35	4.9	227	59	28		4.1	--	341	.46	7,740	202	16	27	1.1	538	7.9
Sept. 1-10	8,451	39		48	21	35	4.9	223	59	29		4.2	.15	342	.47	7,800	206	24	26	1.1	541	7.7
Sept 11-20	8,986	36		48	21	35	4.9	225	60	30		4.2	--	343	.47	8,320	206	22	26	1.1	544	7.9
Sept. 21-30	9,226	37		48	22	35	4.9	226	61	29		4.3	--	345	.47	8,590	210	26	26	1.0	547	7.9
Weighted average	a 9,400	35		47	21	34	4.3	219	58	28		3.2	--	334	0.45	8,480	204	24	26	1.0	531	--

a Represente 96 percent of runoff for water year October 1953 to September 1954.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER AT KING HILL, IDAHO.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at 11:50 a.m./

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

BOISE RIVER BASIN

BOISE RIVER AT NOTUS, IDAHO

LOCATION.--At steel highway bridge, 1,100 feet 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, approximately.
RECORDS AVAILABLE.--Chemical analyses: January 1939 to January 1940, November 1950 to September 1954.
Water temperatures: November 1950 to September 1954.
Sediment records: January 1939 to June 1940.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 448 ppm Aug. 11-20; minimum, 98 ppm May 21-26.
Hardness: Maximum, 197 ppm Jan. 11-20; minimum, 44 ppm May 21-26.
Specific conductance: Maximum daily, 722 micromhos Aug. 18; minimum daily, 122 micromhos May 24.
Water temperatures: Maximum observed, 85°F July 19; minimum observed, 40°F Jan. 26, Mar. 12.
EXTREMES, 1939-40, 1950-54.--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 daily, 1,470, (revised) micromhos July 30, Aug. 26, 1939; minimum daily, 81.7 micromhos Apr. 27, 1952.
Water temperatures (1950-54): Maximum observed, 85°F on several days during summer months; minimum observed, 35°F Jan. 18, Dec. 25-27, 1952.
Sediment loads (1939-40): Maximum, 8,600 tons Apr. 2, 1939; minimum, 0.3 ton Aug. 3, 1939.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1347.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953	509	33		39	12	65	3.8	227	72	18		2.9	--	357	0.49	491	147	0	48	2.3	548	8.0
Oct. 11-20	721	36		42	13	63	3.8	a234	73	17		2.5	0.14	364	.50	709	158	0	46	2.2	557	8.3
Oct. 21-31	862	37		50	16	75	4.6	275	93	22		3.6	--	436	.59	1,010	191	0	45	2.4	667	7.7
Nov. 1-10	783	36		50	15	74	4.6	274	93	20		3.6	--	431	.59	911	186	0	46	2.4	661	7.8
Nov. 11-20	720	37		50	16	76	4.5	272	94	23		4.3	.12	437	.59	850	191	0	46	2.4	664	7.9
Nov. 21-30	720	36		50	16	74	4.5	268	91	23		3.9	--	429	.58	834	191	0	45	2.3	656	7.8
Dec. 1-10	695	36		50	15	71	4.5	262	88	22		3.8	--	415	.56	779	186	0	45	2.3	634	7.7
Dec. 11-20	675	35		49	15	71	4.3	260	87	22		2.7	.13	411	.56	749	184	0	45	2.3	630	7.6
Dec. 21-31	637	35		54	15	71	4.2	280	87	22		2.2	--	422	.57	726	196	0	43	2.2	650	7.7
Jan. 1-10, 1954	604	38		54	14	67	3.7	262	89	21		2.0	--	422	.57	688	192	0	43	2.1	645	7.7
Jan. 11-20	591	36		56	14	70	4.1	276	89	21		.7	.15	423	.58	675	197	0	43	2.2	645	7.5
Jan. 21-31	676	33		54	13	61	4.1	260	81	21		1.2	--	394	.54	719	188	0	41	1.9	604	7.6
Feb. 1-10	769	33		56	12	56	3.6	256	71	19		2.8	--	372	.51	772	189	0	39	1.8	578	7.8
Feb. 11-19	781	31		45	13	51	3.3	212	70	15		5.5	.11	337	.46	711	166	0	40	1.7	523	7.8
Feb. 20-28	1,779	23		27	6.2	25	1.7	120	35	8.0		3.2	--	193	.26	927	93	0	36	1.1	299	7.8
Mar. 1-9	1,950	21		24	5.6	25	1.7	112	32	7.0		3.7	--	173	.24	911	83	0	39	1.2	273	7.5
Mar. 10-18	4,690	17		17	3.6	14	1.4	76	17	4.0		2.2	.07	113	.15	1,430	57	0	34	.8	170	7.3
Mar. 19-22	2,275	21		23	5.7	22	1.7	104	30	7.0		2.9	--	166	.23	1,020	81	0	37	1.1	249	7.7
Mar. 23-31	1,048	24		33	9.4	38	2.5	154	55	12		4.0	--	288	.39	815	121	0	40	1.5	399	7.7

a Includes equivalent of 14 parts per million of carbonate (CO_3).

Apr. 1-5, 1954....	668	28		40	11	52	2.5	190	72	15		4.1	--	315	0.43	568	145	0	43	1.9	490	7.7
Apr. 6-10	1,265	21		26	6.6	27	1.7	113	38	9.0		2.4	--	179	.24	611	92	0	38	1.2	278	7.4
Apr. 11-20	2,756	17		16	3.6	13	1.2	71	16	3.9		1.6	0.08	107	.15	796	55	0	33	.8	158	7.4
Apr. 21-30	2,739	16		16	3.8	13	1.3	73	16	4.1		1.3	--	110	.15	813	56	0	33	.8	162	7.4
May 1-10	1,574	19		18	4.2	20	1.9	90	21	5.4		1.7	--	138	.19	586	62	0	40	1.1	211	7.6
May 11-20	1,781	17		18	4.2	18	1.9	88	21	5.2		2.1	.04	132	.18	635	62	0	38	1.0	202	7.4
May 21-26	4,217	15		13	2.7	11	1.5	64	12	3.1		1.7	--	98	.13	1,120	44	0	34	.7	140	7.3
May 27-31	1,970	18		18	4.8	21	2.0	94	24	6.0		2.6	--	152	.21	808	65	0	40	1.1	222	7.3
June 1-10.....	1,791	20		21	5.2	23	2.0	108	27	6.8		2.6	--	168	.23	812	74	0	40	1.2	256	7.8
June 11-23.....	950	22		24	6.2	31	2.1	131	34	8.8		2.4	.09	201	.27	516	85	0	43	1.5	310	7.5
June 24-30.....	2,509	16		16	3.6	15	1.6	79	16	4.2		1.7	--	116	.16	786	55	0	36	.9	176	7.4
July 1-5	1,120	20		22	5.4	25	2.5	116	28	7.0		1.8	--	175	.24	529	77	0	40	1.2	266	7.5
July 6-10	255	27		35	10	52	4.4	192	62	16		2.2	--	309	.42	213	128	0	46	2.0	476	7.9
July 11-20	234	28		33	11	60	4.1	206	65	18		2.8	.13	338	.46	214	128	0	50	2.3	506	7.8
July 21-31	237	29		38	13	63	4.1	220	72	20		3.0	--	350	.48	224	148	0	47	2.2	540	8.0
Aug. 1-10	111	30		43	15	78	4.6	256	99	26		2.7	--	430	.58	129	169	0	49	2.6	667	8.0
Aug. 11-20	121	32		45	15	83	4.5	267	102	28		2.8	.18	448	.61	146	174	0	50	2.7	689	8.0
Aug. 21-31	295	33		41	13	72	4.3	243	82	25		3.9	--	385	.52	307	156	0	49	2.5	589	8.2
Sept. 1-10	214	37		46	14	82	4.6	b269	98	26		3.9	--	441	.60	255	172	0	50	2.7	669	8.3
Sept. 11-20	540	32		39	12	60	4.2	223	71	18		3.9	.11	348	.47	507	147	0	46	2.2	535	7.8
Sept. 21-30	371	33		43	13	75	4.2	251	86	22		4.7	--	399	.54	400	161	0	49	2.6	611	8.0
Weighted average	1,104	23		28	7.4	34	2.4	141	42	10		2.5	--	221	0.30	659	100	0	42	1.5	336	--

b Includes equivalent of 7 parts per million of carbonate (CO_3).

BOISE RIVER BASIN--Continued

BOISE RIVER AT NOTUS, IDAHO--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
Water temperatures: November 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 314 ppm Oct. 21-31; minimum, 79 ppm May 11-22.
Hardness: Maximum, 176 ppm Oct. 21-31; minimum, 37 ppm May 11-22.
Specific conductance: Maximum daily, 500 micromhos Oct. 26; minimum daily, 91.8 micromhos May 22.
Water temperatures: Maximum observed, 71°F July 16-17; minimum observed, 35°F Jan. 21.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 314 ppm Oct. 21-31, 1953; minimum, 79 ppm May 11-22, 1954.
Hardness: Maximum, 176 ppm Oct. 21-31, 1953; minimum, 37 ppm May 11-22, 1954.
Specific conductance: Maximum daily, 529 micromhos Nov. 30, Dec. 3, 1952; minimum daily, 91.8 micromhos May 22, 1954.
Water temperatures: Maximum observed, 73°F Aug. 8-11, 14, 1952; minimum observed, freezing point Jan. 14, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for gaging station near Clarkston for water year October 1953 to September 1954 given in WSP 1347. No appreciable inflow between gaging and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1953 ..	22,320	31		36	16	39	4.2	198	51	17		1.6	--	296	0.40	17,840	156	0	34	1.4	459	7.5
Oct. 11-20.....	22,620	34		39	16	40	4.5	211	50	16		2.0	0.13	305	.41	18,630	163	0	34	1.4	474	7.7
Oct. 21-31.....	22,910	32		44	16	40	4.2	225	57	18		2.0	--	314	.43	19,420	176	0	32	1.3	490	7.8
Nov. 1-10	23,600	34		36	15	38	4.2	193	54	18		1.9	--	300	.41	19,120	152	0	34	1.3	463	7.7
Nov. 11-20	22,340	31		40	15	33	3.8	190	50	18		2.3	--	285	.39	17,190	162	6	30	1.1	440	7.6
Nov. 21-30	25,980	30		36	14	33	3.8	170	51	18		2.3	--	272	.37	19,080	147	8	32	1.2	420	7.6
Dec. 1-6	25,980	29		36	13	30	3.8	164	48	18		2.0	--	262	.36	18,380	143	9	31	1.1	403	7.6
Dec. 11-20	26,020	28		37	13	31	3.8	164	50	20		1.8	--	266	.36	18,690	146	11	31	1.1	409	7.6
Dec. 21-31	28,260	28		34	14	28	3.2	160	44	16		2.6	--	248	.34	18,920	142	11	29	1.0	392	7.6
Jan. 1-10, 1954 ..	26,440	27		34	13	30	3.3	160	45	17		2.0	--	251	.34	17,920	138	7	31	1.1	399	7.7
Jan. 11-20.....	26,520	28		36	14	28	2.8	164	47	19		1.8	.08	255	.35	18,260	147	13	29	1.0	402	7.8
Jan. 21-31.....	27,790	28		34	14	26	2.8	152	42	17		2.0	--	240	.33	18,010	142	18	28	.9	374	7.8
Feb. 1-10	33,750	27		29	12	22	2.8	134	36	16		2.1	--	212	.29	19,320	122	12	28	.9	327	7.6
Feb. 11-20	38,450	26		27	11	21	2.8	125	34	14		1.9	.06	200	.27	20,760	113	10	28	.9	303	7.5
Feb. 21-28	41,140	27		26	9.8	19	2.1	117	32	12		1.6	--	189	.26	20,990	105	9	28	.8	293	7.6
Mar. 1-10	35,970	27		28	10	21	1.9	127	34	12		1.5	--	199	.27	19,330	111	7	29	.9	314	7.6
Mar. 11-20	48,720	24		23	8.7	16	2.0	106	27	10		1.3	.04	166	.23	21,840	93	6	27	.7	256	7.4
Mar. 21-31	34,860	23		25	9.0	19	2.6	118	31	11		1.7	--	178	.24	16,750	99	3	29	.8	287	7.8

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR CLARKSTON, WASH.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Apr. 1-10, 1954...	49,760	23		25	9.1	19	2.6	114	30	12		1.8	--	177	0.24	23,780	100	6	29	0.8	284	7.5
Apr. 11-20	84,890	20		19	7.1	13	1.9	87	21	8.0		1.6	0.37	134	.18	30,710	77	5	26	.6	210	7.3
Apr. 21-30	87,650	17		15	5.1	11	1.8	69	16	6.1		1.1	--	108	.15	25,560	58	2	28	.6	168	7.4
May 1-10	93,160	15		14	4.9	11	1.5	66	17	6.2		.9	--	105	.14	26,410	55	1	30	.6	159	7.2
May 11-22	169,100	12		9.7	3.2	7.3	1.3	46	12	3.8		.9	.05	79	.11	36,070	37	0	29	.5	110	7.0
May 23-31	123,200	14		12	4.4	10	1.3	60	14	4.6		.8	--	93	.13	30,940	48	0	30	.6	141	7.3
June 1-10.....	92,500	20		18	6.1	15	2.1	86	22	7.4		.6	--	130	.18	32,470	70	0	31	.8	208	7.1
June 11-20	106,800	17		17	5.2	13	1.8	74	19	6.1		.9	.05	116	.16	33,450	64	3	30	.7	183	7.1
June 21-30.....	111,240	14		15	4.5	11	1.6	65	16	5.2		.6	--	99	.13	29,730	56	3	29	.6	154	7.1
July 1-10	79,370	16		16	5.0	12	1.7	77	16	5.5		.8	--	111	.15	23,790	60	0	29	.7	175	7.1
July 11-20	47,950	15		18	5.9	15	2.1	83	22	7.1		.8	.06	128	.17	16,570	69	1	31	.8	204	7.3
July 21-31	31,480	20		23	8.2	22	2.5	118	32	10		.6	--	175	.24	14,870	91	0	34	1.0	286	7.2
Aug. 1-10	24,700	25		29	11	28	3.1	155	37	12		1.0	--	220	.30	14,670	118	0	33	1.1	354	7.6
Aug. 11-20	22,490	25		30	12	29	3.3	160	38	13		1.2	.06	231	.31	14,030	124	0	33	1.1	371	7.6
Aug. 21-31	25,660	24		30	11	31	3.5	158	42	13		1.3	--	231	.31	16,000	120	0	35	1.2	372	7.4
Sept. 1-10	22,090	26		33	13	33	4.2	174	43	16		1.7	--	252	.34	15,030	136	0	34	1.2	405	7.4
Sept. 11-20	22,770	32		34	13	36	4.0	172	51	17		2.2	.12	268	.36	16,480	138	0	35	1.3	412	7.6
Sept. 21-30	22,520	35		35	13	37	4.1	184	48	16		1.6	--	272	.37	16,540	141	0	36	1.4	421	7.6
Weighted average	a49,060	20		22	7.9	18	2.3	103	27	9.5		1.3	--	159	0.22	21,060	88	3	30	0.8	247	--

a Represents 99 percent of runoff for water year October 1953 to September 1954.

SNAKE RIVER MAIN STEM--Continued

SNAKE RIVER NEAR CLARKSTON, WASH.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 76°F July 16; minimum, 33°F Dec. 23.
EXTREMES, 1951-54.--Water temperatures: Maximum, 77°F July 10, 11, 27, 1952; minimum, freezing point on many days in December 1951, January and February 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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

DESOLATION CREEK NEAR DALE, OREG.

LOCATION(revised).--Temperature recorder at gaging station, three quarters of a mile upstream from mouth and 1½ miles east of Dale, Grant County.
DRAINAGE AREA.--108 square miles(revised).
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 73°F July 16; minimum, freezing point on many days December to February.
EXTREMES, 1950-54.--Water temperatures: Maximum, 76°F July 24,1951; minimum, freezing point on many days during winter months.
REMARKS.--Records of discharge for the water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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

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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 63°F July 4, 5, 14; minimum, 38°F Jan. 17, 18, 20-22, 25-27.
EXTREMES, 1952-54.--Water temperatures: Maximum, 63°F July 6-8, 11, 12, 1953, July 4, 5, 14, 1954; minimum, 38°F Jan. 17, 18, 20-22, 25-27, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	54	54	51	50	46	45	42	41	43	42	46	44	47	46	52	50	58	54	60	56	60	57	58	57
2	54	52	50	48	45	45	42	41	42	41	44	43	48	47	53	51	58	56	60	57	60	58	58	57
3	53	52	48	47	45	45	41	40	42	41	44	43	51	48	56	53	58	57	61	58	59	57	58	57
4	53	52	48	47	45	44	42	41	42	41	44	42	51	50	58	56	57	56	63	60	59	56	57	55
5	53	52	47	47	44	44	43	42	42	41	45	43	51	50	57	55	56	55	63	60	59	57	56	54
6	54	52	48	47	44	43	43	42	42	41	46	45	51	49	57	55	56	54	62	61	60	57	56	54
7	54	53	48	48	43	42	43	43	42	42	46	45	50	48	58	56	57	54	62	59	60	58	57	55
8	55	54	48	47	42	42	43	41	43	41	49	46	50	50	58	57	57	56	59	58	60	58	56	54
9	54	54	47	47	43	42	42	41	43	41	49	49	50	49	58	56	56	55	59	58	59	57	56	54
10	54	54	48	47	43	42	42	41	43	42	49	46	50	48	58	55	57	54	59	58	59	56	56	55
11	54	52	48	47	42	42	42	40	42	42	46	43	52	49	58	57	57	55	60	57	59	57	55	54
12	53	51	48	47	43	42	40	40	45	42	43	41	53	51	57	55	58	56	61	59	59	56	56	54
13	53	51	48	48	43	42	40	40	45	43	43	41	55	52	57	55	58	56	62	60	58	57	56	54
14	53	52	49	48	44	42	40	40	44	41	44	43	55	52	58	56	57	55	63	60	58	57	55	55
15	53	52	49	48	44	43	41	40	43	42	44	44	54	52	59	57	57	55	62	60	57	56	55	55
16	52	51	49	48	43	43	41	39	43	42	45	44	56	53	60	58	57	54	62	59	57	55	55	55
17	52	51	48	46	43	43	39	38	43	43	45	44	57	56	61	59	56	53	61	59	58	56	55	54
18	52	51	46	45	44	43	39	38	43	42	45	43	57	56	62	59	58	55	61	59	59	57	55	53
19	51	50	45	45	45	44	39	39	43	42	45	44	57	55	61	59	58	57	61	59	59	58	55	53
20	50	50	45	44	45	44	39	38	45	43	46	44	56	54	60	58	60	58	60	57	58	58	55	54
21	50	49	45	44	44	43	38	38	46	44	46	44	56	54	59	56	61	58	57	56	58	57	56	55
22	50	48	45	45	43	42	41	38	46	43	47	45	56	55	58	55	61	59	58	55	59	57	56	55
23	49	48	45	45	42	41	41	40	46	44	48	46	56	55	58	56	61	58	59	55	59	58	56	54
24	49	48	46	45	41	40	40	40	47	46	48	47	56	54	58	58	60	58	59	56	58	56	56	54
25	49	48	47	46	40	39	40	38	47	46	48	46	56	54	58	56	60	58	60	56	57	56	56	55
26	50	49	47	47	40	39	38	38	47	46	48	47	56	55	57	55	60	59	60	57	56	55	57	55
27	50	50	47	47	40	40	40	38	46	44	49	47	55	54	57	54	60	58	59	57	56	55	57	55
28	51	50	47	46	42	40	41	39	48	45	49	46	54	53	57	56	59	56	59	56	57	56	56	54
29	51	50	46	46	42	40	41	41	--	--	46	44	54	52	56	55	60	56	59	56	59	56	54	52
30	51	50	46	46	41	39	43	41	--	--	46	44	53	52	57	54	58	57	59	56	59	58	53	51
31	51	50	--	--	41	40	43	42	--	--	46	44	--	--	58	57	--	--	59	56	59	57	--	--
Average	52	51	47	47	43	42	41	40	44	43	46	44	53	52	58	56	58	56	60	58	59	57	56	54

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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 60°F May 18, June 20-24, July 4, 11-19; minimum, 44°F Mar. 11-13.
EXTREMES, 1952-54.--Water temperatures: Maximum, 63°F July 14, 1953; minimum, 44°F Feb. 9, 10, 1953, Mar. 11-13, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	56	56	54	54	52	52	50	49	49	49	48	48	51	50	53	52	57	56	59	58	58	57	57	57
2	56	55	54	54	52	52	50	50	49	49	48	48	51	51	53	52	58	57	59	58	58	57	57	57
3	56	55	54	53	52	52	50	50	49	49	48	48	52	51	56	53	57	57	59	58	58	57	57	57
4	56	55	54	53	52	52	50	50	49	49	48	48	52	52	58	56	57	57	60	58	58	56	57	56
5	56	55	54	53	52	52	51	50	49	49	49	48	52	52	58	57	57	57	59	58	58	56	57	56
6	56	56	54	53	52	52	51	51	49	49	50	49	52	51	58	57	57	56	59	58	58	56	57	56
7	56	56	54	53	52	51	51	51	50	49	50	50	51	50	58	57	57	56	59	58	58	57	57	56
8	56	56	54	53	52	51	51	51	50	49	51	50	51	50	59	57	57	57	59	58	58	57	57	56
9	56	56	54	53	52	51	51	51	50	49	51	50	51	50	58	58	57	57	59	58	58	57	57	56
10	56	56	54	53	52	51	51	51	50	49	51	47	51	50	58	57	57	56	59	58	58	57	56	56
11	56	55	54	53	52	51	51	51	50	49	47	44	51	50	58	57	57	57	60	58	58	57	56	56
12	55	55	54	54	51	51	51	51	50	49	45	44	52	51	58	57	58	57	60	59	58	57	56	56
13	55	55	54	54	51	51	51	51	49	48	46	44	54	52	58	57	58	57	60	59	58	57	56	56
14	55	55	54	54	51	51	51	51	48	46	47	46	54	53	58	57	58	57	60	59	57	57	56	56
15	55	55	54	54	51	51	51	51	46	46	48	47	53	52	58	57	58	57	60	59	57	57	56	56
16	55	55	54	54	51	51	51	50	46	46	48	48	54	53	59	58	58	57	60	58	57	56	56	56
17	55	55	54	54	51	51	50	50	47	46	48	48	56	54	59	58	58	57	60	58	57	56	56	56
18	55	55	54	53	51	51	50	50	48	47	49	48	56	55	60	58	58	57	60	58	57	56	56	56
19	55	54	54	53	52	51	50	50	47	47	49	48	56	55	59	58	58	58	60	58	57	57	56	56
20	54	54	53	53	51	49	50	50	49	47	49	48	55	54	59	58	60	58	59	58	57	57	56	56
21	54	54	53	53	49	46	50	50	49	49	50	49	55	54	58	57	60	59	59	58	57	57	56	56
22	54	53	53	53	46	46	50	50	49	49	50	49	55	54	58	57	60	59	59	58	57	57	56	56
23	54	53	53	53	46	46	50	50	49	49	51	50	55	54	58	57	60	59	59	58	57	57	56	56
24	54	53	53	52	47	46	50	50	49	49	51	50	55	54	58	57	60	58	59	58	57	56	56	56
25	54	53	52	52	48	47	50	50	49	49	51	50	55	54	58	57	59	58	59	58	57	56	56	56
26	54	53	52	52	48	47	50	50	49	49	51	51	55	55	58	56	59	58	59	58	56	56	56	56
27	54	54	52	52	49	48	50	50	49	48	52	51	55	55	58	56	59	58	59	58	56	56	56	56
28	54	54	52	52	49	49	50	50	48	48	51	50	55	54	57	57	59	58	59	58	56	56	56	56
29	54	54	52	52	49	49	50	50	--	--	51	50	54	54	57	57	59	58	59	58	57	56	56	55
30	54	54	52	52	49	49	50	50	--	--	50	50	54	53	57	56	58	58	58	56	57	57	55	55
31	54	54	--	--	50	49	50	49	--	--	51	50	--	--	58	57	--	--	58	57	57	57	--	--
Average	55	55	53	53	50	50	50	50	49	48	49	48	53	53	58	57	58	57	59	58	57	57	56	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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 53°F July 12-14, 16, 18, 19; minimum, 40°F Jan. 16-18, 20, 21, 25-27.
EXTREMES, 1952-54.--Water temperatures: Maximum, 53°F July 12-14, 16, 18, 19, 1954; minimum, 39°F Dec. 27, 28, 1952, and January 26, 1953.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	46	45	46	45	44	43	43	43	43	42	43	41	45	42	46	42	49	45	50	46	52	47	50	46
2	46	45	45	44	44	43	43	42	43	42	43	41	44	43	46	43	50	45	51	45	51	48	50	46
3	46	45	44	43	44	43	43	42	43	41	43	41	45	44	48	44	49	46	52	46	51	46	49	47
4	47	45	44	43	43	43	43	42	43	42	43	41	45	44	49	45	48	45	52	47	51	46	48	46
5	47	45	44	43	43	43	43	43	43	42	44	41	44	43	49	44	49	45	51	47	51	46	49	45
6	47	45	44	44	43	42	43	42	43	42	44	43	44	42	49	44	49	45	50	47	51	46	49	45
7	47	45	45	44	42	42	43	43	43	42	44	42	46	42	49	45	48	45	50	47	51	46	49	47
8	47	45	45	43	42	42	43	42	43	41	44	43	45	43	50	46	48	46	50	47	51	46	49	46
9	47	46	44	44	43	42	43	42	43	41	44	43	44	42	48	46	48	45	50	47	51	46	49	46
10	46	46	44	44	43	42	43	43	43	42	43	41	45	42	50	45	49	45	49	47	51	46	49	46
11	46	44	45	43	43	42	43	42	42	41	42	41	46	42	49	46	49	45	52	46	51	46	48	46
12	45	44	45	44	43	43	42	41	43	42	43	41	46	44	49	44	48	45	53	47	50	46	48	46
13	46	44	44	44	43	42	42	41	43	42	43	41	47	45	50	45	47	45	53	47	50	47	49	45
14	46	44	45	44	43	42	42	42	43	42	44	42	46	42	51	45	47	45	53	48	50	47	48	46
15	46	44	45	45	43	42	42	41	43	42	44	42	47	42	50	47	49	46	52	47	48	46	48	46
16	46	44	45	44	43	43	41	40	43	42	43	42	48	43	51	46	48	45	53	47	49	45	47	46
17	45	44	44	43	43	43	41	40	43	42	43	42	47	44	52	46	49	45	52	47	50	46	47	45
18	45	44	44	43	44	43	41	40	43	42	44	42	47	44	52	47	50	45	53	47	50	46	47	45
19	45	44	44	43	44	43	42	41	43	42	43	42	47	43	51	47	49	46	53	47	49	47	48	45
20	45	44	43	42	43	42	41	40	43	43	44	42	47	43	50	47	52	47	50	47	48	47	48	45
21	45	44	44	43	42	42	42	40	43	43	44	42	47	43	50	46	51	46	50	46	50	46	47	45
22	45	43	44	44	42	42	42	42	43	42	44	42	47	43	50	45	52	46	51	46	51	46	47	45
23	44	43	44	43	42	41	42	41	44	42	45	42	47	43	51	46	51	46	52	46	50	47	48	45
24	45	43	44	44	42	41	42	41	44	43	44	43	47	43	50	47	52	46	52	47	48	46	48	45
25	45	43	44	44	42	41	41	40	44	43	45	42	47	43	49	46	50	46	52	47	47	46	48	45
26	45	44	44	44	43	42	41	40	43	42	44	43	47	43	48	46	51	47	52	46	49	46	48	45
27	46	44	44	44	43	42	41	40	43	42	45	43	45	44	50	45	50	46	52	46	48	46	48	45
28	46	44	44	43	43	42	42	41	44	42	44	42	46	43	48	45	51	45	51	46	48	47	47	45
29	46	45	44	44	43	41	42	42	--	--	44	41	45	42	48	46	51	46	51	46	51	47	46	45
30	45	44	44	44	42	41	42	42	--	--	44	41	44	43	50	45	50	47	51	46	49	47	46	44
31	46	45	--	--	43	42	42	42	--	--	44	42	--	--	50	46	--	--	51	46	50	46	--	--
Average	46	44	44	44	43	42	42	41	43	42	44	42	46	43	49	45	49	46	51	47	50	46	48	45

DESCHUTES RIVER NEAR MADRAS, OREG.

LOCATION.--Temperature recorder at gaging station, 1 mile downstream from Pelton dam Site, 5 miles upstream from Shitike Creek, 7½ miles northwest of Madras, Jefferson County, and at mile 101.6 (river-profile survey).
DRAINAGE AREA.--7,900 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: March 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 59°F July 14; minimum, 44°F Dec. 25, Jan. 16-22, 25-28, Mar. 12, 13.
EXTREMES, 1952-54.--Water temperatures: Maximum, 59°F July 3-5, 10, 1952, June 17, July 6-8, 14, 15, 18, 19, 1953, July 14, 1954; minimum, 43°F Dec. 28, 1952, Jan. 20-22, 27, 28, Feb. 9, 10, 1953.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	53	52	52	52	49	49	46	45	46	46	48	46	48	47	51	49	54	52	56	53	58	55	56	54
2	53	51	52	50	49	49	46	46	46	46	47	46	49	48	52	50	55	53	56	53	58	56	56	55
3	52	51	50	49	49	49	46	46	46	46	46	46	51	49	54	51	55	53	57	54	57	55	56	54
4	52	51	49	49	49	48	46	46	46	46	46	46	51	50	55	53	54	53	58	55	57	54	56	53
5	52	51	50	49	48	48	47	46	46	46	47	46	51	50	55	53	54	52	58	55	57	54	55	53
6	52	52	50	50	48	47	47	47	46	46	48	47	50	49	55	53	54	52	57	55	57	54	55	53
7	53	52	50	50	47	47	47	47	46	46	48	47	50	48	55	53	54	52	57	55	58	55	55	54
8	53	53	50	49	47	47	47	46	46	46	50	48	51	49	56	54	54	53	56	55	58	55	55	53
9	53	53	50	49	47	47	47	46	46	46	50	49	50	49	56	54	54	52	56	54	58	54	55	53
10	53	53	50	49	47	47	47	46	46	46	50	47	50	48	56	53	55	52	56	54	57	54	55	54
11	53	52	50	50	47	46	46	46	46	46	47	45	51	48	56	54	55	53	58	54	57	54	54	53
12	52	51	50	50	47	47	46	45	47	46	45	44	52	51	54	52	55	54	58	55	57	54	55	53
13	53	51	50	50	47	47	46	45	47	47	45	44	54	52	55	52	55	54	58	56	57	55	55	53
14	53	52	51	50	47	46	46	45	47	46	46	45	53	51	55	53	54	53	59	56	56	54	55	54
15	53	52	51	51	47	47	46	45	46	46	46	46	52	51	56	54	55	53	58	56	56	54	55	54
16	52	52	51	50	47	47	46	44	46	46	46	46	54	51	56	54	55	53	58	55	56	53	55	54
17	52	52	51	49	47	47	44	44	46	46	47	46	55	53	57	54	55	52	58	55	57	54	55	53
18	52	52	49	48	47	47	44	44	46	46	47	46	55	53	57	55	55	53	58	55	57	55	54	53
19	52	51	49	48	48	47	44	44	46	46	47	46	55	52	56	55	55	54	58	55	57	55	55	53
20	51	51	48	48	48	47	44	44	47	46	47	46	54	52	56	54	58	54	57	54	56	55	55	53
21	51	50	49	48	47	46	44	44	48	47	47	46	54	52	55	53	57	54	56	53	56	54	55	53
22	50	50	49	49	46	45	45	44	48	47	48	47	54	52	55	52	57	55	56	53	57	54	55	54
23	50	50	49	48	45	45	45	45	48	47	48	47	54	52	55	53	57	54	57	54	57	55	55	53
24	50	50	49	48	45	45	45	45	48	47	48	48	54	52	55	54	57	54	57	54	55	54	55	53
25	50	50	49	49	45	44	45	44	48	48	48	47	54	52	54	52	57	55	57	54	55	53	55	53
26	51	50	50	49	45	45	44	44	48	47	48	48	54	52	54	52	56	55	57	54	55	53	55	54
27	51	51	50	50	45	45	44	44	48	46	49	48	53	52	54	51	56	54	57	54	55	54	55	54
28	52	51	50	49	45	45	45	44	48	46	49	47	53	51	54	52	56	53	57	54	55	54	55	53
29	52	52	49	49	45	45	45	45	--	--	47	46	53	51	53	52	56	54	56	54	57	55	53	58
30	52	51	49	49	45	45	46	45	--	--	47	46	51	50	55	51	56	54	57	54	57	55	53	51
31	52	51	--	--	45	45	46	46	--	--	48	47	--	--	55	53	--	--	57	54	57	54	--	--
Average	52	51	50	49	47	46	46	45	47	46	47	46	52	51	55	53	55	53	57	54	57	54	55	53

DESCHUTES RIVER BASIN--Continued

WARM SPRINGS RIVER AT HEHE MILL, NEAR WARM SPRINGS, OREG.

LOCATION.--Temperature recorder at gaging station at highway bridge, a quarter of a mile east of abandoned Hehe Mill, 10 miles south of Bear Springs ranger station, and 18 miles northwest of Warm Springs, Jefferson County.
DRAINAGE AREA.--108 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1954 (discontinued).
EXTREMES, 1953-54.--Water temperatures: Maximum, 59 °F July 14; minimum, freezing point Jan. 16, 17.
EXTREMES, 1950-54.--Water temperatures: Maximum, 59°F on several days in July of each year; minimum, freezing point Dec. 26, 27, 1951, Jan. 1-4, 1952, Jan. 16, 17, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	48	45	45	44	42	41	39	39	40	39	40	38	44	41	45	39	49	44	52	48	57	49	52	47
2	47	43	44	41	41	41	39	39	40	39	39	37	43	41	44	41	50	44	55	45	56	50	54	48
3	46	43	41	39	41	40	39	38	39	39	39	37	45	42	48	44	49	46	56	48	55	49	52	48
4	46	43	40	39	40	39	40	38	39	39	39	37	44	42	48	44	48	45	58	49	55	47	50	46
5	46	43	42	40	40	39	41	40	39	39	40	38	43	41	49	43	51	45	55	50	55	48	51	45
6	46	44	43	42	40	38	41	40	39	39	41	39	42	40	49	43	49	45	55	49	56	48	50	46
7	47	45	44	43	38	38	41	40	40	39	41	39	44	40	49	44	51	45	54	50	56	48	52	48
8	47	46	44	41	38	37	41	39	40	38	42	41	44	42	50	45	50	47	52	48	56	49	51	47
9	47	47	42	42	40	38	40	39	39	38	43	41	43	41	49	46	50	45	52	48	54	48	51	46
10	49	46	42	42	39	38	40	40	39	38	41	39	45	40	51	45	50	46	51	48	55	47	50	47
11	47	44	43	42	39	38	40	39	39	38	40	38	45	41	49	46	50	46	55	47	55	48	49	46
12	45	43	43	43	40	39	39	38	40	38	39	37	46	43	49	43	50	47	57	49	55	47	51	47
13	47	44	44	43	40	39	39	38	40	39	40	38	47	44	50	44	49	46	58	49	55	48	50	45
14	47	44	45	44	39	39	39	39	40	39	41	39	45	42	49	44	48	46	59	50	55	49	50	47
15	47	45	46	45	39	39	39	38	40	39	42	40	46	41	50	46	49	47	58	50	52	48	50	48
16	46	44	46	43	40	39	38	32	41	40	42	41	47	42	52	46	50	46	57	49	53	46	49	47
17	45	44	43	41	40	40	35	32	41	40	41	39	47	43	53	46	51	45	58	49	54	47	49	46
18	46	45	42	41	40	40	37	35	40	38	41	39	46	43	54	47	52	45	58	50	52	47	48	44
19	45	44	42	42	41	40	38	36	40	39	41	39	44	42	53	48	51	47	58	50	53	49	49	45
20	45	43	42	41	41	39	36	35	41	40	42	38	46	42	52	48	56	47	55	50	51	49	49	45
21	45	42	43	41	39	39	37	35	41	40	42	39	47	42	50	46	56	48	53	47	53	47	49	45
22	43	41	43	43	39	38	38	37	40	39	42	39	48	42	51	44	57	49	55	46	55	48	50	47
23	42	41	43	42	38	37	38	37	40	39	42	39	47	43	51	46	55	49	56	48	53	48	50	46
24	43	41	43	42	38	37	38	37	42	40	42	41	47	42	50	47	56	48	56	49	50	48	50	46
25	44	43	45	43	38	37	37	36	41	40	43	39	47	42	49	45	54	49	57	48	49	46	49	46
26	44	43	45	44	39	37	37	35	41	39	43	41	45	42	49	45	55	50	56	48	49	46	50	46
27	44	43	45	42	39	39	37	35	40	39	44	41	45	43	50	43	54	49	56	49	50	46	49	46
28	44	43	42	41	39	39	38	35	41	40	43	40	44	41	48	44	55	46	55	47	50	47	48	45
29	46	44	42	41	39	39	38	38	--	--	40	37	44	41	47	46	56	47	56	48	52	48	46	44
30	46	45	42	42	39	38	39	38	--	--	41	37	43	41	51	44	54	50	56	48	52	48	45	41
31	46	44	--	--	39	38	40	39	--	--	41	39	--	--	50	46	--	--	56	48	53	48	--	--
Average	46	44	43	42	39	39	39	37	40	39	41	39	45	42	50	45	52	47	56	48	53	48	50	46

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 February 1954 (discontinued).
Water temperatures: December 1952 to February 1954 (discontinued).
EXTREMES, 1952-53.--Dissolved solids: Maximum, 105 ppm Mar. 21-31; minimum 90 ppm July 21-31.
Hardness: Maximum, 46 ppm Mar. 21-31, May 1-10; minimum, 38 ppm July 11-20.
Specific conductance: Maximum daily, 141 micromhos Jan. 18, Mar. 26; minimum daily, 92.4 micromhos Jan. 19.
Water temperatures: Maximum, 67°F Aug. 5-6.
REMARKS.--Values reported for dissolved solids are residues on evaporation. Records of specific conductance of daily samples available in district office at Portland, Oreg. Discharge records for water year October 1953 to September 1954 given in WSP 1348.

Chemical analyses, in parts per million, October 1953 to February 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953 ..	4,807	31	0.14	7.1	5.3	12	2.4	71	2.6	2.5	0.1	0.5	0.10	86	0.12	1,120	40	0	38	0.8	130	7.4	3
Oct. 11-20.....	4,846	31	.05	6.7	5.0	13	2.0	73	3.0	2.5	.2	.5	.10	90	.12	1,180	37	0	42	.9	128	7.4	5
Oct. 21-31.....	4,705	34	.02	6.7	6.2	11	2.0	74	3.1	2.5	.1	.5	.05	89	.12	1,130	42	0	35	.7	129	7.6	3
Nov. 1-10	4,937	35	.00	7.1	5.0	14	2.0	73	2.5	3.2	.3	.8	--	98	.13	1,310	38	0	43	1.0	127	7.5	1
Nov. 11-20	5,450	34	.00	6.7	5.3	9.4	2.1	68	2.2	2.8	.2	.8	.04	101	.14	1,490	38	0	33	.7	121	7.4	2
Nov. 21-30	6,965	33	.24	6.7	5.0	9.0	1.8	65	2.3	3.2	.2	.6	--	92	.13	1,730	37	0	33	.6	117	7.3	2
Dec. 1-10	6,543	32	.07	7.3	4.1	9.6	2.1	67	2.0	2.2	.1	.5	--	98	.13	1,730	35	0	36	.7	117	7.9	--
Dec. 11-20	7,579	32	.42	7.3	4.0	9.5	2.1	63	1.9	2.8	.1	.8	--	97	.13	1,980	35	0	36	.7	115	7.8	--
Dec. 21-31.....	8,900	28	.18	7.7	3.6	9.0	2.0	61	1.9	2.2	.1	.8	--	98	.13	2,350	34	0	35	.7	110	7.8	--
Jan. 1-10, 1954 ..	7,377	30	.04	8.7	4.3	10	2.4	70	2.2	2.5	.3	1.0	--	100	.14	1,990	39	0	34	.7	125	7.7	1
Jan. 11-20.....	7,150	31	.04	8.3	4.3	10	2.1	66	2.0	2.5	.2	1.0	.08	94	.13	1,810	38	0	35	.7	118	7.5	1
Jan. 21-31.....	9,909	31	.14	9.1	2.9	9.1	2.2	63	2.3	2.2	.1	1.0	--	101	.14	2,700	35	0	35	.7	112	7.4	2
Feb. 1-15	9,635	31	.24	7.7	4.2	8.9	2.3	64	.7	4.2	.1	1.0	.05	100	.14	2,600	36	0	33	.6	119	7.2	4

DESCHUTES RIVER BASIN--Continued

DESCHUTES RIVER AT MOODY, NEAR BIGGS, OREG.--Continued

Temperature (°F) of water, October 1953 to February 1954

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

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.

LOCATION.--At Maryhill Ferry about 2½ 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.
DRAINAGE AREA.--237,000 square miles (above gaging station near The Dalles).
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1954.
Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 149 ppm Dec. 21-31; minimum, 80 ppm May 11-20, July 1-10.
Hardness: Maximum, 89 ppm Nov. 1-10; minimum, 49 ppm May 11-20.
Specific conductance: Maximum daily, 242 micromhos Oct. 8; minimum daily, 115 micromhos May 17, 18.
Water temperatures: Maximum observed, 72°F Oct. 3; minimum observed, freezing point Jan. 20.
EXTREMES, 1950-54.--Dissolved solids: Maximum, 157 ppm Dec. 21-31, 1952; minimum, 80 ppm May 11-20, July 1-10, 1954.
Hardness: Maximum, 104 ppm Dec. 21-31, 1952; minimum, 49 ppm May 11-20, 1954.
Specific conductance: Maximum daily, 268 micromhos Dec. 29, 1952; minimum daily, 115 micromhos May 17, 18, 1954.
Water temperatures: Maximum observed, 77°F Sept. 4-6, 1953; minimum observed, freezing point Jan. 25, 30, 1951, Jan. 20, 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for gaging station near The Dalles for water year October 1953 to September 1954 given in WSP 1348. 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 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953 ..	101,200	7.3	0.05	22	7.7	12	1.8	98	22	9.0	--	0.9	0.08	a131	0.18	35,790	87	7	23	0.6	212	7.5	3
Oct. 11-20.....	102,800	9.0	.02	23	6.7	11	2.0	98	22	5.0	--	1.4	.09	a128	.17	35,530	85	5	21	.5	218	7.4	7
Oct. 21-31.....	98,680	9.8	.03	24	6.1	11	2.2	100	23	5.0	--	1.6	.06	a132	.18	35,170	85	3	21	.5	222	7.4	4
Nov. 1-10.....	103,700	12	.00	25	6.4	12	2.1	102	23	5.5	0.1	1.3	--	142	.19	39,760	89	5	22	.6	238	7.7	--
Nov. 11-20	103,200	12	.00	25	6.2	11	1.8	102	22	5.0	.2	1.4	--	140	.19	39,010	88	4	21	.5	233	8.0	--
Nov. 21-30	99,950	12	.02	24	6.8	11	1.7	102	22	5.5	.1	1.3	--	142	.19	38,320	88	4	21	.5	235	7.8	--
Dec. 1-10	100,600	14	.02	23	7.1	11	2.3	102	22	5.8	.1	1.0	--	143	.19	38,840	87	3	21	.5	229	7.8	--
Dec. 11-20	104,800	14	.07	23	6.9	11	1.7	100	21	5.0	.2	1.3	--	144	.20	40,750	86	4	21	.5	224	8.0	--
Dec. 21-31	106,000	15	.14	23	6.4	11	2.1	100	21	5.5	.2	1.5	--	149	.20	42,640	84	2	22	.5	226	8.0	--
Jan. 1-10, 1954 ..	110,400	14	.00	24	6.3	12	2.1	100	21	5.0	.3	1.8	--	132	.18	39,350	86	4	23	.6	222	7.7	1
Jan. 11-20.....	108,600	14	.00	24	6.2	11	2.0	101	21	5.0	.3	1.6	.05	132	.18	38,710	85	2	21	.5	219	7.7	2
Jan. 21-31.....	117,500	13	.00	23	6.5	10	2.1	97	20	5.2	.3	1.5	--	128	.17	40,610	84	4	20	.5	213	7.7	2
Feb. 1-14	124,700	15	.00	21	7.9	10	2.2	96	20	4.8	.4	1.9	.09	140	.19	47,140	85	6	20	.5	222	7.6	1
Feb. 15-28	124,600	16	.02	21	7.4	10	2.3	94	19	5.5	.3	2.2	--	138	.19	46,430	83	6	20	.5	216	7.6	2
Mar. 1-10.....	120,300	13	.02	21	6.4	11	2.3	95	19	6.2	.4	1.4	--	140	.19	45,470	79	1	22	.5	211	7.8	0
Mar. 11-20.....	146,300	13	.03	21	6.2	11	2.2	93	19	6.0	.3	1.4	.20	134	.18	52,930	78	2	23	.5	208	7.8	0
Mar. 21-31.....	129,200	13	.00	22	5.8	10	2.1	94	18	5.5	.3	1.2	--	126	.17	43,950	79	2	20	.5	205	7.8	5

a Sum of determined constituents.

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.--Continued

Chemical analyses, in parts per million, water year October 1953 to September 1954--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 (micromhos at 25°C)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Apr. 1-10, 1954..	136,300	17	0.03	21	5.6	8.6	2.0	89	17	3.8	0.4	1.2	--	126	0.17	46,370	75	2	19	0.4	192	7.8	0
Apr. 11-20.....	162,400	13	.01	18	4.8	8.2	2.0	76	14	4.2	.3	1.2	0.15	113	.15	49,550	65	3	21	.4	170	7.7	0
Apr. 21-30	178,500	10	.04	16	3.8	6.9	1.8	67	12	3.5	.3	1.1	--	98	.13	47,230	56	1	21	.4	147	7.6	0
May 1-10	201,900	12	.16	16	4.0	6.2	1.8	65	13	3.0	.3	1.1	--	93	.13	50,700	56	3	19	.4	151	8.1	10
May 11-20	380,300	7.5	.06	14	3.5	4.4	1.6	58	11	1.8	.2	1.4	.08	80	.11	82,140	49	1	16	.3	130	8.1	10
May 21-31	532,000	8.5	.09	16	3.3	3.9	1.6	60	11	1.8	.2	1.0	--	82	.11	117,800	53	4	13	.2	134	8.0	5
June 1-10.....	507,100	13	.00	16	4.3	4.0	2.6	67	11	1.8	.2	.6	--	85	.12	116,400	58	3	12	.2	134	7.8	3
June 11-20.....	508,600	11	.00	16	4.2	3.5	2.7	66	9.6	1.2	.2	.6	--	81	.11	111,200	57	3	11	.2	131	7.8	3
June 21-30.....	492,600	9.8	.02	17	4.3	3.2	2.5	67	9.6	3.5	.1	.5	--	84	.11	111,700	60	5	10	.2	144	7.3	2
July 1-10	443,000	8.6	.00	17	4.1	2.9	2.4	70	9.6	1.2	.1	.7	--	80	.11	95,690	59	2	9	.2	134	7.4	3
July 11-20	457,300	8.4	.00	18	4.5	3.5	2.5	71	11	1.8	.1	.6	--	84	.11	103,700	63	5	10	.2	143	7.5	2
July 21-31	369,200	7.9	.05	18	4.8	3.2	2.5	75	11	1.5	.2	.6	--	86	.12	85,730	65	3	9	.2	146	7.3	3
Aug. 1-10	255,100	9.5	.00	20	4.1	5.1	1.5	78	12	2.5	.1	.7	--	97	.13	66,810	67	3	14	.3	158	7.4	0
Aug. 11-20	204,800	8.2	.00	20	3.9	5.3	1.5	79	13	2.2	.1	.6	.04	98	.13	54,190	66	1	14	.3	160	7.4	0
Aug. 21-31	188,800	7.6	.00	20	4.7	6.3	1.6	82	14	2.8	.2	.6	--	102	.14	52,000	69	2	16	.3	169	7.3	5
Sept. 1-10	177,400	8.0	.00	21	4.8	7.1	1.6	84	15	3.0	.2	.9	--	108	.15	51,730	72	3	17	.4	178	8.0	3
Sept. 11-20	146,300	9.8	.00	21	5.2	8.2	1.7	86	17	3.5	.3	.8	.02	114	.16	45,030	74	3	19	.4	186	8.1	5
Sept. 21-30	132,100	12	.00	23	5.7	11	1.9	99	21	5.2	.1	1.0	--	136	.18	48,510	81	0	22	.5	214	7.9	0
Weighted average	209,100	11	0.03	19	4.9	6.3	2.1	78	14	3.2	0.2	1.0	--	103	0.14	58,150	68	4	16	0.3	167	--	--

COLUMBIA RIVER MAIN STEM--Continued

COLUMBIA RIVER AT MARYHILL FERRY NEAR RUFUS, OREG.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

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 miles upstream from Trout Creek.
DRAINAGE AREA.--360 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 54°F July 14, Aug. 1, minimum, 33°F Jan. 16-23, 25-28, Feb. 11, 12.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	46	45	45	42	40	38	37	37	37	36	37	36	40	37	41	37	44	41	49	47	54	49	51	48
2	45	42	42	39	38	38	37	37	36	36	36	35	39	39	41	39	44	41	50	45	53	51	52	49
3	45	44	39	37	38	38	37	36	36	36	35	34	41	39	44	41	45	44	51	47	52	48	51	49
4	45	44	37	37	38	36	36	33	36	36	36	34	41	40	43	41	45	43	52	48	51	47	49	47
5	46	44	39	37	37	36	37	34	36	36	37	35	40	39	44	41	45	43	51	49	53	49	49	46
6	47	45	41	39	37	36	37	37	36	36	39	37	39	38	44	40	45	43	52	49	53	49	48	46
7	47	46	41	41	36	36	37	37	36	36	39	37	41	38	45	41	47	43	52	49	53	50	50	48
8	49	47	41	40	36	33	37	36	36	35	39	37	41	40	44	41	47	44	50	47	53	50	50	48
9	49	49	41	41	36	34	36	36	35	35	39	38	40	38	43	39	48	45	49	48	52	49	50	47
10	49	48	41	41	36	35	37	36	35	35	38	37	41	38	45	41	47	45	49	48	52	49	50	48
11	48	46	41	41	36	35	37	36	35	33	37	36	41	38	43	39	47	45	50	47	53	49	50	48
12	46	44	42	41	36	36	36	34	35	33	37	35	41	40	43	40	46	45	51	48	52	49	48	48
13	46	45	42	41	36	35	36	34	37	35	37	35	42	41	44	40	45	44	53	49	53	50	48	46
14	46	45	42	41	37	35	36	36	37	36	37	36	41	39	45	41	45	43	54	49	53	50	50	48
15	47	46	42	42	39	37	36	35	37	37	38	37	41	39	45	42	46	45	53	49	51	48	50	49
16	47	45	42	40	39	39	35	33	37	37	39	38	43	39	45	41	45	43	53	49	52	49	49	47
17	45	45	40	38	39	37	33	33	37	37	39	38	43	40	45	41	45	42	53	49	52	48	47	46
18	46	45	38	36	38	37	33	33	37	37	38	37	41	39	46	42	46	42	53	49	51	49	47	46
19	46	44	37	37	39	38	33	33	37	37	38	38	42	39	45	42	47	46	53	49	51	50	48	46
20	44	43	37	37	39	38	33	33	38	37	40	38	41	39	44	41	50	46	52	48	51	50	48	46
21	44	42	37	36	38	37	33	33	38	38	39	38	42	39	44	41	50	46	49	45	51	48	48	46
22	42	41	37	36	37	36	33	33	38	37	39	37	43	40	45	41	50	47	50	46	53	50	49	48
23	42	41	37	37	36	35	34	33	38	38	39	37	42	39	45	42	50	47	52	48	51	49	48	46
24	42	41	38	37	35	35	34	34	39	38	40	39	42	39	44	43	50	46	52	48	49	47	49	47
25	44	42	40	38	35	35	34	33	39	38	40	38	42	39	44	42	50	48	52	48	48	47	49	47
26	44	43	40	40	37	35	34	33	39	37	39	39	42	40	43	41	50	48	52	48	50	48	48	46
27	43	43	40	40	37	37	34	33	38	37	40	37	42	40	43	40	48	47	52	48	49	47	48	46
28	43	43	40	38	35	35	35	33	38	37	37	34	41	39	43	40	49	45	50	46	51	49	46	44
29	44	43	40	38	37	37	36	35	--	--	37	33	40	38	42	42	51	47	52	47	53	50	44	44
30	46	44	40	40	37	36	37	36	--	--	38	35	40	39	44	41	51	49	52	48	53	50	44	41
31	45	44	--	--	37	36	37	37	--	--	39	37	--	--	44	43	--	--	53	49	52	49	--	--
Average	45	44	40	39	37	36	35	35	37	36	38	37	41	39	44	41	47	45	52	48	52	49	49	47

KLICKITAT RIVER NEAR PITT, WASH.

LOCATION (revised).--Temperature recorder at gaging station, 2½ miles south of Pitt, Klickitat County, 5 miles upstream from Silvias Creek, and 7 miles upstream from mouth.
DRAINAGE AREA.--1,290 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 60°F July 14, 15, 17, 18, 23-26, 31, Aug. 1, 2, 6-8, 11; minimum, 34°F Jan. 20-24, 27, 28.
EXTREMES, 1950-54.--Water temperatures: Maximum, 66°F July 17, 23, 1951; minimum, 34°F Jan. 20-24. 27, 28, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	52	51	49	48	43	43	41	40	39	39	41	39	44	41	45	41	51	48	52	51	60	55	57	52
2	52	50	48	43	43	43	42	41	39	38	39	38	44	42	45	43	50	48	53	48	60	56	57	53
3	51	50	43	40	43	41	42	40	39	38	39	37	45	43	49	45	50	49	56	50	58	54	57	53
4	51	48	41	40	41	40	41	40	39	38	39	37	45	44	49	47	50	48	57	52	57	52	55	51
5	51	48	43	41	42	41	41	40	38	38	40	38	44	43	49	46	52	48	56	54	58	53	53	50
6	51	49	45	43	42	41	41	41	38	38	41	39	43	42	50	47	50	48	57	53	60	54	56	51
7	50	50	46	45	41	39	41	41	38	38	41	39	44	41	50	47	52	48	56	54	60	55	56	54
8	50	49	46	44	39	38	41	40	38	38	42	40	44	43	49	48	52	50	56	54	60	55	58	55
9	51	51	44	44	41	39	40	40	38	37	42	41	43	42	48	47	54	50	54	52	59	54	58	53
10	51	51	44	44	41	39	40	40	37	37	41	39	44	40	49	47	54	51	53	52	59	54	58	54
11	51	47	44	44	41	39	40	39	37	35	40	39	45	41	49	47	51	49	54	52	60	54	56	54
12	49	45	45	44	41	39	39	36	36	35	39	38	46	44	47	45	51	49	58	52	59	54	56	54
13	49	46	45	44	40	40	37	36	39	36	40	38	47	45	48	46	51	48	59	54	59	55	56	52
14	49	46	46	45	40	40	39	37	39	38	41	39	46	43	48	47	49	47	60	55	59	56	56	53
15	51	48	47	45	42	40	39	39	39	38	42	40	46	43	49	48	49	47	60	56	58	54	57	55
16	51	48	47	45	42	42	39	35	40	39	43	41	48	45	49	47	49	47	59	55	58	54	57	54
17	49	48	45	43	42	41	35	35	40	39	43	41	49	47	49	48	49	47	60	55	58	54	54	52
18	50	48	43	41	42	41	35	35	39	38	43	39	47	45	49	48	50	46	60	55	57	53	54	51
19	50	47	41	41	44	42	35	35	40	39	43	41	45	45	49	48	50	49	59	55	57	55	54	52
20	49	46	41	41	44	42	35	34	40	39	45	42	45	43	49	47	53	49	58	53	57	54	54	52
21	49	46	41	41	42	40	34	34	41	40	45	42	47	44	47	47	54	51	54	50	57	53	55	52
22	47	44	42	41	40	40	34	34	41	39	45	42	48	46	48	46	55	51	56	52	57	54	55	53
23	47	45	42	42	40	39	34	34	41	39	45	42	47	45	49	47	53	51	60	54	57	53	55	52
24	46	44	43	42	39	38	35	34	42	41	46	44	47	45	49	48	53	49	60	55	53	50	56	52
25	48	46	45	43	39	38	35	35	41	41	46	42	47	45	48	47	53	51	60	54	53	51	56	52
26	48	46	45	45	40	39	36	35	41	40	45	44	46	45	48	47	51	51	60	55	54	51	56	52
27	47	46	45	43	40	40	36	34	41	39	45	43	45	45	49	46	51	49	59	54	55	51	56	52
28	47	46	43	43	40	40	37	34	41	40	44	40	46	45	49	47	53	48	58	54	55	53	54	50
29	49	47	43	43	40	40	37	37	--	--	41	37	45	43	48	48	56	51	59	53	59	54	50	49
30	49	48	44	43	40	39	39	37	--	--	41	37	44	43	50	47	55	52	59	54	59	55	50	46
31	49	49	--	--	40	39	39	39	--	--	41	39	--	--	51	49	--	--	60	54	58	55	--	--
Average	49	48	44	43	41	40	38	37	39	38	42	40	46	44	49	47	52	49	57	53	58	54	55	52

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, 1¼ miles downstream from North Fork, and 1½ miles west of Dee, Hood County.
DRAINAGE AREA.--20.0 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1954 (discontinued).
EXTREMES, 1953-54.--Water temperatures: Maximum 57°F Aug. 12; minimum, freezing point Jan. 27.
EXTREMES, 1950-54.--Water temperatures: Maximum, 60°F Aug. 10, 11, 1952; minimum, freezing point Jan. 27, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	50	--	--	44	43	40	40	40	38	39	39	40	40	42	39	44	43	51	49	56	52	56	53
2	50	50	--	--	43	43	40	39	38	38	39	38	40	40	42	40	45	43	51	47	55	53	56	54
3	50	49	--	--	--	--	39	39	38	38	38	38	40	40	46	42	45	45	52	49	54	53	55	54
4	50	49	--	--	--	--	39	39	38	38	38	37	40	40	45	44	45	44	53	50	54	51	54	53
5	50	49	--	--	--	--	40	39	38	38	38	37	40	40	45	44	45	44	53	51	54	51	54	52
6	50	49	--	--	--	--	40	40	38	38	39	38	40	39	46	43	45	44	54	51	55	52	55	52
7	50	49	--	--	--	--	40	40	38	38	39	39	41	40	46	43	47	45	54	53	56	53	55	54
8	51	50	--	--	--	--	40	40	38	37	39	39	41	40	46	44	47	46	53	52	56	54	55	53
9	51	51	--	--	42	41	40	40	37	37	39	39	40	40	45	44	48	46	52	50	56	53	55	53
10	51	51	--	--	41	41	40	40	37	37	39	38	42	40	46	44	47	46	50	50	56	53	55	53
11	51	50	--	--	42	41	40	39	38	34	38	38	42	41	45	44	46	46	50	50	56	53	54	53
12	50	48	--	--	42	42	39	38	35	34	38	37	42	42	44	43	47	46	52	50	57	53	55	54
13	50	49	--	--	42	41	39	38	37	35	38	37	42	41	46	43	47	46	53	49	56	54	54	53
14	49	48	--	--	42	41	39	39	38	37	38	38	41	39	47	43	46	45	55	52	56	54	55	54
15	50	49	--	--	42	42	39	38	38	38	39	38	41	40	48	45	47	45	55	52	55	53	55	54
16	50	49	--	--	42	42	38	34	39	38	39	39	43	41	48	45	45	44	54	51	54	53	54	54
17	49	49	44	44	42	42	35	34	39	39	39	39	43	41	48	45	47	45	54	51	56	53	54	53
18	49	49	44	43	42	42	36	34	39	38	39	39	41	40	49	45	48	45	56	53	56	53	54	53
19	49	48	44	44	42	42	36	35	39	38	39	39	42	40	48	45	48	47	55	53	55	54	54	53
20	48	--	44	43	42	42	35	34	39	39	41	39	42	40	47	46	51	47	54	51	55	54	55	53
21	--	--	43	42	42	42	34	33	39	39	41	39	43	40	46	45	51	48	52	51	56	53	55	53
22	--	--	44	43	42	42	34	33	39	39	41	40	43	41	47	44	51	49	53	50	56	54	55	54
23	--	--	43	42	42	42	36	34	39	39	41	40	43	40	47	45	51	49	55	52	55	54	55	54
24	--	--	44	43	42	41	36	36	39	39	41	40	43	41	47	46	51	49	55	52	54	53	55	54
25	--	--	45	44	41	39	36	34	39	39	41	40	42	41	46	45	51	50	55	52	53	53	55	53
26	--	--	45	45	40	39	35	34	39	39	41	40	43	41	45	43	51	50	55	52	54	53	55	53
27	--	--	45	44	40	40	35	32	39	39	41	40	43	42	44	42	51	49	55	53	54	52	54	53
28	--	--	44	44	41	40	36	33	39	39	40	39	42	41	44	42	51	49	54	51	54	53	53	52
29	--	--	44	44	41	41	36	36	--	--	39	37	41	40	44	44	52	49	55	52	55	54	52	50
30	--	--	44	44	41	40	37	36	--	--	39	38	40	40	45	44	52	51	55	52	56	54	50	49
31	--	--	--	--	40	40	38	37	--	--	40	39	--	--	45	44	--	--	55	52	55	54	--	--
Average	--	--	--	--	42	41	38	37	38	38	39	39	42	40	46	44	48	46	54	51	55	53	54	53

BULL RUN RIVER AT BULL RUN, OREG.

LOCATION.--Temperature recorder at gaging station, at Bull Run, 450 feet downstream from tailrace of Portland General Electric Co.'s powerplant, 1.5 miles downstream from Little Sandy River, and 1.5 miles above mouth.
DRAINAGE AREA.--136 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1954 (discontinued).
EXTREMES, 1953-54.--Water temperatures: Maximum, 61°F July 31, Aug. 1; minimum, 36°F Jan. 20, 21.
EXTREMES, 1950-54.--Water temperatures: Maximum, 67°F July 27, 28, 1953; minimum, 34°F Nov. 29, 30, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	51	49	46	46	44	43	41	40	41	41	42	42	48	44	49	48	55	53	61	57	59	56
2	53	51	50	48	46	46	43	43	41	40	41	40	42	42	48	45	50	48	54	52	60	59	59	56
3	53	51	48	46	46	45	43	42	41	40	41	39	43	42	49	47	51	50	56	52	59	57	58	56
4	53	52	47	45	45	44	42	41	41	40	41	40	43	42	49	48	50	49	59	53	57	56	56	55
5	53	52	46	45	45	44	42	42	41	40	42	40	43	42	49	47	50	49	59	55	56	55	57	55
6	54	52	46	45	45	44	42	42	41	40	42	41	42	42	51	46	49	47	60	56	57	55	57	55
7	54	52	47	45	44	43	42	42	41	40	42	40	44	42	52	49	49	47	60	53	59	57	57	56
8	56	53	47	45	43	43	42	42	41	40	42	42	44	43	52	51	49	48	55	50	60	58	57	56
9	56	54	47	46	44	43	42	42	41	40	42	41	43	42	51	49	49	48	54	48	58	56	58	56
10	56	54	47	46	44	44	42	42	41	40	41	40	45	42	51	49	48	48	53	48	59	56	58	57
11	55	55	48	46	44	44	42	41	41	40	41	40	46	43	51	48	50	48	54	50	59	57	57	55
12	55	53	48	47	45	44	41	40	41	40	40	40	46	44	49	48	51	49	56	53	58	58	56	55
13	53	52	48	47	45	45	40	40	41	41	41	40	45	43	51	48	51	49	58	48	58	58	56	55
14	54	52	49	48	45	45	41	40	41	41	42	40	44	44	53	52	50	49	58	50	58	57	56	55
15	54	53	49	48	45	45	41	40	41	41	42	41	45	43	54	52	50	49	57	52	59	57	57	55
16	54	53	48	47	45	45	40	38	41	41	42	41	47	43	54	51	49	48	59	50	58	57	55	55
17	53	52	49	45	45	44	39	38	41	41	42	41	47	44	56	51	49	48	60	51	58	56	56	55
18	53	51	47	45	44	44	39	38	41	41	42	40	46	43	56	52	50	48	59	52	58	57	55	54
19	52	50	47	45	44	44	39	38	41	41	42	41	46	44	55	50	51	49	59	54	59	58	56	54
20	51	50	47	45	44	44	38	36	41	41	43	41	47	44	54	52	52	50	57	51	58	56	56	54
21	51	49	47	44	44	44	37	36	41	41	43	41	47	44	52	50	55	49	55	49	57	56	56	55
22	49	48	46	45	44	44	38	37	41	41	43	41	48	44	55	50	56	51	56	49	57	56	57	55
23	48	48	46	45	44	44	39	38	42	41	43	41	48	43	58	51	55	52	58	51	57	56	57	55
24	48	47	45	45	44	44	38	37	42	41	44	42	48	44	58	52	56	52	59	52	56	55	57	56
25	48	47	46	45	44	43	39	38	42	41	45	42	47	45	53	51	57	53	59	52	55	54	58	56
26	48	47	46	46	43	43	38	38	42	41	45	43	47	45	52	48	56	54	59	55	54	54	58	57
27	48	48	46	46	44	43	38	38	42	41	43	42	47	46	49	48	55	53	60	56	55	54	58	57
28	49	48	47	46	44	44	39	38	42	41	42	41	46	45	49	48	55	52	59	54	55	55	57	55
29	50	48	47	46	44	44	40	39	--	--	42	40	45	43	50	48	60	54	60	56	57	55	55	54
30	51	49	47	46	44	43	40	40	--	--	43	40	45	44	49	48	60	55	60	56	57	56	54	52
31	51	49	--	--	43	43	40	40	--	--	43	41	--	--	49	48	--	--	61	56	58	56	--	--
Average	52	51	47	46	44	44	40	40	41	41	42	41	45	43	52	49	52	50	58	52	58	56	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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 65°F July 14, 31, Aug. 1, 2; minimum, 38°F Jan. 26.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	53	52	49	48	47	47	44	43	43	42	43	41	44	41	48	41	53	48	57	53	65	60	62	57
2	54	51	49	48	47	47	44	43	42	41	42	40	44	42	47	43	54	48	58	52	65	60	60	57
3	54	51	49	48	47	47	43	42	42	41	42	39	45	43	53	46	53	51	60	53	63	59	59	56
4	54	50	48	47	47	46	44	43	42	41	43	40	45	44	52	48	52	49	61	55	63	58	59	55
5	54	51	48	47	46	46	44	44	42	41	44	41	44	43	53	48	52	48	60	57	61	59	58	54
6	55	51	48	47	46	46	44	43	42	41	44	43	44	42	53	47	50	48	59	56	62	56	59	54
7	55	51	48	47	47	46	44	44	42	41	44	42	46	42	53	49	53	47	58	55	63	58	58	55
8	54	53	48	47	46	46	44	44	42	41	44	43	44	43	52	48	52	49	58	56	63	58	59	54
9	54	53	48	47	47	46	44	43	42	41	44	43	43	42	51	48	49	48	58	55	63	58	60	54
10	53	53	48	47	47	46	44	44	42	41	43	40	47	42	53	47	49	48	57	55	63	57	58	55
11	55	52	48	47	46	46	44	44	42	41	40	39	47	42	52	49	52	48	62	56	63	57	55	54
12	55	52	49	48	47	46	44	41	43	41	40	39	47	44	52	47	52	50	63	58	62	58	56	53
13	53	52	48	47	47	46	41	41	43	42	42	39	47	45	53	47	50	49	64	59	60	58	58	54
14	54	52	49	48	46	46	41	41	42	42	43	39	47	43	54	48	51	49	65	60	58	56	57	55
15	55	53	50	49	46	46	41	41	42	41	43	41	48	42	54	50	52	50	63	60	58	56	55	53
16	53	52	50	48	46	46	42	41	43	42	43	42	49	44	54	49	50	48	64	59	61	55	54	53
17	52	51	48	46	46	46	42	42	43	42	42	40	50	44	56	49	53	47	64	59	61	56	54	52
18	51	51	46	45	46	46	42	42	42	40	43	40	49	45	56	50	54	48	64	59	61	57	55	51
19	52	50	45	45	47	46	42	42	41	40	43	42	46	43	55	50	52	49	64	60	60	58	55	52
20	51	50	45	45	47	46	42	40	42	41	43	41	49	44	53	50	58	50	62	58	58	56	56	52
21	50	49	45	45	46	45	41	40	43	42	44	42	49	44	53	48	58	53	60	56	62	56	55	53
22	49	48	47	45	45	44	41	40	42	41	45	41	50	44	54	47	59	52	62	55	62	57	55	53
23	48	46	47	47	44	44	42	41	43	41	44	40	50	45	56	49	59	53	64	58	60	57	56	52
24	48	46	47	47	44	44	42	41	44	42	44	42	49	44	54	51	59	53	64	59	57	55	57	53
25	48	47	48	47	44	43	41	40	44	43	45	42	49	44	51	49	58	54	64	59	56	54	58	54
26	49	47	48	48	43	43	40	38	44	42	45	42	48	44	50	48	57	54	64	59	57	54	58	54
27	50	48	48	48	44	43	40	39	43	41	45	43	47	45	53	47	55	53	64	59	56	54	57	54
28	50	49	48	46	44	44	42	40	43	41	43	42	47	45	53	48	58	51	64	58	57	55	55	52
29	51	50	47	46	44	44	43	42	--	--	44	40	47	45	52	50	59	53	64	58	60	55	53	50
30	50	49	47	47	44	43	43	43	--	--	44	40	45	43	52	48	58	55	64	58	60	58	52	48
31	50	48	--	--	43	42	43	42	--	--	43	40	--	--	51	50	--	--	65	59	62	56	--	--
Average	52	50	48	47	46	45	43	42	42	41	43	41	47	43	53	48	54	50	62	57	61	57	57	53

MIDDLE FORK WILLAMETTE RIVER AT LOWELL, OREG.

LOCATION.--Temperature recorder at gaging station at bridge, 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 1954 (discontinued).
EXTREMES, 1953-54.--Water temperatures: Maximum, 63°F Sept. 9; minimum, 41°F Mar. 15.
EXTREMES, 1950-54.--Water temperatures: Maximum, 72°F July 16, 1951; minimum, 34°F Nov. 28, 29, 1953.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	56	50	50	46	46	44	44	44	44	45	44	44	44	50	48	53	52	53	53	57	56	62	61
2	56	54	50	49	46	46	44	43	44	44	44	44	44	44	49	48	53	52	54	53	57	56	62	62
3	55	53	49	49	46	46	43	43	44	43	44	44	44	44	49	48	53	52	54	53	57	57	62	62
4	55	53	49	48	46	45	43	43	43	43	44	44	44	44	48	48	53	52	54	53	58	57	62	62
5	55	53	48	48	45	45	43	43	43	43	44	44	44	44	49	48	53	52	54	53	58	57	62	62
6	55	54	48	48	45	45	43	43	43	43	44	44	44	44	49	48	53	52	54	53	59	57	62	62
7	55	54	48	48	45	44	43	43	43	43	44	44	44	44	50	48	53	52	54	54	59	57	62	62
8	55	54	48	48	46	44	43	43	43	43	45	44	44	44	49	48	53	53	54	54	58	57	62	62
9	55	55	48	47	45	44	43	43	43	43	45	45	44	44	49	48	53	52	54	54	58	58	63	62
10	55	54	47	47	45	45	43	43	43	43	45	45	44	44	49	48	52	52	54	54	58	58	62	62
11	55	54	47	47	45	45	43	43	43	43	45	44	45	44	49	49	53	52	54	54	58	58	62	62
12	55	54	47	47	45	45	43	43	43	43	44	43	46	45	50	49	53	52	55	54	58	58	62	62
13	55	54	47	47	46	45	43	43	43	43	43	42	46	46	51	50	53	53	55	54	58	58	62	62
14	55	54	47	47	46	46	43	43	43	43	42	42	48	46	50	50	53	53	55	54	59	58	62	62
15	55	54	47	47	46	46	43	43	43	43	42	41	48	47	51	50	53	53	54	54	59	59	62	62
16	54	54	47	47	46	46	43	43	43	43	42	42	48	47	51	50	53	53	55	54	60	59	62	62
17	54	54	47	47	46	46	43	43	43	43	42	42	50	47	51	50	53	53	55	54	60	59	62	62
18	54	53	47	47	46	46	43	43	43	43	42	42	49	47	52	50	53	53	55	54	60	59	62	61
19	53	52	47	46	46	46	43	43	43	43	42	42	49	48	52	50	53	53	55	54	59	59	62	61
20	52	51	46	45	47	46	43	43	43	43	43	42	49	47	51	50	53	53	55	54	59	59	62	61
21	52	51	45	45	47	47	43	43	43	43	43	43	49	47	52	50	53	53	55	54	60	59	61	61
22	51	50	45	45	47	47	43	43	44	43	44	43	49	47	52	50	53	53	55	54	61	60	61	61
23	50	50	46	45	47	46	43	43	44	43	44	44	49	48	52	51	53	53	55	54	60	60	61	61
24	50	49	46	46	46	45	43	43	44	43	44	44	50	49	52	51	54	53	56	55	60	60	61	61
25	49	49	46	46	45	45	43	43	45	44	45	44	50	48	51	51	53	53	56	55	60	60	61	61
26	49	48	46	46	45	45	43	42	45	45	44	44	49	48	51	51	53	53	56	55	61	60	61	61
27	49	48	46	46	45	44	42	42	45	45	44	44	48	48	52	51	53	53	56	56	61	61	61	61
28	49	48	46	46	44	44	42	42	45	45	44	44	49	48	52	51	53	53	56	56	61	61	61	61
29	50	48	46	46	44	44	43	42	--	--	45	44	49	48	52	51	53	53	56	56	61	61	61	61
30	50	50	46	46	44	44	44	43	--	--	44	44	49	48	52	52	53	53	56	56	61	61	61	61
31	50	50	--	--	44	44	44	44	--	--	44	44	--	--	52	52	--	--	57	56	62	61	--	--
Average	53	52	47	47	46	45	43	43	44	43	44	43	47	46	51	50	53	53	55	54	59	59	62	62

WILLAMETTE RIVER BASIN--Continued

FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OREG.

LOCATION.--Temperature recorder at gaging station, 10 feet upstream from highway bridge, 1½ miles downstream from Winberry Creek, 2½ miles southeast of Fall Creek, Lane County, and 5 miles above mouth.
DRAINAGE AREA.--186 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 69°F July 18, Aug. 1; minimum, 38°F Mar. 12, 13.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	50	49	--	--	43	42	43	43	42	40	45	42	50	43	53	49	58	55	69	63	65	61
2	53	51	49	48	--	--	43	42	43	42	41	39	45	44	48	46	53	50	60	53	68	64	64	61
3	53	50	48	47	47	47	42	41	42	42	41	39	46	44	56	47	55	53	62	55	67	63	62	59
4	53	50	47	46	47	46	43	41	43	42	42	39	46	45	54	50	53	51	64	56	66	62	62	59
5	54	51	47	47	46	46	44	43	43	42	43	40	45	44	56	49	54	50	63	59	65	63	62	57
6	55	53	47	47	47	46	44	43	43	42	44	42	44	43	57	49	52	50	62	59	66	59	62	58
7	56	53	48	47	47	46	44	43	42	41	44	42	45	43	60	53	54	49	60	58	67	61	61	59
8	56	55	48	47	47	47	44	43	42	41	45	43	45	44	60	56	54	51	60	58	66	63	62	58
9	56	55	48	47	--	--	43	43	42	41	46	45	44	43	58	55	51	49	60	58	66	61	63	58
10	56	55	48	47	--	--	43	43	42	42	45	40	46	43	60	53	49	49	60	57	66	61	62	59
11	56	55	48	47	--	--	43	42	42	42	41	39	47	43	60	56	53	49	65	58	66	61	59	57
12	56	54	48	48	46	46	42	40	44	42	41	38	48	46	59	53	53	51	67	60	65	62	59	57
13	55	54	48	48	46	45	40	40	44	44	41	38	48	47	60	53	52	51	68	61	62	60	60	57
14	55	54	49	48	46	46	41	40	44	43	42	39	48	46	60	53	51	51	68	63	61	60	60	59
15	55	54	50	49	46	45	41	41	43	42	42	41	48	44	62	57	51	50	67	62	62	60	59	56
16	55	53	49	48	46	46	42	41	43	42	42	41	51	46	63	57	50	49	66	60	63	57	56	54
17	53	53	48	46	46	45	42	42	43	43	42	41	53	48	65	58	52	48	68	61	64	59	55	54
18	53	52	46	46	46	46	42	42	43	42	43	40	52	48	66	60	54	48	69	63	64	60	55	51
19	52	51	46	45	48	46	42	42	42	42	43	42	50	47	65	60	53	52	68	63	64	62	55	51
20	51	50	45	45	48	47	42	40	43	42	44	41	53	47	63	58	50	52	63	60	62	60	56	52
21	51	49	46	45	47	46	40	40	43	43	45	42	52	47	59	55	62	55	62	58	64	59	56	54
22	49	47	--	--	46	45	41	40	43	42	45	41	53	47	61	53	62	57	65	57	65	60	56	55
23	48	45	--	--	45	44	42	41	43	42	45	41	53	49	63	56	61	57	68	61	64	59	59	55
24	47	45	--	--	45	44	42	42	45	43	44	43	53	47	62	58	63	56	68	63	59	57	60	57
25	47	45	--	--	45	43	42	40	45	44	45	42	51	47	58	56	61	57	68	62	58	57	61	57
26	47	46	--	--	44	43	40	39	45	43	45	43	50	48	56	51	60	58	68	62	60	57	61	57
27	48	47	--	--	45	44	41	39	43	42	45	43	49	48	56	50	58	56	66	63	60	59	60	58
28	49	48	--	--	44	44	43	41	42	41	44	43	49	47	57	52	61	53	67	61	61	59	58	55
29	51	49	--	--	44	43	43	43	--	--	43	41	49	45	56	53	63	56	67	61	62	60	55	52
30	51	49	--	--	43	41	43	43	--	--	43	41	47	45	54	51	62	58	67	61	62	61	53	51
31	50	49	--	--	42	41	43	43	--	--	43	41	--	--	54	51	--	--	68	62	64	59	--	--
Average	52	51	--	--	46	45	42	42	43	42	43	41	48	46	59	53	56	52	65	60	64	60	59	56

MIDDLE FORK WILLAMETTE RIVER AT JASPER, OREG.

LOCATION.--Temperature recorder at gaging station, 25 feet downstream from highway bridge at Jasper, Lane County, 650 feet downstream from Hills Creek and 7½ miles southeast of Springfield.
DRAINAGE AREA.--1,340 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 65°F Aug. 7, 22, 31, Sept. 1, 8, 9; minimum, 40°F Jan. 20, 21, 25-28, Mar. 13, 14.
REMARKS.--Record of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	--	--	53	52	51	50	43	43	42	42	44	42	46	44	55	46	59	53	60	55	63	57	65	61
2	58	--	52	50	50	50	43	43	42	42	44	42	45	44	53	49	59	53	60	55	62	58	63	62
3	57	53	50	50	50	50	43	43	42	42	44	41	47	44	58	50	57	54	61	55	62	58	64	62
4	56	52	51	50	50	49	43	43	42	42	44	41	47	46	57	50	56	53	61	55	62	57	64	61
5	57	52	51	51	50	49	44	43	42	42	44	41	47	45	57	50	56	52	59	55	62	59	64	60
6	58	54	51	51	49	48	44	43	42	42	44	43	45	44	58	50	54	52	59	56	64	57	64	60
7	58	54	51	51	48	48	44	44	42	42	44	42	46	44	59	52	57	50	58	57	65	58	63	61
8	59	55	51	50	48	48	44	44	42	42	45	43	46	45	58	53	54	53	58	56	62	58	65	61
9	59	57	51	50	48	48	44	44	42	42	45	44	45	44	54	52	53	52	57	55	63	57	65	61
10	57	57	50	50	48	48	44	44	42	42	44	43	48	44	59	52	53	52	58	56	63	57	63	62
11	57	56	50	49	48	47	44	43	42	42	43	42	50	44	57	53	55	52	61	56	63	58	62	61
12	58	56	51	49	48	48	43	41	42	42	43	41	48	46	58	51	55	53	62	55	61	59	62	61
13	58	56	51	50	48	47	41	41	43	42	42	40	49	48	58	51	54	53	63	56	60	59	63	61
14	58	56	51	51	48	47	42	41	43	43	43	40	51	47	59	51	54	53	61	57	60	59	62	62
15	58	55	51	51	48	47	42	41	43	42	42	42	51	46	59	53	54	53	59	57	62	59	62	61
16	57	55	51	51	47	47	42	42	43	43	43	42	53	48	60	52	53	51	62	56	63	58	61	60
17	57	56	51	49	47	46	42	42	43	43	43	41	56	49	61	52	56	51	62	56	63	58	61	60
18	57	56	49	48	46	46	42	42	43	42	44	41	56	49	61	53	57	51	63	56	63	59	62	58
19	56	54	49	49	48	46	42	42	42	42	44	43	53	48	61	53	55	54	60	57	62	60	62	58
20	55	54	49	47	48	48	42	40	42	42	45	42	55	49	61	55	58	54	59	56	60	60	62	59
21	54	52	48	47	48	47	42	40	44	42	46	42	54	47	58	53	61	55	60	56	63	60	60	59
22	54	52	50	48	47	46	41	41	43	43	46	42	56	48	61	52	61	55	62	54	65	60	60	60
23	54	51	50	49	46	46	41	41	44	42	46	42	55	49	62	53	59	55	62	56	62	61	62	60
24	52	49	50	50	46	45	41	41	45	43	46	43	56	49	61	55	62	55	62	56	61	60	62	60
25	52	49	50	50	46	44	41	40	45	44	47	43	55	49	58	54	59	54	62	56	61	60	63	60
26	51	49	50	50	44	44	40	40	44	44	47	44	54	50	56	53	56	56	62	56	62	60	62	60
27	51	50	50	50	45	44	41	40	44	43	45	44	52	50	60	52	57	55	61	57	62	60	61	60
28	52	50	51	50	44	44	42	40	44	42	44	44	51	49	60	53	60	54	62	56	61	61	61	58
29	52	52	51	51	44	43	42	42	--	--	46	42	53	47	59	54	63	55	62	56	62	61	61	58
30	53	52	51	51	43	43	42	42	--	--	46	41	51	48	58	54	58	57	63	57	62	61	61	57
31	53	52	--	--	43	43	42	42	--	--	45	43	--	--	58	54	--	--	63	57	65	60	--	--
Average	56	53	50	50	47	47	42	42	43	42	44	42	51	47	59	52	57	53	61	56	62	59	62	60

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 town of Blue River, Lane County.
DRAINAGE AREA.--24.1 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 63°F July 31, Aug. 1; minimum, 36°F Jan. 27.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	53	51	48	47	45	44	41	41	42	42	41	39	42	39	45	39	48	45	53	50	63	57	59	55
2	52	50	47	46	44	44	41	40	42	42	40	39	41	40	44	40	50	45	56	48	62	58	59	57
3	51	49	46	44	44	43	40	39	42	41	41	39	42	41	48	43	49	47	57	49	61	57	59	57
4	51	49	45	44	43	42	41	39	42	41	41	39	42	41	45	44	48	46	59	51	60	56	57	55
5	51	49	45	45	42	41	42	41	42	41	42	40	42	41	48	43	48	45	56	53	59	57	56	53
6	52	50	45	45	43	42	42	41	42	41	42	41	42	41	50	43	46	45	55	53	61	54	57	53
7	52	50	46	45	43	42	43	42	42	41	42	40	43	41	49	45	51	45	56	52	61	56	57	55
8	52	5=	46	45	42	40	43	42	42	41	42	42	42	41	40	45	47	46	55	53	61	56	57	54
9	53	52	46	45	42	41	43	42	42	41	42	41	41	40	47	45	46	45	54	53	61	56	57	54
10	53	52	46	46	42	42	43	42	42	41	41	39	44	41	50	45	46	45	55	52	61	56	57	55
11	53	52	46	45	42	42	42	41	41	41	40	39	44	41	47	45	48	46	59	53	61	56	55	54
12	52	49	46	46	43	42	41	40	42	41	39	38	44	42	49	45	49	47	61	53	61	56	55	54
13	51	50	46	46	43	42	40	40	42	42	40	38	44	42	50	44	47	47	62	54	59	57	56	52
14	52	51	47	46	43	42	41	40	42	41	41	39	44	42	51	45	47	46	62	55	57	56	56	55
15	52	51	47	46	43	42	40	39	42	41	41	40	45	41	52	47	48	46	62	56	57	55	55	53
16	51	50	47	46	43	42	40	39	42	41	41	40	46	42	53	47	47	45	62	56	59	55	54	53
17	51	50	46	44	42	42	41	40	42	41	40	39	46	43	54	48	48	45	62	56	59	55	53	52
18	51	50	45	44	43	42	41	40	41	39	41	38	46	43	55	49	50	45	62	56	59	55	53	51
19	50	49	45	44	43	42	40	40	40	39	40	40	43	42	54	49	47	47	62	57	59	57	53	50
20	49	49	44	43	43	43	40	38	41	40	4'	39	46	42	50	48	53	47	59	55	57	56	53	50
21	49	48	44	43	43	43	39	38	42	41	42	39	47	42	49	47	54	48	56	54	59	56	53	51
22	48	46	45	44	43	42	40	39	42	41	42	39	47	43	52	45	56	49	59	52	60	55	53	53
23	47	45	45	45	42	41	41	40	42	41	42	39	47	43	53	47	56	50	61	54	59	56	54	51
24	47	45	46	45	42	41	40	39	42	42	41	40	47	43	50	48	57	50	61	55	57	54	54	52
25	47	45	46	46	41	41	40	37	42	42	42	39	46	42	49	47	54	51	61	55	55	54	55	52
26	47	45	46	46	42	41	38	37	42	41	42	41	46	43	47	45	52	51	61	55	56	54	55	53
27	47	46	46	45	42	41	39	36	41	40	41	40	45	44	51	45	51	50	61	55	56	53	55	53
28	48	47	45	45	42	42	41	39	42	40	40	39	45	42	49	45	55	48	62	55	56	55	53	50
29	48	47	45	45	42	41	41	41	--	--	41	38	42	41	47	46	57	49	62	56	59	55	51	48
30	49	48	45	45	41	40	42	41	--	--	41	38	42	40	50	46	53	51	62	55	59	57	50	47
31	49	47	--	--	41	40	42	41	--	--	40	38	--	--	47	45	--	--	63	56	59	56	--	--
Average	50	49	46	45	43	42	41	40	42	41	41	39	44	42	50	45	50	47	59	54	59	56	55	53

NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OREG.

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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 59°F Aug. 1; minimum, 35°F Jan. 20, 21.
EXTREMES, 1951-54.--Water temperatures: Maximum, 59°F July 28, Aug. 1-3, 1952, Aug. 18, 19, 1953, Aug. 1, 1954; minimum, 33°F Jan. 2, 3, 1952.
REMARKS.--Record of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	48	48	45	45	44	52	40	40	42	41	41	40	42	39	44	39	46	43	49	48	59	52	55	51
2	48	46	45	42	43	42	40	39	42	41	40	39	42	40	44	40	49	43	52	56	57	53	55	52
3	47	45	42	41	43	42	39	39	42	41	41	39	41	41	46	42	48	46	54	47	56	52	54	52
4	48	45	43	42	42	41	39	39	42	41	41	39	41	41	45	43	46	45	55	49	55	49	52	50
5	48	46	44	43	41	40	40	39	42	41	42	40	41	40	47	42	46	44	54	50	53	51	52	48
6	48	46	44	44	41	40	40	40	42	41	42	41	40	40	48	42	46	44	54	50	56	50	52	49
7	48	47	44	44	41	40	40	40	42	41	42	40	43	40	48	43	48	44	53	50	57	51	52	50
8	48	48	44	43	40	40	40	40	41	41	42	42	42	41	47	43	47	45	52	50	57	51	53	49
9	49	48	45	44	41	40	40	40	41	41	42	41	41	40	46	43	45	44	51	49	56	51	53	49
10	49	49	46	45	41	40	40	40	41	41	41	40	44	40	48	42	45	44	50	49	56	50	53	50
11	49	47	46	44	41	40	40	39	41	41	40	39	45	40	46	43	47	44	55	49	56	50	51	50
12	47	45	45	45	41	41	39	38	42	41	40	38	44	41	47	42	47	45	55	50	55	50	51	50
13	47	46	46	45	41	41	39	38	42	41	40	39	43	41	48	42	46	45	57	50	54	52	52	50
14	48	47	46	45	41	41	39	39	42	41	42	40	43	41	49	43	46	45	58	52	53	51	53	51
15	48	47	46	46	41	41	39	38	42	41	42	41	44	40	48	44	47	45	58	52	52	50	52	50
16	47	46	46	45	41	41	38	37	42	42	42	41	46	41	49	44	45	44	57	52	54	49	51	50
17	47	47	45	43	41	41	38	38	42	41	42	41	45	42	50	44	46	44	57	51	54	49	50	49
18	47	47	43	43	42	41	38	37	42	40	41	40	44	42	40	44	49	43	58	51	53	50	51	49
19	47	46	43	43	42	41	38	37	41	40	41	40	42	40	49	44	47	46	58	52	53	51	51	48
20	46	46	43	43	42	41	38	35	42	41	41	40	45	41	48	45	41	46	55	50	52	51	50	48
21	46	44	43	42	42	41	37	35	42	41	41	39	46	41	46	44	52	46	52	49	53	50	51	48
22	44	43	44	43	41	41	38	37	42	41	43	39	46	41	49	43	53	47	54	47	55	50	51	50
23	44	43	44	44	41	40	38	37	42	41	42	39	46	41	50	45	51	47	56	49	54	52	52	49
24	44	43	45	44	41	40	38	37	43	42	42	41	45	41	49	46	53	47	56	49	52	50	51	49
25	44	43	45	45	41	40	38	36	43	42	42	39	45	40	46	44	52	48	56	49	51	49	52	49
26	44	43	45	45	41	40	37	36	42	41	42	41	44	42	45	43	51	49	55	49	52	50	52	50
27	45	44	45	45	41	40	37	36	42	41	41	39	35	32	48	42	49	48	55	49	52	50	51	49
28	45	45	45	44	41	41	40	36	42	41	40	39	43	42	46	43	52	47	55	49	53	51	50	48
29	47	45	44	44	41	41	40	40	--	--	41	37	43	40	46	45	54	47	56	50	55	51	49	46
30	46	46	44	44	41	40	40	40	--	--	41	37	42	40	46	44	52	48	56	49	54	52	47	44
31	46	45	--	--	40	40	41	40	--	--	40	38	--	--	46	44	--	--	57	50	55	51	--	--
Average	47	46	44	44	41	41	39	38	42	41	41	40	43	41	47	43	49	45	55	50	54	51	52	49

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 northeast of Detroit, Marion County.
DRAINAGE AREA.--106 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum 56°F July 14, 15, 18, 19; minimum 39°F Jan. 20, 21, Mar. 11-14, 27-31, Apr. 1.
EXTREMES, 1950-54.--Water temperatures: Maximum, 58°F July 17, 1951, Aug. 4, 13, 14, 1952; minimum, 33°F Mar. 3-7, 1951.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	50	49	50	49	47	46	43	43	42	42	41	40	41	39	45	42	47	46	49	49	55	51	51	48
2	50	49	49	47	47	46	44	43	42	42	40	40	41	41	45	43	49	46	51	47	55	51	52	49
3	49	47	48	47	46	45	43	43	42	41	40	39	41	41	47	45	49	48	52	48	54	51	51	50
4	48	47	47	47	45	44	43	43	42	41	40	39	41	41	46	45	48	47	53	49	53	49	51	51
5	48	48	47	47	44	43	44	43	42	41	40	39	41	41	48	45	47	46	52	50	53	51	51	49
6	49	48	47	47	44	44	44	43	42	41	41	40	42	41	48	44	47	46	52	50	54	50	52	49
7	49	49	48	47	44	43	44	43	42	41	41	40	43	42	48	45	49	46	51	50	54	50	52	51
8	49	49	47	47	43	42	44	43	42	41	41	40	43	43	48	45	48	47	51	50	55	51	53	50
9	50	49	47	47	43	42	44	43	42	42	41	40	43	42	47	45	47	46	51	50	54	51	52	49
10	50	50	47	47	43	43	44	43	42	42	40	40	44	42	48	45	46	46	50	49	54	50	51	50
11	50	50	47	47	43	43	43	43	42	42	40	39	44	43	47	45	48	46	54	49	54	50	51	50
12	50	48	47	47	43	43	43	42	42	42	40	39	44	43	48	45	48	47	54	50	54	50	51	50
13	50	49	47	47	43	43	42	42	42	42	39	39	44	43	48	45	48	47	55	50	53	51	51	50
14	51	50	47	47	43	43	42	42	42	42	40	39	44	43	49	45	47	47	56	51	52	51	51	50
15	51	51	48	47	43	43	43	42	42	42	40	40	44	42	49	46	47	47	56	51	51	50	51	50
16	51	50	48	48	43	43	42	41	42	42	41	40	45	43	50	46	47	46	55	51	51	49	51	50
17	50	50	48	48	43	43	42	41	42	32	41	40	45	43	50	46	47	46	55	51	52	48	50	49
18	50	50	48	48	43	43	42	41	42	41	40	40	44	43	50	46	49	46	56	51	52	50	50	49
19	51	50	48	48	44	43	42	41	42	41	40	40	44	42	50	46	48	48	56	52	51	50	50	49
20	51	51	48	47	45	44	41	39	42	41	41	40	45	42	49	46	51	48	54	51	51	50	50	49
21	51	49	48	46	44	44	40	39	42	41	41	40	45	43	47	46	52	48	51	50	51	50	50	49
22	49	48	47	46	44	44	41	40	41	41	41	40	46	43	49	45	52	49	54	49	53	50	50	50
23	48	48	47	47	44	43	42	41	41	40	41	40	46	43	50	46	51	49	55	50	52	50	52	50
24	48	47	47	47	44	43	42	41	41	41	41	41	45	43	50	48	52	48	55	50	50	49	51	49
25	47	47	47	47	44	43	41	40	41	41	41	41	45	43	48	46	52	50	55	50	49	48	51	50
26	47	47	48	47	44	43	41	40	41	41	41	41	45	44	47	46	51	50	55	50	50	48	52	50
27	48	47	48	48	44	43	40	40	41	41	41	39	45	45	48	45	50	49	55	51	50	48	51	50
28	48	48	48	47	44	43	40	40	41	41	40	39	45	44	48	45	52	48	55	50	49	48	50	49
29	50	48	47	47	44	44	41	40	--	--	40	39	44	43	47	47	53	49	54	50	51	49	49	47
30	50	50	47	47	44	43	42	41	--	--	40	39	44	43	48	46	52	49	54	49	51	50	47	45
31	50	50	--	--	43	43	42	42	--	--	40	39	--	--	48	47	--	--	55	50	52	49	--	--
Average	49	49	48	47	44	43	42	42	42	41	40	40	44	42	48	45	49	47	54	50	52	50	51	49

NORTH SANTIAM RIVER AT NIAGARA, OREG.

LOCATION.--Temperature recorder at gaging station, 0.8 mile downstream from Big Cliff Dam, and 2.1 miles east of Niagara, Marion County.
DRAINAGE AREA.--453 square miles.
RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 53°F Sept. 25-30; minimum not determined, may have occurred during period of no record.
EXTREMES, January 1953 to September 1954.--Water temperatures: Maximum, 53°F Sept. 25-30, 1954; minimum, 40°F on many days in February and March 1953.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	52	52	49	49	47	47											--	--	45	45	50	49	51	50
2	52	52	49	49	47	47											--	--	45	45	49	49	50	50
3	52	52	49	49	47	47											--	--	46	56	49	49	50	49
4	52	51	49	49	47	46											--	--	47	46	49	49	50	49
5	52	51	49	49	46	46											--	--	47	46	49	49	50	50
6	51	50	49	49	46	46											--	--	47	46	50	49	50	50
7	51	51	49	49	46	46											--	--	47	46	50	49	50	50
8	51	51	50	49	46	46											--	--	46	46	50	50	50	50
9	51	51	50	50	46	45											--	--	46	46	50	50	50	50
10	51	51	50	50	45	44											--	--	46	46	50	49	50	50
11	51	51	50	50	45	44											--	--	47	46	50	49	50	50
12	51	51	50	50	45	44											--	--	47	46	49	49	51	50
13	51	51	50	49	45	45											--	--	47	47	49	49	51	51
14	51	51	49	49	45	45											--	--	47	47	49	49	51	51
15	51	50	49	48	45	45											--	--	47	47	49	49	51	51
16	50	50	49	48	45	45											--	--	47	47	50	49	51	51
17	50	50	48	48	45	45											--	--	48	47	50	49	51	51
18	50	49	48	48	45	45											--	--	47	47	50	49	51	51
19	50	50	48	48	45	45											--	--	48	47	49	49	52	51
20	50	50	48	48	45	44											--	--	48	48	49	49	52	52
21	50	50	48	48	44	44											--	--	48	48	49	49	52	52
22	50	50	48	48	44	44											46	46	49	48	50	49	52	52
23	50	50	48	48	44	44											46	46	49	48	50	50	52	52
24	50	50	48	47	44	44											46	45	49	48	50	50	52	52
25	50	50	48	47	44	44											46	45	49	48	50	50	53	52
26	50	50	47	47	44	44											46	45	49	48	50	50	53	53
27	50	50	47	47	44	44											45	45	49	48	50	50	53	53
28	50	50	47	47	44	43											45	45	49	48	50	49	53	53
29	50	49	47	47	43	43											45	45	49	49	50	49	53	53
30	49	49	47	47	43	43											45	45	50	49	50	49	53	53
31	49	49	--	--	43	43											--	--	51	49	50	49	--	--
Average	51	50	49	48	45	45											46	45	48	47	50	49	51	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 1954.
Water temperatures: February 1951 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 68 ppm Jan. 1-4, 8-10, 12, 14-16; minimum, 38 ppm Nov. 22-30.
Hardness: Maximum, 25 ppm Oct. 1-10; minimum, 15 ppm Nov. 22-30, Dec. 1-10, Feb. 1-4, 8, 10, 13-16, 18, 20-23.
Specific conductance: Maximum daily, 109 micromhos Aug. 5; minimum daily, 39.6 micromhos Nov. 22.
Water temperatures: Maximum observed, 72°F Aug. 1; minimum observed 37°F Jan. 24.
EXTREMES, 1951-54.--Dissolved solids: Maximum, 69 ppm Nov. 1-30, 1952; minimum, 38 ppm Nov. 22-30, 1953.
Hardness: Maximum, 28 ppm Sept. 16-20, 24-29, 1951, Aug. 11-20, Oct. 11-31, 1952, Aug. 1-10, 1953; minimum, 15 ppm Nov. 22-30, Dec. 1-10, 1953, Feb. 1-4, 8, 10, 13-16, 18, 20-23, 1954.
Specific conductance: Maximum daily, 109 micromhos Aug. 5, 1954; minimum daily, 34.6 micromhos Jan. 20, 1953.
Water temperatures: Maximum observed 75°F on many days during summer months; minimum observed, 35°F Nov. 30, 1952.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Portland, Oreg. Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Chemical analyses, in parts per million, water year October 1953 to September 1954

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953...	7,975	15	0.19	5.6	2.8	4.0	0.8	32	2.2	3.2	0.2	1.0	--	54	0.07	1,160	25	0	25	0.3	66.7	7.0	2
Oct. 19-22, 24-27.	11,270	15	.18	5.2	2.1	3.9	.7	30	2.1	3.0	.1	1.0	--	54	.07	1,640	22	0	27	.4	61.2	7.0	3
Oct. 11-18, 23, 28-31.....	8,285	15	.19	5.6	2.4	4.0	.9	30	2.3	3.2	.2	1.1	0.05	56	.08	1,250	24	0	26	.4	67.0	6.9	3
Nov. 1-10, 13.....	8,109	13	.11	6.7	1.3	4.1	1.1	32	2.4	3.5	.1	.7	--	62	.08	1,360	22	0	28	.4	69.8	7.1	--
Nov. 11, 12, 14-21	16,330	15	.18	5.6	1.2	3.5	1.0	26	2.2	3.0	.1	1.1	--	58	.08	2,560	19	0	27	.3	62.7	7.0	20
Nov. 22-30	96,820	14	.08	4.0	1.3	2.7	.9	20	2.0	2.2	.1	1.1	--	a 38	.05	9,930	15	0	26	.3	50.2	6.8	50
Dec. 1-10	8,855	14	.34	4.4	.9	3.2	1.2	22	2.1	2.2	.1	1.0	--	52	.07	12,430	15	0	30	.4	49.3	7.1	15
Dec. 11-20	82,200	12	.23	5.2	.9	3.6	1.1	26	1.7	2.0	.2	1.0	.01	50	.07	11,100	17	0	30	.4	52.2	7.0	10
Dec. 21-31	70,750	16	.28	5.0	1.3	3.2	1.2	26	1.9	1.8	.1	.9	--	48	.07	9,170	18	0	26	.3	52.6	7.0	9
Jan. 1-4, 8-10, 12, 14-16, 1954	34,310	23	.21	6.0	1.6	5.0	1.0	33	2.5	2.2	.2	1.1	--	68	.09	6,300	22	0	32	.5	67.3	7.3	7
Jan. 5-7, 11, 13, 17-20.....	57,070	19	.28	4.8	1.4	3.6	1.0	25	2.7	2.0	.2	1.0	.05	56	.08	8,630	18	0	29	.4	56.0	7.1	10
Jan. 21-31	93,850	15	.40	3.8	1.8	3.1	1.0	22	2.1	1.8	.2	1.0	--	54	.07	13,680	17	0	27	.3	47.1	7.0	5
Feb. 1-4, 8, 10, 13-16,18, 20-23..	70,580	15	.04	5.2	.6	3.4	1.0	24	1.7	2.0	.1	.6	.08	50	.07	9,530	15	0	31	.4	48.7	7.1	20
Feb. 5-7, 9, 11-12, 17, 19, 24-28....	47,190	17	.04	6.4	.7	3.8	1.2	26	1.9	2.2	.2	.6	--	50	.07	6,370	19	0	29	.4	55.6	7.0	10
Mar. 1-10.....	24,540	16	.13	5.8	1.4	4.0	.9	29	2.4	2.5	.1	.9	--	56	.08	3,710	20	0	29	.4	60.2	7.4	10
Mar. 11-20	33,720	14	.17	5.2	1.5	3.8	.9	29	2.1	2.0	.1	.7	--	55	.07	5,010	19	0	29	.4	58.0	7.3	10
Mar. 21-31	18,240	16	.09	5.6	1.8	4.2	1.0	30	2.7	2.5	.1	.9	--	61	.08	3,000	21	0	29	.4	63.6	7.3	5

a Sum of determined constituents.

Apr. 1-10, 1954...	36,480	15	.02	4.8	1.5	3.6	1.2	26	2.3	2.2	.2	.6	--	54	.07	5,320	18	0	28	.4	55.4	6.8	5
Apr. 11-20	33,870	12	.01	4.6	1.3	3.1	1.0	25	1.7	2.0	.2	.6	0.05	44	.06	4,020	17	0	27	.3	49.7	7.2	0
Apr. 21-30	17,210	16	.00	5.0	1.6	3.6	1.1	27	2.0	2.5	.1	.6	--	51	.07	2,370	19	0	28	.4	59.5	7.1	5
May 1-10	13,050	13	.07	5.2	1.8	3.8	1.0	28	3.0	2.0	.1	.7	--	54	.07	1,900	20	0	28	.4	61.6	7.2	5
May 11-20	13,210	14	.07	5.2	1.3	3.6	1.0	26	2.4	1.8	.1	.8	.02	53	.07	1,890	18	0	29	.4	57.9	7.2	5
May 21-31	11,970	14	.07	4.8	1.4	3.5	1.0	28	2.2	1.8	.1	.8	--	52	.07	1,680	17	0	29	.4	57.4	7.7	5
June 1-10	14,150	17	.19	5.2	1.2	3.8	--	26	2.6	2.2	.1	.4	--	47	.06	1,800	18	0	32	.4	54.7	6.9	3
June 11-20.....	19,000	17	.14	4.4	1.5	2.6	--	24	1.8	2.0	.1	.4	--	43	.06	2,210	17	0	25	.3	47.9	6.9	2
June 21-30.....	13,860	18	.30	4.8	1.5	3.0	--	26	2.1	1.8	.1	.4	--	46	.06	1,720	18	0	26	.3	52.7	6.9	2
July 1-10	10,810	19	.00	4.8	1.3	3.6	.8	29	1.5	1.5	.1	.7	--	51	.07	1,490	17	0	30	.4	59.3	7.0	--
July 11-20	8,493	19	.00	6.0	1.0	3.9	.8	29	2.3	2.0	.1	.8	.02	56	.08	1,280	19	0	30	.4	63.1	7.0	--
July 21-31	6,917	20	.00	5.6	1.6	4.0	.9	31	2.4	2.0	.1	.8	--	56	.08	1,050	21	0	29	.4	53.8	7.0	--
Aug. 1-10.....	6,200	19	.01	6.4	1.9	5.0	.9	33	3.5	3.5	.2	.5	--	61	.08	1,020	24	0	30	.4	71.6	6.9	0
Aug. 11-20	6,633	19	.00	6.0	1.6	4.2	.9	32	2.3	2.8	.1	.6	.02	54	.07	967	22	0	29	.4	66.4	6.9	0
Aug. 21-31.....	7,062	17	.01	6.2	1.4	4.3	.9	31	2.1	2.5	.2	.5	--	54	.07	1,030	21	0	29	.4	64.0	6.7	0
Sept. 1-10	7,363	18	.01	5.8	1.4	3.9	1.0	31	2.0	2.2	.1	.4	--	49	.07	974	20	0	28	.4	61.7	7.1	5
Sept. 11-20	9,515	18	.02	5.8	1.3	4.0	1.0	30	2.4	2.2	.1	.3	.05	51	.07	1,310	20	0	29	.4	61.1	7.3	5
Sept. 21-30	8,769	17	.02	6.2	2.0	4.1	.9	32	2.8	3.0	.2	.2	--	55	.07	1,300	24	0	26	.4	67.1	7.0	5
Weighted average	29,420	15	0.17	5.0	1.3	3.5	1.0	26	2.1	2.1	0.1	0.8	--	51	0.07	4,050	18	0	28	0.4	54.2	--	--

WILLAMETTE RIVER BASIN--Continued

WILLAMETTE RIVER AT SALEM, OREG.--Continued

Temperature (°F) of water, water year October 1953 to September 1954

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

MIDDLE SANTIAM RIVER AT MOUTH NEAR FOSTER, OREG.

LOCATION.--Temperature recorder at gaging station, half a mile upstream from mouth and 2½ miles northeast of Foster, Linn County.
DRAINAGE AREA.--287 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 67°F July 17-19, Aug. 1, 2; minimum, 37°F Jan. 25, 26.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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

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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 powerplant and 3 miles upstream from Cedar Creek.
DRAINAGE AREA.--731 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 59°F Oct. 14, 21, minimum, 39°F Jan. 27-31, Feb. 5-28, Mar. 1-8.
EXTREMES, 1950-54.--Water temperatures: Maximum, 61°F Oct. 2-5, 1951; minimum, 37°F Feb. 6-16, 1951.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	54	54	57	56	49	49	43	43	40	40	39	39	41	41	44	44	47	46	51	51	--	56	53	53
2	54	54	56	55	49	49	43	43	40	40	39	39	41	41	45	44	46	46	51	51	--	56	53	53
3	54	54	55	54	49	49	43	43	40	40	39	39	41	41	45	45	46	46	51	51	56	56	53	52
4	54	54	56	54	49	49	43	43	40	40	39	39	42	41	45	45	46	46	--	51	57	56	--	53
5	55	54	56	53	49	49	43	43	40	39	39	39	42	42	45	45	48	46	--	51	57	57	--	52
6	55	55	55	55	49	49	43	43	39	39	40	39	42	42	45	45	48	47	53	53	57	56	--	45
7	56	55	55	55	49	49	43	43	39	39	39	39	42	42	45	45	47	47	53	53	--	55	--	45
8	56	56	55	55	49	49	43	43	39	39	40	39	42	42	45	45	47	47	53	53	--	55	46	45
9	56	56	55	55	49	49	43	43	39	39	40	40	42	42	45	45	48	47	53	52	55	54	48	44
10	56	56	55	55	49	48	43	43	39	39	40	40	42	42	45	45	48	48	53	52	55	53	47	45
11	57	56	55	55	48	47	43	43	39	39	40	40	42	42	45	45	48	48	--	53	55	53	--	44
12	58	57	55	55	47	47	43	43	39	39	40	40	42	42	45	45	48	48	54	52	--	55	--	45
13	58	58	55	55	47	46	43	43	39	39	40	40	42	42	45	45	48	48	54	54	57	54	48	45
14	59	58	--	--	46	45	43	42	39	39	40	40	42	42	45	45	48	48	54	54	--	55	51	46
15	59	59	--	--	45	45	42	42	39	39	40	40	42	42	46	45	48	48	54	54	--	55	--	47
16	59	59	--	--	45	45	42	42	39	39	41	40	42	42	46	46	49	48	54	54	--	54	--	47
17	59	59	--	--	45	45	42	42	39	39	41	41	43	42	46	46	49	49	55	54	--	53	47	47
18	59	59	--	--	45	45	44	43	39	39	41	41	43	43	46	46	49	49	--	55	--	55	48	47
19	59	59	--	--	45	45	42	42	39	39	41	41	43	43	46	46	49	49	56	56	--	55	50	46
20	59	59	52	52	45	45	42	41	39	39	41	41	43	43	46	46	49	49	56	56	--	55	50	46
21	59	57	52	51	45	45	41	40	39	39	41	41	43	43	46	46	49	49	56	56	--	53	51	46
22	57	57	51	50	45	44	40	40	39	39	41	41	43	43	46	46	49	49	56	55	--	55	50	48
23	57	57	50	50	44	44	40	40	39	39	41	41	43	43	47	45	49	49	--	55	--	53	--	48
24	57	57	50	50	44	44	40	40	39	39	41	41	44	43	46	46	49	49	--	55	54	53	--	48
25	57	57	50	50	44	44	40	40	39	39	41	41	44	44	46	46	49	49	--	56	54	53	--	48
26	57	57	50	50	44	44	40	40	39	39	41	41	44	43	46	46	50	49	--	54	54	53	--	48
27	57	57	50	50	44	44	40	39	39	39	41	41	43	43	46	46	50	50	55	55	54	53	51	48
28	57	57	50	50	44	44	39	39	39	39	41	41	43	43	46	45	50	50	--	54	54	53	52	48
29	57	57	50	49	44	43	39	39	--	--	41	41	44	43	46	46	50	50	56	55	--	53	--	47
30	57	57	49	49	43	43	39	39	--	--	41	41	44	44	47	46	51	50	57	55	55	53	--	48
31	57	57	--	--	43	43	40	39	--	--	41	41	--	--	47	47	--	--	57	55	54	53	--	--
Average	57	57	53	53	46	46	42	42	39	39	40	40	43	42	46	46	48	48	54	54	--	--	--	--

LEWIS RIVER BASIN--Continued

EAST FORK LEWIS RIVER NEAR HEISSON, WASH.

LOCATION.--Temperature recorder at gaging station, 60 feet downstream from Basket Creek, 1½ miles northeast of Heisson, Heisson County, and 20 miles upstream from mouth.
DRAINAGE AREA.--125 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1953, June to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 61°F Aug. 1, 2; minimum, not determined.
EXTREMES, 1950-54.--Water temperatures: Maximum, 74°F Aug. 4, 1952; minimum, 33°F Jan. 31, Feb. 1, 1951, Nov. 24 to Dec. 3, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

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

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1																	--	--	52	51	62	60	60	58
2																	--	--	55	48	62	60	61	60
3																	--	--	56	51	60	57	60	58
4																	--	--	58	52	57	55	58	56
5																	--	--	58	55	55	54	56	56
6																	--	--	58	55	58	55	56	54
7																	--	--	58	55	59	56	56	56
8																	--	--	55	53	59	58	58	56
9																	--	--	55	53	58	55	59	57
10																	--	--	53	52	59	56	59	57
11																	--	--	55	52	59	58	57	56
12																	--	--	58	52	59	58	56	55
13																	--	--	59	54	58	57	55	53
14																	--	--	59	56	57	56	55	53
15																	--	--	57	55	57	56	55	55
16																	--	--	56	54	56	55	55	54
17																	--	--	59	54	58	55	54	53
18																	51	49	59	56	58	56	53	52
19																	51	49	58	57	58	57	54	53
20																	52	49	57	54	58	57	54	52
21																	56	50	54	52	59	56	54	53
22																	56	51	58	52	58	58	55	54
23																	55	50	60	57	58	58	56	55
24																	56	49	60	58	58	56	56	55
25																	56	52	60	57	56	54	57	56
26																	52	52	59	56	56	55	57	56
27																	52	51	60	58	57	55	57	55
28																	54	48	60	57	58	57	55	52
29																	57	59	60	58	61	58	53	51
30																	57	52	61	58	61	60	51	49
31																	--	--	61	59	61	59	--	--
Average																	--	--	58	55	58	57	56	55

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.
RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 56°F Aug. 7; minimum, freezing point on Jan. 20.
EXTREMES, 1950-54.--Maximum, 61°F Aug. 4, 9, 10, 15, 1952; minimum, freezing point on Jan. 20, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	46	45	44	42	41	41	40	39	38	--	--	42	40	44	38	44	42	45	44	54	48	54	47
2	47	45	44	41	41	41	40	39	39	38	--	--	41	40	43	40	44	42	48	44	54	49	53	48
3	49	45	42	40	41	40	39	39	39	38	--	--	43	41	46	42	44	43	49	45	52	48	50	48
4	49	45	42	40	40	39	39	37	39	39	--	--	42	41	43	42	44	42	49	45	50	49	50	48
5	50	46	42	42	40	39	39	37	39	39	--	--	41	40	46	42	44	42	49	47	50	49	52	46
6	49	46	43	42	39	39	39	39	40	39	--	--	40	39	46	40	43	42	50	46	55	49	52	47
7	52	47	44	42	39	39	39	39	40	39	--	--	43	39	46	42	44	42	49	47	56	50	52	48
8	52	49	44	42	39	39	39	39	40	39	--	--	41	40	44	42	46	42	47	46	54	50	54	48
9	50	50	44	44	39	39	39	39	40	39	--	--	40	39	43	41	45	44	47	46	55	49	54	48
10	50	49	44	44	39	39	39	39	39	38	--	--	44	39	44	41	44	43	46	46	55	49	52	48
11	50	48	44	44	39	39	39	36	38	37	--	--	44	39	42	41	45	43	49	45	55	49	49	48
12	50	46	44	44	41	39	36	36	39	38	--	--	42	41	43	41	44	43	49	45	55	50	50	46
13	50	47	44	44	40	39	36	36	39	38	--	--	42	40	45	41	44	43	50	46	54	50	52	48
14	48	46	45	44	41	40	37	36	39	39	--	--	42	39	45	41	44	43	51	47	51	49	50	48
15	49	47	44	44	41	41	37	36	39	39	--	--	42	39	45	42	44	43	50	47	50	49	48	48
16	47	46	44	41	41	41	36	35	40	39	--	--	45	40	46	42	44	42	54	47	50	49	--	--
17	47	47	41	40	41	40	36	35	41	40	42	40	44	41	46	42	44	43	51	47	53	49	--	--
18	47	47	41	40	41	41	36	36	40	38	43	39	42	40	46	42	46	43	52	47	52	49	--	--
19	47	46	41	41	41	41	36	34	38	38	41	39	41	40	45	42	46	45	51	48	51	49	--	--
20	46	45	42	41	41	40	34	32	40	38	42	40	44	40	43	42	47	45	48	46	51	49	--	--
21	46	44	41	41	41	40	34	33	40	40	44	40	44	40	42	42	48	44	46	46	54	49	--	--
22	45	42	41	41	40	39	34	34	41	40	44	39	45	40	46	42	49	46	52	46	51	50	--	--
23	45	42	41	41	40	39	36	34	41	40	43	39	44	40	45	42	47	45	52	48	51	49	--	--
24	43	42	42	41	40	39	36	36	--	--	44	41	44	40	44	42	48	43	52	48	51	48	--	--
25	45	43	43	42	39	39	36	34	--	--	43	39	42	40	43	42	47	45	52	47	49	47	--	--
26	45	43	43	42	40	39	35	34	--	--	41	40	41	40	42	40	46	45	52	48	50	47	--	--
27	45	43	43	42	40	40	35	35	--	--	40	39	45	40	43	41	45	44	52	48	51	47	--	--
28	46	44	42	41	41	40	37	35	--	--	42	38	43	40	43	41	47	43	52	47	52	48	50	46
29	45	45	43	41	40	40	38	37	--	--	43	37	42	39	43	42	49	45	53	48	54	48	48	44
30	47	46	43	40	40	40	38	38	--	--	43	37	43	39	43	42	47	45	53	48	50	50	47	43
31	46	45	--	--	41	40	39	38	--	--	41	39	--	--	44	42	--	--	54	48	54	48	--	--
Average	48	46	43	42	40	40	37	36	39	39	--	--	43	40	44	41	45	43	50	47	52	49	--	--

COWLITZ RIVER NEAR KOSMOS, WASH.

LOCATION.--Temperature recorder at gaging station, half a mile downstream from Tumwater Creek, 1½ miles downstream from Cispus River, and 4 miles southeast of Kosmos, Lewis County.
DRAINAGE AREA.--1,042 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1952 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 57°F Aug. 7, 8, Sept. 3, 9, 10; minimum 37°F Jan. 5.
EXTREMES, 1952-54.--Water temperatures: Maximum, 62°F Aug. 12-16, 19, 20, 1953; minimum, 37°F Jan. 5, 1954.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	50	48	48	43	43	41	41	40	39	41	40	41	41	44	43	44	44	47	46	56	55	56	54
2	50	49	49	46	43	43	41	41	40	39	40	40	41	41	44	44	45	44	47	46	56	55	56	55
3	50	49	46	44	43	42	41	41	39	38	40	39	42	41	47	44	45	45	49	47	55	53	57	56
4	50	50	44	44	42	41	41	38	38	38	40	39	42	42	47	46	45	44	49	49	53	52	56	54
5	51	50	44	44	41	41	38	37	39	38	40	40	42	41	46	45	45	45	49	49	52	52	54	54
6	51	51	45	44	41	40	38	38	39	39	41	40	41	41	46	46	45	44	49	49	54	52	54	53
7	51	51	45	45	40	40	38	38	39	39	41	41	42	41	46	46	44	44	50	49	57	54	54	54
8	53	51	45	45	40	40	38	38	39	38	41	41	42	42	46	46	44	43	49	49	57	56	55	54
9	53	53	45	45	40	40	39	38	39	38	41	41	42	42	46	45	44	44	49	48	56	55	57	55
10	53	53	46	45	40	40	39	39	39	38	41	39	42	42	45	44	44	44	48	47	55	54	57	56
11	53	52	46	46	40	40	39	38	39	38	39	39	44	42	44	43	45	44	48	47	56	54	56	55
12	52	50	46	46	41	40	38	38	39	38	40	39	44	43	43	43	45	45	49	48	56	55	55	54
13	51	51	46	46	41	41	38	38	39	39	40	39	43	43	44	43	45	45	50	49	56	56	54	53
14	51	51	47	46	41	41	38	38	39	39	40	39	44	43	44	43	45	44	51	50	56	54	54	53
15	51	51	47	47	41	41	38	38	39	39	41	40	43	43	44	44	44	44	51	51	54	52	54	54
16	51	51	47	45	41	41	38	38	39	39	41	41	45	43	44	44	44	43	51	51	52	52	54	53
17	51	51	45	42	41	41	38	38	39	39	41	41	45	45	44	43	44	43	51	51	53	52	53	53
18	51	50	44	43	41	41	38	38	39	39	41	40	45	44	44	43	45	44	52	51	53	52	53	51
19	50	49	43	43	41	41	38	38	39	39	41	40	44	44	44	43	45	45	52	52	53	52	53	52
20	49	48	43	43	41	41	39	38	40	39	41	41	44	44	44	43	45	45	52	51	53	52	53	52
21	49	48	43	43	41	41	39	39	40	40	42	41	44	44	43	43	46	45	51	50	53	52	53	53
22	48	46	43	43	41	41	39	39	40	40	42	42	44	44	44	43	47	46	53	50	53	53	54	53
23	46	45	43	43	41	41	39	39	40	40	42	42	44	44	45	44	47	46	55	53	53	52	54	53
24	45	45	43	43	41	41	39	39	41	40	42	42	44	44	45	44	47	46	55	55	52	51	54	53
25	45	45	43	43	41	41	39	39	41	41	42	42	44	44	44	44	47	47	55	55	52	51	55	54
26	45	45	43	43	41	41	39	39	41	40	42	42	44	43	44	43	47	46	55	55	52	51	56	55
27	45	45	43	43	41	41	39	39	41	40	42	41	44	43	43	43	46	46	55	54	52	51	56	55
28	46	45	43	43	41	41	39	39	41	41	41	41	44	44	44	43	46	45	54	54	52	51	55	54
29	47	46	43	43	41	41	39	39	--	--	41	40	44	43	43	43	48	46	54	54	55	52	54	51
30	48	47	43	43	41	41	39	39	--	--	41	40	44	43	43	43	48	47	55	54	55	55	52	50
31	48	48	--	--	41	41	39	39	--	--	41	41	--	--	44	43	--	--	55	54	55	54	--	--
Average	49	49	45	44	41	41	39	39	40	39	41	40	43	43	44	44	45	45	51	51	54	53	55	54

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 upstream northeast of Morton, Lewis County.
DRAINAGE AREA.--16.4 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, not determined, occurred during period of no record; minimum, 34°F Jan. 20, 21.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	50	45	43	43	43	42	42	38	38	39	38	39	39	42	40							--	--
2	50	49	43	42	43	43	42	41	38	38	38	38	39	39	42	42							--	--
3	49	49	42	42	43	43	41	39	38	38	38	37	40	39	42	42							--	--
4	50	48	43	42	43	42	40	35	38	38	38	37	40	40	42	42							--	
5	50	49	43	42	42	42	41	40	38	38	38	37	40	40	42	42							--	--
6	50	50	42	42	42	42	41	41	38	38	38	38	40	40	44	42							--	--
7	50	49	43	42	42	42	41	40	38	38	38	38	40	40	44	44							--	--
8	50	50	43	43	42	42	40	40	38	38	38	38	40	40	44	44							--	--
9	50	50	43	43	42	42	40	40	38	38	39	38	40	40	44	44							--	--
10	50	49	43	43	42	42	40	40	38	38	38	38	40	40	44	44							--	--
11	49	48	43	43	42	41	40	38	38	38	38	38	40	40	44	44							54	54
12	49	47	43	43	42	42	38	37	38	38	38	37	40	40	44	44							54	53
13	49	48	43	43	42	42	37	37	38	38	38	38	40	40	44	44							53	53
14	49	48	44	43	42	42	37	37	38	38	38	38	40	40	44	43							54	53
15	49	49	44	43	42	42	37	37	38	38	38	38	40	40	44	44							53	53
16	--	--	43	42	42	42	37	37	38	38	38	38	41	40	44	44							53	53
17	--	--	42	42	42	42	37	37	38	38	38	38	41	41	44	44							53	52
18	--	--	42	42	42	42	37	36	38	37	40	38	41	41	45	44							53	53
19	--	--	42	42	42	42	37	36	38	37	40	40	41	41	46	45							53	52
20	--	--	42	42	42	42	36	34	39	38	40	40	41	41	46	46							53	51
21	46	45	43	42	42	42	35	34	39	38	40	39	41	41	46	46							53	51
22	45	43	43	43	42	42	36	35	39	39	40	39	41	41	46	46							53	53
23	44	43	43	43	42	42	36	36	39	39	40	39	41	40	46	46							54	53
24	44	43	43	43	42	41	37	36	39	39	40	40	41	41	46	46							57	54
25	44	44	44	43	42	42	37	36	39	38	40	40	41	41	46	46							56	54
26	44	44	44	43	42	42	36	36	39	39	40	40	41	41	46	46							57	55
27	44	44	44	43	42	42	36	36	39	39	40	40	41	40	46	46							55	53
28	45	44	43	43	42	42	37	36	39	39	40	40	41	41	--	--							53	52
29	45	45	44	43	42	42	37	37	--	--	40	39	41	41	--	--							54	49
30	46	45	44	43	42	42	38	37	--	--	39	39	41	40	--	--							55	48
31	45	45	--	--	42	42	38	37	--	--	39	39	--	--	--	--							--	--
Average	48	47	43	43	42	42	38	38	38	38	39	39	40	40	44	44							--	--

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 2¼ miles west of Mayfield, Lewis County.
DRAINAGE AREA.--1,400 square miles.(revised).
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 61°F Aug. 29, 30, Sept. 1, minimum, 38°F Jan. 20-28.
EXTREMES, 1950-54.--Water temperatures: Maximum, 67°F Aug. 5, 9-13, 1952; minimum, 35°F Jan. 29-31, Feb. 1, 2, 1951.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	53	51	51	51	45	45	44	43	42	42	43	42	44	44	48	45	--	--	50	49	60	58	61	59
2	51	50	51	48	45	45	44	44	42	42	42	41	44	44	48	47	--	--	52	48	60	59	60	60
3	51	50	48	46	45	45	44	43	42	41	42	40	45	44	50	47	49	48	54	51	59	58	60	59
4	52	51	46	46	45	44	43	42	41	41	42	41	45	45	50	49	49	48	56	52	58	56	59	58
5	53	52	47	46	44	44	42	42	41	41	42	42	45	45	49	49	50	48	55	53	56	54	58	56
6	53	53	48	47	44	44	42	42	42	41	43	42	45	44	52	49	49	47	54	53	58	55	57	56
7	53	53	48	48	44	43	42	42	42	42	43	42	45	44	52	50	47	46	54	52	60	58	57	57
8	55	53	48	48	43	43	42	42	42	42	43	42	44	44	52	50	48	47	52	51	60	60	58	57
9	55	55	48	48	44	43	42	42	42	42	44	43	44	43	50	48	50	48	52	51	60	58	60	58
10	55	54	48	48	44	44	42	42	42	42	44	41	45	43	--	--	49	48	51	50	60	59	60	59
11	54	53	49	48	44	44	42	42	42	41	41	40	47	45	--	--	49	48	52	50	60	58	59	57
12	53	51	49	49	44	44	42	40	41	41	41	40	47	46	--	--	50	49	56	51	60	59	57	56
13	53	53	49	49	44	44	40	40	41	41	41	41	46	45	--	--	49	48	56	53	60	60	56	56
14	53	53	50	49	45	44	40	40	41	41	42	41	45	45	--	--	48	48	56	54	60	58	56	56
15	54	53	50	50	45	45	40	40	41	41	42	42	45	43	--	--	48	48	56	54	58	58	56	56
16	54	53	50	48	45	45	40	40	41	41	43	42	47	44	--	--	48	47	56	54	58	56	56	56
17	53	53	48	45	45	45	40	40	42	41	43	43	47	47	--	--	47	46	58	54	58	56	56	55
18	53	53	45	44	45	45	40	40	42	42	44	43	47	46	--	--	50	47	58	56	58	58	55	54
19	53	52	44	44	45	45	40	40	42	41	44	43	46	44	--	--	50	50	58	56	58	58	54	54
20	52	51	44	44	45	45	40	38	42	41	43	43	46	43	--	--	50	49	58	54	58	58	56	54
21	51	50	44	44	45	44	38	38	42	42	45	43	47	45	--	--	51	50	54	52	60	56	56	56
22	50	49	44	44	44	43	38	38	42	42	45	45	47	46	--	--	52	50	56	52	60	58	57	56
23	49	48	44	44	43	43	38	38	42	42	45	44	47	46	--	--	52	51	59	56	58	57	56	56
24	48	48	45	44	43	43	38	38	44	42	46	45	47	46	--	--	52	49	59	57	57	56	57	56
25	48	48	45	45	43	43	38	38	44	43	46	45	47	46	--	--	52	50	59	56	57	57	58	57
26	48	48	45	45	43	43	38	38	43	43	45	45	46	44	--	--	50	49	59	56	57	57	58	58
27	49	48	45	45	43	43	38	38	43	43	45	44	47	44	--	--	49	48	59	57	57	56	58	56
28	49	49	45	45	43	43	39	38	43	43	44	42	48	46	--	--	50	48	59	56	58	57	56	56
29	50	49	45	45	43	43	40	39	--	--	44	42	48	46	--	--	54	49	59	56	61	58	56	55
30	51	50	45	45	43	43	42	40	--	--	44	43	46	45	--	--	54	50	60	57	61	60	55	53
31	51	51	--	--	43	43	42	42	--	--	45	44	--	--	--	--	--	--	60	58	60	59	--	--
Average	52	51	47	46	44	44	41	40	42	42	43	43	46	45	--	--	50	48	56	54	59	58	57	57

COWLITZ RIVER BASIN--Continued

TOUTLE RIVER NEAR SILVER LAKE, WASH.

LOCATION.--Temperature recorder at gaging station at highway bridge 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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum 64°F Aug. 1, minimum, 34°F Jan. 20, 21.
EXTREMES, 1950-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	45	44	42	42	38	38	41	39	--	40	49	42	49	46	52	51	64	58	61	57
2	--	--	49	46	45	44	42	41	38	37	40	38	--	40	48	46	50	46	56	50	62	59	60	57
3	--	--	46	44	45	44	41	41	38	37	40	38	44	43	50	48	50	48	58	51	59	56	60	56
4	--	--	46	44	44	43	41	40	38	37	41	38	44	43	48	47	50	47	59	52	57	55	58	55
5	--	--	47	46	44	44	41	40	39	38	41	39	44	43	49	46	50	47	58	54	57	54	58	56
6	--	--	47	46	44	43	41	41	38	37	43	40	43	42	52	46	49	47	57	54	60	55	58	54
7	--	--	48	46	43	42	41	41	38	38	40	40	44	42	54	49	49	46	57	55	62	56	58	56
8	--	--	47	46	43	43	41	40	39	38	42	40	44	43	53	50	49	47	56	52	60	58	61	56
9	55	55	47	47	44	43	41	40	39	38	42	41	43	41	50	48	50	48	54	52	61	56	62	56
10	55	54	48	47	44	43	41	40	39	38	41	40	46	41	50	48	50	48	54	52	62	56	59	56
11	54	52	48	47	44	43	40	38	38	37	40	39	46	42	50	47	50	48	56	52	60	57	56	54
12	52	50	49	48	44	44	38	37	40	38	40	38	46	44	47	45	50	48	59	52	60	58	57	55
13	53	51	48	48	44	43	38	37	40	39	39	38	46	44	51	45	50	48	59	54	58	57	57	54
14	52	51	50	48	45	44	39	38	39	39	40	39	45	42	52	46	48	47	58	54	58	57	56	55
15	54	52	49	48	45	44	39	38	39	39	41	40	45	42	52	48	50	48	57	54	58	56	56	55
16	52	51	48	46	44	44	38	36	40	39	42	40	49	43	54	47	48	46	58	55	57	56	55	54
17	52	52	46	46	44	43	37	36	41	40	41	39	48	46	54	48	49	46	60	55	60	56	54	54
18	52	51	46	45	43	43	37	37	40	39	43	39	46	44	53	48	51	46	59	56	58	56	56	52
19	51	49	46	46	44	43	37	36	40	39	42	40	45	44	52	48	50	48	58	56	58	57	54	53
20	50	49	46	45	44	43	36	34	41	40	43	41	48	43	51	47	52	49	56	54	59	56	56	52
21	50	48	46	46	43	43	36	34	41	40	44	40	48	43	48	46	56	50	56	52	60	56	56	53
22	48	46	46	46	43	42	36	36	41	40	46	41	47	45	53	46	56	52	60	53	58	58	56	54
23	47	44	46	45	43	42	36	36	41	40	44	40	48	43	52	49	55	51	58	56	58	56	57	54
24	46	45	46	46	43	42	36	36	42	41	48	42	48	44	52	48	57	50	61	55	56	54	57	54
25	49	46	46	45	42	41	36	35	41	40	46	42	46	44	50	47	55	52	60	56	57	54	58	55
26	48	46	45	45	42	41	35	35	40	40	44	43	46	44	48	46	53	51	60	56	58	55	57	54
27	48	47	46	45	42	42	36	35	41	39	44	42	49	42	49	45	52	51	62	57	56	54	56	52
28	49	47	45	44	43	42	36	36	41	40	42	40	48	44	48	45	55	49	61	56	58	55	55	51
29	50	49	46	45	42	42	37	36	--	--	43	38	46	44	48	47	57	51	62	56	63	57	53	49
30	51	50	46	45	42	42	38	37	--	--	45	39	46	42	48	46	57	52	62	57	62	58	52	49
31	51	50	--	--	42	42	39	38	--	--	44	41	--	--	50	47	52	51	63	57	60	56	--	--
Average	--	--	47	46	44	43	38	38	40	39	42	40	46	43	50	47	52	49	58	54	59	56	57	54

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: August 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 59°F Sept. 1-3, 9-11, 26, 27, minimum, 36°F Jan. 22-25.
EXTREMES, 1950-54.--Water temperatures: Maximum, 72°F Aug. 21, 1951; minimum, freezing point on Jan. 29, 30, 1951.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	53	51	51	46	46	42	42	40	40	42	42	45	44	46	46	50	50	52	50	58	58	59	58
2	53	52	51	49	46	46	42	42	40	40	42	42	44	44	47	46	50	50	50	50	58	58	59	59
3	52	52	49	47	46	46	42	41	40	40	43	42	44	44	47	47	51	50	53	50	58	57	59	58
4	53	52	47	46	46	45	41	40	40	40	42	42	45	44	48	47	51	51	55	53	57	56	58	58
5	54	53	46	46	45	45	40	40	41	40	42	42	45	45	48	48	51	51	55	55	56	54	58	57
6	54	54	46	46	45	44	40	40	41	40	43	42	45	44	48	48	51	51	55	55	56	54	57	56
7	56	54	47	46	44	44	40	40	40	40	43	43	44	44	50	48	51	50	55	54	57	56	57	56
8	56	56	47	47	44	44	40	40	40	40	43	43	44	44	50	50	50	50	54	53	57	57	58	57
9	56	56	47	47	44	43	40	40	41	40	43	43	44	44	51	49	50	49	53	53	57	57	59	58
10	56	56	47	47	44	43	40	40	41	41	43	41	44	44	49	48	50	50	53	53	58	57	59	59
11	56	55	48	47	43	43	40	40	41	41	42	41	46	44	48	48	50	50	53	52	58	58	59	57
12	55	54	48	48	43	43	40	40	41	41	41	41	46	46	48	47	50	50	54	52	58	57	57	56
13	54	54	48	48	43	43	40	40	41	41	41	41	46	46	47	47	50	50	55	54	57	57	57	57
14	54	54	49	48	44	43	40	40	41	41	41	41	46	46	49	47	50	50	55	55	57	57	57	56
15	54	54	49	49	44	43	40	40	41	41	43	41	46	45	49	49	50	50	55	55	57	57	56	56
16	54	54	49	48	44	44	40	39	41	41	44	43	46	45	49	49	50	50	55	55	57	56	56	56
17	54	54	48	46	44	44	39	39	42	41	44	44	47	46	49	49	50	49	55	55	56	55	56	55
18	54	53	46	46	44	44	39	39	42	42	44	44	47	47	50	49	50	49	56	55	56	56	55	55
19	53	53	46	46	44	44	39	39	42	41	44	44	47	46	50	49	50	50	56	56	56	65	55	55
20	53	52	46	46	44	43	39	38	41	41	44	44	46	45	49	49	51	50	56	55	57	56	55	55
21	52	50	46	46	43	43	38	37	41	41	44	44	46	45	50	48	51	50	55	54	57	57	56	55
22	50	49	46	46	43	43	37	36	41	41	45	44	46	46	49	48	51	51	55	53	58	57	57	56
23	49	48	46	46	43	43	36	36	41	41	45	45	47	46	51	49	51	51	55	55	58	57	57	57
24	48	48	46	46	43	43	36	36	42	41	46	45	47	47	51	51	51	50	56	54	57	56	57	57
25	48	48	46	46	43	43	37	36	42	42	46	46	47	47	51	50	51	51	56	56	56	55	58	57
26	49	48	46	46	43	42	38	37	42	42	46	46	47	46	50	50	51	50	56	55	56	56	59	57
27	48	48	46	46	42	42	38	38	42	42	46	45	46	45	51	50	50	50	57	56	56	65	59	58
28	49	48	46	46	42	42	38	38	42	42	45	44	46	46	50	50	50	49	57	56	56	65	58	56
29	50	49	46	46	42	42	39	38	--	--	44	44	46	46	50	50	52	50	57	56	58	56	56	55
30	50	50	46	46	42	42	40	39	--	--	44	44	46	46	50	49	52	52	58	57	58	58	55	55
31	51	50	--	--	42	42	40	40	--	--	45	44	--	--	50	50	--	--	58	57	58	58	--	--
Average	53	52	47	47	44	43	39	39	41	41	44	43	46	46	49	49	50	50	55	54	57	56	57	57

COWLITZ RIVER BASIN--Continued

COWEMAN RIVER NEAR KELSO, WASH.

LOCATION.--Temperature recorder at gaging station, 3 miles downstream from Goble Creek, 3.8 miles southeast of Kelso, Cowlitz County, and 7 miles (revised) upstream from mouth.
DRAINAGE AREA.--119 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1954.
EXTREMES, 1950-54.--Water temperatures: Maximum, 81°F Aug. 4, 1952; minimum, 33°F Jan. 2, 3, 1952.
REMARKS.-- Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	55	54	48	48			--	--	--	--	42	42					--	--			66	65
2	53	52	54	50	48	48			41	41	--	--	42	42					--	--			65	62
3	54	51	51	48	48	48			--	--	--	--	45	42					--	--			64	50
4	54	51	48	47	48	47			--	--	--	--	45	45					--	--			61	58
5	54	51	48	48	47	47			--	--	--	--	46	45					--	--			61	59
6	54	52	48	48	47	47			--	--	--	--	45	44					--	--			62	57
7	56	53	48	48	47	46			--	--	--	--	46	44					--	--			62	60
8	57	56	49	48	46	46			--	--	--	--	46	44					60	55			64	60
9	57	57	48	48	46	45			40	40	47	45	44	43					60	57			65	59
10	57	56	48	48	45	45			40	40	45	42	47	43					55	55			65	61
11	56	53	49	48	45	45			40	38	42	42	48	44					62	55			61	58
12	53	51	49	49	45	45			41	38	42	41	48	46					65	56			60	58
13	54	52	50	49	45	44			41	41	42	41	47	46					66	59			60	58
14	54	52	50	50	44	44			41	41	42	41	47	44					65	60			60	58
15	55	53	50	50	44	44			41	41	42	42	46	44					64	60			58	57
16	55	53	50	48	44	44			41	41	43	42	--	--					62	58			58	56
17	53	53	48	47	44	44			41	41	43	40	--	--					68	60			57	56
18	53	53	48	48	44	44			41	40	43	40	--	--					67	63			57	54
19	54	53	48	48	44	43			40	40	43	42	--	--					65	62			57	55
20	53	53	48	48	44	44			41	40	43	42	--	--					63	59			58	54
21	52	50	48	48	44	44			41	41	44	41	--	--					61	57			59	54
22	50	48	48	48	44	43			41	41	44	41	--	--					67	57			59	57
23	48	47	49	48	43	42			41	40	44	41	--	--					65	61			61	57
24	48	48	50	49	42	42			41	41	44	43	--	--					68	59			62	58
25	49	48	50	50	42	41			--	--	44	40	--	--					68	62			63	58
26	49	49	50	49	41	41			--	--	44	44	--	--					65	62			63	60
27	49	48	49	49	41	41			--	--	44	42	--	--					--	--			61	57
28	50	48	49	48	--	--			--	--	43	40	--	--					--	--			57	54
29	51	50	49	48	--	--			--	--	40	37	--	--					--	--			55	50
30	55	51	48	48	--	--			--	--	42	38	--	--					--	--			53	48
31	55	55	--	--	--	--			--	--	43	41	--	--					--	--			--	--
Average	53	52	49	49	45	44			--	--	--	--	--	--					--	--			61	57

ABERNATHY 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.--Water temperatures: June 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 61°F July 30, 31, Aug. 1; minimum, 36°F Jan. 20, 21.
EXTREMES, 1950-54.--Water temperatures: Maximum, 68°F Aug. 19-21, 1950; minimum, 34°F Mar. 7, 1951.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	53	52	49	46	48	48	44	44	41	41	44	41	45	43	52	41	54	49	54	53	61	57	59	54
2	52	51	46	44	48	48	44	44	41	40	43	41	44	43	48	45	54	49	56	51	59	56	59	56
3	52	49	44	42	48	47	44	43	42	40	44	40	46	44	51	47	54	51	57	50	56	55	57	55
4	52	48	45	42	47	47	43	43	42	40	44	40	48	46	52	48	54	50	58	51	54	53	56	54
5	52	48	45	45	48	47	45	43	42	41	45	42	47	45	53	48	55	50	57	52	56	53	55	54
6	53	50	47	45	48	47	45	45	42	41	45	42	46	44	57	46	52	51	56	54	59	55	56	53
7	54	50	47	47	47	46	45	45	42	40	43	41	46	44	59	50	54	51	56	54	60	55	56	55
8	54	54	47	45	47	46	45	44	42	41	44	43	46	44	55	52	53	52	54	50	56	54	57	55
9	54	54	47	47	48	47	44	44	42	41	45	43	45	44	52	51	55	51	54	52	56	54	58	54
10	54	52	47	46	47	47	44	43	42	40	43	42	48	43	55	50	55	52	53	52	59	52	58	56
11	53	51	47	47	47	47	43	42	40	40	42	41	50	43	52	50	53	52	55	52	58	53	56	54
12	51	48	48	47	47	47	42	41	42	40	43	40	47	47	51	48	56	53	58	51	58	53	55	54
13	53	51	48	48	47	46	41	41	42	42	43	40	49	47	55	47	54	51	60	53	56	55	56	54
14	52	51	48	48	47	46	43	41	43	42	43	40	48	44	57	47	52	51	59	56	56	55	55	54
15	53	52	48	48	47	47	43	41	43	43	44	42	49	45	56	50	53	52	56	55	58	55	55	54
16	52	51	49	48	47	46	41	40	43	43	46	42	53	45	58	49	53	50	56	54	56	55	55	53
17	52	52	48	47	46	46	40	39	43	43	42	40	51	47	60	50	53	50	60	54	57	54	54	54
18	52	51	47	47	47	46	39	39	43	42	45	40	49	45	59	52	55	48	59	57	56	54	55	54
19	51	49	47	47	46	46	39	39	43	42	44	42	48	46	58	52	53	52	57	55	57	56	55	53
20	49	48	47	47	46	46	39	36	44	43	44	41	51	46	54	51	56	52	55	54	58	56	56	52
21	48	45	47	47	46	46	38	36	44	44	46	40	53	45	53	50	58	51	57	53	59	55	56	53
22	47	45	48	47	46	44	40	38	45	44	46	40	53	47	56	47	56	52	59	51	57	56	56	55
23	46	44	48	48	44	44	40	39	45	44	45	40	53	44	56	50	56	52	58	55	58	55	58	56
24	47	45	48	48	44	44	39	39	45	44	47	42	52	44	55	52	58	51	59	53	56	53	58	55
25	47	45	48	48	44	44	39	37	44	43	46	41	49	45	52	50	55	52	59	55	56	54	59	55
26	47	45	48	48	44	44	38	37	44	43	45	44	47	46	52	49	55	53	58	54	55	54	60	57
27	47	45	48	47	44	44	39	37	44	42	45	42	51	44	52	48	53	53	58	54	56	53	58	54
28	47	45	47	47	44	44	40	38	45	43	43	40	49	43	52	48	56	49	59	52	58	55	54	51
29	49	47	48	47	45	44	40	40	--	--	45	38	46	43	51	50	59	51	59	53	59	56	53	49
30	49	49	48	48	44	44	41	40	--	--	46	39	49	43	53	50	57	54	61	55	59	57	52	48
31	49	49	--	--	44	44	41	41	--	--	46	42	--	--	53	51	--	--	61	55	59	56	--	--
Average	51	49	47	47	46	46	42	41	43	42	44	41	49	45	54	49	55	51	57	53	57	55	56	54

MILL CREEK BASIN

MILL CREEK NEAR CATHLAMET, WASH.

LOCATION.--Temperature recorder at gaging station, 40 feet downstream from small tributary, 50 feet downstream from bridge, three-quarters of a mile upstream from mouth, and 9½ miles east of Cathlamet, Wahkiakum County.
DRAINAGE AREA.--27.6 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1953 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 60°F July 30, 31, Aug. 1, 7; minimum, 36°F Jan. 20, 21.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	--	--	50	48	48	48	--	--	41	40	42	40	44	43	49	42	54	51	54	53	60	56	58	55
2	--	--	48	45	48	48	--	--	40	39	42	40	44	43	48	46	54	50	56	52	59	56	58	56
3	--	--	45	43	--	--	43	42	40	39	42	39	45	44	51	48	54	53	56	51	56	55	57	56
4	--	--	45	43	47	47	44	43	40	40	42	39	46	45	52	49	54	51	58	52	56	54	57	55
5	--	--	46	45	48	47	45	44	40	39	43	41	46	44	52	49	55	51	57	53	56	55	56	55
6	--	--	47	46	48	46	--	--	40	39	44	41	45	45	55	48	53	52	57	55	59	55	56	53
7	--	--	48	47	46	46	46	45	40	39	42	40	46	45	56	50	54	52	57	55	60	56	55	55
8	--	--	48	47	46	46	45	44	40	39	43	42	46	45	54	52	54	53	56	52	58	55	57	55
9	--	--	48	48	48	48	45	45	40	39	44	42	45	44	52	51	56	53	55	54	56	53	58	55
10	--	--	48	47	47	47	45	44	40	39	42	41	46	43	54	50	55	54	55	54	58	53	58	56
11	--	--	48	48	47	47	44	43	39	38	42	41	48	44	53	51	54	53	56	53	58	54	56	55
12	--	--	49	48	48	47	43	42	39	39	42	40	47	47	52	50	56	53	57	53	58	56	56	55
13	--	--	49	49	47	46	42	42	40	39	41	39	48	46	54	49	54	53	59	54	57	56	56	55
14	--	--	50	49	47	47	43	42	41	40	42	39	47	44	55	49	53	51	58	56	57	56	56	55
15	--	--	50	50	47	47	42	41	41	41	42	41	48	45	55	52	53	51	57	55	57	55	56	56
16	--	--	50	48	47	47	41	40	41	41	43	42	51	46	57	51	52	50	57	55	57	56	55	54
17	--	--	48	47	47	46	40	38	41	41	42	40	50	48	59	52	52	50	59	55	57	55	55	54
18	--	--	47	47	47	47	39	38	41	40	43	40	48	46	58	53	53	49	58	57	57	55	55	54
19	--	--	47	47	48	47	39	38	41	41	43	42	47	46	59	55	52	52	58	56	58	57	55	54
20	--	--	47	47	47	47	38	36	42	41	44	41	50	46	56	53	55	52	56	55	59	57	55	53
21	--	--	48	47	47	46	37	36	42	42	45	41	51	45	55	53	56	52	56	54	58	56	56	53
22	--	--	48	48	46	44	38	37	43	42	45	41	50	47	57	50	56	53	58	52	58	57	57	55
23	--	--	48	48	44	44	39	38	43	41	44	41	50	47	57	52	55	53	58	56	58	56	57	56
24	--	--	49	48	45	44	38	38	43	42	45	42	50	45	56	54	57	52	59	54	56	55	57	55
25	--	--	49	49	45	44	39	37	42	41	45	41	48	46	54	52	55	53	59	54	56	55	57	55
26	--	--	49	48	44	44	38	37	42	41	44	44	47	46	54	52	55	54	58	55	56	55	58	56
27	--	--	49	48	45	44	38	37	42	40	45	43	49	44	53	50	54	52	58	55	56	54	58	55
28	--	--	48	47	45	45	40	38	42	41	43	41	48	44	52	49	54	50	59	53	57	55	55	53
29	--	--	49	48	45	44	40	40	--	--	43	39	46	44	52	51	56	52	59	54	59	56	53	50
30	50	50	49	48	45	44	41	40	--	--	44	39	47	44	53	51	56	54	60	56	58	57	52	49
31	50	50	--	--	--	--	41	40	--	--	45	42	--	--	53	52	--	--	60	56	59	56	--	--
Average	--	--	48	47	46	46	41	40	41	40	43	41	47	45	54	51	54	52	57	54	58	55	56	54

CLATSKANIE RIVER NEAR CLATSKANIE, OREG.

LOCATION.--Temperature recorder at gaging station, 2 miles downstream from Carcus Creek and 5½ miles southeast of Caltskanie, Columbia County.
DRAINAGE AREA.--53.0 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1954 (discontinued).
EXTREMES, 1953-54.--Water temperatures: Maximum, 67°F Aug. 1; minimum, 36°F Jan. 20, 21.
EXTREMES, 1950-54.--Water temperatures: Maximum, 75°F July 24, 1950; minimum, 33°F Nov. 28-30, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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

ELOKOMIN RIVER BASIN

ELOKOMIN RIVER NEAR CATHLAMET, WASH.

LOCATION (revised).--Temperature recorder at gaging station 125 feet upstream from railroad bridge, 2½ miles northeast of Cathlamet, Wahkiakum County, and 4½ miles upstream from mouth.
DRAINAGE AREA.--65.8 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 64°F May 19, July 31, Aug. 1, Sept. 1; minimum, 37°F Jan. 20-22, 25, 26.
EXTREMES, 1950-54.--Water temperatures: Maximum, 73°F June 29, 1951; minimum, 35°F Jan. 3, 4, Nov. 28-30, Dec. 1, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	51	49	48	48	44	44	42	42	44	41	44	44	51	45	57	52	54	53	64	58	64	57
2	53	51	49	46	48	48	44	43	42	42	42	41	44	44	50	49	56	52	59	52	61	58	62	60
3	54	52	46	45	48	47	43	43	42	42	42	41	45	44	51	49	55	54	60	53	58	56	61	58
4	55	52	46	45	47	46	43	43	42	42	43	41	46	45	54	51	55	53	62	54	57	54	59	57
5	55	51	47	46	47	46	45	43	42	42	43	43	45	44	53	50	55	52	61	55	57	55	59	57
6	55	52	47	47	47	46	45	45	42	42	44	43	44	43	57	49	53	52	60	57	61	55	59	54
7	56	52	48	47	46	46	45	45	42	42	44	42	45	43	60	53	56	52	58	56	63	57	59	57
8	56	55	48	47	46	46	45	45	42	42	44	43	45	43	56	54	54	53	57	53	60	56	60	57
9	56	56	48	48	47	46	45	45	43	42	45	44	44	43	54	52	57	53	55	54	60	54	60	57
10	56	54	48	48	47	47	45	44	43	42	44	42	45	41	55	51	56	53	54	53	61	53	60	59
11	54	52	48	48	47	47	44	43	42	41	43	42	47	43	53	52	55	53	58	53	58	55	59	57
12	52	50	49	48	47	47	43	42	42	41	42	41	47	46	53	51	58	53	61	54	59	56	58	57
13	54	52	49	49	47	46	42	42	43	42	42	41	46	45	57	50	56	53	63	55	59	58	58	57
14	53	52	50	49	47	46	43	42	43	43	42	41	46	43	59	51	54	52	59	57	58	57	58	57
15	54	52	50	50	47	47	43	42	43	43	44	42	47	44	59	55	53	52	57	56	61	56	58	56
16	53	53	50	48	47	46	42	41	43	43	45	44	50	45	61	55	52	51	58	55	59	58	57	56
17	53	53	48	47	46	46	41	40	44	43	44	41	50	48	63	55	52	51	63	55	61	56	56	55
18	53	52	47	47	46	46	40	40	44	43	44	42	48	44	63	57	54	50	62	58	60	57	56	55
19	52	50	47	47	47	46	40	39	43	43	44	44	46	45	64	58	54	52	60	56	60	58	56	55
20	51	50	47	47	47	47	39	37	44	43	44	43	49	45	59	55	54	52	57	54	61	58	58	54
21	50	48	47	47	47	46	37	37	44	44	45	42	49	45	57	54	58	53	58	54	60	58	59	55
22	48	47	48	47	46	45	40	37	45	44	46	42	49	47	61	53	57	54	61	53	60	58	59	57
23	48	46	48	48	45	45	40	40	45	44	46	43	50	44	61	55	57	53	61	57	61	57	58	56
24	48	47	48	48	45	45	40	39	45	45	46	44	50	46	58	55	58	52	63	55	58	56	61	56
25	48	48	48	48	45	44	40	37	45	44	46	43	49	47	56	54	55	53	63	56	58	54	61	56
26	48	48	48	48	44	44	38	37	44	44	46	45	48	47	56	53	54	53	61	56	56	55	62	58
27	49	48	48	48	45	44	39	38	44	42	45	44	49	45	56	52	53	52	62	54	60	55	61	57
28	49	48	48	47	45	45	41	39	44	44	44	39	48	46	54	50	57	51	63	54	61	57	57	54
29	50	48	48	47	45	44	41	41	--	--	43	40	47	45	52	52	59	52	63	56	62	58	54	50
30	50	50	48	48	44	44	42	41	--	--	44	41	48	44	54	52	57	54	63	57	61	59	53	49
31	51	50	--	--	44	44	42	42	--	--	44	43	--	--	56	53	--	--	64	57	63	58	--	--
Average	52	51	48	47	46	46	42	41	43	43	44	42	47	45	57	52	55	53	60	55	60	56	59	56

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.--31.9 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1949 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 55°F Aug. 1, 2, 7; minimum, 39°F Jan. 20, 21, 25.
EXTREMES, 1949-54.--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 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	53	53	52	48	48	45	45	43	43	44	43	45	44	47	49	50	49	53	52	58	56	57	54
2	53	52	52	48	48	48	45	44	43	43	43	42	45	44	47	46	50	48	53	52	58	56	56	55
3	53	52	48	47	48	47	44	44	43	43	43	42	46	44	49	47	51	50	53	51	56	55	55	54
4	53	52	48	47	47	47	45	44	43	43	43	42	46	46	49	48	51	50	54	52	55	54	55	54
5	54	53	48	48	47	47	46	45	43	43	44	43	46	45	51	48	50	49	54	53	55	53	55	54
6	54	54	48	48	47	47	46	46	43	43	44	43	45	45	51	47	50	50	54	54	57	54	54	52
7	54	54	49	48	47	46	46	46	43	43	43	42	46	44	53	49	50	49	54	54	58	54	55	54
8	55	54	50	49	46	46	46	45	43	43	45	43	46	45	52	50	50	50	54	53	56	55	56	54
9	56	55	49	49	47	46	46	45	43	43	46	44	45	44	50	50	51	50	53	53	57	53	56	54
10	56	56	49	49	47	46	46	45	43	42	44	43	46	43	50	49	51	51	53	53	57	52	56	55
11	56	54	49	49	47	46	45	43	42	42	43	43	47	44	50	49	51	50	53	53	55	55	55	54
12	54	53	49	49	47	46	43	43	43	42	43	42	47	47	50	49	51	50	55	52	56	55	55	54
13	53	53	49	49	46	46	44	43	43	43	43	42	47	46	51	48	51	50	56	54	56	55	56	55
14	53	53	50	49	47	46	44	44	43	43	43	42	47	45	52	48	50	49	56	55	55	54	56	55
15	53	53	50	50	47	47	44	43	43	43	44	43	47	45	52	51	50	50	55	54	55	54	55	55
16	53	53	50	49	47	46	43	42	44	43	44	43	49	45	53	49	50	49	54	54	55	54	55	55
17	53	53	49	48	46	46	42	41	44	44	44	42	49	47	54	51	50	49	55	54	57	54	54	53
18	53	53	48	48	46	46	41	41	44	43	44	43	47	46	54	52	50	48	55	55	56	55	--	--
19	53	52	48	47	47	46	41	41	44	43	45	44	47	46	55	52	50	50	55	54	57	55	--	--
20	52	52	47	47	47	47	41	39	45	44	45	43	48	46	54	51	51	50	54	54	57	56	--	--
21	52	50	48	47	47	46	40	39	45	45	44	43	48	45	51	50	53	50	54	53	57	56	--	--
22	50	49	48	48	46	45	42	40	45	45	45	43	48	47	53	50	53	52	56	53	57	56	--	--
23	49	48	48	48	45	45	42	42	45	44	45	43	48	45	53	50	53	52	56	55	57	56	--	--
24	49	48	49	48	45	45	42	41	45	45	46	44	48	45	52	51	53	51	57	55	56	54	--	--
25	49	49	49	49	45	44	41	39	45	44	46	44	47	46	51	49	53	53	57	55	55	54	--	--
26	49	49	49	48	45	44	41	40	45	44	45	45	47	46	50	49	53	53	57	55	55	54	--	--
27	49	49	49	48	45	45	41	41	44	43	45	45	47	45	49	48	53	52	56	54	56	54	--	--
28	49	49	48	47	46	45	42	41	44	44	45	43	47	45	49	47	53	51	56	53	56	55	--	--
29	51	49	49	48	45	45	43	42	--	--	43	42	46	44	49	49	54	52	56	54	57	55	--	--
30	52	51	49	48	45	44	43	42	--	--	44	42	46	44	50	49	54	53	57	55	57	56	--	--
31	53	52	--	--	45	44	43	43	--	--	45	44	--	--	50	49	--	--	57	56	57	55	--	--
Average	52	52	49	48	46	46	43	43	44	43	44	43	47	45	51	49	51	50	55	54	56	55	--	--

GRAYS RIVER BASIN

WEST BRANCH GRAYS RIVER NEAR GRAYS RIVER, WASH.

LOCATION.--Temperature recorder at gaging station, 1 mile upstream from mouth and 3¼ miles northeast of town of Grays River, Wahkiakum County.
DRAINAGE AREA.--16.3 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 60°F July 25, 29-31, Aug. 17; minimum, 38°F Jan. 21.
EXTREMES, 1950-54.--Water temperatures: Maximum, 66°F Aug. 11, 1953; minimum, 36°F Feb. 20, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	51	50	48	48	48	45	45	42	42	44	43	45	44	51	45	53	51	54	53	60	57	58	55
2	52	50	48	47	48	48	45	43	43	42	43	42	45	45	49	46	54	50	56	53	59	57	58	56
3	52	50	47	46	48	47	43	43	43	43	43	42	46	45	51	49	53	52	56	52	57	56	56	55
4	52	50	47	46	47	46	44	43	43	43	44	42	47	46	51	50	55	51	58	53	56	56	55	54
5	53	50	47	47	47	46	45	44	43	43	43	43	47	47	53	50	54	52	58	54	57	56	56	55
6	52	52	48	47	47	46	45	45	43	43	45	43	47	46	55	49	53	52	56	55	58	56	56	54
7	53	51	48	48	46	46	45	45	43	43	43	42	47	46	57	51	53	51	56	55	60	56	56	56
8	53	52	48	48	46	46	45	45	43	43	45	43	47	46	55	53	53	52	56	53	58	56	57	56
9	53	53	48	48	47	46	45	45	43	43	46	45	46	46	53	52	54	52	55	54	57	54	57	55
10	53	51	48	48	47	46	45	45	43	42	45	44	47	45	53	50	55	53	54	53	58	54	57	56
11	51	50	48	48	48	46	45	43	42	41	44	43	48	46	52	51	54	53	54	52	58	55	56	55
12	50	49	49	48	48	47	43	43	43	42	43	43	48	48	51	50	55	53	56	52	58	56	55	54
13	50	49	49	49	47	46	43	43	44	43	43	43	48	47	54	48	54	52	58	53	58	56	55	54
14	50	49	50	49	47	46	43	43	44	44	44	43	48	47	56	49	54	52	56	55	56	56	54	54
15	50	49	50	49	47	47	43	42	44	44	44	43	48	47	54	52	52	50	55	54	57	56	54	54
16	49	49	49	48	47	46	42	42	44	44	45	44	49	47	57	51	50	50	56	54	57	56	54	54
17	49	49	48	46	47	47	42	41	44	44	44	42	49	49	58	52	50	50	58	54	58	56	54	54
18	49	49	47	47	47	47	41	41	44	43	46	44	49	47	58	53	52	49	57	55	58	55	54	54
19	49	48	47	47	48	47	41	40	44	43	45	44	49	48	58	54	52	51	56	55	56	56	54	54
20	49	47	47	47	47	47	40	39	45	44	45	44	50	48	54	52	52	51	55	54	58	56	55	53
21	47	46	48	47	47	45	40	38	45	45	46	43	51	47	54	52	54	51	56	54	58	57	55	54
22	47	46	48	48	45	45	41	40	45	45	47	43	50	48	57	52	53	52	58	53	57	56	55	55
23	47	45	48	48	45	45	41	41	45	44	46	43	51	47	56	52	55	52	58	55	57	55	55	55
24	47	46	48	48	45	45	41	41	45	44	48	44	51	47	55	53	55	51	59	54	56	54	56	55
25	47	46	48	48	45	45	41	37	44	44	47	44	49	48	54	51	54	52	60	56	55	54	56	54
26	47	45	48	48	45	45	40	39	44	43	47	46	49	47	53	52	54	53	58	56	54	54	57	56
27	47	46	48	48	45	45	40	40	43	42	46	44	50	46	52	50	53	52	58	54	56	54	56	55
28	48	47	48	48	45	45	41	40	43	43	44	42	49	46	53	50	55	51	59	54	56	55	55	54
29	49	48	48	48	45	45	41	41	--	--	45	41	48	46	53	51	56	52	60	55	57	56	54	52
30	50	49	48	48	45	45	41	41	--	--	46	42	49	45	54	51	55	54	60	56	57	56	54	52
31	50	50	--	--	45	45	42	41	--	--	45	44	--	--	54	52	--	--	60	56	58	56	--	--
Average	50	49	48	48	46	46	43	42	44	43	45	43	48	47	54	51	54	52	57	54	57	56	55	54

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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 1954.
EXTREMES, 1953-54.--Water temperatures: Maximum, 60°F May 17, 18; minimum, 39°F Jan. 20, 21.
EXTREMES, 1950-54.--Water temperatures: Maximum, 65°F July 14, Aug. 4, 1952; minimum, 34°F Nov. 28, 1952.
REMARKS.--Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Temperature (°F) of water, water year October 1953 to September 1954

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	52	49	48	48	45	44	44	43	44	42	46	44	51	43	53	50	55	53	59	57	57	55
2	52	51	49	46	48	48	45	42	44	43	43	42	46	45	50	48	54	50	56	53	59	57	57	57
3	52	52	46	44	48	47	43	42	44	43	44	41	48	45	52	49	54	53	56	51	57	56	57	55
4	53	51	47	45	47	46	45	43	44	43	45	42	47	47	52	51	53	51	57	53	56	55	56	55
5	55	53	47	47	47	46	46	45	45	44	45	44	47	46	55	50	53	50	57	53	55	55	56	55
6	55	54	48	47	47	46	47	46	45	44	45	43	46	45	56	48	53	51	57	55	57	55	56	53
7	55	54	49	48	46	45	47	46	45	44	44	42	48	45	58	52	53	51	56	56	57	56	56	54
8	56	55	50	48	46	45	46	44	45	44	48	44	47	45	57	54	53	52	56	53	57	56	56	55
9	56	56	50	49	47	46	46	45	45	43	48	44	46	44	54	52	53	51	55	54	58	56	56	55
10	56	55	50	50	47	46	47	44	44	42	44	43	48	43	54	51	54	52	55	55	57	54	56	55
11	55	53	50	50	47	46	45	44	43	41	44	42	51	44	53	52	53	52	55	54	56	56	56	54
12	53	51	50	50	47	46	44	43	45	43	44	41	49	48	52	51	54	52	57	53	56	56	55	54
13	53	52	50	50	46	45	45	43	46	45	44	41	49	47	54	50	53	51	58	54	56	56	55	55
14	53	52	50	49	47	46	45	45	45	45	44	41	49	45	56	50	53	51	58	56	56	56	55	54
15	53	52	50	49	47	46	45	43	45	45	45	44	50	46	56	54	53	51	57	55	56	55	55	55
16	53	52	49	48	47	45	43	42	46	45	46	43	53	46	58	53	52	50	55	54	56	55	55	54
17	53	52	48	47	46	46	43	41	46	46	44	41	51	48	60	54	52	50	57	55	57	55	55	54
18	53	52	47	47	47	46	42	41	46	44	46	42	50	46	60	56	53	48	57	57	57	56	55	54
19	52	50	47	47	47	46	42	41	46	44	46	44	48	47	59	57	53	52	57	56	57	56	55	54
20	51	50	47	47	47	47	41	39	46	45	46	42	51	47	58	54	54	52	56	55	57	57	54	52
21	50	48	48	47	47	45	42	39	47	46	46	42	52	45	54	53	56	50	56	55	57	57	55	54
22	49	46	48	48	45	45	43	42	47	46	47	42	51	48	57	52	56	52	58	55	58	57	55	54
23	48	46	48	48	46	45	43	43	47	45	46	42	52	46	57	53	54	52	58	57	57	56	56	55
24	49	47	48	48	46	44	43	42	47	46	47	43	51	46	56	53	55	50	58	57	56	54	58	56
25	49	47	48	48	44	43	42	40	46	45	47	43	50	47	53	51	55	52	58	57	54	54	58	56
26	49	47	48	48	45	44	41	40	45	44	47	46	49	47	53	51	54	53	58	57	54	54	58	57
27	48	47	48	47	45	44	41	41	45	43	47	45	51	45	51	49	53	53	57	56	55	54	58	56
28	49	48	48	47	45	45	42	41	45	44	45	43	49	46	52	48	55	51	57	54	56	55	56	54
29	51	49	49	47	45	44	44	42	--	--	45	40	47	45	52	51	57	52	57	56	57	55	54	51
30	51	50	49	48	44	43	44	43	--	--	46	40	49	44	52	51	57	55	58	57	57	56	52	49
31	52	51	--	--	45	43	44	43	--	--	45	44	--	--	53	51	--	--	59	57	56	56	--	--
Average	52	51	49	48	46	45	44	43	45	44	45	43	49	46	55	51	54	51	57	55	57	56	56	54

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 1953 to September 1954.
Water temperatures: January 1953 to September 1954.
EXTREMES, 1953-54.--Dissolved solids: Maximum, 136 ppm Feb. 16-22; minimum 56 ppm Nov. 22-30.
Hardness: Maximum, 84 ppm Feb. 16-22; minimum, 24 ppm May 21-31.
Specific conductance: Maximum daily, 251 micromhos Feb. 21; minimum daily, 60.7 micromhos May 24.
Water temperatures: Maximum observed, 70°F July 14, 15, 17-19; minimum observed, 38°F Jan. 21, 25-27.
EXTREMES, January 1953 to September 1954.--Dissolved solids: Maximum, 136 ppm Feb. 16-22, 1954; minimum, 56 ppm Nov. 22-30, 1953.
Hardness: Maximum, 84 ppm Feb. 16-22, 1954; minimum, 24 ppm May 21-31, 1954.
Specific conductance: Maximum daily, 251 micromhos Feb. 21, 1954; minimum daily, 58.5 micromhos Jan. 19, 1953.
Water temperatures: Maximum observed, 70°F July 14, 15, 17-19, 1954; minimum observed, 38°F Jan. 21, 25-27, 1954.
REMARKS.--Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of specific conductance of daily samples available in district office at Portland, Oreg., Records of discharge for water year October 1953 to September 1954 given in WSP 1348.

Chemical analyses, in parts per million, water year October 1953 to September 1954.

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)	pH	Color
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate					
Oct. 1-10, 1953 ..	1,775	32	0.07	7.1	5.0	9.1	1.5	66	2.4	2.5	0.3	0.6	0.05	a94	0.13	450	38	0	33	0.6	98.6	7.0	6
Oct. 11-20.....	1,938	31	.09	7.1	4.1	8.9	1.6	51	2.2	2.8	.4	.2	.06	a83	.11	434	35	0	35	.7	97.3	7.7	7
Oct. 21-31.....	1,731	31	.06	7.9	4.8	5.7	1.5	51	2.2	2.5	.4	.7	.04	a82	.11	383	39	0	23	.4	97.0	7.2	7
Nov. 1-21.....	1,899	30	.06	8.1	2.9	5.9	1.4	52	1.8	2.8	.1	.5	--	85	.12	436	32	0	27	.5	97.1	7.4	--
Nov. 22-30	14,320	19	.07	6.7	2.2	3.6	1.7	35	1.8	2.0	.1	1.5	--	a56	.08	2,170	26	0	22	.3	72.2	7.3	60
Dec. 1-10.....	10,250	23	.29	8.5	2.3	4.8	1.4	46	1.9	2.2	.2	.9	--	a68	.09	1,880	31	0	24	.4	84.2	7.4	5
Dec. 11-20.....	6,703	22	.25	8.3	2.5	4.8	1.4	46	1.9	1.8	.1	1.1	.06	75	.10	1,360	31	0	24	.4	84.1	7.8	5
Dec. 21-31	5,305	25	.13	7.7	2.5	4.7	1.2	46	1.7	1.5	.3	.6	--	68	.09	974	30	0	25	.4	81.2	7.6	2
Jan. 1-10, 1954....	4,770	25	.21	8.7	3.3	5.6	1.8	52	2.3	3.0	.1	1.0	--	a77	.10	992	35	0	25	.4	98.7	7.2	3
Jan. 11-20.....	11,440	23	.28	10	3.0	5.3	1.7	55	2.4	1.8	.1	1.1	.01	a76	.10	2,350	37	0	23	.4	103	7.2	2
Jan. 21-31.....	16,660	22	.24	9.3	3.9	5.4	1.7	55	2.5	2.5	.1	1.1	--	a76	.10	3,420	39	0	22	.4	101	7.2	2
Feb. 1-15, 23-28 ..	9,680	25	.00	13	.5	4.9	1.5	51	2.2	3.0	.0	.7	.02	81	.11	2,120	34	0	23	.4	94.0	7.5	20
Feb. 16-22.....	8,530	23	.13	26	4.7	5.0	1.9	98	10	1.0	.1	3.0	--	136	.18	3,130	84	4	11	.2	190	7.8	15
Mar. 1-10	5,149	28	.04	8.9	3.5	5.4	1.3	55	2.4	2.0	.1	1.1	--	85	.12	1,180	37	0	24	.4	98.5	7.4	3
Mar. 11-20	5,027	25	.07	8.7	2.9	4.9	1.7	49	2.1	2.0	.1	.7	--	77	.10	1,050	34	0	23	.4	89.0	7.7	2
Mar. 21-31.....	3,625	26	.03	8.7	3.5	5.6	1.7	54	2.2	2.8	.1	.8	--	84	.11	822	36	0	24	.4	98.4	7.4	3
Apr. 1-10.....	5,774	25	.04	8.9	2.9	5.3	1.5	52	2.1	1.8	.2	.7	--	a74	.10	1,150	34	0	24	.4	92.3	7.3	5
Apr. 11-20.....	5,541	21	.02	7.5	2.6	4.7	1.5	45	1.2	1.8	.4	.6	.08	72	.10	1,080	29	0	25	.4	86.2	7.3	0
Apr. 21-30	4,861	20	.03	6.6	2.6	4.2	1.0	41	1.3	1.5	.2	.6	--	62	.08	814	27	0	24	.4	72.2	7.4	5
May 1-10	3,854	20	.09	6.9	2.0	4.2	1.5	38	2.1	1.8	.2	.8	--	66	.09	687	25	0	25	.4	77.1	7.6	10
May 11-20	3,723	22	.09	6.4	2.1	4.2	1.6	39	1.8	1.5	.2	.8	.01	71	.10	714	25	0	27	.4	75.0	8.0	5
May 21-31	2,980	18	.10	6.4	2.0	4.1	1.5	38	1.7	1.8	.2	.8	--	66	.09	531	24	0	25	.4	74.8	7.5	5

June 1-10, 1954 ..	2,866	26	.00	6.8	2.9	4.1	2.8	45	1.4	1.8	.1	.3	--	67	0.09	518	29	0	22	.3	77.2	7.8	3
June 11-20.....	3,312	28	.02	7.6	2.7	4.3	--	46	1.9	2.0	.1	.4	--	72	.10	644	30	0	24	.3	81.3	7.7	5
June 21-30.....	2,229	28	.05	6.8	2.4	4.3	--	43	1.5	2.0	.1	.5	--	68	.09	409	27	0	26	.4	74.9	7.6	10
July 1-10.....	1,768	31	.02	6.8	2.4	4.9	--	45	1.6	2.0	.1	.4	--	72	.10	344	27	0	28	.4	77.6	7.4	4
July 11-20.....	1,526	32	.03	6.8	2.2	4.8	--	44	1.5	2.0	.1	.6	--	74	.10	305	26	0	29	.4	78.7	7.1	15
July 21-31.....	1,377	33	.03	7.2	2.2	4.9	--	44	1.4	1.8	.1	.4	--	75	.10	279	27	0	28	.4	79.4	7.2	2
Aug. 1-10.....	1,311	34	.00	8.5	2.8	6.6	1.8	51	2.5	2.5	.1	1.2	--	90	.12	319	33	0	29	.5	96.8	7.1	--
Aug. 11-20.....	1,319	32	.00	8.1	2.0	6.2	2.0	49	2.1	2.0	.1	1.1	.05	84	.11	299	28	0	30	.5	89.3	7.0	--
Aug. 21-31.....	1,511	33	.01	7.7	2.5	5.8	1.9	49	1.4	2.2	.2	.8	--	81	.11	330	30	0	28	.5	87.2	7.0	5
Sept. 1-10.....	1,345	33	.01	8.3	2.8	5.9	1.8	52	1.5	2.5	.1	.3	--	84	.11	305	32	0	27	.5	93.4	8.1	5
Sept. 11-20.....	1,563	32	.04	8.7	2.9	5.9	1.9	54	1.6	2.5	.1	.5	.06	82	.11	346	34	0	26	.4	94.2	7.7	10
Sept. 21-30.....	1,352	33	.05	8.7	2.9	6.0	1.8	53	1.6	2.8	.1	.3	--	83	.11	303	34	0	27	.5	94.3	8.0	10
Weighted Average	4,632	24	0.11	9.3	2.7	5.0	1.6	50	2.3	2.2	0.1	0.9	--	76	0.10	950	34	0	23	0.4	92.7	--	--

a Sum of determined constituents.

ROGUE RIVER BASIN--Continued

ROGUE RIVER AT GRANTS PASS, OREG.--Continued

Temperature (°F) of water, water year October 1953 to September 1954
/Once-daily measurement at approximately 11:45 a.m./

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

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