Quality of Surface Waters of the United States 1950

Parts 7–8. Lower Mississippi River Basin and Western Gulf of Mexico Basins

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

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, and other agencies by personnel of the Water Resources Division under the direction of:

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INTRODUCTION

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

The records of chemical analyses, 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, 1948, to September 30, 1949. 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, total hardness, sediment loads, water temperature, and other pertinent data. Records of water discharge of the streams at, or near, the sampling point for the sampling period are included in most tables of analyses. The records are arranged by drainage basins, according to Geological Survey practice in reporting records of stream flow.

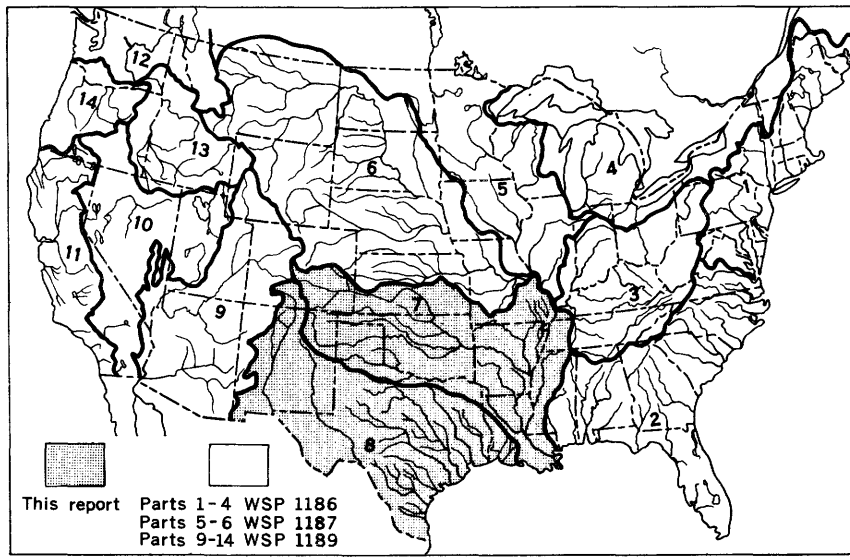

Figure 1. Map of the United States showing basins covered by the four water-supply papers on quality of surface waters in 1950. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply papers.

During the year ended September 30, 1950, 105 regular sampling stations on 69 streams for the study of the chemical character of surface waters were maintained by the Geological Survey in the area covered by this volume. Samples were collected less frequently during the year at many other points. Water temperatures were measured daily at 83 of the regular sampling stations. Not all analyses of samples of surface water collected during the year have been included. Single analyses of an incomplete nature generally have been omitted. Also, determinations made on the daily samples before compositing have not been reported. Specific conductance was usually determined on each daily sample, and pH, chloride, or other determinations were also made on many of the daily samples. As noted in the table headings these data are available for reference at the district offices listed under Division of Work, on pages

Quantities of suspended sediment are reported for 36 stations during the year ended September 30, 1950. The sediment samples were collected from one to five 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 30 of the stations. As noted under "Remarks" in

the table headings, suspended-sediment concentrations also were determined from the samples collected for chemical analysis 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 analysis were usually collected daily at, or near, points on streams where gaging stations are maintained for measurement of water discharge. Most of the analyses were made on 10-day composites of daily samples collected for a period of a year at each sampling point. Three composite samples were usually prepared each month by mixing together equal volumes of daily samples collected from the 1st to the 10th, from the 11th to the 20th, and during the remainder of the month. For some streams that are subject to sudden and large changes in chemical composition or concentration, samples were composited for shorter periods on the basis of the concentration of dissolved solids indicated by measurements of specific conductance of the daily samples.

The samples were analyzed according to methods regularly used by the Geological Survey. These methods are essentially the same as or are modifications of methods described in recognized authoritative publications for the mineral analysis of water samples (Collins, 1928; Am. Public Health Assoc., 1946).

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

SUSPENDED SEDIMENT

In general, samples were collected daily with the US D-43 depth-integrating sampler (U. S. Inter-agency, 1948, p. 70-76) from a fixed sampling point at one vertical in the cross section. The US DH-48 hand sampler was used at many stations during periods of low flow. Suspended-sediment samples, consisting of depth-integrated samples at three or more verticals in the cross section were made periodically to determine the cross-sectional distribution of the suspended concentration with respect to that at the daily sampling vertical. In streams where comparatively rapid fluctuations in transverse distribution of water discharge or sediment concentration are encountered at the sampling point, samples were taken regularly at two or more verticals to determine the average concentration across the section. During periods of high flow, samples were taken two or more times throughout the day at many sampling stations, and during periods of rapidly changing flow samples were taken hourly at some stations.

Sediment concentrations were determined by filtration or evaporation of the samples as required. At many stations the mean daily concentration for some days was obtained by plotting the instantaneous concentrations on the original or copies of the original gage-height chart. The plotted concentrations adjusted, if necessary, for cross-sectional distribution with respect to that at the daily sampling vertical, were connected or averaged by continuous curves to obtain a concentration graph. This graph represented the estimated concentration at any time and, for most periods, mean daily concentrations were determined from the graph. When the concentration and water discharge were changing rapidly, the day was often subdivided for this computation. For some periods when the day-to-day variation in the concentration was negligible, the data were not plotted, and the average concentration of the samples was used as the mean concentration for the day. For certain stations, when the discharge and sediment concentrations were relatively low and varied only slightly from day to day, the samples for a number of days were composited and the mean daily concentrations and mean daily loads are shown.

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

In many instances where there were no observations for several days, the sediment loads for individual days are not estimated, as numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates of sediment loads for individual days. However, estimated sedi-

ment 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 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 10,000 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 was often different from the concentration in the original suspension. The weight of sediment used is indicated in the tables of analyses.

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, the average of the maximum daily temperatures, and the average of the 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 quantity of sodium and potassium is given in some analyses and is the quantity of sodium needed in addition to the calcium and magnesium to balance the acid constituents.

The total 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 has been 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 moder-

ate to high concentration, the proportion of potassium is much smaller than that of sodium.

Specific conductance values are expressed in reciprocal ohms (micromhos at 25°C). The discharge of the streams is reported in second-feet (See Stream Flow, p. 19) 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 (pH) is given as the negative logarithm of the number of moles of ionized hydrogen per liter of water.

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. Daily sediment loads are expressed in tons per day, and except for subdivided days are usually obtained by multiplying mean daily sediment concentration in parts per million by the mean daily discharge, and the conversion factor 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

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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 Untied 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 in-

creasing 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 dissolved solids are usually satisfactory for domestic and some industrial uses. Waters containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands.

PROPERTIES AND CHARACTERISTICS OF WATER

Oxygen consumed

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

Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 10 usually passes unnoticed. Some swamp waters have natural color of 200 to 300 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. 13). 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 .ather. 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. 6 .) 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).

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 (0.062 mm) range do not appear to be affected by flocculation or dispersion resulting from the mineral constituents in solution. The sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

PUBLICATIONS

Reports giving chemical analyses, suspended-sediment loads, and water temperatures of samples of surface water made by the Geological Survey have been published yearly since 1941. Records for the years ended September 30, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, and 1949, for many of the stations listed in this report are given in Water-Supply Papers 942, 950, 970, 1022, 1030, 1050, 1102, 1133, and 1163.

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.
1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

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

COOPERATION

The table on p. 17-18 lists State and local agencies that cooperated in quality-of-water investigations in the drainage basins included in this volume. The locations of quality-of-water district offices responsible for the data collected in the drainage basins are given in the table, also.

Financial assistance was furnished by the Bureau of Reclamation of the United States Department of the Interior, in the operation of some stations in Oklahoma, New Mexico, and Texas.

Financial assistance was also furnished by the Corps of Engineers, Department of Army, in the operation of some stations

State	Cooperating agency	Drainage basin	District or regional office
Arkansas	Institute of Science and Technology, University of Arkansas, Dr. W. W. Grigorieff, director.	Lower Mississippi River.	c/o Institute of Science and Technology, University of Arkansas, Fayetteville, Ark.
Louisiana	Louisiana Department of Public Works, J. Lester White, director.	Lower Mississippi River, Western Gulf of Mexico.	302 W. 15th St., Austin, Tex.
Missouri	--	Lower Mississippi River (sedimentation investigations at St. Louis).	510 Rudge-Guenzel Bldg., Lincoln, Nebr.
New Mexico	New Mexico Interstate Stream Commission, John H. Bliss, secretary, and Colfax County Board of Commissioners, C. F. Adams, chairman.	Lower Mississippi River, Western Gulf of Mexico.	P. O. Box 293, University Station, Albuquerque, N. Mex.
Oklahoma	Oklahoma Planning and Resources Board, Clarence Burch, chairman, and Oklahoma A. & M. College Engineering Experiment Station, C. A. Dunn, executive director.	Lower Mississippi River.	1203 West Sixth St., Stillwater, Okla.

State	Cooperating agency	Drainage basin	District or regional office
Texas	Texas State Board of Water Engineers, consisting of H. A. Beckwith, chairman, A. P. Rollins, and J. S. Guleke; Texas Red Bluff Water Power Control District, Lower Colorado River Authority, Brazos River Conservation and Reclamation District, Lower Neches Valley Authority, San Jacinto Conservation and Reclamation District, Upper Red River Flood Control and Irrigation District, and the Texas Electric Company. Cities of Abilene, Amarillo, and Fort Worth.	Lower Mississippi River, Western Gulf of Mexico.	302 W. 15th St., Austin, Tex.

in New Mexico and Texas. The Corps also provided financial assistance and made determinations of sediment concentrations in their laboratory in connection with the sedimentation investigations of the Mississippi River at St. Louis. Assistance in collection records was given by many municipal, State, and Federal agencies.

In addition to these cooperative programs, many of the stations were operated from funds appropriated directly to the Geological Survey for quality-of-water investigations. Studies of suspended loads in the middle Rio Grande in New Mexico were initiated as a Federal project in 1948.

DIVISION OF WORK

The quality-of-water program was conducted by the water resources division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer and S. K. Love, chief of the quality of water branch. The records were collected and prepared for publication under supervision of district or regional chemists and engineers as follows: In Arkansas--G. A. Billingsley; in Missouri--P. C. Benedict; in Oklahoma--I. W. Walling; in New Mexico--J. D. Hem; in Colorado (except that part in Missouri River basin), C. S. Howard; in Texas and Louisiana--Burdge Irelan. Any additional analytical data on file for the sampling stations can be obtained by writing the responsible Survey district office.

STREAM FLOW

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 either are daily mean discharges or are discharges for the time at which samples were collected, computed from a stage-discharge relation or from a discharge measurement.

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CHEMICAL ANALYSES, WATER TEMPERATURES, AND SUSPENDED SEDIMENT

PART 7. LOWER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER MAIN STEM

MISSISSIPPI RIVER AT ST. LOUIS, MO.

LOCATION.--At MacArthur bridge, 1.1 miles below gaging station which is 15 miles downstream from Missouri River and 180 miles upstream from Ohio River.
DRAINAGE AREA.--701,000 square miles (authority, Mississippi River Commission).
RECORDS AVAILABLE.--Sediment records: April 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 6,420,000 tons May 14; minimum daily, 51,300 tons Dec. 10.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 6,420,000 tons May 14, 1950; minimum daily, 16,700 tons Dec. 27, 1948.
REMARKS.--Sediment loads for days when concentrations were not measured are computed from estimated concentrations which are based on water discharge of the Mississippi and Missouri Rivers upstream from their junction. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	70,000	--	125,000	93,500	1,050	265,000	64,500	--	67,400
2	67,200	--	116,000	90,100	--	216,000	60,500	444	72,500
3	65,900	560	99,600	95,300	--	211,000	57,900	--	63,600
4	64,500	--	94,200	92,700	--	192,000	60,500	--	56,800
5	63,900	573	98,900	88,500	723	173,000	63,900	326	56,200
6	75,600	--	113,000	83,700	--	160,000	64,500	--	55,400
7	93,500	735	186,000	83,700	719	162,000	66,600	310	55,700
8	98,900	--	221,000	85,200	--	164,000	69,300	--	55,200
9	101,000	--	193,000	84,400	--	156,000	63,900	306	52,800
10	89,300	540	130,000	82,900	652	146,000	59,200	--	51,300
11	89,300	--	135,000	81,400	--	140,000	59,900	--	73,100
12	95,300	632	163,000	79,900	--	139,000	61,800	582	97,100
13	103,000	--	184,000	77,700	--	137,000	65,900	--	77,900
14	108,000	618	180,000	76,300	--	134,000	64,500	346	60,300
15	108,000	--	176,000	75,600	636	130,000	68,600	--	70,900
16	108,000	--	175,000	76,300	594	122,000	74,200	494	99,000
17	105,000	574	163,000	80,600	--	127,000	79,900	--	87,400
18	97,100	--	141,000	79,200	584	125,000	81,400	--	72,500
19	88,500	482	115,000	76,300	--	118,000	79,900	320	69,000
20	97,100	553	145,000	78,400	--	118,000	77,000	--	62,400
21	146,000	1,140	449,000	77,700	534	112,000	83,700	302	68,200
22	222,000	--	1,280,000	75,600	--	107,000	150,000	--	183,000
23	263,000	--	1,690,000	72,800	525	103,000	202,000	1,190	649,000
24	255,000	2,160	1,490,000	70,700	--	95,600	210,000	--	885,000
25	223,000	--	1,160,000	73,500	462	91,700	180,000	--	680,000
26	196,000	1,850	979,000	67,200	--	78,700	156,000	--	505,000
27	177,000	--	784,000	63,200	--	71,700	165,000	800	356,000
28	164,000	1,380	611,000	61,200	410	67,700	163,000	--	279,000
29	141,000	--	514,000	65,900	--	69,000	142,000	571	219,000
30	114,000	--	437,000	68,600	365	67,600	129,000	495	172,000
31	105,000	1,370	388,000	--	--	--	125,000	--	155,000
Total	3,795,100	--	12,740,000	2,358,100	--	3,999,000	3,049,600	--	5,508,000

MISSISSIPPI RIVER MAIN STEM--Continued

MISSISSIPPI RIVER AT ST. LOUIS, MO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1------	126,000	--	151,000	131,000	389	138,000	143,000	385	149,000
2------	126,000	--	150,000	125,000	--	132,000	144,000	--	156,000
3------	150,000	638	258,000	128,000	--	132,000	161,000	470	204,000
4------	272,000	--	911,000	132,000	--	129,000	163,000	--	220,000
5------	294,000	--	1,180,000	133,000	--	121,000	170,000	--	289,000
6------	261,000	--	1,030,000	131,000	301	106,000	207,000	800	447,000
7------	222,000	--	785,000	124,000	--	90,700	189,000	--	375,000
8------	200,000	--	583,000	122,000	248	81,700	211,000	--	450,000
9------	178,000	810	389,000	126,000	--	87,800	234,000	1,210	764,000
10------	164,000	--	294,000	135,000	304	111,000	247,000	1,800	1,200,000
11------	159,000	567	243,000	154,000	--	155,000	277,000	--	1,710,000
12------	147,000	--	227,000	178,000	--	274,000	306,000	--	2,160,000
13------	161,000	682	296,000	197,000	1,080	574,000	308,000	--	1,770,000
14------	211,000	--	524,000	208,000	--	618,000	287,000	1,600	1,240,000
15------	253,000	--	697,000	216,000	990	577,000	271,000	1,200	878,000
16------	260,000	980	688,000	224,000	--	780,000	271,000	--	688,000
17------	247,000	--	567,000	213,000	1,170	673,000	271,000	871	637,000
18------	234,000	--	474,000	190,000	--	492,000	266,000	--	585,000
19------	204,000	--	365,000	167,000	--	353,000	246,000	--	508,000
20------	176,000	583	277,000	149,000	661	266,000	224,000	724	438,000
21------	159,000	--	216,000	150,000	--	247,000	207,000	--	380,000
22------	154,000	--	179,000	161,000	--	253,000	202,000	626	341,000
23------	150,000	402	163,000	177,000	573	274,000	202,000	--	315,000
24------	148,000	--	151,000	180,000	--	295,000	200,000	543	293,000
25------	150,000	360	146,000	168,000	--	254,000	189,000	--	273,000
26------	164,000	--	177,000	156,000	--	202,000	194,000	--	284,000
27------	169,000	480	219,000	141,000	437	166,000	203,000	559	306,000
28------	169,000	--	231,000	140,000	--	156,000	197,000	--	319,000
29------	160,000	--	201,000	--	--	--	190,000	667	342,000
30------	159,000	--	177,000	--	--	--	216,000	--	434,000
31------	142,000	--	150,000	--	--	--	244,000	835	550,000
Total-	5,769,000	--	12,100,000	4,456,000	--	7,738,000	6,840,000	--	18,700,000

Day	April			May			June		
1------	271,000	--	761,000	444,000	2,690	3,220,000	332,000	2,220	1,990,000
2------	297,000	--	1,140,000	442,000	--	2,720,000	320,000	2,180	1,880,000
3------	336,000	1,880	1,710,000	442,000	1,950	2,330,000	312,000	--	1,880,000
4------	391,000	--	2,330,000	434,000	--	1,980,000	312,000	--	1,960,000
5------	393,000	2,450	2,600,000	418,000	1,500	1,690,000	326,000	2,450	2,160,000
6------	387,000	2,440	2,550,000	382,000	--	1,400,000	316,000	--	2,010,000
7------	385,000	2,050	2,130,000	352,000	--	1,210,000	299,000	2,140	1,730,000
8------	387,000	--	2,250,000	330,000	1,220	1,090,000	272,000	--	1,400,000
9------	385,000	--	2,390,000	328,000	--	1,070,000	249,000	1,690	1,140,000
10------	376,000	2,260	2,290,000	334,000	1,270	1,150,000	236,000	--	1,010,000
11------	354,000	--	2,220,000	334,000	--	1,330,000	228,000	--	917,000
12------	333,000	2,370	2,130,000	356,000	2,010	1,930,000	243,000	--	1,100,000
13------	327,000	2,180	1,920,000	426,000	--	4,150,000	258,000	1,630	1,140,000
14------	322,000	2,260	1,960,000	461,000	--	6,420,000	263,000	1,400	994,000
15------	318,000	--	2,050,000	456,000	4,560	5,610,000	256,000	--	795,000
16------	311,000	--	1,920,000	431,000	--	4,190,000	249,000	1,020	686,000
17------	299,000	2,100	1,700,000	407,000	2,730	3,000,000	252,000	--	850,000
18------	284,000	--	1,510,000	374,000	--	2,350,000	278,000	--	1,210,000
19------	272,000	1,870	1,370,000	340,000	2,140	1,960,000	294,000	1,850	1,470,000
20------	261,000	--	1,200,000	328,000	--	2,030,000	295,000	--	1,550,000
21------	253,000	1,430	977,000	345,000	--	2,570,000	310,000	2,030	1,700,000
22------	250,000	--	992,000	347,000	2,900	2,720,000	345,000	2,800	2,610,000
23------	263,000	--	1,240,000	340,000	2,580	2,370,000	385,000	2,700	2,810,000
24------	280,000	2,130	1,610,000	330,000	2,370	2,110,000	414,000	--	3,280,000
25------	301,000	--	1,980,000	324,000	--	1,940,000	409,000	--	3,200,000
26------	314,000	2,640	2,240,000	316,000	2,000	1,710,000	381,000	2,440	2,510,000
27------	342,000	--	2,570,000	307,000	--	1,420,000	334,000	--	1,800,000
28------	362,000	2,900	2,830,000	308,000	--	1,180,000	285,000	1,700	1,310,000
29------	391,000	--	3,270,000	320,000	1,470	1,270,000	260,000	--	1,020,000
30------	432,000	--	3,700,000	330,000	--	1,680,000	237,000	1,280	819,000
31------	--	--	--	336,000	2,130	1,930,000	--	--	--
Total-	9,877,000	--	59,540,000	11,422,000	--	71,730,000	8,950,000	--	48,930,000

MISSISSIPPI RIVER MAIN STEM--Continued

MISSISSIPPI RIVER AT ST. LOUIS, MO.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	220,000	--	760,000	212,000	--	807,000	191,000	1,310	676,000
2	199,000	--	715,000	203,000	1,180	647,000	192,000	--	705,000
3	185,000	1,400	699,000	191,000	--	541,000	191,000	--	629,000
4	194,000	--	655,000	191,000	960	495,000	176,000	--	508,000
5	202,000	1,160	633,000	182,000	--	465,000	151,000	1,030	420,000
6	202,000	1,160	633,000	168,000	--	430,000	145,000	1,010	395,000
7	185,000	1,230	614,000	147,000	972	386,000	130,000	930	326,000
8	173,000	--	635,000	131,000	1,170	414,000	116,000	910	285,000
9	165,000	--	628,000	129,000	1,360	474,000	104,000	--	248,000
10	155,000	1,430	598,000	141,000	--	548,000	104,000	--	236,000
11	146,000	--	536,000	149,000	1,540	620,000	104,000	789	222,000
12	147,000	1,240	492,000	164,000	--	872,000	102,000	--	211,000
13	155,000	--	523,000	172,000	--	924,000	99,400	760	204,000
14	167,000	1,460	658,000	158,000	1,680	717,000	97,600	--	200,000
15	195,000	3,270	1,720,000	162,000	--	774,000	97,600	760	200,000
16	231,000	--	3,240,000	198,000	2,260	1,210,000	96,800	--	192,000
17	234,000	4,500	2,840,000	261,000	--	2,610,000	96,000	--	174,000
18	221,000	--	2,260,000	274,000	4,090	3,030,000	95,100	615	158,000
19	236,000	3,270	2,080,000	258,000	--	2,740,000	88,700	--	139,000
20	288,000	3,280	2,550,000	217,000	--	2,230,000	86,300	566	132,000
21	338,000	4,800	4,380,000	186,000	3,340	1,680,000	94,300	--	139,000
22	356,000	--	4,890,000	169,000	--	1,250,000	105,000	530	150,000
23	360,000	--	4,140,000	155,000	2,150	900,000	125,000	--	189,000
24	343,000	3,580	3,320,000	141,000	--	720,000	129,000	--	216,000
25	316,000	--	2,540,000	126,000	1,810	616,000	127,000	690	237,000
26	279,000	2,460	1,850,000	127,000	--	586,000	119,000	687	221,000
27	252,000	--	1,520,000	131,000	--	555,000	111,000	580	174,000
28	237,000	2,050	1,310,000	127,000	1,420	487,000	124,000	--	207,000
29	236,000	--	1,200,000	131,000	--	520,000	133,000	1,280	460,000
30	240,000	--	1,130,000	157,000	1,500	636,000	124,000	--	489,000
31	231,000	1,590	992,000	180,000	--	690,000	--	--	--
Total	7,088,000	--	50,740,000	5,338,000	--	29,570,000	3,654,800	--	8,742,000

Total discharge for year (second-foot-days) 72,597,600
Total load for year (tons) 330,000,000

ST. FRANCIS RIVER BASIN

ST. FRANCIS RIVER AT MARKED TREE, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 63, at Marked Tree, Poinsett County, 4.8 miles downstream from Little River, and 7 miles downstream from dam of Poinsett County Drainage District 7.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, November 1949 to September 1950.
Water temperatures: October 1945 to September 1946, November 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum 329 ppm Nov. 21-30; minimum, 106 ppm Feb. 14-19.
Hardness: Maximum, 260 ppm Nov. 21-30; minimum, 64 ppm Feb. 14-19.
Water temperatures: Maximum, 86°F June 17; minimum, 40°F Jan. 7.
EXTREMES, 1945-46, 1949-50.--Dissolved solids: Maximum, 329 ppm Nov. 21-30, 1949; minimum, 106 ppm Feb. 14-19, 1950.
Hardness: Maximum, 260 ppm Nov. 21-30, 1949; minimum, 64 ppm Feb. 14-19, 1950.
Water temperatures: Maximum, 87°F July 17, 24, 1946; minimum, 35°F Dec. 19, 1945.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Nov. 1-10, 1949.....	2,111	8	8.0	388	22	0.02	52	15	13	1.0	234	20	9.2	0.0	1.8	250	191	0
Nov. 11-20	1,633	12	8.4	465	23	.03	68	20	15	1.4	a 290	21	9.5	.0	1.4	303	252	14
Nov. 21-30	496	10	8.3	517	26	.03	76	17	11	2.2	b 328	24	8.5	.0	1.7	329	260	0
Dec. 1-10	423	4	8.3	351	25	.02	38	18	11	.2	195	22	6.0	.1	1.7	229	169	9
Dec. 11-20	1,202	11	8.0	354	18	.03	50	12	7.3	1.0	194	21	4.5	.1	2.2	221	174	15
Dec. 21-31	2,665	22	7.9	301	16	.11	36	10	7.4	.6	156	19	6.2	.1	2.1	196	131	3
Jan. 1-10, 1950	3,881	12	7.7	220	12	.29	26	7.4	4.9	1.4	102	16	5.5	.1	2.7	138	95	12
Jan. 11-20.....	4,850	11	7.9	186	8.0	.39	23	6.7	4.1	1.0	90	13	3.0	.1	1.5	132	85	11
Jan. 21-24, 28-31	4,472	9	7.8	213	7.7	.30	30	6.2	4.3	1.4	107	15	3.0	.0	1.2	136	100	13
Jan. 25-27	4,393	21	8.1	256	--	--	34	8.9	5.7	--	136	14	3.5	--	.6	165	121	10
Feb. 1-6	4,413	28	7.6	173	--	--	19	6.3	4.2	--	84	9.0	3.8	--	1.1	124	73	4
Feb. 7-13	4,424	12	7.8	225	9.3	.06	28	8.7	4.5	1.6	114	17	4.0	.1	1.4	140	106	12
Feb. 14-19	4,557	8	7.8	132	5.3	.10	13	7.6	3.2	2.1	58	11	3.8	.2	2.4	106	64	16
Feb. 20-28	4,734	22	7.5	198	8.8	.13	27	6.8	3.9	1.8	100	14	2.5	.0	1.4	128	95	13
Mar. 1-10	3,687	12	7.8	270	15	.03	38	10	6.1	1.4	146	16	4.5	.1	1.7	171	136	16
Mar. 11-20	3,224	5	8.2	315	18	.02	45	7.3	7.2	2.7	171	17	5.5	.1	1.7	193	142	2
Mar. 21-25	2,742	6	8.2	361	22	.02	50	13	8.5	3.0	202	19	5.8	.1	1.4	224	178	13
Mar. 26-31	3,638	7	7.6	198	8.0	.12	25	6.9	4.4	1.7	105	11	4.0	.1	1.5	126	91	5
Apr. 1-6	3,562	9	7.4	254	13	.04	33	9.4	5.4	1.5	132	14	7.5	.0	2.6	155	121	12
Apr. 7-10	2,878	7	8.0	295	--	--	37	9.4	7.8	--	164	17	4.5	--	2.1	182	131	0
Apr. 11-20	2,549	8	7.7	309	19	.03	41	11	6.9	2.4	170	14	7.0	.0	.8	193	148	8
Apr. 21-30	2,290	3	8.0	375	18	.02	51	16	9.3	1.8	213	17	8.0	.1	1.3	234	193	18

a Includes equivalent of 12 parts per million of carbonate (CO_3).
b Includes equivalent of 10 parts per million of carbonate (CO_3).

May 1-6	2,480	4	7.9	401	22	.02	54	14	9.6	3.2	224	18	8.0	.1	1.7	243	192	9
May 7-10	3,118	12	8.0	289	--	--	39	10	8.5	--	154	17	5.0	--	2.3	190	138	12
May 11-20	2,693	10	7.8	332	22	.02	45	10	8.1	2.4	180	17	9.0	.1	2.2	208	153	6
May 21-31	2,383	10	8.3	333	21	.02	44	12	8.5	2.7	191	15	8.0	.1	1.1	216	159	2
June 1-10	2,189	9	7.8	386	23	.02	50	15	10	2.6	218	15	7.8	.1	1.4	241	186	8
June 11-20	2,337	8	7.9	380	22	.02	47	14	9.9	3.0	212	15	9.5	.1	2.7	235	175	1
June 21-30.....	2,655	6	7.8	389	22	.02	50	15	11	2.6	220	15	9.8	.1	1.2	240	186	6
July 1-10	2,473	8	7.6	384	21	.03	50	14	12	3.0	218	20	10	.2	1.4	241	182	4
July 11-20	2,408	10	7.8	367	21	.01	50	13	10	2.6	211	18	9.8	.1	1.4	232	178	5
July 21-31	2,825	9	7.6	284	18	.02	37	9.7	7.1	2.4	153	13	6.8	.1	1.7	176	132	7
Aug. 1-10	2,589	10	7.8	329	24	.08	44	12	9.0	5.0	188	13	6.8	.1	1.0	209	159	5
Aug. 11-20	2,375	8	7.5	366	23	.06	49	12	9.5	4.5	212	13	7.0	.1	1.3	224	172	0
Aug. 21-31	2,413	8	8.2	334	23	.04	46	10	9.8	4.3	192	13	6.5	.0	1.5	209	156	0
Sept. 1-10.....	3,068	18	7.9	278	20	.05	40	8.7	8.6	3.1	153	13	6.2	.0	2.1	178	136	10
Sept. 11-20.....	2,872	10	7.7	339	15	.04	46	12	9.3	6.1	190	16	7.0	.1	1.0	210	164	8
Sept. 21-30	2,670	8	8.3	397	23	.03	50	14	10	3.8	216	16	8.0	.1	.6	236	182	5
Average	c2,790	--	--	314	18	0.07	42	11	8.1	2.4	174	16	6.4	0.1	1.6	199	150	8

c Mean daily discharge, water year October 1949 to September 1950, 2,744 second-feet.

ST. FRANCIS RIVER BASIN--Continued

ST. FRANCIS RIVER AT MARKED TREE, ARK.--Continued

Temperature (°F) of water, November 1949 to September 1950

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

MISCELLANEOUS ANALYSES OF STREAMS IN ST. FRANCIS RIVER BASIN IN ARKANSAS

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C.)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
ST. FRANCIS RIVER FLOODWAY NEAR MARKED TREE																		
Oct. 12, 1949	5,360			126							63	9.0	4.0		1.9		38	0
Feb. 7, 1950	29,800		8.0	185							93	12	3.8		1.2		83	7

WHITE RIVER BASIN

WHITE RIVER AT BEAVER, ARK.

LOCATION.--At gaging station at Missouri and North Arkansas Railway bridge, a quarter of a mile east of Beaver, Carroll County, 2¾ miles upstream from Leatherwood Creek.
DRAINAGE AREA.--1,238 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1949 to September 1950.
Water temperatures: October 1945 to September 1946, October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 137 ppm July 11-20; minimum, 41 ppm Feb. 13-15.
Hardness: Maximum, 118 ppm July 11-20; minimum, 33 ppm Feb. 13-15.
Water temperatures: Maximum, 87°F June 26; minimum, 35°F Dec. 22.
EXTREMES, 1945-46, 1949-50.--Dissolved solids: Maximum, 137 ppm July 11-20, 1950; minimum, 41 ppm Feb. 13-15, 1950.
Hardness: Maximum, 118 ppm July 11-20, 1950; minimum, 33 ppm Feb. 13-15, 1950.
Water temperatures: Maximum, 89°F Aug. 8-9, 17, 1946; minimum, freezing point Dec. 16, 18-20, 1945.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-20, 1949	444	6	8.1	201	12	0.02	34	4.2	4.4	0.6	112	6.8	4.2	0.1	2.9	126	102	10
Oct. 21-31	426	3	--	223	--	--	37	4.1	3.9	--	127	5.8	4.2	--	2.2	134	109	5
Nov. 1-10	322	4	--	202	--	--	34	3.4	4.3	--	112	7.6	4.5	--	1.5	117	99	7
Nov. 11-20	232	4	--	209	--	--	34	3.5	4.0	--	117	7.4	4.5	--	1.6	122	99	3
Nov. 21-30	183	3	--	216	--	--	35	3.3	4.6	--	123	5.8	5.0	--	1.4	127	101	0
Dec. 1-10	149	2	8.1	224	--	--	37	4.5	4.5	--	125	7.1	4.0	--	1.3	127	111	8
Dec. 11-22	356	3	8.0	210	--	--	34	3.9	4.4	--	114	7.8	4.8	--	2.2	120	101	8
Dec. 23-25	2,490	45	7.3	119	--	--	16	2.8	3.4	--	55	5.0	3.2	--	2.8	96	51	6
Dec. 26-31	2,357	28	7.7	146	--	--	20	4.6	3.5	--	74	7.2	3.5	--	2.4	102	69	6
Jan. 1-4, 1950	3,202	15	7.6	165	--	--	26	4.8	4.0	--	85	8.4	4.2	--	2.4	107	85	15
Jan. 5-7	14,000	50	7.5	98.0	--	--	16	1.6	3.2	--	45	7.0	2.8	--	3.5	56	46	10
Jan. 8-13	3,780	23	7.7	136	--	--	22	3.4	3.4	--	67	7.4	4.0	--	3.1	80	69	14
Jan. 14-20	9,819	45	7.7	107	--	--	15	2.7	3.5	--	53	5.2	3.0	--	2.6	58	49	5
Jan. 21-31	1,835	11	7.6	143	--	--	24	2.5	3.4	--	74	7.1	3.0	--	3.2	91	70	10
Feb. 1-10	2,240	20	7.3	122	--	--	16	2.3	3.9	--	59	4.3	3.2	--	2.6	81	49	1
Feb. 11-12, 16-20	3,033	21	7.8	125	--	--	19	2.9	2.6	--	62	6.5	3.0	--	3.0	83	59	8
Feb. 13-15	15,400	37	7.3	84.4	--	--	10	1.9	2.8	--	40	4.0	1.0	--	1.4	41	33	0
Feb. 21-28	1,638	10	7.7	147	--	--	22	4.2	2.9	--	75	6.6	3.5	--	2.7	92	72	11
Mar. 1-10	1,402	3	7.7	148	--	--	25	2.8	3.1	--	83	9.4	3.2	--	1.4	91	74	6
Mar. 11-14	1,618	3	8.1	174	--	--	26	3.0	6.8		98	7.0	2.5	--	1.0	98	77	0
Mar. 15-20	2,225	3	7.7	146	--	--	23	1.7	3.1	--	78	6.0	2.8	--	1.2	83	64	0
Mar. 21-31	1,697	20	7.8	133	9.0	.04	20	2.5	2.5	1.4	68	5.8	3.5	.1	.6	80	60	4

Apr. 1-3	1,088	7	7.9	158	--	--	24	3.5	3.0	--	84	7.0	1.0	--	.5	80	74	5
Apr. 4-10	5,004	17	8.1	118	--	--	20	2.0	3.1	--	62	7.6	1.8	--	.2	65	58	7
Apr. 11-20	1,289	4	7.4	147	--	--	24	3.1	2.1	--	79	6.6	2.2	--	1.6	89	73	8
Apr. 21-30	1,192	4	8.7	140	--	--	21	3.7	3.2	--	76	6.1	2.8	--	.2	80	68	5
May 1-10	5,710	15	7.5	138	--	--	21	3.6	2.5	--	72	6.6	2.5	--	2.1	97	67	8
May 11-20	19,610	16	7.8	130	--	--	22	3.7	3.8	--	71	6.7	2.8	--	2.5	98	70	12
May 21-31	1,862	6	7.5	164	--	--	27	3.7	2.1	--	89	9.7	2.0	--	2.3	113	83	10
June 1-10	1,241	12	7.7	170	--	--	28	3.3	3.4	--	94	7.4	2.0	--	2.5	106	83	6
June 11-20	939	7	7.6	170	--	--	28	3.1	2.7	--	95	7.4	2.2	--	1.0	101	83	5
June 21-30	370	5	7.9	181	9.5	0.02	31	4.8	3.9	1.0	114	5.5	2.5	0.0	2.5	118	97	4
July 1-10	370	3	8.1	211	13	.03	35	4.6	3.1	2.2	124	7.0	4.0	.1	2.0	133	106	5
July 11-20	3,892	7	8.2	222	--	--	38	5.7	3.0	--	128	14	2.5	--	5.4	137	118	13
July 21, 23-25	10,490	45	7.8	128	--	--	16	5.9	3.0	--	65	10	1.2	--	5.7	99	64	11
July 22, 26-31	2,854	10	7.9	166	--	--	26	3.9	2.4	--	91	7.9	1.5	--	4.5	111	81	6
Aug. 1-10	6,174	10	8.1	174	--	--	27	4.0	2.7	--	91	4.1	2.0	--	4.6	110	84	9
Aug. 11-20	1,519	7	8.2	175	--	--	28	3.7	2.6	--	95	4.4	2.2	--	2.8	107	85	7
Aug. 21-31	1,507	5	8.2	207	--	--	35	5.2	2.6	--	124	4.0	2.5	--	1.6	122	109	7
Sept. 1-10	1,891	7	8.5	182	--	--	30	4.5	1.9	--	104	6.1	1.8	--	1.6	108	93	8
Sept. 11-17	1,787	10	8.1	196	--	--	34	4.2	2.8	--	116	5.3	3.5	--	1.0	115	102	7
Sept. 18-20	3,017	35	7.6	123	--	--	16	4.3	3.2		67	5.0	2.5	--	1.3	83	58	3
Sept. 21-30	1,795	10	8.1	172	--	--	28	2.7	2.9	--	99	4.4	2.2	--	2.7	108	81	0
Average	2,709	--	--	162	--	--	26	3.6	3.3	--	88	6.7	2.9	--	2.2	100	79	7

WHITE RIVER BASIN--Continued

WHITE RIVER AT BEAVER, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

WHITE RIVER AT COTTER, ARK.

LOCATION.--At bridge on U. S. Highway 62 at Cotter, Baxter County, about 5 miles downstream from gaging station near Flippin.
DRAINAGE AREA.--6,067 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 185 ppm Nov. 1-10; minimum, 110 ppm Aug. 10-12.
Hardness: Maximum, 176 ppm Sept. 11-20; minimum, 82 ppm May 13-16.
Water temperatures: Maximum, 78°F July 16-17, 19; minimum, 38°F on several days in December and January.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 192 ppm Dec. 11-20, 1947; minimum, 110 ppm Aug. 10-12, 1950.
Hardness: Maximum, 176 ppm Sept. 11-20, 1950; minimum, 66 ppm Aug. 16-20, 1948.
Water temperatures: Maximum, 84°F on several days in July and August, 1949; minimum, 36°F Jan. 1, 30, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Discharge records for gaging station near Flippin, for water year October 1949 to September 1950 given in Water-Supply Paper 1177. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-10, 1949	1,502	4	--	299	--	--	35	11	2.9	--	161	8.1	4.0	--	2.8	158	133	1
Oct. 11-20	4,332	3	--	286	--	--	42	13	2.9	--	a178	9.2	4.0	--	2.8	171	158	12
Oct. 21-26, 30-31 ..	5,838	8	--	265	--	--	36	11	2.7	--	158	5.8	4.0	--	3.8	161	135	6
Oct. 27-29	4,897	36	--	202	--	--	30	6.7	2.2	--	113	8.0	3.5	--	4.5	135	102	10
Nov. 1-10	2,078	4	--	312	--	--	47	12	3.4	--	184	6.0	4.8	--	5.9	185	167	16
Nov 11-20	1,379	4	--	309	--	--	44	13	3.3	--	b187	6.1	5.2	--	4.0	179	163	0
Nov. 21-30	1,024	3	8.5	307	4.8	0.02	45	14	3.5	2.2	c188	7.6	4.5	0.0	3.6	179	170	16
Dec. 1-10	970	4	--	311	--	--	43	14	3.4	--	188	6.7	5.5	--	2.6	172	165	11
Dec. 11-20	1,134	4	--	318	--	--	44	14	3.6	--	194	6.4	5.8	--	2.7	178	167	8
Dec. 21-31	6,639	6	--	292	--	--	42	13	2.9	--	d175	7.2	5.0	--	3.3	169	158	15
Jan. 1-3, 6-7, 1950.	21,570	5	8.0	259	--	--	36	10	3.8	--	150	6.0	3.2	--	5.1	152	131	8
Jan. 4-5, 8 10	33,400	27	7.9	195	--	--	27	9.5	2.6	--	125	6.0	2.0	--	4.1	127	106	4
Jan 11-20	29,040	17	7.7	220	--	--	31	9.6	3.2	--	126	5.4	2.8	--	2.3	131	117	14
Jan 21-31	8,899	5	8.2	259	8.4	.03	37	10	2.5	.5	150	5.6	2.5	.0	4.9	146	133	10
Feb. 1-10	7,780	5	8.3	290	--	--	37	11	3.1	--	166	5.2	3.2	--	3.3	161	138	2
Feb 11-20	26,600	36	7.8	215	--	--	30	9.7	2.0	--	122	7.2	4.2	--	2.9	131	115	15
Feb 21-28	9,296	6	8.3	261	--	--	35	10	3.6	--	156	5.1	3.0	--	2.7	153	128	1
Mar 1-10	7,343	4	8.1	286	--	--	43	13	2.9	--	172	13	4.0	--	5.1	176	161	20
Mar. 11-20.....	9,509	5	8.0	295	--	--	41	15	2.8	--	177	6.7	3.5	--	4.2	179	163	19
Mar. 21-31	8,165	4	8.1	279	--	--	41	14	2.8	--	169	12	3.5	--	3.8	168	160	21
Apr. 1-10	16,110	7	7.6	242	--	--	33	10	2.3	--	145	8.6	3.5	--	3.5	143	123	5
Apr. 11-20	6,963	3	8.2	273	11	.03	38	13	2.5	1.8	166	7.6	3.5	.1	3.0	163	148	12
Apr. 21-30	4,049	4	8.2	255	--	--	33	13	1.9	--	154	9.2	4.5	--	2.0	140	136	10

a Includes equivalent of 9 parts per million of carbonate (CO_3).
b Includes equivalent of 13 parts per million of carbonate (CO_3).
c Includes equivalent of 7 parts per million of carbonate (CO_3).
d Includes equivalent of 11 parts per million of carbonate (CO_3).

WHITE RIVER BASIN--Continued

WHITE RIVER AT COTTER, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
May 1-10, 1950	13,790	4	7.8	230	--	--	32	11	2.5	--	152	7.4	2.5	--	1.7	153	125	1
May 11-12, 17-20	54,980	5	8.1	206	--	--	26	11	2.5	--	126	7.4	2.5	--	1.1	134	110	7
May 13-16	112,300	10	7.5	158	--	--	21	7.2	1.8	--	90	5.4	1.5	--	2.0	112	82	8
May 21-31	11,460	5	7.8	272	--	--	36	12	2.6	--	163	6.6	2.5	--	3.1	168	139	6
June 1-10	11,370	7	7.7	288	--	--	42	12	3.2	--	174	4.5	3.0	--	3.9	169	154	12
June 11-20	7,447	12	7.6	293	--	--	42	12	2.7	--	178	5.6	2.5	--	3.5	171	154	8
June 21-30	3,325	7	7.5	296	--	--	41	13	3.3	--	184	8.2	2.2	--	2.3	168	156	5
July 1-10	3,898	3	8.1	278	7.9	0.04	38	13	3.2	1.9	180	3.3	3.0	0.0	1.2	162	148	1
July 11-22	5,622	5	8.2	293	--	--	39	13	3.1	--	182	6.7	2.8	--	3.1	170	151	2
July 23-31	15,910	22	8.0	222	--	--	31	8.8	2.2	--	134	7.2	1.5	--	2.5	133	114	4
Aug. 1-9	9,343	7	8.2	296	--	--	42	14	2.6	--	186	3.9	2.5	--	1.4	170	162	10
Aug. 10-12	13,780	17	7.0	180	--	--	26	7.9	1.3	--	104	10	2.0	--	2.1	110	97	12
Aug. 13-20	4,701	12	8.2	250	--	--	34	11	2.5	--	148	4.2	2.8	--	2.0	142	130	9
Aug. 21-31	10,200	12	8.0	271	--	--	36	12	2.4	--	164	4.1	2.2	--	1.8	155	139	5
Sept. 1-10	10,860	7	8.2	277	--	--	42	12	2.6	--	180	4.3	2.5	--	3.8	176	154	7
Sept. 11-20	8,979	10	8.1	296	--	--	44	16	2.1	--	193	5.0	2.8	--	3.6	181	176	17
Sept. 21-30	6,242	7	8.1	280	--	--	42	14	2.5	--	179	5.1	2.2	--	3.0	166	162	16
Average	10,740	--	--	265	--	--	37	12	2.7	--	161	6.7	3.3	--	3.1	157	141	9

WHITE RIVER BASIN--Continued

WHITE RIVER AT COTTER, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

WHITE RIVER BASIN--Continued

WHITE RIVER AT NEWPORT, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 67 at Newport, Jackson County, 7¼ miles downstream from Black River.
DRAINAGE AREA.--19,812 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1950.
Water temperatures: October 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 191 ppm Nov. 21-30; minimum, 104 ppm Jan. 11-20.
Hardness: Maximum, 178 ppm Dec. 1-11; minimum, 87 ppm Jan. 11-20.
Water temperatures: Maximum, 81°F July 19-20; minimum, 39°F Jan. 7.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 194 ppm Oct. 1-10, 11-20, 1948; minimum, 98 ppm Feb. 1-3, 1949.
Hardness: Maximum, 180 ppm Oct. 11-20, 1947; minimum, 51 ppm Jan. 25-31, 1949.
Water temperatures: Maximum, 87°F Aug. 4, 9, 1947; minimum, 36°F Dec. 23, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-31, 1949.....	21,610	22	7.8	247	12	0.03	31	13	3.7	1.8	144	4.5	4.0	0.1	3.4	147	131	13
Nov. 1-10	14,770	18	8.0	293	11	.02	35	15	3.4	1.7	182	6.8	4.8	.0	3.5	171	149	0
Nov. 11-20	10,660	15	8.3	314	12	.03	37	19	3.9	1.7	203	6.1	4.2	.0	2.6	188	170	4
Nov. 21-30.....	9,013	10	8.2	321	9.6	.03	38	19	3.6	1.7	202	5.8	10	.0	2.4	191	173	7
Dec. 1-11.....	8,280	7	8.5	327	10	.00	40	19	4.1	2.3	a206	4.4	4.0	.0	2.0	188	178	9
Dec. 12-20	22,120	35	8.3	218	7.2	.17	26	11	3.0	2.9	124	5.6	3.0	.0	2.8	133	110	8
Dec. 21-31	27,590	10	8.3	230	6.8	.08	26	12	3.2	1.6	131	5.4	3.0	.1	3.1	128	114	12
Jan. 1-2, 8, 1950...	58,970	22	8.0	239	--	--	28	12	3.2	--	132	6.0	7.2	--	2.8	147	119	11
Jan. 3-7, 9-10	85,340	8	7.8	174	7.6	.16	22	8.0	2.2	1.3	92	8.4	3.0	.1	3.3	108	88	12
Jan. 11-20	120,000	5	7.4	169	6.8	.16	20	9.0	2.0	.8	92	9.6	2.5	.2	2.9	104	87	12
Jan. 21-31	76,980	8	8.2	192	5.8	.07	24	10	2.1	.5	110	4.1	2.2	.0	2.7	112	101	11
Feb. 1-10	62,020	8	8.0	211	7.4	.06	24	11	2.5	1.9	116	8.8	3.0	.0	2.9	121	105	10
Feb. 11-20	96,050	22	7.7	179	6.9	.06	22	9.5	2.2	.8	104	5.5	2.8	.1	2.3	112	94	9
Feb. 21-28	67,260	9	7.6	209	7.1	.04	24	12	1.8	.9	120	5.4	2.8	.1	1.9	120	109	11
Mar. 1-10	40,800	5	8.4	237	14	.03	27	12	2.1	1.8	138	5.4	3.4	.0	2.3	137	117	4
Mar. 11-20	35,990	2	8.2	263	9.5	.03	30	14	3.1	1.1	160	5.6	3.0	.0	3.6	149	132	1
Mar. 21-31	38,500	5	8.1	249	8.6	.02	29	12	2.3	1.4	145	5.6	3.1	.0	2.5	138	122	3
Apr. 1-10.....	48,880	7	8.4	237	12	.03	28	12	2.5	1.8	142	5.9	2.8	.0	2.1	138	119	10
Apr. 11-20	46,750	4	7.6	226	8.0	.02	28	14	1.9	1.0	138	4.0	2.2	.1	2.2	134	127	14
Apr. 21-30.....	26,500	5	7.6	291	8.8	.02	30	15	4.4	1.8	157	5.9	2.8	.0	2.2	148	137	8
May 1-10	34,490	10	8.0	248	9.3	.02	30	14	3.9	1.7	152	3.7	2.5	.0	2.4	146	132	8
May 11-20	117,500	7	7.9	193	9.0	.07	22	11	2.6	2.0	110	4.9	1.8	.0	3.1	121	100	10
May 21-31	64,300	5	7.4	234	11	.02	29	12	2.1	1.8	141	4.7	2.8	.1	3.7	137	122	6

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

June 1-10	54,870	7	7.4	219	8.5	.02	28	11	1.9	.7	136	4.4	1.8	.1	2.2	129	115	4
June 11-20	41,890	5	7.6	256	13	.03	30	14	3.0	1.3	161	5.1	2.2	.0	2.5	151	132	0
June 21-30	25,240	4	8.3	274	11	.06	32	16	2.1	1.0	176	4.4	1.8	.0	1.6	157	146	1
July 1-10	17,480	4	7.8	284	10	.06	35	16	2.8	1.9	180	4.3	3.8	.0	3.4	167	153	6
July 11-20	16,000	4	8.2	289	12	.02	36	15	2.9	1.8	181	3.5	3.8	.0	3.4	169	152	3
July 21-31	30,890	5	8.0	241	12	.04	31	11	2.3	1.9	148	3.3	2.8	.0	2.1	142	123	1
Aug. 1-10	22,180	10	7.5	252	13	.04	34	11	2.6	2.4	155	4.3	3.0	.0	2.8	149	130	3
Aug. 11-20	19,240	10	7.6	251	11	.05	34	11	2.6	2.2	155	3.6	2.5	.0	2.5	147	130	3
Aug. 21-31	22,810	8	7.9	255	12	.06	33	12	3.8	3.0	160	4.8	2.5	.0	2.2	153	132	1
Sept. 1-10	33,100	8	7.6	281	18	.03	29	11	5.1	2.6	174	3.8	3.8	.0	4.0	164	118	0
Sept. 11-20	22,680	5	8.2	308	12	.03	38	15	7.2		190	7.2	4.2	.1	3.4	183	156	1
Sept. 21-30	20,150	6	7.4	312	7.8	.03	39	16	4.4		192	7.2	4.0	.1	2.5	181	163	6
Average	39,850	--	--	249	10	0.05	30	13	3.0	1.7	150	5.4	3.3	0.0	2.7	146	128	6

WHITE RIVER BASIN--Continued

WHITE RIVER AT NEWPORT, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

WHITE RIVER AT CLARENDON, ARK.

LOCATION.--At gaging station on Cottonbelt Railroad bridge at Clarendon, Monroe County.
DRAINAGE AREA.--25,497 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 174 ppm Dec. 1-10; minimum, 38 ppm Feb. 1-9.
Hardness: Maximum, 169 ppm Dec. 1-10; minimum, 30 ppm Feb. 1-9.
Water temperatures: Maximum, 83°F June 26; minimum 43°F Jan. 5.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 198 ppm Sept. 1-10, 21-30, 1948; minimum, 38 ppm Feb. 1-9, 1950.
Hardness: Maximum, 175 ppm Oct. 11-20, 1947, Oct. 11-20, 1948; minimum 29 ppm Mar. 1-10, 1948.
Water temperatures (1948-50): Maximum, 88°F Sept. 24, 1949; minimum, 41°F Dec. 30, 1948, Jan. 30-31, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 furnished by Corps of Engineers, Memphis District.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-8, 1949	12,340	6	--	300	--	--	37	16	4.6	--	a182	4.5	6.2	--	2.8	167	158	9
Oct. 9-18	31,720	37	7.8	160	9.2	0.12	18	8.5	3.9	0.6	88	3.8	4.5	0.1	2.0	103	80	8
Oct. 19-22	35,020	33	--	180	--	--	22	9.4	3.8	--	104	3.3	3.8	--	1.9	119	94	8
Oct. 23-31	42,900	50	--	141	--	--	16	6.8	3.1	--	76	3.3	3.5	--	2.0	99	68	6
Nov. 1-8	39,880	37	--	145	--	--	17	7.0	2.8	--	81	3.0	4.5	--	1.6	98	71	5
Nov. 9-14	24,250	24	--	192	--	--	24	9.8	3.1	--	113	4.6	4.5	--	1.4	107	100	8
Nov. 15-20	16,030	17	--	236	--	--	28	13	3.9	--	141	3.8	5.2	--	1.8	139	123	8
Nov. 21-30	12,270	8	--	288	--	--	34	16	4.4	--	175	4.4	6.0	--	1.5	163	151	7
Dec. 1-10	11,060	5	8.4	311	--	--	38	18	5.1	--	b193	4.4	7.0	--	2.0	174	169	10
Dec. 11-13	15,770	45	8.3	236	--	--	29	13	4.6	--	140	4.0	11	--	1.8	146	126	11
Dec. 14-20	34,630	22	7.9	137	--	--	16	7.3	3.5	--	73	4.5	4.5	--	1.8	97	70	10
Dec. 21-31	42,650	35	7.9	124	--	--	13	6.5	3.5	--	63	5.3	5.0	--	1.8	97	59	8
Jan. 1-8, 1950	54,410	45	7.5	121	--	--	15	4.4	4.2	--	60	6.3	5.0	--	2.1	98	56	6
Jan. 9-17	118,700	50	7.6	96.5	--	--	12	4.1	2.7	--	48	5.1	2.2	--	2.0	52	47	7
Jan. 18-31	145,100	27	7.7	78.3	4.0	.50	8.3	2.8	3.8	.5	38	3.2	2.2	.0	1.0	46	32	1
Feb. 1-9	120,300	37	7.1	74.5	--	--	6.8	3.2	2.5	--	30	6.9	2.0	--	1.7	38	30	6
Feb. 10-20	115,200	30	7.4	84.8	--	--	8.5	3.8	3.1	--	40	5.8	2.2	--	2.9	46	37	4
Feb. 21-28	129,900	25	7.2	74.3	--	--	10	4.0	2.4	--	38	11	1.8	--	2.3	50	41	10
Mar. 1-10	88,070	32	7.0	86.5	--	--	10	4.2	4.0	--	48	3.0	2.5	--	1.4	49	42	3
Mar. 11-20	61,360	27	7.2	115	--	--	14	5.0	3.2	--	66	6.0	2.2	--	1.3	83	56	1
Mar. 21-31	55,510	18	7.6	142	--	--	17	6.4	3.6	--	82	6.7	3.0	--	1.4	89	69	2

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

WHITE RIVER BASIN--Continued

WHITE RIVER AT CLARENDON, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Apr. 1-10, 1950	54,650	20	7.0	143	--	--	16	6.6	4.6	--	77	4.2	3.5	--	1.2	87	67	4
Apr. 11-20	55,940	12	7.4	180	--	--	21	10	2.9	--	100	4.0	2.5	--	2.7	108	94	12
Apr. 21-30	51,770	8	7.5	191	4.4	0.02	23	11	2.6	1.1	114	4.4	2.8	0.1	.8	112	103	9
May 1-9	43,800	14	7.5	163	--	--	21	9.7	3.5	--	105	6.2	4.0	--	1.1	113	92	6
May 10-17	60,810	40	7.3	120	--	--	13	6.9	3.1	--	64	9.4	2.0	--	1.9	68	61	8
May 18-20	94,370	17	7.3	174	--	--	22	10	1.2		97	10	4.5	--	2.8	116	96	16
May 21-31	128,500	20	7.6	181	12	.04	23	7.5	2.6	1.7	101	4.5	2.5	.1	2.7	114	88	6
June 1-10	74,050	22	7.6	169	--	--	21	8.0	3.1	--	99	6.2	1.8	--	4.9	113	85	4
June 11-20	60,980	17	7.7	201	--	--	25	9.6	2.8	--	123	5.2	1.8	--	2.1	125	102	1
June 21-30	48,180	22	7.3	218	--	--	27	12	3.2	--	134	8.1	2.5	--	2.1	128	117	7
July 1-10	28,850	17	7.6	251	--	--	31	13	4.3	--	155	10	2.5	--	2.1	147	131	4
July 11-20	16,950	4	7.9	274	11	.06	34	15	3.5	2.2	171	4.1	3.5	.0	1.6	160	147	6
July 21-31	24,830	10	7.9	242	--	--	35	12	3.6	--	151	12	2.0	--	2.1	145	137	13
Aug. 1-10	32,810	12	8.2	219	--	--	29	10	3.2	--	134	4.0	3.2	--	2.1	138	113	4
Aug. 11-20	26,720	17	8.2	238	--	--	31	12	3.5	--	147	4.2	3.2	--	1.7	145	127	6
Aug. 21-26	21,820	5	7.5	235	--	--	31	11	3.2	--	143	1.6	5.5	--	2.1	142	123	5
Aug. 27-31	31,320	32	8.0	165	--	--	20	7.5	2.6	--	95	3.0	4.5	--	2.5	107	81	3
Sept. 1-10	44,720	30	8.0	178	--	--	23	7.3	3.3	--	97	3.5	2.5	--	1.1	101	87	8
Sept. 11-20	41,500	30	8.2	191	--	--	24	9.0	2.9	--	115	3.9	2.5	--	1.7	107	97	3
Sept. 21-30	33,560	25	8.1	216	--	--	29	10	3.5	--	130	3.7	3.0	--	1.6	122	113	7
Average	55,800	--	--	177	--	--	22	9.0	3.4	--	103	5.2	3.6	--	1.9	109	91	7

WHITE RIVER BASIN--Continued

WHITE RIVER AT CLARENDON, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

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WHITE RIVER BASIN--Continued

LITTLE RED RIVER NEAR HEBER SPRINGS, Ark.

LOCATION.--At gaging station at bridge on State Highway 25, 2¾ miles downstream from Peter Creek, and 3 miles northeast of town of Heber Springs, Cleburne County.
DRAINAGE AREA.--1,141 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1950.
Water temperatures: November 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 58 ppm Aug. 21-24; minimum, 29 ppm Aug. 25-31.
Hardness: Maximum, 27 ppm Apr. 5-8, July 11-20, Aug. 21-24; minimum, 14 ppm Dec. 11-20.
Water temperatures: Maximum, 86°F Aug. 1; minimum, 43°F Jan. 8, Feb. 2.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Nov. 1-10, 1949	864	9	7.3	54.7	7.8	0.11	6.1	1.4	2.6	0.8	24	3.8	2.5	0.1	1.2	39	21	1
Nov. 11-20	420	8	7.2	62.9	7.4	.13	6.3	1.6	2.5	.8	24	4.3	3.5	.1	1.2	43	22	3
Nov. 21-30	272	7	7.4	57.4	6.6	.14	6.4	1.6	2.7	.5	28	3.1	2.5	.1	1.5	42	23	0
Dec. 1-10	212	6	7.5	61.8	6.6	.12	7.1	1.4	2.8	.3	28	3.5	2.0	.1	1.3	40	23	1
Dec. 11-20	5,965	32	7.3	39.6	5.3	.03	4.0	.9	2.0	--	15	3.0	1.5	.1	2.1	36	14	1
Dec. 21-31	3,994	17	6.9	41.0	6.2	.08	4.8	1.0	1.9	.1	17	3.1	1.8	.1	1.7	35	16	2
Jan. 1-10, 1950	14,520	6	7.0	39.4	5.8	.09	4.4	1.2	2.1	.3	16	2.9	2.0	.0	.6	36	16	3
Jan. 11-20	11,820	4	6.7	35.2	4.7	.07	4.1	1.1	1.9	.4	15	3.0	2.0	.0	.6	32	15	2
Jan. 21-31	4,419	4	7.2	38.8	4.9	.12	4.4	1.1	1.8	.8	15	3.1	1.8	.1	.4	33	16	3
Feb. 1-5	11,010	18	4.2	42.4	5.8	.12	4.6	1.3	1.5	.5	12	4.2	2.8	.1	1.0	33	17	7
Feb. 6-10	3,684	8	6.9	43.7	10	.02	5.9	1.0	2.8	2.0	19	4.5	2.5	.1	1.9	40	19	3
Feb. 11-20	9,060	18	7.0	37.1	7.9	.02	4.4	.9	1.6	1.8	14	3.9	2.2	.0	2.5	34	15	3
Feb. 21-28	1,780	7	7.3	41.9	6.3	.09	5.8	1.5	1.5	.3	18	3.9	2.2	.2	1.0	33	21	6
Mar. 1-10	1,188	2	7.0	44.4	4.0	.07	5.0	.9	1.6	1.8	18	3.8	2.2	.0	.7	33	16	1
Mar. 11-20	2,962	17	7.2	43.9	6.1	.07	4.4	.9	3.8	--	18	4.3	3.0	.0	.7	33	15	0
Mar. 21-31	2,492	7	6.9	46.7	5.2	.08	5.0	1.0	1.6	1.1	18	3.7	2.0	.1	.9	34	17	2
Apr. 1-4, 9-10	1,865	7	7.5	48.1	7.4	.07	5.4	1.7	1.9	.7	19	4.1	2.0	.1	.4	37	20	5
Apr. 5-8	2,688	15	7.0	61.8	--	--	7.7	1.9	2.1	--	25	4.0	3.0	--	3.9	35	27	6
Apr. 11-20	1,099	4	7.1	50.2	5.3	.05	5.8	1.7	1.7	.3	22	4.2	2.2	.1	.4	36	21	3
Apr. 21-30	553	2	7.2	51.6	4.0	.01	5.3	1.6	1.5	.5	22	3.8	2.2	.1	.6	33	20	0
May 1-10	3,722	12	6.7	46.0	9.0	.34	6.4	.7	2.2	1.2	18	4.2	3.0	.1	3.9	41	19	4
May 11-20	7,089	16	6.7	37.5	8.6	.08	5.4	.9	2.1	1.4	16	4.1	2.2	.0	2.4	36	17	4
May 21-31	1,632	6	6.6	46.3	9.0	.07	6.2	.9	2.3	1.2	21	3.2	2.2	.0	2.6	39	19	2
June 1-20	3,577	10	6.8	47.4	5.9	.08	4.6	1.2	2.7	2.5	20	3.3	2.2	.1	.6	34	16	0
June 21-30	643	12	7.2	53.4	8.3	.09	5.3	1.9	2.6	2.5	25	4.1	2.2	.1	1.2	43	21	0

July 1-10	495	5	6.9	58.0	8.8	.03	7.3	1.5	1.5	1.4	28	2.7	2.0	.1	.8	44	24	1
July 11-20	980	12	7.2	59.7	9.7	.09	8.1	1.6	2.9	1.1	28	5.8	2.0	.1	1.0	49	27	4
July 21-31	1,739	17	7.2	56.3	8.3	.09	7.4	1.4	2.3	.9	26	3.7	2.2	.1	1.0	48	24	3
Aug. 1-10	2,195	23	7.2	56.6	11	.10	7.3	1.1	2.6	1.9	28	3.1	1.5	.0	1.0	46	23	0
Aug. 11-20	855	15	7.1	57.0	7.0	.16	8.1	1.2	2.3	.8	27	2.9	2.5	.0	.9	40	25	3
Aug. 21-24	723	17	6.8	76.8	--	--	9.3	1.0	3.4	--	39	1.0	1.5	--	1.6	58	27	0
Aug. 25-31	10,410	45	6.5	40.3	--	--	4.2	1.2	2.5	--	18	3.0	1.2	--	1.3	29	15	1
Sept. 1-10	5,019	22	7.1	50.8	8.5	.01	6.5	.7	3.0	1.7	22	3.0	3.0	.0	1.1	42	19	1
Sept. 11-20	2,145	20	7.2	52.3	9.1	.20	7.0	1.1	2.8	.8	25	3.2	2.8	.0	1.0	41	22	1
Sept. 21-30	974	12	7.4	51.3	5.3	.10	6.4	1.3	2.2	1.0	22	4.6	3.0	.0	.8	43	21	3
Average	a3,427	--	--	49.5	7.1	0.09	5.9	1.2	2.3	1.0	21	3.6	2.3	--	1.3	39	20	2

a Mean daily discharge, water year October 1949 to September 1950, 3,523 second-feet.

WHITE RIVER BASIN--Continued

LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.--Continued

Temperature (°F) of water, November 1949 to September 1950

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

MISCELLANEOUS ANALYSES OF STREAMS IN WHITE RIVER BASIN IN ARKANSAS

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
WHITE RIVER AT CALICO ROCK																		
Feb. 1, 1950	15,600		8.5	278							172	3.0	2.2		3.0		152	11
Sept. 28	8,370		7.9	278			40	13	2.3		176	4.5	2.5		1.9	161	153	9
WEST FORK WHITE RIVER AT GREENLAND																		
Mar. 13, 1950	144		7.3	80.1							33	9.0	2.8		0.6		33	6
Mar. 21	144		7.5	64.9	5.6	0.07	8.0	1.9	4.8	1.4	28	5.1	9.0	0.1	.6	56	28	5
KINGS RIVER NEAR BERRYVILLE																		
Oct. 17, 1949	100		8.5	204	8.0	0.01	42	10	2.2	1.8	176	4.3	3.0	0.1	1.7	160	146	2
Mar. 13, 1950	730		7.8	216			--	--	--		126	5.0	2.5		2.5	--	112	9
Sept. 16	2,080		7.7	215			36	6.1	2.1		135	3.6	2.5		1.0	128	115	4
BUFFALO RIVER NEAR ST. JOE																		
Oct. 18, 1949	158		8.4	281	6.3	0.03	37	3.1	1.9	1.8	122	5.3	2.0	0.1	1.4	120	105	5
Mar. 14, 1950	1,960		7.9	164			--	--	--		92	8.0	1.8		.3	--	84	9
Sept. 27	482		7.7	164			33	2.3	2.1		108	3.8	2.5		.3	102	92	3
BUFFALO RIVER NEAR RUSH																		
Oct. 18, 1949	229		7.8	215	5.9	0.02	37	3.3	2.2	1.4	126	5.0	2.5	0.1	1.4	122	106	3
Mar. 14, 1950	2,760		8.0	188			--	--	--		101	8.0	2.2		2.8	--	94	11
Sept. 29	552		7.7	188			37	2.9	2.6		125	3.7	1.5		.3	114	104	2
BLACK RIVER NEAR CORNING																		
Oct. 19, 1949	3,520		8.3	174	7.3	0.01	18	9.9	1.9	1.8	100	4.0	2.0	0.1	2.2	103	86	4
Mar. 16, 1950	3,820		7.8	151							84	3.0	1.5		1.1		73	4
BLACK RIVER AT POCAHONTAS																		
Oct. 20, 1949	9,480		8.3	171	8.7	0.02	18	10	0.9		100	3.3	2.5	0.1	2.1	103	86	4
Mar. 16, 1950	10,700		8.2	200							121	4.0	2.2		.9		106	7

WHITE RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN WHITE RIVER BASIN IN ARKANSAS--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
NORTH FORK RIVER AT NORFORK DAM NEAR NORFORK, ARK.																		
Oct. 26, 1949	1,640	0	7.6	324	6.1	0.00	33	19	1.7	1.6	181	6.3	2.0	0.0	2.4	161	160	12
Nov. 3	1,680	0	7.6	296	5.0	.01	32	19	1.3	1.2	185	3.7	1.8	.0	2.4	159	158	6
Dec. 2	1,690	5	8.4	287	6.2	.02	31	20	1.5	1.5	186	3.6	2.5	.0	2.0	164	160	7
Jan. 10, 1950	5,310	8	7.6	311	4.5	.03	32	21	1.7	2.7	194	4.3	2.8	.0	1.3	167	166	7
Feb. 1	2,640	5	8.0	297	4.9	.06	30	20	1.8	2.0	184	4.4	2.5	.1	1.9	160	157	6
Mar. 3	2,660	5	8.1	288	3.8	.05	30	20	1.5	1.7	180	4.1	2.8	.0	2.2	157	157	10
Apr. 12	4,890	3	7.4	270	4.0	.02	31	18	.8	2.2	176	4.0	2.5	.0	.4	150	151	7
May 12	4,760	3	7.2	277	5.2	.02	30	18	.7	2.6	176	3.8	.8	.0	.0	152	149	5
June 22	4,830	4	7.7	277	8.3	.02	27	16	1.1	2.4	174	5.4	1.5	.1	2.5	152	137	0
July 13	1,670	3	7.7	272	6.9	.02	27	18	.9	1.8	173	4.3	2.2	.1	2.6	150	141	0
Aug. 8	2,140	7	7.6	268	6.1	.02	31	16	1.5	3.7	174	7.1	2.8	.0	2.2	158	143	1
Sept. 11	3,740	5	7.5	265	5.0	.02	31	17	1.5	3.0	174	5.3	2.8	.0	1.6	155	147	5

MISCELLANEOUS ANALYSES OF STREAMS IN WHITE RIVER BASIN IN ARKANSAS--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
SPRING RIVER AT IMBODEN																		
Oct. 19, 1949	940		8.6	384	8.1	0.02	42	25	4.2	1.6	256	3.6	2.5	0.1	2.8	219	208	0
Mar. 15, 1950	2,370		8.5	347							a 228	3.0	2.5		1.4		194	7
ELEVEN POINT RIVER NEAR RAVENDON SPRINGS																		
Oct. 20, 1949	1,170		8.6	320	7.8	0.02	34	21	0.8		200	5.4	2.5	0.0	3.1	177	171	7
Mar. 15, 1950	1,960		8.3	307							197	2.0	2.2		2.6		170	8
STRAWBERRY RIVER NEAR EVENING SHADE																		
Oct. 3, 1949	22			399							262	3.0	5.0		2.1		129	0
Mar. 22, 1950	271		8.0	275							170	5.0	2.5		.6		142	3
STRAWBERRY RIVER NEAR POUGHKEEPSIE																		
Oct. 4, 1949	108			404							244	6.0	6.0		1.3		95	0
Mar. 23, 1950	600		8.3	308							198	4.0	2.5		.8		170	8
PINEY FORK STRAWBERRY RIVER AT EVENING SHADE																		
Oct. 4, 1949	25			267							161	2.0	5.0		2.2		73	0
Mar. 22, 1950	128		8.3	260							163	3.0	2.0		1.4		139	5
SOUTH FORK LITTLE RED RIVER NEAR CLINTON																		
Oct. 6, 1949	5,710			38.7							11	3.0	4.0		2.6		9	0
Mar. 20, 1950	905		7.8	57.8							29	3.0	2.8		.2		18	0
MIDDLE FORK LITTLE RED RIVER AT SHIRLEY																		
Oct. 6, 1949	2,940			77.5							42	8.0	3.2		2.9		27	0
Mar. 21, 1950	730		7.3	92.7							42	8.0	2.0		.5		40	6

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

ARKANSAS RIVER BASIN

ARKANSAS RIVER AT KAW CITY, OKLA.

LOCATION.--At bridge in Kaw City, Kay County, a quarter of a mile above Beaver Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,790 ppm Apr. 29-30; minimum, 193 ppm Aug. 1-4.
Hardness: Maximum, 573 ppm Jan. 21-31; minimum, 94 ppm July 26-31.
Water temperatures: Maximum, 89°F June 26; minimum, freezing point Jan. 5, 7.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 1,790 ppm Apr. 29-30, 1950; minimum, 193 ppm Aug. 1-4, 1950.
Hardness: Maximum, 573 ppm Jan. 21-31, 1950; minimum, 94 ppm July 26-31, 1950.
Water temperatures: Maximum, 90°F July 2, 1949; minimum, freezing point Jan. 29, 1949, Jan. 5, 7, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949 --		--	2,060	14	0.05	98	33	308	23	170	309	402	0.3	2.5		1,270	1.73		380	240	62
Oct. 11-15 -------		--	2,010	--	--	100	31	279		190	265	390	--	3.5		1,160	1.58		377	222	62
Oct. 16-20 -------		--	831	--	--	59	12	94		160	75	132	--	6.0		499	.68		196	66	51
Oct. 21-31 -------		--	1,560	--	--	97	25	201		201	205	285	--	3.0		980	1.33		345	180	56
Nov. 1-10 --------		--	2,080	--	--	112	37	283		194	350	370	--	2.0		1,250	1.70		432	272	59
Nov. 11-20 -------		--	2,230	--	--	124	41	310		223	394	395	--	1.5		1,380	1.88		478	295	58
Nov. 21-30 ------		--	2,320	--	--	134	41	320		254	398	405	--	6.5		1,430	1.94		503	295	58
Dec. 1-10 --------		8.1	2,350	15	.00	139	42	327	20	247	438	415	.5	7.0		1,530	2.08		520	317	57
Dec. 11-20 -------		--	2,420	--	--	139	41	320		256	356	445	--	5.0		1,430	1.94		516	306	57
Dec. 21-31 -------		--	2,390	18	.00	143	38	337	13	255	323	465	.5	12		1,480	2.01		513	304	58
Jan. 1-10, 1950---		--	2,540	--	--	154	45	334		272	332	510	--	8.0		1,520	2.07		569	346	56
Jan. 11-20 -------		7.8	2,490	14	.00	145	38	341	12	261	342	485	.5	12		1,520	2.07		518	304	58
Jan. 21-31 -------		8.1	2,570	18	.00	154	46	347	24	275	387	495	.5	12		1,620	2.20		573	348	56
Feb. 1-10 --------		--	2,510	21	.00	139	42	365	22	260	323	510	.3	12		1,560	2.12		520	306	59
Feb. 11-20 -------		8.2	2,380	20	.00	144	43	327	19	249	408	415	.3	12		1,510	2.05		536	332	56
Feb. 21-28 -------		--	2,490	--	--	148	43	354		257	426	465	--	7.5		1,570	2.14		546	336	58
Mar. 1-10 -------		7.7	2,520	16	.00	136	40	360	8.4	260	361	500	.5	6.5		1,560	2.12		504	291	60
Mar. 11-20 ------		--	2,480	--	--	129	40	356		257	297	520	--	8.8		1,480	2.01		486	276	61
Mar. 21-31-------		--	2,490	--	--	115	37	368		202	301	535	--	6.1		1,460	1.99		439	274	65

Apr. 1-10 -------	7.6	2,670	12	.00	112	39	410	14	164	335	585	.5	3.7	1,600	2.18	440	289	66
Apr. 11-20 -------	--	2,570	--	--	104	35	390		173	284	575	--	4.4	1,480	2.01	404	262	68
Apr. 21-28 -------	--	2,500	--	--	88	35	405		168	264	585	--	8.5	1,470	2.00	364	226	71
Apr. 29-30 -------	--	3,150	--	--	133	45	468		171	255	795	--	8.4	1,790	2.43	517	377	66
May 1-3----------	--	3,010	--	--	127	44	455		159	256	770	--	4.8	1,730	2.35	498	368	66
May 4-6 ---------	--	2,150	--	--	85	31	326		152	215	495	--	1.5	1,230	1.67	340	215	68
May 7-10 --------	--	1,650	--	--	66	23	256		192	146	358	--	1.4	985	1.34	259	102	68
May 11-20 -------	7.5	2,260	13	.00	98	29	326	8.8	186	222	515	.3	5.5	1,310	1.78	364	211	65
May 21-30 -------	--	2,230	--	--	93	30	340		180	207	515	--	7.5	1,280	1.74	356	208	68
May 31 ----------	--	1,080	--	--	38	13	164		155	91	198	--	5.0	618	.84	148	22	71
June 1-3, 5, 7----	--	941	--	--	41	12	137		141	70	184	--	3.2	565	.77	152	36	66
June 4 ----------	--	2,280	--	--	84	31	358		180	211	525	--	9.5	1,310	1.78	337	190	70
June 6, 8-10------	--	1,650	--	--	78	19	241		181	126	365	--	2.8	1,010	1.37	272	124	66
June 11-12, 17-20-	--	1,910	--	--	89	26	282		196	155	435	--	8.8	1,090	1.48	329	168	65
June 13-16 -------	--	1,320	--	--	68	16	187		173	105	275	--	4.2	804	1.09	236	94	63
June 21-27, 30 ---	--	2,120	--	--	90	27	324		185	178	495	--	5.8	1,210	1.65	336	184	68
June 28-29 -------	--	1,690	--	--	78	23	243		171	137	378	--	2.8	1,030	1.40	289	149	65
July 1-10 --------	--	909	--	--	49	9.3	124		115	72	182	--	3.9	518	.70	160	66	63
July 11-14--------	--	1,080	--	--	56	11	145		139	80	212	--	4.1	620	.84	184	70	63
July 18----------	--	387	--	--	49	3.5	17		95	16	54	--	3.9	242	.33	136	58	21
July 19-20 -------	--	770	--	--	52	8.8	93		140	56	136	--	3.6	472	.64	166	52	55
July 21-25 -------	--	803	--	--	54	9.1	93		141	55	141	--	3.7	472	.64	172	57	54
July 26-31 -------	--	285	--	--	29	5.3	18		99	14	26	--	2.8	201	.27	94	14	30
Aug. 1-4 --------	--	306	--	--	29	5.5	23		104	16	30	--	2.5	193	.26	95	10	35
Aug. 5-10 --------	--	507	--	--	45	8.5	47		134	48	62	--	2.8	309	.42	148	38	41
Aug. 11-20 -------	--	765	--	--	60	12	82		160	90	106	--	3.7	472	.64	199	68	47
Aug. 21-28, 31 ---	--	814	--	--	64	13	93		167	109	114	--	3.7	507	.69	213	76	49
Aug. 29-30 -------	--	1,330	--	--	96	23	161		225	208	198	--	3.6	842	1.15	334	150	51

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT KAW CITY, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Sept. 1, 5, 7-8, 1950		--	905	--	--	70	14	98		173	127	118	--	4.1		571	0.78		232	90	48
Sept. 2-4, 6, 9-10		--	1,630	--	--	112	28	200		233	221	288	--	3.7		1,050	1.43		394	204	52
Sept. 11, 14-15, 18-20		--	1,250	--	--	77	19	154		162	166	210	--	4.2		778	1.06		270	137	55
Sept. 12-13, 16-17		--	1,590	--	--	110	28	200		235	211	290	--	4.2		1,050	1.43		390	197	53
Sept. 21-22		--	1,180	--	--	72	19	130		174	151	168	--	4.6		714	.97		258	114	52
Sept. 23-30		--	1,740	--	--	110	30	221		233	271	285	--	4.0		1,040	1.41		398	207	55

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT KAW CITY, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT RALSTON, OKLA.

LOCATION.--At gaging station at bridge on State Highway 18 at Ralston, Pawnee County, 2 miles downstream from Salt Creek, and 2 miles upstream from Grayhorse Creek.
DRAINAGE AREA.--54,227 square miles.
RECORDS AVAILABLE.--Chemical analyses: January to September 1950.
Water temperatures: January to September 1950.
EXTREMES, January to September 1950.--Dissolved solids; Maximum, 1,760 ppm May 1-6; minimum, 240 ppm July 21-22.
Hardness: Maximum, 556 ppm Feb. 1-10; minimum, 106 ppm July 21-22.
Water temperatures: Maximum, 91°F June 26; minimum, freezing point Jan. 4-5, 30-31.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, January to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Jan. 1-10, 1950	2,216	7.8	2,510	12	0.00	142	37	346	24	256	328	520	0.4	1.5		1,540	2.09	9,210	506	296	58
Jan. 11-20	2,124	--	2,600	--	--	141	45	364		252	314	560	--	6.0		1,550	2.11	8,890	537	330	60
Jan. 21-31	1,907	8.0	2,690	18	.00	150	42	383	13	258	353	550	.3	2.5		1,640	2.23	8,440	546	335	60
Feb. 1-10	1,538	--	2,790	--	--	154	42	402		264	312	625	--	8.0		1,670	2.27	6,930	556	340	61
Feb. 11-20	2,193	8.2	2,560	17	.00	145	41	362	18	241	333	525	.3	7.5		1,570	2.14	9,300	530	333	59
Feb. 21-28	2,048	--	2,640	--	--	146	43	294		242	390	405	--	5.0		1,400	1.90	7,740	541	342	54
Mar. 1-10	1,882	7.9	2,720	11	.00	147	45	386		241	349	585	.5	5.5		1,650	2.24	8,380	552	354	60
Mar. 11-20	1,608	7.9	2,720	14	.00	140	39	392	10	250	328	600	.5	3.6		1,650	2.24	7,160	510	305	62
Mar. 21-21	1,631	--	2,740	--	--	117	40	424		203	288	645	--	2.2		1,620	2.20	7,130	456	290	67
Apr. 1-10	1,284	7.5	2,900	10	.00	127	40	438	12	184	324	680	.5	2.9		1,730	2.35	6,000	482	330	66
Apr. 11-20	1,169	--	2,970	--	--	126	39	456		178	278	730	--	2.3		1,720	2.34	5,430	475	329	68
Apr. 21-30	1,109	7.5	2,880	8.2	.00	112	37	449	14	177	276	705	.3	2.9		1,690	2.30	5,060	432	286	68
May 1-6	1,345	--	3,120	--	--	122	41	477		165	255	785	--	3.0		1,760	2.39	6,390	473	338	69
May 7-9	1,680	--	2,480	--	--	94	32	379		162	214	590	--	3.2		1,390	1.89	6,310	366	233	69
May 10	13,400	--	1,000	--	--	58	13	126		131	78	200	--	1.1		579	.79	20,900	198	90	58
May 11-13	8,847	--	537	--	--	36	8.3	60		114	33	87	--	3.6		317	.43	7,570	124	30	51
May 14	4,830	--	1,160	--	--	56	15	166		146	97	240	--	2.3		707	.96	9,220	201	82	64
May 15-16	2,755	--	1,880	--	--	81	23	277		160	146	432	--	7.5		1,050	1.43	7,810	296	166	67
May 17-20	1,968	--	2,380	--	--	96	29	365		189	207	550	--	6.8		1,350	1.84	7,170	358	204	69
May 21-23, 30-31	2,192	--	2,340	--	--	97	31	357		180	193	560	--	9.3		1,340	1.82	7,930	370	222	68
May 24-26, 28-29	3,296	--	1,850	--	--	80	24	270		153	149	425	--	6.3		1,030	1.40	9,170	298	172	66
May 27	4,830	--	957	--	--	44	14	112		106	55	188	--	2.3		531	.72	6,920	168	80	59
June 1-2	1,545	--	2,380	--	--	92	29	364		167	193	565	--	6.8		1,330	1.81	5,550	348	212	69
June 3, 9-10	5,713	--	1,410	--	--	68	17	195		164	102	298	--	2.2		823	1.12	12,700	240	105	64
June 4-8	13,910	--	872	--	--	52	11	107		146	56	162	--	2.0		504	.69	18,900	175	56	57
June 11, 13, 17-18	3,230	--	1,690	--	--	78	20	245		177	121	380	--	3.0		1,020	1.39	8,900	276	132	66

June 12, 14-16 ----	2,792	--	2,030	--	--	90	23	300	181	142	475	--	4.8	1,120	1.52	8,440	319	170	67
June 21-30---------	1,188	--	2,410	--	--	106	28	359	202	173	575	--	4.1	1,350	1.84	4,330	380	214	67
July 1-2, 6-9------	1,565	--	2,250	--	--	95	27	338	192	159	535	--	5.3	1,250	1.70	5,280	348	190	68
July 3-5----------	1,623	--	1,770	--	--	80	22	258	174	127	405	--	5.6	1,080	1.47	4,730	290	147	66
July 10 ----------	5,580	--	683	--	--	45	7.4	74	122	37	116	--	1.5	368	.50	5,540	143	43	53
July 11, 14-15-----	5,640	--	977	--	--	53	12	127	134	62	198	--	4.1	574	.78	8,740	182	72	60
July 12, 17 --------	14,650	--	613	--	--	44	8.0	70	130	37	105	--	2.7	362	.49	14,300	143	36	52
July 13, 16 --------	4,620	--	1,470	--	--	73	14	204	132	76	350	--	3.0	882	1.20	11,000	240	132	65
July 18-20 --------	55,200	--	400	--	--	37	6.4	31	108	18	55	--	2.3	254	.35	37,900	119	30	36
July 21-22 --------	23,350	--	388	--	--	34	5.2	33	105	21	47	--	3.7	240	.33	15,100	106	20	40
July 23-24 --------	11,750	--	594	--	--	42	7.0	68	124	36	100	--	3.2	346	.47	11,000	134	32	53
July 25-31 --------	14,110	--	976	--	--	55	9.6	126	139	49	200	--	3.2	562	.76	21,400	176	62	61
Aug. 1, 4-5, 10 ----	58,480	--	791	--	--	40	8.7	111	108	54	164	--	2.4	452	.61	71,400	136	48	64
Aug. 2-3, 6-9------	45,320	--	1,040	--	--	50	9.8	145	117	72	218	--	2.4	602	.82	73,700	166	70	66
Aug. 11-20--------	16,020	--	1,050	--	--	65	13	130	150	101	190	--	2.9	630	.86	27,300	216	92	57
Aug. 21-24, 31 ----	14,320	--	878	--	--	62	13	103	158	92	145	--	2.5	531	.72	20,500	208	78	52
Aug. 25-30 --------	9,902	--	1,190	--	--	81	17	141	190	119	210	--	3.3	725	.99	19,400	272	116	53
Sept. 1-7----------	13,390	--	916	--	--	57	13	117	146	97	160	--	3.5	551	.75	19,900	196	76	56
Sept. 8-10---------	6,667	--	1,270	--	--	81	18	159	186	148	222	--	2.7	776	1.06	14,000	276	124	56
Sept. 11-15, 18-20 -	5,634	--	1,590	--	--	90	26	214	217	197	292	--	2.5	984	1.34	15,000	332	154	58
Sept. 16-17--------	4,545	--	2,100	--	--	122	32	282	236	235	430	--	6.3	1,220	1.66	15,000	436	242	58
Sept. 21-28--------	4,784	--	1,510	--	--	86	23	205	198	170	292	--	3.7	924	1.26	11,900	309	147	59
Sept. 29-30 -------	3,600	--	2,040	--	--	115	32	276	238	254	395	--	3.6	1,190	1.62	11,600	418	224	59
Weighted average	6,819	--	1,190	--	--	66	16	160	149	106	240	--	3.1	702	0.95	12,900	230	108	60

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT RALSTON, OKLA.--Continued

Temperature (° F) of water, January to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				50	33	52	62	69	75	84	76	75
2				57	34	42	66	70	75	85	82	76
3				39	37	50	65	80	72	85	83	76
4				32	43	50	58	77	73	85	71	84
5				32	48	58	57	71	72	85	78	74
6				39	50	60	55	75	72	85	77	75
7				39	53	50	63	68	76	85	80	76
8				38	50	47	68	74	78	83	82	76
9				40	51	49	68	69	81	77	82	77
10				43	52	51	65	58	80	73	81	78
11				40	47	43	65	65	83	78	82	73
12				46	48	35	64	73	85	80	83	71
13				48	40	42	60	68	87	81	84	70
14				48	39	48	63	73	87	82	84	73
15				44	43	46	63	78	87	83	83	71
16				43	47	52	55	80	88	84	83	73
17				49	53	60	60	82	88	76	78	77
18				35	49	55	63	80	86	75	79	78
19				38	50	42	63	80	80	74	80	78
20				36	51	47	66	75	80	77	74	81
21				40	45	54	72	80	86	75	76	78
22				45	47	56	77	80	87	77	77	74
23				47	52	60	77	80	85	80	79	76
24				59	53	61	76	78	89	79	80	75
25				40	56	69	66	81	87	80	83	71
26				34	51	61	68	68	91	78	85	70
27				35	53	60	56	76	87	81	82	71
28				45	54	57	63	74	87	81	83	75
29				36	--	57	64	77	78	78	79	76
30				32	--	60	65	82	87	79	76	75
31				32	--	65	--	75	--	81	75	--
Average				41	47	53	64	75	82	80	80	75

ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.

LOCATION.--At bridge on State Highway 33 in Sand Springs, Tulsa County, 7 miles downstream from Cimarron River, and 10 miles above gaging station at Tulsa.
DRAINAGE AREA.--74,350 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1949, January to September 1950.
Water temperatures: October 1946 to September 1949, January to September 1950.
EXTREMES, January to September 1950.--Dissolved solids: Maximum, 4,070 ppm Mar. 1; minimum, 232 ppm July 18-20.
Hardness: Maximum, 776 ppm Mar. 1; minimum, 112 ppm July 18-20.
Water temperatures: Maximum, 90°F June 26; minimum, freezing point Jan. 30-31, Feb. 1.
EXTREMES, 1946-49, January to September 1950.--Dissolved solids: Maximum, 5,360 ppm Oct. 12-17, 1946; minimum, 232 ppm July 18-20, 1950.
Hardness: Maximum, 1,280 ppm Oct. 11, 1946; minimum, 106 ppm July 2, 1947.
Water temperatures: Maximum, 96°F Aug. 7, 1947; minimum, freezing point on several days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Discharge records for gaging station at Tulsa for water year October 1949 to September 1950 given in Water-Supply Paper 1177. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, January to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Jan. 1-10, 1950 ...	2,782	--	5,160	--	--	179	51	906		256	313	1,480	--	4.5		3,060	4.16	23,000	656	446	75
Jan. 11-20	2,725	8.1	4,830	16	0.00	179	52	767	23	252	300	1,310	0.1	5.5		2,780	3.78	20,500	660	454	71
Jan. 21-31	2,440	--	4,550	--	--	180	53	795		248	342	1,300	--	5.0		2,800	3.81	18,400	667	464	72
Feb. 1-10	1,955	7.9	4,800	20	.00	192	57	778	23	265	321	1,300	.3	2.0		2,820	3.84	14,900	714	496	69
Feb. 11-12, 15, 19-20	2,654	--	3,880	--	--	160	43	629		225	304	1,020	--	5.0		2,270	3.09	16,300	576	392	70
Feb. 13-14.....	2,975	--	4,960	--	--	181	46	856		208	258	1,460	--	5.0		2,910	3.96	23,400	640	470	74
Feb. 16-18.....	2,680	--	4,450	--	--	167	46	735		236	312	1,190	--	7.5		2,570	3.50	18,600	606	412	73
Feb. 21-25.....	2,584	--	3,930	--	--	162	49	647		232	393	1,000	--	2.5		2,370	3.22	16,500	606	416	70
Feb. 26-27.....	2,420	--	4,950	--	--	179	51	853		233	394	1,350	--	6.5		2,950	4.01	19,300	656	465	74
Feb. 28	3,360	--	3,300	--	--	134	41	517		188	286	830	--	7.0		1,910	2.60	17,300	503	349	69
Mar. 1.....	3,390	--	6,900	--	--	209	62	1,250		180	308	2,150	--	4.5		4,070	5.54	37,300	776	629	78
Mar. 2-10	2,423	--	3,900	--	--	152	48	660		210	380	1,020	--	6.0		2,370	3.22	15,500	576	404	71
Mar. 11-20.....	2,073	7.8	4,360	11	.00	166	48	720	16	229	319	1,200	.3	2.2		2,600	3.54	14,600	612	424	71
Mar. 21-31.....	1,963	--	4,320	--	--	150	49	720		189	295	1,190	--	1.4		2,500	3.40	13,300	576	420	73
Apr. 1-3, 5	2,360	--	4,700	--	--	159	49	783		175	281	1,320	--	2.5		2,680	3.64	17,100	598	454	74
Apr. 4, 7-8	2,573	--	3,170	--	--	135	34	480		164	190	840	--	2.8		1,760	2.39	12,200	477	342	69
Apr. 6, 9-10	2,073	--	3,690	--	--	137	42	595		188	247	988	--	4.6		2,110	2.87	11,800	514	360	72
Apr. 11-20.....	1,373	7.5	4,480	7.5	.00	165	49	747	22	190	284	1,250	.3	1.8		2,620	3.56	9,710	613	458	72
Apr. 21-30	1,360	7.8	4,840	9.6	.00	167	51	809	27	181	280	1,390	.5	4.0		2,830	3.85	10,400	626	478	73

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.--Continued

Chemical analyses, in parts per million, January to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
May 1-10, 1950	2,081	--	4,730	--	--	159	51	799		176	265	1,360	--	6.1		2,730	3.71	15,300	606	462	74
May 11, 17-19	9,888	--	2,220	--	--	96	22	334		146	164	540	--	6.6		1,230	1.67	32,800	330	210	69
May 12-16	12,200	--	1,370	--	--	68	13	192		131	109	295	--	3.9		806	1.10	26,500	223	116	65
May 20	3,230	--	3,070	--	--	123	31	482		157	176	825	--	7.8		1,720	2.34	15,000	434	306	71
May 21-23, 27, 30	5,566	--	2,790	--	--	103	26	448		153	157	740	--	6.0		1,560	2.12	23,400	364	238	73
May 24-26, 31	5,428	--	3,550	--	--	117	30	602		158	199	980	--	7.1		2,010	2.73	29,500	416	286	76
May 28-29	8,100	--	1,610	--	--	62	18	242		128	93	390	--	2.4		968	1.32	21,200	228	124	70
June 1-2	3,635	--	5,640	--	--	169	41	997		157	326	1,620	--	5.8		3,240	4.41	31,800	590	462	79
June 3-4	5,215	--	3,730	--	--	122	32	617		146	178	1,040	--	5.5		2,070	2.82	29,100	436	316	75
June 5, 10	10,430	--	2,050	--	--	77	19	318		140	112	515	--	4.5		1,110	1.51	31,300	270	155	72
June 6-9	15,490	--	1,210	--	--	52	15	175		149	68	268	--	2.4		711	.97	29,700	192	70	67
June 11-20	4,838	7.4	2,580	14	0.00	99	22	400	7.2	165	154	670	0.1	3.2		1,450	1.97	18,900	338	202	72
June 21-23, 25-28	2,054	--	3,110	--	--	118	31	507		184	164	850	--	5.1		1,770	2.41	9,820	422	271	72
June 24, 29-30	2,007	--	4,400	--	--	140	39	762		183	226	1,260	--	4.2		2,520	3.43	13,700	510	360	76
July 1-2, 4, 7-9	1,945	--	3,520	--	--	138	36	577		175	182	1,000	--	4.4		2,020	2.75	10,600	492	349	72
July 3	2,670	--	5,330	--	--	184	50	897		166	181	1,620	--	6.1		3,020	4.11	21,800	664	528	75
July 5-6	2,180	--	3,000	--	--	113	30	477		160	160	810	--	2.2		1,670	2.27	9,830	406	274	72
July 10	9,590	--	1,460	--	--	70	13	197		112	49	362	--	4.0		857	1.17	22,200	228	136	65
July 11-14	10,840	--	818	--	--	47	9.0	103		125	39	165	--	1.7		453	.62	13,300	154	52	59
July 15-17	5,133	--	1,860	--	--	79	16	282		131	87	478	--	4.0		1,010	1.37	14,000	263	156	70
July 18-20	49,430	--	391	--	--	36	5.4	36		112	18	55	--	1.8		232	.32	31,000	112	20	41
July 21, 23-26	29,360	--	1,200	--	--	50	9.6	182		128	46	288	--	2.5		669	.91	53,000	164	60	71
July 22, 28-30	31,080	--	2,150	--	--	90	17	332		142	171	510	--	4.6		1,190	1.62	99,900	294	178	71
July 27, 31	40,550	--	3,430	--	--	96	20	607		145	158	960	--	5.8		1,920	2.61	210,000	322	202	80
Aug. 1-2, 7-10	53,820	--	1,750	--	--	64	13	283		133	91	440	--	5.0		1,010	1.37	147,000	213	104	74
Aug. 3-6	86,500	--	1,330	--	--	52	10	205		123	68	315	--	1.9		762	1.04	178,000	171	70	72
Aug. 11-12, 18-19	24,820	--	1,450	--	--	70	15	209		155	105	320	--	2.2		842	1.15	56,400	236	109	66
Aug. 13-17, 20	17,900	--	1,800	--	--	80	19	263		165	127	410	--	4.8		1,060	1.44	51,200	278	142	67
Aug. 21-26	14,950	--	1,560	--	--	80	17	220		172	115	345	--	1.8		920	1.25	37,100	270	128	64
Aug. 27-29	9,473	--	2,180	--	--	96	22	336		191	153	525	--	4.1		1,230	1.67	31,500	330	174	69
Aug. 30-31	12,750	--	3,070	--	--	117	30	497		205	195	795	--	6.1		1,740	2.37	59,900	416	248	72

Sept. 1, 4	18,000	--	2,280	--	--	86	20	368	172	156	560	--	5.2		1,280	1.74	62,200	296	156	73
Sept. 2-3, 5-10 ...	15,570	--	1,750	--	--	74	19	260	157	134	395	--	3.0		991	1.35	41,700	262	134	68
Sept. 11-13	7,853	--	1,900	--	--	95	22	289	192	167	440	--	5.6		1,110	1.51	23,500	328	170	66
Sept. 14-18.....	7,212	--	2,430	--	--	110	27	374	222	187	580	--	3.7		1,390	1.89	27,100	386	204	68
Sept. 19-20.....	8,685	--	2,780	--	--	128	32	423	235	222	670	--	4.0		1,600	2.18	37,500	451	258	67
Sept. 21, 25-30 ...	6,441	--	2,690	--	--	124	31	402	203	208	655	--	5.3		1,530	2.08	26,600	437	270	67
Sept. 22-24	8,613	--	2,330	--	--	123	27	332	176	266	505	--	7.5		1,350	1.84	31,400	418	274	63
Weighted average.	9,315	--	2,080	--	--	84	20	329	154	132	523	--	3.7		1,200	1.63	30,200	292	166	71

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ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT SAND SPRINGS BRIDGE NEAR TULSA, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER AT VAN BUREN, ARK.

LOCATION.--At gaging station at Van Buren, Crawford County, 1½ miles downstream from Lee Creek, and 8½ miles downstream from Poteau River.
DRAINAGE AREA.--150,218 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1950.
Water temperatures: October 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,500 ppm Dec. 21-24; minimum, 264 ppm May 11-20.
Hardness: Maximum, 418 ppm Dec. 21-24; minimum, 87 ppm Jan. 16-19.
Water temperatures: Maximum, 87°F July 27; minimum, 40°F Dec. 16, Jan. 4, 7.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 1,610 ppm Oct. 21-24, 1946; minimum, 217 ppm May 21, 24-26, 28-30, 1946.
Hardness: Maximum, 418 ppm Dec. 21-24, 1949; minimum, 70 ppm Jan. 29-31, 1949.
Water temperatures: Maximum, 87°F Aug. 1, 1946, July 27, 1950; minimum, freezing point Jan. 30, 1947.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949	11,920	6	7.6	1,270	9.8	0.03	75	19	173	5.2	143	93	290	0.1	4.3		768	1.04	24,700	265	148	58
Oct. 11-14, 17-20	9,988	5	--	1,400	--	--	74	16	190	--	131	86	348	--	2.3		838	1.14	22,600	250	143	62
Oct. 15-16	11,300	6	--	2,420	--	--	104	24	365	--	128	82	682	--	2.1		1,320	1.80	40,300	358	253	69
Oct. 21, 25-27, 29-31	20,200	6	--	1,500	--	--	76	18	210	--	121	65	380	--	3.5		860	1.17	46,900	264	164	63
Oct. 22-24, 28	17,900	6	--	2,120	--	--	92	20	330	--	137	113	560	--	3.8		1,190	1.62	57,500	312	200	70
Nov. 1-10	10,300	5	--	1,350	--	--	76	15	173	--	141	79	310	--	3.1		778	1.06	21,600	251	136	60
Nov. 11-20	7,488	5	--	1,870	--	--	90	22	270	--	154	112	468	--	2.4		1,040	1.41	21,000	315	189	65
Nov. 21-30	6,602	4	8.1	2,000	7.3	.03	99	26	292	5.8	166	120	508	.1	3.4		1,140	1.55	20,300	354	218	64
Dec. 1-10	6,552	4	8.0	2,100	7.0	.03	100	24	311	9.2	160	129	538	.2	4.2		1,200	1.63	21,200	348	217	65
Dec. 11-15	6,944	5	--	1,970	--	--	96	22	283	--	159	118	495	--	2.4		1,100	1.50	20,600	330	200	65
Dec. 16-20	6,628	5	--	2,420	--	--	112	27	362	--	171	130	630	--	3.2		1,350	1.84	24,200	390	250	67
Dec. 21-24	7,630	5	--	2,670	--	--	120	29	400	--	171	121	738	--	3.8		1,500	2.04	30,900	418	278	68
Dec. 25-26	11,640	7	--	1,960	--	--	90	22	279	--	134	109	505	--	4.8		1,080	1.47	33,900	315	205	66
Dec. 27-31	14,420	32	--	1,340	--	--	62	15	182	--	103	69	330	--	3.0		781	1.06	30,400	216	132	65
Jan. 1-3, 1950	15,830	14	8.0	1,300	--	--	66	17	192	--	115	77	332	--	3.3		771	1.05	33,000	234	140	64
Jan. 4-7	27,620	40	7.7	703	--	--	40	10	96	--	72	42	170	--	3.0		413	.56	30,800	141	82	60
Jan. 8-10	26,070	50	7.7	496	--	--	26	6.7	60		50	25	109	--	3.1		294	.40	20,700	92	52	59
Jan. 11, 14-15, 20	52,450	43	7.7	592	--	--	28	7.1	89	--	65	29	139	--	2.8		361	.49	51,100	99	46	66
Jan. 12-13	47,850	32	7.7	1,120	--	--	54	14	161		77	38	310	--	3.3		652	.89	84,200	192	130	64
Jan. 16-19	52,120	32	7.4	455	--	--	25	6.0	62	--	62	28	94	--	3.8		286	.39	40,200	87	36	61
Jan. 21-26	28,170	40	7.5	607	--	--	36	7.9	82	--	71	40	142	--	2.6		374	.51	28,400	122	64	59
Jan. 27-31	19,140	18	7.8	1,010	8.3	.00	51	16	142	6.2	98	61	245	.1	4.6		607	.83	31,400	193	112	61
Feb. 1-5	22,640	21	7.7	853	--	--	28	6.6	116	--	80	52	195	--	1.4		500	.68	30,600	97	32	72
Feb. 6-10	22,660	39	7.5	645	--	--	27	9.4	82	--	66	35	145	--	1.0		360	.49	22,000	106	52	63
Feb. 11-12	23,650	17	7.7	1,110	--	--	56	15	165	--	102	59	272	--	1.0		652	.89	41,600	201	118	64

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT VAN BUREN, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Feb. 13-20, 1950	57,360	13	7.6	614	6.9	0.19	36	8.2	64	3.2	76	34	133	0.1	2.5		354	0.48	54,800	124	61	59
Feb. 21-23, 26-27 ...	24,920	36	7.6	708	--	--	39	9.6	93	--	76	44	152	--	1.2		403	.55	27,100	137	74	60
Feb. 24-25, 28	22,830	41	7.7	854	--	--	42	11	119	--	86	53	192	--	1.2		503	.68	31,000	150	80	63
Mar. 1-10	18,240	5	7.8	1,310	7.9	.01	66	15	177	10	114	80	302	.1	7.6		765	1.04	37,700	226	132	62
Mar. 11-14, 18	18,440	9	7.8	1,130	--	--	64	17	167	--	114	80	290	--	2.1		732	1.00	36,400	230	136	61
Mar. 15-17, 19-20 ...	19,560	22	7.8	1,020	--	--	56	16	137	--	100	64	248	--	2.8		625	.85	33,000	206	124	59
Mar. 21-25.....	15,240	11	7.7	1,150	--	--	64	17	165	--	113	65	290	--	2.0		718	.98	29,500	230	137	61
Mar. 26-31.....	10,070	7	7.9	1,330	--	--	75	20	197	--	131	78	350	--	1.0		856	1.16	23,300	269	162	61
Apr. 1-5	13,830	5	7.7	1,990	--	--	88	21	281	--	134	91	505	--	2.5		1,050	1.43	39,200	306	196	67
Apr. 6-10	25,300	8	7.8	1,010	--	--	54	11	132	--	101	56	230	--	2.8		582	.79	39,800	180	97	61
Apr. 11-22	10,860	6	7.8	1,100	9.8	.05	61	18	139	2.0	121	61	245	.0	5.3		656	.89	19,200	226	127	57
Apr. 23-30	8,090	6	7.8	1,870	--	--	79	22	265	--	118	75	488	--	2.5		990	1.35	21,600	288	191	67
May 1-3, 6	19,580	11	7.9	1,240	--	--	60	15	169	--	93	51	298	--	2.9		726	.99	38,400	211	135	64
May 4-5, 10	27,400	22	7.6	692	--	--	40	8.5	84	--	71	39	150	--	2.7		434	.59	32,100	135	77	57
May 7-9.....	46,270	10	7.8	447	--	--	32	5.7	50	--	66	28	90	--	2.7		289	.39	36,100	104	50	51
May 11-20.....	191,700	27	7.6	443	10	.06	33	5.7	46	2.0	89	19	77	.1	2.5		264	.36	137,000	106	33	48
May 21-24.....	51,880	31	8.0	474	--	--	36	6.3	51	--	86	32	88	--	2.3		300	.41	42,000	116	46	49
May 25-31.....	50,430	21	7.8	732	--	--	46	8.6	88	--	102	43	152	--	2.5		406	.55	55,300	150	67	56
June 1-9	52,510	7	7.8	828	11	.02	48	11	99	5.8	113	42	175	.1	3.7		479	.65	68,000	165	72	55
June 10-13	53,500	9	7.7	611	--	--	41	10	64	--	124	39	102	--	2.7		388	.53	56,000	144	42	49
June 14-16, 20.....	37,250	3	7.8	859	--	--	52	12	100	--	118	48	165	--	3.0		533	.72	53,600	180	83	55
June 17-19	26,670	10	7.9	1,060	--	--	61	15	132	--	120	56	235	--	3.8		664	.90	47,800	214	115	57
June 21-26	20,920	9	8.1	717	--	--	52	12	76	--	127	48	128	--	2.7		459	.62	25,900	180	76	48
June 27-30	17,000	6	7.7	1,090	--	--	68	14	139	--	130	54	242	--	3.3		715	.97	32,800	227	120	57

ARKANSAS RIVER AT VAN BUREN, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
July 1-3, 10, 1950	12,550	7	7.8	1,070	--	--	63	15	144	--	132	63	245	--	2.9		628	0.85	21,300	218	110	59
July 4-9	12,550	5	7.8	1,490	--	--	71	19	208	--	135	62	372	--	1.9		881	1.20	29,900	255	144	64
July 11-14	45,100	10	7.5	1,230	--	--	66	16	160	--	138	59	278	--	3.1		711	.97	86,600	230	118	60
July 15-16, 20	61,600	25	8.0	811	--	--	53	12	94	--	134	37	160	--	4.5		482	.66	80,200	182	72	53
July 17-19	46,230	10	7.7	585	--	--	47	9.3	58	--	124	42	98	--	4.0		358	.49	44,700	155	54	45
July 21, 30-31	146,700	20	7.5	639	--	--	47	9.4	78	--	118	38	125	--	3.6		396	.54	157,000	156	59	52
July 22-29	173,400	--	7.8	539	11	0.04	43	7.9	58	3.0	118	29	90	0.3	2.9		314	.43	147,000	140	44	47
Aug. 1-7	175,000	20	8.0	824	15	.10	50	7.1	107	9.3	125	45	168	.1	3.8		469	.64	222,000	154	52	58
Aug. 8-10	125,700	25	8.0	620	--	--	41	7.8	67	--	115	23	111	--	3.2		347	.47	118,000	134	40	52
Aug. 11-18	86,250	22	7.8	601	--	--	44	8.0	66	--	114	44	102	--	2.1		343	.47	79,900	143	50	50
Aug. 19-25	64,030	20	8.0	792	--	--	46	9.4	83	--	113	44	140	--	3.1		428	.58	74,000	154	61	54
Aug. 26-31	46,350	--	7.6	957	12	.03	60	13	120	6.9	143	55	196	.3	2.4		572	.78	71,600	203	86	55
Sept. 1, 4, 10	64,830	25	7.1	906	--	--	56	11	109		133	48	185	--	3.3		552	.75	96,600	184	76	56
Sept. 2-5, 5-9	71,310	17	8.1	674	--	--	50	11	71	--	125	56	119	--	2.8		414	.56	79,700	170	68	48
Sept. 11-15	41,700	10	8.2	885	--	--	57	13	99	--	140	69	170	--	3.7		512	.70	57,600	196	81	52
Sept. 16-22	114,300	30	7.9	478	--	--	39	8.7	44	--	101	33	78	--	2.3		295	.40	91,000	134	50	42
Sept. 23, 26-27	48,330	20	8.1	674	--	--	48	11	66		115	36	124	--	2.4		403	.55	52,600	165	71	47
Sept. 24-25, 28-30	40,540	15	8.2	852	--	--	60	13	90	--	136	68	160	--	2.8		510	.69	55,800	203	92	49
Weighted average	41,620	--	--	770	--	--	48	10	95	--	110	44	160	--	3.0		452	0.62	50,800	160	70	54

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT VAN BUREN, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER AT DARDANELLE, ARK.

LOCATION.--At gaging station at bridge on State Highway 7 at Dardanelle, Yell County, 5 miles downstream from Illinois Bayou.
DRAINAGE AREA.--153,442 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,180 ppm Oct. 17-19; minimum, 160 ppm Feb. 12-13.
Hardness: Maximum, 336 ppm Oct. 17-19, Nov. 21-30, Dec. 1-10; minimum, 54 ppm Feb. 12-13.
Water temperatures: Maximum, 87°F June 26-27; minimum, 41°F Dec. 17.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 1,320 ppm Dec. 11-13, 1948; minimum, 160 ppm Feb. 12-13, 1950.
Hardness: Maximum, 350 ppm Sept. 1-3, 1949; minimum, 54 ppm Feb. 12-13, 1950.
Water temperatures: Maximum, 89°F Aug. 17, 1949; minimum, freezing point Jan. 30, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-16, 20, 1949	12,650	5	7.8	1,310	8.3	0.02	68	16	176	6.2	131	78	298	0.0	1.6		735	1.00	25,100	236	128	61
Oct. 17-19	11,200	5	7.9	2,180	6.6	.03	95	24	318	10	116	78	590	.0	1.2		1,180	1.60	35,700	336	240	66
Oct. 21, 24, 26-28	22,500	9	8.0	1,240	10	.03	58	16	170	5.6	108	64	285	.1	2.4		678	.92	41,200	210	122	63
Oct. 22-23	17,000	22	--	749	--	--	41	9.6	98	--	70	38	175	--	1.5		428	.58	19,600	142	84	60
Oct. 25, 29-31	24,180	8	7.7	1,660	10	.02	69	18	247	8.5	93	58	440	.2	2.8		935	1.27	61,000	246	170	68
Nov. 1-10	13,000	7	7.8	1,230	10	.04	58	17	165	5.3	133	67	282	.2	2.7		701	.95	24,600	214	106	62
Nov. 11-20	8,408	6	7.8	1,520	9.4	.04	78	21	210	5.0	157	95	350	.2	2.2		870	1.18	19,800	281	152	61
Nov. 21-30	7,409	5	7.8	1,900	7.9	.03	92	26	274	4.4	164	110	472	.0	3.9		1,070	1.46	21,400	336	202	64
Dec. 1-10	6,875	3	7.8	1,970	8.0	.03	92	26	290	8.2	165	121	500	.2	3.0		1,130	1.54	21,000	336	202	65
Dec. 11, 13-17, 19-20	9,810	3	7.8	1,400	8.0	.02	68	16	195	7.0	121	86	340	.1	3.4		788	1.07	20,900	236	136	63
Dec. 12, 18	12,100	7	--	907	--	--	52	10	129	--	93	57	210	--	1.7		508	.69	16,600	171	95	62
Dec. 21-28, 31	12,870	4	7.8	1,520	8.7	.02	68	17	219	8.4	113	79	388	.1	3.3		881	1.20	30,600	240	147	66
Dec. 29-30	19,000	12	8.0	968	9.4	.00	50	14	130	8.5	88	54	228	.0	2.7		560	.76	28,700	182	110	59
Jan. 1-2, 1950	18,200	18	7.8	997	9.5	.02	46	13	138	4.8	86	58	241	.2	1.9		564	.77	27,700	168	98	63
Jan. 3, 8-10	40,150	20	7.9	546	7.3	.22	26	7.4	68	3.7	56	36	114	.1	1.8		306	.42	33,200	96	50	60
Jan. 4-7	67,050	70	7.4	339	--	--	20	5.4	38	--	45	20	67	--	2.2		214	.29	38,700	72	35	53
Jan. 11-15	78,260	10	7.7	598	9.0	.15	30	8.6	79	3.0	60	26	140	.0	3.8		355	.48	75,000	110	62	60
Jan. 16-20	77,000	15	7.7	425	8.8	.44	26	6.4	54	2.8	60	20	86	.0	4.9		259	.35	53,800	92	42	55
Jan. 21-31	35,180	7	7.5	579	6.1	.16	32	6.6	73	2.9	67	33	123	.0	1.7		333	.45	31,600	107	52	59
Feb. 1-6	43,380	32	7.6	513	9.6	.10	26	7.0	64	7.1	56	31	108	.1	1.3		297	.40	34,800	94	48	57
Feb. 7-11	29,660	14	7.8	638	9.3	.05	30	10	79	8.0	66	36	138	.1	1.2		373	.51	29,900	116	62	58
Feb. 12-13	96,000	7	7.4	245	--	--	15	4.0	29	--	40	18	46	--	1.2		160	.22	41,500	54	21	54
Feb. 14, 17-20	74,000	18	7.7	486	8.0	.36	28	6.4	58	4.2	70	27	98	.0	2.6		292	.40	58,300	96	39	55
Feb. 15-16	108,500	21	7.5	691	--	--	44	6.6	90	--	75	26	170	--	1.6		404	.55	118,000	137	76	59
Feb. 21-28	32,010	20	7.5	641	6.5	.08	34	7.9	80	2.5	74	42	135	.0	2.7		363	.49	31,400	118	57	59

ARKANSAS RIVER AT DARDANELLE, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Mar. 1-2, 1950	26,650	31	7.6	624	--	--	34	8.7	82	--	72	43	135	--	0.7		354	0.48	25,500	121	62	60
Mar. 3-11	22,360	4	7.8	1,030	10	0.04	51	11	133	13	98	61	229	0.1	5.2		606	.82	36,600	172	92	61
Mar. 12-20	26,310	7	7.9	782	9.6	.08	42	6.6	97	2.6	77	50	168	.1	1.4		452	.61	32,100	132	69	61
Mar. 21-25	21,280	7	7.5	765	9.2	.08	42	8.3	96	3.2	79	47	168	.1	1.9		434	.59	24,900	139	74	59
Mar. 26-31	14,520	5	7.5	1,000	7.6	.09	52	11	129	3.6	101	72	228	.1	2.0		563	.77	22,100	175	92	61
Apr. 1-7	20,230	6	7.7	1,040	7.1	.11	55	9.2	140	5.2	97	53	240	.1	1.5		598	.81	32,700	175	96	63
Apr. 8-10	30,670	11	7.7	750	5.2	.12	43	6.4	93	7.4	80	48	160	.1	1.8		437	.59	36,200	134	68	58
Apr. 11-20	15,350	5	7.7	800	8.8	.02	46	12	99	2.6	101	42	172	.0	1.9		466	.63	19,300	164	82	56
Apr. 21-24	9,925	6	7.3	1,010	8.3	.03	56	13	127	3.5	121	51	221	.0	1.9		565	.77	15,100	193	94	58
Apr. 25-30	10,020	5	7.3	1,510	8.7	.07	70	15	211	3.0	113	61	378	.1	1.7		895	1.22	24,200	236	144	65
May 1-5	22,460	6	7.2	947	7.9	.03	43	12	132	1.4	112	35	228	.1	3.5		544	.74	33,000	157	65	64
May 6, 10	46,950	16	7.9	520	--	--	33	7.4	54	--	68	25	113	.1	1.8		326	.44	41,300	113	58	51
May 7-9	63,570	37	7.6	355	7.5	.10	22	3.8	39	1.3	54	13	68	.1	1.7		185	.25	31,800	70	26	54
May 11-20	207,400	23	7.5	402	12	.06	34	4.9	38	2.3	93	16	67	.1	2.3		246	.33	138,000	105	29	43
May 21-26	55,170	22	7.6	462	12	.04	33	6.2	49	1.5	86	23	83	.1	2.4		282	.38	42,000	108	37	49
May 27-31	53,800	15	7.6	656	22	.03	41	8.3	74	1.6	98	34	132	.0	2.4		388	.53	56,400	136	56	54
June 1, 4-7	55,000	10	7.3	640	9.9	.04	39	8.5	81	5.4	96	34	136	.1	2.7		390	.53	57,900	132	54	56
June 2-3, 8-10	64,200	9	7.8	781	8.3	.04	48	10	102	4.6	114	39	175	.2	3.8		489	.67	84,800	161	68	57
June 11-18	52,420	5	7.6	660	10	.02	46	9.6	71	4.5	113	39	121	.2	2.8		383	.52	54,200	154	62	49
June 19-21	28,570	5	7.3	1,120	8.9	.02	60	14	146	5.4	123	57	254	.1	3.6		652	.89	50,300	207	106	60
June 22-30	21,570	5	7.5	746	7.9	.02	47	11	81	4.8	130	48	134	.1	1.9		428	.58	24,900	162	56	51
July 1-8	11,990	--	8.1	1,020	9.7	.07	62	14	130	6.8	135	51	220	.1	1.0		596	.81	19,300	312	102	56
July 9-10	17,700	5	7.2	1,500	9.4	.05	74	20	205	16	134	62	368	.1	2.8		886	1.20	42,300	266	156	61
July 11-16	38,970	--	7.9	1,220	12	.12	69	17	162	6.0	133	58	280	.3	3.0		722	.98	76,000	242	133	59
July 17-20	56,900	17	7.9	459	--	--	40	8.3	40	--	109	32	68	--	2.8		277	.38	42,600	134	44	39
July 21-31	172,100	--	8.1	489	12	.03	39	7.4	52	3.1	107	26	80	.2	1.9		284	.39	132,000	128	40	46
Aug. 1, 8-10	150,800	17	7.7	586	--	--	32	9.1	67	--	110	39	104	--	1.6		332	.45	135,000	118	28	55
Aug. 2-7	192,200	15	7.7	741	--	--	40	8.7	92	--	108	48	148	--	1.6		431	.59	224,000	136	48	60
Aug. 11-18	94,500	--	8.1	623	14	.04	46	8.7	70	3.4	117	42	106	.2	2.5		360	.49	91,900	151	55	49
Aug. 19-20	66,800	20	8.1	749	--	--	51	11	88	--	121	50	139	--	2.9		443	.60	79,900	172	73	53
Aug. 21-23, 26-30	58,120	18	8.0	820	16	.05	53	9.4	103	12	122	49	165	.1	3.4		473	.64	74,200	170	70	55
Aug. 24-25, 31	59,730	13	7.4	624	12	.03	41	9.1	72	9.0	110	46	115	.3	1.6		361	.49	58,200	140	50	51

Sept. 1-3, 5	75,000	15	7.3	866	15	.05	58	9.2	106	7.9	137	50	175	.1	3.3	494	.67	100,000	182	70	54
Sept. 4, 6-10	73,980	12	7.3	649	11	.02	44	9.4	76	11	122	54	114	.3	2.1	382	.52	76,300	148	48	50
Sept. 11, 15-17	78,900	20	7.4	693	--	--	47	11	73	--	116	52	125	--	3.1	405	.55	86,300	162	67	49
Sept. 12-14	40,030	12	8.2	959	--	--	59	13	112	--	142	67	187	--	4.2	550	.75	59,400	200	84	55
Sept. 18-23	112,000	21	7.9	442	10	.05	34	6.1	47	6.2	96	30	74	.3	2.0	258	.35	78,000	110	32	46
Sept. 24-30	49,330	14	7.6	741	14	.04	42	11	91	5.1	114	56	141	.3	1.6	430	.58	57,300	150	56	56
Weighted average	48,460	--	--	665	--	--	41	8.7	80	--	99	38	134	--	2.3	388	0.53	50,800	139	57	53

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT DARDANELLE, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER AT LITTLE ROCK, ARK.

LOCATION.--At gaging station at Missouri Pacific Railway bridge at Little Rock, Pulaski County.
DRAINAGE AREA.--157,933 square miles.
RECORDS AVAILABLE.--Chemical analyses: October to September 1950.
Water temperatures: October 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,110 ppm Dec. 3-4, 7-11; minimum, 217 ppm May 9-10.
Hardness: Maximum, 342 ppm Dec. 3-4, 7-11; minimum, 70 ppm Feb. 1-10.
Water temperatures: Maximum, 87°F June 26; minimum, 42°F Feb. 3.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 1,730 ppm Oct. 24-29, 1946; minimum, 187 ppm Dec. 11-20, 1946.
Hardness: Maximum, 406 ppm Aug. 3-5, 7, 1947; minimum, 48 ppm Jan. 11-14, 1948.
Water temperatures: Maximum, 91°F Aug. 6, 9, 1947; minimum, freezing point Jan. 28, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-7, 1949.....	18,290	6	--	870	--	--	58	10	107	--	126	64	179	--	3.1		517	0.70	25,500	186	82	56
Oct. 8-11.....	23,400	10	--	821	--	--	45	8.1	80	--	101	49	134	--	3.1		392	.53	24,800	146	62	54
Oct. 12-19.....	19,060	8	8.0	869	12	0.04	51	12	114	4.5	107	54	194	0.3	2.3		519	.71	26,700	176	89	58
Oct. 20-22	14,230	7	--	1,660	--	--	75	20	241	--	116	62	445	--	3.6		977	1.33	37,500	269	174	66
Oct. 23, 27-31	34,020	12	--	1,160	--	--	54	12	164	--	103	54	280	--	4.6		690	.94	63,400	184	100	66
Oct. 24-26.....	28,600	17	--	712	--	--	38	9.2	92	--	87	44	152	--	2.2		424	.58	32,700	133	62	60
Nov. 1-5	21,820	7	--	1,260	--	--	62	14	177	--	104	52	328	--	4.6		764	1.04	45,000	212	127	64
Nov. 6-10	14,720	8	--	1,030	--	--	60	13	131	--	129	70	228	--	3.3		615	.84	24,400	203	98	58
Nov. 11-16	10,850	6	7.8	1,130	10	.03	70	17	145	3.2	151	68	248	.1	2.8		670	.91	19,600	244	120	56
Nov. 17-20	9,928	6	--	1,430	--	--	76	17	198	--	156	93	338	--	4.9		864	1.18	23,200	260	132	62
Nov. 21-24	9,380	5	--	1,440	--	--	72	18	201	--	155	103	345	--	3.8		884	1.20	22,400	254	126	63
Nov. 25-30	8,825	4	--	1,740	--	--	84	22	250	--	160	108	438	--	4.2		985	1.34	23,500	300	169	64
Dec. 1-2, 5-6.....	7,795	4	--	1,710	--	--	91	22	244	--	169	107	425	--	2.6		975	1.33	20,500	318	179	63
Dec. 3-4, 7-11.....	8,219	10	7.9	1,780	9.4	.00	94	26	285	13	170	114	485	.1	3.8		1,110	1.51	24,600	342	202	63
Dec. 12-13	21,150	18	--	974	--	--	53	12	137	--	94	74	230	--	2.7		585	.80	33,400	182	104	62
Dec. 14-22.....	23,410	27	--	696	--	--	34	8.2	92	--	70	45	157	--	2.4		393	.53	24,800	118	61	63
Dec. 23-25, 31	23,420	14	--	882	--	--	44	12	134	--	77	49	218	--	2.8		498	.68	31,500	160	96	65
Dec. 26-30	23,380	9	---	1,100	--	--	48	14	160	--	88	52	282	--	2.8		620	.84	39,100	178	106	66

ARKANSAS RIVER AT LITTLE ROCK, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Jan. 1-3, 1950	29,200	21	7.8	811	--	--	42	11	117	--	71	42	200	--	3.6		508	0.69	40,100	150	92	63
Jan. 4-5, 9-10	80,750	16	7.7	443	--	--	25	6.8	54	--	68	26	88	--	3.0		286	.39	62,400	90	35	57
Jan. 6-8	94,530	23	7.6	307	--	--	22	4.9	34	--	55	22	56	--	1.4		224	.30	57,200	75	30	50
Jan. 11-13, 18-20	89,070	18	7.2	302	--	--	22	5.1	39	--	54	20	66	--	1.8		224	.30	53,900	576	32	53
Jan. 14-17	144,000	28	7.4	489	--	--	33	7.5	63	--	71	23	108	--	2.4		333	.45	129,000	114	56	55
Jan. 21-31	61,080	15	7.5	416	7.8	0.20	22	5.1	51	2.2	52	23	84	0.0	3.5		241	.33	39,700	76	34	58
Feb. 1-10	66,220	23	7.4	412	6.8	.24	20	4.9	44	1.8	44	25	80	.0	5.2		237	.32	42,400	70	34	57
Feb. 11-15, 19-20	101,500	36	7.1	405	--	--	29	6.2	50	--	60	22	85	--	3.1		256	.35	70,200	98	49	53
Feb. 16-18	127,300	26	7.2	552	--	--	38	8.1	67	--	71	24	122	--	4.9		365	.50	125,000	128	70	53
Feb. 21-24	61,180	38	7.4	392	--	--	28	6.3	44	--	56	24	75	--	3.7		252	.34	41,600	96	50	50
Feb. 25-28	47,980	32	7.5	485	--	--	34	8.1	61	--	65	29	108	--	2.1		312	.42	40,400	118	66	53
Mar. 1-4	44,150	37	7.0	468	--	--	29	8.5	56	--	60	39	100	--	2.0		300	.41	35,800	108	58	53
Mar. 5-10	37,320	20	7.2	762	--	--	44	11	99	--	75	52	170	--	2.7		462	.63	46,600	155	94	58
Mar. 11-20	38,110	21	7.5	667	--	--	38	10	85	--	74	46	145	--	1.8		406	.55	41,800	136	76	58
Mar. 21-31	28,640	15	7.3	715	6.5	.06	36	9.6	90	3.8	80	36	160	.0	2.5		404	.55	31,200	130	64	59
Apr. 1-10	27,910	6	7.4	856	10	.03	40	10	108	6.2	96	38	189	.1	4.0		504	.69	38,000	141	62	61
Apr. 11-20	21,460	5	7.7	916	--	--	53	14	108	--	120	51	185	--	4.1		564	.77	32,700	190	91	55
Apr. 21-27	13,440	8	7.4	784	--	--	40	12	94	--	98	42	162	--	4.5		465	.63	16,900	150	69	58
Apr. 28-30	13,170	5	7.6	1,340	--	--	66	17	181	--	119	57	318	--	3.2		825	1.12	29,300	234	137	63
May 1-2,	17,700	8	7.5	1,190	--	--	58	15	157	--	95	54	285	--	6.1		745	1.01	35,600	206	128	62
May 3-6	39,080	10	7.7	816	--	--	33	11	107	--	66	35	188	--	4.1		496	.67	52,300	128	74	64
May 7-8	48,900	18	7.3	529	--	--	29	7.0	64	--	60	23	112	--	2.5		363	.49	47,900	102	52	58
May 9-10	101,900	38	7.5	317	--	--	23	7.0	34	--	58	22	59	--	3.0		217	.30	59,700	86	39	46
May 11-20	216,200	8	8.0	417	12	.03	34	5.8	36	3.7	94	17	63	.2	4.1		232	.32	135,000	109	32	41
May 21-27	74,870	12	7.6	402	--	--	31	5.5	39	--	90	20	66	--	3.1		233	.32	47,100	100	26	46
May 28-31	60,450	10	7.6	625	--	--	36	8.4	59	--	96	24	110	--	2.4		327	.44	53,400	124	46	51
June 1-10	64,380	7	7.4	668	9.2	.02	40	8.8	78	3.8	99	34	138	.1	2.6		397	.54	69,000	136	55	55
June 11, 18-20	49,350	17	7.4	752	--	--	47	10	90	--	117	39	148	--	4.0		452	.61	60,200	158	62	55
June 12-17	62,050	12	7.5	607	--	--	45	9.7	59	--	118	37	105	--	3.8		374	.51	62,700	152	56	46
June 21-23	30,530	10	7.8	1,050	--	--	62	13	136	--	126	69	230	--	3.4		651	.89	53,700	208	105	59
June 24-30	24,400	7	7.3	720	--	--	50	9.8	78	--	128	50	130	--	4.4		429	.58	28,300	166	60	51

July 1, 7-9	14,250	10	8.0	796	--	---	55	13	83	--	134	48	160	--	2.5		461	.63	17,700	190	80	49
July 2-6, 10	15,650	7	8.0	997	--	--	60	14	115	--	133	48	212	--	2.2		542	.74	22,900	207	98	55
July 11, 14, 16-20..	48,940	7	8.0	1,180	--	--	68	18	138	--	146	61	260	--	3.8		663	.90	87,600	244	124	55
July 12-13, 15	34,430	5	7.8	1,480	--	--	75	20	188	--	142	69	352	--	3.8		822	1.12	76,400	269	152	60
July 21, 24-25, 27-31	174,000	15	7.8	471	14	0.07	38	7.3	45	6.2	112	32	71	0.3	2.9		272	.37	128,000	125	33	42
July 22-23, 26	172,700	10	7.3	614	--	--	46	8.4	67	--	120	30	115	--	3.7		352	.48	164,000	150	51	49
Aug. 1-3, 8-10.....	182,700	7	8.0	618	--	--	45	9.1	67	--	119	36	108	--	3.2		349	.47	172,000	150	52	49
Aug. 4-7	209,800	7	7.9	859	--	--	55	9.8	94	--	143	44	165	--	4.1		474	.64	269,000	178	60	54
Aug. 11-20	103,800	15	8.0	580	--	--	44	7.6	65	--	112	38	98	--	3.3		332	.45	93,000	141	49	50
Aug. 21, 25-28, 31..	61,720	10	8.1	680	--	--	48	9.3	66	--	122	41	120	--	2.5		387	.53	64,500	158	58	48
Aug. 22-24, 29-30 .	66,200	12	8.0	819	--	--	57	12	96	--	126	46	170	--	2.9		470	.64	84,000	192	88	52
Sept. 1-2, 5, 8-10 ..	70,120	10	8.0	655	--	--	51	10	66	--	124	47	104	--	4.9		378	.51	71,600	168	66	46
Sept. 3-4, 6-7	81,580	10	7.7	801	--	--	48	13	88	--	132	47	148	--	2.3		450	.61	99,100	174	66	52
Sept. 11-13, 16-19..	90,900	8	7.9	673	--	--	51	11	66	--	130	53	109	--	2.8		388	.53	95,200	172	66	45
Sept. 14-15	41,400	20	7.6	959	--	--	63	13	112		152	66	178	--	11		544	.74	60,800	210	86	54
Sept. 20-25	99,520	12	8.1	424	--	--	36	8.7	38	--	101	26	64	--	2.2		238	.32	64,000	126	43	40
Sept. 26-30	53,680	7	8.2	690	--	--	50	9.8	72	--	125	48	125	--	2.5		398	.54	57,700	166	63	49
Weighted average..	58,740	--	--	619	--	--	41	8.7	70	--	98	35	121	--	3.3		363	0.49	57,600	137	56	51

ARKANSAS RIVER BASIN--Continued

ARKANSAS RIVER AT LITTLE ROCK, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

CIMARRON RIVER AT MANNFORD, OKLA.

LOCATION.--At gaging station at county highway bridge, half a mile north of Mannford, Creek County, 1½ miles downstream from House Creek, and 18 miles upstream from mouth.
DRAINAGE AREA.--18,822 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 10,500 ppm May 2-8; minimum, 739 ppm July 12, 19.
Hardness: Maximum, 1,710 ppm May 2-8; minimum, 160 ppm July 12, 19.
Water temperatures: Maximum, 82°F June 16, Aug. 14-15; minimum, freezing point on several days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949 ...	307	--	11,100	36	0.00	310	80	2,170	115	183	317	3,780	0.2	4.0		6,900	9.38	5,720	1,100	952	79
Oct. 11-17.....	626	--	11,000	--	--	304	82	2,140		198	331	3,720	--	6.0		6,680	9.08	11,300	1,100	934	81
Oct. 18-20.....	1,937	--	5,540	--	--	118	30	1,080		177	210	1,700	--	8.0		3,230	4.39	16,900	418	273	85
Oct. 21-24	1,632	--	4,350	--	--	111	27	797		179	130	1,300	--	8.0		2,460	3.35	10,800	388	242	82
Oct. 25-28.....	1,368	--	3,230	--	--	101	27	512		157	70	900	--	5.5		1,690	2.30	6,240	363	234	75
Oct. 29-31.....	693	--	5,350	--	--	152	39	926		154	186	1,580	--	5.0		2,960	4.03	5,540	540	414	79
Nov. 1-10	461	--	8,390	--	--	230	59	1,640		194	266	2,800	--	5.5		5,100	6.94	6,350	816	658	81
Nov. 11-20	318	--	11,800	--	--	318	89	2,370		206	363	4,080	--	4.5		7,450	10.13	6,400	1,160	990	82
Nov. 21-30	264	--	12,400	--	--	348	96	2,490		232	370	4,320	--	4.0		7,740	10.53	5,520	1,260	1,070	81
Dec. 1-10	256	7.9	12,600	14	.00	341	98	2,520	50	226	389	4,320	.1	3.5		7,850	10.68	5,430	1,250	1,070	81
Dec. 11-20	277	--	13,000	--	--	363	101	2,620		269	393	4,520	--	3.0		8,130	11.06	6,080	1,320	1,100	81
Dec. 21-31	343	--	11,800	--	--	213	89	2,490		264	367	4,050	--	2.0		7,340	9.98	6,800	898	681	86
Jan. 1-4, 1950	373	--	11,700	--	--	305	91	2,250		241	375	3,850	--	2.0		6,990	9.51	7,040	1,140	938	81
Jan. 5-10.....	310	--	16,300	--	--	342	104	3,300		250	465	5,500	--	1.0		9,840	13.38	8,240	1,280	1,080	85
Jan. 11-13, 17-20.	434	--	11,700	--	--	291	87	2,260		257	372	3,820	--	7.0		6,960	9.47	8,160	1,080	874	82
Jan. 14-16.....	596	--	8,700	--	--	229	68	1,670		207	267	2,850	--	5.5		5,190	7.06	8,350	851	682	81
Jan. 21-31.....	283	7.7	12,700	26	.00	322	92	2,620	29	245	403	4,380	.0	4.5		8,000	10.88	6,110	1,180	981	82
Feb. 1-10	250	--	13,500	--	--	353	101	2,810		216	407	4,820	--	7.5		8,600	11.70	5,800	1,300	1,120	83
Feb. 11-13, 15-20.	427	8.1	11,400	18	.00	283	85	2,300	34	214	378	3,880	.1	4.0		7,090	9.64	8,170	1,060	880	82
Feb. 14, 28.....	761	--	7,340	--	--	168	52	1,410		158	235	2,350	--	8.0		4,300	5.85	8,840	633	504	83
Feb. 21-24.....	374	--	12,600	--	--	283	90	2,630		206	431	4,380	--	1.5		7,920	10.77	8,000	1,080	907	84
Feb. 25-27.....	338	--	16,300	--	--	325	100	3,450		211	479	5,700	--	2.0		10,200	13.87	9,310	1,220	1,050	86

ARKANSAS RIVER BASIN--Continued

CIMARRON RIVER AT MANNFORD, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Mar. 1, 1950	1,000	--	3,840	--	--	109	35	647		143	121	1,120	--	1.0		2,100	2.86	5,670	416	299	77
Mar. 2-3	579	--	7,220	--	--	173	56	1,360		164	219	2,300	--	7.5		4,200	5.71	6,570	662	527	82
Mar. 4-5	375	--	9,450	--	--	243	74	1,830		198	276	3,150	--	5.0		5,680	7.72	5,750	911	749	81
Mar. 6-10	275	--	12,200	--	--	296	94	2,480		207	388	4,220	--	2.5		7,580	10.31	5,630	1,120	956	83
Mar. 11-20	266	7.8	12,600	9.2	0.00	334	98	2,560	23	217	378	4,500	0.3	3.8		8,010	10.89	5,750	1,240	1,060	81
Mar. 21-31	185	--	14,900	--	--	380	110	2,980		198	435	5,150	--	9.8		9,160	12.46	4,580	1,400	1,240	82
Apr. 1-2	166	--	15,000	--	--	379	118	3,070		156	411	5,350	--	5.1		9,400	12.78	4,210	1,430	1,300	82
Apr. 3-6	1,438	--	3,020	--	--	93	27	498		151	81	860	--	6.6		1,640	2.23	6,370	343	219	76
Apr. 7-8	302	--	5,770	--	--	185	54	985		175	130	1,800	--	9.0		3,250	4.42	2,650	684	540	76
Apr. 9-10	185	--	8,740	--	--	271	68	1,630		182	186	2,950	--	8.9		5,200	7.07	2,600	956	806	79
Apr. 11-20	140	7.9	14,300	7.1	.10	406	116	2,840	32	183	343	5,080	.1	.7		8,920	12.13	3,370	1,490	1,340	80
Apr. 21-30	155	--	15,500	--	--	431	125	3,080		163	372	5,500	--	1.3		9,590	13.04	4,010	1,590	1,460	81
May 1	167	--	10,600	--	--	303	92	2,000		180	251	3,600	--	5.1		6,340	8.62	2,860	1,130	986	79
May 2-8	137	--	16,800	--	--	460	136	3,390		160	392	6,050	--	3.5		10,500	14.28	3,880	1,710	1,580	81
May 9-10	4,575	--	4,330	--	--	154	36	751		173	341	1,180	--	4.2		2,550	3.47	31,500	532	390	75
May 11, 16	6,525	--	2,110	--	--	96	19	321		126	177	515	--	3.2		1,190	1.62	21,000	318	214	69
May 12-15	3,710	--	1,620	--	--	84	15	236		155	148	355	--	2.7		968	1.32	9,700	271	144	65
May 17-18	1,135	--	2,720	--	--	112	23	427		104	184	725	--	5.0		1,530	2.08	4,690	374	289	71
May 19-20	1,110	--	4,110	--	--	153	34	685		132	186	1,210	--	3.9		2,340	3.18	7,010	522	414	74
May 21-25	1,270	--	5,280	--	--	162	40	1,020		188	267	1,660	--	4.2		3,250	4.42	11,100	568	414	80
May 26, 29-30	2,513	--	3,730	--	--	122	26	646		144	206	1,050	--	4.6		2,130	2.90	14,500	412	294	77
May 27-28	2,960	--	1,820	--	--	70	16	287		128	104	460	--	4.5		1,000	1.36	7,990	240	136	72
May 31	1,390	--	8,440	--	--	235	49	1,670		141	491	2,680	--	9.0		5,200	7.07	19,500	788	672	82
June 1-2	974	--	9,290	--	--	264	52	1,890		137	532	3,050	--	7.1		5,860	7.97	15,400	872	760	82
June 3-4, 7	2,390	--	4,270	--	--	136	30	754		137	229	1,240	--	3.2		2,460	3.35	15,900	463	351	78
June 5-6	2,305	--	2,900	--	--	101	21	480		129	152	790	--	4.1		1,610	2.19	10,000	338	232	75
June 8-10	1,531	--	6,570	--	--	152	36	1,050		126	273	1,720	--	5.5		3,300	4.49	13,600	527	424	81
June 11, 19-20	541	--	6,630	--	--	215	46	1,230		141	317	2,090	--	8.2		3,980	5.41	5,810	726	610	79
June 12-13, 17-18	1,250	--	4,660	--	--	153	34	832		137	230	1,400	--	7.1		2,720	3.70	9,180	522	410	78
June 14-16	2,023	--	3,120	--	--	98	21	519		139	147	840	--	9.0		1,700	2.31	9,290	331	217	77
June 21-23, 25-27	446	--	7,380	--	--	249	59	1,360		170	286	2,400	--	5.1		4,440	6.04	5,350	864	724	77
June 24	518	--	3,740	--	--	112	30	605		140	114	1,050	--	5.0		1,980	2.69	2,770	403	288	77
June 28-30	186	--	10,600	--	--	309	86	2,080		144	322	3,680	--	3.5		6,550	8.91	3,290	1,120	1,010	80

July 1-2, 5-6	355	--	8,820	--	--	292	72	1,640	139	209	3,020	--	8.0		5,310	7.22	5,090	1,020	910	78
July 3-4, 7-9	511	--	5,900	--	--	193	47	1,050	153	262	1,810	--	5.3		3,440	4.68	4,750	674	549	77
July 10	7,870	--	1,890	--	--	82	16	261	112	71	472	--	6.8		1,070	1.46	22,700	270	178	68
July 11, 13	2,970	--	1,880	--	--	64	15	247	103	41	445	--	3.7		964	1.31	7,730	221	136	71
July 12, 19	1,790	--	1,160	--	--	46	11	196	92	36	335	--	1.9		739	1.01	3,570	160	84	73
July 14, 16, 20 ...	1,858	--	4,450	--	--	132	32	788	111	115	1,390	--	2.9		2,510	3.41	12,600	461	370	79
July 15, 17-18	1,875	--	6,080	--	--	170	40	1,180	140	212	1,990	--	5.5		3,670	4.99	18,600	588	474	81
July 21	17,800	--	1,470	--	--	52	11	228	124	50	365	--	3.6		812	1.10	39,000	175	73	74
July 22, 26, 28-31.	17,800	--	3,040	--	--	112	19	502	139	229	775	--	4.4		1,710	2.33	82,200	358	244	75
July 23-25, 27.....	7,842	--	2,390	--	--	66	14	414	131	103	640	--	7.7		1,310	1.78	27,700	222	114	80
Aug. 1-2, 5.....	22,970	--	2,540	--	--	75	15	442	144	103	695	--	4.4		1,410	1.92	87,400	248	130	79
Aug. 3-4.....	25,200	--	1,960	--	--	68	13	313	143	108	475	--	5.0		1,050	1.43	71,400	223	106	75
Aug. 6-10.....	5,016	--	3,420	--	--	86	21	596	154	150	930	--	5.1		1,860	2.53	25,200	301	175	81
Aug. 11-13	2,897	--	3,970	--	--	124	34	694	229	218	1,090	--	6.1		2,280	3.10	17,800	450	261	77
Aug. 14-20	1,927	--	5,150	--	--	155	43	926	214	259	1,510	--	5.1		3,000	4.08	15,600	564	388	78
Aug. 21-25.....	1,171	--	5,470	--	--	174	49	975	221	289	1,610	--	4.1		3,210	4.37	10,100	636	454	77
Aug. 26-31.....	1,493	--	7,720	--	--	199	60	1,470	230	347	2,400	--	3.2		4,590	6.24	18,500	743	554	81
Sept. 1-7	3,496	--	3,910	--	--	114	34	686	186	224	1,080	--	8.1		2,240	3.05	21,100	424	272	78
Sept. 8-10	2,823	--	3,020	--	--	93	29	497	155	151	805	--	14		1,660	2.26	12,700	351	224	75
Sept. 11-13	1,317	--	3,850	--	--	136	38	636	191	212	1,060	--	7.3		2,180	2.96	7,750	496	339	74
Sept. 14, 18-20 ...	1,840	--	5,290	--	--	165	47	926	217	240	1,550	--	4.0		3,040	4.13	15,100	604	426	77
Sept. 15-17	2,083	--	2,800	--	--	90	26	447	151	112	750	--	5.7		1,500	2.04	8,440	332	208	75
Sept. 21-23	2,730	--	3,890	--	--	181	38	616	144	432	975	--	5.0		2,320	3.16	17,100	608	490	69
Sept. 24-30	1,190	--	5,980	--	--	205	45	1,070	178	348	1,780	--	4.1		3,540	4.81	11,400	696	550	77
Weighted average	1,707	--	4,160	--	--	126	30	750	157	196	1,230	--	5.1		2,420	3.29	11,200	438	310	79

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ARKANSAS RIVER BASIN--Continued

CIMARRON RIVER AT MANNFORD, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

VERDIGRIS RIVER NEAR CLAREMORE, OKLA.

LOCATION.--At gaging station at bridge on State Highway 20, 2½ miles downstream from Caney River, 4½ miles west of Claremore, Rogers County, and 12 miles upstream from Bird Creek.
DRAINAGE AREA.--6,534 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 662 ppm May 3-5; minimum, 173 ppm July 18-20.
Hardness: Maximum, 319 ppm Jan. 21-31; minimum, 91 ppm May 11-13, July 18-20.
Water temperatures: Maximum, 86°F June 18; minimum, 35°F Jan. 26.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 662 ppm May 3-5, 1950; minimum, 126 ppm June 22-30, 1948.
Hardness: Maximum, 319 ppm Jan. 21-31, 1950; minimum, 50 ppm June 22-30, 1948.
Water temperatures: Maximum, 93°F July 22, 1949; minimum, freezing point on several days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949 ----	665	--	574	25	0.02	58	8.7	48	6.6	170	19	85	0.1	3.0		342	0.47	614	180	41	36
Oct. 11-12, 18-20 --	265	--	581	--	--	55	8.3	50		147	26	93	--	1.5		346	.47	248	171	51	39
Oct. 13-17 ---------	334	--	405	--	--	39	6.5	32		114	15	59	--	2.0		247	.34	223	124	31	36
Oct. 21-31 ---------	3,214	--	501	--	--	46	4.4	50		141	19	74	--	2.5		266	.36	2,310	133	17	45
Nov. 1-10----------	405	--	614	--	--	64	11	50		203	23	86	--	1.5		365	.50	399	205	39	34
Nov. 11-20 --------	265	8.1	671	7.8	.15	72	14	53	5.4	215	26	92	.1	.5		399	.54	285	237	61	32
Nov. 21-30 --------	201	--	726	--	--	73	14	62		229	29	110	--	1.0		423	.58	230	240	52	36
Dec. 1-10 ---------	176	8.0	787	4.4	.12	81	15	61	6.9	242	32	115	.0	.5		466	.63	221	264	65	33
Dec. 11-20---------	189	--	861	--	--	81	14	80		260	33	131	--	1.5		496	.67	253	260	47	40
Dec. 21-31 --------	456	8.0	927	4.4	.00	92	15	79	9.3	249	40	150	.3	1.5		532	.72	655	291	87	36
Jan. 1-10, 1950 ----	821	--	972	--	--	95	17	82		259	43	162	--	1.0		572	.78	1,270	307	95	37
Jan. 11-20---------	1,261	--	924	8.4	.00	86	17	79	6.6	228	46	151	.1	1.0		546	.74	1,860	284	98	37
Jan. 21-31 ---------	530	--	995	--	--	95	20	78		234	47	175	--	1.0		591	.80	846	319	128	35
Feb. 1-10----------	365	8.0	1,070	3.2	.00	92	19	97		229	46	200	.3	1.5		614	.84	605	308	120	41
Feb. 11, 17-20-----	713	--	880	--	--	80	17	74		191	46	160	--	1.5		549	.75	1,060	270	113	38
Feb. 12-16---------	2,486	--	644	--	--	60	14	49		147	41	105	--	2.5		406	.55	2,730	207	87	34
Feb. 21-28---------	486	8.0	948	6.8	.00	84	16	95		208	66	170	.3	1.5		558	.76	732	275	105	43
Mar. 1-10 ---------	489	8.0	937	4.1	.00	87	16	86	4.5	226	52	160	.3	1.3		573	.78	757	283	98	39
Mar. 11-20 --------	707	--	955	--	--	90	15	87		224	55	165	--	1.0		556	.76	1,060	286	103	40
Mar. 21-31 --------	658	7.6	999	4.3	.00	90	17	93	4.0	222	56	178	.3	1.7		605	.82	1,070	294	113	40

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR CLAREMORE, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Apr. 1-10, 1950	948	--	949	--	--	85	16	85		208	50	170	--	1.0		574	0.78	1,470	278	107	40
Apr. 11-13	317	--	879	--	--	72	13	89		178	45	164	--	2.4		512	.70	438	233	87	45
Apr. 14-20	259	--	705	--	--	61	10	67		160	40	116	--	3.5		413	.56	289	293	62	43
Apr. 21-28	210	--	752	--	--	69	13	65		177	49	119	--	2.9		450	.61	255	226	81	38
Apr. 29-30, May 1-2	3,232	--	486	--	--	37	8.2	46		83	35	83	--	4.5		300	.41	2,620	126	58	44
May 3-5	1,663	--	1,050	--	--	86	20	99		216	52	198	--	2.9		662	.90	2,970	297	120	42
May 6-9	1,870	--	763	--	--	46	13	91		151	45	136	--	4.0		480	.65	2,420	168	44	54
May 10	13,400	--	280	--	--	26	7.0	17		68	21	36	--	3.0		204	.28	7,380	94	38	28
May 11-13	17,400	--	293	--	--	25	7.0	21		73	20	38	--	3.5		202	.27	9,490	91	31	33
May 14-20	3,559	--	500	--	--	49	8.4	41		132	35	70	--	2.5		309	.42	2,970	157	49	36
May 21-25, 30	1,799	--	588	--	--	57	9.9	45		162	35	78	--	1.9		365	.50	1,770	183	50	35
May 26-29	11,860	--	303	--	--	32	5.8	18		95	18	32	--	2.7		201	.27	6,440	104	26	28
June 1, 3-8	17,500	--	337	--	--	39	5.4	18		110	18	34	--	2.9		224	.30	10,600	120	29	25
June 2, 9-10	9,583	--	521	--	--	54	11	33		157	29	62	--	7.5		329	.45	8,510	180	51	29
June 11-15	8,980	--	348	--	--	36	6.4	20		112	19	33	--	1.9		222	.30	5,380	116	24	27
June 16-20	872	--	485	--	--	54	8.0	33		156	24	60	--	2.4		305	.41	718	168	40	30
June 21-26, 28-30	629	--	621	--	--	68	14	35		193	34	77	--	1.3		395	.54	671	227	68	25
June 27	392	--	1,000	--	--	70	13	45		211	33	83	--	.9		413	.56	437	228	55	30
July 1-10	615	--	652	--	--	62	12	56		176	32	104	--	1.8		403	.55	669	204	60	37
July 11-13	4,260	--	625	--	--	61	10	53		172	30	96	--	2.5		385	.52	4,430	193	52	38
July 14-17	8,952	--	383	--	--	40	5.8	27		117	15	48	--	4.1		198	.27	4,790	124	28	32
July 18-20	26,870	--	233	--	--	27	5.7	13		83	15	23	--	2.7		173	.24	12,600	91	23	23
July 21-27, 31	25,240	--	255	--	--	29	5.7	14		97	13	23	--	1.8		185	.25	12,600	96	16	25
July 28-30	12,840	--	477	--	--	55	9.1	29		175	22	50	--	2.3		294	.40	10,200	175	31	27
Aug. 1-10	20,040	--	315	--	--	37	6.4	18		125	14	28	--	1.4		200	.27	10,800	119	16	25
Aug. 11-18	3,719	--	524	--	--	64	11	30		207	24	52	--	1.9		327	.44	3,280	205	35	24
Aug. 19-20	11,350	--	313	--	--	32	6.6	19		108	13	32	--	1.4		205	.28	6,280	107	18	28
Aug. 21-24	5,940	--	385	--	--	43	7.3	25		140	16	41	--	2.0		238	.32	3,820	137	23	28
Aug. 25-31	3,319	--	508	--	--	51	9.5	39		177	23	57	--	2.0		309	.42	2,770	166	21	34
Sept. 1, 7-10, 1950	2,769	--	531	--	--	63	11	32		207	23	55	--	1.9		320	.44	2,390	202	33	26
Sept. 2-6	4,588	--	380	--	--	44	7.9	23		146	16	38	--	2.3		232	.32	2,870	142	23	26
Sept. 11-20	2,398	--	522	9.7	0.00	57	11	35	3.9	184	23	61	0.1	1.8		313	.43	2,030	187	36	28
Sept. 21, 23, 26-30	1,881	--	486	--	--	50	9.8	34		148	21	67	--	2.2		299	.41	1,520	165	44	31
Sept. 22, 24-25	6,287	--	259	--	--	28	7.0	12		89	11	28	--	2.3		183	.25	3,110	99	26	22
Weighted average	3,580	--	401	--	--	42	7.7	28		128	20	48	--	2.3		255	0.35	2,460	136	32	31

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR CLAREMORE, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

VERDIGRIS RIVER NEAR INOLA, OKLA.

LOCATION.--At gaging station at bridge on State Highway 33, 6 miles downstream from Dog Creek, and 6 miles west of Inola, Rogers County.
DRAINAGE AREA.--7,911 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 726 ppm Feb. 1-11; minimum, 181 ppm July 21-27, 30-31.
Hardness: Maximum, 322 ppm Jan. 1-10; minimum, 82 ppm July 11-12, 18-20.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 1,630 ppm Feb. 20-22, 1948; minimum, 91 ppm June 22-30, July 1-2, 1948.
Hardness: Maximum, 500 ppm Feb. 20-22, 1948; minimum, 60 ppm June 22-30, July 1-2, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-5, 1949	330	--	854	--	--	61	11	93		161	19	174	--	2.5		491	0.67	437	198	66	51
Oct. 6-10	1,266	--	667	--	--	61	11	60		183	23	108	--	2.0		388	.53	1,330	198	48	40
Oct. 11-20	448	8.2	709	12	0.02	54	9.4	78	14	152	19	135	0.3	2.0		422	.57	510	174	49	47
Oct. 21, 26-27, 30-31	1,748	--	702	--	--	54	11	72		164	22	126	--	3.0		409	.56	1,930	180	46	47
Oct. 22-25, 28-29	4,423	--	519	--	--	31	9.0	59		102	17	99	--	3.5		313	.43	3,740	114	31	53
Nov. 1-10	522	7.5	811	2.4	.00	68	13	80	14	198	23	145	.1	2.0		461	.63	650	223	61	42
Nov. 11-20	295	--	907	--	--	73	14	94		213	24	172	--	2.0		536	.73	427	240	65	46
Nov. 21-30	235	7.8	989	7.5	.15	80	17	103	13	222	26	192	.0	1.0		578	.79	367	270	88	44
Dec. 1-10	203	--	1,070	--	--	86	16	112		237	31	210	--	2.0		608	.83	333	280	86	46
Dec. 11-20	240	7.8	1,220	5.5	.25	92	19	131	11	246	31	270	.0	4.0		714	.97	463	308	106	47
Dec. 21-31	487	--	1,200	--	--	96	19	118		244	38	235	--	2.5		676	.92	889	318	118	45
Jan. 1-10, 1950	893	7.8	1,220	4.5	.00	96	20	127	12	249	41	235	.3	2.5		700	.95	1,690	322	118	45
Jan. 11-13, 18-20	1,173	--	1,190	--	--	90	19	130		222	43	252	--	2.5		705	.96	2,230	302	120	48
Jan. 14-17	1,930	--	952	--	--	86	17	78		208	40	170	--	2.0		560	.76	2,920	284	114	37
Jan. 21-31	626	7.9	1,190	10	.01	92	17	128	6.4	220	45	238	.3	.5		694	.94	1,170	300	120	48
Feb. 1-11	412	8.0	1,260	4.5	.00	94	19	133		229	45	258	.3	2.0		726	.99	808	312	125	48
Feb. 12-20	1,945	--	889	--	--	71	17	83		164	43	175	--	2.0		552	.75	2,900	247	112	42
Feb. 21-27	597	--	1,030	--	--	82	15	106		191	47	205	--	2.0		619	.84	998	266	110	46
Feb. 28	2,130	--	617	--	--	45	9.3	71		107	49	116	--	3.0		363	.49	2,090	150	63	51
Mar. 1-10	724	7.4	1,020	5.0	.00	82	16	104	5.0	192	49	198	.3	2.0		609	.83	1,190	270	113	45
Mar. 11	1,130	--	429	--	--	33	12	31		80	30	71	--	2.5		291	.40	888	132	66	34
Mar. 12, 18-20	1,458	--	1,020	--	--	78	18	101		193	51	195	--	2.0		580	.79	2,280	286	110	45
Mar. 13-17	653	--	1,260	--	--	80	21	142		166	47	290	--	1.9		710	.97	1,250	286	150	52
Mar. 21-31	781	7.7	1,090	5.3	.00	94	18	112	3.7	220	55	210	.3	1.9		668	.91	1,410	308	128	44

Apr. 1-10	1,041	--	1,130	--	--	87	17		115		211	48	220	--	3.9		634	.86	1,780	287	114	46
Apr. 11-20	331	7.3	1,060	5.9	.05	78	17	108		4.8	181	45	215	.1	3.9		646	.88	577	264	116	46
Apr. 21-28	242	--	985	--	--	72	14		104		171	43	195	--	2.7		570	.78	372	237	97	49
Apr. 29-May 1-2, 10	5,124	--	570	--	--	37	9.4		59		89	26	111	--	3.0		358	.49	4,950	131	58	49
May 3, 7-9	2,160	--	783	--	--	63	12		76		153	44	140	--	3.5		493	.67	2,880	206	81	44
May 4-6	1,547	--	1,120	--	--	92	18		106		227	48	210	--	1.9		704	.96	2,940	304	118	43
May 11-14, 17, 19	20,030	--	327	--	--	28	6.7		28		84	23	45	--	2.5		222	.30	12,000	98	28	38
May 15-16, 18, 20	5,555	--	506	--	--	40	8.8		49		110	28	87	--	2.5		310	.42	4,650	136	46	44
May 21-24	1,700	--	710	--	--	62	12		61		160	38	117	--	1.7		447	.61	2,050	204	73	39
May 25-26, 30-31	6,868	--	470	--	--	45	8.1		32		120	26	62	--	2.9		292	.40	5,410	146	48	32
May 27-29	22,200	--	278	--	--	34	5.8		12		86	16	33	--	3.2		191	.26	11,400	109	38	20
June 1-2, 9-10	7,308	--	528	--	--	52	8.7		30		149	27	56	--	3.3		327	.44	6,450	166	44	28
June 3-8	22,470	--	359	--	--	38	5.3		23		113	17	40	--	1.9		228	.31	13,800	117	24	30
June 11-15	11,680	--	376	--	--	36	6.8		30		113	19	48	--	3.0		233	.32	7,350	118	26	35
June 16-20	1,094	--	535	--	--	50	8.8		45		148	23	78	--	2.9		327	.44	966	161	40	38
June 21, 24-30	693	--	697	--	--	64	11		64		188	31	111	--	2.7		428	.58	801	204	50	41
June 22-23	1,130	--	1,130	--	--	70	16		131		156	27	260	--	4.2		690	.94	2,110	240	112	54
July 1-10	692	--	783	--	--	68	13		75		180	37	141	--	1.7		470	.64	878	223	76	42
July 11-12, 18-20	16,700	--	272	--	--	25	4.7		21		81	13	32	--	2.4		182	.25	8,210	82	16	35
July 13-17	8,540	--	424	--	--	39	6.4		37		120	17	61	--	3.2		254	.35	5,860	124	26	39
July 21-27, 30-31	26,910	--	267	--	--	28	5.5		17		95	12	27	--	1.5		181	.25	13,200	92	14	29
July 28-29	10,960	--	510	--	--	50	9.6		40		171	23	60	--	3.0		312	.42	9,230	164	24	34
Aug. 1-10	24,880	--	318	--	--	36	6.6		18		119	13	31	--	1.5		202	.27	13,600	117	20	25
Aug. 11-17	3,916	--	566	--	--	65	10		38		202	22	67	--	3.2		305	.41	3,220	203	38	29
Aug. 18-20	12,280	--	338	--	--	40	7.4		18		121	14	38	--	2.8		218	.30	7,230	130	32	23
Aug. 21-24, 31	7,160	--	427	--	--	47	7.6		28		147	18	48	--	2.0		268	.36	5,180	148	28	29
Aug. 25-30	2,745	--	563	--	--	58	11		41		178	21	78	--	2.0		348	.47	2,580	190	44	32
Sept. 1-10	3,949	7.9	481	11	.00	54	9.2	32		3.0	169	20	54	.0	2.3		286	.39	3,050	173	34	28
Sept. 11-17	1,967	--	667	--	--	67	13		52		210	25	96	--	1.5		398	.54	2,110	220	48	34
Sept. 18-20	3,807	--	524	--	--	52	9.8		41		160	23	73	--	2.3		312	.42	3,210	170	40	34
Sept. 21, 23, 27-30	1,997	--	545	--	--	43	9.2		55		158	22	79	--	1.8		327	.44	1,760	146	16	45
Sept. 22, 24-26	5,002	--	282	--	--	28	5.4		19		90	10	33	--	2.3		197	.27	2,660	92	18	31
Weighted average	4,235	--	430	--	--	41	7.8		34		122	19	60	--	2.2		269	0.37	3,080	134	34	35

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR COMMERCE, OKLA.

LOCATION.--At gaging station at county highway bridge, 1¼ miles upstream from Mud Creek, 1¾ miles downstream from Four Mile Creek, and 4½ miles west of Commerce, Ottawa County.
DRAINAGE AREA.--5,876 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: November 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 456 ppm Dec. 11-20; minimum, 149 ppm July 16-20.
Hardness: Maximum, 289 ppm Dec. 11-20; minimum, 66 ppm July 16-20.
Water temperatures: Maximum, 84°F June 17, 27; minimum, 33°F Feb. 2.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 570 ppm Jan. 1-10, 1949; minimum, 83 ppm July 8-10, 1949.
Hardness: Maximum, 388 ppm Jan. 11-14, 1949; minimum, 51 ppm Aug. 11-12, 1948.
Water temperatures: Maximum, 90°F Aug. 26, 1948, Aug. 11, 1949; minimum, freezing point on several days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-4, 1949	275	--	392	--	--	45	11	18		111	68	24	--	1.0		244	0.33	181	158	67	20
Oct. 5-10	2,822	--	271	--	--	27	10	13		56	77	6.0	--	2.0		194	.26	1,480	108	63	20
Oct. 11-19	297	--	419	--	--	50	14	16		110	102	14	--	1.0		276	.38	221	182	92	16
Oct. 20-23, 25-26	6,080	--	278	--	--	27	10	14		73	57	12	--	2.5		198	.27	3,250	108	49	21
Oct. 24, 27-31	1,980	--	373	--	--	40	11	19		114	66	16	--	2.5		268	.36	1,430	145	52	22
Nov. 1-10	338	--	504	--	--	56	16	24		139	108	22	--	1.5		331	.45	302	206	92	21
Nov. 11-20	245	7.4	544	9.2	0.02	64	17	25	9.1	157	119	22	0.1	1.0		352	.48	233	230	101	18
Nov. 21-30	210	--	544	--	--	67	17	23		175	104	25	--	.5		353	.48	2,000	237	94	17
Dec. 1-10	175	7.7	664	3.6	.15	76	21	35	8.8	186	128	45	.1	.5		419	.57	198	276	124	21
Dec. 11-20	234	--	701	--	--	78	23	41		200	163	31	--	.5		456	.62	288	289	125	23
Dec. 21-23	2,437	--	537	--	--	62	17	25		158	114	20	--	2.0		345	.47	2,270	225	95	19
Dec. 24-31	576	--	370	--	--	42	13	8.8		102	72	12	--	2.5		243	.33	378	158	75	11
Jan. 1-2, 10, 1950	891	--	456	--	--	48	14	26		126	92	22	--	3.5		295	.40	710	177	74	24
Jan. 3-9	1,608	--	645	--	--	68	19	38		200	105	39	--	3.0		405	.55	1,760	248	84	25
Jan. 11-20	1,353	7.7	507	16	.12	58	14	26	7.8	135	107	23	.3	2.5		331	.45	1,210	202	92	21
Jan. 21-31	423	7.5	598	10	.02	73	18	29	5.3	178	120	31	.3	2.5		409	.56	467	256	110	19
Feb. 1-10	284	--	672	4.0	.00	78	21	37		198	137	38	.3	2.5		426	.58	327	281	119	22
Feb. 11-12, 15-20	593	--	603	--	--	65	18	32		143	134	34	--	2.0		382	.52	612	236	119	23
Feb. 13-14	2,155	--	392	--	--	40	11	23		88	91	18	--	4.0		280	.38	1,630	145	73	26
Feb. 21-28	353	8.0	629	3.0	.00	69	19	37		179	121	40	.3	1.0		399	.54	380	250	104	24
Mar. 1-10	634	--	600	--	--	68	17	34		158	127	36	--	1.5		362	.49	620	240	110	24
Mar. 11-20	585	7.3	627	3.7	.00	72	18	35	6.4	180	122	41	.1	2.5		409	.57	646	254	106	23
Mar. 21-31	422	--	671	--	--	70	21	41		202	113	47	--	1.4		422	.57	481	261	96	26

Apr. 1-3	1,061	--	634	--	--	76	20	29		196	107	44	--	1.9		425	.58	1,220	272	111	19
Apr. 4-10	1,555	--	310	--	--	34	9.5	12		72	65	14	--	3.9		234	.32	982	124	65	17
Apr. 11-20	248	8.0	426	8.3	.00	49	12	21	3.5	125	75	23	.1	4.6		268	.36	179	172	69	21
Apr. 21-30	321	--	553	--	--	63	16	30		165	100	34	--	2.3		374	.51	324	223	88	23
May 1, 5-10	1,160	--	435	--	--	46	12	29		124	78	29	--	4.5		279	.38	874	164	62	28
May 2-4	2,643	--	658	--	--	73	19	39		192	100	56	--	4.5		422	.57	3,010	260	103	24
May 11-20	970	7.3	495	9.3	.00	56	13	25	3.2	129	111	20	.1	5.1		320	.44	838	193	87	22
May 21-25, 28-29	3,161	--	484	--	--	57	18	13		164	67	27	--	3.5		320	.44	2,730	216	82	12
May 26-27, 30-31	6,262	--	289	--	--	38	8.3	14		111	47	12	--	4.4		226	.31	3,820	129	38	20
June 1, 4-9	13,090	--	268	--	--	36	6.7	8.8		110	31	7.8	--	3.9		192	.26	6,790	117	27	14
June 2-3, 10	14,570	--	188	--	--	23	5.7	5.6		64	28	5.8	--	4.0		163	.22	6,410	81	28	13
June 11-12	2,745	--	269	--	--	35	6.9	9.2		103	32	10	--	4.0		196	.27	1,450	116	31	14
June 13-20	1,700	--	419	--	--	58	11	15		189	45	12	--	4.4		285	.39	1,310	190	35	14
June 21-30	531	--	512	--	--	69	15	18		224	55	20	--	3.7		351	.48	503	234	50	14
July 1-5	1,587	--	495	--	--	61	14	22		166	86	20	--	6.0		318	.43	1,360	210	74	19
July 6-10	2,346	--	326	--	--	40	7.8	15		126	38	14	--	3.2		203	.28	1,290	132	29	20
July 11-15	17,800	--	230	--	--	29	5.0	9.2		88	24	8.8	--	4.2		161	.22	7,740	93	21	18
July 16-20	24,500	--	168	--	--	19	4.6	7.5		61	21	6.0	--	2.7		149	.20	9,860	66	16	20
July 21-25	28,080	--	200	--	--	23	5.4	8.8		85	20	4.5	--	2.4		152	.21	11,500	80	10	19
July 26-31	10,720	--	291	--	--	36	6.8	15		132	27	8.8	--	2.9		189	.26	5,470	118	10	22
Aug. 1-10	13,370	--	261	--	--	34	6.6	8.8		121	19	7.2	--	2.4		171	.23	6,170	112	13	15
Aug. 11-20	9,883	--	282	--	--	39	7.6	9.1		137	23	7.0	--	2.7		197	.27	5,260	129	16	13
Aug. 21-24, 28, 30-31	6,184	--	317	--	--	42	8.0	12		134	35	11	--	2.4		210	.29	3,510	138	28	16
Aug. 25-27, 29	4,160	--	447	--	--	63	11	16		207	43	15	--	3.2		299	.41	3,360	202	11	15
Sept. 1-10	6,692	7.3	306	10	.06	40	8.7	11	3.9	130	34	11	--	2.4		197	.27	3,560	136	29	15
Sept. 11, 13, 16-17	2,425	--	292	--	--	40	9.4	9.6		119	44	9.8	--	2.8		203	.28	1,330	138	41	13
Sept. 12, 14-15, 18-20	2,140	--	456	--	--	64	13	23		224	54	14	--	3.3		295	.40	1,700	213	30	19
Sept. 21-30	1,125	8.1	592	15	.00	84	18	22	3.8	284	59	24	.3	2.9		369	.50	1,120	284	50	14
Weighted average.	3,392	--	297	--	--	37	8.2	13		115	39	11	--	3.0		207	0.28	1,900	126	32	18

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR COMMERCE, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

NEOSHO RIVER NEAR WAGONER, OKLA.
(Below Spring River, known locally as Grand River)

LOCATION.--At bridge on U. S. Highway 51, 6 miles upstream from Fourteen Mile Creek, and 5 miles southeast of Wagoner, Wagoner County.
DRAINAGE AREA.--12,307 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 191 ppm Apr. 21-30, June 21-30; minimum, 64 ppm May 10-13.
Hardness: Maximum, 137 ppm Dec. 1-10; minimum, 53 ppm May 10-13.
Water temperatures: Maximum, 81°F July 3; minimum, 35°F Jan. 5, 31.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 208 ppm Apr. 21-30, 1948; minimum, 64 ppm May 10-13, 1950.
Hardness: Maximum, 153 ppm Apr. 21-30, 1948; minimum, 53 ppm May 10-13, 1950.
Water temperatures: Maximum, 84°F Aug. 18, 1949; minimum, freezing point Jan. 17, 27, 29, Feb. 13, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949....		--	300	8.3	0.02	41	5.5	9.2		113	36	9.0	0.1	2.5		176	0.24		125	32	14
Oct. 11-20		--	288	--	--	40	6.2	9.2		115	37	8.0	--	1.5		173	.24		125	31	14
Oct. 21-31		--	280	--	--	38	6.0	12		114	36	8.8	--	2.0		172	.23		119	26	18
Nov. 1-10		--	290	--	--	40	5.9	11		116	37	9.2	--	1.5		177	.24		124	29	16
Nov. 11-20.....		7.6	295	1.6	.00	41	6.7	8.6		112	40	10	.1	1.0		175	.24		130	38	13
Nov. 21-30.....		--	300	--	--	41	6.4	15		126	38	12	--	1.5		179	.24		129	25	20
Dec. 1-10		7.9	303	6.1	.18	43	7.3	10	3.7	114	43	11	.1	1.5		182	.25		137	44	13
Dec. 11-20.....		--	304	--	--	40	6.4	12		118	39	9.5	--	1.5		184	.25		126	29	17
Dec. 21-31.....		7.7	295	7.1	.00	40	6.6	11	3.1	110	40	11	.1	2.0		178	.24		127	37	15
Jan. 1-10, 1950 ...		8.1	270	7.9	.04	38	5.9	7.2		105	33	9.2	.0	1.5		163	.22		119	33	12
Jan. 11-12, 18-20 .		--	239	--	--	34	5.6	5.8		94	33	5.5	--	1.5		155	.21		108	31	10
Jan. 13-17		--	208	--	--	32	4.4	3.8		86	26	5.0	--	2.0		144	.20		98	28	8
Jan. 21-31		7.2	286	7.4	.00	40	6.4	9.4	3.1	109	41	8.8	.1	3.0		173	.24		126	37	14
Feb. 1-10.....		--	298	--	--	38	6.4	12		105	45	9.2	--	1.5		184	.25		121	35	18
Feb. 11-20.....		7.4	286	7.1	.02	40	7.2	9.5	3.3	101	46	8.5	.1	4.5		180	.24		129	47	13
Feb. 21-28.....		--	297	--	--	41	6.2	9.9		108	44	9.2	--	2.5		185	.25		128	39	14
Mar. 1-10		8.1	294	6.5	.00	41	7.0	7.9	3.2	107	47	8.2	.3	3.5		179	.24		131	43	11
Mar. 11-20		--	293	--	--	38	6.6	11		104	45	7.5	--	3.5		180	.24		122	37	16
Mar. 21-31		7.4	298	5.6	.00	42	6.2	10	2.7	113	44	10	.1	3.2		182	.25		130	38	14

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR WAGONER, OKLA.--Continued
(Below Spring River, known locally as Grand River)

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Apr. 1-10, 1950 ...		--	297	--	--	41	6.9	8.2		105	46	8.5	--	3.2		188	0.26		131	45	12
Apr. 11-20.....		7.8	304	6.4	0.00	42	6.6	10	2.4	111	42	10	0.0	4.0		186	.25		132	41	14
Apr. 21-30.....		--	303	--	--	42	6.5	9.7		112	44	9.0	--	2.8		191	.26		132	40	14
May 1-9		--	295	--	--	41	5.9	9.5		107	41	9.5	--	4.1		182	.25		127	39	14
May 10-13		--	119	--	--	16	3.1	2.4		45	13	3.0	--	4.0		64	.09		53	16	9
May 14-20		--	235	--	--	32	4.7	7.5		86	31	6.5	--	4.5		152	.21		99	29	14
May 21-25, 28-29..		--	272	--	--	41	5.9	5.0		103	38	7.0	--	4.6		182	.25		127	42	8
May 26-27, 30-31..		--	184	--	--	23	4.4	7.0		68	25	4.5	--	3.3		143	.19		76	20	17
June 1-10		7.4	293	8.8	.00	42	4.9	9.5	2.3	108	43	10	.1	4.4		178	.24		125	36	14
June 11-20		7.6	288	8.0	.00	40	5.2	8.8	2.6	107	41	9.0	.1	4.1		178	.24		121	34	13
June 21-30		--	297	--	--	37	5.7	13		105	40	10	--	3.7		191	.26		116	30	20
July 1-10		--	284	--	--	32	5.6	19		104	41	9.5	--	3.6		175	.24		103	18	29
July 11-20		--	272	--	--	37	5.5	11		101	39	7.8	--	4.2		178	.24		115	32	17
July 21-31		--	255	--	--	36	5.5	7.1		99	34	6.2	--	3.3		141	.19		112	31	12
Aug. 1-10.....		--	229	--	--	32	5.0	5.0		87	29	5.0	--	3.3		151	.21		100	29	10
Aug. 11-20.....		--	230	--	--	28	5.2	11		91	30	4.8	--	3.0		151	.21		91	17	21
Aug. 21-31.....		--	243	--	--	32	5.9	7.0		97	28	6.2	--	2.5		153	.21		104	25	13
Sept. 1-10		7.9	249	11	.06	36	5.9	5.3		107	27	5.2	--	2.9		159	.22		114	26	9
Sept. 11-20.....		--	228	--	--	33	4.5	7.8		100	24	6.0	--	2.9		150	.20		101	19	14
Sept. 21-30		7.4	228	10	.06	32	5.1	7.6	3.0	101	24	5.5	--	2.4		140	.19		101	18	14

ARKANSAS RIVER BASIN--Continued

NEOSHO RIVER NEAR WAGONER, OKLA.--Continued
(Below Spring River, known locally as Grand River)

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR TASCOSA, TEX.

LOCATION.--At Boys' Ranch near Tascosa, Oldham County, 20 miles upstream from gaging station near Amarillo, Potter County.
DRAINAGE AREA.--19,287 square miles (above gaging station, revised).
RECORDS AVAILABLE.--Chemical analyses: June 1948 to September 1950.
Water temperatures: February 1949 to September 1950.
EXTREMES, 1949-50. Dissolved solids: Maximum, 1,580 ppm Apr. 19-21; minimum, 294 ppm June 22.
Hardness: Maximum, 484 ppm Apr. 3-5; minimum, 72 ppm June 22.
EXTREMES, June 1948-50. Dissolved solids: Maximum, 1,580 ppm Apr. 19-21, 1950; minimum, 245 ppm Nov. 21-30, 1948.
Hardness: Maximum, 484 ppm Apr. 3-5, 1950; minimum, 72 ppm June 22, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Amarillo, for water year October 1949 to September 1950 given in Water-Supply Paper 1177. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Nov. 21-30, 1949 ..	28.4	7.9	1,630	17		79	40	227		254	331	212	0.5	2.5		1,030	1.40	79	362	154	58
Dec. 1-10.....	11.6	8.0	1,460	18		55	39	210		266	267	180	.9	1.2		933	1.27	29	298	80	61
Dec. 11-20.....	12.5	8.1	1,780	19		70	46	262		280	354	236	.6	1.8		1,130	1.54	38	364	134	61
Dec. 21-31.....	20.5	8.0	1,750	17		87	42	238		258	333	246	.6	.8		1,090	1.48	60	390	178	57
Jan. 1-10, 1950 ...	30.2	8.0	2,100	21		62	43	329		224	355	349	--	1.5		1,270	1.73	104	332	148	68
Jan. 11-20	16.6	8.0	1,830	20		58	40	278		238	315	276	--	1.0		1,100	1.50	49	309	114	66
Jan. 21-31.....	7.18	8.0	1,450	19		38	31	232		260	257	174	--	.5		894	1.22	173	222	10	69
Feb. 1-28.....	8.43	7.6	1,920	15		81	45	271		242	412	245	.5	1.8		1,190	1.62	271	387	188	60
Mar. 1-14.....	18.1	8.1	2,450	15		94	56	360		251	500	368	.7	.5		1,520	2.07	74	465	260	63
Mar. 15-19.....	7.40	8.1	1,940	17		72	42	282		271	375	248	.6	1.2		1,170	1.59	234	352	130	64
Apr. 3-5.....	2.67	7.8	2,480	15		100	57	365		226	570	350	.7	4.2		1,570	2.14	113	484	299	62
Apr. 19-21.....	23.3	7.9	2,520	15		97	54	380		230	529	388	1.0	2.8		1,580	2.15	99	464	276	64
June 13-20	761	7.7	1,500	20		55	22	233		215	269	192	.7	6.5		904	1.23	1,860	228	59	69
June 21, 23-24,26-28	240	7.9	1,260	18		50	23	182		190	234	148	.9	7.0		788	1.07	511	220	64	64
June 22	4,739	8.2	406	18		18	6.6	71		171	60	16	--	2.2		294	.40	3,760	72	0	68
June 22, 25, 29-30.	2,466	7.9	837	23		44	20	102		199	127	81	1.2	1.8		517	.70	3,440	192	29	54
July 1-2, 6, 8-9 ...	1,243	7.7	933	30		40	17	132		183	148	105	.9	4.0		579	.79	1,940	170	20	63
July 3-5, 7, 10-11 .	5,526	7.8	1,270	20		48	22	194		214	208	168	.7	1.2		776	1.06	11,600	210	35	67
July 12-18.....	1,760	8.0	816	20		38	13	117		209	108	82	.7	2.5		492	.67	2,340	148	0	63
July 19-30	4,418	7.7	703	18		26	9.5	111		179	97	66	.7	2.5		422	.57	5,030	104	0	70

Aug. 1-2, 5-6.....	3,330	8.0	735	20		32	10	108	160	115	70	.7	5.6		447	.61	4,020	121	0	66
Aug. 3-4, 7-10.....	700	8.1	1,340	19		60	22	193	209	214	184	.7	3.2		817	1.11	1,540	240	68	64
Aug. 11-16.....	575	7.8	1,110	17		55	19	154	171	221	125	.8	1.8		688	.94	1,070	215	75	61
Aug. 17-20	45.2	8.0	1,750	18		80	31	251	210	308	266	.7	3.8		1,060	1.44	1,290	327	155	63
Aug. 21	52.0	8.4	1,600	17		70	31	230	195	337	205	.8	1.5		1,000	1.36	140	302	142	62
Aug. 22-31.....	318	8.1	949	15		45	16	129	152	186	98	.6	1.8		577	.78	495	178	54	61
Sept. 1, 3-4	128	8.3	983	19		52	19	135	a216	188	89	.5	2.0		619	.84	214	208	30	59
Sept. 2, 5-10.....	2,327	8.1	686	16		35	13	93	157	126	56	.6	3.0		426	.58	2,680	141	12	59
Sept. 11-16	2,152	8.0	722	15		34	12	103	170	125	60	.6	2.2		439	.60	2,550	134	0	62
Sept. 17-20	183	8.1	1,110	16		52	18	162	187	203	133	.6	2.0		684	.93	338	204	50	63
Sept. 21-24	170	8.1	1,420	18		61	23	208	197	228	210	.6	4.0		885	1.20	406	246	85	65
Sept. 25-26	2,985	7.7	497	15		31	11	62	158	67	39	.8	1.0		308	.42	2,480	122	0	52
Sept. 27-30	617	8.0	868	15		41	15	122	165	159	88	.6	2.8		544	.74	906	164	29	62
Weighted average	b 523	--	919	19		39	16	136	186	150	101	0.7	2.7		562	0.76	794	164	11	64

a Includes equivalent of 2 ppm of carbonate (CO_3).
b Mean discharge for water year.

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR TASCOSA, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	45						--	82	78	79
2		--	38						--	81	--	69
3		--	39						--	82	74	72
4		--	37						--	78	72	68
5		--	36						--	82	79	75
6		--	38						--	82	82	72
7		--	35						--	82	80	79
8		--	37						--	81	78	80
9		--	36						--	82	80	75
10		--	--						--	81	81	76
11		--	--						--	79	80	79
12		--	--						--	80	79	75
13		--	--						80	82	81	75
14		--	--						82	82	79	74
15		--	--						82	--	78	78
16		--	--						80	80	80	79
17		--	--						81	81	75	79
18		--	--						82	82	86	81
19		--	--						80	79	72	79
20		--	--						82	79	75	76
21		--	--						80	75	73	71
22		--	--						81	73	80	73
23		--	--						82	81	--	--
24		--	--						82	80	75	70
25		--	--						81	80	81	61
26		--	--						81	78	79	61
27		48	--						80	80	77	63
28		46	--						82	79	75	76
29		47	--						82	82	79	70
30		39	--						82	80	78	69
31		--	--						--	--	80	--
Average		--	--						--	80	78	74

CANADIAN RIVER NEAR AMARILLO, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 87 and 287, 2,000 feet downstream from Pitcher Creek, 2.0 miles downstream from Panhandle and Santa Fe Railway bridge, and 19 miles north of Amarillo, Potter County.
DRAINAGE AREA.--19,287 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: July 1948 to October 1949, October 1949 to September 1950.
Water temperatures: August 1949 to September 1950.
Sediment records: August 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum observed, 80°F July 10; minimum, freezing point on several days during winter months.
Sediment loads: Maximum daily, 3,700,000 tons July 7; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Water temperatures (1949-50): Maximum observed, 84°F Sept. 12, 1949; minimum, freezing point on several days during winter months.
Sediment loads (1949-50): Maximum daily, 3,700 tons July 7, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Instantaneous discharge (second-feet)	Temperature (°F)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Oct. 7, 1949	9.03	65	--	1,850	--						--	227	285							--		
Oct. 14	11.3	62	--	1,710	--						--	203	238							--		
Oct. 21	32.4	53	--	1,970	--						--	434	262							--		
Oct. 25	16.8	51	--	2,370	--						--	429	382							--		
Oct. 27	15.0	42	--	2,470	--						--	473	410							--		
Feb. 21, 1950	9.66	--	--	1,790	--						--	187	265							--		
Mar. 21	8.83	--	--	1,820	--						--	140	260							--		
Apr. 13	12.3	--	8.3	1,830	87						358	179	295							400		
Apr. 19	36.1	--	8.3	1,520	--						246	240	220							310		
Apr. 26	8.99	--	8.3	1,870	76						396	231	295							436		
May 1	8.06	--	8.3	1,990	79						366	179	370							430		
May 10	9.0	--	8.2	1,830	77						450	147	285							416		
June 2	4.69	--	8.0	1,000	24						238	177	105							154		
June 9	3.47	--	8.3	1,590	73						410	165	235							364		
June 13	4,200	--	7.9	1,980	--						264	305	360							334		
June 22	1,830	--	7.8	666	22						204	90	60							128		
June 29	2,110	--	7.8	602	20						178	81	60							126		
July 15	1,370	--	7.9	984	--						219	154	118							178		
July 21	6,930	--	7.9	543	--						204	68	40							126		
Aug. 26	69.7	--	7.7	1,390	--						140	282	205							228		
Aug. 28	--	--	7.7	1,200	--						182	248	145							232		
Aug. 29	940	--	7.7	1,070	--						158	216	135							184		
Aug. 31	374	--	7.8	935	--						214	176	105							182		
Sept. 6	2,800	--	7.8	761	--						158	162	80							142		
Sept. 8	1,680	--	7.9	1,100	--						174	179	155							196		
Sept. 13	1,790	--	7.8	721	14						178	125	70							136		
Sept. 22	--	--	8.1	1,620	--						237	280	230							352		

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ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEXAS--Continued

Temperature (°F) of water, water year October 1949 to September 1950
/Once-daily temperature measurement at approximately 8 a. m./

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

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEXAS--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	16	286	12	10	51	1	15	65	3
2	13	81	3	9.0	52	1	13	59	2
3	11	76	2	9.0	80	2	13	63	2
4	11	58	2	8.0	48	1	11	41	1
5	11	59	2	9.5	95	5	10	65	2
6	11	68	2	100	1,030	284	10	62	2
7	8.0	58	1	140	1,120	423	10	33	1
8	7.0	45	1	130	1,130	397	9.0	53	1
9	16	250	14	106	868	248	11	75	2
10	60	1,560	290	74	741	148	14	60	2
11	32	450	39	40	572	62	15	109	4
12	17	62	3	24	361	23	14	67	3
13	13	57	2	19	290	15	12	84	3
14	11	50	1	18	170	8	8.0	86	2
15	9.0	54	1	19	194	10	10	50	1
16	170	4,250	3,120	20	220	12	11	63	2
17	283	4,350	3,470	102	811	223	12	69	2
18	150	1,900	769	106	651	186	11	96	3
19	82	1,100	246	78	402	85	14	78	3
20	46	600	75	58	318	50	18	64	3
21	30	350	28	43	230	27	16	66	3
22	19	200	10	36	203	20	13	121	4
23	20	157	8	34	135	12	14	120	6
24	18	163	8	32	159	14	16	145	7
25	16	127	5	32	170	15	19	118	6
26	16	89	4	26	149	10	17	69	3
27	13	75	3	22	141	8	15	215	9
28	12	69	2	22	120	7	20	117	6
29	11	48	1	20	78	4	25	83	6
30	10	85	2	17	79	4	32	75	6
31	9.0	55	1	--	--	--	38	87	9
Total	1,151.0	--	8,130	1,363.5	--	2,300	466.0	--	109

Day	January			February			March		
1	46	125	16	12	63	2	30	87	7
2	55	196	29	5.0	65	1	32	63	5
3	31	155	13	3.0	56	0	28	83	6
4	20	133	7	3.0	54	0	28	63	5
5	15	74	3	4.0	71	1	28	78	6
6	20	66	4	4.0	36	0	26	112	8
7	25	83	6	4.0	37	0	17	105	5
8	30	71	6	5.0	35	0	12	32	1
9	32	134	12	6.0	63	1	10	58	2
10	28	99	7	6.0	46	1	9.0	26	1
11	24	81	5	7.0	56	1	9.0	19	0
12	22	88	5	11	93	3	9.0	21	1
13	22	101	6	8.0	77	2	8.0	13	0
14	20	99	5	10	37	1	8.0	13	0
15	19	68	3	6.0	22	0	8.0	7	0
16	16	58	3	4.0	72	1	7.0	16	0
17	14	59	2	3.0	56	0	7.0	6	0
18	10	46	1	2.0	47	0	8.0	0	0
19	9.0	49	1	3.0	50	0	7.0	0	0
20	10	71	2	4.0	37	0	5.0	0	0
21	11	55	2	5.0	48	1	7.0	1	0
22	11	39	1	7.0	52	1	8.0	10	0
23	10	37	1	7.0	61	1	7.0	0	0
24	9.0	38	1	8.0	44	1	8.0	0	0
25	6.0	46	1	11	58	2	8.0	10	0
26	6.0	41	1	28	84	6	8.0	4	0
27	5.0	110	2	32	42	4	9.0	7	0
28	4.0	39	0	28	78	6	8.0	1	0
29	6.0	47	1	--	--	--	7.0	0	0
30	5.0	111	1	--	--	--	7.0	0	0
31	6.0	44	1	--	--	--	7.0	0	0
Total	547.0	--	148	236.0	--	36	380.0	--	47

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR AMARILLO, TEXAS--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	7.0	0	0	8.0	34	1	7.0	5	0
2	7.0	0	0	7.0	53	1	439	15,200	20,500
3	3.0	15	0	6.0	35	1	69	8,100	1,920
4	2.0	62	0	6.0	64	1	16	217	9
5	3.0	61	0	5.0	32	0	18	196	10
6	2.0	56	0	5.0	58	1	12	142	5
7	2.0	69	0	5.0	28	0	6.0	49	1
8	3.0	65	1	6.0	52	1	5.0	25	0
9	2.0	80	0	7.0	58	1	6.0	0	0
10	2.0	48	0	7.2	47	1	36	5,140	1,340
11	4.0	35	0	6.0	41	1	193	19,900	12,300
12	4.0	40	0	6.0	133	1	71	14,900	3,100
13	6.0	37	1	24	2,280	394	2,470	36,000	409,000
14	6.0	74	1	263	8,900	6,320	1,350	31,800	126,000
15	9.1	40	1	79	6,180	1,480	533	22,500	32,800
16	709	14,800	48,200	26	450	32	224	19,000	11,500
17	233	7,380	4,460	7.5	32	1	84	19,400	4,400
18	103	4,000	1,110	4.0	97	1	26	16,000	1,120
19	32	1,000	86	6.5	33	1	41	11,300	2,200
20	18	39	2	32	103	9	1,360	36,500	179,000
21	20	(e)	3	23	50	3	1,000	23,400	70,000
22	22	74	4	9.0	50	1	4,740	37,400	814,000
23	20	73	4	6.0	32	1	312	13,400	11,900
24	13	78	3	5.0	29	0	118	4,750	1,610
25	9.0	68	2	11	24	1	19	3,000	154
26	8.0	67	1	14	830	31	3.0	1,470	12
27	11	45	1	5.0	12	0	5.5	3,120	143
28	9.0	34	1	6.0	24	0	2.0	5,790	31
29	9.0	50	1	5.0	30	0	6,390	39,700	1,080,000
30	7.0	47	1	6.0	8	0	137	10,500	5,250
31	--	--	--	7.0	9	0	--	--	--
Total	1,285.1	--	53,880	613.2	--	8,280	19,692.5	--	2,788,000

Day	July			August			September		
1	31	4,900	425	3,700	23,900	244,000	150	7,000	2,840
2	8.0	1,800	39	7,930	34,300	908,000	130	5,140	1,800
3	24	1,390	670	2,220	26,100	160,000	106	3,000	859
4	1,400	25,400	135,000	1,200	17,300	56,000	129	3,200	1,120
5	9,830	39,000	1,260,000	924	11,800	29,400	1,610	24,900	127,000
6	4,860	25,400	461,000	766	10,200	21,100	2,800	26,400	212,000
7	21,800	48,600	3,700,000	370	6,510	6,500	2,230	19,200	116,000
8	1,090	28,900	87,000	208	3,700	2,080	1,900	142,000	72,800
9	227	20,300	20,700	120	2,680	867	4,190	24,100	327,000
10	94	19,000	4,870	80	2,000	432	3,430	18,700	262,000
11	9.0	10,300	250	82	1,300	288	7,720	33,000	1,140,000
12	1,610	20,100	134,000	715	11,400	28,800	1,770	17,800	118,000
13	3,230	24,500	225,000	532	4,150	5,960	1,500	22,800	92,500
14	1,930	20,000	132,000	629	3,500	5,940	747	13,000	26,200
15	1,280	23,800	83,000	1,190	16,600	65,300	709	8,700	16,600
16	266	21,100	15,700	300	2,000	1,620	465	6,200	7,780
17	104	14,600	4,120	90	1,500	365	276	4,500	3,350
18	381	14,100	14,900	55	1,130	168	190	2,840	1,460
19	2,440	27,000	244,000	19	409	21	155	1,900	795
20	3,210	25,400	213,000	17	337	15	110	1,080	321
21	12,400	44,700	1,660,000	52	880	124	74	760	152
22	7,380	30,700	639,000	52	560	79	103	700	195
23	12,000	41,400	1,550,000	90	1,180	287	190	1,060	544
24	2,690	30,300	227,000	312	7,310	8,370	313	4,400	9,700
25	1,460	22,200	87,000	134	4,000	1,540	2,690	24,100	188,000
26	1,520	21,600	85,200	69	1,650	308	3,280	20,900	285,000
27	531	15,400	23,600	73	1,700	335	924	9,620	25,000
28	1,900	15,300	79,500	504	12,000	22,200	810	11,000	25,200
29	1,330	13,600	49,700	902	15,200	37,000	465	4,700	5,900
30	2,530	19,000	240,000	671	14,000	26,500	268	3,800	2,750
31	3,620	24,600	245,000	376	9,530	10,300	--	--	--
Total	101,185.0	--	11,620,000	24,382	--	1,644,000	39,434	--	3,073,000

Total discharge for year (second-foot-days) 190,735.3
Total load for year (tons) 19,200,000

e Estimated.

CANADIAN RIVER NEAR AMARILLO, TEXAS--Continued

Particle-size analyses of suspended sediment, October 1949 to July 1950
(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 (second-feet)	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. 10, 1949	7:00 a.m.	67	3,290	1,210	56	65	87	96	98	99	100	--		--		BSWCM
Oct. 17	7:20 a.m.	330	5,460	943	48	61	81	86	88	90	94	99		100		BSWCM
Nov. 7	7:00 a.m.	145	1,310	943	55	66	82	89	91	92	95	98		100		BSWCM
Jan. 3, 1950	2:30 p.m.	31	135	967	57	71	83	88	91	96	98	99		100		BWCM
Apr. 16	4:35 p.m.	626	17,000	1,470	52	68	79	84	89	93	98	--		--		BWCM
Apr. 19	6:25 a.m.	36	1,350	674	82	99	100	--	--	--	--	--		--		BWCM
May 14	7:15 p.m.	270	8,750	2,880	--	94	--	99	--	--	--	--		--		PWCM
May 15	7:20 a.m.	110	9,380	3,750	--	89	--	99	--	--	--	--		--		PWCM
June 3	6:50 a.m.	94	11,600	3,890	--	93	--	98	--	--	--	--		--		PWCM
June 11	7:10 a.m.	440	32,900	4,910	--	61	--	90	--	--	--	--		--		PWCM
June 12	3:00 p.m.	55	14,900	2,430	--	89	--	98	--	--	--	--		--		PWCM
June 13	5:50 a.m.	15	4,730	2,060	--	93	--	99	--	--	--	--		--		PWCM
June 13	9:30 a.m.	9,100	141,000	4,640	25	27	39	63	75	--	--	--		--		PWCM
June 13	10:00 a.m.	7,700	102,000	3,920	--	42	--	63	--	--	--	--		--		PWCM
June 14	6:40 p.m.	1,030	24,800	4,500	--	59	--	73	--	--	--	--		--		PWCM
June 18	6:15 a.m.	30	15,700	2,430	--	94	--	96	--	--	--	--		--		PWCM
June 20	9:40 a.m.	1,100	42,800	6,060	40	49	58	70	76	83	88	91		97		PSWCM
June 22	6:30 a.m.	4,100	41,000	2,740	--	26	--	43	--	65	81	94		100		PSWCM
June 29	6:25 a.m.	11,400	37,300	3,860	22	25	31	39	48	60	81	99		100		PSWCM
June 29	7:35 a.m.	24,500	64,900	4,480	--	31	--	51	--	78	90	98		100		PSWCM
July 5	11:20 a.m.	14,600	43,100	3,500	--	36	--	59	--	87	97	99		100		PSWCM
July 7	1:15 a.m.	56,200	65,900	4,240	25	26	35	52	75	95	97	98		100		PSWCM
July 12	12:40 p.m.	1,900	32,500	3,010	--	16	--	31	--	57	82	96		100		PSWCM
July 30	6:55 p.m.	4,600	51,800	7,400	32	42	48	62	82	96	99	100		--		PSWCM

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER AT BRIDGEPORT, OKLA.

LOCATION.--At county highway bridge, a quarter of a mile downstream from gaging station at Bridgeport, Caddo County, which is at Chicago, Rock Island & Pacific Railway bridge, 1 mile north of Bridgeport, and 2¾ miles upstream from Lumpmouth Creek.
DRAINAGE AREA.--25,071 square miles (revised).
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,880 ppm June 20; minimum, 278 ppm May 9-10.
Hardness: Maximum, 662 ppm June 20; minimum, 166 ppm July 20.
Water temperatures: Maximum, 93°F June 25; minimum, freezing point on many days during winter months.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 1,880 ppm June 20, 1950; minimum, 278 ppm May 9-10, 1950.
Hardness: Maximum, 736 ppm Apr. 29-30, 1949; minimum, 166 ppm July 20, 1950.
Water temperatures: Maximum, 93°F June 25, 1950; minimum, freezing point on many days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949 ...	12.0	--	755	--	--	105	21	32		240	190	16	--	2.5		535	0.73	17	348	152	17
Oct. 11-20	11.0	--	791	22	0.05	117	21	38	17	267	200	14	0.2	1.5		566	.77	17	378	160	17
Oct. 21-24	110	--	612	--	--	78	14	33		134	172	24	--	2.0		410	.56	122	252	142	22
Oct. 25-31	39.7	--	904	--	--	126	23	43		222	262	32	--	2.5		638	.87	68	409	227	19
Nov. 1-10	18.8	--	910	--	--	144	26	26		288	249	18	--	2.5		673	.92	34	466	230	11
Nov. 11-20	15.7	7.3	925	5.0	.00	146	25	36	16	295	257	14	.1	1.5		670	.91	28	467	225	14
Nov. 21-30	19.4	--	924	--	--	149	28	24		284	274	14	--	1.5		698	.95	37	487	254	10
Dec. 1-10	20.0	--	934	--	--	152	26	24		278	277	14	--	2.0		692	.94	37	486	258	10
Dec. 11-20	21.7	8.1	942	20	.00	152	26	30	5.0	271	291	14	.2	3.5		700	.95	41	486	264	12
Dec. 21-31.....	43.2	--	982	--	--	133	31	34		247	270	34	--	2.5		691	.94	81	460	257	14
Jan. 1-3, 9-10, 1950	90.4	--	1,290	--	--	132	38	91		242	298	123	--	2.5		871	1.18	213	486	287	29
Jan. 4-8	48.6	--	1,790	--	--	168	50	160		310	420	198	--	2.5		1,150	1.56	151	624	370	36
Jan. 11-20	85.2	8.1	1,390	18	.00	132	38	130	5.2	239	339	138	.7	2.5		954	1.30	219	486	290	36
Jan. 21-31	56.1	8.1	1,370	21	.00	155	44	92		269	378	107	.5	.5		972	1.32	147	568	348	26
Feb. 1-10.....	39.7	--	1,220	--	--	146	36	82		247	372	69	--	3.0		904	1.23	97	512	310	26
Feb. 11-20	81.1	8.2	1,430	14	.00	149	43	117	9.2	218	424	117	.5	2.5		1,030	1.40	226	549	370	31
Feb. 21-27	79.3	--	1,480	--	--	133	39	159		230	383	178	--	1.5		1,010	1.37	216	492	304	41
Feb. 28.....	66.0	--	938	--	--	94	31	55		174	217	78	--	2.5		645	.88	115	362	220	25
Mar. 1-10	35.6	8.0	1,140	16	.00	149	34	59		247	345	53	.3	2.5		830	1.13	80	512	310	20
Mar. 11-20.....	20.4	--	949	--	--	150	29	25		264	295	14	--	3.5		719	.98	40	493	276	10
Mar. 21-31.....	18.2	--	961	--	--	148	31	29		261	311	15	--	1.7		723	.98	36	496	282	11

Apr. 1-10	17.3	8.1	963	23	.00	147	29	37	5.4	254	310	18	.3	2.5	730	.99	34	486	278	14
Apr. 11-20	20.5	--	1,010	--	--	159	28	34		252	333	21	--	3.2	776	1.06	43	512	304	13
Apr. 21-30	16.6	7.9	986	27	.00	150	31	38	4.4	251	329	16	.5	3.0	764	1.04	34	502	296	14
May 1-7	16.1	--	1,000	--	--	137	34	44		252	327	19	--	3.5	748	1.02	33	482	276	16
May 8	114	--	679	--	--	63	21	49		169	155	34	--	2.8	452	.61	139	244	105	31
May 9-10	108	--	420	--	--	51	12	20		134	88	9.5	--	4.8	278	.38	81	176	66	19
May 11, 14-15	65.3	--	489	--	--	62	12	29		152	114	16	--	3.2	343	.47	60	204	80	24
May 12-13, 20	61.0	--	706	--	--	94	19	39		185	201	24	--	2.9	508	.69	84	312	161	21
May 16-19	32.0	--	945	--	--	145	28	32		232	315	19	--	2.8	718	.98	62	477	287	13
May 21-22, 26, 28-29	58.8	--	719	--	--	78	18	64		187	185	42	--	3.2	493	.67	78	268	116	34
May 23, 25, 30-31	37.5	--	925	--	--	126	25	52		198	295	42	--	2.8	676	.92	68	418	256	21
May 24, 27	42.5	--	1,520	--	--	142	33	101		185	407	93	--	3.2	982	1.34	113	490	338	31
June 1-2, 8-10	23.8	--	933	--	--	127	27	41		256	243	36	--	2.9	706	.96	45	428	218	17
June 3-4	53.0	--	647	--	--	90	18	26		194	169	12	--	2.3	461	.63	66	298	140	16
June 5-7	46.7	--	2,060	--	--	127	45	252		198	391	340	--	1.8	1,250	1.70	158	502	340	52
June 11-12, 14	60.7	--	1,070	--	--	123	28	81		163	331	84	--	2.4	794	1.08	130	422	288	29
June 13, 15-16	35.7	--	1,750	--	--	132	45	194		160	487	210	--	1.9	1,150	1.56	111	514	384	45
June 17-19	88.7	--	2,390	--	--	148	53	302		199	495	400	--	1.9	1,500	2.04	359	587	424	53
June 20	360	--	3,000	--	--	160	64	413		194	558	575	--	10	1,880	2.56	1,830	662	502	58
June 21, 29-30	120	--	2,020	--	--	111	42	264		188	334	368	--	3.3	1,220	1.66	395	450	296	56
June 22-24, 27-28	302	--	2,650	--	--	139	56	367		209	454	515	--	6.0	1,640	2.23	1,340	577	406	58
June 25	19.0	--	1,340	--	--	89	35	143		155	268	190	--	3.6	867	1.18	44	366	238	46
June 26	191	--	734	--	--	78	23	42		176	182	32	--	2.7	496	.67	256	289	144	24
July 1-2	488	--	2,070	--	--	101	42	288		214	344	365	--	2.2	1,250	1.70	1,650	424	249	60
July 3-10	5,332	--	1,420	--	--	76	33	178		190	226	228	--	.9	923	1.26	13,300	325	170	54
July 11-17	1,396	--	1,480	--	--	79	27	199		190	252	228	--	2.3	942	1.28	3,550	308	152	58
July 18-19	2,085	--	1,060	--	--	56	19	138		149	179	148	--	1.4	650	.88	3,660	218	96	58
July 20	8,950	--	515	--	--	50	10	51		143	82	51	--	3.6	339	.46	8,190	166	49	40
July 21-23	14,130	--	836	--	--	74	17	73		158	136	100	--	.7	502	.68	19,200	254	125	38
July 24-31	5,521	--	1,060	--	--	65	23	139		191	180	152	--	1.5	670	.91	9,990	256	100	54

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER AT BRIDGEPORT, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Aug. 1-10, 1950	5,319	--	932	--	--	62	18	109		167	153	119	--	3.2		586	0.80	8,420	228	92	51
Aug. 11-15, 19	433	--	1,060	--	--	66	21	127		178	164	148	--	1.9		668	.91	781	251	105	52
Aug. 16	2,360	--	474	--	--	59	13	38		150	106	33	--	2.8		344	.47	2,190	200	78	29
Aug. 17-18, 20	286	--	854	--	--	78	17	78		162	170	87	--	1.4		563	.77	435	264	132	39
Aug. 21, 27, 30-31	2,640	--	866	--	--	72	21	81		138	179	101	--	1.5		586	.80	4,180	266	153	40
Aug. 22-26, 28-29	489	--	1,160	--	--	86	26	120		166	197	170	--	1.4		764	1.04	1,010	322	186	45
Sept. 1-2, 5, 7-9	1,013	--	762	--	--	52	15	86		152	109	99	--	2.3		464	.63	1,270	192	67	50
Sept. 3-4, 6, 10	1,542	--	994	--	--	60	20	123		159	141	156	--	1.8		610	.83	2,540	232	101	54
Sept. 11-20	2,345	7.7	1,020	14	0.00	64	21	123	5.2	171	167	135	0.7	2.2		630	.86	3,990	246	106	51
Sept. 21-30	1,014	7.9	1,130	16	.00	76	23	134	5.4	199	192	149	.7	1.9		705	.96	1,930	284	121	50
Weighted average	779	--	1,050	--	--	71	22	123		175	178	144	--	1.9		667	0.91	1,400	268	124	50

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER AT BRIDGEPORT, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	46	45	--	32	42	48	54	68	75	--	70
2	57	54	37	--	32	32	57	61	70	71	75	72
3	68	41	47	--	32	37	64	72	65	73	--	73
4	69	45	39	32	34	44	44	77	62	73	72	71
5	68	47	39	32	44	45	49	56	66	72	77	67
6	68	44	--	32	47	49	44	65	66	74	77	65
7	70	48	--	32	49	46	60	67	68	76	76	67
8	73	50	32	33	48	33	58	71	74	74	81	68
9	74	55	38	34	39	38	63	63	79	74	78	67
10	58	52	45	37	40	49	65	60	82	--	78	68
11	57	58	52	38	47	40	52	58	70	73	78	64
12	54	48	32	44	49	32	58	65	78	76	76	64
13	50	50	32	49	35	32	44	64	77	72	77	63
14	55	44	32	38	32	34	--	57	78	69	77	64
15	53	42	32	45	33	46	52	64	76	78	79	70
16	56	46	33	32	38	45	51	73	78	73	71	71
17	56	38	41	42	45	45	52	72	77	70	76	70
18	61	42	33	32	40	57	58	75	87	73	72	73
19	66	45	40	32	37	48	51	74	70	78	72	73
20	68	44	57	--	44	35	54	64	77	72	62	72
21	56	37	32	35	54	41	59	66	73	71	64	69
22	63	37	32	37	32	44	62	68	82	72	73	66
23	50	39	34	46	40	49	68	74	78	72	69	66
24	49	46	42	46	40	51	64	75	80	80	--	68
25	45	42	32	33	43	58	62	72	93	73	78	65
26	50	46	35	32	37	56	76	57	81	71	81	62
27	55	42	36	32	49	47	50	57	72	73	72	66
28	51	46	39	34	47	48	53	60	71	77	73	68
29	54	46	46	32	--	44	69	71	72	74	73	69
30	50	46	--	32	--	45	47	66	75	76	72	72
31	40	--	--	32	--	52	--	76	--	--	--	--
Average	58	46	38	36	41	44	56	67	75	74	74	68

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR WHITEFIELD, OKLA.

LOCATION.--At bridge on State Highway 2, 2 miles above gaging station near Whitefield, Haskell County, which is three-quarters of a mile north of Whitefield, and 5½ miles upstream from Snake Creek.
DRAINAGE AREA.--47,576 square miles, revised (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: September 1944 to February 1945, September 1946 to September 1950.
Water temperatures: September 1944 to February 1945, September 1946 to September 1950.
EXTREMES, 1949-1950.--Dissolved solids: Maximum, 6,520 ppm Dec. 12-19; minimum, 244 ppm Sept. 17-20.
Hardness: Maximum, 1,450 ppm Dec. 12, 17-19; minimum, 99 ppm Sept. 17-20.
Water temperatures: Maximum 86°F Aug. 30; minimum, freezing point Dec. 14, Jan. 8.
EXTREMES, 1944-45, 1946-50.--Dissolved solids: Maximum, 8,570 ppm Jan. 21-24, 1949; minimum 89 ppm Jan. 2,5-7, 1948.
Hardness: Maximum, 1,810 ppm Jan 21-24, 1949; minimum, 18 ppm Feb. 17, 1948.
Water temperatures: Maximum, 88°F Sept. 4, 1944; minimum, freezing point on many days during winter months.
Remarks.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Discharge records for gaging station near Whitefield for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1, 3-4, 9, 1949	666	--	3,740	--	--	146	39	568		136	63	1,120	--	4.0		2,010	2.73	3,610	524	413	70
Oct. 2, 10	714	--	4,270	--	--	163	32	684		126	54	1,320	--	4.5		2,320	3.16	4,470	538	435	73
Oct. 5-8	2,245	--	2,790	--	--	104	28	421		103	37	825	--	5.0		1,470	2.00	8,910	374	290	71
Oct. 11, 14	1,540	--	4,990	--	--	174	46	808		102	34	1,600	--	5.0		2,720	3.70	11,300	623	540	74
Oct. 12-13	2,445	--	7,650	--	--	277	69	1,300		102	37	2,600	--	6.5		4,340	5.90	28,700	974	891	74
Oct. 15-16	1,093	--	3,380	--	--	127	34	503		102	23	1,020	--	5.5		1,760	2.39	5,190	457	374	71
Oct. 17-20	585	--	4,460	--	--	163	42	722		131	33	1,420	--	4.5		2,450	3.33	3,870	579	472	73
Oct. 21-24	1,192	--	5,410	--	--	186	53	864		131	36	1,710	--	4.5		2,920	3.97	9,400	682	574	73
Oct. 25-30	4,500	--	3,440	--	--	116	36	519		107	36	1,020	--	3.0		1,780	2.42	21,600	438	350	72
Oct. 31	2,160	--	1,960	--	--	72	21	297		108	38	555	--	2.5		1,040	1.41	6,070	266	178	71
Nov. 1-2	1,700	--	2,330	--	--	90	26	375		121	37	712	--	5.5		1,310	1.78	6,010	332	232	71
Nov. 3-7	901	--	3,300	--	--	128	36	512		158	37	1,000	--	2.5		1,790	2.43	4,350	468	338	70
Nov. 8-10	589	--	4,220	--	--	156	46	666		165	37	1,310	--	5.0		2,300	3.13	3,660	578	443	71
Nov. 11-20	633	7.1	6,670	4.0	0.10	236	64	1,120	62	138	41	2,200	0.1	4.0		3,800	5.17	6,490	852	739	72
Nov. 21-30	504	--	8,820	--	--	311	85	1,580		155	58	3,100	--	3.0		5,210	7.09	7,090	1,130	998	75
Dec. 1-10	460	--	8,760	--	--	--	--	--		--	--	--	--	--		--	--	--	--	--	--
Dec. 11, 13-16, 20	713	--	7,470	--	--	272	74	1,320		161	44	2,600	--	6.0		4,400	5.98	8,470	980	851	74
Dec. 12, 17-19	820	--	10,900	--	--	408	105	1,960		190	53	3,900	--	5.0		6,520	8.87	14,400	1,450	1,290	75
Dec. 21	803	--	8,140	--	--	306	81	1,400		184	86	2,750	--	22		4,740	6.45	10,300	1,100	946	73
Dec. 22-23, 25-26	1,908	--	6,230	--	--	226	61	1,030		161	69	1,980	--	7.5		3,450	4.69	17,800	765	633	75
Dec. 24, 30-31	2,057	--	3,890	--	--	154	40	576		111	82	1,150	--	3.5		2,060	2.80	11,400	548	458	70
Dec. 27	4,560	--	2,810	--	--	112	30	410		117	30	825	--	4.5		1,470	2.00	18,100	403	307	69
Dec. 28-29	3,570	--	2,030	--	--	75	23	287		83	34	565	--	7.0		1,030	1.40	9,930	282	214	69
Jan. 1, 8-9, 1950	3,827	--	5,110	--	--	183	46	795		118	40	1,580	--	8.5		2,710	3.69	28,000	646	549	73

Jan. 2-6 ---------	5,412	--	1,840	--	--	69	18	268		80	26	520	--	4.0	1,010	1.37	14,800	246	180	70
Jan. 7 ----------	4,920	--	2,690	--	--	100	27	401		76	29	805	--	6.0	1,400	1.90	18,600	360	298	71
Jan. 10 ----------	8,550	--	3,540	--	--	132	34	520		96	34	1,050	--	6.0	1,620	2.48	42,000	470	391	71
Jan. 11-12, 20 ----	8,260	--	2,770	--	--	107	28	402		100	33	805	--	6.5	1,430	1.94	31,900	382	300	70
Jan. 13, 19 --------	12,000	--	1,840	--	--	79	21	253		82	27	520	--	5.0	1,030	1.40	33,400	284	216	66
Jan. 14, 16-17 ----	17,930	--	646	--	--	33	9.4	73		62	16	150	--	1.5	415	.56	20,100	121	70	57
Jan. 15, 18--------	13,880	--	910	--	--	44	10	107		66	17	220	--	2.0	541	.74	20,300	151	97	61
Jan. 21-23, 29 ----	2,578	--	3,020	--	--	122	35	448		127	51	895	--	3.5	1,620	2.20	11,300	448	344	68
Jan. 24-26, 28, 30-	2,162	--	3,710	--	--	146	41	554		143	50	1,110	--	4.0	1,980	2.69	11,600	532	416	69
Jan. 27, 31 -------	2,040	--	4,110	--	--	157	43	647		136	53	1,280	--	5.5	2,250	3.06	12,400	568	457	71
Feb. 1-2, 10------	2,147	--	3,260	--	--	134	37	500		125	44	1,010	--	2.0	1,790	2.43	10,400	486	384	69
Feb. 3, 8-9-------	2,730	--	2,860	--	--	112	33	421		106	41	850	--	3.5	1,510	2.05	11,100	415	328	69
Feb. 4-7 ----------	4,482	--	1,950	--	--	76	22	286		84	38	560	--	4.0	1,030	1.40	12,400	280	211	69
Feb. 11 ----------	1,530	--	3,860	--	--	148	48	591		129	46	1,200	--	8.0	2,100	2.86	8,680	566	461	69
Feb. 12-13, 19-20-	16,970	--	1,690	--	--	71	22	235		95	26	475	--	4.0	1,010	1.37	46,300	268	190	66
Feb. 14, 18-------	19,520	--	1,270	--	--	55	19	170		100	23	338	--	1.5	749	1.02	39,500	215	133	63
Feb. 15-17 -------	15,840	--	700	--	--	36	10	89		82	18	168	--	.5	437	.59	18,700	131	64	60
Feb. 21-24 -------	3,045	--	2,500	--	--	106	32	359		138	40	720	--	7.5	1,330	1.81	10,900	396	283	66
Feb. 25-26--------	2,240	--	3,190	--	--	130	39	493		150	51	975	--	7.0	1,770	2.41	10,700	485	362	69
Feb. 27-28--------	1,930	--	3,850	--	--	146	45	599		138	52	1,190	--	7.0	2,110	2.87	11,000	549	436	70
Mar. 1-10 --------	1,588	7.8	4,980	12	0.00	187	56	794	26	151	73	1,580	0.3	4.2	2,810	3.82	12,000	696	572	70
Mar. 11-12, 15-20	1,769	--	5,120	--	--	183	53	850		130	66	1,660	--	7.5	2,880	3.92	13,800	674	568	73
Mar. 13-14 -------	3,135	--	2,940	--	--	108	35	444		120	52	865	--	8.0	1,570	2.14	13,300	414	315	70
Mar. 21-31 -------	717	7.2	6,450	7.3	.00	223	69	1,110	30	131	66	2,140	.1	3.6	3,710	5.05	7,180	840	732	73
Apr. 1-2 ---------	500	--	7,260	--	--	255	73	1,210		128	54	2,420	--	3.0	4,080	5.55	5,510	936	832	74
Apr. 3-4, 10------	7,870	--	1,570	--	--	68	16	216		90	20	430	--	4.4	862	1.17	18,300	236	162	67
Apr. 5 ----------	7,300	--	2,930	--	--	116	26	431		83	26	875	--	5.7	1,520	2.07	30,000	396	328	70
Apr. 6-9 ---------	5,435	--	1,150	--	--	48	12	16		70	22	308	--	4.5	648	.88	9,510	170	112	67
Apr. 11-12--------	1,685	--	2,850	--	--	100	31	389		112	27	780	--	4.4	1,390	1.89	6,320	377	285	69
Apr. 13-15--------	1,000	--	3,780	--	--	123	42	617		115	30	1,200	--	3.9	2,070	2.82	5,590	480	335	74
Apr. 16-18--------	784	--	4,940	--	--	182	53	795		130	33	1,600	--	4.6	2,730	3.71	5,780	672	566	72
Apr. 19-20--------	811	--	6,930	--	--	246	70	1,130		128	34	2,280	--	2.8	3,830	5.21	8,390	902	797	73

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR WHITEFIELD, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 21-28, 1950---	823	--	8,990	--	--	306	85	1,570		119	48	3,100	--	8.4		5,180	7.04	11,500	1,110	1,020	75
Apr. 29-30---------	2,425	--	5,620	--	--	194	52	920		100	45	1,820	--	3.7		3,080	4.19	20,200	698	616	74
May 1, 3 ----------	3,065	--	4,000	--	--	145	40	632		103	48	1,250	--	4.4		2,170	2.95	18,000	526	442	72
May 2, 4-5, 10-----	12,820	--	2,160	--	--	83	22	314		78	30	625	--	4.6		1,120	1.52	38,800	298	234	70
May 6 ------------	1,600	--	3,390	--	--	112	35	532		81	28	1,050	--	5.3		1,800	2.45	7,780	424	357	73
May 7-9 ----------	18,000	--	1,440	--	--	62	14	203		82	12	405	--	2.2		882	1.20	42,900	212	145	68
May 11, 17-20------	61,040	--	654	--	--	39	8.5	78		99	13	146	--	1.9		394	.54	64,900	132	52	56
May 12-16----------	85,020	--	501	--	--	36	6.9	55		103	12	98	--	2.3		300	.41	68,900	118	34	50
May 21-23 ----------	13,870	--	980	--	--	48	14	120		110	15	235	--	2.3		624	.85	23,400	178	88	60
May 24-25 ----------	8,495	--	1,410	--	--	37	20	214		134	20	360	--	1.9		896	1.22	20,600	174	64	73
May 26, 29 ---------	5,445	--	1,960	--	--	87	26	269		165	30	525	--	4.0		1,020	1.39	15,000	324	189	64
May 27-28 ----------	5,050	--	2,530	--	--	110	32	365		178	31	720	--	7.7		1,350	1.84	18,400	406	260	66
May 30 ------------	6,520	--	3,850	--	--	151	46	568		182	35	1,140	--	10		2,040	2.77	35,900	566	416	69
May 31, June 1, 8-9	6,055	--	2,260	--	--	92	28	325		143	32	635	--	5.1		1,190	1.62	19,500	344	228	67
June 2-5, 10 --------	5,594	--	1,740	--	--	75	24	236		137	38	455	--	5.8		1,070	1.46	16,200	286	174	64
June 6-7 ----------	5,630	--	3,740	--	--	148	43	560		159	39	1,120	--	8.4		1,990	2.71	30,200	541	410	69
June 11-13, 18-20 --	4,457	--	1,790	--	--	80	24	234		139	30	465	--	8.2		1,070	1.46	12,900	298	184	63
June 14, 17 --------	3,790	--	2,470	--	--	86	32	368		127	41	705	--	8.0		1,300	1.77	13,300	346	242	70
June 15-16----------	3,350	--	5,090	--	--	196	54	811		123	38	1,650	--	8.4		2,820	3.84	25,500	711	610	71
June 21-22 --------	1,510	--	1,420	--	--	65	20	190		154	23	358	--	1.0		853	1.16	3,480	244	118	63
June 23-24 --------	1,590	--	2,120	--	--	72	29	321		162	28	590	--	3.7		1,120	1.52	4,810	298	166	70
June 25 -----------	1,790	--	5,380	--	--	193	59	873		137	34	1,750	--	7.8		2,980	4.05	14,400	724	612	72
June 26-30----------	1,260	--	3,510	--	--	132	42	540		161	58	1,050	--	4.0		1,900	2.58	6,460	502	370	70
July 1 -------------	1,000	--	3,220	--	--	128	40	487		151	53	965	--	3.5		1,750	2.38	4,720	484	360	69
July 2-4 -----------	1,526	--	3,820	--	--	146	43	599		147	54	1,180	--	4.4		2,100	2.86	8,650	541	420	71
July 5-6 -----------	7,170	--	1,780	--	--	76	20	241		111	31	475	--	3.9		1,060	1.44	20,500	272	180	66
July 7-8 -----------	11,900	--	972	--	--	52	14	117		114	58	202	--	3.3		570	.78	18,300	188	94	58
July 9-10 ---------	10,440	--	1,790	--	--	83	21	246		128	74	455	--	6.3		1,100	1.50	31,000	294	188	65
July 11-14 ---------	28,080	--	1,620	--	--	82	21	216		141	78	398	--	3.3		1,010	1.37	76,600	291	176	62

July 15-20 --------	20,100	--	1,020	--	--	53	14	124	112	54	218	--	2.9		590	.80	32,000	190	92	59
July 21-22 --------	54,300	--	988	--	--	58	12	124	137	40	218	--	1.9		577	.78	84,600	194	82	58
July 23-31	59,440	--	643	--	--	42	9.5	72	113	32	123	--	1.9		370	.50	59,400	144	52	52
Aug. 1-2 ----------	29,850	--	577	--	--	34	9.4	63	101	23	108	--	2.0		337	.46	27,200	124	40	53
Aug. 3-10 --------	18,820	--	978	--	--	58	17	116	144	59	202	--	2.5		618	.84	31,400	214	96	54
Aug. 11-16, 19-20-	7,476	--	1,500	--	--	74	23	196	149	71	360	--	2.4		936	1.27	18,900	279	157	60
Aug. 17-18--------	8,375	--	1,960	--	--	88	26	276	134	63	530	--	4.4		1,050	1.43	23,700	326	216	65
Aug. 21, 25-29----	9,307	--	1,840	--	--	84	23	255	129	48	495	--	5.3		1,190	1.62	29,900	304	198	65
Aug. 22-24, 30-31-	10,120	--	1,330	--	--	60	17	184	118	41	340	--	1.8		819	1.11	22,400	220	123	65
Sept. 1-6 ----------	7,585	--	1,130	--	--	59	17	144	137	65	248	--	1.7		696	.95	14,300	217	105	59
Sept. 7-10 --------	6,648	--	1,610	--	--	76	24	213	153	79	385	--	1.9		999	1.36	17,900	288	162	62
Sept. 11-13 -------	5,257	--	1,370	--	--	74	20	179	170	87	300	--	2.3		814	1.11	11,600	266	127	59
Sept. 14-16-------	59,330	--	1,020	--	--	54	14	129	119	45	232	--	2.8		605	.82	96,900	192	95	59
Sept. 17-20--------	58,850	--	389	--	--	30	5.8	40	92	18	65	--	1.5		244	.33	38,800	99	24	47
Sept. 21 ----------	29,000	--	441	--	--	38	8.5	39	114	23	68	--	2.7		273	.37	21,400	130	36	40
Sept. 22-25 -------	11,860	--	795	--	--	44	11	98	117	31	170	--	1.4		484	.66	15,500	155	59	58
Sept. 26-30 -------	4,332	--	1,330	--	--	73	20	168	172	59	302	--	2.0		820	1.12	9,590	264	123	58
Weighted average	9,964	--	1,270	--	--	61	16	172	113	34	327	--	2.8		731	0.99	19,700	218	126	63

ARKANSAS RIVER BASIN--Continued

CANADIAN RIVER NEAR WHITEFIELD, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

CHICORICA CREEK NEAR HEBRON, N. MEX.

LOCATION.--At gaging station at highway bridge near east boundary of Maxwell Grant, 300 feet downstream from Una de Gato Creek, 4¼ miles northeast of Hebron, Colfax County, and 9 miles south of Raton.
DRAINAGE AREA.--381 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1950 (discontinued).
Sediment records: October 1949 to September 1950 (discontinued).
EXTREMES, 1949-50.--Water temperatures: Maximum observed, 84°F June 18; minimum, freezing point several days during winter months.
Sediment loads: Maximum daily, 79,800 tons July 26; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

CHICORICA CREEK NEAR HEBRON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2.1	140	1	3.5	44	0	3.1	58	0
2	2.6	208	1	3.3	42	0	2.8	32	0
3	2.8	126	1	3.1	46	0	3	57	0
4	2.8	62	0	3.1	30	0	3	68	1
5	4.0	70	1	3.1	42	0	3	83	1
6	3.7	88	1	3.1	131	1	2.5	80	1
7	3.3	73	1	3.1	e 50	0	2	175	1
8	2.8	132	1	3.1	e 50	0	5	606	8
9	3.1	118	1	3.3	e 50	0	4	241	3
10	3.7	62	1	3.1	47	0	3	216	2
11	4.0	67	1	3.5	73	1	2.5	68	0
12	3.7	e 70	1	3.3	48	0	2	92	0
13	3.1	e 70	1	3.3	49	0	2.5	93	1
14	2.8	78	1	2.8	38	0	2.5	135	1
15	2.8	111	1	2.8	40	0	2.5	120	1
16	3.1	76	1	2.6	66	0	3	117	1
17	3.1	110	1	2.8	54	0	3	103	1
18	3.3	81	1	2.8	46	0	3.5	165	2
19	2.8	e 70	1	2.8	38	0	3.5	114	1
20	2.6	e 60	0	2.6	79	1	3.5	115	1
21	2.8	48	0	2.8	37	0	3	182	1
22	3.3	e 40	0	3.1	48	0	2.5	108	1
23	4.0	40	0	3.1	118	1	2.5	154	1
24	4.0	70	1	3.3	134	1	2.5	162	1
25	3.7	57	1	2.6	48	0	2.5	298	2
26	3.5	72	1	2.6	33	0	2.5	134	1
27	3.3	60	1	2.1	29	0	2.5	109	1
28	3.5	39	0	2.3	57	0	3	98	1
29	3.3	52	0	2.6	e 50	0	3	58	0
30	3.1	55	0	2.6	37	0	3	238	2
31	3.5	136	1	--	--	--	3	181	1
Total	100.2	--	23	88.2	--	5	89.9	--	38

Day	January			February			March		
1	3	146	1	3	247	2	2.7	43	0
2	3	162	1	2.5	186	1	2.7	104	1
3	2	155	1	2	175	1	2.7	68	0
4	1.5	180	1	2.5	225	2	2.5	51	0
5	1.5	130	1	2.5	712	5	2.5	45	0
6	1.5	97	0	2.5	470	3	2.2	80	0
7	2	120	1	2.5	186	1	2.0	43	0
8	2.5	118	1	2.5	98	1	2.2	48	0
9	2.5	128	1	2.5	138	1	2.0	22	0
10	2.5	82	1	2	156	1	1.7	e 25	0
11	2.5	98	1	2.5	142	1	1.4	28	0
12	2.5	103	1	3	141	1	1.7	28	0
13	2.5	114	1	2.5	139	1	1.7	25	0
14	2.5	84	1	2.5	115	1	2.0	31	0
15	2.5	81	1	3	334	3	1.4	33	0
16	2.5	85	1	3.5	436	4	1.3	24	0
17	2.5	156	1	3.5	297	3	1.3	49	0
18	3	102	1	3	264	2	1.2	123	0
19	3	e 150	1	2.5	290	2	1.0	121	0
20	3.5	266	3	2.5	289	2	1.1	97	0
21	3.5	143	1	2.5	305	2	.8	97	0
22	3	232	2	2.5	260	2	.8	115	0
23	3	348	3	2.5	286	2	.8	140	0
24	3	240	2	2.5	221	1	.7	106	0
25	3	542	4	2.5	221	1	.5	101	0
26	2.5	210	1	2.5	222	1	.3	106	0
27	2	146	1	3	516	4	.4	84	0
28	2	218	1	2.7	189	1	.4	122	0
29	2	365	2	--	--	--	.4	e 70	0
30	2.5	412	3	--	--	--	.4	59	0
31	3	249	2	--	--	--	.4	75	0
Total	78.5	--	43	73.7	--	52	43.2	--	1

e Estimated or interpolated.

ARKANSAS RIVER BASIN--Continued

CHICORICA CREEK NEAR HEBRON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0.4	95	0	0.5	77	0	22	5,750	s 597
2	.5	124	0	.5	83	0	3.3	1,290	11
3	.5	110	0	.5	86	0	12	e 5,330	1,230
4	.5	119	0	.5	15	0	82	15,300	4,110
5	.5	e 90	0	.6	e 70	0	14	1,500	57
6	.5	72	0	.6	e 70	0	12	39	1
7	.6	e 80	0	.3	131	0	11	58	2
8	.4	95	0	.3	39	0	10	e 50	1
9	.3	83	0	.4	39	0	9.8	e 50	1
10	.4	74	0	.5	36	0	9.4	e 50	1
11	.4	86	0	.5	69	0	60	9,950	s 6,260
12	.4	86	0	.6	57	0	19	e 5,810	562
13	.5	74	0	.8	e 60	0	1.5	141	1
14	.5	226	0	.8	66	0	1	e 100	0
15	.5	69	0	.8	84	0	.7	e 100	0
16	.4	73	0	1.1	89	0	109	20,600	s 24,700
17	.3	58	0	1.1	72	0	374	28,400	s 75,000
18	.4	e 70	0	1.1	53	0	39	4,750	s 1,020
19	.8	95	0	.5	77	0	4.0	e 2,000	22
20	1.1	83	0	.2	74	0	4.8	e 2,000	26
21	.4	69	0	.1	e 70	0	4.6	e 500	6
22	.6	94	0	.2	e 70	0	3.8	236	2
23	.6	95	0	.2	e 70	0	2.5	e 100	1
24	.5	e 75	0	.2	e 70	0	2.0	e 100	1
25	.5	68	0	.3	e 70	0	1.5	e 100	0
26	.4	70	0	.3	e 70	0	.5	e 100	0
27	.4	87	0	.3	e 70	0	.5	70	0
28	.4	67	0	.3	e 70	0	.3	49	0
29	.5	76	0	.3	e 70	0	108	11,400	s 14,100
30	.5	e 70	0	.4	e 70	0	15	2,400	s 363
31	--	--	--	47	7,450	s 5,440			
Total	14.7	--	0	61.8	--	5,440	937.2	--	128,100

Day	July			August			September		
1	1	e 100	0	24	e 3,170	s 705	0.6	e 100	0
2	1	e 100	0	194	14,600	s 24,000	.6	123	0
3	62	e 8,260	s 5,220	66	e 8,620	s 3,100	.5	102	0
4	21	2,360	s 626	6.8	300	6	.5	286	0
5	62	e 6,010	s 3,560	4.3	94	1	.8	e 200	0
6	16	e 2,000	86	3.8	e 90	1	1.1	e 180	1
7	2.5	e 100	1	3.3	87	1	.8	e 160	0
8	2.2	e 100	1	3.3	99	1	99	4,400	s 4,030
9	43	3,980	s 1,970	3.1	48	0	13	e 2,500	88
10	5	1,200	16	20	13,500	s 1,130	1	259	1
11	2	115	1	7.5	5,000	101	.5	e 500	1
12	7	2,260	s 58	3	1,000	8	.5	764	1
13	3	198	2	2.5	79	1	.5	79	0
14	2.5	84	1	2.2	e 80	0	.5	e 100	0
15	2	71	0	2	83	0	.5	e 100	0
16	2.5	195	1	1.6	e 70	0	.5	e 100	0
17	17	e 2,140	s 449	1.2	e 60	0	22	e 3,140	s 1,100
18	11	e 1,500	45	1.0	e 50	0	47	e 4,980	s 1,660
19	26	e 6,520	s 1,130	80	5,740	s 7,150	25	e 2,000	135
20	48	4,730	s 4,140	16	2,000	86	8.3	184	4
21	184	12,600	s 18,200	1.5	152	1	4.6	137	2
22	5.4	e 100	1	1.2	163	1	4.3	122	1
23	18	2,310	s 430	.8	87	0	11	e 1,500	45
24	14	e 1,000	38	.6	75	0	6.2	326	5
25	84	2,180	s 10,800	.6	115	0	3.6	83	1
26	654	17,300	s 79,800	3.5	e 1,500	14	2	71	0
27	5.5	2,200	33	5.8	1,500	23	.5	29	0
28	.5	e 1,000	1	1.6	310	1	.5	8	0
29	.3	844	1	1.0	e 200	1	.5	119	0
30	59	9,990	s 6,000	1.0	126	0	.5	127	0
31	15	e 2,000	81	.7	100	0	--	--	--
Total	1,376.4	--	132,700	463.9	--	36,330	256.9	--	7,080

Total discharge for year (second-foot-days) 3,584.6
Total load for year (tons) 309,800

e Estimated or interpolated.
s Computed by subdividing day.

ARKANSAS RIVER BASIN--Continued

CHICORICA CREEK NEAR HEBRON, N. Mex.--Continued

Particle-size analyses of suspended sediment, December 1949 to June 1950
(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 (second-feet)	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. 8, 1949	4:30 p.m.	5	606	1,103	36	58	83	92	95	96	97	99		100		BSWCM
Jan. 25, 1950	11:15 a.m.	3	313	1,630	42	56	70	75	79	81	85	96		100		BSWCM
May 31	9:10 p.m.	430	57,400	5,000	--	36	--	57	--	81	91	98		100		PSWCM
May 31	10:00 p.m.	290	34,000	4,900	--	37	--	56	--	78	91	98		99		PSWCM
May 31	11:20 p.m.	186	24,000	3,080	--	44	--	63	--	80	87	94		99		PSWCM
June 17	2:37 p.m.	1,390	59,900	1,970	35	40	46	50	57	63	79	90		98		BSWCM
June 17	4:36 p.m.	1,870	72,000	3,070	0	1	20	36	46	54	72	92		98		PSN
June 29	8:25 p.m.	478	60,800	4,200	--	41	--	61	--	88	93	97		99		PSWCM

VERMEJO RIVER NEAR DAWSON, N. MEX.

LOCATION.--Chemical quality samples collected at gaging station in Maxwell Grant, 2¼ miles north of Dawson, Colfax County. Suspended sediment samples collected at bridge in Dawson, 2¼ miles downstream from gaging station.
DRAINAGE AREA.--299 square miles.
RECORDS AVAILABLE.--Chemical analyses: (intermittent sampling) August 1945 to October 1950 (discontinued).
Water temperatures: April 1949 to September 1950.
Sediment records: January 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum observed, 80°F July 18; minimum, freezing point Jan. 31 to Feb. 3.
Sediment loads: Maximum daily, 23,000 tons July 21; minimum daily, 0 tons on many days.
EXTREMES, January 1949 to September 1950.--Water temperatures: Maximum observed, 82°F July 29, 1949; minimum, freezing point Jan. 31 to Feb. 3, 1950.
Sediment loads: Maximum daily, 94,500 tons Sept. 9, 1949; minimum daily, 0 tons on many days.
REMARKS.--Chemical quality samples collected at gaging station at times of discharge measurements. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177. No appreciable inflow between gaging station and sediment sampling point except during rare periods of heavy local runoff.

Chemical analyses, in parts per million, October 1949 to October 1950

Date of collection	Discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 10, 1949	5.0		512	16		64	16	25		194	109	4.0	0.6	0.8		331	0.45	45	226	66	19
Oct. 27	5.8		505	16		65	17	22		195	107	4.0	.6	.6		328	.45	51	232	72	17
Nov. 18	2.7		523	--		--	--	--		187	117	--	--	--		--	--	--	--	--	--
Dec. 23	2.5		573	--		--	--	--		203	130	--	--	--		--	--	--	--	--	--
Jan. 5, 1950	2.0		563	14		72	17	29		206	130	4.5	.6	.7		369	.50	20	250	80	20
Jan. 17	5.7		526	16		66	17	26		192	121	4.0	.6	.8		346	.47	53	234	77	19
Feb. 20	2.4		512	--		--	--	--		174	113	--	--	--		--	--	--	--	--	--
Apr. 10	.2		529	13		66	15	28		187	121	5	.4	.5		341	.46	1.8	226	73	21
May 17	2.4		653	--		--	--	--		186	136	--	--	--		--	--	--	--	--	--
June 12	4.8		581	--		--	--	--		178	153	--	--	--		--	--	--	--	--	--
Sept. 20	4.9		477	--		--	--	--		182	92	--	--	--		--	--	--	--	--	--
Oct. 3	1.5		535	15		64	15	35		197	119	6	.7	1.3		353	.48	14	221	60	26

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER NEAR DAWSON, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurement generally between 10 a. m. and 5 p. m.]

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

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER NEAR DAWSON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	7.7	e 20	0	4.3	0	0	4.7		
2	7.0	9	0	4.9	11	0	3.3		
3	6.5	28	0	4.9	9	0	2.7		
4	5.8	14	0	4.9	8	0	2.1		
5	5.4	45	1	4.7	14	0	2		
6	4.9	11	0	4.7	9	0	2	e 20	0
7	4.5	18	0	4.7	16	0	2		
8	4.3	40	0	4.5	7	0	2		
9	4.5	39	0	4.9	7	0	2		
10	4.9	34	0	4.9	9	0	2		
11	5.6	26	0	5.4	41	1	2		
12	5.6	21	0	4.9	14	0	1.8	89	0
13	5.6	e 27	0	5.4	9	0	1.8	185	1
14	5.6	53	1	5.6	27	0	1.8	103	1
15	5.8	26	0	6.3			1.8	137	1
16	5.8	15	0	6.3			2.0	102	1
17	5.8	14	0	5.6	e 20	0	2.4	163	1
18	5.8	11	0	6.3			3.0		
19	5.8	20	0	5.6			3.0	e 100	1
20	6.0	8	0	6.0			3		
21	6	11	0	4.9	16	0	2.5	85	1
22	6	11	0	4.7			2.5	95	1
23	6	5	0	4.5			3.0	84	1
24	6	11	0	6.5			3.2	27	0
25	6	10	0	6.3			3.2		
26	6	12	0	5.8	e 15	0	2.8	e 25	0
27	5.8	11	0	5.4			2.6	22	0
28	6.0	11	0	5.4			2.6	22	0
29	5.2	13	0	5.2			2.8	18	0
30	4.3	16	0	5.2			3.4	22	0
31	3.7	17	0	--	--	--	3.7	26	0
Total	173.9	--	2	158.7	--	1	79.7	--	11

Day	January			February			March		
1	4.5	e 25	0	3.9	32	0	1.3	14	0
2	6.4	e 25	0	3.0	67	1	1.2	14	0
3	5.8	24	0	3.4	151	1	1.0	19	0
4	2.8	36	0	5.8	726	11	.9	13	0
5	2.2	34	0	12	546	18	.9	10	0
6	1.7	20	0	9.1	25	1	1.1	15	0
7	2.0	47	0	7.7	96	2	1.0	22	0
8	2.4	e 45	0	6.1	173	3	1.1	11	0
9	3.0	43	0	3.7	33	0	1.7	15	0
10	3.0	51	0	2.4	25	0	3.0	47	0
11	3.0	40	0	3.7	24	0	3.4	26	0
12	3.0	42	0	3.2	22	0	3.0	17	0
13	3.2	53	0	2.2	40	0	2.2	12	0
14	3.4	43	0	2.4	e 31	0	2.6	29	0
15	3.4	e 45	0	3.0	22	0	3.7	23	0
16	3.9	47	0	3.4	20	0	3.7	52	1
17	4.5	43	1	4.2	21	0	3.9	24	0
18	4.5	47	1	4.2	19	0	2.8	15	0
19	5.8			2.0	13	0	1.4	14	0
20	6.4			1.7	11	0	1.4	7	0
21	6.1	e 50	1	1.7	8	0	1.7	11	0
22	7.0			1.0	30	0	1.7	13	0
23	7.7			.9	47	0	2.2	7	0
24	13	637	22	1.1	12	0	1.6	8	0
25	7.3	104	2	1.7	27	0	1.3	8	0
26	3.0	222	2	1.8	e 22	0	1.0	14	0
27	2.8	40	0	1.6	17	0	.8	12	0
28	3.4	417	4	1.2	9	0	.7	13	0
29	3.7	168	2	--	--	--	.8	15	0
30	6.1	413	7	--	--	--	.8	10	0
31	5.4	243	4	--	--	--	.8	13	0
Total	140.4	--	50	98.1	--	37	54.7	--	1

e Estimated or interpolated.

ARKANSAS RIVER BASIN--Continued

VERMEJO RIVER NEAR DAWSON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0.7	35	0	1.4	17	0	1.8	1,460	7
2	.7	8	0	2.0	12	0	2.4	1,200	8
3	.6	45	0	1.3	9	0	3.4	674	6
4	.6	25	0	.9	10	0	12	552	18
5	.6	36	0	.7	19	0	14	392	15
6	.6	8	0	.7	7	0	9.9	301	8
7	.6	8	0	.7	57	0	7.0	376	7
8	.6	5	0	.6	123	0	6.1	350	6
9	.6	8	0	.6	90	0	4.5	32	0
10	.6	11	0	.6	85	0	3.9	36	0
11	.9	15	0	.7	82	0	5.1	16	0
12	1.6	11	0	1.0	275	1	5.1	88	1
13	2.0	88	0	1.2	457	1	3.7	22	0
14	2.6	43	0	1.6	216	1	3.4	62	1
15	2.2	31	0	1.6	134	1	2.6	22	0
16	3.0	102	1	1.8	138	1	1.8	18	0
17	4.5	68	1	2.2	156	1	1.7	16	0
18	3.9	31	0	2.4	1,500	10	1.7	32	0
19	3.4	21	0	1.7	e 1,000	4	1.4	22	0
20	4.5	24	0	1.4	397	2	1.7	15	0
21	4.2	24	0	1.3	641	2	2.0	12	0
22	3.9	e 23	0	1.2	402	1	1.7	20	0
23	3.4	23	0	1.1	448	1	1.6	14	0
24	3.0	24	0	1.3	466	2	1.4	15	0
25	3.0	16	0	1.3	464	2	1.2	5	0
26	2.2	e 14	0	1.6	323	1	1.2	0	0
27	1.7	12	0	1.8	e 231	1	1.3	58	0
28	1.7	6	0	1.8	139	1	1.4	9	0
29	1.2	6	0	1.7	809	4	14	1,540	s 285
30	1.2	e 10	0	1.6	876	4	40	8,620	s 1,360
31	--	--	--	1.7	2,330	11	--	--	--
Total	60.3	--	2	41.5	--	52	159.0	--	1,720

Day	July			August			September		
1	11	1,000	30	18	785	s 143	1.8	8	0
2	4.8	210	3	11	114	3	1.6	e 15	0
3	146	7,900	s 11,300	13	329	12	1.3		
4	21	3,900	s 303	7.3	338	7	1.6		
5	93	6,550	s 9,180	5.1	41	1	2.6	e 50	1
6	95	8,080	s 2,880	6.4	151	3	5.8		
7	37	4,510	s 556	5.1	174	2	6.1		
8	28	2,980	s 944	3.9	152	2	5.1	20	0
9	58	8,280	s 1,720	4.5	453	6	4.8	91	1
10	28	3,520	s 338	3.9	e 460	4	5.1	16	0
11	40	4,590	s 922	3.2			4.8	64	1
12	16	2,500	108	5.4	1,200	17	4.2	92	1
13	18	319	16	4.2	588	7	3.9		
14	20	918	50	3.2	594	5	3.4	e 30	0
15	13	368	13	2.8	20	0	2.8		
16	9.9	177	5	3.0	27	0	2.4	0	0
17	8.2	87	2	2.8	20	0	6.4	942	52
18	11	800	24	2.6	e 20	0	2.4	6	0
19	14	2,000	76	2.6	11	0	7.0	e 1,300	25
20	60	7,680	s 2,180	2.6	78	1	4.8	30	0
21	300	15,000	s 23,000	63	8,940	s 4,560	2.8	41	0
22	37	4,000	400	29	5,050	s 749	2.4	76	0
23	41	2,850	s 443	6.7	349	6	2.4	41	0
24	32	2,660	s 333	4.2	18	0	3.2	170	1
25	46	6,000	s 1,140	3.2	13	0	3.4	154	1
26	45	3,000	s 1,080	3.4	260	2	3.2	95	1
27	62	e 6,500	s 1,410	4.5	160	2	2.6	17	0
28	54	5,720	s 1,310	6.7	389	7	2.2	123	1
29	41	3,330	s 658	4.8	408	5	2.2	27	0
30	14	500	19	2.8	38	0	2.0	46	0
31	9.9	62	2	2.0	24	0	--	--	--
Total	1,413.8	--	60,440	240.9	--	5,550	104.3	--	88

Total discharge for year (second-foot-days) 2,725.3
Total load for year (tons) 67,950

e Estimated or interpolated.
s Computed by subdividing day.

VERMEJO RIVER NEAR DAWSON, N. MEX.--Continued

Particle-size analyses of suspended sediment, January to July 1950
(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 (second-feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Jan. 18, 1950	4:30 p.m.	4.5	259	1,210	15	17	22	26	30	39	50	--		--		BWCM
July 3	5:30 p.m.	380	86,400	1,430	18	21	26	34	44	51	74	93		99		BSWCM
July 3	5:30 p.m.	380	86,400	1,940	18	20	26	32	41	51	74	93		99		PSWCM

ARKANSAS RIVER BASIN--Continued

CIMARRON RIVER AT UTE PARK, N. MEX.

LOCATION.--At gaging station in Maxwell Grant, half a mile downstream from Ute Creek, and 1 mile east of post office at Ute Park, Colfax County.
DRAINAGE AREA.--297 square miles.
RECORDS AVAILABLE.--Chemical analyses: June 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 285 ppm Aug. 21-31; minimum, 172 ppm Jan. 1-4, 6-10.
Hardness: Maximum, 237 ppm Aug. 21-31; minimum, 128 ppm Feb. 1-10.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 285 ppm Aug. 21-31, 1950; minimum, 100 ppm May 11-19, 1947.
Hardness: Maximum, 237 ppm Aug. 21-31, 1950; minimum, 72 ppm May 11-19, 1947, June 1-10, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Oct. 1-10, 1949.....	24.6	7.6	314	11	0.02	42	8.7	11	1.4	177	15	5.5	0.5	0.3	(a)	183	0.25	12	141	0	14
Oct. 11-20.....	34.9	7.6	326	11	.02	44	8.6	11	1.6	184	15	5.0	.4	.3	(a)	188	.26	18	146	0	14
Oct. 21-27, 29-31...	28.0	7.7	316	8.6	.01	44	8.4	11	1.4	178	14	4.5	.4	.2	(a)	180	.24	14	144	0	14
Nov. 1-7, 9-10	25.8	7.8	313	10	.02	43	9.1	11	1.8	182	15	4.5	.5	.2	(a)	185	.25	13	145	0	14
Nov. 11-19	14.8	7.9	311	11	.04	42	8.3	11	3.0	176	15	5.0	.4	.3	(a)	183	.25	7.3	139	0	14
Nov. 21-30	7.03	7.5	310	13	.02	42	9.3	11	3.2	173	17	5.2	.4	.5	(a)	187	.25	3.5	143	1	14
Dec. 1-10	5.93	7.6	306	15	.01	40	9.1	11	3.2	167	17	4.2	.3	1.8	.0	184	.25	2.9	138	0	15
Dec. 11-20	5.85	7.7	301	14	.02	40	9.1	11	3.4	170	15	4.2	.3	1.4	.0	182	.25	2.9	138	0	14
Dec. 21-31	5.46	7.7	303	14	.02	40	9.3	11	2.8	170	16	4.5	.4	1.3	.0	183	.25	2.7	138	0	15
Jan. 1-4, 6-10, 1950.	4.59	7.7	283	14	.02	38	8.6	9.3	3.0	161	14	3.5	.4	1.7	.0	172	.23	2.1	130	0	13
Jan. 11-15, 17-20...	4.41	7.7	292	15	.01	39	9.1	10	2.0	163	16	3.8	.4	.9	.0	176	.24	2.1	135	2	14
Jan. 21-23, 25-31...	4.99	7.8	298	16	.02	40	9.1	11	2.6	168	17	4.0	.4	.9	.0	185	.25	2.5	138	0	15
Feb. 1-10	5.53	8.0	291	14	.01	39	7.6	11	3.2	162	17	4.5	.4	1.2	(a)	178	.24	2.7	128	0	15
Feb. 11-20	6.24	7.8	291	15	.02	40	7.6	9.6	3.0	159	16	4.8	.4	.8	(a)	175	.24	2.9	131	0	13
Feb. 21-28	6.46	7.8	285	14	.01	39	8.2	9.9	3.0	157	16	5.0	.4	.9	(a)	173	.24	3.0	131	2	14
Mar. 1-10.....	9.92	7.4	306	14	.01	40	9.7	9.9	2.0	169	17	4.5	.3	.9	(a)	181	.25	4.8	140	2	13
Mar. 11-20.....	25.1	7.6	318	15	.02	42	9.7	11	2.2	174	17	5.5	.4	1.4	(a)	190	.26	13	145	2	14
Mar. 21-22, 24-31..	35.1	7.6	310	13	.02	40	9.7	11	2.4	170	17	4.8	.4	.9	(a)	183	.25	17	140	0	14
Apr. 1-10	45.8	7.6	315	13	.03	42	9.0	11	2.2	175	17	5.2	.3	1.4	(a)	187	.25	23	142	0	14
Apr. 11-20	58.5	7.6	312	14	.02	42	8.9	12	3.0	174	17	4.8	.3	1.0	(a)	189	.26	30	142	0	15
Apr. 21-30	57.0	7.7	316	13	.03	43	8.7	12	3.0	178	16	4.2	.3	1.2	(a)	189	.26	29	144	0	15
May 1-10.....	59.6	7.6	333	13	.04	46	9.1	12	3.4	190	17	4.5	.4	.9	(a)	200	.27	32	152	0	14
May 11-20.....	119	7.6	340	15	.05	46	9.2	13	4.0	193	17	4.5	.5	1.4	(a)	206	.28	66	153	0	15
May 21-30.....	121	7.6	342	13	.03	47	9.4	13	4.6	195	18	4.5	.4	1.0	(a)	207	.28	68	156	0	15

a Less than 0.1 part per million of boron.

June 1-10	75.0	7.6	330	14	.04	45	9.1	12	4.4	186	18	4.5	.3	.9	(a)	200	.27	40	150	0	14
June 11-20	42.8	7.8	331	12	.03	44	8.8	12	2.6	179	16	5.5	.5	1.3	(a)	191	.26	22	146	0	15
June 21, 23-30	74.0	7.8	358	16	.03	48	10	13	3.6	193	19	6.2	.5	3.0	(a)	214	.29	43	161	3	15
July 1-10	107	7.7	360	16	.03	49	10	12	6.0	197	21	5.5	.5	2.8	(a)	220	.30	64	164	2	13
July 11-20	91	7.7	357	17	.08	48	10	13	4.4	196	21	5.8	.4	1.2	(a)	218	.30	54	161	0	15
July 21-31	38.2	7.8	356	17	.05	48	10	12	4.4	197	20	5.2	.4	1.2	(a)	215	.29	22	161	0	14
Aug. 1-5, 7-10	61.6	7.7	352	16	.06	49	10	12	4.2	198	19	4.8	.6	1.0	(a)	215	.29	36	164	2	13
Aug. 11-20	78.6	7.7	444	20	.04	69	14	8.6	3.2	253	35	1.5	.4	.7	(a)	277	.38	59	230	22	7
Aug. 21-31	86.5	7.7	458	19	.05	72	14	8.3	3.4	259	38	1.2	.6	.7	(a)	285	.39	67	237	25	7
Sept. 1-10	44.3	7.7	377	16	.07	53	11	13	3.6	211	22	5.5-	.6	.7	(a)	229	.31	27	177	4	14
Sept. 11-20	26.2	7.7	371	12	.08	51	11	12	4.8	207	22	5.5	.6	.5	(a)	221	.30	16	172	2	13
Weighted average	40.7	--	350	15	0.04	49	10	12	3.6	196	20	4.6	0.4	1.2	(a)	213	0.29	23	164	3	13

a Less than 0.1 part per million of boron.

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.

LOCATION.--At county road bridge at Loma Parda, Mora County, about 5 miles below Coyote Creek.
DRAINAGE AREA.--530 square miles (above gaging stations, see REMARKS).
RECORDS AVAILABLE.--Water temperatures: April 1949 to September 1950.
Sediment records: January 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum observed, 79°F June 13; minimum, freezing point on several days during winter months.
Sediment loads: Maximum daily, 11,900 tons July 13; minimum daily, 0 tons on many days.
EXTREMES, January 1949 to September 1950.--Water temperatures: Maximum observed, 88°F July 7, 1949; minimum, freezing point on several days during winter months.
Sediment loads: Maximum daily, 11,900 tons July 22, 1949, July 13, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 are summations of records for Mora River near Golondrinas and Coyote Creek near Golondrinas, which are given in Water-Supply Paper 1177. No appreciable inflow between stations and sampling point except during periods of heavy local rains.

Temperature (°F) of water October 1949 to September 1950
/Once-daily temperature measurements generally between 8 a. m. and 5 p. m./

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

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	24	401	26	10	26	1	5.5	17	0
2	22	276	16	8.7	26	1	6.8	61	1
3	21	138	8	8.7	22	1	7.3	26	1
4	21	95	5	9.5	18	0	8	25	1
5	21	78	4	9.8	e30	1	9	24	1
6	20	71	4	10	47	1	7.9	48	1
7	18	75	4	10	23	1	9.5	41	1
8	18	49	2	10	24	1	11	31	1
9	16	53	2	9.5	19	0	10	28	1
10	15	37	1	9.3	21	1	12	32	1
11	15	37	1	9.2	20	0	13	33	1
12	16	38	2	9.8	31	1	10	33	1
13	15	49	2	10	18	0	9	50	1
14	16	41	2	10	17	0	9	80	2
15	18	50	2	11	16	0	9.5	54	1
16	16	50	2	11	20	1	11	44	1
17	17	42	2	11	21	1	11	56	2
18	16	39	2	9.5	20	1	12	59	2
19	16	35	2	8.6	15	0	12	32	1
20	17	33	2	10	16	0	13	24	1
21	16	35	2	10	20	1	12	59	2
22	13	45	2	9.6	22	1	9	35	1
23	12	31	1	9.6	36	1	9.5	53	1
24	13	32	1	12	24	1	11	59	2
25	12	37	1	11	36	1	12	57	2
26	10	41	1	9.1	17	0	12	49	2
27	9.6	33	1	9.1	23	1	12	50	2
28	9.4	26	1	9.0	26	1	13	62	2
29	8.8	28	1	6.8	20	0	13	45	2
30	9.9	27	1	6.1	19	0	13	40	1
31	11	26	1	--	--	--	13	27	1
Total	482.7	--	104	287.9	--	19	326.0	--	40

Day	January			February			March		
1	12	48	2	9.0	13	0	6.1	18	0
2	11	50	1	7.5	64	1	8.0	36	1
3	10	82	2	8.5	21	0	7.5	16	0
4	9	42	1	10	18	0	6.4	24	0
5	8.5	50	1	12	34	1	5.5	21	0
6	8	50	1	12	28	1	5.7	20	0
7	8	60	1	11	30	1	5.0	33	0
8	9	45	1	10	26	1	5.0	94	1
9	9	41	1	11	40	1	5.0	33	0
10	9	54	1	11	47	1	5.9	19	0
11	9	38	1	11	29	1	5.4	28	0
12	9	21	1	10	26	1	5.3	28	0
13	9	31	1	10	40	1	4.5	14	0
14	8	18	0	10	34	1	5.5	38	1
15	6.5	23	0	11	65	2	6.0	30	0
16	6.5	63	1	11	39	1	5.5	37	1
17	6.5	29	1	10	30	1	4.7	36	0
18	6.5	27	0	9.1	27	1	4.9	24	0
19	6.5	82	1	9.6	41	1	5.0	24	0
20	7	16	0	9.6	26	1	5.1	22	0
21	7	e20	0	8.8	30	1	5.6	24	0
22	7	24	0	7.2	22	0	5.8	23	0
23	7.2	35	1	8.9	34	1	5.5	27	0
24	6	45	1	9.0	28	1	4.4	25	0
25	6	28	0	8.4	28	1	5.7	67	1
26	6	16	0	9.8	23	1	6.6	54	1
27	6.5	15	0	8.8	20	0	6.4	47	1
28	8	20	0	6.8	23	0	5.7	39	1
29	10	16	0	--	--	--	4.6	40	0
30	11	64	2	--	--	--	5.0	22	0
31	11	10	0	--	--	--	4.5	26	0
Total	253.7	--	22	271.0	--	23	171.8	--	8

e Estimated or interpolated.

ARKANSAS RIVER BASIN--Continued

MORA RIVER AT LOMA PARDA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2.9	24	0	3.2	17	0	5.1	34	0
2	3.1	22	0	3.8	16	0	4.1	40	0
3	2.8	31	0	3.4	11	0	5.7	30	0
4	2.8	30	0	3.4	22	0	23	250	16
5	3.5	31	0	2.9	9	0	12	150	5
6	3.2	33	0	2.9	9	0	5.8	61	1
7	3.5	36	0	2.7	5	0	4.2	32	0
8	3.8	33	0	2.5	6	0	4.1	29	0
9	3.2	43	0	2.2	8	0	3.7	25	0
10	3.0	e 40	0	2.2	5	0	3.6	32	0
11	3.1	34	0	11	275	s 29	4.5	31	0
12	3.3	32	0	15	468	s 22	3.9	24	0
13	4.9	33	0	7.0	70	1		29	0
14	4.4	51	1	5.9	42	1	3.1	16	0
15	4.0	40	0	5.5	125	2	3.7	19	0
16	3.8	35	0	4.7	56	1	2.8	19	0
17	3.8	49	0	4.0	26	0	3.2	48	0
18	4.1	25	0	3.8	26	0	6.8	83	2
19	3.3	25	0	4.1	26	0	4.3	48	1
20	3.4	28	0	4.5	15	0	3.2	42	0
21	3.2	28	0	4.3	17	0	21	1,370	s 213
22	3.1	18	0	5.1	28	0	5.6	850	13
23	3.0	31	0	5.1	28	0	4.7	250	3
24	2.9	23	0	4.8	27	0	4.2	153	2
25	2.6	19	0	4.8	36	0	3.6	155	2
26	3.0	25	0	5.7	35	1	3.5	112	1
27	2.8	86	1	5.7	32	0	3.7	93	1
28	3.6	24	0	5.3	28	0	3.0	67	1
29	2.8	21	0	4.0	29	0	3.5	55	1
30	3.0	21	0	3.8	41	0	3.4	52	0
31	--	--	--	3.5	21	0	--	--	--
Total	99.9	--	2	146.8	--	57	165.7	--	262

Day	July			August			September		
1	3.2	50	0	76	e 5,500	s 3,980	2.8	25	0
2	3.0	72	1	30	1,850	s 207	2.6	21	0
3	16	242	s 44	21	1,500	85	2.5	15	0
4	17	350	16	14	3,000	113	3.0	39	0
5	12	266	9	7.9	228	5	4.3	46	0
6	10	134	4	8.1	96	2	12	150	5
7	8.8	100	2	7.3	131	3	19	450	23
8	9.0	93	2	5.5	119	2	10	200	5
9	5.1	80	1	4.2	66	1	6.6	150	3
10	20	455	s 210	3.8	45	0	5.9	66	1
11	14	300	11	3.7	30	0	5.5	62	1
12	37	646	s 235	4.6	46	1	5.7	56	1
13	278	10,700	s 11,900	5.5	24	0	5.4	e 60	1
14	53	1,300	186	4.3	29	0	4.8	70	1
15	28	270	20	3.7	51	1	4.9	34	0
16	17	250	11	3.6	109	1	5.2	40	1
17	11	96	3	4.3	38	0	5.6	54	1
18	9.4	115	3	3.3	50	0	6.6	69	1
19	6.6	90	2	2.9	27	0	7.1	96	2
20	6.2	101	2	3.7	20	0	7.1	90	2
21	46	1,920	s 769	3.6	25	0	5.7	78	1
22	12	1,000	32	3.8	33	0	6.0	56	1
23	10	258	s 68	4.1	44	0	6.4	49	1
24	16	300	13	4.0	39	0	14	300	11
25	10	139	4	3.7	36	0	12	350	11
26	7.4	118	2	3.8	31	0	8.2	126	3
27	8.2	82	2	4.0	42	0	6.6	111	2
28	25	1,500	101	3.5	33	0	6.3	100	2
29	11	e 300	9	3.5	38	0	6.0	89	1
30	8.3	195	4	3.3	35	0	6.1	60	1
31	8.7	161	4	3.2	35	0	--	--	--
Total	726.9	--	13,670	257.9	--	4,400	203.9	--	82

Total discharge for year (second-foot-days) 3,394.2
Total load for year (tons) 18,690

e Estimated or interpolated.
s Computed by subdividing day.

MORA RIVER AT LOMA PARDA, N. MEX.--Continued

Particle-size analyses of suspended sediment, February to July 1950
(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 (second-feet)	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. 7, 1950	3:00 p. m.	11	19	420	3½	49	71	82	94	95	99	100				BSWCM
June 21	10:00 p. m.	115	4,690	3,350	48	57	72	83	89	93	--	--				BWCM
July 13	9:25 a. m.	450	15,500	4,040	31	40	49	53	59	61	63	64		76		PSWCM

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.

LOCATION.--At gaging station at ford on State Highway 57, 3½ miles northwest of Bueyeros, Harding County, and 19½ miles northeast of Mosquero.
DRAINAGE AREA.--520 square miles.
RECORDS AVAILABLE.--Chemical analyses: February to September 1950.
Water temperatures: March 1949 to September 1950.
Sediment records: March 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 674 ppm June 20; minimum, 142 ppm July 31.
Hardness: Maximum, 232 ppm Feb. 5-28, Mar. 1-31; minimum, 89 ppm July 31.
Water temperatures: Maximum observed, 94°F June 16; minimum, freezing point Dec. 22.
Sediment loads: Maximum daily, 176,000 tons July 31; minimum daily, 0 tons on many days.
EXTREMES, March 1949 to September 1950.--Dissolved solids, (1950): Maximum, 674 ppm June 20, 1950; minimum, 142 ppm July 31, 1950.
Hardness, (1950): Maximum, 232 ppm Feb. 5-28, Mar. 1-31; minimum, 89 ppm July 31, 1950.
Water temperatures: Maximum observed, 94°F June 16, 1950; minimum, freezing point Dec. 22, 1949.
Sediment loads: Maximum daily, 176,000 tons July 31, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 30, 1949	3.8	--	664	15		44	25	69		270	103	22	1.3	0.5		413	0.56	4.2	213	0	41
Feb. 5-28, 1950	5.88	8.2	678	16		45	29	65		277	106	24		.4		421	.57	6.7	232	4	38
Mar. 1-31	3.36	8.1	737	16		42	31	76		282	122	28		.2		454	.62	4.1	232	2	42
Apr. 1-30	3.34	8.1	754	16		38	33	83		279	133	30		.2		470	.64	4.2	230	2	44
May 1-31	1.98	7.8	853	19		32	36	109		293	167	35		1.1		543	.74	2.9	228	0	51
June 1-12, 14-19	a4.12	8.2	825	18		30	33	109		271	169	34		1.2		527	.72	5.9	210	0	53
June 20	--	8.2	1,000	23		46	26	152		300	236	41		2.4		674	.92	--	222	0	60
June 21-30	5.79	8.2	849	19		36	30	114		288	170	33		1.2		545	.74	8.5	214	0	54
July 1-4	.70	8.2	841	19		37	31	110		293	165	33		.4		539	.73	1.0	220	0	52
July 5	220	8.0	592	21		35	17	74		228	93	23		1.9		377	.51	224	158	0	50
July 6, 7, 9-15	14.5	7.8	504	20		40	17	43		200	72	16		2.1		309	.42	12	170	6	35
July 17-27, 29-30	69.2	7.9	384	19		37	13	25		177	42	7		2.0		232	.32	43	146	1	27
July 31	1,650	7.9	240	12		22	8.3	14		100	34	1		2.1		142	.19	653	89	7	26
Aug. 2-5, 7-25, 27-31	13.2	7.8	675	22		44	24	70		252	120	20		.7		425	.58	15	209	2	42
Sept. 1-4, 6-8 12-14, 18-29	b13.9	8.0	644	19		43	24	63		248	108	19		.8		399	.54	15	206	3	40
Sept. 9-11, 17	130	7.9	310	14		34	9.5	18		146	32	6.5		1.7		188	.26	66	124	4	24
Weighted average	c206	--	425	16		33	15	37		174	63	10		1.6		262	0.36	146	144	2	36

a Discharge for June 20 included in discharge reported for June 1-12, 14, 19.
b Discharge for Sept. 25 included in discharge reported for Sept. 9-11, 17.
c Discharge for period Feb. to Sept. includes 90 % total flow for water year.

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurement generally between 4:00 p. m. and 5:30 p. m. Oct. 1 to May 22 and between 12 m. and 2 p. m. thereafter]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	57	45	46	45	39	56	66	86	86	74	76
2	70	59	50	43	43	52	61	70	72	84	74	72
3	69	61	49	37	46	50	49	62	75	72	81	70
4	64	63	47	33	56	62	50	53	54	--	83	65
5	67	55	43	38	55	64	51	57	85	76	80	71
6	70	53	50	37	57	51	52	64	74	81	80	--
7	65	57	45	34	49	47	60	70	78	82	86	75
8	68	60	45	39	51	47	61	66	80	77	76	68
9	64	54	50	41	45	55	65	63	83	77	72	--
10	65	59	42	39	49	53	62	63	90	83	79	--
11	65	42	36	44	52	54	60	72	85	78	76	--
12	62	53	34	42	39	49	51	--	81	73	80	70
13	60	59	35	43	41	45	42	59	86	79	74	62
14	60	52	34	42	47	51	58	74	92	84	76	70
15	60	50	36	42	50	48	50	68	90	78	72	67
16	65	55	34	43	49	52	48	75	94	72	78	65
17	62	56	42	48	52	56	61	72	85	74	71	76
18	59	58	54	53	52	45	56	73	90	--	72	75
19	57	58	--	45	56	40	55	72	85	74	72	74
20	57	52	47	53	53	55	64	75	--	--	70	74
21	60	49	33	54	47	55	67	70	64	74	70	66
22	50	52	32	54	56	59	68	70	84	--	83	67
23	49	53	35	54	50	55	70	84	88	84	74	66
24	53	51	34	53	51	59	62	86	86	84	79	71
25	59	55	36	45	61	58	54	79	91	75	78	65
26	50	68	37	36	61	48	70	77	78	79	--	67
27	60	56	36	36	57	41	75	74	87	80	77	66
28	62	58	36	42	57	50	70	85	76	80	78	67
29	62	56	35	40	--	51	66	84	82	84	76	64
30	39	53	40	45	--	49	59	81	83	84	82	71
31	45	--	45	39	--	65	--	--	--	--	75	--
Average	60	55	41	43	51	52	59	71	82	79	77	69

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	4.7	18	0	3.8	143	1	5.8	30	0
2	4.7	18	0	3.8	58	1	6.4	27	0
3	4.7	23	0	3.4	151	1	5.8	18	0
4	4.2	23	0	3.4	12	0	5.2	17	0
5	3.8	23	0	3.4	16	0	5.8	78	1
6	3.8	23	0	3.8	24	0	6.4	26	0
7	3.0	23	0	3.8	19	0	6.4	96	2
8	2.4	23	0	4.2	41	0	7.1	29	1
9	2.7	25	0	3.8	57	1	7.1	30	1
10	2.7	25	0	3.4	11	0	7.1	32	1
11	2.4	27	0	3.0	11	0	7	202	4
12	2.4	27	0	2.7	44	0	7	e 45	1
13	2.4	81	1	3.0	20	0	6	79	1
14	2.4	359	2	3.4	15	0	5	24	0
15	3.0	18	0	3.4	12	0	7	90	2
16	3.0	20	0	3.8	36	0	8	86	2
17	3.4	17	0	4.2	14	0	8	150	3
18	3.4	23	0	4.7	15	0	7.8	76	2
19	3.0	28	0	4.7	19	0	7.8	e 75	2
20	3.0	78	1	4.7	23	0	7.1	39	1
21	3.0	22	0	4.7	15	0	6	43	1
22	3.4	107	1	5.2	31	0	4	84	1
23	3.8	10	0	5.8	22	0	7	98	2
24	4.2	9	0	5.2	22	0	8	84	2
25	4.2	68	1	5.2	42	1	8	23	0
26	3.8	15	0	4.7	59	1	9	25	1
27	3.8	23	0	4.7	19	0	9	26	1
28	3.4	16	0	4.2	26	0	9	80	2
29	3.4	21	0	4.7	13	0	9	84	2
30	3.8	9	0	5.8	5	0	8	65	1
31	4.2	13	0	--	--	--	7	116	2
Total	106.1	--	6	124.6	--	6	217.8	--	39
	January			February			March		
1	5.2	57	1	5	79	1	4.7	25	0
2	7.8	28	1	5	167	2	5.2	26	0
3	7	22	0	5	211	3	4.7	16	0
4	8	31	1	6	e 200	3	4.2	26	0
5	7	22	0	7.1	e 100	2	3.8	32	0
6	6	64	1	6.4	60	1	3.8	301	3
7	9	38	1	5.8	20	0	3.4	625	6
8	13	54	2	5.8	23	0	3.4	623	6
9	10	100	3	5.8	17	0	3.8	235	2
10	6	47	1	5.8	65	1	4.2	26	0
11	7.1	76	1	5.8	61	1	3.8	32	0
12	6.4	117	2	5.2	22	0	3.0	46	0
13	7.1	62	1	5.8	341	5	3.0	25	0
14	7.1	68	1	6.4	318	5	3.0	53	0
15	7.1	e 70	1	5.8	112	2	3.8	24	0
16	6.4	71	1	6.4	78	1	3.4	25	0
17	5.2	e 100	1	7.1	48	1	3.4	26	0
18	7.8	89	2	7.1	29	1	3.0	61	0
19	7.8	21	0	6.4	32	1	2.7	27	0
20	7.1	35	1	6.4	28	1	3.0	56	0
21	6.4	36	1	6.4	34	1	2.7	44	0
22	5.8	20	0	7.1	29	1	3.0	43	0
23	5.8	63	1	6.4	42	1	2.7	54	0
24	5.2	54	1	5.8	39	1	1.8	50	0
25	5.2	31	0	5.2	42	1	2.0	91	0
26	5	29	0	4.7	27	0	2.0	92	0
27	5	37	0	4.7	29	0	2.7	72	1
28	5	44	1	4.2	21	0	3.0	64	1
29	4	42	0	--	--	--	3.4	65	1
30	4	91	1	--	--	--	3.4	56	1
31	5	59	1	--	--	--	4.2	60	1
Total	204.5	--	28	164.6	--	36	104.2	--	22

e Estimated or interpolated.

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	4.2	40	0	2.0	22	0	7.1	67	1
2	4.7	57	1	1.6	26	0	9.6	64	2
3	4.2	74	1	.8	30	0	8.6	54	1
4	4.7	47	1	.5	25	0	18	1,500	73
5	5.2	48	1	.4	47	0	13	e 500	18
6	4.2	46	1	.4	37	0	7.1	175	3
7	3.4	41	0	.3	96	0	3.0	122	1
8	3.0	47	0	.3	38	0	3.0	132	1
9	2.7	137	1	.3	34	0	1.8	86	0
10	2.4	85	1	.4	34	0	1.8	378	2
11	3.0	50	0	.6	47	0	1.6	208	1
12	2.4	52	0	1.6	e 100	0	1.6	250	1
13	3.8	31	0	3.0	187	2	1.2	546	2
14	3.8	54	1	3.8	70	1	.7	157	0
15	3.4	44	0	5.8	167	3	.5	55	0
16	4.7	43	1	3.8	41	0	.6	56	0
17	3.8	46	0	2.7	54	0	.5	455	1
18	3.4	54	0	1.8	117	1	1.4	114	0
19	3.8	50	1	2.0	115	1	.7	64	0
20	4.2	47	1	2.0	66	0	.7	e 100	0
21	3.4	36	0	2.0	118	1	46	4,660	s 1,110
22	2.7	36	0	2.0	154	1	4.7	600	8
23	3.0	38	0	1.8	382	2	.7	240	0
24	2.4	60	0	1.8	167	1	.2	393	0
25	2.4	52	0	2.4	371	2	.1	603	0
26	2.4	29	0	3.4	e 350	3	.1	153	0
27	2.4	e 30	0	2.7	345	3	.1	133	0
28	2.0	19	0	2.7	138	1	0	116	0
29	2.0	29	0	2.7	180	1	4.9	500	7
30	2.4	20	0	3.0	141	1	1.1	151	0
31	--	--	--	2.7	79	1	--	--	--
Total	100.1	--	11	61.3	--	25	140.4	--	1,230

Day	July			August			September		
1	0.7	494	1	68	2,000	367	2.4	32	0
2	1.2	140	0	22	111	7	1.6	206	1
3	.3	173	0	33	137	12	1.1	193	1
4	.6	241	0	16	63	3	2.4	61	0
5	220	9,980	s 10,300	12	49	2	4.7	58	1
6	57	5,030	774	9.6	39	1	50	1,160	s 341
7	16	1,640	71	8.6	68	2	35	500	47
8	7.1	761	15	8.6	39	1	48	716	s 2,460
9	4.7	357	5	7.8	23	0	316	8,480	s 13,100
10	9.6	1,210	31	7.1	34	1	174	5,780	s 6,180
11	13	402	14	18	128	6	48	1,500	194
12	23	300	19	18	50	2	23	232	14
13	12	161	5	11	37	1	16	36	2
14	7.8	101	2	11	67	2	23	28	2
15	5.2	168	2	9.6	122	3	26	54	4
16	3.8	233	2	7.8	76	2	24	65	4
17	79	3,050	s 3,680	29	147	12	58	2,310	s 1,630
18	215	9,040	s 15,100	14	38	1	5.2	154	2
19	257	8,820	s 24,800	5.8	109	2	4.2	78	1
20	92	3,340	s 922	4.7	41	1	4.2	62	1
21	44	680	s 178	4.7	27	0	5.2	47	1
22	104	1,400	s 646	4.7	29	0	5.8	75	1
23	22	584	35	4.2	69	1	7.1	12	0
24	7.1	287	6	3.0	17	0	8.6	79	2
25	3.4	192	2	2.4	136	1	52	1,000	140
26	2.4	131	1	3.0	224	2	16	37	2
27	75	5,980	s 3,390	46	450	56	9.6	26	1
28	63	5,200	s 6,590	8.6	87	2	7.8	26	1
29	3.8	1,500	15	5.2	64	1	8.6	e 50	1
30	1.6	640	3	3.8	277	3	8.6	49	1
31	1,650	11,900	s 176,000	3.0	93	1	--	--	--
Total	3,001.3	--	242,600	410.2	--	495	996.1	--	24,140

Total discharge for year (second-foot-days) 5,631.2
Total load for year (tons) 268,600

e Estimated or interpolated.
s Computed by subdividing day.

ARKANSAS RIVER BASIN--Continued

UTE CREEK NEAR BUEYEROS, N. MEX.--Continued

Particle-size analyses of suspended sediment, June to July 1950
(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 (second-feet)	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	
June 21, 1950	7:20 a.m.	48	10,700	3,460	--	52	--	76	--	90	96	99		100		PSWCM
June 21	7:34 a.m.	135	16,900	3,030	47	61	77	86	93	98	--	--		--		BWCM
June 21	9:40 a.m.	187	15,100	3,160	--	68	--	86	--	--	--	--		--		PWCM
June 21	9:50 a.m.	187	14,100	2,470	--	67	--	88	--	--	--	--		--		PWCM
July 5	6:10 a.m.	1,280	31,100	4,400	--	36	--	49	--	67	78	86		99		PSWCM
July 17	7:02 p.m.	1,480	28,300	2,530	--	29	--	40	--	58	74	85		97		PSWCM
July 18	5:50 a.m.	1,700	51,600	3,180	28	34	42	49	62	95	97	99		100		PSWCM
July 18	5:50 a.m.	1,700	51,600	3,420	3	15	27	40	58	95	97	99		100		SPN
July 19	6:08 p.m.	1,330	54,100	2,640	--	22	--	30	--	42	50	58		80		PSWCM
July 19	7:13 p.m.	3,400	44,400	3,220	--	24	--	32	--	49	68	90		100		PSWCM

DEEP FORK RIVER NEAR DEWAR, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 266, 3½ miles upstream from Wolf Creek, and 3½ miles east of Dewar, Okmulgee County.
DRAINAGE AREA.--2,307 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 2,020 ppm Jan. 3; minimum, 84 ppm July 21-24.
Hardness: Maximum, 579 ppm Jan. 3; minimum, 40 ppm May 11-12, 14-17.
Water temperatures: Maximum, 80°F June 15-16, 18, 20, 25-29, July 3, Aug. 15; minimum, 34°F Jan. 8.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 2,730 ppm Dec. 1-3, 1948; minimum, 84 ppm July 21-24, 1950.
Hardness: Maximum, 624 ppm Dec. 1-3, 1948; minimum, 40 ppm May 11-12, 14-17, 1950.
Water temperatures: Maximum, 85°F July 22, 1949; minimum, 33°F Jan. 28-29, 31, Feb. 1-2, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949...	78.7	8.2	632	9.0	0.10	34	14	79	17	124	19	125	0.3	3.5		364	0.50	77	142	41	51
Oct. 11, 13, 18-20	224	--	881	--	--	38	16	115		113	22	208	--	2.0		490	.67	296	161	68	61
Oct. 12.....	728	--	2,700	--	--	100	28	409		85	16	825	--	5.5		1,430	1.94	2,810	364	295	71
Oct. 14-17.....	129	--	692	--	--	27	11	90		65	14	170	--	1.5		395	.54	138	112	60	64
Oct. 21, 23-26, 28-31.....	500	--	691	--	--	27	13	86		86	26	148	--	1.0		388	.53	524	121	50	61
Oct. 22, 27.....	816	--	1,100	--	--	47	17	106		41	58	228	--	1.0		624	.85	1,370	187	154	55
Nov. 1-10.....	142	--	596	--	--	27	16	68		119	14	118	--	2.5		338	.46	130	134	36	52
Nov. 11-20.....	117	7.5	992	--	.05	48	20	115		125	25	228	.1	3.5		547	.74	173	202	100	55
Nov. 21-25, 30...	68.2	--	1,460	--	--	67	27	183		167	21	365	--	2.0		786	1.07	145	278	141	59
Nov. 26-29.....	66.8	--	1,100	--	--	51	20	140		137	23	265	--	4.0		595	.81	107	209	97	59
Dec. 1-10.....	68.3	8.0	1,850	5.0	.18	82	32	251	13	201	26	485	.2	1.5		1,100	1.50	203	336	172	61
Dec. 11-20.....	82.8	--	2,220	--	--	89	39	304		228	33	580	--	5.0		1,160	1.58	259	382	196	63
Dec. 21-23, 30-31	94.0	--	2,420	--	--	97	45	331		244	39	640	--	3.5		1,280	1.74	325	427	227	63
Dec. 24-25.....	90.0	--	3,150	--	--	127	52	444		243	38	888	--	5.5		1,670	2.27	406	531	332	64
Dec. 26-29.....	95.5	--	1,840	--	--	74	39	240		238	39	445	--	4.0		1,020	1.39	263	345	150	60
Jan. 1, 5-6, 1950.	129	--	2,330	--	--	95	43	325		236	39	625	--	6.5		1,250	1.70	435	414	220	63
Jan. 2, 4.....	102	--	2,940	--	--	118	49	423		239	37	835	--	5.5		1,590	2.16	438	496	300	65
Jan. 3.....	94.0	--	3,690	--	--	138	57	561		236	33	1,110	--	5.0		2,020	2.75	513	579	386	68
Jan. 7-10.....	163	--	1,840	--	--	74	24	266		209	44	455	--	4.5		1,060	1.44	467	283	112	67
Jan. 11, 17, 19-20	416	--	1,330	--	--	50	21	172		98	30	335	--	2.0		724	.98	813	212	131	64
Jan. 12, 18.....	562	--	1,720	--	--	70	27	229		132	30	455	--	3.5		978	1.33	1,480	286	178	64
Jan. 13, 16.....	564	--	965	--	--	37	13	131		58	21	255	--	2.5		550	.75	838	146	98	66
Jan. 14-15.....	591	--	693	--	--	26	12	89		56	35	159	--	2.0		435	.59	694	114	68	63
Jan. 21-31.....	146	7.9	1,410	12	.00	64	32	175	7.2	209	33	318	.1	1.5		796	1.08	314	29	1[illegible]	58

ARKANSAS RIVER BASIN--Continued

DEEP FORK RIVER NEAR DEWAR, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Feb. 1-10, 1950..	102	--	1,950	--	--	78	33	248		184	33	480	--	8.5		1,060	1.44	292	330	179	62
Feb. 11-12	606	--	1,990	--	--	75	37	280		200	37	525	--	5.0		1,060	1.44	1,730	339	175	64
Feb. 13-14	2,425	--	1,020	--	--	40	16	131		65	27	262	--	1.0		588	.80	3,850	166	113	63
Feb. 15-21	902	--	601	--	--	28	14	70		92	20	129	--	2.0		357	.49	869	128	52	54
Feb. 22-24	243	--	852	--	--	38	20	103		141	27	182	--	2.0		495	.67	325	177	62	56
Feb. 25-28	166	--	1,050	--	--	47	23	128		145	27	242	--	2.5		604	.82	271	212	92	57
Mar. 1-3, 6-7 ...	294	--	1,280	--	--	58	28	158		168	26	310	--	2.0		738	1.00	586	260	122	57
Mar. 4-5	294	--	2,100	--	--	78	26	303		92	21	610	--	4.0		1,090	1.48	865	302	226	69
Mar. 8-10	191	--	966	--	--	48	27	109		212	29	185	--	3.0		554	.75	282	231	58	51
Mar. 11, 13-16 ..	213	--	997	--	--	46	23	118		150	29	220	--	2.5		553	.75	318	210	86	55
Mar. 12	374	--	563	--	--	20	14	74		66	49	114	--	3.3		348	.47	351	108	54	60
Mar. 17-20	144	--	1,380	--	--	62	27	175		159	34	340	--	1.8		776	1.06	302	266	135	59
Mar. 21-31	100	7.9	1,780	6.6	0.00	84	34	231	8.8	200	36	455	0.1	3.1		1,030	1.40	278	350	186	58
Apr. 1-2	88.5	--	1,890	--	--	83	38	242		234	41	460	--	8.4		1,090	1.48	260	363	171	59
Apr. 3-10	2,337	--	521	--	--	22	12	61		70	20	111	--	3.3		340	.46	2,150	104	47	56
Apr. 11-14	356	--	648	--	--	34	14	76		115	19	136	--	2.9		372	.51	358	142	48	54
Apr. 15-20	162	--	938	--	--	47	18	115		139	21	215	--	2.7		545	.74	238	191	77	57
Apr. 21-24, 29-30	135	--	1,200	--	--	51	23	157		158	35	280	--	2.3		691	.94	252	222	92	61
Apr. 25-28	115	--	1,560	--	--	75	28	204		192	25	398	--	1.5		912	1.24	283	302	144	59
May 1-6	86.7	--	1,620	--	--	80	33	203		221	30	400	--	1.3		1,010	1.37	236	335	154	57
May 7-10	1,267	--	803	--	--	31	15	105		90	26	188	--	2.3		511	.69	1,750	139	65	62
May 11-12, 14-17	14,140	--	172	--	--	8.2	4.6	19		32	9.0	31	--	1.5		89	.12	3,400	40	14	51
May 13, 18-20 ...	10,000	--	254	--	--	15	8.0	21		56	8.8	42	--	2.2		203	.28	5,480	70	24	39
May 21-22	5,370	--	430	--	--	25	11	46		101	15	76	--	1.5		258	.35	3,740	108	24	48
May 23-29	1,123	--	640	--	--	39	17	66		147	20	119	--	1.4		375	.51	1,140	168	47	46
May 30-31	942	--	1,120	--	--	68	26	113		141	22	272	--	1.0		686	.93	1,740	276	161	47
June 1-7	840	--	706	--	--	38	17	75		132	18	142	--	2.4		400	.54	907	165	57	50
June 8-10	774	--	546	--	--	32	16	55		141	14	94	--	2.8		302	.41	631	146	30	45
June 11-12, 14, 16-20	1,151	--	448	--	--	30	12	40		110	16	73	--	2.7		262	.36	814	124	34	41
June 13, 15	914	--	958	--	--	49	17	114		112	19	230	--	3.0		590	.80	1,460	192	100	56
June 21-24	318	--	618	--	--	37	16	59		149	15	105	--	1.7		349	.47	300	158	36	45
June 25, 28-30 ...	194	--	874	--	--	47	21	95		190	19	172	--	1.1		508	.69	266	204	56	50
June 26-27	228	--	2,600	--	--	86	30	278		152	19	565	--	1.1		1,050	1.43	646	338	213	64

July 1-4	108	--	800	--	--	46	22	86	187	24	151	--	1.9	467	.64	136	206	52	48
July 5, 8-9	198	--	1,280	--	--	61	29	155	204	31	288	--	2.4	771	1.05	412	271	104	55
July 6-7	437	--	545	--	--	21	10	71	45	35	122	--	2.8	319	.43	376	94	56	62
July 10	578	--	3,100	--	--	128	42	454	164	34	925	--	5.5	1,670	2.27	2,610	492	357	67
July 11-13	2,763	--	388	--	--	15	7.4	45	45	9.1	84	--	1.7	264	.36	1,970	68	31	59
July 14-18	3,336	--	250	--	--	14	8.2	28	70	11	42	--	1.9	196	.27	1,770	68	11	47
July 19-20	6,080	--	190	--	--	9.5	7.2	16	27	9.3	39	--	1.8	96	.13	1,580	53	31	40
July 21-24	11,790	--	177	--	--	8.9	5.8	14	28	7.2	32	--	1.7	84	.11	2,670	46	23	40
July 25-31	7,887	--	240	--	--	15	7.7	19	57	7.6	38	--	1.8	226	.31	4,810	69	22	37
Aug. 1-10	4,126	--	426	--	--	24	12	40	103	11	71	--	1.5	254	.35	2,830	110	25	44
Aug. 11-13, 17-18	939	--	716	--	--	38	17	81	136	15	151	--	1.7	396	.54	1,000	165	54	52
Aug. 14-16	356	--	931	--	--	53	23	100	197	19	185	--	2.4	518	.70	498	226	65	49
Aug. 19-20	1,850	--	362	--	--	16	11	42	68	12	75	--	2.3	230	.31	1,150	85	30	52
Aug. 21-24, 29, 31	648	--	612	--	--	30	14	72	103	17	131	--	1.4	348	.47	609	132	48	54
Aug. 25-28, 30	526	--	946	--	--	46	23	109	155	24	208	--	1.7	529	.72	751	210	82	53
Sept. 1-3, 6	226	--	685	--	--	32	14	82	95	19	153	--	1.4	389	.53	237	138	60	56
Sept. 4-5, 7	186	--	934	--	--	44	21	110	145	21	208	--	1.7	516	.70	259	196	78	55
Sept. 8-10	192	--	1,380	--	--	66	29	167	207	23	320	--	3.0	771	1.05	400	284	114	56
Sept. 11-12	149	--	1,730	--	--	79	34	227	219	24	442	--	4.1	988	1.34	397	337	158	59
Sept. 13-15	703	--	1,210	--	--	55	27	146	180	33	270	--	2.3	686	.93	1,300	248	100	56
Sept. 16-20	6,574	--	247	--	--	11	6.9	25	26	11	54	--	1.5	217	.30	3,850	56	34	49
Sept. 21-23	3,440	--	360	--	--	19	8.8	49	62	13	88	--	3.2	252	.34	2,340	84	32	56
Sept. 24-30	358	--	787	--	--	42	19	85	147	20	160	--	1.8	468	.64	452	183	62	50
Weighted average	1,338	--	412	--	--	20	10	45	68	13	85	--	1.9	258	0.35	932	91	36	52

ARKANSAS RIVER BASIN--Continued

DEEP FORK RIVER NEAR DEWAR, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

PETIT JEAN CREEK AT DANVILLE, ARK.

LOCATION.--At highway bridge at Danville, Yell County, a quarter of a mile downstream from Dutch Creek and 1,800 feet upstream from Chicago, Rock Island, and Pacific Railway bridge.
DRAINAGE AREA.--741 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 66 ppm Oct. 11-20; minimum, 13 ppm Feb. 1-3.
Hardness: Maximum, 30 ppm Oct. 11-20, Nov. 11-20; minimum, 9 ppm Feb. 1-3.
Water temperatures: Maximum, 88°F Aug. 8; minimum, 34°F Jan. 22.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 68 ppm Dec. 21-31, 1948; minimum, 13 ppm Feb. 1-3, 1950.
Hardness: Maximum, 33 ppm Nov. 1-10, 1948; minimum, 9 ppm Feb. 1-10, 1949, Feb. 1-3, 1950.
Water temperatures: Maximum, 88°F Aug. 8, 1950; minimum, 34°F Jan. 22, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-10, 1949	26.1	7	7.4	84.8	--	--	5.2	3.8	6.3	--	35	6.0	6.5	--	2.2	55	29	0
Oct. 11-20	25.3	7	5.8	109	--	--	5.3	4.0	13	--	6	6.1	28	--	2.2	66	30	25
Oct. 21-31	301	23	7.4	94.5	3.7	0.20	5.3	3.6	5.0	0.6	29	5.4	5.5	0.1	2.4	53	28	4
Nov. 1-10	107	20	--	89.8	--	--	5.5	3.2	6.7	--	28	6.6	6.0	--	3.8	62	27	4
Nov. 11-20	41.9	20	--	86.2	--	--	5.7	3.9	6.0	--	31	6.5	5.5	--	2.2	61	30	5
Nov. 21-30	29.1	11	7.6	90.1	8.3	.16	5.6	3.6	7.1	1.7	35	7.5	4.5	.3	1.7	59	29	0
Dec. 1-11	28.7	10	7.5	83.7	3.8	.14	5.2	3.3	3.8	1.4	30	6.3	9.5	.0	1.4	55	27	2
Dec. 12-20	398	40	7.2	71.8	--	--	3.6	2.8	6.2	--	23	7.0	5.2	--	1.9	38	20	2
Dec. 21-31	460	30	7.3	70.0	--	--	3.2	2.7	5.3	--	22	6.0	5.5	--	1.6	35	19	1
Jan. 1-6, 1950	2,876	70	7.1	37.9	--	--	3.2	2.9	3.3	--	12	6.0	5.0	--	1.9	28	20	10
Jan. 7-10	2,948	70	7.2	61.1	--	--	4.6	1.9	5.3	--	16	9.0	4.8	--	1.9	35	19	6
Jan. 11-20	5,071	70	7.0	48.2	--	--	2.8	2.3	3.7	--	12	8.0	3.5	--	2.2	28	16	7
Jan. 21-31	3,517	11	7.0	47.1	4.9	.34	2.2	1.9	3.8	.8	13	5.9	3.0	.1	.8	32	13	3
Feb. 1-3	6,033	38	7.3	28.5	--	--	1.0	1.6	1.4	--	9	2.0	1.5	--	.6	13	9	2
Feb. 4-10	3,164	45	6.8	44.4	--	--	2.2	1.6	4.0	--	11	8.0	2.8	--	1.0	25	12	3
Feb. 11, 16-20	3,287	40	7.1	51.7	--	--	3.4	1.7	4.8	--	15	7.0	3.0	--	.7	28	16	3
Feb. 12-15	7,155	45	7.0	30.2	--	--	2.3	2.0	3.5	--	10	9.0	1.8	--	1.4	25	14	6
Feb. 21-28	2,875	65	6.9	45.2	12	.06	3.6	2.3	4.6	2.2	20	7.2	3.0	.3	1.8	48	18	7
Mar. 1-10	2,550	20	6.7	41.9	--	--	1.8	1.3	3.4	--	10	5.5	2.5	--	.9	20	10	2
Mar. 11-20	2,321	22	6.7	46.6	--	--	2.9	2.0	3.3	--	12	9.5	2.2	--	1.1	27	15	6
Mar. 21-31	997	55	7.5	55.0	9.8	.08	3.2	2.3	4.2	3.9	16	10	4.0	.2	1.6	48	17	4

ARKANSAS RIVER BASIN--Continued

PETIT JEAN CREEK AT DANVILLE, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Apr. 1-10, 1950	605	38	6.5	62.7	6.2	0.22	3.8	3.1	2.4		15	7.4	4.2	0.1	1.7	37	22	10
Apr. 11-20	226	16	7.3	62.5	--	--	2.9	3.0	4.9	--	18	9.7	4.2	--	.6	34	20	5
Apr. 21-30	405	27	7.2	66.0	--	--	3.1	2.6	5.1	--	18	8.6	4.5	--	1.3	34	18	4
May 1-10	3,354	12	6.8	49.9	--	--	3.7	2.1	3.2		13	6.7	4.8	--	.5	27	18	7
May 11-20	2,330	8	6.6	56.7	--	--	3.2	2.4	4.8	--	12	8.9	4.0	--	3.4	33	18	8
May 21-31	2,355	11	6.7	58.2	--	--	3.3	2.9	4.3	--	16	9.5	4.5	--	1.7	34	20	7
June 1-10	1,842	25	6.9	59.3	--	--	3.3	3.0	6.1	--	17	13	3.0	--	1.7	38	21	7
June 11-20	797	26	7.0	70.9	5.9	.18	4.0	2.7	4.6	2.6	20	8.6	3.8	.2	1.9	56	21	5
June 21-30	205	40	7.5	62.8	--	--	3.8	3.2	6.1	--	23	7.9	3.8	--	1.9	38	23	4
July 1-10	278	22	7.2	72.8	8.6	.15	5.0	3.0	3.6	2.0	28	5.5	3.5	.1	1.6	56	25	2
July 11-20	192	23	7.2	72.2	--	--	4.8	3.8	6.8	--	27	9.3	5.0	--	1.1	60	28	6
July 21, 27-29	1,060	45	7.1	58.4	--	--	4.4	2.8	4.8	--	20	9.0	4.5	--	1.1	36	22	6
July 22-26, 30-31	2,677	40	7.0	41.7	--	--	3.8	2.1	7.6	--	16	5.0	9.5	--	1.3	37	18	5
Aug. 1-10	1,554	70	7.3	58.5	--	--	2.4	2.7	5.2	--	19	6.0	4.5	--	1.4	31	17	2
Aug. 11-20	1,496	60	7.3	67.2	--	--	4.1	3.0	4.9	--	20	7.2	4.5	--	1.7	35	23	6
Aug. 21-31	1,526	45	6.6	62.3	6.9	.80	4.3	2.3	5.7	1.5	22	7.1	3.2	.4	1.6	55	20	2
Sept. 1-10	206	50	7.3	71.5	9.4	.02	8.0	.6	3.8	3.3	25	5.9	4.5	.1	1.9	54	22	2
Sept. 11-15, 19-20	546	80	7.2	64.4	--	--	4.2	3.1	3.9	--	25	5.8	3.5	--	2.5	35	23	3
Sept. 16-18	2,690	60	7.0	41.6	--	--	3.8	2.2	1.4		14	5.0	2.8	--	1.3	23	19	7
Sept. 21-30	1,930	70	7.5	54.7	--	--	3.7	1.8	3.6	--	18	4.9	2.5	--	2.6	28	17	2
Average	1,469	--	--	61.8	--	--	3.8	2.6	4.8	--	19	7.2	4.8	--	1.7	40	20	5

ARKANSAS RIVER BASIN--Continued

PETIT JEAN CREEK AT DANVILLE, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

ARKANSAS RIVER BASIN--Continued

BAYOU METO NEAR STUTTGART, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 79, 5½ miles southwest of Stuttgart, Arkansas County, and 8 miles upstream from Crooked Creek.
RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1950.
Water temperatures: November 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 119 ppm July 17-20; minimum, 22 ppm Feb. 21-28, Mar. 1-10.
Hardness: Maximum, 73 ppm July 17-20; minimum, 12 ppm Jan. 11-20.
Water temperatures: Maximum, 84°F July 20; minimum, 39 F Jan. 5.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Nov. 1-10, 1949	1,013	34	--	65.4	--	--	5.4	2.9	6.5	--	25	3.8	5.5	--	2.0	38	25	5
Nov. 11-20.....	501	32	--	67.4	--	--	5.4	3.1	5.4	--	32	2.1	8.2	--	2.2	42	26	0
Nov. 21-30.....	33.0	40	7.6	96.4	9.4	--	5.2	3.0	6.8	1.9	32	3.6	5.5	0.3	2.8	65	25	0
Dec. 1-10	34.4	25	7.8	90.4	7.7	--	6.0	2.9	8.1	2.0	32	3.0	9.5	.0	1.4	71	27	1
Dec. 11-20	895	32	--	58.6	--	--	4.2	3.0	6.4	--	28	5.8	2.2	--	2.3	38	23	0
Dec. 21-31	1,600	32	--	53.9	--	--	3.3	2.5	5.7	--	20	5.6	4.5	--	2.0	33	19	2
Jan. 1-10, 1950	1,817	70	7.4	51.9	--	--	3.4	2.7	6.9	--	18	9.0	4.8	--	1.3	37	20	5
Jan. 11-20	3,102	50	7.2	42.9	--	--	2.8	1.1	4.4	--	14	4.0	2.8	--	1.9	24	12	0
Jan. 21, 23-24, 27-30	3,540	65	7.4	40.9	--	--	3.7	1.6	5.2	--	18	7.0	2.8	--	.8	30	16	1
Jan. 22, 25-26, 31 ...	3,580	65	7.5	52.5	--	--	3.7	2.4	6.6	--	22	7.0	4.5	--	1.8	37	19	1
Feb. 1-10	3,497	50	6.9	47.9	--	--	3.8	1.3	3.4	--	16	3.0	2.8	--	.8	23	15	2
Feb. 11-20	3,797	37	7.3	42.6	4.2	0.15	3.2	1.4	2.8	--	14	3.7	2.2	.1	1.2	26	14	2
Feb. 21-28	3,765	22	6.7	41.1	--	--	3.1	1.6	3.2	--	15	4.0	2.0	--	.6	22	14	2
Mar. 1-10	2,609	33	6.9	38.5	--	--	3.2	1.4	3.2	--	13	4.9	1.8	--	1.5	22	14	3
Mar. 11-31.....	1,688	32	6.8	41.7	--	--	2.6	1.5	3.2	--	13	4.9	2.2	--	2.4	23	13	2
Apr. 1-10	1,540	29	7.0	44.9	--	--	3.4	1.4	5.0	--	16	5.4	3.0	--	1.0	27	14	1
Apr. 11-20	1,160	40	7.0	49.8	--	--	4.3	1.6	4.0	--	19	3.1	2.8	--	1.4	27	17	2
Apr. 21-30.....	448	35	6.8	61.0	--	--	4.8	2.4	4.8	--	23	4.0	3.5	--	2.9	34	22	3
May 1-3, 5-6	511	34	7.1	55.9	--	--	4.6	2.0	4.3	--	20	7.0	3.0	--	2.8	34	20	3
May 4, 7-10	1,066	30	6.7	45.3	--	--	3.0	1.9	3.6	--	14	3.0	2.2	--	1.6	27	15	4
May 11-20	1,742	20	6.5	47.1	--	--	4.2	2.4	2.9	--	19	4.0	5.5	--	.4	29	21	5
May 21-31	1,652	21	6.9	50.9	--	--	5.0	2.4	2.8	--	23	3.1	5.0	--	.6	30	22	4
June 1-10	863	23	6.9	60.7	--	--	6.4	3.0	4.9	--	29	4.6	5.2	--	.9	39	28	5
June 11-20	184	45	7.4	83.0	--	--	5.8	3.5	6.2	--	29	5.8	6.0	--	5.8	47	29	5
June 21-30	38.4	70	7.4	97.2	--	--	7.4	3.7	8.3	--	36	4.9	10	--	2.2	54	34	4

July 1-10	4.4	80	7.9	123	--	--	8.2	5.1	9.8	--	51	4.9	8.2	--	4.8	66	41	0
July 11-16	.1	70	7.9	150	--	--	11	6.0	9.9	--	67	8.4	9.8	--	4.6	83	52	0
July 17-20	.0	25	7.9	201	--	--	16	8.0	14	--	105	2.0	9.2	--	3.8	119	73	0
July 21-25	13.4	20	7.8	171	--	--	17	5.7	9.8	--	82	1.0	8.5	--	5.4	107	66	0
July 26-31	484	70	7.4	104	--	--	8.4	4.0	10	--	43	7.0	6.5	--	1.8	57	32	0
Aug. 1-10	765	60	7.0	76.8	9.6	.28	7.4	2.4	7.5	2.0	38	11	2.8	.1	1.6	65	28	0
Aug. 11-21	180	60	7.6	105	--	--	6.6	4.0	8.6	--	46	3.5	6.5	--	1.5	54	33	0
Aug. 22-31	798	45	6.8	73.3	--	--	6.2	2.8	5.7	--	30	3.1	6.0	--	1.2	40	27	2
Sept. 1-10	1,246	70	7.0	75.9	--	--	8.0	2.2	5.7	--	37	2.0	4.2	--	1.0	41	29	0
Sept. 11-20	1,180	65	7.5	76.7	--	--	8.6	2.5	4.5	--	34	4.8	5.5	--	1.6	44	32	4
Sept. 21-30	1,228	75	7.5	71.7	--	--	6.9	3.1	3.8	--	32	4.0	3.8	--	1.9	40	30	4
Average	a1,312	--	--	73.8	--	--	5.8	2.8	5.9	--	31	4.8	5.0	--	2.0	44	26	2

a Mean daily discharge, water year October 1949 to September 1950, 1,278 second-feet.

ARKANSAS RIVER BASIN--Continued

BAYOU METO NEAR STUTTGART, ARK.--Continued

Temperature (°F) of water, November 1949 to September 1950

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

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN NEW MEXICO

Chemical analyses, in parts per million, October 1949 to October 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
CANADIAN RIVER NEAR TAYLOR SPRINGS																					
Nov. 21, 1949	24		3,070	--		--	--	--	267	1,690	--	--	--			--	--		--	--	--
Dec. 30	.8		2,840	--		--	--	--	295	1,510	--	--	--			--	--		--	--	--
Jan. 26, 1950	4.1		2,910	13		286	166	244	267	1,560	57	0.4	2.0			2,460	3.35		1,400	1,180	28
Feb. 9	12		2,960	--		--	--	--	262	1,600	--	--	--			--	--		--	--	--
Feb. 16	14		3,090	--		--	--	--	261	1,690	--	--	--			--	--		--	--	--
Apr. 5	4.9		3,270	5.8		336	189	273	246	1,820	79	.5	.1			2,820	3.84		1,620	1,410	27
May 16	5.1		3,180	--		--	--	--	234	1,620	--	--	--			--	--		--	--	--
May 25	4.4		3,080	--		--	--	--	199	1,750	--	--	--			--	--		--	--	--
Sept. 12	22		2,260	--		--	--	--	200	1,180	--	--	--			--	--		--	--	--
CIMARRON RIVER AT SPRINGER																					
Oct. 6, 1949	2.6		2,879	16		338	159	186	269	1,540	55	0.4	0.7			2,430	3.30		1,500	1,280	21
Nov. 21	15		1,740	--		--	--	--	264	775	--	--	--			--	--		--	--	--
Dec. 30	6.8		2,970	--		--	--	--	335	1,581	--	--	--			--	--		--	--	--
Jan. 26, 1950	4.4		2,720	11		313	160	175	283	1,450	54	.3	.8			2,300	3.13		1,440	1,210	21
Feb. 9	5.0		2,940	--		--	--	--	381	1,610	--	--	--			--	--		--	--	--
Feb. 16	5.6		3,030	--		--	--	--	293	1,670	--	--	--			--	--		--	--	--
Apr. 5	3.9		3,150	6.9		357	188	228	292	1,750	68	.6	.1			2,740	3.73		1,660	1,420	23
May 16	3.6		3,080	--		--	--	--	263	1,660	--	--	--			--	--		--	--	--
May 25	3.2		3,160	--		--	--	--	288	1,750	--	--	--			--	--		--	--	--
June 15	4.6		3,000	--		--	--	--	230	1,660	--	--	--			--	--		--	--	--
Sept. 12	5.0		2,310	--		--	--	--	234	1,190	--	--	--			--	--		--	--	--
Sept. 19	67		1,470	--		--	--	--	168	655	--	--	--			--	--		--	--	--
RAYADO RIVER AT SAUBLE RANCH NEAR CIMARRON																					
Oct. 10, 1949	3.9		136	23		16	5.2	5.5	83	4.3	0	0.2	0.7			96	0.13		62	0	16
Oct. 27	--		126	22		15	4.9	5.3	76	4.9	0	.4	.7			90	.12		58	0	17
Nov. 16	2.1		141	--		--	--	--	76	--	--	--	--			--	--		--	0	--
Dec. 23	3.2		147	--		--	--	--	82	--	--	--	--			--	--		--	--	--
Jan. 5, 1950	5.7		148	25		18	5.4	6.7	90	5.8	0	.6	.8			106	.14		67	0	18
Jan. 17	3.5		137	25		17	5.5	3.9	81	5.1	0	.3	.9			98	.13		65	0	12

MISCELLANEOUS ANALYSES OF STREAMS IN ARKANSAS RIVER BASIN IN NEW MEXICO--Continued

Chemical analyses, in parts per million, October 1949 to October 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
RAYADO RIVER AT SAUBLE RANCH NEAR CIMARRON--Continued																					
Feb. 20, 1950	4.2		139	--		--	--	--		82	--	--	--	--		--	--		--	--	--
Apr. 10	8.7		97.6	19		12	4.6	1.8		56	5.8	0	0.4	0.2		72	0.10		49	3	8
May 17	4.8		119	--		--	--	--		68	--	--	--	--		--	--		--	--	--
May 31	3.5		135	--		--	--	--		83	--	--	--	--		--	--		--	--	--
Sept. 20	4.6		136	--		--	--	--		83	--	--	--	--		--	--		--	--	--
Oct. 3	2.4		146	21		18	6.3	4.6		90	4.1	1	.4	.5		100	.14		71	0	12
RAYADO RIVER NEAR MIAMI																					
Apr. 10, 1950	4.1		151	20		19	6.3	3.7		87	8.6		0.4	0.3		101	0.14		74	2	10
May 17	.3		235	--		--	--	--		136	--		--	--		--	--		--	--	--
May 31	.2		271	--		--	--	--		162	--		--	--		--	--		--	--	--
Oct. 3	.1		279	23		41	11	2.5		170	10	1	.4	.8		174	.24		148	8	4
MORA RIVER AT LOMA PARDA																					
Oct. 21, 1949			534	18		66	19	25		246	81	7	0.6	0.3		338	0.46		242	41	18
Nov. 22			593	17		68	22	33		276	90	8.0	.4	.3		375	.51		260	34	22
UTE CREEK AT GALLEGOS																					
July 20, 1950			463	19		24	12	61		146	92	16	1.0	2.7		300	0.41		110	0	55
Aug. 1			494	27		32	15	57		190	89	10	1.0	.2		325	.44		142	0	47

Aug. 22	117	7.6	1,480					200	179	275						286		
Aug. 30	1,330	7.9	1,130					162	151	210						216		
Sept. 7	2,950	7.8	1,390	17				188	195	240						266		
Sept. 12	6,570	7.9	727					172	98	100						146		
Sept. 21	139	8.0	1,330					212	165	217						259		
Sept. 28	1,480	8.0	890					177	102	127						171		

RED RIVER BASIN

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.

LOCATION.--At gaging station at county road bridge in Briscoe County, 1 mile upstream from Byrnes (Battle) Creek, 3.4 miles upstream from Mulberry Creek, and 7½ miles southwest of Brice, Hall County.
DRAINAGE AREA.--5,646 square miles, of which 4,326 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1950.
Water temperatures: August 1949 to September 1950.
Sediment records: August 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 10,300 ppm May 16-18, 21; minimum, 2,090 ppm Oct. 10, Sept. 5-6.
Hardness: Maximum, 2,200 ppm June 5-6, 12-13; minimum, 722 ppm July 1, 5, 6-7.
Sediment loads: Maximum daily, 479,000 tons July 5; minimum daily, 0 tons on most days during October to May.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 10,900 ppm Sept. 15-19, 1949; minimum, 1,980 ppm Sept. 5, 1949.
Hardness: Maximum, 2,220 ppm Sept. 15-19, 1949; minimum, 694 ppm Sept. 5, 1949.
Sediment loads: Maximum daily, 479,000 tons July 5, 1950; minimum daily, 0 tons on most days other than during summer months.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 9, 10, 11-13, 1949	s 52.4	7.9	7,310	25		336	70	1,240		136	1,060	1,850		3.5		4,650	6.32	658	1,130	1,020	71
Oct. 10	s 283	7.7	2,680	26		397	42	205		82	1,100	280		2.5		2,090	2.84	1,600	1,160	1,100	28
Apr. 17, 1950	5.00	7.5	9,440	25		650	87	1,560		72	1,710	2,490		--		6,560	8.92	89	1,980	1,920	63
May 14-15	414	7.5	9,270	28		500	82	1,560		123	1,440	2,390		--		6,060	8.24	6,770	1,580	1,480	68
May 16-18, 21	10.2	7.6	15,200	30		650	134	2,960		114	1,750	4,740		--		10,300	14.01	284	2,170	2,080	75
June 2, 3, 4	s 110	7.5	9,940	27		592	86	1,640		107	1,550	2,620		--		6,570	8.94	1,950	1,830	1,740	66
June 2, 3	s 204	7.6	5,730	28		492	55	803		94	1,400	1,180		2.0		4,010	5.45	2,210	1,450	1,380	55
June 5-6, 12-13	6.35	7.5	14,400	26		673	126	2,710		100	1,750	4,390		--		9,720	13.22	167	2,200	2,120	73
June 11	11.0	7.6	3,600	25		558	60	300		74	1,640	370		2.5		2,990	4.07	89	1,640	1,580	28
June 21-24	126	7.6	8,150	26		416	73	1,350		95	1,270	2,040		--		5,220	7.10	1,780	1,340	1,260	69
June 27-28, 29, 30	s 160	7.6	5,500	20		426	63	764		103	1,280	1,110		1.0		3,720	5.06	1,610	1,320	1,240	56
June 29	s 1,541	7.7	3,780	21		304	47	481		116	877	702		.5		2,490	3.39	10,400	952	857	52
July 1, 5, 6-7	s 944	7.7	4,250	19		227	38	647		113	682	940		1.5		2,610	3.55	6,650	722	630	66
July 2-4, 5, 8-10	s 448	7.7	6,460	22		312	65	1,020		119	910	1,580		1.0		3,970	5.40	4,800	1,050	948	68
July 11-13, 14, 15-17, 19-20	s 64.9	8.0	4,970	23		324	46	719		115	905	1,080		1.8		3,160	4.30	554	998	904	61
July 14, 18	s 58.0	8.0	8,840	28		490	86	1,440		119	1,400	2,240		--		5,740	7.81	899	1,580	1,480	67
July 21-22, 24, 25-27, 28, 29, 30-31	s 541	8.0	4,320	22		343	40	568		107	927	850		4.5		2,810	3.82	4,100	1,020	933	55
July 23, 24, 28, 29	s 250	8.0	7,370	22		364	60	1,210		114	935	1,920		4.0		4,570	6.22	3,080	1,150	1,060	69

s Computed by subdividing day.

Aug. 1-2, 9, 23....	s249	7.8	4,250	26	426	53	505	97	1,150	780	4.0	2,990	4.07	2,010	1,280	1,200	46
Aug. 5-8, 9, 13....	sa16.7	7.9	10,100	45	598	128	1,690	104	1,650	2,760	--	6,920	9.41	312	2,020	1,930	65
Aug. 9, 10-12	s55.3	8.0	5,980	21	380	78	879	112	1,080	1,390	3.5	3,890	5.29	581	1,270	1,180	60
Aug. 24, 27-31.....	s231	7.8	5,460	22	302	61	843	109	864	1,310	3.0	3,460	4.71	2,160	1,000	951	65
Aug. 24, 25.....	s4.80	7.8	8,680	33	532	99	1,420	90	1,510	2,250	--	5,890	8.01	76	1,730	1,660	64
Sept. 1-3, 4.....	s19.6	7.8	8,940	36	420	104	1,560	108	1,230	2,480	--	5,880	8.00	311	1,480	1,390	70
Sept. 4, 5, 6, 7-10.	s343	7.8	5,580	24	304	74	868	116	910	1,350	3.5	3,590	4.88	3,320	1,060	968	64
Sept. 5, 6.....	s1,539	7.8	3,200	22	269	50	369	96	765	568	3.5	2,090	2.84	8,680	877	798	48
Sept. 11-13.....	262	7.8	5,720	22	316	76	879	114	863	1,430	5.0	3,650	4.96	2,580	1,100	1,010	63
Sept. 14-20.....	40.6	7.7	9,910	32	476	121	1,710	107	1,350	2,780	--	6,520	8.87	715	1,680	1,600	69
Sept. 21-24, 30....	10.4	7.7	11,400	34	556	145	2,040	111	1,680	3,240	--	7,750	10.54	218	1,980	1,890	69
Sept. 25, 28-29....	s44.6	7.7	7,070	24	386	90	1,120	107	1,090	1,810	2.0	4,580	6.23	552	1,330	1,250	65
Sept. 25, 26-27....	s603	7.8	4,560	20	286	53	673	111	841	1,010	4.2	2,940	4.00	4,790	932	840	61
Weighted average.	69.3	--	5,230	23	327	56	778	110	930	1,190	2.9	3,360	4.57	629	1,050	956	62

s Computed by subdividing day.
a Includes days of less than 0.05 second-foot flow.

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								--	--	92	75	77
2								--	74	79	71	85
3								--	63	90	71	73
4								--	67	86	72	69
5								--	75	80	80	68
6								--	90	74	86	71
7								--	--	87	76	69
8								--	--	--	--	85
9								--	--	--	69	75
10								--	--	--	78	83
11								--	73	--	76	65
12								--	89	--	90	64
13								--	--	79	79	66
14								55	--	71	--	67
15								80	--	78	--	68
16								66	--	77	--	--
17							72	78	--	84	--	72
18								82	--	81	--	--
19								--	--	76	--	69
20								--	--	78	--	72
21								67	76	82	--	77
22								--	85	72	--	--
23								--	87	70	84	82
24								--	83	78	74	--
25								--	--	70	--	64
26								--	--	83	--	71
27								--	78	92	71	84
28								--	76	92	70	69
29								--	76	75	68	83
30								--	87	83	84	83
31								--	--	78	70	--
Average								--	--	80	--	74

a Wide variations occur from day to day due to the variable discharge and time of temperature measurement.

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0						
2	0	--	0						
3	0	--	0						
4	0	--	0						
5	0	--	0						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	98	--	e 9,110						
10	241	22,700	s 16,900						
11	42	23,300	s 2,720						
12	13	18,200	s 643						
13	2.3	6,380	s 59						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	0	--	0						
23	0	--	0						
24	0	--	0						
25	0	--	0						
26	0	--	0						
27	0	--	0						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	0	--	0						
Total-	396.3	--	29,430	0	--	0	0	--	0

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
Total-	0	--	0	0	--	0	0	--	0

e Estimated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0	--	0	0	--	0
2	0	--	0	0	--	0	299	21,400	s 23,700
3	0	--	0	0	--	0	113	14,300	s 6,010
4	0	--	0	0	--	0	4.2	--	e 19
5	0	--	0	0	--	0	10	4,340	s 187
6	0	--	0	0	--	0	2.0	--	e 1
7	0	--	0	0	--	0	0	--	0
8	0	--	0	0	--	0	0	--	0
9	0	--	0	0	--	0	0	--	0
10	0	--	0	0	--	0	0	--	0
11	0	--	0	0	--	0	11	7,600	s 193
12	0	--	0	0	--	0	13	--	e 58
13	0	--	0	0	--	0	.4	--	e .2
14	0	--	0	720	29,400	s 69,100	0	--	0
15	0	--	0	107	14,200	s 4,700	0	--	0
16	0	--	0	31	6,840	573	0	--	0
17	5.0	--	e240	9.0	2,700	66	0	--	0
18	0	--	0	.8	--	e .9	0	--	0
19	0	--	0	0	--	0	0	--	0
20	0	--	0	0	--	0	0	--	0
21	0	--	0	.2	--	e .2	369	22,100	s 31,100
22	0	--	0	0	--	0	73	19,500	s 5,420
23	0	--	0	0	--	0	57	11,600	s 2,350
24	0	--	0	0	--	0	5.0	1,410	s 37
25	0	--	0	0	--	0	0	--	0
26	0	--	0	0	--	0	0	--	0
27	0	--	0	0	--	0	24	15,800	s 1,640
28	0	--	0	0	--	0	.6	--	e 1
29	0	--	0	0	--	0	1,300	23,900	s120,000
30	0	--	0	0	--	0	188	17,100	9,550
31	--	--	--	0	--	0	--	--	--
Total	5.0	--	240	868.0	--	74,440	2,469.2	--	200,300

Day	July			August			September		
1	38	6,200	636	510	11,400	s23,700	21	3,510	s 223
2	28	2,910	220	152	7,030	2,890	5.6	700	11
3	26	5,800	s452	59	3,400	542	1.2	500	1.6
4	1,220	22,900	s 125,000	59	4,120	s 826	695	14,800	s 33,200
5	3,440	24,700	s 357,000	23	800	50	2,680	23,000	s193,000
6	713	10,700	s 25,400	22	3,270	s 361	506	12,300	s 18,200
7	445	9,250	s 11,500	5.1	--	e 5	257	--	e 4,070
8	178	4,930	s 2,440	3.7	--	e 2	101	3,100	845
9	74	--	e 507	241	9,620	s 8,590	108	4,840	1,410
10	51	4,760	s 719	62	10,500	s 1,920	111	4,760	1,430
11	33	1,400	125	16	3,200	138	397	13,300	s 21,700
12	37	690	69	5.6	800	12	256	9,920	s 7,170
13	34	1,780	s 185	0	--	0	132	4,200	1,500
14	79	4,150	s 1,550	0	--	0	93	2,320	583
15	128	4,400	1,520	0	--	0	68	1,860	341
16	66	2,120	378	0	--	0	33	--	e 89
17	42	2,730	s 299	0	--	0	24	654	42
18	16	1,200	52	0	--	0	24	--	e 32
19	149	9,280	s 4,600	0	--	0	24	500	32
20	55	5,620	835	0	--	0	18	--	e 24
21	911	18,000	s 74,900	0	--	0	8.4	500	11
22	207	16,600	9,280	0	--	0	4.6	500	6.2
23	99	4,040	s 1,390	73	--	e 3,900	2.0	500	2.7
24	307	4,050	s 5,640	25	4,720	s 402	20	--	e 203
25	899	14,600	s 59,900	1.2	400	3.0	60	7,800	s 1,870
26	865	13,600	s 54,200	0	--	0	1,240	21,300	s 81,300
27	212	7,000	4,010	860	17,400	s59,700	157	8,450	3,860
28	182	5,330	2,620	108	15,500	4,520	61	3,220	530
29	928	16,800	s 69,300	59	5,260	838	31	1,120	94
30	217	7,340	4,300	165	15,200	s 8,670	17	--	e 32
31	212	9,930	s 7,620	61	8,680	1,430	--	--	--
Total	11,891	--	826,600	2,510.6	--	118,500	7,155.8	--	371,800

Total discharge for year (second-foot-days) ---------- 25,295.9
Total load for year (tons) ---------- 1,621,000

e Estimated.
s Computed by subdividing day.

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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. 10, 1949	5:00 p. m.	285	36,300	5,820	34	51	72	85	90	95	99	100		--	--	SBCW
Oct. 13	8:45 a. m.	2.6	9,760	1,610	74	88	96	100	--	--	--	--		--	--	BCW
May 14, 1950	8:50 a. m.	452	20,400	1,190	48	51	54	60	68	87	98	100		--	--	SBCW
May 14	10:30 a. m.	382	16,200	--	--	--	--	--	--	87	98	100		--	--	S
May 14	3:50 p. m.	540	30,200	--	--	--	--	--	--	69	72	83		98	100	S
May 14	5:50 p. m.	339	31,100	--	--	--	--	--	--	83	86	92		100	--	S
May 15	11:30 a. m.	80	14,400	--	--	--	--	--	--	97	98	100		--	--	S
May 15	5:40 p. m.	37	11,700	--	--	--	--	--	--	95	96	98		100	--	S
May 16	9:24 a. m.	33	6,640	--	--	--	--	--	--	92	94	98		100	--	S
May 16	5:05 p. m.	33	7,030	--	--	--	--	--	--	72	74	82		99	100	S
May 17	10:15 a. m.	12	2,460	--	--	--	--	--	--	96	97	100		--	--	S
June 2	9:37 a. m.	325	29,100	2,080	16	21	36	84	94	95	98	99		100	--	SBN
June 2	9:37 a. m.	325	29,100	1,260	66	69	82	88	93	95	99	100		--	--	SBCW
June 2	12:00 m.	262	28,800	--	--	--	--	--	--	92	96	98		100	--	S
June 2	7:40 p. m.	222	20,700	--	--	--	--	--	--	81	86	91		99	100	S
June 3	9:50 a. m.	152	20,300	--	--	--	--	--	--	97	99	100		--	--	S
June 3	5:15 p. m.	31	9,540	--	--	--	--	--	--	97	99	100		--	--	S
June 21	9:30 a. m.	759	38,600	1,930	42	62	68	76	80	86	92	98		100	--	SBCW
June 21	1:10 p. m.	444	23,600	2,040	56	80	89	97	98	99	100	--		--	--	SBCW
June 22	9:00 a. m.	47	14,700	1,690	75	91	97	99	100	100	--	--		--	--	SBCW
June 22	9:00 a. m.	47	14,700	2,320	41	43	46	81	100	100	--	--		--	--	SBN
June 24	10:15 a. m.	2.9	1,690	1,490	91	98	100	--	--	--	--	--		--	--	SBCW
June 27	9:40 a. m.	27	22,200	2,320	65	76	88	97	99	100	--	--		--	--	SBCW
June 29	8:10 a. m.	4,020	47,400	3,280	21	28	36	47	62	80	91	100		--	--	SBCW
June 30	12:25 p. m.	148	18,400	1,800	59	65	74	78	82	85	90	97		100	--	SBCW
July 2	10:50 a. m.	27	2,910	2,210	59	80	88	93	94	96	98	100		--	--	SBCW
July 4	3:15 p. m.	1,740	37,900	2,480	--	--	0	13	85	90	99	100		--	--	SBN
July 4	3:15 p. m.	1,740	37,900	3,910	34	46	56	68	79	90	99	100		--	--	SBCW
July 4	5:00 p. m.	1,540	33,700	2,520	--	54	69	79	87	94	98	100		--	--	PCW
July 5	1:15 p. m.	9,100	54,200	2,370	25	34	40	51	66	81	93	97		100	--	SBCW

RED RIVER BASIN--Continued

PRAIRIE DOG TOWN FORK RED RIVER NEAR BRICE, TEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--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 (second-feet)	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 6, 1950	12:12 p. m.	531	9,730	6,410	41	51	60	69	78	83	91	95		100	--	SBCW
July 8	6:00 p. m.	128	4,340	1,380	39	54	62	67	71	77	90	98		100	--	SBCW
July 21	12:45 p. m.	1,780	28,200	4,020	--	--	3	5	86	87	98	100		--	--	SBN
July 21	12:45 p. m.	1,780	28,200	4,320	38	46	60	71	82	90	98	100		--	--	SBCW
July 27	1:40 p. m.	244	5,950	2,110	50	61	70	78	82	92	100	--		--	--	SBCW
Aug. 1	2:30 p. m.	947	15,200	2,190	27	38	44	53	65	78	93	99		100	--	SBCW
Aug. 9	5:32 p. m.	244	19,500	5,900	--	46	58	73	83	85	95	99		100	--	PCW
Aug. 27	7:00 p. m.	618	28,700	5,150	--	58	69	80	85	88	96	100		--	--	PCW
Sept. 4	11:00 a. m.	148	8,160	5,340	40	51	63	70	74	80	95	100		--	--	PCW
Sept. 11	3:15 p. m.	1,080	24,200	1,750	42	50	62	74	82	87	94	100		--	--	SBCW
Sept. 26	11:40 a. m.	1,370	23,000	1,070	41	47	56	66	79	88	97	100		--	--	SBCW

RED RIVER BASIN--Continued

RED RIVER AT DENISON DAM NEAR DENISON, TEX.

LOCATION.--Immediately below dam on Red River, 1¾ miles upstream from Sand Creek, 4 miles northwest of Denison, Grayson County, and 3 miles upstream from gaging station near Colbert, Bryan County, Okla.
DRAINAGE AREA.--38,290 square miles (above dam), 38,330 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: May 1944 to September 1950.
Water temperatures: October 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 977 ppm Mar. 1-31; minimum, 790 ppm Sept. 1-30.
Hardness: Maximum, 356 ppm Feb. 1-28; minimum, 281 ppm Sept. 1-30.
EXTREMES, 1944-50.--Dissolved solids: Maximum, 1,430 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 464 ppm Oct. 21-30, 1945.
Hardness: Maximum, 522 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 233 ppm Dec. 21-31, 1945, Jan. 11-20, 1946.
Water temperatures (1945-49): Maximum, 82°F Sept. 5, 1947; minimum, 40°F Jan. 30, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Colbert, Okla., for water year October 1949 to September 1950 given in Water-Supply Paper 1177. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-31, 1949	2,946	7.8	1,410	13		93	26	176		134	207	280		0.8		900	1.22	7,160	339	229	53
Nov. 1-30	2,765	7.8	1,420	9.2		94	26	172		124	209	280		1.8		902	1.23	6,730	342	240	52
Dec. 1-31	2,949	7.8	1,510	11		95	24	182		128	222	280		1.5		930	1.26	7,400	336	230	54
Jan. 1-31, 1950	2,538	7.8	1,540	8.8		97	24	181		126	216	288		1.0		940	1.28	6,440	340	238	54
Feb. 1-28	3,104	7.8	1,560	11		100	26	176		130	214	290		1.0		970	1.32	8,130	356	250	52
Mar. 1-31	1,772	7.5	1,600	11		96	27	186		129	215	300		3.5		977	1.33	4,670	350	245	54
Apr. 1-30	2,378	7.6	1,610	11		98	26	204		132	216	325		4.0		972	1.32	6,240	352	244	56
May 1-31	13,860	7.6	1,570	11		96	25	188		132	214	295		5.5		967	1.32	36,200	342	234	54
June 1-30	8,661	8.0	1,490	14		90	26	174		135	193	275		3.8		885	1.20	20,700	332	221	53
July 1-31	7,206	8.0	1,380	17		83	23	162		132	177	260		3.5		824	1.12	16,000	302	194	54
Aug. 1-31	25,570	8.0	1,420	13		84	22	170		130	175	272		3.0		848	1.15	58,500	300	194	55
Sept. 1-30	10,330	7.9	1,320	12		78	21	156		126	165	245		2.0		790	1.07	22,000	281	178	55
Weighted average	7,049	--	1,460	13		88	24	174		130	191	276		3.1		882	1.20	16,800	318	212	54

RED RIVER BASIN--Continued

RED RIVER AT DENISON DAM NEAR DENISON, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

MULBERRY CREEK NEAR BRICE, TEX.

LOCATION.--At gaging station at bridge on State Highway 70, 1.5 miles upstream from Bitter Creek, 2.3 miles southwest of Brice, Hall County, and 3.3 miles upstream from mouth.
DRAINAGE AREA.--534 square miles of which 238 square miles are probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1950.
Water temperatures: August 1949 to September 1950.
Sediment records: August 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 2,920 ppm June 24; minimum, 693 ppm July 24.
Hardness: Maximum, 1,770 ppm June 24; minimum, 391 ppm July 24.
Sediment loads: Maximum daily, 195,000 tons July 4; minimum daily, 0 tons on most days other than summer months.
EXTREMES, October 1949 to September 1950.--Dissolved solids: Maximum, 2,920 ppm June 24, 1950; minimum, 693 ppm July 24, 1950.
Hardness: Maximum, 1,770 ppm June 24, 1950; minimum, 391 ppm July 24, 1950.
Sediment loads: Maximum daily, 195,000 tons July 4, 1950; minimum daily, 0 tons on most days other than summer months.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 23, 27, 1949	0.15	7.8	3,110	30		432	135	178		104	1,520	250		0.8		2,600	3.54	0.8	1,630	1,550	19
Apr. 5, 1950	.10	7.8	3,070	26		440	112	199		86	1,500	255		.5		2,570	3.50	1.0	1,560	1,490	22
June 2	s416	7.7	1,200	26		208	24	52		106	537	32		1.2		940	1.28	1,060	618	530	15
June 2, 3	s34.5	7.7	2,200	29		372	52	100		113	1,050	122		1.5		1,780	2.42	166	1,140	1,050	16
June 4-7	.20	7.7	3,270	28		480	131	190		150	1,600	255		.0		2,760	3.75	1.5	1,740	1,610	19
June 23, 24	.25	7.7	3,480	44		472	144	219		79	1,730	270		.5		2,920	3.97	2.0	1,770	1,700	21
July 1-3, 6-10, 12	s107	7.7	2,640	29		374	80	158		132	1,150	212		2.5		2,070	2.82	598	1,260	1,150	21
July 4-5	1,183	7.7	1,610	21		228	40	84		82	668	108		1.5		1,190	1.62	3,800	734	666	20
July 12, 13, 16, 17, 19	s668	8.0	1,540	25		248	33	69		99	673	86		1.2		1,180	1.60	2,260	754	674	17
July 14-15, 16, 18, 20-21	s67.5	8.1	2,540	35		399	76	137		120	1,200	182		2.0		2,090	2.84	423	1,310	1,210	19
July 21, 24, 25-26, 31	s331	8.0	1,240	25		180	27	58		110	467	77		1.8		942	1.28	842	560	470	18
July 22-23,24,27-30	s62.2	8.1	1,950	30		284	50	106		103	813	150		1.8		1,490	2.03	250	914	830	20
July 24	s204	8.0	918	18		128	17	43		80	334	49		1.8		693	.94	382	391	326	19
Aug. 1, 5, 6-7, 9	s253	7.7	1,450	26		216	35	67		98	584	98		2.2		1,080	1.47	738	683	602	18
Aug. 2-4, 5, 8, 10	s37.3	7.8	2,250	39		334	61	132		105	986	183		1.8		1,790	2.43	235	1,080	998	21
Aug. 11-26	a.28	7.8	3,000	44		432	134	166		123	1,530	210		.2		2,580	3.51	2.0	1,630	1,530	18
Aug. 27, 29, 30	s25.9	8.2	2,420	27		349	65	160		105	1,050	217		1.2		1,920	2.61	134	1,140	1,050	23
Aug. 28, 29, 31, Sept. 1-3, 4	sa17.2	8.2	1,850	23		259	46	110		121	736	148		1.8		1,380	1.88	64	835	736	22

s Computed by subdividing day.
a Includes days of less than 0.05 second-foot flow.

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Sept. 4, 5, 1950---	s1,878	8.2	1,420	22		218	38	53		106	596	76		1.0		1,060	1.44	5,370	700	613	14
Sept. 4, 6-10, 11, 14	s72.3	8.2	2,170	31		320	61	124		126	940	168		1.2		1,710	2.33	334	1,050	946	20
Sept. 5, 11 -------	s1,205	8.2	954	19		130	21	44		102	330	56		1.8		713	.97	2,320	411	328	19
Sept. 13-15-------	32.0	8.2	2,340	34		326	68	147		116	970	218		.8		1,820	2.48	157	1,090	998	23
Sept. 16-19, 21-23	64.7	7.6	2,590	38		372	101	141		91	1,230	209		.8		2,140	2.91	374	1,340	1,270	19
Sept. 20, 25, 27-30	46.1	7.7	2,130	34		302	74	119		109	948	169		1.5		1,700	2.31	212	1,060	968	20
Sept. 24, 26 ------	365	7.7	1,410	24		194	40	79		107	565	100		4.0		1,060	1.44	1,040	648	561	21
Weighted average	38.2	--	1,650	25		244	43	84		102	697	111		1.7		1,260	1.73	131	786	702	19

s Computed by subdividing day.

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--								--	--	70	--
2	--								74	82	77	--
3	--								76	76	--	--
4	--								--	84	94	74
5	--						59		--	78	87	67
6	--								83	80	88	81
7	--								--	--	82	85
8	--								--	87	--	--
9	--								--	--	86	--
10	--								--	--	88	--
11	--								--	--	80	68
12	--								--	75	81	67
13	--								--	--	--	--
14	--								--	--	--	69
15	--								--	84	--	72
16	--								--	67	--	--
17	--								--	68	--	78
18	--								--	71	66	81
19	--								--	86	--	76
20	--								--	73	--	73
21	--								--	85	--	74
22	--								--	76	--	--
23	60								--	70	--	79
24	--								87	74	--	69
25	--								--	--	--	65
26	--								--	82	--	73
27	55								--	79	81	84
28	--								--	81	80	77
29	--								--	--	68	82
30	--								--	92	--	
31	--								--	92	78	--
Average	--								--	--	--	--

a Wide variations occur from day to day due to the variable discharge and time of temperature measurement.

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0.1		--	0.2		--
2	0	--	0	.1		--	.2		--
3	0	--	0	.1		--	.1		--
4	0	--	0	.2		--	.1		--
5	0	--	0	.1		--	.1		--
6	0	--	0	.1		--	.1		--
7	0	--	0	0		0	.1		--
8	0	--	0	.1		--	.1		--
9	0	--	0	.1		--	.1		--
10	0	--	0	.1		--	.1		--
11	0	--	0	.1		--	.1		--
12	0	--	0	0		0	.1		--
13	0	--	0	0		0	.1		--
14	0	--	0	.1		--	.1		--
15	0	--	0	.1		--	.1		--
16	0	--	0	.2		--	.1		--
17	0	--	0	.3		--	.1		--
18	0	--	0	.4		--	.1		--
19	0	--	0	.3		--	.4		--
20	0	--	0	.2		--	.3		--
21	0	--	0	.1		--	.1		--
22	0	--	0	.1		--	.2		--
23	.2			.1		--	.1		--
24	.4			.1		--	.1		--
25	.4			.2		--	.2		--
26	.3			.2		--	.1		--
27	.1	15	--	.2		--	.1		--
28	.2			.2		--	.1		--
29	.2			.2		--	.1		--
30	.2			.2		--	.1		--
31	.1						.1		--
Total	2.1	--	t0.1	4.3		e0.2	4.0		e0.2

Day	January			February			March		
1	0.2			0.1			0.3		--
2	.2			.1			.3		--
3	.4			.1			.2		--
4	1.0			.1			.2		--
5	.4			.1			.2		--
6	.2			.1			.2		--
7	.1			.2			.2		--
8	.1			.2			.1		--
9	.1			.1			.1		--
10	.1			.1			.1		--
11	.2			.2			.1		--
12	.2			.7			.1		--
13	.2			.6			.1		--
14	.2			.3			.1		--
15	.2			.2			.1		--
16	.2			.2			.1		--
17	.2			.2			.1		--
18	.1			.2			0		0
19	.1			.2			0		0
20	.2			.2			0		0
21	.2			.2			0		0
22	.2			.2			0		0
23	.2			.2			0		0
24	.2			.2			0		0
25	.2			.2			0		0
26	.1			.2			0		0
27	.1			.2			0		0
28	.1			.2			.1		--
29	.1			--			.1		--
30	.1			--			.1		--
31	.1			--			.1		--
Total	6.2		e0.3	5.8		e0.2	3.0		e0.1

e Estimated.
t Less than 0.05 ton.

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	0.2		--	0		0	0	--	0
2	.1		--	0		0	110	25,000	s 10,500
3	.1		--	.1		--	6.6	5,950	s 166
4	.1		--	.2		--	.3	750	s .6
5	.1		--	0		0	.3	225	s .2
6	.1		--	0		0	.1	e 200	.1
7	.2		--	0		0	.1	e 100	--
8	.1		--	0		0	0	--	0
9	0		0	0		0	0	--	0
10	0		0	0		0	0	--	0
11	0		0	.1		--	0	--	0
12	.1		--	.1		--	0	--	0
13	.1		--	.1		--	0	--	0
14	.2		--	.6		--	0	--	0
15	.2		--	.4		--	0	--	0
16	.4		--	.1		--	0	--	0
17	.4		--	.3		--	0	--	0
18	.4		--	.1		--	0	--	0
19	.3		--	.1		--	0	--	0
20	.2		--	.1		--	0	--	0
21	.2		--	.1		--	0	--	0
22	.1		--	.2		--	0	--	0
23	.1		--	0		0	.4	e 350	.4
24	.1		--	0		0	.1	200	.1
25	.1		--	0		0	0	--	0
26	.1		--	.1		--	0	--	0
27	.1		--	0		0	0	--	0
28	.1		--	0		0	0	--	0
29	0		0	0		0	0	--	0
30	0		0	0		0	0	--	0
31	--		--	0		0	--	--	--
Total	4.2		e 0.2	2.7		e 0.1	117.9	--	t 10,670

Day	July			August			September		
1	0.1	625	s 2.7	680	12,100	s43,000	0	--	0
2	36	11,400	s 3,180	97	1,670	s 531	.1	e 100	--
3	555	5,490	s70,800	26	1,000	70	.1	e 100	--
4	1,690	23,100	s195,000	22	990	59	1,210	11,400	s 75,100
5	676	15,500	s57,700	133	4,040	s8,270	746	11,000	s 24,300
6	36	1,750	s 177	121	7,380	2,410	121	4,300	1,400
7	83	9,620	s4,650	40	3,670	450	65	e 1,000	176
8	7.2	700	s 22	7.4	592	s 14	26	768	54
9	.2	e 300	.2	127	4,820	s4,100	21	e 500	28
10	.1	e 200	.1	7.6	392	8.0	16	e 300	13
11	0	--	0	1.6	88	.4	533	13,100	s 41,100
12	405	16,700	s32,000	.6			53	3,500	501
13	38	2,280	s 321	.1			40	1,500	162
14	1.1	350	s 1.2	.1	--	e .1	28	820	62
15	.3	e 400	.3	.3			28	400	30
16	2,140	6,840	s178,000	.2			10	e 200	5.4
17	192	4,500	s3,500	0	--	0	6.5	e 200	3.5
18	61	1,140	s 207	.2			7.6	e 200	4.1
19	188	7,080	s8,640	.1			27	e 1,000	73
20	30	450	s 52	.1			20	e 600	32
21	754	15,700	s47,700	.2			3.7	e 400	4.0
22	144	3,120	s 1,870	.1	--	--	2.4	e 200	1.3
23	21	760	43	.2			396	4,470	s 31,900
24	198	6,320	s 9,730	.1			449	10,300	s 20,800
25	112	6,450	s 2,340	.3			132	3,660	s 2,410
26	257	9,750	s9,900	.2			281	11,300	s 10,700
27	56	3,000	454	11	3,200	s 130	66	2,800	s 556
28	23	1,130	70	17	4,540	s 262	34	1,180	108
29	115	8,710	s5,560	48	6,440	s1,480	.7	901	41
30	37	6,170	s 688	54	2,670	s 437	7.6	e 800	16
31	173	6,520	s 5,440	19	4,410	s 410	--	--	--
Total	8,029.0	--	638,000	1,414.4	--	t61,630	4,347.0	--	t209,600

Total discharge for year (second-foot-days) ---------- 13,940.6
Total load for year (tons) ---------- 919,900

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

RED RIVER BASIN--Continued

MULBERRY CREEK NEAR BRICE, TEX.--Continued

Particle-size analyses of suspended sediment, June to September 1950
(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 (second-feet)	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	
June 2, 1950	10:12 a. m.	3.7	30,000	--	--	--	--	--	--	92	92	94		99	100	S
June 2	3:50 p. m.	109	26,900	1,480	38	53	63	68	71	74	83	83		96	100	SBCW
June 2	5:45 p. m.	525	33,800	--	--	--	--	--	--	77	90	97		100	--	S
July 4	9:00 a. m.	535	28,100	2,590	41	50	61	74	82	88	95	99		100	--	SBCW
July 4	9:00 a. m.	535	28,100	2,130	--	--	0	76	84	86	94	99		100	--	SBN
July 4	6:42 p. m.	90	11,200	9,150	31	40	52	57	60	91	95	98		100	--	SPCW
July 5	7:51 p. m.	87	5,030	1,620	38	57	65	71	76	81	89	99		100	--	SBCW
July 16 a	6:45 p. m.	23,800	39,200	3,120	33	47	60	76	94	100	--	--		--	--	SBCW
July 17	8:09 a. m.	185	4,760	1,750	38	46	55	64	69	78	96	100		--	--	SBCW
July 22	10:10 a. m.	133	17,500	1,780	36	46	58	68	79	90	98	100		--	--	SBCW
July 24	3:30 p. m.	213	6,000	3,430	19	28	37	50	60	83	96	99		--	--	SBCW
Aug. 9	4:20 p. m.	109	3,460	2,340	48	57	69	75	80	86	93	99		100	--	SBCW
Aug. 28	10:50 a. m.	34	8,280	3,210	50	70	88	92	94	99	99	100		--	--	SPCW
Aug. 28	10:50 a. m.	34	8,280	2,980	0	9	13	86	93	96	99	100		--	--	SPN
Sept. 4	1:50 p. m.	29	26,500	2,550	--	31	44	58	72	84	98	100		--	--	SPCW
Sept. 11	4:40 p. m.	255	10,200	1,590	36	43	52	61	67	74	85	95		100	--	SBCW
Sept. 26	9:20 a. m.	535	10,200	3,120	35	41	53	62	64	82	93	100		--	--	SBCW

a Bank sample.

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.

LOCATION.--At gaging station at bridge on State Highway 34, 3 miles south of Carter, Beckham County, and 12 miles downstream from Timber Creek.
DRAINAGE AREA.--2,380 square miles.
RECORDS AVAILABLE.--Sediment records: March 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 254,000 tons May 18; minimum, no flow Oct. 1-8, 16-22.
EXTREMES, 1948-51.--Sediment loads: Maximum daily, 344,000 tons May 7, 1948; minimum, no flow at times each year.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	0	0	0	9.1	114	2.8	15		
2	0	0	0	6.6			12		
3	0	0	0	6.5			14		
4	0	0	0	6.0			14		
5	0	0	0	6.0			16		
6	0	0	0	6.5			16		
7	0	0	0	9.6			15		
8	0	0	0	8.6			16		
9	170	e5,000	2,300	6.2			23		
10	642	e10,000	17,300	4.5			28	e190	10
11	97	e2,000	524	6.2			28		
12	23	852	53	3.5			16		
13	14		8	2.0			18		
14	6	e200	3	6.2			21		
15	2		1	7.6			22		
16	0	0	0	8.6	e190	9	21		
17	0	0	0	10			22		
18	0	0	0	10			21		
19	0	0	0	10			25	463	31
20	0	0	0	7.0			37		
21	0	0	0	6.6			100		
22	0	0	0	9.1			99		
23	32			11			111		
24	70			15			96		
25	39	e190	21	16			72		
26	26			17			58	e200	40
27	18	369	18	16			63		
28	14	224	8.5	15			61		
29	13	176	6.2	12			54		
30	16	128	5.5	14			66		
31	11	129	3.8	--	--	--	66		
Total	1,193	--	20,315.0	272.4	--	263.8	1,246	--	691

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	79	159	34	40	746	81	36		
2	70	168	32	58			36		
3	60	e170	28	63			38		
4	50	e170	23	56			42		
5	45	184	22	75			42		
6	40	e175	19	79	e190	35	33		
7	35	165	16	77			21		
8	40	184	20	68			23		
9	47	172	22	66			23		
10	56	e173	26	66			25		
11	75	174	35	122			21		
12	105	e169	48	152			18		
13	84	164	37	209	e500	214	18		
14	72	155	30	152			22		
15	61	176	29	108			22		
16	52	e171	24	77			26	e190	12
17	51	166	23	66			22		
18	37	e170	17	52			19		
19	34	e170	16	51			18		
20	39	180	19	44			21		
21	46	138	17	43			20		
22	51	188	26	31	e190	26	22		
23	59	238	38	32			17		
24	68			28			16		
25	44			31			18		
26				26			15		
27				56			18		
28	45	e200	26	56			17		
29				--	--	--	14		
30				--	--	--	16		
31	50			--	--	--	16		
Total-	1,675	--	809	1,984	--	1,616	715	--	372

Day	April			May			June		
1	10						54	1,400	204
2	14						276	11,400	s8,520
3	11						649	10,800	s18,900
4	10			10	e250	7	157	3,800	1,610
5	12						137	2,900	1,070
6	13						204	3,600	1,980
7	13				450	s122	105	2,700	766
8	13	e190	7	467	6,740	58,510	72	1,600	311
9	13			118	2,100	669	47	850	108
10	13			384	10,900	s11,300	42	500	57
11	18			198	3,300	1,760	1,590	17,700	s76,100
12	16			125	e1,300	439	870	11,500	s27,000
13	15			4,190	5,310	s60,000	250	7,200	4,860
14	14			1,950	2,900	s15,300	167	10,500	s4,720
15	16			523	4,050	5,720	40	2,200	238
16	85	e800	184	202	2,400	1,310	33	1,460	130
17	87	781	184	79	3,140	s670	28	1,160	88
18	44	476	57	7,730	12,200	s254,000	26	920	65
19	42	514	58	452	6,100	7,450	25	529	36
20	42	299	34	170	6,500	2,980	23	500	31
21	38	e281	29	90	3,100	753	674	12,800	s23,300
22	29	263	21	66	2,200	392	742	10,600	s21,300
23	20	e274	15	58	1,200	188	209	5,000	2,820
24	13	e274	10	51	1,100	152	180	2,900	1,410
25	10	284	7.7	49	2,150	284	99	2,000	535
26	9.6	e300	8	46	1,900	236	68	1,100	202
27	9.6	464	12	47	1,500	190	63	394	67
28	9.1		7	72	1,200	234	59	369	59
29	9.1	e300	7	115	1,400	434	58	562	88
30	11		9	91	1,550	381	95	1,200	308
31	--	--	--	70	1,700	321	--	--	--
Total-	659.4	--	747.7	17,413	--	373,837	7,042	--	196,883

e Estimated or interpolated.

s Computed by subdividing day.

RED RIVER BASIN--Continued

NORTH FORK RED RIVER NEAR CARTER, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-fset)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	105	1,250	354	2,740	17,300	s 128,000	198	2,800	1,500
2	165	4,720	s 2,100	1,020	6,540	s 18,000	382	2,300	2,370
3	1,160	13,400	s 42,100	482	6,100	7,940	122	900	296
4	3,210	15,400	s134,000	161	3,800	1,650	209	1,700	960
5	5,050	11,900	162,000	108	1,700	496	1,130	10,400	s 31,800
6	1,030	10,700	29,800	77	850	177	602	5,470	s 8,890
7	512	7,380	s 10,200	70	806	152	272	1,900	1,400
8	546	8,420	s 12,400	70	288	54	284	1,200	920
9	220	4,500	2,670	61	333	55	209	900	508
10	170	2,700	1,240	133	6,870	s 2,470	198	2,200	1,180
11	157	1,900	805	231	3,900	2,440	659	4,710	s 8,370
12	166	1,800	808	133	1,300	467	278	2,800	2,100
13	420	9,080	s 10,300	93	724	182	220	1,900	1,130
14	385	4,200	4,370	61	856	141	290	1,610	1,260
15	334	3,600	3,240	99	692	185	226	1,070	652
16	226	1,900	1,160	1,210	18,600	s 61,000	193	1,470	766
17	175	1,400	662	2,870	11,100	s 86,200	170	1,300	596
18	144	1,500	583	393	e 2,500	2,660	189	5,530	2,820
19	283	7,580	s 5,800	193	e 1,400	729	125	1,070	361
20	3,200	12,700	s110,000	161	e 950	413	102	1,010	278
21	1,270	8,330	s28,500	108	800	233	82	375	83
22	1,560	13,200	s55,700	129	800	279	68	503	92
23	725	8,800	17,200	721	980	s 13,600	58	283	44
24	445	5,100	6,130	362	3,400	3,320	66	874	156
25	657	7,100	s12,600	189	1,200	612	197	3,800	s 2,020
26	748	10,900	s22,100	102	1,400	385	537	19,600	s 28,400
27	636	6,700	s11,500	82	1,600	354	481	5,600	7,270
28	828	7,700	s17,200	75	e 1,200	243	410	4,200	4,650
29	559	4,280	s 6,470	183	2,360	s 1,170	510	4,800	6,610
30	337	3,220	s 2,930	663	7,650	s 13,700	226	2,400	1,460
31	259	e 2,400	1,680	382	3,800	3,920	--	--	--
Total	25,682	--	716,602	13,362	--	351,227	8,693	--	118,942

Total discharge for year (second-foot-days) 79,935.8

Total load for year (tons) 1,782,305.5

e Estimated or interpolated.

s Computed by subdividing day.

RED RIVER BASIN--Continued

ELK CREEK NEAR HOBART, OKLA.

LOCATION.--At gaging station at bridge on county road, 7 miles south and 1 mile west of Hobart, Kiowa County.
DRAINAGE AREA.--540 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,360 ppm Apr. 11-20, 21-28; minimum, 173 ppm July 17-20.
Hardness: Maximum, 830 ppm Mar. 21-31; minimum, 109 ppm July 17-20.
Water temperatures: Maximum, 88°F June 26; minimum, 33°F Jan. 4-8, 19.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 11-20, 1949	2.91	--	1,730	5.5	0.05	156	83	138	22	382	511	122	0.4	3.5		1,150	1.56	9.0	730	418	28
Oct. 21-26	66.88	--	455	--	--	46	15	26		129	91	21	--	3.5		288	.39	52	176	71	24
Oct. 27-31	7.46	--	1,150	--	--	115	54	77		319	313	60	--	5.5		814	1.11	16	509	248	25
Nov. 1-10	4.96	--	1,390	--	--	129	67	100		396	324	102	--	11		978	1.33	13	597	273	27
Nov. 11-20	5.00	7.6	1,590	1.0	.00	150	74	120	30	440	390	103	.3	4.0		1,090	1.48	15	678	318	27
Nov. 21-30	4.90	--	1,770	--	--	171	89	120		502	464	111	--	3.5		1,210	1.65	16	792	382	25
Dec. 1-10	4.88	--	1,690	11	.50	164	89	124	16	497	435	102	.3	4.5		1,190	1.62	16	775	368	25
Dec. 11-20	6.59	--	1,680	--	--	133	85	141		464	440	104	--	5.0		1,140	1.55	20	682	302	31
Dec. 21-31	9.29	8.0	1,550	9.0	.00	126	82	113	23	421	428	89	.5	5.5		1,080	1.47	27	652	306	26
Jan. 1-10, 1950	6.61	8.2	1,600	6.0	.00	146	82	116	28	454	412	93	.5	7.5		1,120	1.52	20	701	329	25
Jan. 11-20	6.90	--	1,640	--	--	133	86	132		442	449	99	--	5.5		1,120	1.52	21	686	324	30
Jan. 21-31	5.78	8.2	1,690	7.0	.00	154	86	123	14	436	474	101	.3	4.5		1,180	1.60	18	738	380	26
Feb. 1-10	6.94	--	1,710	--	--	125	91	162		449	492	108	--	8.0		1,210	1.65	23	686	318	34
Feb. 11-20	8.71	--	1,620	14	.00	148	85	120	20	463	423	98	.5	7.5		1,140	1.55	27	718	339	26
Feb. 21-28	6.24	--	1,590	--	--	145	90	114		467	431	102	--	4.5		1,120	1.52	19	732	349	25
Mar. 1-10	9.24	--	1,630	12	.00	152	91	106		479	442	89	.3	5.5		1,130	1.54	28	753	360	23
Mar. 11-20	6.63	--	1,670	14	.00	160	84	135	13	446	493	98	.5	7.5		1,220	1.66	22	744	379	28
Mar. 21-31	7.15	--	1,770	--	--	168	100	122		485	520	108	--	4.4		1,260	1.71	24	830	432	24
Apr. 1-10	6.11	--	1,850	3.2	.00	172	96	142	12	489	542	114	.7	3.0		1,330	1.81	22	824	422	27
Apr. 11-20	6.13	--	1,890	3.6	.00	171	97	149	13	481	560	123	.7	1.9		1,360	1.85	23	826	431	28
Apr. 21-28	6.39	--	1,900	--	--	161	97	167		477	579	120	--	1.7		1,360	1.85	23	800	409	31
Apr. 29-30	124	--	396	--	--	41	13	20		132	69	12	--	4.2		257	.35	86	156	48	22
May 1-2, 9-10	156	--	570	--	--	52	22	35		167	117	24	--	4.1		377	.51	159	220	84	26
May 3-5	4.53	--	918	--	--	72	35	83		229	197	74	--	7.7		610	.83	7.5	324	136	36
May 6-8	9.90	--	1,280	--	--	109	54	104		302	306	104	--	8.5		904	1.23	24	494	246	31

May 11, 13-14, 19	829	--	337	--	--	39	11	15	132	51	8.2	--	2.8	210	.29	470	142	34	19
May 12, 15, 20	118	--	458	--	--	48	15	27	151	81	20	--	4.4	291	.40	93	182	58	24
May 16-18	70.3	--	698	--	--	68	27	43	202	149	34	--	6.3	467	.64	89	280	115	25
May 21	46.0	--	632	--	--	72	24	29	174	154	23	--	7.7	426	.58	53	278	135	19
May 22-26, 30-31	21.0	--	1,060	--	--	105	45	64	254	281	58	--	5.5	738	1.00	42	447	239	24
May 27-29	18.4	--	1,410	--	--	144	64	91	337	405	84	--	5.7	1,050	1.43	52	622	346	24
June 1, 7-8	9.00	--	792	--	--	79	31	48	189	195	46	--	7.1	519	.71	13	324	170	24
June 2-3, 9-10	8.15	--	1.270	--	--	126	57	78	327	325	76	--	6.5	898	1.22	20	549	281	24
June 4-6	97.7	--	452	--	--	47	16	24	142	91	15	--	3.9	284	.39	75	183	66	22
June 11-13	6.57	--	1,310	--	--	132	58	90	335	343	89	--	7.1	943	1.28	17	568	293	26
June 14-20	3.61	--	1,640	--	--	152	83	109	321	513	111	--	4.6	1,130	1.54	11	720	457	25
June 21, 23-24, 26-30	12.1	--	854	--	--	86	38	48	198	240	41	--	5.5	605	.82	20	370	208	22
June 22, 25	23.4	--	1,170	--	--	116	51	69	205	373	62	--	6.8	888	1.21	56	499	331	23
July 1-3	1.73	--	1,000	--	--	96	43	58	226	268	54	--	2.7	710	.97	3.3	416	232	23
July 4-5, 8-10	33.7	--	627	--	--	64	25	29	168	138	29	--	5.2	429	.58	39	262	125	19
July 6-7	308	--	311	--	--	42	9.7	8.3	124	48	6.0	--	3.7	213	.29	177	145	44	11
July 11-14	7.78	--	758	--	--	81	29	38	202	170	40	--	6.7	513	.70	11	321	156	21
July 15-16	8.20	--	1,340	--	--	163	61	69	272	481	56	--	6.0	1,020	1.39	23	658	434	19
July 17-20	1,070	--	258	--	--	31	7.7	9.0	108	28	6.0	--	3.2	173	.24	500	109	20	15
July 21-22, 25-26	1,950	--	283	--	--	33	9.0	11	115	36	7.2	--	2.8	181	.25	953	120	26	17
July 23-24	272	--	791	--	--	82	34	40	232	193	26	--	4.4	544	.74	400	344	154	20
July 27-29	119	--	1,100	--	--	114	54	54	291	302	46	--	6.1	782	1.06	251	506	268	19
July 30-31	43.5	--	1,540	--	--	142	80	110	423	439	80	--	7.8	1,070	1.46	126	684	337	26
Aug. 1, 5-6	147	--	1,040	--	--	102	48	64	285	270	51	--	6.0	761	1.03	302	452	218	24
Aug. 2-4	736	--	514	--	--	52	18	28	173	88	20	--	3.9	326	.44	648	204	62	23
Aug. 7-10	63.0	--	1,550	--	--	159	79	97	418	450	82	--	8.0	1,080	1.47	184	722	379	23
Aug. 11-17	40.6	--	1,770	--	--	168	91	132	451	528	108	--	8.9	1,260	1.71	138	793	422	27
Aug. 18-20	108	--	633	--	--	63	26	36	167	157	27	--	4.4	424	.58	124	264	127	23
Aug. 21, 25-26	32.3	--	939	--	--	92	40	60	257	230	50	--	5.8	658	.89	57	394	184	25
Aug. 22-23, 27-29	38.4	--	1,470	--	--	144	73	100	376	416	90	--	8.2	1,020	1.39	106	660	350	25
Aug. 24, 30-31	138	--	465	--	--	47	17	24	144	93	14	--	4.4	304	.41	113	187	69	22

RED RIVER BASIN--Continued

ELK CREEK NEAR HOBART, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Sept. 1-3, 1950....	22.3	--	1,050	--	--	102	48	64		277	277	50	--	6.0		762	1.04	46	452	225	24
Sept. 4-10.....	17.0	--	1,740	--	--	166	93	125		434	537	104	--	8.0		1,250	1.70	57	796	440	25
Sept. 11-19.....	21.7	--	1,670	--	--	161	91	114		411	528	93	--	5.3		1,190	1.62	70	776	438	24
Sept. 20	16.0	--	790	--	--	70	35	49		188	204	38	--	7.1		543	.74	23	318	164	25
Sept. 21	13.0	--	1,180	--	--	114	54	68		268	329	61	--	6.0		863	1.17	30	506	286	23
Sept. 22-30	11.8	--	1,830	--	--	172	97	144		444	583	118	--	5.0		1,340	1.82	43	828	465	27
Weighted average.	72.9	--	524	--	--	55	21	29		169	110	22	--	3.7		353	0.48	69	224	85	22

RED RIVER BASIN--Continued

ELK CREEK NEAR HOBART, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

DEEP RED RUN NEAR RANDLETT, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 277, 2¾ miles north of Randlett, Cotton County, and 4½ miles upstream from West Cache Creek.
DRAINAGE AREA.--622 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to August 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 2,490 ppm Dec. 21-31; minimum, 150 ppm May 11-12.
Hardness: Maximum, 842 ppm Dec. 21-31; minimum, 54 ppm May 11-12.
Water temperatures: Maximum, 82°F Aug. 8, 17; minimum, freezing point Dec. 18, 22.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 26, 30-31, 1949	10	--	784	--	--	42	17	92		154	50	139	--	1.5		446	0.61	12	175	48	53
Oct. 27-29 --------	10	--	493	--	--	28	11	57		123	29	75	--	2.5		282	.38	7.6	115	14	52
Nov. 1, 3-4 -------	3	--	994	--	--	55	22	115		181	63	187	--	1.0		571	.78	4.6	228	79	52
Nov. 2, 6-10 ------	2.90	--	1,500	--	--	82	34	182		243	99	310	--	.5		873	1.19	6.8	344	145	53
Nov. 11-20 --------	1.98	7.8	2,220	16	0.30	120	53	283	23	331	179	470	0.1	2.5		1,310	1.78	7.0	518	246	53
Nov. 21-30 --------	2.39	--	2,850	--	--	141	67	398		422	199	665	--	2.0		1,680	2.28	11	627	282	58
Dec. 1-10 ---------	2.56	7.8	3,490	10	.00	163	86	490	24	481	268	795	.5	3.5		2,080	2.83	14	760	366	57
Dec. 11-20 --------	2.99	--	4,000	--	--	168	97	594		499	318	970	--	2.5		2,390	3.25	19	818	409	61
Dec. 21-31 --------	3.66	8.1	4,150	4.0	.00	166	104	617	37	519	332	975	.1	2.5		2,490	3.39	25	842	416	60
Jan. 1-10, 1950----	2.95	8.1	3,820	3.0	.00	156	93	580	25	487	286	895	.1	5.5		2,280	3.10	18	772	372	61
Jan. 11-16 --------	6.95	--	3,650	--	--	145	93	538		455	291	875	--	5.0		2,170	2.95	41	744	372	61
Jan. 17-18 --------	6.60	--	2,570	--	--	107	65	353		418	165	555	--	5.5		1,460	1.99	26	534	192	59
Jan. 19-20 --------	4.15	--	1,970	--	--	107	52	251		446	126	375	--	.5		1,130	1.54	13	481	116	53
Jan. 21-24 --------	2.90	--	2,120	--	--	90	52	298		382	143	440	--	5.0		1,220	1.66	9.6	438	126	60
Jan. 25-31 --------	2.70	--	2,500	--	--	109	59	355		414	195	525	--	3.5		1,450	1.97	11	514	176	60
Feb. 1-4 ----------	2.60	--	2,690	--	--	117	65	384		424	214	580	--	5.5		1,570	2.14	11	559	212	60
Feb. 5-10 ---------	2.53	--	3,030	--	--	124	73	453		457	240	685	--	5.0		1,800	2.45	12	610	235	62
Feb. 11 ----------	3.30	--	2,880	--	--	118	73	410		412	226	645	--	5.0		1,680	2.28	15	594	257	60
Feb. 13, 18 -------	216	--	1,100	--	--	44	27	142		153	81	225	--	2.5		650	.88	379	221	96	58
Feb. 14-16 --------	1,337	--	279	--	--	22	6.6	27		93	19	30	--	2.0		219	.30	791	82	6	41
Feb. 17 ----------	189	--	672	--	--	40	16	--		117	--	121	--	2.5		416	.57	212	166	70	--
Feb. 19-20 --------	29.0	--	1,500	--	--	75	38	183		199	120	320	--	2.5		836	1.14	65	343	180	54
Feb. 21-23 --------	16.0	--	2,020	--	--	100	49	254		266	163	435	--	2.5		1,130	1.54	49	451	233	55
Feb. 24-28 -------	8.60	--	2,720	--	--	130	71	356		355	226	610	--	6.0		1,570	2.14	36	616	326	56

Mar. 1-10 --------	6.17	8.2	3,380	14	.00	136	86	481	12	373	290	800	.3	3.4	2,010	2.73	33	693	388	60
Mar. 11-20--------	5.28	--	3,710	--	--	129	97	557		377	337	900	--	4.5	2,210	3.01	32	721	412	63
Mar. 21-31--------	4.32	7.8	4,000	4.6	.00	148	104	601	11	449	339	988	.3	1.2	2,420	3.29	28	796	428	62
Apr. 1-10 ---------	3.87	--	4,070	--	--	142	103	612		435	328	1,000	--	1.5	2,400	3.26	25	778	422	63
Apr. 11-15--------	4.44	--	4,170	--	--	134	108	638		412	332	1,050	--	1.9	2,470	3.36	30	778	440	64
Apr. 16 ----------	180	--	679	--	--	38	14	70		109	40	120	--	6.7	374	.51	182	152	63	50
Apr. 17-18 --------	185	--	1,260	--	--	54	25	167		15.	92	268	--	2.5	736	1.00	368	238	114	60
Apr. 19-20 --------	24.5	--	1,800	--	--	84	39	232		172	153	405	--	4.5	1,000	1.36	66	370	229	58
Apr. 21-30 --------	4.47	8.0	2,060	9.8	.00	89	46	284	10	298	176	425	.1	.8	1,180	1.60	14	415	167	58
May 1-------------	42.0	--	2,400	--	--	89	60	338		333	179	525	--	4.0	1,360	1.85	154	468	195	61
May 2, 10 ---------	1,036	--	363	--	--	30	10	22		85	21	50	--	3.2	245	.33	685	116	46	29
May 3-4-----------	152	--	736	--	--	38	15	92		145	47	132	--	3.5	433	.59	178	156	38	56
May 5-9-----------	14.5	--	1,110	--	--	52	24	141		167	105	202	--	3.2	682	.93	27	228	92	57
May 11-12 --------	7,435	--	140	--	--	14	4.5	10		64	9.2	8.0	--	3.2	150	.20	3,010	54	1	30
May 13-14 --------	3,795	--	270	--	--	21	6.3	24		92	14	28	--	2.0	176	.24	1,800	78	3	40
May 15-16---------	576	--	548	--	--	35	12	60		134	32	86	--	3.7	322	.44	501	137	27	49
May 17-18 --------	58.5	--	1,140	--	--	63	24	135		204	74	215	--	2.4	673	.92	106	256	88	54
May 19-20 --------	41	--	1,580	--	--	77	34	204		267	105	315	--	2.3	956	1.30	106	332	112	57
May 21, 25 --------	54.7	--	2,030	--	--	98	45	264		312	147	420	--	5.0	1,130	1.54	167	430	174	57
May 22, 31 --------	68.5	--	936	--	--	48	18	117		183	56	168	--	2.2	544	.74	101	194	44	57
May 23-24 --------	17.5	--	1,660	--	--	81	35	216		265	113	340	--	1.9	989	1.35	47	346	129	58
May 26, 30 --------	484	--	385	--	--	28	8.0	36		109	18	50	--	2.5	234	.32	306	103	14	43
May 27-29---------	2,180	--	258	--	--	22	6.6	14		79	6.1	28	--	2.8	201	.27	1,180	82	17	28
June 1-2, 7--------	63.3	--	1,200	--	--	72	26	148		225	77	242	--	1.7	736	.99	125	286	102	53
June 3-6 ----------	1,120	--	421	--	--	30	8.9	43		110	23	64	--	1.9	249	.34	753	112	22	46
June 8-10---------	34.3	--	1,520	--	--	89	33	187		275	103	305	--	1.1	926	1.26	86	358	132	53
June 11-12, 19-20--	22.3	--	1,950	--	--	91	42	263		304	127	415	--	6.0	1,090	1 48	66	400	150	59
June 13-14 --------	54.5	--	672	--	--	35	11	74		186	33	73	--	4.1	383	.52	56	132	0	55
June 15-16 --------	14.5	--	1,090	--	--	56	20	142		239	62	190	--	2.7	623	.85	24	222	25	58
June 17-18 --------	8.40	--	1,630	--	--	76	33	224		304	102	322	--	2.4	954	1.30	22	325	75	60
June 21, 23-24 ----	1,329	--	270	--	--	24	5.9	22		106	12	22	--	2.9	173	.24	621	84	0	36
June 22, 25 --------	588	--	584	--	--	41	11	63		146	31	92	--	3.5	342	.47	543	148	28	48
June 26-28 --------	23.0	--	1,110	--	--	65	22	136		250	70	190	--	2.5	643	.87	40	252	48	54
June 29-30 --------	12.5	--	1,420	--	--	80	29	182		304	91	266	--	3.5	842	1.15	28	318	69	55

RED RIVER BASIN--Continued

DEEP RED RUN NEAR RANDLETT, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
July 1-3, 1950	10.5	--	1,660	--	--	95	35	213		349	110	312	--	3.2		988	1.34	28	381	94	55
July 4-6	9.00	--	2,010	--	--	109	42	258		378	138	390	--	2.3		1,130	1.54	27	444	134	56
July 8-10	63.3	--	1,150	--	--	65	25	137		229	67	215	--	1.9		674	.92	115	265	78	53
July 11-14	14.2	--	1,320	--	--	65	27	169		236	89	250	--	2.7		771	1.05	30	273	80	57
July 15-20	15.9	--	1,810	--	--	88	38	234		289	125	365	--	2.5		1,110	1.51	48	376	138	58
July 22	81.0	--	1,570	--	--	65	34	195		256	87	300	--	2.5		879	1.20	192	302	92	58
July 23-26	55.2	--	548	--	--	30	9.6	69		143	30	80	--	3.0		308	.42	46	114	0	57
July 27-31	21.8	--	744	--	--	42	15	96		215	38	112	--	2.4		425	.58	25	166	0	56
Aug. 1-6	150	--	771	--	--	40	15	94		155	48	132	--	2.5		430	.58	174	162	34	56
Aug. 7-10	9.05	--	1,050	--	--	56	21	129		213	67	185	--	2.7		616	.84	15	226	52	55
Aug. 11-15	3.70	--	1,390	--	--	72	29	176		276	86	258	--	2.9		817	1.11	8.2	298	72	56
Aug. 16-18	17.7	--	1,730	--	--	84	35	232		310	124	335	--	3.9		1,040	1.41	50	354	100	59
Aug. 19-20	14.5	--	685	--	--	36	14	90		215	35	91	--	2.9		390	.53	15	148	0	57
Aug. 21, 26-28	49.4	--	652	--	--	38	12	75		170	39	89	--	2.4		379	.52	51	144	5	53
Aug. 22-23	308	--	438	--	--	26	7.4	51		105	19	70	--	2.7		253	.34	210	96	10	54
Aug. 24-25	934	--	339	--	--	28	7.2	34		128	17	34	--	2.8		204	.28	514	100	0	42
Aug. 29-31	7.50	--	920	--	--	52	19	114		209	56	158	--	4.4		539	.73	11	208	36	54
Sept. 1-4	3.68	--	1,270	--	--	70	28	155		263	83	225	--	7.1		740	1.01	7.4	290	73	54
Sept. 5	58.0	--	267	--	--	26	10	17		90	23	28	--	6.8		155	.21	24	106	32	26
Sept. 6, 9	77.0	--	833	--	--	44	16	102		164	57	142	--	4.1		473	.64	98	176	42	56
Sept. 23-24	16.5	--	1,800	--	--	97	40	224		318	124	355	--	3.7		1,000	1.36	45	406	146	55
Sept. 30	8.30	--	2,710	--	--	120	64	381		404	202	600	--	5.1		1,570	2.14	35	562	231	60

RED RIVER BASIN--Continued

DEEP RED RUN NEAR RANDLETT, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

WASHITA RIVER NEAR CLINTON, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 183, half a mile north of Clinton, Custer County, three-quarters of a mile upstream from Beaver Creek, and 3 miles downstream from Barnitz Creek.
DRAINAGE AREA.--1,990 square miles.
RECORDS AVAILABLE.--Sediment records: May 1947 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 165,000 tons July 20; minimum daily, 0.4 ton July 2, 3.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 253,000 tons May 12, 1947; minimum daily, 0.2 ton Oct. 11, 12, 15-19, 1948.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	11	68	2.0	19	120	6.2	28	56	4.2
2	11	118	3.5	18	96	4.7	28	117	8.8
3	11	e 123	3.6	21	106	6.0	28	e 88	6.6
4	11	128	3.8	22	112	6.7	28	60	4.5
5	14	54	2.0	21	106	6.0	28	45	3.4
6	14	50	1.9	20	108	5.8	28	48	3.6
7	12	61	2.0	20	e 100	5.4	28	57	4.3
8	10	64	1.7	20	92	5.0	28	96	7.3
9	10	82	2.2	20	104	5.6	29	53	4.2
10	20	2,680	s 145	20	114	6.2	31	41	3.4
11	209	e 14,000	7,900	21	107	6.1	32	63	5.4
12	104	14,000	3,930	20	122	6.6	31	66	5.5
13	54	4,800	700	20	74	4.0	33	63	5.6
14	34	1,600	147	20	90	4.9	33	146	13
15	26	520	36	20	56	3.0	28	148	11
16	21	e 470	27	20	82	4.4	28	109	8.2
17	18	420	20	20	107	5.8	28	83	6.3
18	16	212	9.2	20	86	4.6	30	74	6.0
19	15	587	24	22	70	4.2	32	80	6.9
20	14	421	16	24	74	4.8	36	87	8.5
21	18	e 535	s 26	24	68	4.4	39	96	10
22	24	e 500	32	24	96	6.2	39	94	9.9
23	22	289	17	26	94	6.6	38	e 106	11
24	40	844	91	26	78	5.5	38	118	12
25	31	969	81	26	73	5.1	36	132	13
26	22	166	9.9	27	83	6.1	42	122	14
27	25	143	9.6	28	90	6.8	46	179	22
28	22	100	5.9	28	50	3.8	45	210	26
29	20	92	5.0	28	58	4.4	41	194	21
30	19	129	6.6	28	60	4.5	41	274	30
31	18	130	6.3	--	--	--	41	296	33
Total	896	--	13,267.2	673	--	159.4	1,041	--	328.6

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

WASHITA RIVER NEAR CLINTON, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	41	298	33	24	e 330	21	38	82	8.4
2	43	252	29	25	346	23	38	82	8.4
3	43	284	33	37	367	37	42	96	11
4	30	273	22	40	358	39	39	82	8.6
5	26	264	19	55	392	58	40	76	8.2
6	33	702	63	52	396	56	40	70	7.6
7	30	305	25	49	351	46	36	83	8.1
8	33	280	25	48	350	45	34	70	6.4
9	32	282	24	45	304	37	34	89	8.2
10	37	318	32	43	e 334	39	33	48	4.3
11	46	307	38	47	e 364	46	32	62	5.4
12	52	404	57	54	395	58	31	126	11
13	48	445	58	51	390	54	31	72	6.0
14	46	318	40	59	372	59	33	71	6.3
15	48	306	40	57	460	71	31	64	5.4
16	45	318	39	55	494	73	32	64	5.5
17	37	182	18	54	373	54	35	67	6.3
18	37	194	19	51	366	50	35	49	4.6
19	35	216	20	50	257	35	34	44	4.0
20	37	236	24	48	229	30	33	46	4.1
21	39	226	24	46	261	32	32	53	4.6
22	39	232	24	43	184	21	32	44	3.8
23	38	268	28	44	226	27	33	52	4.6
24	41	280	31	42	244	28	33	e 74	6.6
25	41	276	31	41	191	21	33	96	8.6
26	41	275	30	40	224	24	31	102	8.6
27	29	318	25	40	191	21	31	75	6.3
28	36	290	28	40	148	16	31	80	6.7
29	29	284	22	--	--	--	30	74	6.0
30	34	296	27	--	--	--	29	53	4.2
31	26	e 310	22	--	--	--	28	56	4.2
Total	1,172	--	950	1,280	--	1,121	1,044	--	202.0

Day	April			May			June		
1	28	e 60	4.5	21	114	6.5	54	1,430	208
2	28	64	4.8	24	128	8.3	46	918	114
3	28	62	4.7	24	68	4.4	78	2,700	569
4	26	55	3.9	22	103	6.1	120	12,600	s 4,090
5	28	e 52	3.9	22	107	6.4	68	9,000	1,650
6	28	50	3.8	22	48	2.8	45	e 4,900	595
7	27	e 51	3.7	20	50	2.7	36	1,700	165
8	27	e 52	3.8	43	1,300	151	31	671	56
9	26	53	3.7	29	620	49	30	517	42
10	24	48	3.1	26	345	24	51	8,780	s 1,210
11	24	44	2.8	39	370	39	224	12,000	7,260
12	22	67	4.0	39	249	26	216	13,200	7,700
13	20	72	3.9	459	16,700	s 20,700	70	7,400	1,400
14	20	75	4.1	216	e 15,000	8,750	43	3,400	395
15	21	e 86	4.9	180	15,200	7,390	30	929	75
16	27	98	7.2	208	13,600	7,640	24	320	21
17	31	98	8.2	133	8,300	2,980	20	221	12
18	35	104	9.8	111	6,900	2,070	16	e 192	8.3
19	54	112	16	649	30,000	58,900	13	164	5.8
20	44	90	11	359	23,600	22,900	11	144	4.3
21	38	86	8.8	370	21,000	21,000	10	e 134	3.6
22	34	86	7.9	224	12,300	7,440	12	124	4.0
23	32	60	5.2	133	5,200	1,870	8.9	112	2.7
24	30	60	4.9	95	2,300	590	7.5	106	2.1
25	26	86	6.0	74	1,270	254	6.2	62	1.0
26	22	94	5.6	61	760	125	4.9	80	1.1
27	21	78	4.4	54	579	84	4.4	81	1.0
28	20	e 100	5.4	113	6,240	s 1,900	4.4	88	1.0
29	21	e 100	5.7	98	5,800	1,530	4.9	e 70	.9
30	20	e 100	5.4	126	6,700	2,280	5.9	e 50	.8
31	--	--	--	73	2,700	532	--	--	--
Total	832	--	171.1	4,067	--	169,261.2	1,295.1	--	25,598.6

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

WASHITA RIVER NEAR CLINTON, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	5.5	35	0.5	2,830	20,900	s160,000	197	8,600	4,570
2	4.2	38	.4	3,200	16,000	s138,000	392	e 10,000	10,600
3	3.9	36	.4	514	13,000	s 18,100	224	e 6,000	3,630
4	4.9	38	.5	232	5,200	3,260	148	e 3,000	1,200
5	8.5	38	.9	172	e 1,900	882	158	4,660	s 1,990
6	430	32,200	s 37,400	152	1,150	472	451	e 15,000	18,300
7	370	24,400	24,400	131	1,240	439	241	13,400	8,720
8	180	13,800	6,700	108	933	272	250	11,000	7,420
9	135	6,600	2,400	99	901	241	224	6,600	3,990
10	70	3,800	718	88	890	211	152	3,400	1,400
11	47	2,100	266	75	644	130	122	1,730	570
12	39	1,000	105	64	470	81	108	1,200	350
13	101	8,220	s 2,240	52	265	37	105	1,150	326
14	300	26,500	s 21,500	45	255	31	161	4,560	s 1,980
15	96	18,000	4,670	41	e 250	28	255	9,440	s 6,500
16	56	7,250	1,100	48	3,500	454	142	3,700	1,420
17	120	21,800	s 7,070	127	8,110	s 2,780	119	1,800	578
18	1,150	16,600	s 51,700	302	20,200	s 16,500	104	e 1,300	365
19	348	12,200	11,500	104	7,000	1,970	95	857	220
20	4,350	14,100	s165,000	70	2,400	454	90	914	222
21	4,450	10,800	130,000	56	900	136	81	890	195
22	2,950	16,000	127,000	62	646	108	73	614	121
23	760	16,700	34,300	90	1,830	445	64	474	82
24	476	11,000	14,100	107	2,400	693	60	429	69
25	297	5,300	4,250	89	900	216	57	364	56
26	297	5,300	4,250	79	876	187	56	349	53
27	224	2,200	1,330	77	738	153	57		54
28	170	1,100	505	60	e 620	100	54		51
29	208	e 3,200	1,800	54	502	73	58	e 350	55
30	180	e 2,600	1,260	253	5,340	s 3,650	55		52
31	180	3,330	1,620	250	8,700	5,870	--	--	--
Total	18,011.0	--	657,186.7	9,631	--	355,973	4,353	--	75,139

Total discharge for year (second-foot-days) 44,295.1
Total load for year (tons) 1,299,357.8

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

WASHITA RIVER AT CARNEGIE, OKLA.

LOCATION.--At gaging station at bridge on State Highway 9, 1,300 feet upstream from Running Creek, and 2.7 miles east of Carnegie, Caddo County.
DRAINAGE AREA.--3,230 square miles, including that of Running Creek.
RECORDS AVAILABLE.--Sediment records: May 1947 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 110,000 tons July 21; minimum daily, 1.8 tons Jan. 7.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 257,000 tons May 18,1949; minimum daily, 1.8 tons Jan. 7, 1950.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	42	67	7.6	51	46	6.3	53	64	9.2
2	41	89	9.8	51	42	5.8	54	85	12
3	41	94	10	50	51	6.9	55	58	8.6
4	68	113	21	48	49	6.4	55	56	8.3
5	94	366	93	50	45	6.1	55	88	13
6	55	211	31	39	57	6.0	56	60	9.1
7	44	137	16	49	74	9.8	56	56	8.5
8	43	124	14	47	59	7.5	56	84	13
9	42	102	12	44	72	8.6	57	56	8.6
10	42	128	15	43	142	16	60	130	21
11	41	128	14	42	104	12	65	114	20
12	40	88	9.5	40	74	8.0	61	48	7.9
13	81	402	88	42	118	13	62	92	15
14	143	270	104	42	104	12	62	82	14
15	88	100	24	42	100	11	62	84	14
16	69	62	12	42	104	12	61	110	18
17	59	115	18	42	119	14	62	118	20
18	52	71	10	42	84	9.5	62	72	12
19	50	50	6.8	46	86	11	62	78	13
20	48	75	9.7	46	79	9.8	62	84	14
21	52	70	9.8	47	119	15	72	90	18
22	118	94	s 30	49	82	11	85	59	14
23	143	790	305	50	74	10	92	60	15
24	135	1,710	s 622	51	102	14	88	50	12
25	288	4,260	3,310	52	96	13	79	60	13
26	107	1,060	306	53	92	13	78	71	15
27	71	220	42	53	69	9.9	78	132	28
28	59	120	19	55	134	20	75	49	9.9
29	52	74	10	55	80	12	72	80	16
30	51	102	14	54	86	13	74	30	6.0
31	50	87	12	--	--	--	78	42	--
Total	2,309	--	5,205.2	1,417	--	322.6	2,049	--	415.0

e Estimated or interpolated.
s Computed by subdividing day..

RED RIVER BASIN--Continued

WASHITA RIVER AT CARNEGIE, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	78	56	12	65	38	6.7	79	284	61
2	78	28	5.9	60	42	6.8	104	30	8.4
3	77	38	7.9	65	48	8.4	76	46	9.4
4	76	34	7.0	65	58	10	72	78	15
5	69	16	3.0	68	60	11	72	147	29
6	57	22	3.4	70	55	10	77	99	21
7	55	12	1.8	72	40	7.8	71	274	53
8	64	111	19	78	46	9.7	69	37	6.9
9	66	12	2.1	78	51	11	71	20	3.8
10	65	36	6.3	77	33	6.9	71	54	10
11	69	12	2.2	81	45	9.8	68	176	32
12	70	16	3.0	90	84	20	67	29	5.3
13	78	18	3.8	86	69	16	64	56	9.7
14	82	47	10	85	46	11	64	41	7.1
15	86	14	3.2	84	49	11	63	59	10
16	82	24	5.3	80	33	7.1	63	76	13
17	78	24	5.1	85	30	6.9	65	78	14
18	78	42	8.8	86	46	11	62	68	11
19	77	83	17	84	47	11	60	92	15
20	74	68	14	82	32	7.1	64	57	9.8
21	72	58	11	79	30	6.4	65	40	7.0
22	72	90	18	77	62	13	65	47	8.2
23	72	69	13	75	44	8.9	62	48	8.0
24	74	43	8.6	72	44	8.6	62	48	8.0
25	70	71	13	71	50	9.6	63	136	23
26	70	68	13	70	125	24	62	436	73
27	73	46	9.1	71	38	7.3	59	120	19
28	74	59	12	68	56	10	59	55	8.8
29	69	57	11	--	--	--	59	47	7.5
30	72	41	8.0	--	--	--	58	26	4.1
31	72	44	8.6	--	--	--	58	48	7.5
Total	2,249	--	266.1	2,124	--	287.0	2,074	--	518.5

Day	April			May			June		
1	57	47	7.2	100	900	243	159	1,800	773
2	58	62	9.7	68	206	38	125	426	144
3	56	41	6.2	61	132	22	106	325	93
4	53	122	17	57	166	26	212	2,880	1,650
5	53	38	5.4	53	242	35	140	900	340
6	54	40	5.8	51	187	26	150	632	256
7	53	27	3.9	47	e200	25	126	402	137
8	53	176	25	49	e242	32	94	229	58
9	55	42	6.2	516	9,680	s13,500	84	259	59
10	52	64	9.0	218	5,700	3,360	75	214	43
11	50	32	4.3	967	11,900	s31,200	81	204	45
12	51	60	8.3	257	3,820	s2,650	150	7,210	s2,920
13	48	102	13	143	2,000	773	296	7,700	6,160
14	48	84	11	939	12,800	32,500	218	5,800	3,410
15	51	190	26	757	12,100	24,700	122	1,300	429
16	54	74	11	573	9,180	s14,200	84	264	60
17	56	86	13	272	3,200	2,350	70	167	32
18	57	68	10	642	14,300	s24,800	62	181	30
19	59	199	32	531	11,300	s16,200	54	134	20
20	58	84	13	401	5,340	s5,770	53	340	49
21	59	90	14	595	22,100	35,500	162	9,900	s4,330
22	71	62	12	402	16,100	17,500	232	18,600	11,700
23	70	56	11	376	15,800	16,000	162	10,200	s4,460
24	62	47	7.9	240	7,300	4,730	71	300	58
25	56	58	8.8	182	3,900	1,920	45	188	23
26	54	94	14	163	1,800	793	37	97	9.7
27	49	144	19	143	1,200	463	32	154	13
28	48	84	11	218	1,700	1,000	32	178	15
29	268	12,200	s8,860	300	6,520	s5,280	32	201	17
30	446	9,230	s11,100	280	7,100	5,370	32	174	15
31	--	--	--	182	3,250	1,600	--	--	--
Total	2,259	--	20,294.7	9,782	--	262,606	3,298	--	37,348.7

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

WASHITA RIVER AT CARNEGIE, OKLA.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	31	190	16	1,350	9,000	s32,800	264	1,430	1,020
2	28	216	16	5,730	3,910	s60,500	288	992	771
3	26	160	11	6,360	3,100	53,200	240	1,800	1,170
4	122	3,490	1,150	4,090	3,100	34,300	366	5,000	4,940
5	67	900	163	1,040	7,200	20,200	280	1,800	1,360
6	57	326	50	595	e2,100	3,380	218	1,700	1,000
7	98	1,120	297	450	e1,600	1,940	210	1,800	1,020
8	288	18,000	s14,000	384	968	1,000	384	5,200	5,390
9	256	18,800	13,000	339	923	844	264	5,100	3,640
10	165	14,700	6,550	296	624	499	256	4,600	3,180
11	138	9,800	3,650	272	378	278	248	4,300	2,880
12	130	3,500	1,230	240	280	182	203	2,800	1,530
13	256	2,600	1,800	218	304	179	178	1,700	817
14	154	800	333	196	1,590	841	248	1,400	937
15	155	1,800	754	196	787	417	218	1,200	706
16	280	6,100	4,610	531	6,300	9,030	203	1,300	713
17	411	16,000	s17,800	733	11,800	23,400	272	1,300	955
18	4,410	6,870	s81,700	366	5,000	4,940	203	1,350	740
19	3,710	5,670	s56,800	288	2,000	1,560	171	888	410
20	2,860	12,600	97,300	339	1,300	1,740	156	538	227
21	3,700	11,000	110,000	225	1,300	790	147	385	153
22	3,820	6,300	65,000	189	551	281	140	338	128
23	4,000	2,600	28,100	371	1,700	1,700	129	313	109
24	3,550	2,900	27,800	531	3,500	5,020	122	300	99
25	3,040	11,300	s92,700	322	1,100	956	116	252	79
26	4,060	4,200	46,000	218	434	255	110	309	92
27	3,350	2,800	25,300	203	466	255	106	235	67
28	994	6,200	16,600	256	800	553	102	288	79
29	573	1,800	2,780	218	968	570	97	238	62
30	531	1,300	1,860	189	564	288	96	269	70
31	573	1,100	1,700	178	344	165	--	--	--
Total	41,833	--	719,070	26,913	--	262,063	6,035	--	34,344

Total discharge for year (second-foot-days) 102,342
Total load for year (tons) 1,342,740.8

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

WASHITA RIVER NEAR TABLER, OKLA.

LOCATION.--At gaging station at county highway bridge, 1 mile downstream from Little Washita River, 5 miles south of Tabler, Grady County, and 7½ miles upstream from Winter Creek.
DRAINAGE AREA.--4,760 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1946 to September 1950.
Water temperatures: September 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,200 ppm Apr. 21-30; minimum, 184 ppm July 20-21.
Hardness: Maximum, 778 ppm Jan. 21-31; minimum, 138 ppm July 20-21.
Water temperatures: Maximum, 80°F June 17, 27, Aug. 11-15; minimum, freezing point Dec. 28, Jan. 6-8, Feb. 22.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 1,390 ppm Nov. 5-10, 1947; minimum, 184 ppm July 20-21, 1950.
Hardness: Maximum, 851 ppm Jan. 1-10, 1948; minimum, 127 ppm May 22-24, 1949.
Water temperatures: Maximum, 88°F Aug. 18, 1948; minimum, freezing point on many days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949....	114	--	1,370	--	--	163	61	68		276	433	89	--	2.5		1,000	1.36	308	658	432	18
Oct. 11-20.....	132	--	1,440	--	--	169	59	75		281	440	98	--	2.0		1,040	1.41	371	664	434	20
Oct. 21-31.....	259	--	1,230	--	--	152	41	67		221	376	84	--	2.0		895	1.22	626	548	366	21
Nov. 1-10	153	--	1,360	--	--	168	43	71		245	367	118	--	1.0		982	1.34	406	596	395	21
Nov. 11-20	134	8.0	1,520	16	0.00	190	54	91	6.2	309	444	117	0.3	3.5		1,070	1.46	387	696	443	22
Nov. 21-30	154	--	1,660	--	--	205	59	94		345	467	134	--	.5		1,130	1.54	470	754	472	21
Dec. 1-10	151	--	1,610	--	--	192	58	105		328	491	117	--	2.0		1,130	1.54	461	718	448	24
Dec. 11-20	164	--	1,600	--	--	198	53	100		319	482	117	--	2.0		1,110	1.51	492	712	450	23
Dec. 21-31	206	7.9	1,570	17	.00	210	53	84	19	320	472	113	.7	3.5		1,130	1.54	629	742	480	19
Jan. 1-10, 1950 ...	215	--	1,500	--	--	206	56	67		328	464	95	--	3.5		1,050	1.43	610	744	475	16
Jan. 11-20	222	7.9	1,530	19	.00	201	53	79	7.2	316	463	90	.3	3.5		1,070	1.46	641	720	460	19
Jan. 21-31	193	--	1,580	--	--	217	57	75		334	495	105	--	3.0		1,120	1.52	584	776	502	17
Feb. 1-10	187	--	1,630	19	.00	211	57	92		338	502	112	.3	3.5		1,160	1.58	586	761	484	21
Feb. 11-20	294	--	1,450	--	--	194	53	70		289	466	92	--	4.0		1,020	1.39	810	702	465	18
Feb. 21-28	214	--	1,550	--	--	209	60	72		293	517	103	--	2.0		1,110	1.51	641	768	528	17
Mar. 1-10.....	200	8.1	1,530	19	.00	202	56	89	7.2	264	523	107	.5	2.0		1,140	1.55	616	734	518	21
Mar. 11-20.....	174	--	1,570	--	--	198	60	83		276	512	113	--	1.8		1,100	1.50	517	740	514	20
Mar. 21-31.....	166	8.0	1,590	16	.00	205	59	93	11	276	533	117	.5	1.7		1,170	1.59	524	754	528	21

Apr. 1-9	150	8.0	1,580	17	.00	186	61	92	6.0	225	554	116	.3	3.2	1,150	1.56	466	715	530	22
Apr. 10-20	166	--	1,580	--	--	202	57	97		266	546	114	--	2.5	1,150	1.56	515	738	520	22
Apr. 21-30	149	7.9	1,640	19	.00	207	61	92	9.2	277	552	115	.5	3.3	1,200	1.63	483	768	540	20
May 1-4	303	--	1,640	--	--	194	66	92		192	603	118	--	4.2	1,170	1.59	957	756	598	21
May 5-10	491	--	1,050	--	--	138	29	48		172	293	83	--	4.8	754	1.03	1,000	464	322	18
May 11	6,370	--	479	--	--	67	15	8.0		118	125	8.0	--	10	390	.53	6,710	228	132	7
May 12-20	1,338	--	858	--	--	123	24	29		143	292	30	--	5.5	653	.89	2,360	406	288	13
May 21, 26	1,505	--	628	--	--	88	19	19		134	194	16	--	6.3	447	.61	1,820	298	188	12
May 22-25, 27-31	760	--	966	--	--	132	33	35		166	340	34	--	5.1	726	.99	1,490	465	329	14
June 1-10	435	--	1,150	--	--	164	42	40		186	426	48	--	4.6	941	1.28	1,110	582	428	13
June 11-12, 16, 19-20	312	--	1,030	--	--	140	34	41		182	339	51	--	5.5	804	1.09	677	490	340	15
June 13-15, 17-18	251	--	1,320	--	--	176	51	48		189	474	71	--	4.5	918	1.25	622	648	494	14
June 21, 24-25, 30	584	--	637	--	--	80	19	30		153	167	26	--	8.5	458	.62	722	278	152	19
June 22-23, 26-29	376	--	1,160	--	--	161	33	56		164	416	62	--	5.0	900	1.22	914	537	402	19
July 1-7	303	--	1,140	--	--	147	35	60		186	367	74	--	2.5	850	1.16	695	511	358	20
July 8-10	190	--	1,430	--	--	229	36	53		196	541	78	--	2.2	1,040	1.41	534	720	559	14
July 11-14, 16	357	--	1,320	--	--	182	40	59		197	440	88	--	3.7	998	1.36	962	618	457	17
July 15, 17-19	993	--	792	--	--	106	23	30		147	240	36	--	2.9	564	.77	1,510	359	238	15
July 20-21	8,450	--	288	--	--	42	8.1	7.6		124	38	7.5	--	4.2	184	.25	4,200	138	37	11
July 22, 24-26, 28-29	5,378	--	441	--	--	65	12	9.9		124	111	9.5	--	3.2	294	.40	4,270	212	110	9
July 23, 27, 30-31	3,242	--	601	--	--	89	16	18		156	168	15	--	3.3	420	.57	3,680	288	160	12
Aug. 1-3, 8-10	1,344	--	822	--	--	114	24	34		182	249	33	--	2.4	598	.81	2,170	383	234	16
Aug. 4-7	3,785	--	470	--	--	64	13	14		114	125	12	--	3.2	331	.45	3,380	213	120	12
Aug. 11-12, 20	666	--	884	--	--	119	29	34		195	270	34	---	2.3	682	.93	1,230	416	256	15
Aug. 13-15, 17-19	571	--	1,070	--	--	144	39	42		235	344	42	--	2.4	837	1.14	1,290	520	327	15
Aug. 16	1,060	--	319	--	--	42	17	.9		156	35	5.0	--	6.8	198	.27	567	175	47	1
Aug. 21-22, 28-31	418		1,130	--	--	150	37	48		211	352	62	--	4.4	855	1.16	965	526	353	17
Aug. 23-27	827		870	--	--	120	28	30		180	281	27	--	2.9	658	.89	1,470	414	267	14
Sept. 1-10	458	--	1,080	--	--	142	39	44		196	369	44	--	3.9	814	1.11	1,010	515	354	16
Sept. 11-20	597	8.1	926	16	.00	124	30	40	5.0	208	273	42	.5	2.9	676	.92	1,090	433	262	17
Sept. 21-30	301	--	1,320	--	--	193	45	49		309	410	63	--	3.2	982	1.34	798	666	413	14
Weighted average	556	--	856	--	--	116	28	36		180	261	42	--	3.8	620	0.84	931	404	257	16

RED RIVER BASIN--Continued

WASHITA RIVER NEAR TABLER, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

WASHITA RIVER NEAR DURWOOD, OKLA.

LOCATION.--At gaging station at Mulkey Bridge on State Highway 18, 1½ miles downstream from Caddo Creek, and 4 miles north of Durwood, Carter County.
DRAINAGE AREA.--7,310 square miles.
RECORDS AVAILABLE.--Chemical analyses: May 1944 to September 1950.
Water temperatures: April 1947 to September 1950.
EXTREMES, 1944-49.--Dissolved solids: Maximum, 936 ppm July 21-25, 30-31, 1944; minimum, 140 ppm Oct. 1-3, 1945.
Hardness: Maximum, 574 ppm July 21-25, 30-31, 1944; minimum, 114 ppm Oct. 1-3, 1945.
Water temperatures (1947-50): Maximum, 87°F Aug. 6, 1950; minimum, freezing point on many days during winter months.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Day	October		November		December		January	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	908	--	911	--	1,170	--	1,150	--
2	941	--	869	--	1,160	--	1,210	88
3	896	--	956	--	1,250	104	1,190	--
4	906	--	1,010	68	1,230	--	650	38
5	952	52	956	--	1,160	--	632	--
6	937	--	844	--	1,210	--	872	60
7	901	--	871	--	1,230	--	1,010	--
8	956	--	937	72	1,230	--	1,070	--
9	994	--	932	--	1,180	81	997	64
10	896	--	936	--	1,170	--	887	--
11	986	--	951	--	1,150	--	622	36
12	981	74	923	--	1,160	--	776	--
13	992	--	954	--	1,150	--	547	38
14	1,020	--	941	72	1,170	82	614	--
15	1,110	--	979	--	1,170	--	839	66
16	1,120	78	948	--	1,270	--	787	--
17	1,110	--	1,020	--	1,290	--	937	--
18	1,100	--	1,010	--	1,320	--	986	68
19	1,150	--	1,120	--	1,300	--	1,040	--
20	1,120	--	1,160	100	1,370	118	1,110	--
21	1,160	--	976	--	1,070	--	1,010	--
22	1,130	80	1,090	--	1,070	--	1,010	58
23	860	--	954	76	1,030	90	1,040	--
24	448	28	1,020	--	1,070	--	1,050	--
25	394	46	979	--	1,110	--	1,040	--
26	406	--	1,000	--	1,010	--	1,070	80
27	571	48	1,180	--	1,070	78	1,020	--
28	640	--	1,130	--	1,110	--	1,080	--
29	676	--	1,250	108	1,130	--	--	--
30	839	48	1,180	--	1,160	80	1,080	--
31	845	--	--	--	1,180	--	1,160	80

RED RIVER BASIN--Continued

WASHITA RIVER NEAR DURWOOD, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Day	February		March		April		May	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	1,130	--	1,070	--	1,120	--	432	23
2	1,050	--	1,070	--	1,180	--	288	13
3	1,010	65	1,080	83	1,130	92	556	38
4	1,010	--	1,090	--	1,150	--	807	85
5	1,060	--	1,090	--	1,210	--	1,130	195
6	1,060	--	1,040	--	1,210	--	949	98
7	1,030	--	1,100	--	1,160	--	555	40
8	1,010	--	1,090	83	1,160	--	819	61
9	1,060	71	1,110	--	1,220	89	826	46
10	1,050	--	1,070	--	1,180	--	1,010	65
11	1,000	70	1,080	--	1,110	--	286	8.0
12	615	35	1,080	--	1,190	--	237	9.0
13	476	--	1,080	84	1,290	89	704	37
14	525	--	1,130	--	1,300	--	672	37
15	499	47	1,100	--	1,240	--	711	40
16	539	--	1,100	--	1,260	--	656	36
17	636	--	1,140	--	1,120	--	663	37
18	775	51	1,170	94	1,060	90	593	26
19	864	--	1,160	--	1,320	--	746	39
20	958	--	1,150	--	1,430	--	803	42
21	976	60	1,060	--	1,210	--	796	41
22	1,060	--	1,110	--	1,130	--	841	51
23	1,040	--	1,160	83	1,140	104	813	41
24	1,070	76	1,180	--	1,180	--	581	33
25	1,080	--	1,180	--	1,180	--	414	16
26	1,050	--	1,190	--	1,230	--	393	22
27	1,060	--	1,190	--	1,240	--	558	35
28	1,070	80	1,190	85	1,220	--	476	39
29	--	--	1,190	--	262	31	466	25
30	--	--	1,180	--	495	63	507	27
31	--	--	1,220	--	--	--	617	32

Day	June		July		August		September	
1	575	34	727	50	471	24	696	38
2	753	88	825	64	414	--	777	42
3	583	38	762	58	484	--	864	50
4	804	92	802	58	574	26	852	56
5	764	88	910	74	439	--	981	72
6	755	50	584	44	728	52	916	60
7	747	50	754	78	429	--	958	56
8	655	48	726	36	432	18	1,020	58
9	616	46	742	40	491	--	944	58
10	883	54	857	38	553	22	1,060	52
11	692	44	900	54	623	--	1,100	54
12	511	46	837	58	713	34	972	60
13	472	26	830	48	715	--	945	44
14	414	32	929	58	771	--	328	20
15	534	36	1,070	68	775	--	394	26
16	538	36	843	54	803	36	361	22
17	653	48	512	36	867	--	377	18
18	697	52	986	68	697	34	599	34
19	788	64	678	60	807	--	782	46
20	1,090	98	681	36	498	26	645	30
21	532	36	478	20	742	34	639	36
22	815	62	375	14	803	--	724	44
23	910	64	373	10	555	24	900	56
24	947	74	419	14	380	32	897	60
25	735	40	470	20	541	--	864	52
26	777	46	450	18	444	--	944	56
27	917	40	348	14	392	--	1,000	60
28	950	44	442	20	352	20	1,030	66
29	736	40	508	16	742	--	1,060	68
30	690	44	530	18	782	34	1,080	70
31	--	--	518	20	759	--	--	--

RED RIVER BASIN--Continued

WASHITA RIVER NEAR DURWOOD, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

POND CREEK NEAR FORT COBB, OKLA.
(Known locally as Cobb Creek)

LOCATION.--At bridge on county road, 100 feet upstream from gaging station, which is 5 miles upstream from mouth, and 2.7 miles north of Fort Cobb, Caddo County.
DRAINAGE AREA.--320 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: May 1946 to July 1948.
Water temperatures: October 1946 to July 1948.
Sediment records: May 1947 to September 1950.
EXTREMES, 1949-50.--Sediment records: Maximum daily, 38,600 tons Aug. 1; minimum daily, 1.8 tons Oct. 18.
EXTREMES, 1946-50.--Dissolved solids (1946-48): Maximum, 626 ppm July 11-20, 1948; minimum, 149 ppm May 15, 24, 1947.
Hardness (1946-48): Maximum, 432 ppm July 21-31, 1947; minimum, 69 ppm June 1, 1947.
Water temperatures (1946-48): Maximum, 89°F July 4, 6-7, 9, 1947, June 29, 1948; minimum, freezing point Jan. 3-5, 1947, Jan. 1-2, 1948.
Sediment records (1947-50): Maximum daily, 110,000 tons May 18, 1949; minimum daily, 1.4 tons Sept. 9, 14, 24, 1947.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	11	121	3.6	22	270	16	26	56	3.9
2	10	79	2.1	21	64	3.6	26	67	4.7
3	11	92	2.7	21	44	2.5	27	60	4.4
4	14	e100	3.8	21	e42	2.4	28	36	2.7
5	36	478	46	22	41	2.4	27	52	3.8
6	18	299	15	21	134	7.6	29	87	6.8
7	16	160	6.9	22	124	7.4	30	73	5.9
8	16	171	7.4	23	124	7.7	29	43	3.4
9	16	154	6.7	24	98	6.4	32	63	5.4
10	16	164	7.1	24	62	4.0	35	64	6.1
11	16	100	4.3	24	71	4.6	40	190	21
12	17	66	3.0	24	94	6.1	35	63	5.9
13	17	85	3.9	23	44	2.7	30	68	5.5
14	17	93	4.3	24	63	4.1	30	71	5.8
15	17	56	2.6	24	54	3.5	30	59	4.8
16	17	44	2.0	24	116	7.5	31	76	6.4
17	17	68	3.1	24	129	8.4	33	91	8.1
18	17	40	1.8	24	96	6.2	34	140	13
19	18	52	2.5	25	98	6.6	34	113	10
20	19	53	2.7	26	104	7.3	35	44	4.2
21	25	105	s10	26	65	4.6	56	122	18
22	49	370	49	25	96	6.5	80	312	67
23	30	e250	20	26	86	6.0	44	127	15
24	98	638	s336	27	e84	6.1	38	180	18
25	50	910	s123	27	e84	6.1	37	101	10
26	28	290	22	27	83	6.0	37	170	17
27	22	177	11	28	88	6.7	35	e170	16
28	21	122	6.9	28	102	7.7	33	172	15
29	20	94	5.1	27	54	3.9	33	52	4.6
30	20	80	4.3	26	34	2.4	34	92	8.4
31	21	84	4.8	--	--	--	36	98	9.5
Total	720	--	723.6	730	--	173.0	1,084	--	330.3

e Estimated or interpolated.
s Computed by subdividing day.

POND CREEK NEAR FORT COBB, OKLA.--Continued
(Known locally as Cobb Creek)

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	36	110	11	42	114	13	44	78	9.3
2	36	e 110	11	36	140	14	39	54	5.7
3	38	185	19	34	125	11	39	42	4.4
4	39	182	19	36	128	12	41	51	5.6
5	23	70	4.3	38	82	8.4	41	60	6.6
6	32	72	6.2	40	78	8.4	41	64	7.1
7	32	70	6.0	40	128	14	40	72	7.8
8	34	101	9.3	40	108	12	35	54	5.1
9	37	84	8.4	38	84	8.6	34	110	10
10	38	120	12	38	e 84	8.6	35	50	4.7
11	34	64	5.9	42	e 550	62	37	82	8.2
12	35	68	6.4	103	954	265	36	113	11
13	54	112	16	68	313	58	33	88	7.8
14	52	132	19	48	150	19	36	26	2.5
15	41	56	6.2	41	113	13	33	174	16
16	37	70	7.0	39	98	11	36	60	5.8
17	36	86	8.4	38	92	9.4	35	52	4.9
18	36	63	6.1	37	119	12	34	157	14
19	33	32	2.9	36	122	12	33	52	4.6
20	33	34	3.0	36	78	7.6	31	71	5.9
21	36	34	3.3	38	84	8.6	33	88	7.8
22	39	33	3.5	37	65	6.5	32	36	3.1
23	40	57	6.2	35	96	9.1	32	78	6.7
24	40	59	6.4	34	59	5.4	32	114	9.8
25	38	130	13	34	89	8.2	31	76	6.4
26	29	92	7.2	34	60	5.5	33	64	5.7
27	19	116	5.9	34	48	4.4	31	70	5.9
28	34	96	8.8	37	115	12	30	96	7.8
29	37	112	11	--	--	--	29	94	7.4
30	31	103	8.6	--	--	--	29	96	7.5
31	26	84	5.9	--	--	--	29	74	5.8
Total	1,105	--	266.9	1,153	--	638.7	1,074	--	220.9
	April			May			June		
1	30	104	8.4	28	212	16	32	398	34
2	30	84	6.8	28	189	14	30	371	30
3	31	98	8.2	28	178	13	77	1,580	s328
4	27	54	3.9	26	198	14	42	1,200	136
5	26	70	4.9	25	198	13	28	592	45
6	26	88	6.2	24	202	13	26	342	24
7	27	72	5.2	23	224	14	24	328	21
8	28	86	6.5	379	21,100	s21,600	23	556	35
9	28	99	7.5	133	9,060	s 3,250	22	272	16
10	29	96	7.5	340	6,520	s 5,990	21	246	14
11	26	88	6.2	256	2,400	1,660	148	10,600	s 4,230
12	26	96	6.7	104	1,000	281	64	3,150	544
13	26	74	5.2	414	15,600	s17,400	34	772	71
14	26	95	6.7	162	6,200	s 2,710	27	786	57
15	28	85	6.4	103	3,000	833	23	376	23
16	41	118	13	67	1,900	344	21	264	15
17	53	262	38	47	1,000	127	20	253	14
18	43	158	18	165	6,920	s3,080	18	232	11
19	36	192	19	75	2,300	466	17	217	10
20	31	140	12	158	7,500	s3,200	17	120	5.5
21	30	162	13	131	4,630	s1,640	879	11,400	s27,100
22	29	142	11	51	1,300	179	166	5,020	s 2,250
23	28	138	10	41	518	57	50	1,600	216
24	27	148	11	32	538	47	36	650	63
25	25	164	11	28	e 500	38	28	357	27
26	24	166	11	50	645	87	24	354	23
27	24	150	9.7	48	398	52	23	454	28
28	24	134	8.7	132	7,520	s2,680	23	356	22
29	33	197	18	130	4,220	s1,480	23	260	16
30	36	198	19	54	e 1,200	175	25	222	15
31	--	--	--	37	546	55	--	--	--
Total	898	--	318.7	3,319	--	67,528	1,991	--	35,423.5

e Estimated or interpolated.
s Computed by subdividing day.

RED RIVER BASIN--Continued

POND CREEK NEAR FORT COBB, OKLA.--Continued
(Known locally as Cobb Creek)

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1------	22	230	14	843	17,000	s38,600	29	358	28
2------	20	184	9.9	471	9,200	s11,700	27	e302	22
3------	20	290	16	90	2,000	486	26	247	17
4------	24	590	3.8	56	740	112	27	254	19
5------	34	3,480	s319	48	778	102	451	20,700	s25,200
6------	46	3,600	s448	44	414	49	75	e2,500	506
7------	24	460	30	40	372	40	44	e610	72
8------	21	280	16	38	343	35	36	e400	39
9------	20	208	11	35	313	30	33	e350	31
10------	19	142	7.3	34	282	26	31	e320	27
11------	19	128	6.6	33	308	27	34	e370	34
12------	20	179	9.7	31	349	29	31	e320	27
13------	152	12,800	s5,260	28	346	26	31	e320	27
14------	34	2,400	220	27	313	23	46	e670	83
15------	20	328	18	26	211	15	39	486	51
16------	17	176	8.1	135	5,660	s2,060	36	362	35
17------	18	252	12	146	5,760	s2,270	33	e356	32
18------	20	294	16	56	1,600	242	31	350	29
19------	59	4,120	s655	40	752	81	29	331	26
20------	1,190	11,600	s37,200	34	502	46	29	292	23
21------	800	8,600	18,600	32	343	30	29	302	24
22------	685	8,370	s15,500	32	424	37	27	e278	20
23------	106	2,100	601	202	11,900	s6,480	26	253	18
24------	60	900	146	112	4,920	s1,490	26	266	19
25------	710	14,500	s27,700	48	1,500	194	25	274	18
26------	367	7,820	s7,740	36	600	58	25	225	15
27------	90	1,800	437	62	853	s143	26	426	30
28------	58	542	85	54	4,040	s587	26	240	17
29------	49	462	61	37	900	90	25	149	10
30------	47	478	61	37	576	57	25	168	11
31------	47	586	74	31	435	36	--	--	--
Total-	4,818	--	115,285.4	2,938	--	65,201	1,378	--	26,510

Total discharge for year (second-foot-days) 21,208
Total load for year (tons) 312,620.0

e Estimated or interpolated.
s Computed by subdividing day.

KIAMICHI RIVER NEAR BELZONI, OKLA.

LOCATION.--At gaging station at bridge on State Highway 7, 6 miles downstream from Cedar Creek, and 1¾ miles northwest of Belzoni, Pushmataha County.
DRAINAGE AREA.--1,420 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 84 ppm Oct. 1-10; minimum, 48 ppm Mar. 21-31.
Hardness: Maximum, 23 ppm Dec. 11-20, Apr. 21-30; minimum, 11 ppm Jan. 1-10.
Water temperatures: Maximum, 93°F June 27; minimum, 39°F Jan. 5.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 98 ppm May 21-22, 27-28, 31, 1948; minimum, 44 ppm Apr. 21-30, Nov. 11-20, 1948.
Hardness: Maximum, 46 ppm May 21-22, 27-28, 31, 1948; minimum, 11 ppm Feb. 11-20, 1949, Jan. 1-10, 1950.
Water temperatures: Maximum, 94°F July 8-9, 1949; minimum, freezing point Jan. 27-29, 1948, Jan. 27-30, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949	79.1	7.7	48.3	18	0.90	2.7	1.4	6.9	4.7	19	6.0	3.5	0.3	0.5		84	0.11	18	12	0	45
Oct. 11-20	100	--	53.4	--	--	3.6	1.6	4.4		18	4.2	4.0	--	.5		75	.10	20	16	8	38
Oct. 21-31	2,605	--	48.4	--	--	2.5	1.3	5.3		14	4.0	5.0	--	.5		71	.10	499	12	0	50
Nov. 1-10	298	--	55.9	--	--	2.8	1.6	6.1		18	4.8	4.8	--	.5		70	.10	56	14	0	49
Nov. 11-20.....	143	7.2	64.9	16	.80	3.8	1.9	6.0	3.6	22	6.3	5.0	.2	.5		62	.08	24	17	0	37
Nov. 21-30.....	93.7	--	71.5	--	--	3.0	1.1	12		25	5.4	7.2	--	1.0		65	.09	16	12	0	68
Dec. 1-10	70.7	7.0	72.3	14	.70	5.0	2.4	7.3	3.7	24	8.9	7.0	.1	.5		62	.08	12	22	3	37
Dec. 11-20.....	345	--	72.5	--	--	4.6	2.7	4.9		22	5.8	6.0	--	1.0		57	.08	53	23	5	32
Dec. 21-31.....	2,011	7.4	61.7	22	.90	3.0	1.8	4.0		14	4.8	4.8	--	.5		79	.11	429	15	3	37
Jan. 1-10, 1950	7,644	--	47.1	--	--	2.4	1.3	5.5		14	5.5	3.5	--	1.5		70	.10	1,440	11	0	51
Jan. 11-20	11,490	6.5	41.4	17	.55	2.3	1.4	3.6		12	4.6	3.0	--	.5		64	.09	1,990	12	2	40
Jan. 21-31.....	1,575	--	53.7	--	--	3.1	2.5	3.7		16	6.3	4.0	--	1.0		65	.09	276	18	5	31
Feb. 1-10.....	5,948	6.7	50.2	17	.90	3.4	1.6	5.2	3.2	25	6.7	3.5	--	.5		62	.08	996	15	0	37
Feb. 11-20.....	11,370	--	46.6	--	--	2.9	1.8	4.9		17	4.5	4.5	--	1.0		64	.09	1,960	15	1	42
Feb. 21-28.....	1,526	--	51.0	--	--	3.0	1.6	5.0		16	5.8	3.8	--	.5		67	.09	276	14	1	43
Mar. 1-10	612	7.2	59.2	17	.90	3.7	1.9	5.5	2.8	19	7.1	5.0	--	.5		59	.08	97	17	2	37
Mar. 11-20	636	--	58.7	--	--	3.8	1.7	6.0		20	6.1	4.5	--	.5		55	.07	94	16	0	44
Mar. 21-31	470	--	55.6	--	--	3.0	1.6	6.3		20	5.4	4.2	--	.0		48	.07	61	14	0	49

RED RIVER BASIN--Continued

KIAMICHI RIVER NEAR BELZONI, OKLA.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 1-10, 1950	245	7.7	67.4	10	0.65	3.8	2.0	7.3	1.9	24	6.4	6.5	--	1.0		59	0.08	39	18	0	44
Apr. 11-20	163	--	73.6	--	--	4.6	1.8	8.2		25	6.4	6.2	--	1.1		57	.08	25	19	0	49
Apr. 21-30	1,103	6.8	77.8	8.9	.45	5.0	2.5	6.6	1.9	27	6.7	7.2	--	1.9		64	.09	191	23	1	36
May 1-10	6,039	6.8	47.7	8.7	.70	2.8	1.5	5.5		16	4.9	3.8	--	1.8		71	.10	1,160	13	0	47
May 11-20	4,080	6.4	48.1	12	1.5	3.2	1.4	6.3		19	5.9	3.5	--	1.1		67	.09	738	14	0	50
May 21-31	9,345	6.8	58.3	13	.90	3.9	1.6	6.8		22	5.7	4.0	--	1.8		62	.08	1,560	16	0	47
June 1-10	887	--	57.5	--	--	3.4	2.0	6.7		24	4.3	4.2	--	1.4		72	.10	172	17	0	46
June 11-20	171	--	62.5	--	--	3.2	2.0	7.1		24	4.7	4.0	--	1.7		64	.09	30	16	0	49
June 21-30	56.6	--	68.5	--	--	3.6	2.1	6.2		24	4.9	4.2	--	.5		59	.08	9.0	18	0	43
July 1-10	5,492	--	48.0	--	--	3.1	1.7	4.4		19	3.4	3.2	--	.8		60	.08	890	15	0	39
July 11-20	4,213	--	48.3	--	--	2.8	1.6	5.6		18	3.7	4.0	--	1.8		75	.10	853	14	0	47
July 21-31	10,770	--	39.8	--	--	2.7	1.4	4.1		17	3.0	2.5	--	1.1		66	.09	1,920	12	0	42
Aug. 1-10	7,616	--	46.8	--	--	3.0	1.6	4.3		19	2.8	3.0	--	.9		63	.09	1,300	14	0	40
Aug. 11-20	1,036	--	55.8	--	--	3.8	2.3	4.6		23	3.6	3.5	--	1.7		62	.08	173	19	0	34
Aug. 21-31	1,184	--	50.4	--	--	3.8	2.1	5.5		22	4.0	4.5	--	1.8		70	.10	224	18	0	40
Sept. 1-10	580	--	55.5	--	--	3.8	2.1	5.2		24	3.9	3.5	--	1.1		77	.10	121	18	0	39
Sept. 11-20	14,420	--	50.6	--	--	3.2	1.7	4.4		17	3.3	3.8	--	2.2		66	.09	2,570	15	1	39
Sept. 21-30	2,392	6.8	58.3	11	1.3	3.9	2.1	6.4	2.1	24	6.4	3.5	--	1.0		75	.10	484	18	0	40
Weighted average	3,015	--	48.3	--	--	3.0	1.6	5.0		17	4.4	3.6	--	1.2		66	0.09	537	14	0	43

RED RIVER BASIN--Continued

KIAMICHI RIVER NEAR BELZONI, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	60	57	66	41	55	61	64	75	82	78	75
2	72	62	54	65	44	52	64	65	73	82	76	75
3	72	61	62	61	46	51	--	79	76	89	76	77
4	71	54	55	42	45	61	62	71	76	84	75	77
5	72	53	52	39	48	55	--	70	72	75	81	75
6	76	64	52	50	52	59	62	70	74	75	75	75
7	76	63	52	52	62	57	63	70	76	76	76	75
8	78	52	43	57	53	49	61	72	78	75	80	75
9	74	56	45	45	53	54	66	71	79	79	82	75
10	72	62	58	--	55	53	68	72	78	79	81	77
11	73	68	54	55	55	54	66	71	78	78	82	75
12	70	59	52	53	57	50	66	69	84	77	83	75
13	73	54	47	61	50	49	63	68	84	79	84	77
14	66	54	47	69	50	51	65	--	83	79	85	77
15	72	64	49	52	49	54	62	--	83	79	88	77
16	71	57	55	51	54	54	59	--	85	80	85	69
17	76	60	55	--	50	56	62	--	85	81	77	70
18	77	62	57	55	52	54	66	--	88	77	73	77
19	72	53	66	52	50	53	64	--	90	78	81	73
20	75	52	67	55	53	55	65	75	83	80	72	76
21	69	50	56	51	54	56	67	75	83	82	79	76
22	75	--	49	62	52	58	70	73	88	79	77	73
23	70	50	42	67	52	60	71	74	84	76	72	73
24	64	60	52	--	55	61	69	76	83	--	74	73
25	52	63	56	64	--	67	68	80	84	--	80	72
26	59	64	57	68	--	63	69	79	83	--	78	70
27	58	65	61	43	--	64	70	76	93	--	83	70
28	58	64	61	--	--	62	70	78	--	--	82	72
29	60	60	57	--	--	60	68	79	82	--	83	75
30	50	59	61	--	--	63	66	74	87	--	76	71
31	50	--	--	--	--	59	--	76	--	76	74	--
Average	68	59	54	--	51	56	65	--	82	--	79	74

LITTLE RIVER BELOW LUKFATA CREEK NEAR IDABEL, OKLA.

LOCATION.--At gaging station at bridge on U. S. Highway 70 just downstream from Lukfata Creek and 5 miles northeast of Idabel, McCurtain County.
DRAINAGE AREA.--1,239 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 125 ppm July 1-5; minimum, 40 ppm July 21-31.
Hardness: Maximum, 43 ppm July 1-5; minimum, 12 ppm July 21-31, Aug. 1-10.
Water temperatures: Maximum, 94°F Aug. 16; minimum, freezing point Feb. 14.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 369 ppm Oct. 11-19, 1948; minimum, 40 ppm July 21-31, 1950.
Hardness: Maximum, 72 ppm Oct. 11-19, 1948; minimum, 9 ppm Apr. 21-30, 1948.
Water temperatures: Maximum, 94°F Aug. 16, 1950; minimum, freezing point Feb. 26, 1948, Feb. 14, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Stillwater, Okla. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949....	161	8.2	112	4.6	0.60	6.0	2.6	12		26	4.0	18	0.2	0.5		85	0.12	37	26	4	50
Oct. 11-22	202	--	105	--	--	5.4	2.5	11		26	4.0	16	--	.5		75	.10	41	24	2	51
Oct. 23-31	3,970	--	41.9	--	--	2.6	2.4	1.6		13	3.0	4.0	--	.5		60	.08	643	16	6	20
Nov. 1-10	452	--	67.7	--	--	3.8	1.3	7.4		19	3.5	8.0	--	.5		67	.09	82	15	0	52
Nov. 11-20.....	296	7.5	82.0	13	.30	5.4	1.7	9.0	3.7	25	4.2	11	.1	.5		66	.09	53	20	0	44
Nov. 21-30.....	187	--	105	--	--	6.3	2.1	15		28	10	17	--	.5		78	.11	39	24	1	58
Dec. 1-11.....	177	7.3	127	11	1.0	7.4	2.4	15	2.3	30	4.4	21	.1	.5		82	.11	39	28	4	51
Dec. 12-20.....	2,106	--	59.1	--	--	3.8	2.4	5.4		24	4.2	4.5	--	1.0		67	.09	381	19	0	38
Dec. 21-31.....	2,886	6.8	48.8	18	.55	3.8	1.4	3.8		17	4.0	3.5	--	.5		63	.09	491	15	1	35
Jan. 1-10, 1950 ...	10,690	--	42.3	--	--	3.6	2.5	1.2		18	3.2	2.5	--	.5		58	.08	1,670	19	5	12
Jan. 11-20	12,930	6.5	39.0	14	.18	3.3	1.4	2.3		15	3.0	2.0	--	1.0		52	.07	1,820	14	2	26
Jan. 21-31	1,669	--	55.2	--	--	4.0	2.3	2.6		19	3.4	4.0	--	.5		58	.08	261	19	4	23
Feb. 1-10.....	9,357	6.4	44.0	14	.04	3.8	1.2	3.4	2.4	15	4.3	3.2	--	.5		49	.07	1,240	14	2	30
Feb. 11-20.....	14,960	6.8	44.1	14	.04	4.2	1.2	3.2	2.2	18	3.4	2.5	--	1.5		51	.07	2,060	15	1	28
Feb. 21-28.....	2,222	--	47.6	--	--	3.2	1.6	4.9		14	6.7	4.5	--	.5		54	.07	324	15	3	42
Mar. 1-10.....	824	6.7	68.1	13	.04	5.0	1.6	6.5	2.0	20	4.4	8.2	--	.5		58	.08	129	19	3	40
Mar. 11-20	1,642	--	67.1	--	--	5.6	1.5	5.5		24	3.5	6.0	--	.5		57	.08	253	20	0	37
Mar. 21-31.....	669	--	75.9	--	--	5.6	1.7	6.9		23	4.6	8.2	--	.9		62	.08	112	21	2	42

Apr. 1-10	357	6.9	92.4	10	.55	7.0	1.8	11	1.7	33	5.2	12	.1	.8	66	.09	64	25	0	46
Apr. 11-20.....	254	--	116	--	--	7.8	2.0	12		31	5.0	16	--	.8	74	.10	51	28	2	49
Apr. 21-29.....	865	--	107	--	--	8.9	1.8	10		36	4.6	12	--	.9	74	.10	173	30	0	43
Apr. 30, May 1-10.	12,290	6.4	43.3	8.2	.35	3.4	1.0	4.8		18	3.9	2.5	--	.9	50	.07	1,660	13	0	45
May 11-20	6,476	6.7	43.5	9.5	.75	3.4	1.2	6.0		22	3.6	3.0	--	.7	50	.07	874	13	0	49
May 21-31.....	785	--	74.1	--	--	6.2	1.8	7.4		31	3.0	6.8	--	1.0	62	.08	131	23	0	41
June 1-10.....	409	6.9	97.7	12	.55	8.0	1.6	10		35	4.1	11	.0	1.0	69	.09	76	27	0	46
June 11-20	186	--	124	--	--	7.4	2.3	13		32	3.8	18	--	.4	77	.10	39	28	2	50
June 21-30	96.1	7.2	172	12	.15	9.8	2.4	23		47	4.5	28	.0	.7	104	.14	27	34	0	59
July 1-5	83.6	--	222	--	--	12	3.2	26		46	4.6	41	--	.4	125	.17	28	43	5	57
July 6-10.....	2,871	--	53.0	--	--	3.3	1.7	2.9		10	2.7	6.0	--	2.7	59	.08	457	15	7	30
July 11-20.....	1,127	--	54.0	--	--	3.0	1.5	5.9		18	2.9	5.5	--	1.3	62	.08	189	14	0	49
July 21-31.....	5,753	--	41.7	--	--	3.1	1.1	4.3		18	1.4	3.0	--	1.3	40	.05	621	12	0	43
Aug. 1-10	8,912	--	48.6	--	--	2.6	1.4	5.6		19	2.3	3.5	--	1.8	56	.08	1,350	12	0	50
Aug. 11-20.....	1,378	--	65.7	--	--	4.2	1.6	7.3		25	2.5	6.5	--	1.0	61	.08	227	17	0	48
Aug. 21-31.....	1,010	--	56.9	--	--	4.0	1.6	7.1		24	3.2	5.8	--	1.1	62	.08	169	17	0	48
Sept. 1-10.....	364	6.9	86.0	12	.80	5.8	2.1	8.6	1.8	30	4.1	11	--	1.3	70	.10	69	23	0	42
Sept. 11-20.....	15,030	6.9	62.8	8.0	.55	4.4	1.6	6.0	2.0	21	4.9	6.8	--	1.1	61	.08	2,480	18	0	39
Sept. 21-30.....	3,628	--	54.8	--	--	4.2	2.0	4.5		22	2.9	4.5	--	1.3	64	.09	627	19	1	34
Weighted average.	3,485	--	49.7	--	--	3.8	1.5	4.7		19	3.5	4.0	--	1.0	55	0.07	518	16	0	39

RED RIVER BASIN--Continued

LITTLE RIVER BELOW LUKFATA CREEK NEAR IDABEL, OKLA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	55	57	49	46	54	59	64	74	81	75	71
2	78	58	50	53	45	52	61	66	76	81	75	76
3	69	53	50	57	44	52	63	65	75	83	76	76
4	69	52	51	43	45	51	59	67	73	83	72	76
5	73	53	49	50	45	51	62	66	73	80	74	75
6	68	52	51	45	49	52	58	66	72	77	73	73
7	70	52	49	44	50	55	59	68	75	75	75	74
8	71	53	48	44	57	53	62	67	76	77	76	73
9	73	53	46	43	53	51	63	68	76	77	75	75
10	74	55	49	45	52	53	64	69	78	77	79	74
11	74	57	56	45	52	55	63	70	77	76	80	75
12	71	57	57	49	53	54	61	67	78	77	80	75
13	70	55	51	52	54	47	60	66	70	79	81	73
14	59	54	49	52	32	46	--	66	80	79	82	73
15	65	56	49	55	50	48	60	66	81	79	83	72
16	49	54	43	51	49	50	60	66	82	80	94	69
17	65	53	43	52	46	50	61	68	83	80	81	68
18	66	52	45	54	49	53	59	70	84	81	81	71
19	68	51	49	49	48	53	59	71	84	82	77	70
20	69	52	39	48	43	54	59	71	84	80	77	72
21	70	51	52	44	51	55	60	73	82	80	76	74
22	66	39	48	49	50	54	65	72	82	80	75	74
23	67	49	49	57	50	45	68	72	83	78	74	72
24	64	51	45	54	50	58	67	75	83	78	76	70
25	62	50	43	52	51	61	65	75	83	76	79	69
26	59	50	45	57	52	62	65	79	85	75	78	69
27	58	51	45	53	52	61	66	75	84	76	78	69
28	58	53	45	52	55	61	68	75	84	70	80	70
29	57	43	44	54	--	58	62	75	84	74	79	71
30	58	52	45	50	--	58	65	72	81	73	79	--
31	72	--	46	49	--	59	--	72	--	74	77	--
Average	66	52	48	50	49	54	62	70	79	78	78	72

SULPHUR RIVER NEAR DARDEN, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 67, 0.6 mile upstream from St. Louis Southwestern Railway bridge, and one mile southwest of Darden, Bowie County.
DRAINAGE AREA.--2,754 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to January 1950.
Water temperatures: October 1947 to January 1950.
EXTREMES, 1947-49.--Dissolved solids: Maximum, 5,930 ppm Oct. 24, 27-31, 1948; minimum, 107 ppm Dec. 16-27, 1947.
Hardness: Maximum, 698 ppm Oct. 24, 27-31, 1948; minimum, 19 ppm Jan. 21-22, 1949.
Water temperatures: Maximum, 92°F July 11, 1949; minimum, freezing point Mar. 10, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, October 1949 to January 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 2-6, 1949	115	7.2	618	8.4		23	9.4	81		69	43	116		8.2		380	0.52	118	96	40	65
Oct. 7-8, 10	726	7.6	330	8.1		19	7.4	38		73	22	54		1.8		241	.33	472	78	18	51
Oct. 11, 18-20	2,230	7.4	252	9.4		15	6.3	22		49	17	38		.8		192	.26	1,160	63	23	43
Oct. 12-17	6,562	7.5	117	7.5		10	2.4	9.1		40	8.0	10		.8		68	.09	1,200	35	2	36
Oct. 22, 28	17,010	7.4	66.1	4.8		4.5	4.3	1.2		24	3	6.0		.5		36	.05	1,650	29	9	8
Oct. 23-27, 30	12,470	7.5	158	5.6		13	2.6	14		45	10	19		.5		140	.19	4,710	43	6	42
Nov. 1-5	5,112	7.5	190	8.2		18	2.6	16		60	15	17		1.8		144	.20	1,990	56	6	38
Nov. 7-10	466	7.6	397	14		24	5.8	45		84	31	56		.8		238	.32	299	84	15	54
Nov. 11-14	154	7.3	550	16		30	7.6	66		91	45	90		.8		328	.45	136	106	32	57
Nov. 16, 18-20	106	7.4	816	13		35	9.7	106		98	67	147		.5		468	.64	134	128	47	64
Nov. 24, 27-28, 30	76.2	7.6	1,340	13		49	14	202		106	116	292		.0		752	1.02	155	180	93	71
Dec. 2, 4-5, 7, 9	44.6	7.6	1,640	17		51	16	261		100	139	378		.0		927	1.26	112	193	111	75
Dec. 12-16, 18-19	930	7.4	650	12		39	7.0	79		102	59	108		.0		380	.52	954	126	43	57
Dec. 21, 27-28, 31	1,290	7.7	383	11		28	5.5	47		84	39	51		1.2		253	.34	881	92	24	54
Dec. 23, 26, 30	1,434	7.6	608	10		33	8.0	76		86	59	105		.8		368	.50	1,420	116	45	59
Jan. 2, 5, 7-9,1950	3,736	7.8	315	9.2		29	4.3	30		85	34	35		1.8		216	.29	2,180	90	20	42

RED RIVER BASIN--Continued

SULPHUR RIVER NEAR DARDEN, TEX.--Continued

Temperature (°F) of water, October 1949 to January 1950

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

OUACHITA RIVER NEAR MOUNT IDA, ARK.

LOCATION.--At bridge on U. S. Highway 270, about 6 miles northwest of Mount Ida, Montgomery County, and 350 feet downstream from gaging station.
DRAINAGE AREA.--410 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 52 ppm Oct. 1-23; minimum, 19 ppm Jan. 11-20.
Hardness: Maximum, 35 ppm Oct. 1-23; minimum, 10 ppm Jan. 11-20.
Water temperatures: Maximum, 82°F June 19-20, 25-26, July 3; minimum, 38°F Jan. 7.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific-conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-23, 1949	113	7	7.5	111	7.3	0.00	10	2.4	3.5	0.7	37	3.5	4.5	0.1	1.5	52	35	4
Oct. 24-31	926	18	7.3	51.3	8.2	.05	5.0	2.1	1.5	.5	19	2.9	3.0	.2	2.1	36	21	6
Nov. 1-10	157	10	6.9	80.7	11	.11	5.8	2.2	3.8	.9	26	3.7	3.5	.2	1.9	48	24	2
Nov. 11-20	98	5	7.4	80.3	8.9	.04	6.4	2.8	4.8	.8	32	3.5	4.0	.0	1.4	49	27	1
Nov. 21-30	74	15	7.8	81.1	8.5	.03	8.0	2.0	3.1	.9	34	3.6	4.0	.0	1.0	48	28	0
Dec. 1-11	410	10	7.5	93.9	5.0	.02	9.4	2.0	3.1	.9	36	3.7	3.5	.0	2.0	48	32	2
Dec. 12-20	1,985	45	7.1	41.1	6.2	.03	3.2	1.2	3.0	1.1	14	4.3	2.2	.1	2.3	32	13	1
Dec. 21-31	915	37	7.2	43.4	7.7	.05	3.6	1.5	3.6	1.2	16	4.6	2.2	.1	1.6	41	15	2
Jan. 1-10, 1950	3,574	22	7.1	36.3	7.3	.04	3.4	1.2	2.5	1.8	13	3.8	2.5	.0	1.6	32	13	3
Jan. 11-20	5,632	32	7.1	35.8	--	--	2.6	.9	3.3	--	11	3.0	2.5	--	1.4	19	10	1
Jan. 21-31	1,268	22	6.9	41.6	7.5	.03	3.8	1.7	3.0	.5	16	3.3	2.5	.0	1.7	38	16	3
Feb. 1-10	3,334	21	7.0	36.9	8.3	.04	3.2	1.0	2.2	.2	12	4.0	2.0	.1	1.1	31	12	2
Feb. 11-20	4,691	24	6.9	36.5	7.6	.02	2.8	.9	3.3	.1	13	3.5	2.0	.0	1.6	29	11	0
Feb. 21-28	793	30	6.9	39.0	--	--	4.0	1.2	2.4	--	15	4.0	3.0	--	.4	22	15	3
Mar. 1-10	337	13	7.0	49.3	7.6	.06	5.2	.7	2.4	.2	17	3.6	2.5	.1	1.2	39	16	2
Mar. 11-20	986	24	7.1	44.6	8.3	.07	4.8	1.0	2.6	.2	16	3.6	3.0	.1	1.4	39	16	3
Mar. 21-31	447	17	7.1	42.2	6.9	.02	4.4	.8	3.4	.8	17	3.2	2.5	.2	1.3	35	14	0
Apr. 1-10	296	7	7.4	50.3	6.3	.03	4.8	1.7	2.6	1.2	20	3.5	2.5	.1	1.2	38	19	3
Apr. 11-20	176	4	7.6	53.6	8.5	.04	5.6	1.2	2.6	1.1	23	3.5	2.5	.0	.6	39	19	0
Apr. 21-30	544	4	7.4	62.3	7.1	.02	6.2	2.2	2.3		27	2.1	3.0	.1	.8	42	24	2
May 1-10	3,535	21	6.5	33.2	7.5	.02	4.2	.5	2.4	--	11	2.6	2.8	.0	1.1	27	13	4
May 11-20	1,487	21	6.9	35.9	--	--	3.0	1.6	2.2	--	14	2.0	3.2	--	.7	20	14	3
May 21-31	463	11	6.6	47.7	10	.05	5.6	1.7	3.0	1.2	18	6.1	3.0	.0	4.8	46	21	6

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RED RIVER BASIN--Continued

OUACHITA RIVER NEAR MOUNT IDA, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
June 1-10, 1950	880	19	6.7	39.6	11	0.05	4.0	1.3	2.9	2.4	16	4.1	2.8	0.0	2.3	37	15	2
June 11-20	401	17	6.7	45.2	8.6	.07	5.2	1.7	3.0	3.0	21	5.0	3.0	.0	3.4	45	20	3
June 21-30	355	7	6.8	59.1	7.2	.05	5.6	1.7	4.1	.9	26	3.5	2.5	.1	1.2	41	21	0
July 1-6	286	7	6.7	66.0	--	--	6.6	1.6	4.8	--	28	5.0	2.5	--	1.1	41	23	0
July 7-10	344	36	6.7	45.4	--	--	4.6	1.4	3.5	--	20	4.0	1.5	--	1.3	26	17	1
July 11-20	740	13	7.0	53.7	--	--	5.1	1.8	4.8	--	21	6.1	3.2	--	2.5	43	20	3
July 21-31	1,539	32	7.2	38.0	8.6	.06	3.8	1.6	2.5	.7	17	2.9	2.0	.1	1.2	33	16	2
Aug. 1-10	1,246	30	7.4	40.7	6.3	.02	3.6	2.0	4.4		20	4.5	2.5	.2	1.9	39	17	1
Aug. 11-20	210	10	7.4	51.1	8.3	.02	6.0	2.2	3.5	1.5	25	3.7	3.8	.1	1.4	43	24	4
Aug. 21-31	101	8	7.5	61.7	9.4	.02	7.0	2.1	3.9	1.0	32	3.0	4.2	.1	1.0	49	26	0
Sept. 1-13	187	12	7.3	64.6	9.4	.01	7.0	1.2	4.7	1.6	30	2.6	2.8	.0	1.0	46	22	0
Sept. 14-20	4,377	35	6.8	37.5	--	--	4.4	1.2	2.8	--	14	3.6	2.2	--	2.3	24	16	4
Sept. 21-30	871	30	7.1	45.2	10	.21	6.6	1.1	3.5	.9	21	7.1	2.8	.0	1.0	44	21	4
Average	1,159	--	--	52.1	--	--	5.1	1.5	3.2	--	21	3.8	2.8	--	1.6	38	19	2

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR MOUNT IDA, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR MALVERN, ARK.

LOCATION.--At gaging station at Rockport Bridge on State Highway 84, 2 miles northwest of Malvern, Hot Spring County, and 6 miles downstream from Remmel Dam.
DRAINAGE AREA.--1,570 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 88 ppm Aug. 29-31; minimum, 21 ppm Jan. 11-19.
Hardness: Maximum, 50 ppm Aug. 29-31; minimum, 13 ppm Jan. 11-19.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 88 ppm Aug. 29-31, 1950; minimum, 21 ppm Jan. 11-19, 1950.
Hardness: Maximum, 50 ppm Aug. 29-31, 1950; minimum, 8 ppm Jan. 11-20, 1948.
REMARKS.--Flow is regulated by operation of Remmel Dam. Records of specific conductance of daily samples available in district office at Fayetteville, Ark.
Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-10, 1949	1,049	5	6.8	82.1	8.2	0.01	8.8	2.4	3.1	0.6	23	9.1	3.0	0.1	2.6	50	32	13
Oct. 11-20	1,066	5	7.1	72.5	--	--	7.7	1.8	6.7	--	28	6.7	5.8	--	2.9	50	27	4
Oct. 21-31	3,605	6	6.8	74.6	--	--	8.4	2.1	8.0	--	32	9.0	4.8	--	2.5	52	30	3
Nov. 1-10	1,463	10	7.8	81.9	--	--	9.8	1.7	2.9		32	4.5	2.5	--	2.6	48	31	5
Nov. 11-20	556	15	7.3	101	5.1	.01	8.8	2.6	4.3	1.2	34	5.4	3.5	.1	2.5	53	33	5
Nov. 21-30	502	5	7.4	73.8	--	--	8.6	1.9	3.3	--	30	7.7	4.0	--	2.2	47	29	1
Dec. 1-10	508	5	7.3	73.4	--	--	8.5	2.0	3.6	--	33	5.4	4.5	--	2.4	48	29	2
Dec. 11-21	6,370	6	7.6	84.0	3.3	.02	9.2	2.5	3.5	.9	33	5.5	2.8	.1	2.2	46	33	6
Dec. 22-31	3,260	32	6.8	64.0	--	--	7.4	1.5	7.1	--	31	4.8	3.8	--	2.8	52	25	0
Jan. 1-10, 1950	13,180	12	7.4	59.9	6.3	.01	6.0	1.8	3.3	1.0	22	5.0	2.5	.1	2.0	45	22	4
Jan. 11-19	21,900	40	7.5	40.3	--	--	3.4	1.2	3.1	--	15	3.1	2.0	--	1.0	21	13	1
Jan. 20-31	4,128	40	7.3	50.4	--	--	4.4	1.5	4.1	--	21	3.4	1.5	--	1.7	27	17	0
Feb. 1-10	13,980	38	7.1	47.9	--	--	4.8	1.4	3.7	--	21	3.8	1.5	--	.6	26	18	1
Feb. 11-20	16,610	34	7.3	45.8	11	.04	4.0	1.4	4.5	.1	19	3.9	2.0	.1	1.8	41	16	0
Feb. 21-28	3,336	38	7.2	43.3	--	--	4.0	1.5	3.1	--	18	4.9	1.8	--	.4	25	16	1
Mar. 1-10	1,833	22	6.9	52.7	--	--	6.7	1.7	3.8	--	25	5.4	2.2	--	.4	32	24	3
Mar. 11-20	3,880	23	7.2	55.8	12	.04	5.2	1.3	4.1	.2	23	4.4	2.0	.0	1.3	44	18	0
Mar. 21-31	2,405	6	7.1	72.6	7.9	.02	5.5	2.1	2.5	.7	20	3.7	2.2	.2	2.9	47	22	6
Apr. 1-10	1,786	4	7.3	56.0	7.2	.01	5.7	1.9	2.1	1.0	22	3.8	2.2	.1	2.1	41	22	4
Apr. 11-20	1,315	6	7.1	61.7	--	--	7.0	2.1	2.4	--	25	5.1	3.2	--	1.6	42	26	6
Apr. 21-30	524	6	6.9	66.9	--	--	8.1	2.4	2.2	--	24	7.7	3.2	--	1.3	43	30	10
May 1-10	13,820	9	6.9	56.6	8.7	.04	6.4	2.2	2.9	1.3	19	7.0	3.2	.1	8.5	51	25	9
May 11-20	4,387	14	6.4	56.6	--	--	5.2	2.0	2.5	--	19	5.0	1.8	--	2.7	29	21	6
May 21-31	1,372	17	6.7	57.7	--	--	5.6	1.9	2.6	--	21	4.7	2.5	--	2.0	30	22	5

June 1-10	1,660	6	7.4	54.8	8.9	.04	6.4	1.7	3.2	1.8	23	6.5	2.8	.1	3.9	48	23	4
June 11-20	1,462	6	7.0	61.1	--	--	6.8	1.4	4.2	--	26	5.5	2.0	--	1.7	35	23	1
June 21-30	478	6	7.3	66.4	--	--	6.9	2.1	2.6	--	29	5.8	2.0	--	1.7	46	26	2
July 1-10	413	11	7.2	68.7	8.3	.01	7.5	1.5	3.9	1.1	30	4.7	3.8	.2	2.1	49	25	0
July 11-20	903	7	6.8	69.9	--	--	7.8	1.9	4.1	--	30	4.4	2.5	--	2.4	48	27	3
July 21-31	2,552	17	7.4	78.4	--	--	7.0	3.6	3.3	--	32	4.9	2.0	--	3.2	51	32	6
Aug. 1-10	2,668	6	7.3	71.0	7.2	.02	8.2	2.1	2.8	1.1	29	4.4	2.5	.1	3.1	48	29	5
Aug. 11-20	908	15	7.6	74.9	--	--	7.2	3.2	3.3	--	30	8.1	2.0	--	1.9	50	31	6
Aug. 21-28	454	10	7.5	81.2	--	--	8.0	3.2	3.0	--	27	12	.2	--	1.8	50	33	11
Aug. 29-31	373	5	5.5	140	--	--	10	6.2	2.5		3	48	2.0	--	.9	88	50	48
Sept. 1-10	612	10	7.3	70.5	9.6	.03	9.4	1.7	2.6	1.0	28	5.6	3.2	.0	3.0	51	30	8
Sept. 11-20	9,769	40	7.0	64.4	--	--	7.6	2.0	2.5	--	26	6.0	2.5	--	1.8	35	27	6
Sept. 21-30	2,291	60	7.3	51.4	--	--	5.8	2.3	2.3	--	21	5.7	2.2	--	1.3	30	24	7
Average	4,017	--	--	67.1	--	--	7.0	2.1	3.5	--	25	6.8	2.7	--	2.2	44	26	5

RED RIVER BASIN--Continued

OUACHITA RIVER AT ARKADELPHIA, ARK.

LOCATION.--At gaging station at bridge on State Highway 8, at Arkadelphia, Clark County, 800 feet upstream from Missouri Pacific Railway Bridge.
DRAINAGE AREA.--2,311 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 66 ppm Nov. 21-30; minimum, 33 ppm Jan. 11-20.
Hardness: Maximum, 39 ppm Dec. 11-12, 16; minimum, 15 ppm Jan. 11-20, Feb. 11-20.
Water temperatures: Maximum, 86°F June 25, 26, July 3; minimum, 38°F Jan. 6.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 77 ppm Sept. 1-10, 1949; minimum, 33 ppm Jan. 11-20, 1950.
Hardness: Maximum, 39 ppm Dec. 11-12, 16, 1949; minimum, 11 ppm Jan. 25-31, 1949.
Water temperatures: Maximum, 86°F June 25, 26, July 3, 1949; minimum, 38°F Jan. 6, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 furnished by Corps of Engineers.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-10, 1949	1,882	18	7.3	78.7	8.0	0.02	7.4	1.6	4.7	1.9	24	6.3	4.5	0.3	3.3	57	25	5
Oct. 11-20	1,448	7	7.0	81.9	8.9	.02	7.2	2.4	4.7	1.1	22	9.8	6.0	.1	3.0	61	28	10
Oct. 21-31	5,991	18	7.1	65.5	7.4	.02	6.8	2.1	4.6	2.3	24	7.8	3.5	.1	3.9	54	26	6
Nov. 1-10	1,986	10	7.5	99.3	9.5	.03	8.8	2.1	5.1	1.0	38	4.8	5.0	.2	1.9	61	31	0
Nov. 11-20	953	7	7.8	96.8	6.4	.03	9.5	2.3	5.6	1.0	37	7.7	4.5	.7	1.5	60	33	3
Nov. 21-30	548	6	7.7	100	7.0	.05	8.6	2.1	6.4	.4	37	5.8	6.0	.6	2.0	66	30	0
Dec. 1-10	604	5	7.5	92.4	3.7	.02	9.2	1.9	5.2	.5	35	5.6	6.5	.1	1.7	55	31	2
Dec. 11-12, 16	6,030	5	7.2	91.5	--	--	9.2	3.8	5.1	--	34	6.0	7.8	--	2.2	51	39	11
Dec. 13-15, 17-20	10,200	15	7.4	74.4	--	--	7.8	2.6	3.3	--	31	5.0	4.0	--	2.2	54	30	5
Dec. 21-31	5,348	22	7.4	67.0	5.9	.08	7.2	1.5	3.2	.2	26	4.5	3.2	.1	2.2	52	24	3
Jan. 1-10, 1950	17,290	32	7.1	59.3	7.0	.03	5.0	1.9	3.1	1.0	23	4.8	2.5	.1	1.7	49	20	1
Jan. 11-20	29,650	45	7.0	44.5	6.8	.02	3.8	1.3	3.0	1.2	16	4.2	1.8	.1	1.5	33	15	2
Jan. 21-31	5,676	37	7.0	49.3	7.0	.04	4.0	1.5	2.9	1.8	18	4.9	2.8	.0	1.4	44	16	1
Feb. 1-10	21,010	22	6.9	42.1	8.9	.02	4.4	1.3	2.3	2.0	15	4.4	2.5	.2	2.3	36	16	4
Feb. 11-20	26,440	33	7.0	35.7	12	.02	4.0	1.2	2.1	1.2	16	4.6	2.0	.1	1.9	38	15	2
Feb. 21-28	4,872	28	7.1	42.2	8.6	.03	6.6	1.5	2.5	2.4	20	5.7	3.0	.2	2.3	41	23	6
Mar. 1-11	2,595	19	7.0	59.3	7.0	.04	6.7	1.7	3.5	1.0	22	4.7	4.2	.1	1.9	44	24	6
Mar. 12-20	8,301	22	7.2	44.1	6.9	.03	5.1	1.4	2.6	1.1	16	7.7	2.8	.1	1.4	39	18	5
Mar. 21-31	4,591	23	7.4	52.7	7.4	.04	6.2	1.4	3.4	.9	20	4.8	3.2	.1	1.4	45	21	5
Apr. 1-10	2,844	6	6.9	61.9	6.3	.05	5.7	2.2	3.2	.7	22	5.2	3.8	.1	1.4	45	23	5
Apr. 11-20	1,953	4	7.0	67.8	5.1	.03	6.5	2.2	3.9	2.2	24	4.5	4.8	.1	2.3	48	25	6
Apr. 21-30	1,085	3	7.1	80.6	6.9	.02	7.4	2.7	5.2	1.1	31	4.0	6.2	.0	.6	55	30	4
May 1-10	21,490	26	6.9	43.0	7.9	.09	5.2	1.0	2.6	2.2	14	4.8	3.0	.1	3.9	39	17	6
May 11-20	6,226	16	6.7	54.5	8.9	.03	7.2	1.5	3.1	1.7	18	5.7	3.5	.1	5.4	47	24	9
May 21-31	2,067	8	6.9	61.5	6.1	.02	7.8	1.0	3.4	--	22	4.6	3.8	.0	3.1	45	24	6

June 1-10	2,199	6	7.0	72.6	7.9	.03	5.4	1.9	5.8	1.4	25	6.0	4.5	.1	2.9	51	21	1
June 11-18	2,026	8	6.8	67.7	8.7	.03	7.8	2.1	3.9	1.2	28	4.2	4.2	.1	2.0	51	28	6
June 19-30	678	3	7.2	89.2	8.7	.01	5.9	2.0	9.7	1.2	34	6.0	7.2	.1	1.3	58	23	0
July 1-10	483	6	7.3	86.4	8.7	.01	8.9	2.1	5.6	1.4	33	5.4	6.0	.2	1.0	60	31	4
July 11-20	999	7	7.5	74.3	7.4	.01	8.2	2.1	4.8	.9	32	5.9	3.5	.1	1.2	51	29	3
July 21-31	2,847	9	6.7	75.9	6.1	.01	9.2	1.5	3.7	1.7	30	7.6	3.5	.2	2.5	53	29	4
Aug. 1-10	3,067	7	7.7	70.4	8.3	.02	8.6	2.3	4.2	.9	34	5.4	3.8	.1	1.2	52	31	3
Aug. 11-20	1,350	10	7.6	70.8	8.7	.02	8.1	2.5	3.6	1.0	35	5.7	4.0	.1	1.0	52	30	2
Aug. 21-31	512	7	7.4	93.9	9.2	.02	10	2.3	5.1	1.4	33	11	6.5	.1	1.0	64	34	7
Sept. 1-12	852	5	7.4	90.3	8.3	.01	9.0	1.9	4.3	.6	30	9.4	5.2	.3	1.6	59	30	6
Sept. 13-20	16,110	22	7.5	62.6	6.5	.07	6.6	1.4	2.9	.4	24	5.6	3.2	.4	1.3	50	22	3
Sept. 21-30	3,374	40	7.3	61.6	7.6	.18	6.5	1.6	2.9	.4	22	5.5	4.0	.3	1.4	44	23	5
Average	5,920	--	--	69.2	7.6	0.03	7.1	1.9	4.1	1.2	26	5.8	4.2	0.2	2.0	50	25	4

RED RIVER BASIN--Continued

OUACHITA RIVER AT ARKADELPHIA, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

OUACHITA RIVER AT CAMDEN, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 79, half a mile northeast of Camden, Ouachita County, and 26 miles downstream from Little Missouri River.
DRAINAGE AREA.--5,391 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1950.
Water temperatures: October 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 105 ppm June 24-27; minimum, 30 ppm Feb. 11-13, 16.
Hardness: Maximum, 34 ppm June 24-27; minimum, 15 ppm Jan. 11-20, Feb. 14-15, 17-20.
Water temperatures: Maximum, 92°F June 18.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 193 ppm Nov. 22-24, 1948; minimum, 30 ppm Feb. 11-13, 16, 1950.
Hardness: Maximum, 45 ppm Sept. 19-21, 26, 1946; minimum, 15 ppm on several days in January and February 1949, 1950.
Water temperatures: Maximum, 92°F July 22, 1949, June 18, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 furnished by Corps of Engineers, Vicksburg District.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-10, 1949	3,129	45	7.3	127	9.3	0.12	8.6	2.2	13	1.6	23	6.9	22	0.1	2.0	90	30	12
Oct. 11-20	2,357	37	7.4	122	7.8	.14	8.7	2.0	12	1.0	26	6.7	19	.1	2.3	86	30	9
Oct. 21-22, 30-31	8,578	20	7.4	111	--	--	8.2	1.7	10	--	28	7.0	16	--	1.9	77	27	18
Oct. 23-29	13,170	50	7.1	65.6	7.3	.02	4.4	2.7	4.0	.4	20	5.0	5.0	.2	2.2	62	22	6
Nov. 1-5	6,206	12	7.5	113	--	--	10	2.5	11	--	31	6.2	16	--	2.2	77	35	10
Dec. 24-31	12,390	38	7.2	89.9	6.6	.13	7.0	1.7	7.6	1.3	23	7.3	10	.2	2.4	64	24	6
Jan. 1-4, 1950	7,870	33	7.4	87.7	--	--	9.0	2.0	7.1	--	24	6.8	12	--	1.4	50	31	11
Jan. 5-10	29,370	60	7.2	60.8	--	--	6.4	1.6	3.9	--	20	5.8	6.8	--	2.2	37	23	6
Jan. 11-20	65,570	23	7.0	56.7	4.9	.07	4.4	1.0	4.2	1.0	14	4.3	4.8	.2	2.3	36	15	4
Jan. 21-27	23,200	35	7.3	60.6	--	--	5.6	1.4	5.3	--	16	8.0	5.0	--	1.3	32	20	7
Jan. 28-31	10,520	33	7.4	80.1	--	--	7.5	2.2	7.2	--	24	7.0	9.5	--	1.3	46	28	8
Feb. 1-10	41,970	40	7.2	57.8	7.2	.06	5.0	1.2	3.8	--	16	5.4	5.0	.1	1.5	38	17	4
Feb. 11-13, 16	44,120	50	7.0	59.0	--	--	4.8	1.2	4.9	--	15	3.0	5.5	--	2.8	30	17	5
Feb. 14-15, 17-20	65,300	45	7.1	48.8	6.1	.09	4.4	1.0	3.3	.1	13	4.0	4.2	.1	1.6	32	15	4
Feb. 21-28	16,880	38	7.1	62.2	7.4	.07	5.0	1.4	4.1	--	17	5.1	6.0	.1	1.7	40	18	4
Mar. 1-10	5,150	32	7.2	86.2	9.6	.17	6.0	1.7	7.5	.2	18	5.8	12	.0	1.4	58	22	7
Mar. 11-20	23,370	45	7.1	57.9	6.5	.05	4.5	1.2	4.6	.1	16	4.5	6.8	.1	1.2	38	16	3
Mar. 21-31	11,990	11	7.4	66.9	6.3	.24	5.6	1.1	5.2	3.8	19	4.9	7.0	.0	2.0	47	18	3
Apr. 1-4	10,840	34	7.2	74.6	--	--	6.9	1.1	5.8	--	20	6.0	8.0	--	1.2	39	22	5
Apr. 5-10	6,177	22	7.4	88.0	8.8	.20	7.2	2.0	6.7	2.6	26	7.3	9.8	.1	1.1	68	26	5
Apr. 11-20	3,466	12	7.1	94.7	7.9	.15	6.3	1.9	8.4	2.1	24	5.9	12	.1	1.0	58	24	4
Apr. 21-30	2,450	21	7.0	120	7.7	.20	9.2	1.3	12	2.9	26	8.2	20	.1	1.0	78	28	7
May 1-3	11,430	22	7.7	117	--	--	6.9	1.9	12	--	25	6.0	18	--	.6	80	25	4
May 4-10	42,210	38	7.1	62.9	5.6	.21	5.4	1.9	4.3	1.7	22	4.7	5.0	.3	1.3	57	21	3
May 11-20	26,490	32	6.5	63.4	11	.04	6.8	1.3	4.4	1.2	23	4.7	6.0	.1	2.7	52	22	3
May 21-31	4,531	22	6.8	87.6	12	.21	7.4	1.4	8.6	2.0	24	5.2	12	.1	3.4	65	24	5

RED RIVER BASIN--Continued

OUACHITA RIVER AT CAMDEN, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
June 1-2, 4-6, 10, 1950	4,165	23	6.9	123	9.7	0.16	8.5	2.6	11	--	24	9.2	16	0.0	5.3	78	32	12
June 3, 7-9	5,070	22	6.8	83.2	--	--	7.3	1.7	7.7	--	24	7.0	9.8	--	1.1	63	25	6
June 11-20	3,380	18	7.0	87.6	7.9	.12	7.0	2.0	6.8	--	26	5.1	11	.0	1.2	59	26	4
June 21-23, 28-30	1,422	9	7.0	98.0	11	.11	8.0	1.7	8.4	1.5	26	7.6	13	.0	2.6	68	27	6
June 24-27	1,552	8	6.7	164	--	--	10	2.1	15	--	26	7.1	28	--	2.0	105	34	12
July 1-8	1,071	8	7.0	83.9	14	.08	8.2	.9	7.9	1.0	27	5.8	9.2	.1	1.4	63	24	2
July 9-20	1,583	7	6.7	105	9.4	.03	9.6	1.4	9.4	1.3	30	10	12	.1	1.6	71	30	5
July 21-31	3,492	10	6.6	105	8.3	.16	9.3	1.4	8.7	1.3	30	4.6	12	.1	2.0	65	29	4
Aug. 1-10	4,852	14	7.0	105	5.7	.08	8.8	2.2	8.4	2.0	30	6.1	12	.2	2.1	63	31	6
Aug. 11-20	2,294	9	7.1	103	6.3	.04	8.6	2.2	9.1	2.6	31	5.9	14	.2	1.9	66	30	5
Aug. 21-31	1,400	13	7.5	110	7.4	.04	7.8	2.4	10	1.8	26	8.3	16	.1	1.0	71	29	8
Sept. 1-10	3,371	15	6.8	115	--	--	7.8	1.9	9.8	--	24	7.5	16	--	2.6	76	27	8
Sept. 11-15	2,354	10	7.2	115	--	--	7.1	1.7	11	--	20	9.2	17	--	2.6	76	25	8
Sept. 16-20	22,760	35	7.0	84.1	--	--	9.8	2.1	5.4	--	27	5.3	8.8	--	2.8	64	33	11
Sept. 21-30	24,280	33	7.2	83.3	8.3	.03	9.8	1.8	5.5	1.5	29	7.0	8.2	.1	2.4	76	32	8
Average	a --	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Mean daily discharge, water year October 1949 to September 1950, 12,600 second-feet.

RED RIVER BASIN--Continued

OUACHITA RIVER AT CAMDEN, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

OUACHITA RIVER AT CALION, ARK.

LOCATION.--At railroad bridge in Calion, Union County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Hardness: Maximum, 350 ppm July 16; minimum, 20 ppm May 3.
Water temperatures: Maximum, 88°F July 1; minimum, 46°F Jan. 8-9.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-21, 1949		31	7.6	773	8.8	0.05	24	7.8	112	4.6	16	8.6	223	0.2	3.1	432	92	79
Oct. 22-23		11	3.75	2,380	8.9	.06	57	20	372	10	0	7.6	742	.1	4.0	1,220	224	224
Oct. 24-27		45	--	373	--	--	15	4.1	44	--	32	5.0	108	--	2.9	244	54	28
Oct. 28-31		50	--	204	--	--	10	2.6	28		19	1.6	55	--	2.2	128	36	20
Nov. 1-4		32	7.2	488	--	--	18	5.0	70	--	14	7.9	139	--	8.1	284	65	54
Nov. 5-10		24	7.2	757	9.6	.06	29	9.1	108	1.9	18	7.8	212	.1	5.6	410	110	95
Nov. 11-20		17	6.3	1,180	10	.06	40	15	178	2.2	13	9.5	352	.1	11	660	162	151
Nov. 21-22, 26		17	6.8	1,140	10	.07	40	13	171	3.7	16	8.7	338	.1	10	632	154	140
Nov. 23-25, 27-30		22	7.2	823	8.7	.09	29	10	119	2.8	19	8.2	233	.1	7.7	442	114	98
Dec. 1-10		28	7.0	886	6.9	.20	30	7.4	126	5.6	28	10	252	.0	7.1	491	106	82
Dec. 11-13		20	6.7	1,780	--	--	49	19	281	--	8	15	560	--	14	942	200	194
Dec. 14-15, 18-19		37	7.2	419	--	--	14	4.2	56	--	18	8.9	102	--	7.5	233	52	37
Dec. 16-17, 20		32	7.2	357	--	--	14	3.8	48	--	21	10	90	--	8.4	212	51	33
Dec. 21-25, 29-31		30	7.3	343	6.1	.16	14	3.6	45	5.4	16	6.9	84	.0	6.5	210	50	37
Dec. 26, 28		37	5.9	693	--	--	24	7.3	102	--	3	7.0	197	--	18	411	90	88
Dec. 27		--	--	1,010	--	--	--	--	--	--	7	10	290	--	14	--	108	102
Jan. 1-5, 1950		22	6.6	470	8.4	.09	17	4.8	67	2.5	15	6.3	128	.1	7.7	265	62	50
Jan. 6-9		45	7.2	229	--	--	12	3.3	27	--	14	7.1	56	--	5.6	152	44	32
Jan. 10		--	--	843	--	--	--	--	--	--	7	8.0	240	--	7.6	--	89	83
Jan. 11-12, 16		37	5.4	843	8.5	.08	26	6.8	129	4.5	2	5.4	255	.1	6.0	483	92	90
Jan. 13-15		38	5.0	1,160	8.0	.16	32	9.5	178	5.4	2	6.6	352	.1	7.8	647	120	118
Jan. 17		--	4.9	615	--	--	--	--	--	--	1	11	172	--	4.3	--	61	60
Jan. 18-20		50	5.8	417	--	--	15	5.0	72	--	4	6.9	140	--	2.6	288	58	55
Jan. 21-23, 26-27, 30-31		45	6.7	718	7.9	.06	22	5.6	106	3.7	8	6.1	215	.1	4.2	408	77	70
Jan. 24-25, 28		40	7.3	457	7.8	.10	16	3.6	67	2.0	13	4.2	130	.1	1.2	260	55	44
Jan. 29		--	5.8	1,020	--	--	--	--	--	--	3	10	310	--	3.1	--	120	118

Feb. 1-4	22	6.3	885	8.4	.14	28	9.1	135	5.6	9	18	268	.0	2.8	522	108	100
Feb. 5-9	25	6.7	614	8.8	.06	18	6.6	88	5.0	9	11	178	.1	3.7	355	72	64
Feb. 10-11, 18-19	22	6.4	473	16	.12	15	4.3	69	3.7	7	4.0	132	.1	3.5	278	55	49
Feb. 12-14, 16	20	4.5	965	8.4	.08	28	8.5	150	5.9	0	6.4	288	.0	5.0	552	105	105
Feb. 15	--	4.6	1,450	--	--	--	--	--	--	1	10	440	--	22	--	148	147
Feb. 17	--	4.7	754	--	--	--	--	--	--	1	2.0	212	--	5.1	--	73	72
Feb. 20	--	7.5	251	--	--	--	--	--	--	10	3.0	65	--	1.3	--	33	25
Feb. 21, 23, 26-27	28	6.2	554	7.3	.12	18	4.7	84	4.5	6	4.3	160	.0	2.8	322	64	60
Feb. 22	--	7.5	351	--	--	--	--	--	--	11	7.0	98	--	1.3	--	41	32
Feb. 24-25, 28	30	6.0	760	8.4	.14	22	6.7	115	3.8	5	4.3	224	.0	4.0	433	82	78
Mar. 1	22	7.3	427	--	--	--	--	--	--	12	5.0	115	--	11	--	50	40
Mar. 2-5	23	7.0	657	8.0	.19	21	4.2	93	2.2	7	16	181	.1	8.5	407	70	64
Mar. 6-7	18	4.6	1,410	--	--	52	15	215	--	1	35	428	--	6.4	752	192	190
Mar. 8-11	14	6.8	752	8.6	.10	25	5.3	110	6.4	10	23	215	.1	6.6	466	84	76
Mar. 12-15	16	4.7	1,070	7.6	.15	31	7.1	164	8.0	2	23	302	.1	11	660	106	105
Mar. 16-21	24	5.5	812	7.2	.10	26	6.5	117	8.8	3	13	237	.1	3.0	514	92	89
Mar. 22, 25, 30-31	23	4.6	1,020	7.4	.19	33	5.6	152	5.2	1	29	292	.1	9.1	645	106	104
Mar. 23	30	7.1	517	--	--	--	--	--	--	11	3.0	139	--	6.7	--	60	51
Mar. 24, 28	32	5.9	801	--	--	28	9.0	127	--	4	27	238	--	4.6	484	107	104
Mar. 26-27, 29	19	4.5	1,400	7.4	.16	40	9.8	206	16	0	23	405	.1	11	785	140	140
Apr. 1-2, 5-6, 8, 10	24	6.3	797	6.8	.15	30	3.1	116	5.7	8	23	228	.0	6.3	465	88	81
Apr. 3-4, 9	23	6.0	1,110	7.4	.16	39	2.2	174	6.2	5	26	325	.1	5.0	644	106	102
Apr. 7	15	7.0	577	--	--	--	--	--	--	8	7.0	156	--	9.7	--	64	57
Apr. 11-17, 19-20	22	6.6	716	6.9	.20	27	2.6	102	9.2	14	13	200	.1	5.8	448	78	66
Apr. 18	7	8.2	939	--	--	--	--	--	--	17	7.0	267	--	7.1	--	104	90
Apr. 21-24	17	7.0	717	9.9	.11	24	5.1	104	5.8	18	8.1	198	.0	1.8	407	81	66
Apr. 25, 27-29	12	6.7	931	9.0	.10	25	8.7	139	6.6	18	9.7	265	.1	5.1	538	98	84
Apr. 26, 30	12	7.2	1,560	6.9	.08	47	14	240	8.2	16	7.0	465	.1	1.8	992	174	162

RED RIVER BASIN--Continued

OUACHITA RIVER AT CALION, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
May 1-2, 4-10, 1950		33	7.1	696	8.3	0.15	17	6.4	101	7.8	12	6.7	201	0.1	1.5	406	69	59
May 3		--	5.0	505	--	--	--	--	--	--	2	10	133	--	12	--	20	18
May 11		18	8.4	936	--	--	--	--	--	--	14	5.0	273	--	5.1	--	98	87
May 12-13, 15-16		60	6.9	455	5.2	.21	15	4.0	60	3.1	18	5.7	120	.1	2.0	287	54	39
May 14		45	7.7	150	--	--	--	--	--	--	21	3.0	31	--	.7	--	26	9
May 17-20		30	6.6	747	12	.06	21	3.3	119	5.9	18	7.2	213	.0	1.8	458	66	51
May 21		40	8.2	425	--	--	--	--	--	--	26	10	108	--	4.4	--	53	32
May 22		17	8.0	1,080	--	--	--	--	--	--	14	10	780	--	4.3	--	115	104
May 23-25, 31		27	6.3	1,630	8.5	.11	38	15	252	7.4	7	7.2	490	.1	4.2	829	156	150
May 26-30		35	6.9	745	7.8	.20	24	7.3	103	5.4	18	4.9	202	.1	4.8	430	90	75
June 1, 3-5		11	6.5	892	8.9	.09	26	6.4	128	--	20	11	250	.1	3.9	483	92	75
June 2, 6-7		14	6.4	630	8.9	.10	22	3.8	93	--	20	9.9	170	.1	3.7	338	70	54
June 8-10		15	6.6	426	--	--	17	4.8	64	--	20	13	119	--	1.2	273	62	46
June 11, 13-20		23	6.9	642	7.9	.15	23	4.0	90	--	25	6.6	172	.1	2.8	347	74	54
June 12		40	7.6	1,010	--	--	--	--	--	--	24	7.0	264	--	2.2	--	111	91
June 21-22		15	7.0	598	--	--	21	4.7	84	--	19	10	159	--	8.6	340	72	56
June 23		10	5.8	3,050	--	--	--	--	--	--	4	17	910	--	12	--	313	310
June 24-26, 30		17	7.0	1,260	--	--	42	10	195	--	19	14	375	--	3.4	649	146	130
June 27-29		19	6.8	939	--	--	35	9.7	138	--	31	9.0	268	--	6.1	579	128	102
July 1-2		10	7.4	916	--	--	32	8.7	145	--	24	12	275	--	3.1	580	116	96
July 3, 9-10		8	7.3	610	--	--	19	5.9	93	--	27	12	168	--	2.7	376	72	50
July 4-8		9	7.0	437	7.8	.05	18	4.0	60	4.8	29	7.7	113	.1	1.6	254	61	38
July 11-15, 20		11	7.2	706	7.5	.12	25	5.6	107	4.2	23	8.0	202	.1	2.2	426	86	66
July 16		--	5.1	3,400	--	--	--	--	--	--	3	8.0	1,060	--	7.6	--	350	348
July 17		--	6.5	1,980	--	--	--	--	--	--	4	10	595	--	.3	--	96	95
July 18-19		23	6.8	1,160	--	--	35	7.0	179	--	9	17	345	--	4.7	592	116	109
July 21-26		7	6.6	727	8.5	.04	21	7.0	102	8.4	20	8.6	200	.1	7.9	442	82	65
July 27		--	7.5	484	--	--	--	--	--	--	31	5.0	118	--	1.5	--	66	41
July 28-31		9	7.2	988	7.6	.04	30	9.4	145	10	17	7.2	284	.1	8.4	562	114	100

Aug. 1		--	5.6	741	--	--	--	--	--	--	3	8.0	208	--	2.3	--	84	82
Aug. 2-5, 7, 9-10		--	7.2	547	5.4	.13	21	5.1	79	3.4	22	7.3	142	.1	3.3	316	73	55
Aug. 6		--	7.3	1,030	--	--	--	--	--	--	22	8.0	305	--	2.3	--	114	96
Aug. 8		--	7.2	383	--	--	--	--	--	--	22	12	99	--	2.3	--	54	36
Aug. 11-17		24	7.1	591	7.2	.12	22	6.4	79	9.3	25	8.7	162	.1	3.8	347	82	61
Aug. 18, 20		22	6.5	951	--	--	16	8.4	151		11	8.0	272	--	3.3	464	74	66
Aug. 19		--	7.0	2,250	--	--	--	--	--	--	8	7.0	695	--	5.1	--	240	233
Aug. 21-23, 25, 31		23	6.7	1,090	5.9	.30	34	9.7	162	8.7	17	10	315	.2	7.4	644	126	112
Aug. 24		--	6.8	759	--	--	--	--	--	--	22	10	210	--	1.9	--	88	70
Aug. 26		--	6.8	1,880	--	--	--	--	--	--	20	10	820	--	1.3	--	203	187
Aug. 27-30		--	6.5	1,350	11	.15	46	13	210	5.6	13	10	400	.1	11	816	168	158
Sept. 1		--	6.8	2,030	--	--	--	--	--	--	7	12	637	--	11	--	206	200
Sept. 2		--	7.1	928	--	--	--	--	--	--	13	10	255	--	7.1	--	102	91
Sept. 3-4, 8-10		40	6.2	744	9.4	.10	27	4.7	103	3.2	8	9.2	198	.1	7.7	382	87	80
Sept. 5-7		50	6.7	499	--	--	17	4.6	69		11	7.0	135	--	5.2	324	61	52
Sept. 11-13, 16		60	6.9	713	11	.36	28	4.7	105	3.2	16	10	202	.1	4.0	393	90	76
Sept. 14		--	6.0	1,180	--	--	--	--	--	--	3	11	345	--	11	--	131	129
Sept. 15		--	5.5	2,680	--	--	--	--	--	--	4	14	840	--	12	--	286	283
Sept. 17		--	7.2	331	--	--	--	--	--	--	17	4.0	73	--	4.0	--	43	29
Sept. 18		--	7.2	148	--	--	--	--	--	--	20	2.0	30	--	1.9	--	28	12
Sept. 19		--	7.1	87.4	--	--	--	--	--	--	23	5.0	11	--	1.6	--	31	12
Sept. 20		--	7.6	76.8	--	--	--	--	--	--	29	3.0	6.0	--	1.9	--	28	4
Sept. 21		--	7.4	254	--	--	--	--	--	--	41	2.0	50	--	3.3	--	64	30
Sept. 22-29		45	7.9	631	14	.20	24	4.4	87	8.3	52	8.7	164	.1	1.9	368	78	36
Sept. 30		--	7.4	481	--	--	--	--	--	--	23	4.0	126	--	2.1	--	67	48
Average		--	--	872	--	--	--	--	--	--	14	9.6	260	--	5.5	--	98	87

RED RIVER BASIN--Continued

OUACHITA RIVER AT CALION, ARK.--Continued

Temperature(°F) of water, water year October 1949 to September 1950

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

OUACHITA RIVER NEAR FELSENTHAL, ARK.

302334 O - 54 - 14

LOCATION.--At U. S. Engineers Lock No. 6, 3 miles south of Felsenthal, Union County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,230 ppm July 21-24; minimum, 44 ppm Jan. 23-31, Mar. 1-9.
Hardness: Maximum, 258 ppm July 21-24; minimum, 15 ppm Jan. 23-31, Mar. 1-9.
Water temperatures: Maximum, 89°F July 2, Aug. 16; minimum, 48°F Jan. 8, 11.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-20, 1949		40	7.4	426	7.2	0.04	17	4.9	58	1.8	12	8.1	116	0.1	2.4	248	63	53
Oct. 21-22, 27		50	7.7	479	--	--	18	5.0	65		14	14	122	--	2.4	272	65	54
Oct. 23-26		50	7.6	743	--	--	30	6.8	116		18	17	214	--	2.8	420	103	88
Oct. 28-31		50	7.6	254	--	--	15	3.1	31		16	9.5	50	--	3.8	170	50	37
Nov. 1-10		45	7.2	289	9.0	.08	13	4.3	39	1.2	19	6.3	77	.1	3.6	186	50	35
Nov. 11-15		32	7.1	484	10	.16	20	5.5	68	2.0	21	7.6	135	.1	3.6	294	72	55
Nov. 16-20		18	7.3	735	8.7	.12	28	7.4	108	2.7	22	7.4	213	.1	5.3	430	100	82
Nov. 21-30		7	6.7	962	7.4	.06	34	10	142	2.7	18	7.9	284	.0	7.0	561	126	111
Dec. 1-4, 7-11		9	7.2	1,130	7.9	.08	38	9.8	168	7.0	19	12	328	.1	6.5	618	136	120
Dec. 5-6		8	7.3	910	--	--	33	8.7	135	--	23	10	268	--	4.9	512	118	100
Dec. 12-15		22	6.5	1,630	7.4	.09	52	14	254	8.0	7	10	498	.1	7.6	913	188	182
Dec. 16-20		32	7.1	334	5.0	.16	14	3.8	45	4.6	16	7.8	82	.0	3.1	196	51	37
Dec. 21, 28-31		35	7.0	327	6.6	.10	13	3.5	42	2.7	16	8.4	78	.1	2.7	197	47	34
Dec. 22-27		30	7.2	255	6.1	.15	11	3.0	32	2.9	18	8.8	58	.1	1.9	153	40	25
Jan. 1-7, 1950		38	6.8	280	8.7	.14	12	3.4	37	2.0	17	7.8	70	.1	2.9	162	44	30
Jan. 8-10		33	7.2	154	--	--	7.6	1.7	25	--	29	8.0	33	--	1.5	104	26	2
Jan. 11-22		70	7.1	119	5.9	.15	5.6	1.2	13	1.6	13	5.0	24	.1	1.9	86	19	8
Jan. 23-31		75	7.2	72.7	5.8	.20	4.4	1.0	7.1	.9	13	3.6	12	.1	1.5	44	15	4
Feb. 1-6		45	7.2	95.7	7.1	.02	6.1	1.7	10	.4	14	5.1	18	.1	2.0	78	22	11
Feb. 7-9		45	6.8	145	--	--	8.5	3.2	17	--	12	10	32	--	3.5	118	34	24
Feb. 10-15		40	6.7	182	--	--	9.0	3.1	18	--	16	8.2	42	--	1.4	90	35	22
Feb. 16-20		40	6.7	84.5	--	--	5.4	1.8	8.5	--	11	9.9	15	--	1.6	48	21	12
Feb. 21-24		40	6.6	168	--	--	7.4	2.6	21	--	10	12	40	--	3.0	118	29	21
Feb. 25-28		45	--	89.1	--	--	4.4	2.6	9.3	--	11	7.9	14	--	1.6	45	22	13
Mar. 1-9		45	6.5	68.7	5.8	.03	4.7	.8	6.4	.3	12	4.0	10	.1	3.8	44	15	5
Mar. 10-16		40	7.3	106	6.7	.02	7.2	1.9	11	1.5	16	4.4	23	.0	1.9	81	26	13
Mar. 17-20		30	6.9	144	--	--	7.8	.5	18	--	15	7.0	33	--	.8	79	22	9
Mar. 21-22, 28-31		45	6.8	156	4.0	.04	7.4	1.6	20	1.6	10	5.3	38	.1	2.0	105	25	17
Mar. 23-27		26	6.5	222	--	--	9.2	2.4	29	--	9	8.5	59	--	1.6	135	33	25

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR FELSENTHAL, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Apr. 1-7, 1950		45	7.3	129	4.4	0.04	6.8	1.8	15	3.3	16	5.1	30	0.1	1.9	98	24	11
Apr. 8-10		35	7.0	167	--	--	8.2	1.1	21	--	13	5.0	42	--	1.4	105	25	14
Apr. 11-20		40	8.3	162	5.6	.39	7.5	1.8	21	3.3	21	8.2	35	.1	2.4	114	26	10
Apr. 21-30		60	6.9	252	4.2	.08	9.8	3.1	31	2.2	18	3.2	62	.0	2.3	138	37	22
May 1-9		30	7.1	451	7.4	.15	15	6.1	61	5.0	16	15	120	.0	3.4	287	63	49
May 10-16		37	6.9	181	7.2	.61	7.8	2.1	24	2.6	14	5.1	42	.0	2.8	118	28	17
May 17-24		40	6.8	94.9	7.8	.40	5.5	1.5	8.3	1.9	18	5.3	14	.0	2.3	72	20	5
May 25-31		40	7.2	143	8.2	.19	7.0	2.4	17	2.7	18	5.0	28	.0	3.1	107	27	13
June 1-4		28	7.4	271	10	.27	12	2.6	33	--	24	6.3	63	.1	1.9	170	41	21
June 5-8		25	6.7	342	6.5	.32	14	3.2	45	--	21	5.8	87	.0	2.7	206	48	31
June 9-12		16	7.1	514	9.4	.20	19	3.6	72	--	20	10	138	.0	2.4	289	62	46
June 13-20		10	7.3	484	5.7	.15	17	4.8	69	5.9	21	6.9	131	.1	1.6	308	62	45
June 21-28		15	7.0	486	6.6	.12	16	3.0	73	--	18	6.3	132	.0	1.8	271	52	38
June 29-30		15	6.7	813	--	--	25	7.1	119	--	20	7.4	225	--	2.5	528	92	75
July 1-6		8	7.0	1,500	7.6	.06	50	14	227	8.4	13	9.9	460	.1	3.0	990	182	172
July 7-9		7	6.9	1,200	8.0	.06	38	11	189	8.4	18	11	362	.1	3.0	819	140	125
July 10-16		8	6.9	983	9.6	.04	31	10	146	8.0	27	8.4	285	.1	2.3	640	118	96
July 17-20		12	7.1	795	7.6	.06	26	6.8	122	12	19	8.2	233	.1	2.2	463	93	78
July 21-24		7	5.1	2,360	6.3	.04	69	21	367	24	2	9.9	715	.1	17	1,230	258	257
July 25-27, 29		7	6.8	879	8.3	.03	28	8.0	126	12	20	8.0	245	.1	6.1	516	103	86
July 28, 30-31		22	7.3	633	--	--	22	6.7	90		23	10	176	--	1.1	394	82	64
Aug. 1-6, 8-9		21	7.0	682	5.7	.08	22	6.6	99	9.6	17	7.4	196	.2	2.9	388	82	68
Aug. 7, 10		22	6.6	467	--	--	31	6.8	41		18	5.0	122	--	3.4	285	105	91
Aug. 11-14		30	7.1	382	--	--	15	5.4	49	--	19	5.8	107	--	2.7	244	60	44
Aug. 15-20		35	7.2	501	6.8	.13	19	5.3	69	8.7	23	8.9	133	.2	2.4	296	69	50
Aug. 21, 31		22	7.1	508	--	--	18	4.0	72		23	4.0	136	--	2.5	312	61	42
Aug. 22-24, 27-30		26	7.4	713	7.2	.20	25	7.0		11	20	8.6	203	.2	3.4	417	92	75
Aug. 25-26		20	6.8	1,080	6.4	.06	34	11	166	19	15	9.9	325	.1	4.2	637	130	118
Sept. 1-2, 4-5		45	6.6	673	--	--	23	6.0	87	--	7	5.8	188	--	1.0	432	82	76
Sept. 3, 6-10		45	6.8	315	--	--	11	3.2	40	--	12	8.6	78	--	2.5	206	41	31
Sept. 11-14		40	6.9	308	--	--	13	4.6	39	--	17	10	76	--	1.4	174	51	37
Sept. 15-18		40	6.9	536	12	.35	23	4.1	80	3.7	16	11	149	.0	2.5	295	74	61
Sept. 19-22		60	7.0	126	--	--	9.2	2.1	13	--	16	5.6	26	--	.9	88	32	18
Sept. 23-30		60	7.5	177	6.3	.15	8.3	2.0	19	3.4	19	6.4	36	.1	1.7	115	29	13
Average		--	--	482	--	--	18	4.9	68	--	17	7.9	133	--	3.0	290	65	51

RED RIVER BASIN--Continued

OUACHITA RIVER NEAR FELSENTHAL, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

CADDO RIVER NEAR ARKADELPHIA, ARK.

LOCATION.--At bridge on U. S. Highway 67, 6 miles north of Arkadelphia, Clark County.
DRAINAGE AREA.--450 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 104 ppm Nov. 12, 14-16, 21; minimum, 17 ppm Feb. 17-20.
Hardness: Maximum, 45 ppm July 11-20; minimum, 12 ppm Feb. 17-20.
Water temperatures: Maximum, 93°F Aug. 15; minimum, 37°F Dec. 24, Jan. 7.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-20, 1949		7	--	105	--	--	11	2.3	7.1	--	42	8.6	9.0	--	1.1	76	40	2
Oct. 21-23, 25, 30-31		22	7.4	53.9	10	0.10	5.3	2.6	.8	0.4	21	2.5	3.0	0.2	1.8	38	24	7
Oct. 24, 26-29		70	--	41.0	--	--	5.2	1.7	3.3	--	14	7.6	3.0	--	1.8	30	20	9
Nov. 1-8		13	7.5	81.2	--	--	7.8	1.9	5.9	--	35	5.2	5.8	--	.9	58	27	0
Nov. 9-11, 13, 17-20		8	7.5	101	--	--	8.9	1.8	8.4	--	32	5.0	13	--	1.4	64	30	0
Nov. 12, 14-16, 21		7	7.5	174	--	--	8.7	2.3	22	--	32	6.0	36	--	1.5	104	31	5
Nov. 22-30		6	7.8	89.5	9.4	.04	12	2.7	1.7	.3	44	3.5	3.0	.1	1.1	59	41	5
Dec. 1-13		6	7.3	87.3	7.6	.03	11	2.0	3.2	1.0	41	4.9	3.0	.1	1.4	55	36	2
Dec. 14-20		37	7.4	50.0	--	--	4.2	1.4	6.3	--	22	6.0	3.2	--	1.9	34	16	0
Dec. 21-31		8	--	49.1	--	--	5.2	1.9	4.9	--	21	3.6	3.0	--	1.6	30	21	4
Jan. 1-10, 1950		10	7.1	46.0	8.3	.05	4.1	1.9	2.8	.5	18	3.1	3.0	.0	1.3	36	18	3
Jan. 11-17		34	7.2	38.1	--	--	3.8	1.6	3.3	--	14	5.0	3.0	--	1.4	25	16	5
Jan. 18-25		22	7.2	46.5	--	--	4.9	1.9	4.1	--	20	3.6	2.5	--	6.0	33	20	4
Jan. 26-31		32	7.1	63.1	--	--	5.1	1.7	5.0	--	22	3.4	4.2	--	2.0	35	20	2
Feb. 1-5		32	7.4	36.1	--	--	4.2	2.4	3.7	--	18	8.0	2.5	--	.6	30	20	6
Feb. 6-10		21	7.5	48.2	--	--	5.3	2.4	3.4	--	22	4.0	3.5	--	.7	30	23	5
Feb. 11-16		21	7.1	47.7	--	--	5.8	1.4	1.9	--	17	4.0	3.8	--	1.0	28	20	6
Feb. 17-20		32	6.9	32.2	--	--	3.1	1.0	1.6	--	12	2.0	1.8	--	1.1	17	12	2
Feb. 21-28		20	7.4	56.4	9.3	.07	5.9	1.4	2.6	.1	22	3.2	2.5	.0	1.1	42	20	2
Mar. 1-11		8	7.4	64.4	10	.06	7.1	1.5	2.8	--	27	4.4	3.2	.0	1.0	44	24	2
Mar. 12-20		37	7.2	44.8	--	--	4.7	1.4	.7	--	17	3.4	2.0	--	.6	21	17	4
Mar. 21-31		38	7.5	48.1	--	--	4.7	1.1	3.2	--	20	3.5	3.0	--	.4	26	16	0

Apr. 1-10		6	6.9	55.3	7.2	.06	6.8	1.2	3.6	1.7	24	4.2	4.2	.0	2.5	44	22	2
Apr. 11-20		8	7.1	66.2	--	--	7.7	2.1	2.7	--	29	3.7	2.5	--	.9	45	28	4
Apr. 21-30		5	7.0	72.4	--	--	8.4	2.1	3.0	--	35	4.1	3.0	--	.6	49	30	1
May 1-10		33	7.3	41.6	8.3	.06	4.8	1.2	2.5	--	18	3.1	2.0	.1	.9	33	17	2
May 11-20		20	7.5	58.0	--	--	5.8	2.4	3.7	--	28	4.6	2.5	--	1.1	34	24	1
May 21-31		7	7.2	73.3	--	--	6.8	3.3	4.0	--	31	3.7	4.0	--	1.6	45	30	5
June 1-10		5	6.7	76.3	7.0	.01	7.1	1.8	4.0	1.7	33	4.0	4.8	.1	.4	48	25	0
June 11-20		7	7.8	78.0	--	--	8.9	2.0	4.6	--	37	3.7	4.0	--	2.5	51	30	0
June 21-30		5	7.3	98.6	--	--	10	2.1	3.5	--	39	3.7	4.0	--	1.9	51	34	2
July 1-10		4	7.4	95.3	7.7	.02	12	2.4	5.3	.9	48	9.1	3.8	.1	.6	67	40	0
July 11-20		5	7.4	89.3	--	--	14	2.4	3.5	--	48	4.2	3.5	--	.3	58	45	5
July 21-31		5	7.6	80.1	--	--	10	2.4	3.1	--	44	5.2	2.2	--	.1	58	35	0
Aug. 1-10		7	7.4	80.0	--	--	10	2.3	3.0	--	42	3.5	2.8	--	.8	55	34	0
Aug. 11-20		8	6.9	92.9	8.7	.02	13	1.9	4.4	1.4	46	4.2	3.8	.0	1.0	63	40	3
Aug. 21-31		12	7.6	118	--	--	13	2.4	4.1	--	50	3.5	4.2	--	.8	70	42	1
Sept. 1-10		10	7.3	99.2	12	.01	14	1.6	4.0	1.4	50	3.4	4.0	.0	.8	67	42	1
Sept. 11-13, 15		30	7.7	100	--	--	12	2.1	3.1	--	42	3.8	4.2	--	.8	64	39	4
Sept. 14, 16-20		45	6.9	40.9	--	--	4.2	1.5	2.1	--	16	5.9	2.5	--	1.9	26	17	4
Sept. 21-22, 27		25	6.7	40.4	--	--	4.2	1.1	3.4	--	13	3.6	4.0	--	1.3	24	15	4
Sept. 23-26, 28-30 ...		25	7.4	67.9	--	--	7.9	1.6	2.2	--	34	3.1	3.0	--	.8	58	26	0
Average		--	--	69.7	--	--	7.6	1.9	4.0	--	30	4.4	4.4	--	1.3	46	27	3

RED RIVER BASIN--Continued

CADDO RIVER NEAR ARKADELPHIA, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	58	--	50	41	48	55	65	72	88	90	80
2	--	56	--	53	45	--	57	60	71	89	90	86
3	--	54	53	56	46	45	60	60	72	90	90	86
4	--	57	55	50	42	47	57	61	78	85	87	85
5	--	57	53	41	42	50	57	65	76	88	86	82
6	--	60	--	42	47	46	52	62	71	88	87	79
7	--	64	54	37	53	49	51	60	78	91	86	77
8	--	61	48	40	52	48	57	61	80	87	90	78
9	--	62	46	41	51	46	61	64	84	85	92	75
10	--	53	48	48	50	48	59	68	80	85	89	74
11	--	65	56	47	47	46	61	68	78	70	92	79
12	--	65	56	47	49	44	57	63	82	85	92	81
13	--	57	48	51	50	41	54	62	81	86	92	79
14	--	65	45	51	--	41	55	63	86	88	88	74
15	67	52	41	53	41	45	60	65	84	86	93	71
16	68	52	44	50	41	45	55	69	90	87	92	68
17	70	56	40	48	45	46	55	69	90	88	90	71
18	71	51	45	49	45	48	60	67	--	91	88	74
19	73	--	48	47	42	47	57	--	92	92	85	74
20	72	51	50	44	41	45	55	70	88	88	89	73
21	70	59	51	45	47	54	56	71	88	88	82	75
22	67	50	48	50	40	50	61	72	87	87	85	73
23	65	50	44	50	38	55	65	75	85	88	--	74
24	60	51	37	54	39	54	65	72	85	89	87	73
25	60	50	45	59	54	56	64	73	90	86	90	71
26	60	53	45	56	51	60	64	77	90	85	90	--
27	61	57	46	45	45	57	67	75	89	84	91	70
28	60	57	42	47	50	56	61	71	88	86	87	70
29	56	60	44	53	--	47	66	72	85	85	88	74
30	61	57	40	44	--	50	65	68	85	87	86	--
31	57	--	44	42	--	52	--	74	--	89	86	--
Average	--	57	47	48	46	49	59	67	83	87	89	76

LITTLE MISSOURI RIVER NEAR BOUGHTON, ARK.

LOCATION.--At gaging station at bridge on U. S. Highway 67, 2 miles northeast of Boughton, Nevada County, and 8.7 miles downstream from Antoine Creek.
DRAINAGE AREA.--1,070 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 84 ppm July 23-26; minimum, 25 ppm Feb. 2-3, 5, 9-11.
Hardness: Maximum, 48 ppm Sept. 13-15; minimum, 17 ppm Feb. 2-3, 5, 9-11, Mar. 11-14, June 23-30.
Water temperatures: Maximum, 88°F Aug. 17.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 111 ppm July 25-27, 1949; minimum, 25 ppm Feb. 2-3, 5, 9-11, 1950.
Hardness: Maximum, 73 ppm July 25-27, 1949; minimum, 16 ppm Dec. 1-3, 9-10, 1947.
Water temperatures: Maximum, 94°F July 29, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 furnished by Corps of Engineers, Vicksburg District.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-20, 1949	410	23	--	95.7	--	--	8.7	2.3	5.6	--	24	3.0	8.5	--	2.6	72	31	11
Oct. 21-31	2,621	60	7.2	73.6	12	0.03	5.9	3.5	4.0	0.3	31	5.1	3.5	0.2	2.3	55	29	3
Jan. 1-10, 1950	5,389	40	7.2	64.3	--	--	9.2	1.5	3.6	--	25	8.0	4.0	--	2.1	41	29	9
Jan. 11-20	9,732	21	7.5	57.7	7.2	.03	6.6	1.0	2.6	.6	22	4.4	2.5	.0	1.1	54	20	2
Jan. 21-25	1,440	25	7.6	71.8	--	--	8.7	1.5	4.1	--	27	6.0	4.2	--	1.7	40	28	6
Jan. 26-31	1,200	32	7.3	100	--	--	12	1.7	4.6	--	39	9.0	4.2	--	2.0	70	37	5
Feb. 1, 4, 6-8	5,572	40	7.3	72.1	--	--	8.8	1.3	3.5	--	26	5.0	3.2	--	2.7	37	27	6
Feb. 2-3, 5, 9-11	8,627	35	7.0	43.9	--	--	4.8	1.2	3.0	--	18	4.0	2.0	--	1.0	25	17	2
Feb. 12-20	9,710	40	7.1	61.0	--	--	7.5	1.0	3.0	--	22	5.3	2.5	--	2.1	32	23	5
Feb. 21-28	1,028	34	7.2	72.9	14	.09	8.6	1.0	3.9	3.8	28	7.0	4.0	.1	4.0	61	26	3
Mar. 1-10	443	45	7.4	72.9	11	.08	9.4	2.0	3.3	1.7	30	6.8	3.8	.1	2.4	59	32	7
Mar. 11-14	4,561	32	7.2	45.2	--	--	5.6	.8	2.8	--	18	4.0	3.8	--	.8	27	17	2
Mar. 15-20	3,275	16	7.3	67.6	--	--	8.4	1.1	2.9	--	26	5.0	3.2	--	.6	34	25	4
Mar. 21-22, 27-28, 31	2,110	25	6.9	72.5	--	--	10	.8	3.4	--	29	6.0	3.8	--	.8	39	28	4
Mar. 23-26, 29-30	1,336	40	6.8	97.6	--	--	12	1.7	4.0	--	37	6.0	4.8	--	1.1	73	37	7
Apr. 1-10	869	21	7.3	94.0	--	--	11	1.1	4.6	--	40	6.0	3.8	--	.8	69	32	0
Apr. 11-20	458	22	7.6	93.1	6.4	.25	9.9	1.8	4.3	2.2	38	5.4	4.5	.1	.6	64	32	1
Apr. 21-30	389	12	7.0	93.7	--	--	11	1.8	4.5	--	38	6.0	5.8	--	1.0	62	35	4
May 1-10	8,802	16	7.0	62.0	--	--	8.0	1.0	3.5	--	25	5.0	3.2	--	1.1	34	24	4
May 11-20	1,756	23	7.2	70.2	8.7	.20	8.0	1.7	3.6	--	27	7.4	3.2	.1	.9	59	27	5
May 21-27	457	30	7.4	94.1	--	--	12	1.4	3.8	--	41	5.9	4.0	--	1.5	63	36	2
May 28-31	868	33	7.0	59.0	--	--	7.1	1.7	3.4	--	24	4.0	3.5	--	1.1	33	25	5

RED RIVER BASIN--Continued

LITTLE MISSOURI RIVER NEAR BOUGHTON, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
June 1-10, 1950	1,206	26	7.5	61.3	7.2	0.22	6.8	1.5	3.7	0.6	22	4.4	2.5	0.2	2.7	56	23	5
June 11-14	714	23	7.0	56.5	--	--	6.3	1.6	3.0	--	23	4.0	2.5	--	2.7	46	22	3
June 15-22	176	14	7.5	82.3	--	--	8.9	1.2	4.4	--	33	5.2	4.0	--	1.3	60	27	0
June 23-30	525	20	7.1	45.9	--	--	4.5	1.5	3.9	--	20	4.5	1.8	--	3.2	39	17	1
July 1-10	217	20	7.1	60.3	6.1	.11	6.9	1.0	3.6	1.6	27	4.4	3.2	.1	.4	48	21	0
July 11-20	325	25	7.5	59.8	--	--	7.9	2.3	3.9	--	29	7.0	2.8	--	.9	54	29	5
July 21-22, 27-31	453	22	7.3	54.0	--	--	6.0	1.9	3.4	--	26	7.2	2.2	--	1.0	51	23	1
July 23-26	302	45	7.9	90.3	--	--	15	2.3	3.2		51	7.0	2.8	--	.9	84	47	5
Aug. 1-10	574	35	7.8	71.2	--	--	7.7	1.7	4.0	--	33	4.0	2.5	--	1.1	63	26	0
Aug. 11-20	263	23	7.6	64.2	--	--	7.0	1.7	3.6	--	32	3.4	2.5	--	.6	53	24	0
Aug. 21-31	233	18	6.8	63.6	13	.10	7.3	1.5	5.9	1.5	32	4.9	2.8	.1	1.0	56	24	0
Sept. 1, 3, 5-6	410	25	7.3	83.9	--	--	13	2.5	2.0		30	16	3.2	--	1.8	62	43	18
Sept. 2, 4, 7-10	424	30	7.4	56.2	--	--	8.4	1.6	2.6	--	25	6.6	2.8	--	2.3	54	28	7
Sept. 11-12, 16-20	9,133	60	7.3	54.5	--	--	10	1.5	2.5	--	26	8.2	2.5	--	1.1	39	31	10
Sept. 13-15	1,168	70	7.6	97.3	--	--	18	1.0	1.2	--	44	6.0	1.5	--	7.1	57	48	12
Sept. 21-30	2,795	34	7.7	59.1	4.8	.06	8.0	1.3	3.3	1.5	27	5.6	3.2	.1	1.9	44	25	3
Average	a --	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Mean daily discharge, water year October 1949 to September 1950, 2,097 second-feet.

RED RIVER BASIN--Continued

LITTLE MISSOURI RIVER NEAR BOUGHTON, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

SMACKOVER CREEK NEAR SMACKOVER, ARK.

LOCATION.--At bridge on county road, half a mile northeast of Smackover, Union County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Hardness: Maximum, 698 ppm July 18; minimum, 13 ppm Jan. 14-16.
Water temperatures: Maximum, 85°F July 25, 28, Aug. 15; minimum, 42°F Jan. 8.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-20, 1949		5	5.6	2,500	18	0.06	81	24	396	24	1	16	790	0.0	1.4	1,350	300	300
Oct. 21-22		5	5.7	3,380	19	.04	103	29	540	12	3	16	1,090	.0	1.4	1,810	376	374
Oct. 23-25		15	5.4	2,420	12	.11	77	21	376	9.6	1	14	760	.1	1.4	1,280	278	278
Oct. 26-31		20	6.9	1,460	15	.09	46	12	214	6.8	5	7.2	438	.0	1.6	818	164	160
Nov. 1, 4-10		4	5.6	1,990	21	.05	68	24	304	6.8	1	7.4	640	.0	1.5	1,080	276	276
Nov. 2-3		15	7.6	1,560	--	--	50	12	242		2	12	495	--	1.3	910	174	173
Nov. 11-20		6	5.5	2,910	22	.05	90	31	470	6.8	1	9.5	945	.0	1.4	1,590	352	351
Nov. 21-30		5	5.6	2,840	25	.05	90	31	459	10	2	8.6	918	.0	1.6	1,550	352	350
Dec. 1-10		4	5.3	3,020	22	.03	92	24	505	14	2	4.9	1,000	.1	2.0	1,670	328	326
Dec. 11-12		20	--	2,050	--	--	62	17	326	--	3	9.5	663	--	1.4	1,080	225	222
Dec. 13-20		20	5.5	1,090	13	.03	39	11	170	13	4	8.2	340	.0	1.1	664	142	139
Dec. 21-22, 25, 27-31		8	5.3	1,250	18	.04	41	10	183	5.0	2	9.3	372	.2	2.1	686	144	142
Dec. 23-24, 26		17	5.7	854	16	.04	30	7.4	125	4.0	4	8.2	252	.2	2.1	480	106	102
Jan. 1-4, 1950		8	5.7	1,290	19	.05	40	11	211	5.8	3	8.4	420	.0	.9	766	147	144
Jan. 5		--	7.0	879	--	--	--	--	--	--	12	6.0	29	--	1.8	--	95	85
Jan. 6-10		38	6.6	463	10	.08	14	4.1	65	2.3	5	5.1	132	.1	.9	264	51	47
Jan. 11-12		40	6.0	440	--	--	18	4.4	61	--	4	8.0	135	--	1.8	284	63	60
Jan. 13, 17-18		50	6.0	212	--	--	7.4	2.4	20	--	4	6.0	56	--	1.0	133	28	25
Jan. 14-16		50	6.1	96.5	--	--	3.5	1.0	13	--	8	4.0	24	--	.6	76	13	6
Jan. 19-21		37	6.5	351	--	--	15	3.9	49	--	5	7.9	104	--	1.8	230	54	49
Jan. 22-23, 27		32	6.1	640	15	.06	28	1.2	99	2.9	8	4.8	192	.1	1.0	372	75	68
Jan. 24-26, 28-31		25	6.3	789	12	.10	25	6.6	124	3.8	6	4.0	240	.1	1.0	455	90	85
Feb. 1-2, 8-10		18	6.6	716	14	.09	19	4.8	104	8.7	5	7.2	207	.1	1.1	423	67	63
Feb. 3-7		25	6.0	594	14	.04	18	6.0	85	3.0	6	5.5	172	.0	1.5	341	70	64
Feb. 11-12		34	6.2	634	--	--	20	5.2	96	--	7	5.8	188	--	.4	434	72	66
Feb. 13, 19-20		38	7.0	314	--	--	12	2.9	51	--	7	4.9	98	--	.5	238	42	36
Feb. 18		--	7.0	202	--	--	--	--	--	--	6	7.0	53	--	.8	--	26	21

Feb. 14-17	50	6.2	145	--	--	4.6	2.0	22	--	7	5.6	37	--	.5	116	20	14
Feb. 21	--	7.0	465	--	--	--	--	--	--	8	5.0	136	--	.6	--	54	47
Feb. 22-27	16	6.2	630	13	.06	18	6.3	90	9.6	4	6.5	183	.1	1.0	406	71	68
Feb. 28	--	6.0	773	--	--	--	--	--	--	6	7.0	225	--	.9	--	87	82
Mar. 1, 5-11	6	6.1	1,060	17	.11	40	4.4	155	1.6	7	12	312	.1	.5	616	118	112
Mar. 2-4	14	5.6	672	--	--	20	8.4	106	--	7	6.6	210	--	1.7	455	84	78
Mar. 12, 19-20	36	6.7	348	--	--	11	4.6	47	--	9	12	94	--	1.0	217	46	39
Mar. 13, 15-18	32	6.5	259	6.8	.04	8.6	2.3	32	5.2	8	4.4	67	.1	.5	166	31	24
Mar. 14	40	6.9	176	--	--	--	--	--	--	6	3.0	45	--	2.8	--	20	15
Mar. 21-22, 29	38	6.5	313	--	--	12	2.7	42	--	7	9.3	86	--	1.6	213	41	35
Mar. 23, 28, 30-31	37	6.5	442	--	--	16	3.6	60	--	6	12	125	--	1.4	300	55	50
Mar. 24-27	15	6.5	740	13	.04	24	6.3	107	9.0	5	6.4	218	.4	2.0	433	86	82
Apr. 1-2	25	6.5	559	--	--	22	3.5	77	--	5	7.0	165	--	1.0	403	69	65
Apr. 3-7	21	6.2	840	14	.07	25	8.4	134	5.4	5	7.6	258	.1	2.4	564	97	93
Apr. 8-11	18	6.5	1,090	18	.06	28	9.6	173	15	5	7.6	325	.0	.8	706	110	106
Apr. 12-17	15	6.5	1,450	18	.10	39	13	220	22	7	12	438	.0	.6	888	151	145
Apr. 18-20	25	6.4	955	14	.06	25	8.1	150	5.6	6	5.1	287	.1	.9	597	96	91
Apr. 21-24, 27-28, 30	8	6.5	979	10	.03	26	8.1	144	14	6	3.1	291	.1	.4	569	98	94
Apr. 25-26, 29	40	4.9	659	11	.13	19	7.1	89	8.8	2	4.4	187	.1	2.2	399	76	75
May 1, 9	36	6.6	531	--	--	20	4.6	69	--	8	9.9	148	--	1.0	350	69	62
May 2	37	8.2	270	--	--	--	--	--	--	12	3.0	74	--	1.7	--	30	20
May 3-7	50	6.4	208	--	--	7.4	2.1	27	--	7	5.9	56	--	1.2	148	27	21
May 8	25	8.0	382	--	--	--	--	--	--	13	3.0	104	--	.8	--	37	26
May 10	10	8.0	767	--	--	--	--	--	--	10	3.0	223	--	3.9	--	95	87
May 11-13	12	6.2	1,020	22	.05	29	10	150	4.4	4	6.0	298	.0	.8	594	114	110
May 14-18	18	5.8	1,200	19	.10	29	11	180	7.6	4	4.7	368	.0	.6	754	118	114
May 19-20	15	5.0	1,630	20	.11	49	14	266	9.6	2	6.0	495	.0	.6	946	180	178
May 21-22, 24, 28-29	12	5.4	1,430	18	.11	62	10	213	13	4	5.6	432	.0	.7	920	196	192
May 23, 25-27	10	5.8	1,120	14	.17	32	11	168	12	4	7.0	338	.0	.6	712	125	122
May 30-31	7	4.7	1,930	18	.10	61	15	286	16	1	6.0	588	.0	.7	992	214	212

RED RIVER BASIN--Continued

SMACKOVER CREEK NEAR SMACKOVER, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
June 1-4, 6-7, 1950		8	5.4	2,130	18	0.06	64	12	330	5.2	2	11	660	0.0	0.9	1,100	209	208
June 5, 8-10		5	4.45	1,590	17	.04	46	12	240	12	0	6.0	482	.1	2.4	922	164	164
June 11-13		4	5.1	1,850	17	.10	59	15	294	8.0	3	7.8	580	.1	1.1	986	208	206
June 14-20		3	4.7	2,350	18	.08	72	18	362	16	1	6.6	725	.1	2.1	1,220	254	252
June 21-23, 25-26		4	5.4	2,550	19	.05	80	19	392	15	4	9.9	790	.1	2.6	1,330	278	274
June 24		7	6.9	1,560	--	--	--	--	--	--	7	3.0	478	--	1.1	--	164	158
June 27-30		7	6.9	3,080	16	.08	93	23	496	8.4	16	4.5	980	.1	1.2	1,630	326	314
July 1-7, 10		6	5.2	3,290	16	.07	103	25	543	8.0	3	7.4	1,080	.1	1.1	1,790	360	358
July 8-9		7	5.8	4,410	18	.08	146	34	735	8.4	3	4.5	1,440	.1	1.7	2,390	504	502
July 11, 16		6	4.7	4,120	14	.06	111	31	689	7.6	1	6.6	1,330	.1	1.7	2,190	404	404
July 12-14, 17		5	5.5	3,290	14	.06	97	23	557	6.8	3	7.8	1,060	.1	1.1	1,770	336	334
July 15, 19		10	5.7	2,280	12	.07	69	17	363	7.6	4	7.0	715	.1	.9	1,200	242	238
July 18		--	4.40	6,900	--	--	--	--	--	--	0	3.0	2,400	--	1.3	--	698	698
July 20		--	5.0	5,020	--	--	--	--	--	--	2	5.0	1,720	--	1.0	--	552	550
July 21-24, 28, 30-31		4	4.7	3,500	14	.08	106	28	566	39	1	12	1,120	.1	3.6	1,890	380	378
July 25-27, 29		4	4.40	4,290	14	.05	128	34	685	37	0	7.4	1,360	.1	4.0	2,270	460	460
Aug. 1-3, 5, 8-9		4	4.5	2,970	12	.04	88	24	465	21	0	17	930	.0	3.8	1,560	318	318
Aug. 4		--	5.1	4,310	--	--	--	--	--	--	2	2.0	1,400	--	1.8	--	478	476
Aug. 6, 10		7	4.9	1,690	9.9	.04	54	14	250	12	2	5.4	515	.1	2.9	954	192	191
Aug. 7		--	5.8	911	--	--	--	--	--	--	4	4.0	265	--	1.0	--	93	90
Aug. 11, 19-20		21	5.8	1,080	7.9	.04	31	9.3	159	13	4	4.1	318	.1	2.4	642	116	112
Aug. 12, 14-16		6	5.6	1,400	12	.02	42	10	207	12	4	5.1	422	.1	2.0	803	146	142
Aug. 13		--	5.9	1,870	--	--	--	--	--	--	5	5.0	572	--	1.6	--	222	218
Aug. 17-18		8	5.0	2,800	12	.08	98	18	401	19	1	7.0	880	.0	1.6	1,440	318	318
Aug. 21, 30		20	6.2	1,340	--	--	36	11	212	--	6	6.6	415	--	1.4	833	135	130
Aug. 22-29, 31		12	4.40	2,370	13	.11	80	15	360	18	0	7.0	740	.0	3.7	1,240	261	261
Sept. 1-3		15	5.4	1,940	15	.12	68	12	292	8.0	4	8.0	592	.0	1.8	1,000	219	216
Sept. 4, 6-10		18	4.5	1,360	16	.07	48	8.5	205	4.4	0	8.2	412	.0	2.0	736	155	155
Sept. 5		--	6.0	1,010	--	--	--	--	--	--	4	3.0	295	--	1.0	--	112	109
Sept. 11-12, 15		12	4.9	1,580	18	.11	57	11	236	5.0	2	11	482	.0	1.6	849	187	186
Sept. 13-14		8	4.9	2,270	15	.07	73	17	355	11	2	11	708	.0	1.4	1,200	252	250

Sept. 16, 20		12	6.5	904	--	--	30	9.1	123	--	6	8.0	268	--	.7	518	112	108
Sept. 17-19.....		30	6.5	579	--	--	21	7.5	78	--	4	6.0	164	--	.6	308	83	80
Sept. 21-23.....		10	6.2	973	--	--	31	11	146	--	5	6.8	291	--	1.1	536	122	118
Sept. 24-25, 28-30 ..		8	5.5	1,330	18	.06	42	12	207	10	3	8.8	430	.0	2.7	784	154	152
Sept. 26-27.....		5	5.9	1,910	17	.14	57	18	302	8.8	4	17	610	.0	1.2	1,040	216	212
Average		--	--	1,560	18	0.07	48	13	238	11	4	7.2	488	0.1	1.5	854	174	170

RED RIVER BASIN--Continued

SMACKOVER CREEK NEAR SMACKOVER, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

SALINE RIVER NEAR BENTON, ARK.

LOCATION.--At bridge on Highway 67, 2 miles west of Benton, Saline County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 93 ppm Nov. 11-20, minimum, 29 ppm Mar. 12-14.
Hardness: Maximum, 71 ppm Dec. 1-10, May 21-31; minimum, 22 ppm Mar. 12-14.
Water temperatures: Maximum, 83°F June 27, minimum, freezing point Dec. 16, Jan. 5.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-22, 1949		10	--	125	--	--	17	4.3	2.6	--	64	3.1	8.0	--	1.7	79	60	8
Oct. 23-31		17	--	94.7	--	--	13	3.8	1.9	--	45	3.5	12	--	1.6	69	48	11
Nov. 1-10		15	7.8	132	14	0.02	16	4.1	3.8	1.6	72	6.4	3.5	0.5	2.6	89	57	0
Nov. 11-20		6	--	157	--	--	20	4.4	5.0	--	80	5.8	3.2	--	1.6	93	68	2
Nov. 21-30		4	--	147	--	--	20	4.6	3.6	--	78	5.8	4.2	--	1.5	91	69	5
Dec. 1-10		4	--	144	--	--	21	4.6	4.6	--	82	6.1	4.0	--	1.0	86	71	4
Dec. 11-20		40	7.6	90.2	--	--	11	4.3	2.8	--	42	6.0	3.2	--	1.8	75	45	11
Dec. 21-31		15	7.5	107	--	--	13	4.1	3.2	--	54	5.0	3.2	--	1.4	68	49	5
Jan. 1-10, 1950		30	7.7	75.9	--	--	9.3	4.0	2.7	--	38	6.0	2.5	--	1.5	57	40	8
Jan. 11-20		22	7.5	83.9	--	--	8.8	2.9	2.5	--	36	3.3	1.5	--	.6	56	34	4
Jan. 21-31		11	7.5	88.2	--	--	11	2.8	2.2	--	42	3.9	2.2	--	.6	57	39	5
Feb. 1-4		36	7.5	54.8	--	--	5.3	2.9	2.0	--	24	4.0	3.0	--	.5	30	25	5
Feb. 5-10		10	7.3	79.2	--	--	9.4	2.8	2.6	--	40	6.0	2.2	--	.6	53	35	2
Feb. 11-19		21	6.6	60.9	--	--	7.5	2.6	1.8	--	27	4.7	1.8	--	1.3	50	29	7
Feb. 20-28		5	7.6	92.4	16	.03	12	2.8	3.5		47	5.4	2.5	.1	1.6	68	41	3
Mar. 1-11		5	7.5	106	--	--	15	3.7	2.5	--	56	6.3	2.2	--	1.2	68	53	7
Mar. 12-14		38	7.2	53.9	--	--	5.9	1.9	2.2	--	24	5.3	1.0	--	1.0	29	22	3
Mar. 15-20		10	7.2	82.0	--	--	10	3.4	2.5	--	40	6.0	2.0	--	.9	58	39	6
Mar. 21-31		9	7.3	106	--	--	15	3.8	3.1	--	53	7.2	2.2	--	1.0	71	53	10
Apr. 1-10		6	7.5	98.7	--	--	12	3.6	2.3	--	47	6.5	3.0	--	.5	59	45	6
Apr. 11-20		3	7.0	114	5.9	.02	15	3.6	2.0	2.0	56	4.0	2.8	.1	1.7	68	52	6
Apr. 21-30		4	7.8	127	7.4	.02	14	4.6	2.7	2.2	69	4.4	2.8	.1	.6	78	54	0
May 1-3, 7-9		34	7.5	60.5	--	--	6.6	2.2	2.5	--	25	4.0	1.5	--	3.0	32	26	5
May 4-6, 10		23	7.1	77.4	--	--	9.0	3.2	1.4	--	37	4.0	2.0	--	1.6	39	36	5
May 11-12, 17-20		5	7.4	99.5	--	--	13	3.4	3.1	--	43	6.0	2.0	--	6.2	55	46	11
May 13-16		14	7.5	83.8	--	--	10	3.6	1.6	--	42	5.0	2.0	--	1.0	55	40	5
May 21-31		10	7.5	113	--	--	14	4.6	2.7	--	60	5.0	2.8	--	1.0	71	71	5

RED RIVER BASIN--Continued

SALINE RIVER NEAR BENTON, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
June 1-3, 1950		7	7.6	154	--	--	18	3.8	2.8	--	71	5.0	3.0	--	1.6	88	60	2
June 4-10		8	7.1	97.0	--	--	12	2.6	2.7	--	43	6.4	2.0	--	3.2	66	41	5
June 11-20		6	7.9	120	--	--	16	3.7	2.0	--	64	5.8	2.5	--	1.8	71	55	3
June 21-30		5	8.0	128	--	--	18	4.8	4.4	--	72	6.2	2.5	--	1.7	80	63	4
July 1-10		6	7.8	127	--	--	18	4.1	3.2	--	76	6.2	2.0	--	.6	80	62	0
July 11-20		5	7.7	131	8.0	0.02	19	3.8	2.8	1.5	74	3.0	2.5	0.1	.5	79	63	2
July 21-31		5	7.8	124	--	--	18	4.2	2.5	--	72	5.4	2.2	--	.4	84	62	3
Aug. 1-5, 9-10		7	7.6	111	--	--	17	3.1	2.3	--	61	5.4	2.0	--	1.1	80	55	5
Aug. 6-8		37	7.4	76.4	--	--	10	2.2	0.8		38	3.0	1.2	--	1.1	58	35	4
Aug. 11-20		7	7.5	104	--	--	12	3.9	2.1	--	59	4.2	2.2	--	.9	73	46	0
Aug. 21-23, 27-29, 31		17	7.7	108	--	--	16	4.7	2.5	--	59	6.3	2.8	--	1.2	82	59	11
Aug. 24-26, 30		45	7.5	71.4	--	--	10	3.3	.5		31	8.0	2.2	--	3.5	42	38	13
Sept. 1-10		17	7.6	105	--	--	14	4.6	2.4	--	54	5.8	2.5	--	1.9	74	54	10
Sept. 11-14, 16		20	7.7	103	--	--	15	5.2	1.7	--	54	9.1	2.8	--	.9	69	59	15
Sept. 15, 17-20		20	7.6	72.4	--	--	12	3.1	1.6	--	38	7.4	2.8	--	.7	47	43	12
Sept. 21-30		12	7.8	106	--	--	14	4.6	1.7	--	59	6.7	2.8	--	1.0	73	54	6
Average		--	--	102	--	--	13	3.7	2.5	--	52	5.4	2.8	--	1.4	66	49	6

RED RIVER BASIN--Continued

SALINE RIVER NEAR BENTON, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

SALINE RIVER NEAR RYE, ARK.

LOCATION.--At gaging station at bridge on State Highway 15, 4 miles southwest of Rye, Cleveland County, and 5 miles upstream from Hudgen Creek.
DRAINAGE AREA.--2,040 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1947, October 1948 to September 1950.
Water temperatures: October 1946 to September 1947, October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 82 ppm Nov. 21-30, Aug. 21-26; minimum, 18 ppm Jan. 11-14.
Hardness: Maximum, 47 ppm Aug. 21-26; minimum, 10 ppm Jan. 11-14.
Water temperatures: Minimum, 45°F Jan. 8, Feb. 3.
EXTREMES, 1946-47, 1948-50.--Dissolved solids: Maximum, 132 ppm Jan. 24, 30, 1949; minimum, 18 ppm Jan. 11-14, 1950.
Hardness: Maximum, 77 ppm Jan. 24, 30, 1949; minimum, 8 ppm June 1-7, 9-10, 1947.
Water temperatures: Minimum 37°F Jan. 7, 1947.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1177.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Oct. 1-10, 1949	1,643	20	--	93.3	--	--	9.3	2.2	5.7	--	27	16	3.2	--	1.8	63	32	10
Oct. 11-16	2,707	40	--	86.5	--	--	8.6	2.4	7.4	--	24	18	2.8	--	1.8	53	31	12
Oct. 17-22	870	35	--	114	--	--	11	2.4	5.0	--	32	20	4.2	--	1.7	60	37	11
Oct. 23-31	5,193	65	7.0	59.4	7.9	0.01	.2	4.1	3.4	0.8	14	8.6	2.5	0.2	2.2	39	17	6
Nov. 1-9	3,713	20	7.1	85.7	11	.24	7.6	2.4	5.5	1.1	26	12	3.5	.3	2.1	66	29	8
Nov. 10-20	575	30	7.1	117	13	.40	8.7	3.2	6.4	1.2	32	15	4.5	.2	2.7	75	35	9
Nov. 21-30	370	20	7.4	133	16	.41	11	2.7	7.4	1.4	36	15	5.0	.1	2.2	82	39	9
Dec. 1-10	307	22	7.5	122	12	.37	11	2.9	7.4	1.0	42	14	4.2	.2	1.8	81	39	5
Dec. 11-20	3,329	45	7.1	77.6	7.7	.06	5.6	2.0	4.9	.7	17	13	3.8	.3	2.1	50	22	8
Dec. 21-31	6,027	45	7.0	63.3	7.9	.04	5.3	1.9	3.6	.3	16	9.9	3.0	.2	1.7	43	21	8
Jan. 1-10, 1950	5,819	22	6.9	68.2	8.8	.03	5.5	2.3	3.9	.9	18	10	3.2	.1	1.2	46	23	8
Jan. 11-14	20,960	50	7.1	37.1	--	--	2.2	1.2	2.1	--	7	5.0	3.0	--	1.4	18	10	5
Jan. 15-24	24,800	32	6.6	45.8	7.8	.05	3.4	1.1	3.3	.6	12	5.7	2.8	.2	1.1	33	13	3
Jan. 25-31	8,186	22	7.2	60.1	7.1	.07	5.4	2.5	1.3	1.1	18	8.7	2.5	.1	.6	53	24	9
Feb. 1-10	15,020	37	6.9	47.0	11	.02	3.7	1.5	4.4	1.8	15	7.2	3.5	.3	1.6	43	15	3
Feb. 11-20	22,950	45	7.0	43.4	9.6	.02	3.8	1.1	3.6	1.6	13	6.1	3.5	.3	1.4	38	14	3
Feb. 21-28	11,030	45	7.0	54.1	21	.04	4.6	1.6	3.4	2.0	14	8.2	3.8	.3	1.4	54	18	7
Mar. 1-10	3,041	23	7.2	83.0	12	.08	9.4	2.2	4.4	1.3	26	13	3.2	.2	2.0	62	32	11
Mar. 11-20	8,675	40	6.7	34.1	6.2	.03	3.2	1.1	2.2	1.7	10	5.9	2.5	.2	1.3	30	12	4
Mar. 21-31	8,306	33	7.2	50.3	4.5	.03	5.0	1.7	3.2	.3	15	7.6	3.5	.1	1.4	36	20	7
Apr. 1-4	7,095	40	7.1	46.3	--	--	4.8	1.1	2.3	--	13	8.0	2.8	--	.9	26	16	6
Apr. 5-10	7,580	26	6.4	60.6	--	--	5.3	2.4	2.9	--	16	8.6	4.2	--	2.0	49	23	10
Apr. 11-18	4,420	22	7.5	68.1	6.5	.18	6.6	2.5	3.4	1.0	23	7.7	3.2	.2	1.1	58	27	8
Apr. 19-30, May 1	1,160	22	7.3	91.3	8.3	.25	6.6	2.6	5.2	.9	29	10	4.0	.1	2.8	60	27	3

May 2-10	6,511	40	7.1	57.2	7.9	.31	4.5	1.4	3.8	1.9	15	7.5	2.5	.0	2.1	39	17	5
May 11-16	12,540	35	6.8	47.3	--	--	5.2	2.1	3.2	--	17	8.0	2.5	--	1.1	30	22	8
May 17-20	9,852	37	7.0	61.4	--	--	5.0	1.9	3.9	--	22	6.0	2.5	--	1.1	31	20	2
May 21-31	2,751	27	7.1	85.2	--	--	8.9	2.4	4.9	--	29	10	3.0	--	3.5	70	32	8
June 1-10	1,136	19	7.4	106	11	.35	10	3.2	7.8	.2	32	19	3.0	.2	2.7	80	38	12
June 11-20	645	21	7.1	88.4	9.9	.38	8.9	2.8	5.9	.7	33	13	3.0	.1	1.5	71	34	7
June 21-30	281	20	7.1	110	8.6	.36	11	3.2	6.6	.6	41	14	3.8	.1	1.9	81	41	7
July 1-10	174	7	7.6	114	11	.08	12	3.3	5.4	2.1	47	11	3.8	.1	1.1	76	44	5
July 11-20	152	7	7.5	111	9.0	.06	12	3.2	5.4	.8	46	10	3.5	.1	1.0	71	43	5
Aug. 21-26	265	15	7.5	119	--	--	14	2.9	6.4	--	41	19	3.2	--	1.3	82	47	13
Aug. 27-31	2,392	40	7.2	64.2	--	--	6.8	1.7	3.1	--	16	14	1.5	--	1.0	52	24	11
Sept. 1-9	4,493	40	7.1	75.4	7.4	.01	7.4	1.5	3.7	1.3	18	14	2.5	.2	1.3	58	25	10
Sept. 10-15	1,545	35	6.6	107	--	--	11	2.4	4.2	--	30	17	3.5	--	3.1	78	37	13
Sept. 16-20	4,480	50	7.0	51.8	--	--	6.0	1.5	2.7	--	13	12	2.8	--	1.6	33	21	10
Sept. 21-30	6,323	45	6.8	57.1	7.9	.02	5.7	1.5	3.5	1.9	16	7.7	2.8	.1	3.2	43	20	7
Average	a 5,554	--	--	76.8	--	--	7.1	2.2	4.4	--	23	11	3.2	--	1.7	54	27	8

a Mean daily discharge, water year October 1949 to September 1950, 5,105 second-feet.

RED RIVER BASIN--Continued

SALINE RIVER NEAR RYE, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

HURRICANE CREEK NEAR SHERIDAN, ARK.

LOCATION.--At bridge on Highway 270, 5 miles east of Sheridan, Grant County.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 658 ppm July 25-28; minimum, 41 ppm May 3, 7-9.
Hardness: Maximum, 240 ppm July 25-28; minimum, 21 ppm May 3, 7-9.
Water temperatures: Maximum, 84°F June 27; minimum, 36°F Jan. 5.
REMARKS.--Records of specific conductance of daily samples available in district office at Fayetteville, Ark. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Non-carbonate
Oct. 1-20, 1949		5	7.9	347	9.4	0.02	21	3.8	33	3.0	31	98	7.0	0.5	1.4	199	68	43
Oct. 21, 30-31		9	7.4	235	--	--	21	3.1	21	--	28	51	25	--	1.4	158	65	42
Oct. 22-29		40	7.8	154	9.8	.03	12	2.9	14	2.2	27	38	3.8	.3	1.8	112	42	20
Nov. 1-4, 7		7	7.6	208	11	.06	17	3.3	19	2.0	42	49	7.0	.7	.9	131	56	22
Nov. 5-6, 8-10		40	7.2	299	15	.07	18	4.3	31	3.3	44	79	8.5	1.1	1.8	188	63	27
Nov. 11-20		35	7.6	258	12	.02	15	3.4	29	2.1	46	62	6.0	.7	1.4	161	51	14
Nov. 21-31		40	7.5	337	12	.06	17	3.9	38	2.2	50	83	11	.9	1.3	204	58	18
Dec. 1, 9-10		10	7.9	459	--	--	15	4.6	76	--	71	127	18	--	2.5	297	56	0
Dec. 2-8, 11		9	7.7	344	8.7	.08	16	3.6	49	2.7	58	88	14	1.1	1.0	214	55	7
Dec. 12-13, 18		65	7.2	82.0	--	--	6.2	2.5	7.1	--	15	14	6.2	--	2.2	46	26	13
Dec. 14-17, 19-20		38	7.3	108	--	--	9.6	2.5	7.7	--	23	24	5.8	--	1.4	88	34	15
Dec. 21-31		25	7.3	107	9.2	.24	7.3	2.1	9.7	2.2	20	22	4.0	.5	1.6	83	27	10
Jan. 1-10, 1950		17	6.8	94.2	8.7	.04	6.8	2.6	7.2	.6	19	21	3.0	.3	.7	71	28	12
Jan. 11-16		23	7.3	80.4	--	--	7.4	2.0	6.6	--	31	15	2.5	--	.9	55	27	1
Jan. 17-19		20	7.4	104	--	--	9.0	2.8	9.9	--	36	20	3.2	--	.7	72	34	4
Jan. 20-31		8	7.2	117	11	.12	7.4	2.4	11	.4	22	27	3.5	.3	.8	84	28	10
Feb. 1-3		35	7.2	64.3	--	--	6.6	2.3	5.2	--	24	15	2.8	--	.4	51	26	6
Feb. 4, 8-10		8	7.4	154	--	--	9.0	2.0	20	--	48	15	10	--	.9	94	31	0
Feb. 5-7		15	7.2	98.4	--	--	8.2	2.7	9.0	--	34	18	3.2	--	.2	61	32	4
Feb. 11-16		30	6.6	82.2	--	--	7.2	.9	5.8	--	13	21	2.2	--	.6	58	22	11
Feb. 17-22, 24-25		8	7.1	122	8.3	.04	8.4	2.4	11	1.4	20	33	4.0	.3	1.0	84	31	14
Feb. 23, 26-28		8	7.1	164	--	--	12	2.4	15	--	17	53	4.0	--	.2	114	40	26
Mar. 1-5		4	6.4	175	--	--	14	2.9	17	--	12	66	4.0	--	1.6	116	47	37
Mar. 6-11		1	6.7	213	10	.00	16	3.0	17	4.2	8	72	6.5	.5	.7	143	52	46
Mar. 12-19		6	7.4	109	8.3	.04	8.7	1.9	8.1	3.0	16	27	2.8	.5	.5	79	30	16
Mar. 20-21, 23-26		4	6.9	153	8.3	.02	11	2.1	14	2.4	16	44	4.8	.3	1.3	103	36	23
Mar. 22, 27-31		8	6.8	115	7.5	.02	8.6	1.6	8.6	3.4	20	24	4.0	.3	1.2	77	28	12

RED RIVER BASIN--Continued

HURRICANE CREEK NEAR SHERIDAN, ARK.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	Color	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$	
																	Total	Noncarbonate
Apr. 1-2, 8-10, 1950		7	6.9	127	8.8	0.12	8.6	2.6	11	1.8	19	31	4.2	0.3	0.4	88	32	17
Apr. 3-7		18	7.0	107	7.7	.14	8.1	1.6	8.5	2.1	20	24	4.2	.3	.4	75	27	10
Apr. 11-12		15	7.0	117	--	--	8.4	1.7	8.9		18	26	3.8	--	.2	65	28	13
Apr. 13, 20		8	7.0	211	--	--	14	2.0	30		44	59	7.0	--	.2	136	43	7
Apr. 14-19		8	7.3	162	8.3	.14	9.1	2.3	19	2.4	32	37	4.5	.8	.1	107	32	6
Apr. 21-30		4	7.1	221	9.6	.06	13	3.0	23	1.0	27	65	6.0	.7	.6	146	45	23
May 1-2, 4-6, 10		21	6.8	103	8.4	.11	12	1.1	8.3	--	22	27	2.8	.5	.6	75	34	16
May 3, 7-9		35	7.3	79.5	--	--	7.1	.8	5.1	--	18	16	1.8	--	.9	41	21	6
May 11, 18-20		16	6.9	143	--	--	11	4.5	13	--	24	49	4.2	--	.9	111	46	26
May 12-17		30	6.8	99.2	--	--	8.0	2.8	9.0	--	21	29	3.0	--	.9	63	31	14
May 21-28, 31		20	7.3	212	11	.05	15	3.1	21	2.5	26	63	5.8	.3	1.1	146	50	29
May 29-30		7	7.0	504	--	--	44	4.9	57	--	42	200	8.0	--	1.4	336	130	96
June 1-10		5	5.6	179	--	--	13	3.3	15	--	6	62	4.2	--	1.5	122	46	41
June 11-19		4	6.5	262	9.9	.05	19	4.0	24	1.8	11	98	7.0	.4	1.0	183	64	55
June 20-27		4	7.4	368	8.9	.01	25	5.2	38	2.8	29	121	10	.8	1.1	239	84	60
June 28-30		5	7.7	481	--	---	35	5.0	55	--	35	174	14	--	1.3	324	108	79
July 1-10		4	6.6	541	8.0	.03	45	4.3	57	--	15	208	14	.8	.6	366	130	118
July 11-20		--	7.8	566	8.5	.03	38	6.1	73	3.0	60	178	19	1.4	.5	368	120	71
July 21-24, 29-31		5	7.9	666	8.4	.02	42	6.7	91	11	76	218	22	1.6	.4	437	132	70
July 25-28		--	7.8	917	8.9	.04	81	9.1	105	6.7	60	366	19	1.8	.5	658	240	190
Aug. 1-3, 8		8	7.8	855	9.2	.06	82	5.7	94	13	73	342	11	1.4	1.5	604	228	168
Aug. 4-7, 9-10		8	6.7	608	7.1	.08	53	5.2	61	8.0	26	233	13	1.0	4.2	415	154	132
Aug. 11, 17-20		5	6.4	522	11	.06	50	4.7	47	7.0	22	204	9.5	.6	.3	356	144	126
Aug. 12-16		8	7.9	709	5.9	.06	84	5.0	61	5.5	72	276	7.5	1.0	1.5	507	230	171
Aug. 21-23		10	7.0	610	--	--	52	6.3	59	--	36	195	30	--	1.0	384	156	126
Aug. 24-31		17	7.0	190	--	--	17	5.7	11	--	21	62	3.2	--	1.6	124	66	49
Sept. 1-4		35	6.6	100	--	--	8.4	1.9	4.8		15	22	2.5	--	.6	47	29	16
Sept. 5-10		15	6.2	219	--	--	17	3.8	17	--	12	72	5.8	--	2.0	150	58	48
Sept. 11-15		12	7.0	232	--	--	24	3.4	17	--	20	81	6.2	--	1.1	159	74	58
Sept. 16-18		45	6.7	88.0	--	--	9.3	1.6	5.4	--	14	24	2.0	--	1.1	50	30	18
Sept. 19-22		20	6.9	139	--	--	15	2.6	10	--	26	39	5.2	--	1.0	114	48	27
Sept. 23-27		12	6.8	179	--	--	17	3.3	13	--	26	58	4.2	--	1.0	129	56	35
Sept. 28-30		35	6.6	105	--	--	12	2.7	5.9		16	34	3.5	--	.6	87	41	28
Average		--	--	257	--	--	20	3.3	26	--	30	82	7.4	--	1.0	173	64	40

RED RIVER BASIN--Continued

HURRICANE CREEK NEAR SHERIDAN, ARK.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

RED RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
SALT FORK RED RIVER NORTH OF CLARENDON																					
June 15, 1950a....			1,070			72	25	113		221	86	182		0.9		690	0.94		282	102	46
Sept. 12.....		8.3	600	23		55	18	42		196	75	44		1.0		415	.56		211	50	30
ELM CREEK NEAR SHAMROCK																					
June 10, 1950a ...	--	--	1,230	--		152	29	89		269	328	89		6.5		948	1.29		498	278	28
Sept. 1.....	1.97	7.7	1,230	31		142	28	86		166	365	98		3.5		886	1.20		470	334	29
Sept. 28.....	2.67	7.4	1,120	40		121	29	78		106	355	93		4.5		815	1.11		421	334	29
QUITAQUE CREEK NEAR QUITAQUE																					
June 29, 1950.....	--	7.7	245	21		--	--	15		134	9.0	10		0.0		207	0.28		100	0	25
July 5, 2:45 p.m. .	--	7.9	389	22		31	14	29		177	18	23		2.0		238	.32		135	0	32
July 5, 4:30 p.m. .	--	7.8	267	17		37	7.3	9.5		152	8.2	6.0		1.8		171	.23		122	0	14
July 23.....	--	7.8	199	14		27	4.9	7.5		107	7.7	4.0		3.0		129	.18		88	0	16
July 28.....	18.1	8.5	398	32		--	--	35		b185	18	24		.0		264	.36		128	0	37
SOUTH SULPHUR RIVER NEAR COOPER																					
July 20, 1950	13.0	7.6	424	9.5		52	4.6	28		143	63	17		4.0		278	0.38		149	31	29
Aug. 7.....	4.49	8.0	337	11		43	4.9	20		157	29	8.0		1.0		208	.28		127	0	25
NORTH SULPHUR RIVER NEAR COOPER																					
July 20, 1950	2.6	7.8	390	6.4		41	3.8	32		94	77	21		0.0		244	0.33		118	41	37
July 22.....	1,820	7.7	322	9.8		41	2.0	23		120	41	13		1.5		209	.28		110	12	31
July 27.....	3,770	7.8	391	11		53	4.2	26		158	61	8.0		3.0		252	.34		150	20	28
Aug. 7.....	5.56	7.9	485	11		53	5.2	42		146	79	30		.0		296	.40		154	34	37
WHITEOAK CREEK NEAR TALCO																					
July 20, 1950	23.9	7.1	1,010	6.8		17	6.2	171		37	81	230		0.5		558	0.76		68	38	85
Aug. 7.....	20.2	7.3	616	11		14	6.5	97		45	48	132		.0		360	.49		62	25	77

a Chemical analyses made by Stillwater, Oklahoma, Quality of Water Laboratory.
b Includes equivalent of 7 parts per million of carbonate (CO_3).

RED RIVER AT GARLAND

Feb. 8, 1950.....			7.8	149			68	17	82		51	16	12		1.2		53	11
Apr. 27.....	7,380		7.5	885							177	88	127		.6	518	240	94

LITTLE RIVER NEAR HORATIO

Feb. 6, 1950.....	19,600		7.0	36.5			7.9	2.3	8.1		12	3.0	2.0		1.1		12	2
Apr. 27.....	1,730		7.0	114							30	5.9	13		.4	87	29	5

LITTLE MISSOURI RIVER AT NARROWS DAM SITE NEAR MURFREESBORO

Nov. 4, 1949.....	143			37.7							15	3.0	3.5		1.3		10	0
Feb. 23, 1950.....			7.0	50.1							22	4.0	2.2		.9		16	0

LITTLE MISSOURI RIVER NEAR MURFREESBORO

Feb. 7, 1950.....	317		7.5	47.3							15	5.0	2.0		0.9		17	5
Aug. 18.....	324		6.8	37.4	4.0	0.12	3.4	0.9	2.8	0.7	16	2.6	3.0	0.2	.6	32	12	0

MUDDY FORK CREEK AT MURFREESBORO DAM SITE NEAR MURFREESBORO

Nov. 4, 1949.....	37			81.2							2	4.0	16		1.5		15	13
Feb. 2, 1950.....	3,240		7.7	53.7							18	8.0	5.5		.6		17	2

MISSISSIPPI RIVER DELTA

VERMILION RIVER AT BANCKER'S FERRY NEAR ABBEVILLE, LA.

LOCATION.--At Bancker's Ferry about 6 miles south of Abbeville, Vermilion Parish.
RECORDS AVAILABLE.--Chemical analyses: January 1949 to January 1950.
Water temperatures: January 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Minimum, 50°F Dec. 23, 31, Jan. 1-2.
EXTREMES, January 1949 to September 1950.--Water temperatures: Minimum, 40°F Dec. 16, 1949.
REMARKS.--Top and bottom samples composited together. Records of specific conductance of daily samples and numerous spot chloride determinations for period February 1950 to September 1950 available in district office at Austin, Tex.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C)	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 [a]			Hardness as $CaCO_3$		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1, 4-6, 1949 ..			7.4	260	9.2		8.9	5.9	31		39	7.2	52		2.0		135	0.18		46	14	59
Oct. 2-3			6.9	2,210	10		28	45	345		53	82	620		1.0		1,160	1.58		255	212	75
Oct. 7-10.....			7.2	120	5.5		4.4	3.0	15		22	5	22		1.5		67	.09		23	5	58
Oct. 11, 14-15, 20..			7.0	166	8.1		6.6	2.9	21		32	3.0	30		1.8		89	.12		28	2	61
Oct. 12-13, 16-19 ..			7.0	255	9.8		8.4	2.8	37		38	3.4	54		1.2		135	.18		32	1	71
Oct. 21-31.....			7.4	160	12		7.6	3.8	19		42	3.9	25		1.5		94	.13		35	0	54
Nov. 1-2			7.2	119	9.4		6.2	3.9	12		34	5.8	16		1.2		71	.10		32	4	45
Nov. 3-5			7.2	342	11		8.8	5.8	50		39	5.9	82		1.2		184	.25		46	14	70
Nov. 6-11			7.1	689	12		14	7.8	107		36	5.8	186		1.5		352	.48		67	38	78
Nov. 12-20			7.6	288	16		13	5.7	37		64	6.8	54		1.2		165	.22		56	3	59
Nov. 21-25, 28-30..			7.7	282	20		12	5.9	37		66	5.6	52		1.0		166	.23		54	0	60
Dec. 1-9			7.7	283	20		12	6.1	38		67	5.1	54		1.2		169	.23		55	0	60
Dec. 11-20.....			7.4	313	14		7.8	7.8	44		66	7.8	59		1.8		175	.24		52	0	65
Dec. 21-22, 30-31..			--	234	16		9.3	4.5	28		44	8.9	40		1.5		130	.18		42	6	59
Dec. 23-25, 27-29..			--	535	15		14	5.6	80		46	9.4	129		1.8		277	.38		58	20	75
Jan. 1-5, 7-8, 1950.			--	262	15		7.9	4.2	34		30	7.0	56		1.2		140	.19		37	12	67
Jan. 6, 9-10			--	143	15		5.5	3.5	16		18	5.0	29		1.5		84	.11		28	13	55
Jan. 11-20.....			--	204	14		4.2	3.3	31		26	5.6	45		1.5		117	.16		24	3	74
Jan. 21-27, 29-31 ..			--	206	15		6.2	3.7	29		34	4.7	42		1.8		119	.16		31	3	67
July 1-8, 10			7.0	158	13		8.1	5.9	14		43	3.1	24		2.5		92	.13		44	9	40
Sept. 21-30.....			7.5	428	21		21	9.3	50		95	7.5	78		4.0		238	.32		91	13	54

a The sum of the determined mineral constituents, rather than residue on evaporation is reported due to the large amount of organic matter present.

MISSISSIPPI RIVER DELTA

VERMILION RIVER AT BANCKER'S FERRY NEAR ABBEVILLE, LA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	65	60	50	70	60	60	75	82	95	--	85
2	87	68	65	50	60	62	70	65	78	90	--	88
3	87	64	60	65	65	65	70	70	78	90	--	86
4	84	62	60	65	70	65	65	--	78	90	--	90
5	78	58	60	60	60	68	68	70	80	--	--	85
6	78	60	60	--	60	65	60	78	78	85	--	88
7	82	65	60	58	60	68	60	68	80	85	--	85
8	79	60	60	60	60	60	62	85	80	83	--	80
9	77	65	65	65	60	69	60	80	80	--	--	82
10	79	68	--	60	60	60	60	82	--	80	--	85
11	81	65	58	60	65	60	60	80	85	85	--	85
12	80	60	58	60	65	62	--	--	88	84	--	84
13	78	62	60	68	65	62	65	--	78	85	--	85
14	78	60	60	60	65	50	60	78	82	80	--	88
15	78	60	58	60	60	60	60	80	90	--	--	84
16	76	60	--	60	65	65	60	80	90	88	--	88
17	78	60	70	60	65	--	65	80	92	80	88	85
18	78	58	60	60	60	62	65	80	92	88	81	85
19	78	62	60	60	60	60	65	80	90	88	88	84
20	78	--	60	60	60	60	70	--	90	88	80	85
21	78	60	65	60	65	60	70	--	90	90	84	84
22	78	60	55	65	65	60	70	80	85	85	85	80
23	77	60	50	60	65	69	60	80	94	--	85	88
24	77	60	60	60	65	--	60	80	88	--	--	88
25	72	60	60	60	60	66	65	80	96	--	88	84
26	70	--	--	60	65	65	60	82	95	--	85	80
27	70	--	55	65	65	60	75	82	95	--	88	82
28	70	60	60	--	60	75	70	80	95	--	85	80
29	70	70	60	60	--	68	68	82	88	--	82	80
30	76	68	60	65	--	60	70	80	95	--	85	75
31	64	--	50	60	--	60	--	80	--	--	85	--
Average	77	62	60	60	63	63	65	78	87	--	--	84

PART 8. WESTERN GULF OF MEXICO BASINS

MERMENTAU RIVER BASIN

MERMENTAU RIVER AT LAKE ARTHUR, LA.

LOCATION.--At bridge on State Highway 25, about half of a mile east of Lake Arthur, Jefferson Davis Parish.
RECORDS AVAILABLE.--Chemical analyses: January 1949 to January 1950.
Water temperatures: January 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Minimum, 31°F Dec. 15, 18, 25.
REMARKS.--Top and bottom samples collected at this station and composited together. Records of specific conductance of daily samples and numerous spot chlorides for period February 1950 to September 1950 available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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 [a]			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1-10, 1949 ...		7.5	218	9.2		7.8	4.9	28		52	2.6	38		1.0		117	0.16		40	0	60
Oct. 11-20.....		7.2	139	9.5		5.0	2.7	18		32	2.6	24		1.0		78	.11		24	0	63
Oct. 21-31.....		7.6	128	8.2		5.0	2.9	17		34	2.8	21		.5		74	.10		24	0	60
Nov. 1-10		7.4	164	9.2		6.0	3.5	22		40	2.4	29		.5		92	.13		29	0	62
Nov. 11-20		7.3	165	9.0		5.9	3.4	23		40	2.4	30		.2		94	.13		29	0	63
Nov. 21-25, 28-30 .		7.7	195	10		6.6	4.0	31		50	3.2	38		2.2		120	.16		33	0	67
Dec. 1-10		7.7	194	10		6.3	3.9	31		50	3.4	38		1.0		118	.16		32	0	68
Dec. 11-13, 16-19		7.0	247	6.5		7.8	5.4	31		36	4.4	50		4.2		127	.17		42	12	61
Dec. 14-15		6.5	60.3	--		6.2	1.5	2.1		12	4	7.0		2.8		30	.04		22	12	17
Dec. 20-23		6.9	544	7.2		13	8.3	78		40	6.1	139		1.8		273	.37		67	34	72
Dec. 24-31		6.8	266	5.1		4.8	6.7	36		26	6.2	63		1.5		136	.18		40	18	66
Jan. 1-10, 1950...		6.7	175	3.7		4.1	5.7	21		18	6.0	40		1.2		91	.12		34	19	57
Jan. 11-20		6.8	110	3.4		5.6	6.3	6.3		19	4.4	23		1.2		60	.08		40	24	26
Jan. 21-30.....		7.2	130	5.1		3.4	7.1	10		26	4.2	24		1.2		68	.09		38	16	38
June 21-30		6.8	110	6.4		4.4	4.4	11		32	1.9	16		2.2		62	.08		27	3	45
Sept. 11-13, 15-20		7.4	458	14		12	8.8	62		74	7.2	93		2.5		236	.32		66	6	67

a The sum of the mineral constituents, rather than residue on evaporation, is reported due to the large amount of organic matter present.

MERMENTAU RIVER BASIN--Continued

MERMENTAU RIVER AT LAKE ARTHUR, LA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	43	48	47	35	32	42	57	--	84	--	--
2	87	46	43	44	32	34	42	53	--	85	--	--
3	80	48	45	43	33	43	45	57	--	87	--	--
4	60	47	44	39	32	44	43	60	--	--	--	--
5	65	46	43	42	34	44	--	61	--	--	--	--
6	60	42	46	45	32	45	47	56	73	--	--	83
7	63	43	42	40	35	42	46	58	75	--	--	79
8	70	45	41	39	36	37	41	61	77	--	--	81
9	70	43	43	39	37	43	--	61	77	--	--	84
10	73	43	42	37	38	45	46	57	78	--	--	92
11	70	45	43	34	39	47	44	59	82	--	--	95
12	73	45	45	32	40	42	48	61	84	90	--	92
13	78	47	46	34	--	38	44	63	71	91	--	92
14	77	43	40	36	--	32	36	62	90	93	--	--
15	75	42	31	34	45	--	42	60	93	89	--	84
16	78	40	38	33	43	34	42	65	89	92	82	85
17	76	42	37	35	42	36	45	67	91	95	87	85
18	78	43	31	33	46	37	47	67	93	97	84	87
19	79	42	33	37	34	34	46	68	94	97	86	87
20	76	44	38	38	35	38	57	70	95	--	85	89
21	77	45	37	33	36	33	53	72	96	--	87	86
22	78	45	39	34	38	32	48	71	97	--	73	88
23	78	43	40	33	45	32	52	73	93	--	78	88
24	77	47	43	37	36	33	56	76	94	--	80	89
25	71	46	31	38	37	34	44	77	97	--	83	87
26	71	--	47	37	38	37	57	76	95	--	86	85
27	70	--	46	38	--	38	58	78	99	--	83	87
28	70	48	48	33	--	41	48	75	98	--	85	88
29	73	48	48	32	--	40	50	66	97	--	85	94
30	71	46	43	34	--	45	53	68	83	--	85	94
31	65	--	42	--	--	49	--	67	--	--	--	--
Average	73	45	41	37	37	39	47	65	89	--	--	--

CALCASIEU RIVER BASIN

CALCASIEU RIVER AT LAKE CHARLES, LA.

LOCATION.--At U. S. Naval Reserve Training Station at foot of Nichols St., Lake Charles, Calcasieu Parish.
RECORDS AVAILABLE.--Chemical analyses: January to June, September 1949 to January 1950.
Water temperatures: January to June, September 1949 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum, 97°F Aug. 1.
EXTREMES, October 1949 to September 1950.--Water temperatures: Maximum, 97°F Aug. 1, 1950.
REMARKS.--Unless noted as Top (T) and Bottom (B), samples are a composite of top and bottom. Records of specific conductance of daily samples and numerous spot chlorides for period February to September 1950 available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conduct-ance (micro-mhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Cal-cium (Ca)	Mag-ne-sium (Mg)	So-dium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO_3)	Sul-fate (SO_4)	Chloride (Cl)	Fluo-ride (F)	Ni-trate (NO_3)	Bo-ron (B)	Dissolved solids			Hardness as $CaCO_3$		Per-cent so-dium
																Parts per mil-lion	Tons per acre-foot	Tons per day	Total	Non-carbon-ate	
Oct. 1, 1949		7.8	27,900	15		232	699	5,410		103	1,400	9,700		--		17,500	23.80		3,450	3,370	77
Oct. 2		7.6	6,500	15		50	135	1,080		42	270	1,920		1.0		3,490	4.75		680	646	78
Oct. 3-5		7.6	12,900	16		106	301	2,260		62	580	4,090		--		7,380	10.04		1,500	1,450	77
Oct. 7		--	942	15		7.5	18	141		20	42	240		1.5		475	.65		92	76	77
Oct. 10-11, 14-18, 20		6.9	184	15		7.2	2.5	22		14	6.7	40		1.2		102	.14		28	17	63
Oct. 23, 25, 27, 29		--	177	14		7.0	3.2	21		18	6.8	38		1.2		100	.14		31	16	60
Nov. 1-2		--	138	13		3.8	2.4	20		16	6	30		1.8		85	.12		19	6	69
Nov. 6		--	297	14		--	--	44		16	12	72		1.5		--	--		32	19	75
Nov. 8		--	660	15		7.2	12	100		18	28	170		1.0		342	.47		68	53	76
Nov. 10 (T), 15 (T), 18 (T)		--	1,470	13		13	27	216		18	53	385		1.8		718	.98		144	129	77
Nov. 10 (B)		--	18,800	14		171	422	3,540		74	883	6,290		--		11,400	15.50		2,160	2,100	78
Nov. 15 (B), 18 (B)		--	8,310	13		68	173	1,430		38	346	2,550		--		4,600	6.26		881	850	78
Nov. 21-22, 23 (T), 30 (T)		--	2,430	13		20	46	384		26	96	675		1.2		1,250	1.70		239	218	78
Nov. 23 (B), 30 (B).		--	9,820	15		82	207	1,720		52	431	3,050		--		5,530	7.52		1,060	1,010	78
Dec. 2-3 (T), 11-12 (T)		--	1,910	15		16	35	300		20	75	525		1.0		977	1.33		184	168	78
Dec. 2-3 (B)		--	11,800	14		110	250	2,120		52	524	3,770		--		6,810	9.26		1,300	1,260	78
Dec. 4		--	5,780	13		46	116	991		34	240	1,750		1.0		3,170	4.31		592	564	78
Dec. 11 (B)		--	17,700	16		181	409	3,420		68	884	6,090		--		11,000	14.96		2,130	2,080	78
Dec. 12 (B)		--	2,930	14		--	--	473		24	120	832		1.0		--	--		290	270	78
Dec. 17, 19		--	1,300	13		9.2	23	188		14	50	328		.8		619	.84		118	106	78
Dec. 31		--	58.2	13		--	--	7.8		8	4	11		.8		--	--		10	[a] 3	63
Jan. 10-11, 13, 22, 24, 26, 1950		--	67.7	13		2.8	1.6	9.6		12	3.9	14		1.0		52	.07		14	4	61
July 27-31		6.6	1,180	11		9.4	23	185		17	45	325		.8		608	.83		118	104	77
Sept. 11-14 (B)		7.3	6,520	17		51	143	1,120		41	293	1,990		1.5		3,640	4.95		715	682	77
Sept. 20		7.4	3,990	19		28	81	687		33	170	1,200		1.0		2,200	2.99		403	376	79

a The sum of the mineral constituents, rather than residue on evaporation, is reported due to the large amount of organic matter present.

CALCASIEU RIVER BASIN--Continued

CALCASIEU RIVER AT LAKE CHARLES, LA.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	68	--	--	--	64	--	72	78	86	97	87
2	76	70	65	--	--	64	--	75	78	87	90	84
3	77	--	64	--	--	68	--	75	78	84	87	83
4	74	--	65	--	65	70	--	75	78	90	87	86
5	76	--	--	--	--	--	--	74	78	80	89	86
6	--	63	--	--	--	73	--	76	78	84	86	85
7	75	--	--	--	--	--	--	74	78	87	92	83
8	--	68	--	--	68	64	--	76	77	83	94	85
9	--	--	--	--	--	63	--	76	79	91	89	87
10	77	68	--	57	--	--	--	75	79	85	92	87
11	76	--	63	59	--	64	70	77	79	82	80	86
12	--	--	64	--	--	71	75	76	80	88	89	86
13	--	--	--	62	65	62	69	76	80	87	87	86
14	80	--	--	--	--	65	77	76	88	84	88	88
15	76	65	--	--	57	62	77	76	81	84	88	85
16	--	--	--	--	--	--	63	77	85	87	88	86
17	78	--	60	--	--	62	68	77	85	86	92	87
18	78	64	--	--	59	62	68	77	85	82	--	81
19	--	--	59	--	--	64	70	77	85	88	88	83
20	79	--	--	--	--	67	77	77	83	84	85	--
21	--	64	--	--	66	74	72	78	81	84	87	83
22	--	63	--	64	60	68	77	79	81	94	--	--
23	72	62	--	--	61	70	77	79	79	91	91	--
24	--	--	--	68	62	68	77	78	84	89	88	82
25	71	--	--	--	54	--	77	78	84	84	96	82
26	--	--	--	69	57	66	80	79	86	84	92	80
27	75	--	--	--	60	--	81	79	90	81	89	87
28	--	--	--	--	63	--	82	78	90	87	86	83
29	68	--	--	--	--	72	80	78	92	86	87	--
30	--	67	--	--	--	--	75	78	87	90	86	--
31	--	--	57	--	--	--	--	78	--	89	--	--
Average	--	--	--	--	--	--	--	77	82	86	89	85

SABINE RIVER BASIN

SABINE RIVER NEAR RULIFF, TEX.

LOCATION.--At gaging station at bridge on State Highway 235, 2.4 miles north of Ruliff, Newton County, 4.2 miles upstream from Kansas City-Southern Railway bridge, and 4.5 miles downstream from Cypress Creek.
DRAINAGE AREA.--9,440 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 184 ppm Oct. 2, 12, 21, 24; minimum, 35 ppm June 5-11.
Hardness: Maximum, 47 ppm Aug. 1-11; minimum, 13 ppm June 5-11.
Water temperatures: Maximum, 87° F Aug. 5, 9-11, 13, 17-18; minimum, 53° F Dec. 16.
EXTREMES, 1945-46, 1947-50.--Dissolved solids: Maximum, 411 ppm Dec. 26-27, 1948; minimum, 35 ppm June 5-11, 1950.
Hardness: Maximum, 64 ppm Aug. 1, 11, 16-19, 21-23, 1948; minimum, 13 ppm June 5-11, 1950.
Water temperatures (1947-50): Maximum, 89°F July 25-27, 1948; minimum, 34°F Jan. 24, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1, 6-11, 13-20, 1949	9,899	7.2	113	6.5		3.8	2.1	21		26	6.6	24		1.8		93	0.13	2,490	18	0	71
Oct. 2, 12, 21-24	7,687	7.6	311	13		8.8	3.2	52		36	16	72		1.2		184	.25	3,820	35	6	76
Oct. 3-5, 25-31	5,759	7.6	161	14		6.2	3.9	25		34	11	32		1.2		110	.15	1,710	32	4	63
Nov. 1-10	9,216	7.3	160	14		6.2	4.2	22		28	13	30		.8		122	.17	3,040	33	10	59
Nov. 11-20	7,750	7.3	148	13		7.3	3.6	21		40	11	24		.8		108	.15	2,260	33	0	58
Nov. 21-30	3,398	7.2	214	16		10	5.2	25		32	14	42		1.8		142	.19	1,300	46	20	54
Dec. 1-14	3,666	7.2	227	15		8.6	4.8	30		28	14	48		1.0		147	.20	1,460	41	18	61
Dec. 15-16, 24-31	15,270	7.2	129	14		5.6	4.6	14		16	14	25		.8		108	.15	4,450	33	20	48
Dec. 17-23	24,860	7.2	80.1	15		4.1	3.5	8.0		8	11	17		.2		63	.11	5,240	25	18	41
Jan. 1-8, 10, 1950	15,980	6.6	134	11		5.5	3.4	15		13	14	24		1.0		122	.17	5,260	28	17	54
Jan. 9, 11-20	31,790	6.5	101	9.2		4.7	2.6	13		13	13	18		1.0		68	.14	8,750	22	12	55
Jan. 21-31	26,830	6.7	115	8.8		5.9	3.1	14		17	14	20		.5		111	.15	8,040	27	14	52
Feb. 1-12	18,500	7.3	166	8.4		9.0	4.2	17		28	17	25		.8		116	.16	5,790	40	17	48
Feb. 13-19	53,600	7.1	55.2	11		3.2	2.4	6.8		10	8.0	11		.8		48	.07	6,950	18	10	45
Feb. 20-28	36,800	7.2	78.9	13		4.4	2.6	9.5		14	10	14		1.0		72	.10	7,150	22	10	49
Mar. 1-10	40,300	7.0	92.8	14		5.8	2.6	12		14	9.9	20		.8		85	.12	9,250	25	14	50
Mar. 11-20	34,820	7.1	118	13		7.4	3.1	18		14	12	32		1.0		99	.13	9,310	31	20	55
Mar. 21-31	12,020	7.1	178	15		8.8	3.5	23		24	18	34		1.0		120	.16	3,890	36	17	58

Apr. 1-10.....	6,966	7.0	192	14		10	2.5	24	31	16	31		1.5		150	.20	2,820	35	10	59
Apr. 11-20	3,926	7.3	227	18		9.2	3.8	29	33	15	42		.8		142	.19	1,510	39	12	62
Apr. 21-30	8,594	6.6	202	13		8.0	3.4	26	22	16	39		1.2		137	.19	3,180	34	16	63
May 1-10	25,900	6.7	87.1	18		5.4	2.5	10	16	10	15		1.5		72	.10	5,030	24	11	48
May 11-20	21,970	6.7	124	17		8.2	2.8	15	24	13	21		1.0		96	.13	5,690	32	12	60
May 21-31	16,950	6.9	139	17		9.4	3.1	17	32	13	22		2.0		118	.16	5,400	36	10	50
June 1-2, 16-17, 20-23	28,660	7.3	132	10		6.6	2.5	15	26	8.6	19		2.2		77	.10	596	27	5	55
June 3-4, 12-15...	51,550	7.6	84.1	6.5		4.1	1.7	10	17	7.0	11		1.8		50	.07	6,960	17	3	55
June 5-11	74,760	6.5	47.6	4.7		2.6	1.5	5.8	10	7.0	5.2		3.0		35	.05	7,060	13	4	50
June 18-19, 24-30..	15,910	7.1	179	17		8.6	3.4	22	32	14	26		6.6		130	.18	5,580	35	9	57
July 1-6, 10-11, 15, 17-22	5,802	7.3	164	15		7.0	3.5	18	30	10	25		1.8		108	.15	1,690	32	7	56
July 7-9, 12-14, 16, 23-31	4,192	7.2	226	17		8.9	3.8	28	34	12	41		1.5		142	.19	1,610	38	10	62
Aug. 1-11	2,764	7.4	290	16		11	4.8	37	44	13	54		1.5		167	.23	1,250	47	11	63
Aug. 12-20	4,853	7.3	167	13		8.4	3.3	19	33	13	24		1.0		112	.15	1,470	34	7	54
Aug. 21-31.....	2,307	7.4	178	15		10	3.2	20	46	9.7	24		.5		111	.15	691	38	0	54
Sept. 1-10	2,209	7.6	192	16		--	--	22	38	8.4	31		2.8		127	.17	757	38	7	56
Sept. 11-15, 29-30	2,111	7.6	208	16		8.5	2.7	27	37	8.0	36		1.5		138	.19	787	32	2	64
Sept. 16-28.....	2,272	7.7	300	16		11	3.5	41	41	11	60		2.0		181	.25	1,110	42	8	68
Weighted average	15,940	--	117	12		6.0	2.9	15	19	11	21		1.4		89	0.12	3,830	27	11	55

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SABINE RIVER BASIN--Continued

SABINE RIVER NEAR RULIFF, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

NECHES RIVER AT EVADALE, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 96, 200 feet upstream from Gulf, Colorado & Santa Fe Railway bridge at Evadale, Jasper County, 600 feet downstream from Mill Creek, and 15 miles upstream from Village Creek.
DRAINAGE AREA.--7,908 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 173 ppm Oct. 23-29; minimum, 46 ppm June 4-18.
Hardness: Maximum, 55 ppm July 1-10; minimum, 22 ppm Feb. 14-28.
Water temperatures: Maximum, 87°F Aug. 5, Sept. 30; minimum, 50°F on several days in December and January.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 218 ppm Dec. 11-20, 1948; minimum, 46 ppm June 4-28, 1950.
Hardness: Maximum, 70 ppm Nov. 1-10, 1947; minimum, 17 ppm Mar. 21-31, 1949.
Water temperatures: Maximum, 88°F June 17, July 14, 1949; minimum, 37°F Jan. 30-31, 1948, Jan. 31, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-5, 1949....	1,232	6.7	207	13		6.9	4.8	23		26	8	41	0.0	0.5		152	0.21	506	37	16	58
Oct. 6-10	9,676	6.7	53	7.4		5.9	2.8	6.9		21	5	12	.0	2.5		53	.13	2,480	26	9	37
Oct. 11-19	9,062	6.9	102	11		5.1	3.1	9.6		17	9.5	12	.0	1.5		60	.14	2,540	25	12	45
Oct. 20-22, 30-31.	6,310	6.8	135	14		6.6	3.8	14		20	14	22	--	1.0		85	.19	2,370	32	16	49
Oct. 23-29	4,874	6.8	226	16		8.5	4.0	33		21	15	53	.0	1.0		173	.24	2,280	38	20	65
Nov. 1-10	7,368	6.8	132	14		5.8	3.2	14		16	14	13	.0	1.0		73	.19	2,730	28	14	52
Nov. 11-20.....	3,525	7.0	212	16		8.8	4.4	28		22	21	42	.0	1.5		150	.20	1,430	40	22	60
Nov. 21-30.....	2,036	7.0	205	16		9.6	5.9	22		28	21	36	.0	1.2		146	.20	803	48	25	50
Dec. 1-13	2,586	7.0	195	16		9.4	5.4	21		30	17	34	.0	.8		140	.19	978	26	21	50
Dec. 14-20.....	14,450	7.0	96.5	15		6.2	3.2	9.8		14	12	18	.0	.8		72	.15	4,250	29	17	43
Dec. 21-31.....	16,840	7.0	101	14		6.2	5.6	4.9		14	14	16	.0	.8		68	.17	5,590	38	27	22
Jan. 1-10, 1950 ..	18,120	7.0	96.9	15		6.1	4.4	7.3		14	14	16	.0	.8		70	.17	5,970	33	22	32
Jan. 11-20.....	27,760	6.9	83.7	14		5.9	4.9	3.3		14	10	14	.0	.5		60	.15	8,470	35	23	17
Jan. 21-31	28,220	7.2	95	12		6.1	3.8	8.0		16	14	14	.0	1.0		70	.10	5,330	31	18	36
Feb. 1-13	16,840	7.2	160	6.5		8.3	4.0	17		20	19	27	.0	1.0		112	.15	5,090	37	21	50
Feb. 14-28.....	29,100	7.5	83.5	31		5.2	2.1	11		22	8.8	12	--	.8		82	.12	7,150	22	4	52
Mar. 1-10.....	29,960	7.2	105	17		6.1	2.5	9.9		14	13	15	.1	.8		77	.10	6,230	26	14	46
Mar. 11-20.....	18,850	7.1	130	13		7.6	2.9	12		19	15	18	.1	.8		86	.12	4,380	31	15	46
Mar. 21-31.....	7,336	7.2	179	18		9.8	3.8	21		30	20	28	.0	1.0		122	.17	2,420	40	15	53
Apr. 1-10	4,224	7.2	220	16		11	4.1	28		34	23	38	.0	1.0		139	.19	1,590	44	16	58
Apr. 11-20.....	3,972	7.2	229	17		11	4.2	27		32	20	40	.0	.8		146	.20	1,570	45	18	57
Apr. 21-30.....	6,882	7.0	165	16		9.3	3.8	18		24	21	26	.0	.8		108	.15	2,010	39	19	51

NECHES RIVER BASIN--Continued

NECHES RIVER AT EVADALE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
May 1-10, 1950 ...	13,960	7.1	109	15		6.5	3.0	12		16	14	18	0.0	0.8		96	0.13	3,620	29	15	47
May 11-20.....	14,990	7.0	125	16		7.6	3.2	14		22	14	21	.0	1.0		101	.14	4,090	32	14	48
May 21-31.....	16,130	7.1	133	16		8.4	3.2	15		28	13	21	.0	.8		108	.15	4,700	34	11	49
June 1-3, 19-30 ...	12,850	7.3	150	18		6.0	3.6	17		32	10	21	.0	1.0		93	.13	3,230	30	4	56
June 4-18	36,160	7.3	64.5	12		4.9	3.8	2.1		18	5.4	8.0	.0	1.0		46	.06	4,490	28	13	14
July 1-10	3,185	7.4	196	19		12	6.1	18		39	19	28	.2	1.8		125	.17	1,070	55	23	41
July 11-20	2,936	7.4	195	19		10	5.5	17		34	16	28	.1	1.5		124	.17	983	48	20	44
July 21-31	2,541	7.4	186	16		11	5.6	16		27	22	28	.1	1.0		120	.16	823	50	28	41
Aug. 1-10	1,201	7.4	223	20		9.0	4.7	26		41	15	34	.1	.5		138	.19	447	42	8	57
Aug. 11-20	1,008	7.4	249	19		8.7	4.4	32		43	12	43	.1	.8		152	.21	414	40	5	64
Aug. 21-31	945	7.3	230	18		8.2	4.2	29		43	10	38	.1	.6		141	.19	360	38	2	62
Sept. 1-10	1,116	7.8	231	18		8.8	4.0	31		44	9.7	42	.1	1.2		145	.20	437	38	2	64
Sept. 11-20.....	900	7.8	221	18		7.7	4.5	30		43	10	40	.1	.8		142	.19	345	38	2	63
Sept. 21-30	1,138	7.7	229	16		6.9	4.0	33		39	12	42	.1	1.0		145	.20	446	34	2	68
Weighted average .	11,370	--	115	16		6.6	3.6	11		20	12	18	0.0	0.9		83	0.11	2,550	31	15	43

NECHES RIVER BASIN--Continued

NECHES RIVER AT EVADALE, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

TRINITY RIVER BASIN

TRINITY RIVER NEAR OAKWOOD, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 79 and 84, 1½ miles upstream from International-Great Northern Railroad bridge, and 6 miles northeast of Oakwood, Leon County.
DRAINAGE AREA.--12,912 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,290 ppm Oct. 2-3, 7-8; minimum, 165 ppm Feb. 11-19.
Hardness: Maximum, 244 ppm June 8; minimum, 105 ppm Oct. 27-31, Feb. 11-19.
Water temperatures: Maximum, 88°F Aug. 3; minimum, 41°F Feb. 2, 14.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 1,290 ppm Oct. 2-3, 7-8, 1949; minimum, 165 ppm Feb. 11-19, 1950.
Hardness: Maximum, 271 ppm Oct. 28, 30-31, 1947; minimum, 93 ppm May 13-20, 1948.
Water temperatures: Maximum, 89°F July 31, 1948, July 19, Sept. 9, 12, 1949; minimum, freezing point Feb. 5, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1, 4-6, 9-10, 1949	830	7.8	1,110	11		50	9.4	168		149	81	220		15		649	0.88	1,450	164	42	69
Oct. 2-3, 7-8	585	7.9	2,230	11		66	12	389		159	86	588		13		1,290	1.75	2,040	214	84	80
Oct. 11, 14	1,275	7.8	1,260	13		45	7.4	198		125	58	290		15		710	.97	2,440	143	40	75
Oct. 12-13, 15-20	895	7.9	702	14		41	7.2	92		127	54	113		14		423	.58	1,020	132	28	60
Oct. 21-26	3,881	7.7	641	9.8		36	4.7	88		112	35	118		6.6		380	.52	3,980	110	18	64
Oct. 27-31	8,210	7.9	355	8.2		36	3.6	33		109	37	30		6.5		224	.30	4,970	105	15	40
Nov. 1-5	7,872	7.8	343	7.7		43	3.7	23		137	31	19		2.8		212	.29	4,510	122	10	29
Nov. 6-10	2,568	7.7	484	8.6		47	5.5	45		146	39	51		7.3		294	.40	2,040	140	20	41
Nov. 11-18, 21-22	1,143	7.9	598	11		50	4.0	68		152	45	78		9.5		345	.47	1,060	142	17	51
Nov. 19-20, 23-30	708	8.0	835	13		55	4.4	108		158	54	140		7.8		475	.65	908	155	26	60
Dec. 1-10	519	8.0	1,050	12		62	5.9	144		152	99	176		20		620	.84	869	179	54	64
Dec. 11-20	581	8.0	1,050	14		58	5.5	149		150	93	180		20		600	.82	941	167	44	66
Dec. 21-31	595	7.7	1,160	12		60	11	165		158	96	216		25		692	.94	1,110	194	65	65
Jan. 1-12, 1950	1,194	7.4	1,090	13		52	9.0	157		137	72	218		16		628	.85	2,020	166	54	67
Jan. 13-14, 26-31	3,950	7.5	595	12		57	6.6	58		157	53	75		7.0		369	.50	3,940	169	40	43
Jan. 15-25	11,250	7.5	368	13		45	5.2	26		124	44	28		3.5		242	.33	7,350	134	32	30
Feb. 1-4	3,940	7.6	727	16		62	6.6	78		169	60	101		7.8		422	.57	4,490	182	43	48
Feb. 5-10	15,770	7.7	317	11		38	4.9	18		104	36	20		3.8		192	.26	8,180	115	30	25
Feb. 11-19	47,330	7.5	269	11		35	4.2	12		103	27	12		2.0		165	.22	21,100	105	20	20
Feb. 20-28	23,610	7.3	372	13		48	3.8	21		138	36	21		2.2		218	.30	13,900	135	22	26
Mar. 1-10	3,895	7.3	567	12		61	6.3	47		164	56	59		6.1		337	.46	3,540	178	44	37
Mar. 11-20	3,809	8.0	517	11		54	5.5	45		144	57	51		6.9		310	.42	3,190	157	39	38
Mar. 21-31	1,436	7.8	802	10		72	7.1	86		186	81	106		10		472	.64	1,830	208	56	47

Apr. 1-10	927	7.9	912	9.0	73	8.3	103	189	99	123	11	522	.71	1,310	216	61	51
Apr. 11-16	1,358	8.0	951	11	69	9.5	117	180	107	134	22	582	.79	2,130	211	64	55
Apr. 17-20	9,435	7.9	551	13	40	6.3	63	115	47	82	6.9	333	.45	8,480	126	32	52
Apr. 21-30	13,910	8.0	413	14	48	5.6	31	134	51	31	4.5	269	.37	10,100	143	33	32
May 1-4	7,850	8.0	519	13	52	5.7	49	153	50	55	5.2	326	.44	6,910	153	28	41
May 5-10	16,530	8.0	314	12	38	4.5	23	121	34	19	2.5	210	.29	9,370	113	14	31
May 11-20	24,320	7.9	351	13	47	5.2	18	142	33	18	3.2	204	.28	13,400	139	22	22
May 21-31	16,330	7.8	400	13	47	5.0	24	144	29	28	3.5	232	.32	10,200	138	20	28
June 1-7, 9-10	4,298	7.8	543	13	50	5.5	52	144	45	06	3.5	307	.42	3,560	148	30	43
June 8	3,850	7.9	1,150	14	68	18	132	167	51	240	4.0	628	.85	6,530	244	106	54
June 11-16	2,290	7.9	613	13	66	8.2	49	177	70	60	3.8	368	.50	2,280	198	53	35
June 17-20	6,182	7.8	378	13	44	3.4	32	136	34	30	4.0	227	.31	3,790	124	12	36
June 21-30	2,916	7.9	521	16	52	5.6	45	157	42	51	7.2	316	.43	2,490	152	24	39
July 1-10	1,390	7.9	602	16	54	6.7	58	158	47	71	11	366	.50	1,370	162	32	44
July 11-12, 17-18	4,462	8.1	722	14	52	6.7	82	151	50	109	8.3	419	.57	5,050	157	34	53
July 13-16, 19-20	4,053	7.8	436	14	42	6.6	36	130	38	41	7.0	266	.36	2,910	132	25	37
July 21-27, 30-31	2,203	8.1	497	16	49	6.0	43	150	45	45	8.0	306	.42	1,820	147	24	39
July 28-29	1,065	6.2	866	21	54	8.1	102 --	155	49	152	7.3	515	.70	1,480	168	41	57
Aug. 1, 7-10	4,334	8.0	473	17	49	5.5	41	153	41	44	5.6	292	.40	3,420	145	20	38
Aug. 2-6	8,286	7.9	356	22	42	4.3	25	133	30	23	4.5	233	.32	5,210	122	14	31
Aug. 11-20	2,047	7.9	560	15	48	7.3	52	154	37	66	7.5	337	.46	1,860	150	24	43
Aug. 21-31	2,325	7.9	526	12	49	6.4	46	151	39	55	8.3	310	.42	1,950	149	25	40
Sept. 1-10	6,049	7.9	443	13	44	5.1	38	138	31	46	4.2	266	.36	4,340	131	18	39
Sept. 11-20	5,720	7.8	433	11	47	5.6	32	144	30	40	4.2	262	.36	4,050	140	22	33
Sept. 21-30	9,976	8.2	382	13	46	3.7	27	148	24	30	1.0	232	.32	6,250	130	9	31
Weighted average	6,694	--	413	13	45	5.0	32	132	38	37	4.2	250	0.34	4,520	133	25	34

TRINITY RIVER BASIN--Continued

TRINITY RIVER NEAR OAKWOOD, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

TRINITY RIVER AT ROMAYOR, TEX.

LOCATION.--At bridge of Gulf, Colorado & Santa Fe Railway, one-quarter of a mile west of Romayor, Liberty County, 2 miles upstream from gaging station at Romayor, and 2½ miles downstream from Big Creek.
DRAINAGE AREA.--17,192 square miles (above gaging station).
RECORDS AVAILABLE.--Chemical analyses: October 1945 to November 1949, February to September 1950.
Water temperatures: February to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 484 ppm July 22-27; minimum, 98 ppm Oct. 21-26.
Hardness: Maximum, 187 ppm Apr. 11-21; minimum, 48 ppm Oct. 3-8.
Water temperatures: Maximum, 86°F July 24-25, 27.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 720 ppm Dec. 11-20, 1948; minimum, 98 ppm Oct. 21-26, 1949.
Hardness: Maximum, 202 ppm Sept. 21-26, 1949; minimum, 48 ppm Oct. 3-8, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-2, 1949	586	8.0	387	13		42	4.4	31		142	14	39		4.2		231	0.31	365	123	6	35
Oct. 3-8	15,840	7.0	171	8.4		15	2.7	15		49	9.1	20		3.5		107	.15	4,580	48	8	40
Oct. 9-20	8,060	7.1	632	13		30	5.9	85		100	41	111		5.0		372	.51	8,100	100	18	65
Oct. 21-26	10,940	7.0	161	9.2		19	4.5	4.1		51	10	15		1.8		98	.13	2,890	66	24	12
Oct. 27-31	21,380	7.4	327	11		28	4.7	29		90	28	32		6.6		223	.30	12,900	89	15	42
Nov. 1-10	8,432	7.4	405	12		43	5.5	32		140	34	33		2.2		240	.33	5,460	130	15	35
Nov. 11-20	2,460	7.4	515	13		50	6.1	46		157	33	59		3.2		309	.42	2,050	150	21	40
Nov. 21-30	1,263	7.4	603	14		48	7.1	66		162	46	76		5.8		362	.49	1,230	149	16	49
Feb. 1-7, 1950 ...	7,700	7.6	524	7.8		48	9.4	40		120	48	66		4.4		305	.41	6,340	158	60	35
Feb. 8-19	32,720	7.4	232	9.9		34	3.9	7.8		76	22	22		2.0		140	.19	12,400	101	39	14
Feb. 20-28	43,930	7.6	303	8.4		36	3.2	22		114	30	18		2.2		185	.25	21,900	103	10	32
Mar. 1-11	23,150	7.6	369	7.8		42	3.6	34		128	36	34		5.0		227	.31	14,200	120	15	38
Mar. 12-20	5,433	7.7	553	9.5		57	10	40		142	55	64		8.2		340	.46	4,990	183	67	32
Mar. 21-31	4,738	7.7	551	8.1		40	9.8	61		148	65	54		9.9		344	.47	4,400	140	19	49
Apr. 1-10	2,100	7.7	633	9.2		56	9.7	58		148	64	79		8.5		379	.52	2,150	180	58	41
Apr. 11-21	8,134	7.7	761	9.5		57	11	91		162	74	119		9.9		452	.61	9,930	187	54	51
Apr. 22-30	18,780	7.6	394	8.8		30	5.5	54		128	32	50		7.2		251	.34	12,700	97	0	55
May 1-10	13,590	7.9	420	11		42	4.2	32		106	39	36		18		251	.34	9,210	122	35	37
May 11-20	21,900	7.9	360	12		42	3.8	24		120	30	26		9.0		219	.30	12,900	120	22	31
May 21-31	22,760	7.9	399	11		48	3.9	28		148	32	30		.2		235	.32	14,400	136	14	31

TRINITY RIVER BASIN--Continued

TRINITY RIVER AT ROMAYOR, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
June 1-4, 1950	35,400	7.9	222	10		20	2.1	23		70	14	23		4.0		139	0.19	13,300	59	1	46
June 5-14	17,790	8.0	516	15		42	5.4	54		139	38	61		7.8		320	.44	15,400	127	13	48
June 15-20	4,907	8.0	715	17		52	8.8	76		149	53	100		16		434	.59	5,750	166	44	50
June 21-30	5,482	8.0	631	13		51	8.4	60		156	45	81		3.5		366	.50	5,420	162	34	45
July 1-10	3,620	8.0	683	10		55	9.0	66		179	53	78		8.5		402	.55	3,930	174	28	45
July 11-20	4,684	7.6	493	11		49	6.0	38		141	36	50		6.9		291	.40	3,680	147	31	36
July 21, 28-31.....	3,552	7.7	511	12		50	7.5	39		157	37	48		6.5		300	.41	2,880	156	27	35
July 22-27.....	4,123	7.7	870	7.5		55	7.8	101		171	50	137		5.2		484	.66	5,390	169	29	57
Aug. 1-8	5,130	7.9	375	11		42	4.9	26		134	30	25		7.0		236	.33	3,270	125	15	31
Aug. 9-20	3,778	7.8	556	12		52	7.2	50		169	38	59		7.5		331	.45	3,380	159	20	40
Aug. 21-31	2,720	7.6	641	11		48	8.1	68		173	42	78		7.2		376	.51	2,760	154	12	49
Sept. 1-10	4,471	8.0	538	6.8		51	6.3	47		158	37	57		8.3		313	.43	3,780	153	24	40
Sept. 11-20	6,327	7.9	502	7.0		49	5.9	41		151	31	54		4.7		295	.40	5,040	146	23	38
Sept. 21-30	7,703	7.9	422	8.4		46	4.6	32		148	26	36		3.8		250	.34	5,200	134	12	34
Weighted average.	a 11,220	--	399	10		39	4.9	34		119	33	41		5.3		241	0.33	7,300	117	20	39

a Mean daily discharge water year 1950 - 11,070 second-feet.

TRINITY RIVER BASIN--Continued

TRINITY RIVER AT ROMAYOR, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					61	60	62	69	76	83	84	82
2					59	59	62	69	76	82	84	83
3					60	59	61	71	77	84	85	83
4					60	60	60	70	78	84	85	83
5					61	59	61	71	79	83	84	84
6					61	59	62	73	78	81	85	82
7					61	60	61	73	78	81	85	84
8					69	59	63	75	79	82	83	83
9					69	59	63	74	80	83	82	82
10					67	59	63	75	80	83	85	83
11					61	60	64	76	81	83	85	83
12					61	60	64	75	81	84	84	83
13					59	56	65	75	80	82	84	82
14					59	56	65	74	81	83	84	83
15					60	59	--	73	80	84	84	83
16					60	51	65	73	80	83	83	83
17					--	59	66	74	81	84	83	82
18					58	58	63	75	81	84	83	83
19					58	58	63	75	80	84	83	82
20					57	58	64	76	81	82	82	81
21					58	60	65	76	80	84	82	82
22					59	61	63	77	81	85	82	82
23					59	81	63	77	81	85	82	81
24					60	62	62	77	80	86	83	81
25					60	61	63	78	82	86	83	81
26					60	61	63	78	83	85	83	82
27					59	61	64	77	85	86	82	82
28					59	61	--	77	84	84	82	81
29					--	62	66	77	82	83	83	82
30					--	63	67	77	84	84	83	82
31					--	62	--	76	--	84	83	--
Average					61	59	63	75	80	84	83	82

TRINITY RIVER BASIN--Continued

TRINITY RIVER NEAR MOSS BLUFF

LOCATION.--At Devers Pumping Plant Number One, one mile west of Moss Bluff, Liberty County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 557 ppm Oct. 1-3; minimum, 110 ppm Oct. 4-10.
Hardness: Maximum, 176 ppm Apr. 1-10; minimum, 50 ppm Oct. 11-14, 26-27.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-3 1949		7.7	997	7.0		32	6.4	163		104	84	203		2.2		557	0.76		106	22	77
Oct. 4-10		7.2	168	6.2		17	2.3	13		59	7.8	16		1.8		110	.15		52	4	36
Oct. 11-14, 26-27		7.2	154	7.0		16	2.5	11		51	7.4	16		1.8		132	.18		50	8	32
Oct. 15, 28-31		7.1	237	9.9		20	3.4	22		64	14	30		1.8		188	.26		64	11	42
Oct. 16-25		7.2	548	13		35	4.0	67		110	23	94		3.2		320	.44		104	14	58
Nov. 1-10		7.4	330	9.0		35	4.1	25		109	26	28		3.2		217	.30		104	15	34
Nov. 11-20		7.8	456	14		44	5.5	42		136	32	54		4.1		274	.37		132	21	41
Nov. 21-30		7.6	529	13		42	6.3	54		139	30	71		4.1		313	.43		131	17	47
Dec. 1-3		7.6	642	13		55	8.5	65		165	43	90		6.8		399	.54		172	37	45
Dec. 4-10		7.3	295	8.8		24	3.7	30		67	25	41		1.2		217	.30		75	20	46
Dec. 11-20		7.6	216	9.0		17	3.1	21		52	15	29		2.0		183	.25		55	13	45
Dec. 21-31		7.2	270	9.9		20	3.4	31		57	24	41		1.8		204	.28		64	17	51
Jan. 1, 3-4, 6-10, 1950		7.4	331	11		24	4.2	37		64	28	53		2.2		226	.31		77	25	51
Jan. 11, 14-20		7.2	254	8.2		21	3.1	27		58	19	39		2.5		214	.29		65	18	48
Jan. 21-31		7.6	321	11		34	4.6	24		92	31	32		2.8		199	.27		104	28	33
Feb. 1-10		7.6	276	10		31	4.5	19		88	28	24		2.8		170	.23		96	24	30
Feb. 11-19		7.6	254	11		32	4.6	11		86	24	18		2.8		154	.21		99	28	20
Feb. 20-28		7.4	270	11		27	4.8	25		94	25	26		3.0		164	.22		87	10	39
Mar. 1-8		7.4	286	11		34	5.1	22		96	29	30		2.0		180	.24		106	27	31
Mar. 9-20		7.6	462	11		48	7.8	35		132	40	54		3.2		282	.38		152	44	34
Mar. 21-31		7.7	482	14		51	5.6	37		141	42	49		3.8		272	.37		150	35	35
Apr. 1-10		7.4	632	15		58	7.6	58		150	53	86		3.8		361	.49		176	52	42
Apr. 11-20		7.4	576	10		49	6.3	57		131	54	76		2.8		319	.43		148	41	46
Apr. 21-30		7.8	406	9.5		35	5.6	38		102	36	50		2.2		233	.32		110	27	43
May 1-10		7.8	426	8.8		45	5.7	34		128	39	44		2.2		259	.35		136	31	35
May 11-20		7.8	334	9.2		43	5.4	19		130	30	22		1.8		196	.27		130	23	24
May 21-30		7.7	367	13		45	4.3	24		145	30	22		2.2		226	.31		130	11	29

June 1-9		7.7	231	13		23	2.9	19		78	17	20		2.0		169	.23		69	5	38
June 10-13		7.2	337	15		31	4.3	25		98	14	37		1.8		212	.29		95	15	36
June 14-20		7.9	552	18		46	4.6	52		133	31	77		3.0		330	.45		134	25	45
June 21-30		8.1	424	18		46	5.4	30		138	33	37		4.0		257	.35		137	24	33
July 1-10		8.0	523	18		53	5.7	43		160	38	54		2.5		312	.42		156	25	37
July 11-20		8.0	512	16		49	5.4	45		148	36	57		4.0		306	.42		144	23	40
July 21-29		7.7	589	13		50	5.5	59		142	46	76		4.5		345	.47		148	31	46
Aug. 1-4, 7-8		7.8	636	13		52	7.4	61		156	39	86		4.0		363	.49		160	32	45
Aug. 5-6, 9-13		7.9	410	13		44	4.6	32		140	32	34		3.5		246	.33		129	14	35
Aug. 14-19		8.0	525	13		54	5.0	45		171	32	54		4.2		315	.43		155	15	39
Aug. 21-30		8.0	542	14		54	6.1	48		176	34	58		4.0		319	.43		160	16	40
Sept. 1-10		7.9	553	13		48	5.5	56		151	39	69		4.5		318	.43		142	19	46
Sept. 11-20		7.9	430	13		44	4.3	38		138	28	45		4.5		254	.35		128	14	39
Sept. 21-23, 25-29		7.9	428	13		45	4.3	37		143	27	44		3.2		256	.35		130	13	38

TRINITY RIVER BASIN--Continued

OLD RIVER NEAR COVE, TEX.

LOCATION.--At Barber Hill Pumping Plant, 5 miles northwest of Cove, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,130 ppm Oct. 1-10; minimum, 179 ppm Mar. 11-20.
Hardness: Maximum, 290 ppm Oct. 1-10; minimum, 89 ppm Feb. 1-7, 9-10, 12-15, 18-23, 26-28.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1-10, 1949...		7.6	2,150	9.2		60	34	318		101	88	570		2.8		1,130	1.54		290	206	70
Oct. 11-20		7.5	1,690	5.1		48	27	242		87	67	435		1.8		958	1.30		231	160	69
Oct. 21-31		8.0	390	18		31	6.0	40		131	10	50		1.2		250	.34		102	0	46
Nov. 1-10		7.8	422	18		36	6.1	45		131	23	56		2.0		264	.36		115	8	46
Nov. 11-20.....		8.0	443	17		37	6.6	47		147	19	56		2.2		278	.38		119	0	46
Nov. 21-30.....		8.0	547	13		46	8.3	54		155	23	81		1.0		321	.44		149	22	44
Dec. 1-10.....		7.4	584	2.9		28	8.6	75		97	34	108		1.0		332	.45		106	26	61
Dec. 11-20.....		7.4	508	4.1		27	7.6	64		91	32	92		.5		292	.40		99	24	59
Dec. 21-30.....		7.6	506	4.2		32	8.2	58		111	27	85		1.2		290	.39		114	23	53
Jan. 1-10, 1950...		7.3	424	11		36	6.2	39		112	21	60		2.5		240	.33		115	24	42
Jan. 11-20		7.3	398	11		35	5.9	36		113	19	54		1.8		221	.30		112	19	41
Jan. 21-25, 27-31.		7.4	363	13		34	5.7	30		119	12	45		1.2		203	.28		108	11	38
Feb. 1-7, 9-10, 12-15, 18-23, 26-28		7.6	316	11		26	5.8	33		102	13	44		2.2		185	.25		89	5	45
Mar. 1-2, 4, 6-10		7.8	343	9.9		29	5.8	32		110	15	41		3.2		201	.27		96	6	42
Mar. 11-20.....		7.7	307	9.5		32	5.6	22		116	9.9	30		3.2		179	.24		103	8	32
Mar. 21-31.....		7.8	328	10		32	5.7	25		122	9.9	32		1.8		190	.26		103	3	34
Apr. 1-10		7.7	437	10		46	6.2	34		158	14	49		2.2		241	.33		140	11	35
Apr. 11-20.....		7.8	412	10		40	6.1	34		120	28	50		1.8		232	.32		125	27	37
Apr. 21, 23-30....		7.7	397	11		36	6.0	35		100	37	49		1.8		225	.31		114	32	40
May 1-7, 9-10.....		7.8	332	19		31	4.6	28		92	28	36		2.0		196	.27		96	21	39
May 11-15, 17-20.		7.7	383	16		43	4.9	25		130	31	30		1.8		216	.29		127	21	30
May 21-31		7.9	362	16		46	5.0	18		140	29	20		1.2		208	.28		135	21	22
June 1-10		7.8	336	15		36	4.6	24		118	23	28		1.2		194	.26		109	12	33
June 11-20		7.8	317	16		32	4.7	23		102	20	30		2.0		193	.26		99	16	33
June 21-30		7.8	451	16		46	5.5	35		130	39	44		4.0		262	.36		137	31	35
July 1-10		7.9	469	16		45	6.2	39		134	34	54		2.0		262	.36		138	28	38
July 11-20		7.8	564	21		49	6.6	54		148	41	71		3.0		350	.48		150	28	44
July 21-31.....		7.7	557	16		43	7.4	57		125	42	81		2.5		324	.44		138	36	47

Aug. 1-6, 8-10.....		7.8	527	13		42	6.0	56	130	39	72		3.5		314	.43		130	23	49
Aug. 11-20.....		7.4	556	12		45	7.1	54	136	39	43		4.8		320	.44		142	30	45
Aug. 21-31.....		7.6	636	12		45	8.4	66	140	40	94		4.0		364	.50		147	32	50
Sept. 1-10.....		7.8	550	14		48	6.6	51	150	36	65		7.2		332	.44		147	24	43
Sept. 11-16, 18-20.		8.3	463	13		46	5.1	44	148	30	54		3.2		273	.37		136	14	41
Sept. 21-30.....		8.3	466	14		47	5.2	45	154	26	57		2.8		278	.38		139	12	41

TRINITY RIVER BASIN--Continued

TRINITY RIVER AT ANAHUAC, TEX.

LOCATION.--At Lone Star Pumping Plant in Anahuac, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records December 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 8,960 ppm Oct. 3; minimum, 184 ppm Mar. 1-10.
Hardness: Maximum, 1,810 ppm Oct. 3; minimum, 52 ppm Dec. 25-31.
REMARKS.--Recorde of specific conductance of daily samples available in district office at Austin, Tex.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 3, 1949		7.5	14,300	17		153	347	2,750		153	716	4,900		--		8,960	12.19		1,810	1,680	77
Oct. 16		7.3	444	9.5		18	6.5	60		56	19	96		1.2		283	38		72	26	65
Nov. 6		--	1,400	--		--	--	--		--	--	390		--		--	--		--	--	--
Nov. 20		--	730	--		--	--	--		--	--	146		--		--	--		--	--	--
Nov. 27		--	577	--		--	--	--		--	--	86		--		--	--		--	--	--
Dec. 4		--	1,060	--		--	--	--		--	--	260		--		--	--		--	--	--
Dec. 11		--	773	--		--	--	--		--	--	180		--		--	--		--	--	--
Dec. 18		--	815	--		--	--	--		--	--	206		--		--	--		--	--	--
Dec. 25-31		7.3	295	6.4		12	5.4	39		35	15	65		1.0		246	.33		52	23	62
Jan. 1-19, 1950		7.5	328	6.5		20	4.2	39		51	20	61		3.2		196	.27		67	25	56
Jan. 20-31		7.4	465	7.2		20	4.1	66		51	16	107		2.2		281	.38		67	25	68
Feb. 1-8, 10		7.4	499	6.5		22	8.6	67		84	26	98		2.0		288	.39		90	21	62
Feb. 9, 11-19		7.3	355	7.5		18	6.3	43		64	18	65		2.0		223	.30		71	18	57
Feb. 20-21, 23-28		7.3	300	6.8		17	6.1	31		44	10	63		1.8		204	.28		70	34	49
Mar. 1-10		7.4	286	7.8		17	5.2	34		70	18	42		1.8		184	.25		64	6	53
Mar. 11-18		7.5	320	13		26	4.6	31		84	21	42		1.5		215	.29		84	15	45
Mar. 19-31		7.6	455	15		41	4.2	44		112	38	57		3.2		283	.38		120	28	44
Apr. 1-10		7.7	553	17		52	5.7	55		139	56	70		1.5		338	.46		153	38	44
Apr. 11-20		7.8	638	13		54	14	51		144	55	88		3.2		367	.50		192	74	36
Apr. 21-30		7.8	413	13		33	6.1	40		92	35	56		3.2		244	.33		107	32	44
May 1-10		7.9	449	13		30	6.0	37		55	28	74		1.2		254	.35		100	54	45
May 11-15, 17-20		7.8	490	13		35	7.2	49		110	30	72		2.0		262	.36		117	27	48
May 21-31		7.7	496	12		36	7.3	51		118	31	71		1.5		280	.38		120	23	48
June 1-10		7.8	476	13		36	7.1	47		118	30	64		4.2		262	.36		119	22	46
June 11-20		7.8	546	17		49	5.8	61		164	38	72		3.5		341	.46		146	12	48
June 21-30		8.0	416	17		36	6.3	40		122	29	50		2.0		265	.36		116	16	43
July 1-10		8.2	588	19		53	5.6	58		158	43	77		4.5		366	.50		155	31	45
July 18-19, 21, 26-29		8.1	685	16		49	5.9	76		136	50	103		5.0		399	.54		146	35	53
July 20, 22-25, 30-31		8.1	522	17		46	5.9	50		132	45	64		3.0		318	.43		139	31	44

Aug. 1-10		8.1	573	16		52	5.2	56	156	44	68		5.0	339	.46		151	23	45
Aug. 11-18		8.1	450	14		46	4.7	35	136	35	42		3.0	266	.36		134	23	36
Aug. 24-25, 28-29, 31		7.9	664	21		59	6.8	66	177	45	87		4.8	377	.51		175	30	45
Sept. 1-3, 5-7, 9-11, 13-14, 19.....		7.6	593	15		37	7.4	69	117	24	107		1.8	326	.44		123	27	55
Sept. 21, 23-30 ...		8.2	499	11		35	6.3	58	116	22	85		2.8	292	.40		113	18	53

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TRINITY RIVER BASIN--Continued

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.

LOCATION.--At Texas and Pacific water plant one-eighth of a mile downstream from gaging station at Fort Worth which is at bridge on Vickery Boulevard, Fort Worth, Tarrant County, 388 feet downstream from Texas and Pacific Railway bridge, and 3 miles upstream from mouth.
DRAINAGE AREA.--526 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 415 ppm Dec. 1-10; minimum, 132 ppm Oct. 25-29.
Hardness: Maximum, 284 ppm Dec. 1-10; minimum, 98 ppm Oct. 25-29.
Water temperatures: Maximum, 88°F on several days in June, July, and August; minimum, 40°F Jan. 6, Feb. 2.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 621 ppm Jan. 11-31, 1949; minimum, 124 ppm May 17, 1949.
Hardness: Maximum, 284 ppm Dec. 1-10, 1949; minimum, 68 ppm May 17, 1949.
Water temperatures: Maximum, 88°F on several days in June, July, and August 1950; minimum, freezing point on several days in January 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949...	42.2	7.7	308	7.2		42	5.0	15		143	20	12	0.4	1.2		184	0.25	21	125	8	20
Oct. 11-20	12.4	7.7	336	8.8		44	5.0	21		152	22	19	.2	2.2		201	.27	6.7	130	6	26
Oct. 21-24, 30-31.	40.1	8.2	390	8.2		52	5.9	20		177	25	18	.2	1.2		220	.30	24	154	9	22
Oct. 25-29	403	8.0	230	6.5		33	3.9	6.5		114	11	6.5	.2	1.2		132	.18	144	98	5	13
Nov. 1-10	26.7	8.2	603	14		82	12	32		269	45	38	.2	1.8		374	.51	27	254	34	21
Nov. 11-20	25.8	7.8	628	11		81	13	37		271	54	41	.2	.0		390	.53	27	256	34	24
Nov. 21-30	22.7	8.1	699	13		90	12	46		302	58	46	.3	.0		404	.55	25	274	26	27
Dec. 1-10	23.2	8.1	713	11		94	12	46		320	58	44	.3	.0		415	.56	26	284	22	26
Dec. 11-20	21.0	8.1	674	9.9		90	13	42		302	56	44	.3	1.0		404	.55	23	278	30	25
Dec. 21-31	20.9	8.0	683	9.5		86	16	39		300	57	42	.3	.8		403	.55	23	280	34	23
Jan. 1-10, 1950...	22.6	8.0	653	11		84	15	40		285	58	44	.2	1.0		408	.55	25	271	32	24
Jan. 11-12, 18-20.	131	8.0	513	13		71	10	26		232	41	28	.3	2.0		323	.44	114	218	28	21
Jan. 13-17	354	8.0	360	13		51	6.6	15		161	27	17	.2	3.0		230	.31	220	154	22	17
Jan. 21-31	85.9	8.1	512	14		76	9.8	22		242	40	25	.3	1.5		322	.44	75	230	32	17
Feb. 1-10	758	8.1	404	13		66	6.6	11		202	26	15	.2	3.0		255	.35	522	192	26	11
Feb. 11-19	604	7.8	448	11		70	7.0	13		220	26	15	.3	2.5		266	.36	434	203	23	12
Feb. 20-28	166	7.8	514	15		82	7.9	20		250	36	24	.4	3.0		311	.42	139	237	32	15
Mar. 1-10	113	7.8	503	14		56	6.8	49		240	40	24	.3	2.5		320	.44	98	168	0	39
Mar. 11-20	169	7.7	434	15		64	6.6	28		220	32	22	.3	2.5		278	.38	127	187	7	24
Mar. 21-31	69.3	7.7	444	14		56	6.8	49		230	42	28	.3	2.5		312	.42	58	168	0	39

Apr. 1-10	53.2	7.8	507	13		68	7.4	33	241	44	18	.3	3.0		306	.42	44	200	3	26
Apr. 11-20	856	7.7	354	13		51	6.9	13	161	26	16	.3	2.5		212	.29	490	156	24	16
Apr. 21-30	434	7.9	468	14		74	6.8	16	235	28	17	.3	2.5		275	.37	322	213	20	14
May 1-3	1,953	8.0	298	13		44	4.8	14	152	16	11	.3	2.5		184	.25	970	130	5	19
May 4-10	328	8.1	443	14		68	6.6	20	222	28	19	.3	2.2		270	.37	239	197	15	18
May 11-20	844	8.1	496	16		74	7.0	27	249	32	23	.3	1.2		302	.41	525	213	94	21
May 21-31	181	7.9	529	16		71	6.8	35	239	38	30	.3	2.5		318	.43	155	205	9	27
June 1-10	118	7.9	471	17		62	6.6	32	207	35	30	.3	2.2		287	.39	91	182	12	28
June 11-20	60.6	8.1	493	19		52	12	34	181	44	40	.3	.8		302	.41	49	179	30	29
June 21-30	86.5	8.1	446	15		56	9.4	23	188	34	26	.3	1.2		262	.36	61	178	24	22
July 1, 4-7	89.2	7.9	452	17		58	9.2	11	200	32	23	.3	1.0		267	.36	64	183	19	10
July 2-3, 8-10	71.8	7.7	334	13		44	5.7	16	153	20	14	.3	1.5		200	.27	39	133	8	21
July 11-20	120	8.2	334	10		45	5.5	15	146	18	19	.3	2.0		206	.28	67	135	15	20
July 21-27	65.0	8.0	436	13		56	8.3	21	180	31	27	.4	1.0		284	.39	50	174	26	21
July 28-31	368	7.5	295	11		38	5.8	10	138	14	12	--	.5		197	.27	196	119	6	15
Aug. 1-10	31.4	7.9	468	16		60	9.8	23	195	30	31	.3	1.0		288	.39	24	190	30	21
Aug. 11-20	13.4	8.1	582	17		61	14	40	219	45	48	.3	.8		346	.47	13	210	30	29
Aug. 21, 22	76.3	7.9	542	16		57	12	38	202	42	45	.3	1.0		327	.44	67	192	26	30
Aug. 22, 23-31	222	7.7	273	11		36	3.9	15	121	15	15	.4	2.5		174	.24	104	106	7	24
Sept. 1-7	460	8.1	283	13		38	4.0	16	135	15	13	.2	2.0		173	.24	215	111	1	24
Sept. 8-10	73.3	8.2	466	15		84	8.8	23	222	26	26	--	1.5		274	.37	54	196	14	21
Sept. 11-16	195	8.2	534	18		62	13	33	226	37	39	.4	1.5		319	.43	168	208	23	26
Sept. 17-20	1,056	8.0	260	9 0		34	3.9	17	124	13	14	.3	1.8		154	.21	439	101	0	26
Sept. 21-22	738	7.9	278	11		36	5.7	15	140	11	14	--	1.2		176	.24	351	113	0	23
Sept. 23-30	120	8.1	505	16		66	10	29	231	31	32	.2	1.2		304	.41	98	206	16	23
Weighted average	215	--	400	13		57	6.6	19	191	26	19	0.3	2.1		244	0.33	142	169	13	20

TRINITY RIVER BASIN--Continued

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.--Continued

Mean daily temperature (°F) of water, water year October 1949 to September 1950

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

a No thermograph records for period Jan. 2 to Feb. 6; once-daily temperature measurements taken from control dam pool.

SAN JACINTO RIVER NEAR HUFFMAN, TEX.

LOCATION.--At Sheldon Pumping Plant of City of Houston, 5½ miles downstream from gaging station near Huffman, which is at Beaumont, Sour Lake & Western Railway bridge, 0.4 mile downstream from confluence of East and West Forks, and 3.4 miles southwest of Huffman, Harris County.
DRAINAGE AREA.--2,791 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to July 1948, December 1948 to September 1950.
Water temperatures: January 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 314 ppm Aug. 11-20; minimum, 62 ppm June 3-10.
Hardness: Maximum, 87 ppm Apr. 11-17; minimum, 16 ppm Oct. 4-10.
Water temperatures: Maximum, 86°F June 29, and several days in July and August; minimum, 50°F Dec. 15-16, Jan. 6.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 2,210 ppm Oct. 12, 1947; minimum, 62 ppm June 3-10, 1950.
Hardness: Maximum, 488 ppm Oct. 12, 1947; minimum, 16 ppm Oct. 4-10, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Huffman for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between gaging station and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-3, 1949....	360	7.4	424	15		21	4.9	53		71	2	89		1.8		247	0.34	240	73	14	61
Oct. 4-10	30,370	7.0	78.7	3.1		4.4	1.1	9.5		16	2	14		1.5		44	.12	7,220	16	2	57
Oct. 11-14	18,800	7.6	86.0	9.2		5.8	.7	16		35	4	12		3.5		75	.10	3,810	17	0	67
Oct. 15-19, 27-31 .	4,406	7.6	158	13		14	3.8	16		60	4.3	22		1.2		124	.17	1,480	51	1	41
Oct. 20-26	1,681	7.7	283	14		18	3.8	35		66	6	53		1.2		179	.24	812	60	6	56
Nov. 1-5	727	7.7	233	19		19	3.8	25		72	5	37		1.2		166	.23	326	63	4	46
Nov. 6-20	384	7.7	383	20		23	3.5	49		80	6.9	74		1.5		226	.31	234	72	6	60
Nov. 21-30	278	7.5	431	19		20	5.0	57		75	6.5	89		1.2		248	.34	186	70	9	64
Dec. 1-10	1,073	6.9	369	18		21	5.2	42		54	6.7	80		.8		223	.30	646	74	30	55
Dec. 11-20	11,480	6.9	147	18		11	3.5	13		29	5.5	28		.8		130	.18	4,030	42	18	40
Dec. 21-31	3,294	7.3	214	10		14	3.1	25		43	7.6	42		.8		163	.22	1,450	48	12	54
Jan. 1, 5-11, 1950.	4,131	7.3	208	9.2		15	3.1	24		44	7.7	41		1.2		167	.23	1,860	50	14	51
Jan. 2-4, 12-20 ..	11,410	7.1	125	6.4		9.8	2.2	14		31	6.1	23		1.0		78	.17	3,910	34	8	48
Jan. 21-25	4,354	7.3	177	5.4		17	3.8	13		49	6	27		1.0		114	.16	1,340	58	18	32
Jan. 26-31	1,448	7.4	296	6.5		22	4.0	30		61	7	56		1.0		200	.27	782	71	21	48
Feb. 1-9	918	7.4	351	5.6		26	4.1	36		68	7.3	68		1.2		265	.36	657	82	26	49
Feb. 10-12	8,283	7.3	215	6.0		15	3.6	24		46	7	42		1.0		165	.22	3,690	52	15	50
Feb. 13-19	15,440	7.2	120	9.5		12	3.5	8.6		34	6	20		.8		77	.10	3,210	44	16	30
Feb. 20-28	4,974	7.1	191	16		15	2.7	17		44	6.0	30		1.8		175	.24	2,350	49	12	44
Mar. 1-10	2,993	7.6	221	12		17	3.0	21		47	5.8	39		1.2		186	.25	1,500	55	16	46
Mar. 11-20	1,054	7.8	310	19		24	3.8	31		66	7.4	57		.8		202	.27	575	76	21	47
Mar. 21-31.....	824	7.3	328	9.5		24	4.3	28		48	7.4	65		1.0		203	.28	452	78	38	44

SAN JACINTO RIVER BASIN--Continued

SAN JACINTO RIVER NEAR HUFFMAN, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 1-10, 1950 ..	360	7.4	390	8.8		27	4.1	34		54	7.2	76		1.0		231	0.31	225	84	40	46
Apr. 11-17	557	7.4	410	9.9		26	5.3	51		82	8.5	86		1.0		242	.33	364	87	19	56
Apr. 18-30	3,627	7.3	204	8.1		16	3.5	16		38	6.2	37		.8		146	.20	1,430	55	24	39
May 1-13, 20-22, 27-30.....	2,290	7.6	276	14		21	3.0	29		58	5.7	52		1.2		188	.26	1,160	65	17	49
May 14-19, 23-26, 31	4,066	7.5	182	13		15	2.8	18		46	5.1	32		1.2		153	.21	1,680	49	11	45
June 1-2, 11-16...	3,059	7.1	178	17		15	5.3	10		48	5	26		.5		103	.14	851	59	20	27
June 3-10	24,780	7.0	99.3	11		9.4	3.9	3.9		28	4	14		1.5		62	.08	4,150	40	17	18
June 17-30	548	7.1	313	24		23	5.8	26		68	5.8	54		1.0		178	.24	263	81	28	41
July 1, 9, 11-14, 17, 19	701	7.8	367	21		19	4.0	47		59	6.0	77		2.2		237	.32	449	64	16	61
July 2-8, 10, 15-16, 18, 20	815	7.6	253	17		12	3.5	31		41	4.2	50		3.0		186	.25	409	44	11	60
July 21-31	303	7.6	366	22		20	4.4	42		62	5.4	74		1.0		199	.27	163	68	17	57
Aug. 1-10	191	7.7	436	26		23	4.5	53		70	4.7	90		1.5		264	.36	136	76	19	60
Aug. 11-20	174	7.6	525	23		23	4.5	66		70	4.9	116		1.8		314	.43	148	76	19	65
Aug. 21-31	158	7.5	451	20		21	3.9	59		65	4.5	97		1.2		269	.37	115	68	15	65
Sept. 1-10	143	7.6	475	21		21	4.1	65		65	5.4	106		1.5		272	.37	105	69	16	67
Sept. 11-20.....	140	7.8	463	21		21	3.7	63		67	4.7	101		2.0		264	.36	100	68	13	67
Sept. 21-30	317	7.9	440	20		21	2.8	62		74	6.6	92		1.5		264	.36	226	64	3	68
Weighted average	3,727	--	155	10		12	2.9	15		36	5.0	27		1.3		109	0.15	1,100	42	12	44

SAN JACINTO RIVER BASIN--Continued

SAN JACINTO RIVER NEAR HUFFMAN, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

BRAZOS RIVER BASIN

DOUBLE MOUNTAIN FORK BRAZOS NEAR ROTAN, TEX.

LOCATION.--At gaging station at bridge on State Highway 70, 3.1 miles downstream from Red Creek, and 5 miles north of Rotan, Fisher County.
DRAINAGE AREA.--7,739 square miles of which 6,470 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.
Water temperatures: December 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 19,100 ppm Jan. 21-23; minimum, 531 ppm Sept. 5-9.
Hardness: Maximum, 2,640 ppm Jan. 21-31; minimum, 144 ppm July 20, 22-23, 28.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for period December 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Dec. 21-25, 1949..	0.66	7.6	20,200	12		643	139	4,350		140	1,780	6,850		--		13,800	18.77	25	2,180	2,060	81
Dec. 26-31.....	a.40	7.9	12,900	11		520	108	2,430		146	1,470	3,810		--		8,420	11.45	9.1	1,740	1,620	75
Jan. 1-20, 1950 ..	a.28	7.7	19,500	14		677	126	3,810		139	1,860	5,980		--		12,500	17.00	9.4	2,210	2,090	79
Jan. 21-31.....	a.0	7.6	28,900	14		800	156	6,170		126	2,190	9,700		--		19,100	25.98	.0	2,640	2,530	84
Feb. 1-12	a.0	7.6	17,900	16		675	129	3,420		131	1,870	5,390		--		11,600	15.78	.0	2,210	2,110	77
Feb. 16-22, 25-28.	a.75	7.7	12,800	13		542	96	2,320		137	1,490	3,640		--		8,170	11.11	17	1,750	1,630	74
Feb. 23-24.....	.25	7.6	7,170	14		340	62	1,180		124	1,010	1,790		1.5		4,460	6.07	3.0	1,100	1,000	70
Apr. 15-19.....	609	7.3	1,470	15		102	18	195		140	329	208		1.2		937	1.27	1,540	328	214	56
Apr. 20-22.....	28.7	7.7	3,730	14		196	35	569		152	586	805		1.8		2,280	3.10	177	633	508	66
Apr. 23-25.....	10.4	7.4	7,910	14		380	68	1,330		134	1,090	2,040		--		4,990	6.79	140	1,230	1,120	70
Apr. 26-30.....	2.50	7.4	14,400	14		590	112	2,750		122	1,630	4,340		--		9,500	12.92	64	1,930	1,830	76
May 1-3	322	7.7	1,340	13		196	17	87		105	517	88		1.5		1,030	1.40	895	559	473	25
May 4.....	34	7.9	2,250	17		252	27	224		95	689	305		1.2		1,560	2.12	143	740	662	40
May 5-6	6.75	7.8	3,830	18		338	42	480		117	886	738		1.2		2,560	3.48	47	1,020	920	51
May 10, 16-17, 18.	127	7.7	1,990	15		160	23	239		113	454	317		.8		1,260	1.71	432	494	401	51
May 11-15, 18, 19-20	1,304	7.8	1,020	17		74	12	124		136	229	109		1.2		633	.86	2,230	234	122	54
May 21-22, 26-30..	684	7.9	1,270	16		95	23	131		130	274	158		1.8		772	1.05	1,430	332	225	46
May 23-25, 31.....	31.8	8.0	2,970	18		164	35	419		139	510	580		1.2		1,800	2.45	155	553	439	62
June 1-2, 15-16...	19.0	7.9	2,970	20		155	28	448		139	507	590		1.5		1,820	2.48	93	502	388	66
June 3-6, 10, 17-18	34.4	7.9	4,320	22		234	45	663		127	749	940		1.2		2,720	3.70	253	769	665	65
June 7-9, 19-21, 24	6.21	7.7	7,050	22		374	67	1,150		106	1,130	1,730		.5		4,530	6.16	76	1,210	1,120	67
June 11-14	216	8.0	1,220	17		49	12	183		147	181	184		.8		718	.98	419	172	52	70
June 22-23	1.05	7.8	11,200	23		463	90	2,130		110	1,360	3,290		--		7,410	10.08	21	1,520	1,440	75
July 8, 11-12, 15-17	33.3	7.8	2,230	17		152	27	300		154	497	352		2.0		1,420	1.93	128	490	364	57
July 9-10, 13-14, 18-19, 21, 24-27, 29-31.....	264	7.5	1,210	16		88	17	142		132	293	131		1.5		781	1.06	557	290	182	52
July 20, 22-23, 28	324	7.4	918	16		41	10	130		130	158	109		1.0		563	.77	493	144	37	66

a Includes days of less than 0.05 second-foot flow.

Aug. 1-2, 7.....	139	7.5	1,400	15		250	19	57	83	660	49		1.2		1,090	1.48	409	702	634	15
Aug. 3-6.....	29.0	7.9	2,140	18		148	23	286	128	491	332		1.5		1,360	1.85	106	464	359	57
Aug. 8-9, 16	20.4	7.8	6,700	22		319	53	1,130	119	898	1,730		.5		4,210	5.73	232	1,010	916	71
Aug. 10-15.....	a1.62	7.8	4,670	20		245	40	734	123	730	1,070		1.0		2,900	3.94	13	776	675	67
Aug. 17-18.....	3.45	7.5	2,960	12		328	25	314	59	849	475		1.8		2,030	2.76	19	922	873	43
Aug. 19-21.....	17.5	7.9	3,510	17		287	44	447	105	892	605		1.0		2,340	3.18	111	897	811	52
Aug. 22-26, 29-31	a3.11	8.0	4,350	17		364	40	574	98	997	850		2.8		2,890	3.93	24	1,070	974	54
Aug. 27-28.....	192	7.8	1,490	14		263	18	63	58	682	77		1.5		1,150	1.56	596	730	682	16
Sept. 1-3.....	66.0	7.9	5,160	14		450	50	694	97	1,240	1,040		1.0		3,540	4.81	631	1,330	1,250	53
Sept. 4, 10.....	410	8.0	1,700	12		194	17	157	111	525	183		.5		1,140	1.55	1,260	554	463	38
Sept. 5-9	1,542	8.1	871	13		49	8.3	118	120	177	91		1.2		531	.72	2,210	156	58	62
Sept. 11, 17-18...	204	7.7	2,070	15		176	22	242	121	477	325		3.0		1,320	1.80	727	530	430	50
Sept. 12-13, 20...	361	7.6	889	14		103	13	67	118	263	60		1.2		618	.84	602	310	214	32
Sept. 14-16, 19...	494	7.5	1,380	15		186	20	97	102	491	114		.5		1,050	1.43	1,400	546	462	28
Sept. 21-30.....	209	7.8	1,460	13		77	14	206	123	245	240		4.0		882	1.20	498	250	148	64
Weighted average	146	--	1,270	15		97	16	152	126	294	160		1.4		812	1.10	320	308	205	52

a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS NEAR ROTAN, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 [a]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			--	--	--		--	64	80	--	72	78
2			--	57	--		--	60	80	--	70	85
3			--	60	36		--	72	80	--	72	73
4			--	42	38		--	87	72	--	78	74
5			--	--	--		--	75	65	--	--	73
6			--	47	--		--	83	82	--	--	--
7			--	--	39		--	--	81	--	--	75
8			--	56	38		--	--	82	83	--	77
9			--	58	65		--	--	--	75	85	75
10			--	55	--		--	--	90	88	80	78
11			--	58	--		--	--	80	83	82	78
12			--	64	--		--	72	88	80	88	80
13			--	61	--		--	73	87	76	89	72
14			--	60	--		--	65	80	72	--	75
15			--	--	--		--	68	90	80	--	77
16			--	48	--		62	70	93	80	85	80
17			--	58	--		70	71	92	78	80	82
18			--	60	--		60	72	82	--	82	85
19			--	50	--		72	75	86	--	80	84
20			--	51	61		--	76	85	--	70	78
21			50	56	63		--	--	80	88	88	--
22			51	--	--		70	78	86	78	--	--
23			45	58	72		--	78	89	79	65	--
24			49	--	--		55	--	80	82	--	--
25			--	--	--		70	78	--	75	--	--
26			56	--	--		69	60	--	76	--	--
27			51	--	--		64	64	--	77	--	--
28			54	--	--		82	83	--	70	61	--
29			55	--	--		--	72	--	69	80	--
30			57	--	--		67	74	--	73	74	--
31			56	--	--		--	81	--	--	77	--
Average			--	--	--		--	--	--	--	--	--

a Wide variations occur from day to day due to the small discharge and variable time of temperature measurement.

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 83, 8 miles downstream from Mountain Creek and 10 miles south of Aspermont, Stonewall County.
DRAINAGE AREA.--7,979 square miles, of which 6,470 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: November 1949 to September 1950.
Sediment records: November 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 3,980 ppm Feb. 1-13, 19-28; minimum, 646 ppm May 11, 12-13.
Hardness: Maximum, 2,020 ppm Mar. 1-3, 5-7, July 9; minimum, 224 ppm May 11, 12-13.
Water temperatures (November 1949 to September 1950): Minimum, freezing point Jan. 4.
Sediment loads: Maximum daily, 565,000 tons May 11; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 4,570 ppm Mar. 1-10, 1949; minimum, 646 ppm May 11, 12-13, 1950.
Hardness: Maximum, 2,080 ppm Mar. 21-31, 1949; minimum, 220 ppm Sept. 9-10, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-23, 24, 1949.	sa3.27	7.8	4,420	19		376	62	601		100	1,170	850		0.0		3,130	4.26	28	1,190	1,110	52
Oct. 24, 25-31.....	s180	7.9	1,310	9.2		112	15	147		109	338	155		.8		869	1.18	422	341	252	48
Nov. 1-3, 7.....	20.2	7.7	2,360	16		196	37	285		92	594	385		28		1,590	2.16	87	641	566	49
Nov. 4-6, 8-10.....	9.53	7.6	4,200	19		336	55	585		100	1,020	845		1.0		2,910	3.96	75	1,060	982	54
Nov. 11-20	1.86	7.6	4,760	18		490	44	703		100	1,470	935		.8		3,710	5.05	19	1,400	1,320	52
Nov. 21-30	.43	7.7	4,310	16		602	87	406		110	1,720	610		1.0		3,500	4.76	4.1	1,860	1,770	32
Dec. 1-31.....	.34	7.2	4,500	13		620	96	404		142	1,770	610		.8		3,580	4.87	3.3	1,940	1,820	31
Jan. 1-31, 1950	a.25	7.3	4,570	17		624	87	419		116	1,770	630		.0		3,600	4.90	2.4	1,910	1,820	32
Feb. 1-13, 19-28 ..	1.62	7.8	5,350	13		614	82	595		116	1,700	920		1.2		3,980	5.41	17	1,870	1,770	42
Feb. 14-18	23.4	7.6	2,840	16		301	35	300		86	822	440		1.5		1,960	2.67	124	895	824	42
Mar. 1-7.....	.09	7.4	4,900	17		656	93	464		92	1,880	705		1.5		3,860	5.25	1.0	2,020	1,940	33
Apr. 12-14, 15, 24-30, May 1	s2.34	7.5	4,350	15		424	68	513		121	1,250	745		2.0		3,080	4.19	19	1,340	1,240	45
Apr. 15, 16-23.....	s503	7.6	1,860	15		142	19	229		127	429	268		3.2		1,170	1.59	1,590	432	328	54
May 1, 2-5, 10.....	s708	7.6	1,620	15		254	18	99		86	653	120		4.5		1,210	1.65	2,310	708	637	23
May 6-9, 10	s16.5	7.6	2,840	17		364	39	255		100	968	378		.8		2,070	2.82	92	1,070	986	34
May 11.....	s4,320	7.5	1,490	16		218	19	95		90	576	110		.8		1,080	1.47	12,600	622	548	25
May 11.....	s10,380	7.6	1,190	15		118	12	121		110	330	122		1.0		799	1.09	22,400	344	254	43
May 11, 12-13.....	s2,275	7.6	1,030	16		74	9.6	132		120	240	114		1.0		646	.88	3,970	224	126	56
May 14-18, 19	s559	7.6	1,680	15		214	21	134		98	578	162		1.5		1,170	1.59	1,770	620	540	32
May 19, 20.....	s1,315	7.8	1,150	15		71	12	150		147	210	150		1.8		708	.96	2,510	226	106	59
May 21-22, 28-30...	364	8.0	1,190	16		80	16	143		134	247	146		3.2		717	.98	705	266	156	54
May 23-27, 31.....	532	8.0	1,620	14		176	21	147		119	479	175		3.0		1,070	1.46	1,540	526	428	38

s Computed by subdividing day.
a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
June 1-5, 1950	72.8	7.7	2,380	14		241	25	251		107	666	332		1.2		1,580	2.15	311	704	617	44
June 6-10	71.3	7.6	4,520	16		344	54	601		103	1,000	895		.8		2,960	4.03	570	1,080	996	55
June 11, 12-16	226	8.0	1,370	17		74	14	196		149	256	196		2.2		865	1.18	528	242	120	64
June 17-26, 29-30	3.59	7.8	4,020	18		408	63	482		111	1,280	638		1.8		2,950	4.01	29	1,280	1,190	45
July 9	s7.52	7.8	4,650	19		644	100	447		108	1,910	645		5.6		3,820	5.21	78	2,020	1,930	33
July 9, 10-12, 19-20	s136	7.6	1,520	18		117	30	160		125	391	178		2.5		1,010	1.37	371	416	313	46
July 13-18	55.9	7.7	2,280	15		244	31	235		102	721	290		5.1		1,590	2.16	240	736	653	41
July 21-31	495	7.7	1,350	16		145	20	123		110	440	115		2.0		959	1.30	1,280	444	354	38
Aug. 1-4	90.5	7.7	1,760	17		220	29	141		96	645	157		2.8		1,260	1.71	308	668	590	31
Aug. 5-7, 13-20	26.6	7.7	2,520	15		297	32	244		93	845	315		4.2		1,800	2.45	129	872	796	38
Aug. 8-12	46.4	7.8	1,230	16		100	17	136		113	296	151		3.0		789	1.07	99	320	227	48
Aug. 21-27, 28	s15.9	7.7	4,100	23		576	76	355		92	1,670	500		2.2		3,250	4.42	140	1,750	1,670	31
Aug. 28, 29-31	s146	7.6	1,850	15		325	28	84		69	874	100		2.0		1,460	1.99	576	926	870	17
Sept. 1-2, 3, 4	s572	7.6	2,220	15		368	29	138		73	979	182		1.0		1,750	2.38	2,700	1,040	977	22
Sept. 3, 5-10	s2,114	7.7	1,260	14		158	16	92		97	439	87		2.2		887	1.21	5,060	460	380	30
Sept. 11-12, 13, 14, 15, 16-18, 19, 20	s307	7.8	1,640	16		173	23	175		111	535	183		1.8		1,160	1.58	962	526	435	42
Sept. 13, 14, 15, 19	s945	7.8	1,160	15		183	21	47		108	464	51		3.0		907	1.23	2,310	543	454	16
Sept. 21-30	308	7.8	1,250	14		89	14	157		128	301	142		4.0		812	1.10	675	280	174	55
Weighted average	171	--	1,470	15		162	18	138		109	460	148		2.3		1,010	1.37	466	478	388	39

s Computed by subdividing day.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--	50	--	41	52	--	65	80	--	--	74
2		--	54	66	--	--	--	57	--	--	80	78
3		--	--	45	51	59	--	79	67	--	81	69
4		--	--	31	61	71	--	81	73	--	79	71
5		--	57	36	65	--	--	66	70	--	83	64
6		--	58	42	66	--	--	79	--	--	79	--
7		--	40	35	71	--	--	81	83	--	83	--
8		--	--	--	58	--	--	77	86	--	82	--
9		66	52	--	58	--	--	76	80	85	79	--
10		69	59	48	63	--	--	64	87	90	84	--
11		76	53	51	51	--	--	64	88	83	76	--
12		52	55	61	64	--	47	70	84	75	--	80
13		61	45	44	44	--	--	72	--	87	80	78
14		66	42	51	54	--	56	77	81	--	82	82
15		65	44	54	62	--	50	82	88	87	81	84
16		61	50	52	62	--	52	--	--	86	71	79
17		63	47	64	69	--	62	78	--	82	71	74
18		--	51	48	63	--	69	83	--	80	--	75
19		--	59	44	67	--	--	76	91	80	--	77
20		--	64	52	73	--	65	79	--	75	--	78
21		--	43	49	73	--	70	81	92	77	--	71
22		--	35	--	65	--	84	83	91	78	--	71
23		--	44	60	64	--	82	85	89	69	80	76
24		55	38	64	69	--	75	87	--	70	--	75
25		58	54	59	--	--	71	77	81	80	73	76
26		65	43	--	68	--	75	58	--	75	--	73
27		59	38	--	67	--	74	71	--	72	87	78
28		59	34	--	71	--	78	68	--	77	82	--
29		56	50	--	--	--	--	85	--	80	75	--
30		57	53	38	--	--	62	86	89	87	80	--
31		--	--	--	--	--	--	76	--	72	79	--
Average		--	49	--	62	--	--	75	--	--	--	--

a Wide variations occur from day to day due to the small discharge and variable time of temperature measurement.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Suspended sediment, November 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1				--	--	--	0.2		
2				--	--	--	.3		
3				--	--	--	.2	e 50	--
4				--	--	--	.1		
5				--	--	--	.1		
6				--	--	--	.1	50	--
7				--	--	--	.1	20	--
8				--	--	--	.9	e 67	0.2
9				6.7	140	2.5	1.0	67	.2
10				5.4	130	1.9	.9	78	.2
11				3.6	121	1.2	.7	70	.1
12				2.8	82	.6	.4	63	.1
13				2.6	e 82	.6	.4	168	.2
14				2.2	102	.6	.4	179	.2
15				1.8	e 102	.5	.3	73	.1
16				1.6	180	.8	.2	83	--
17				1.2	110	.4	.2		
18				1.1	110	.3	.3	43	--
19				1.0	e 110	.3	.3		
20				.7	e 110	.2	.3		
21				.6			.2		
22				.6			.2		
23				.6	120	.2	.2	66	--
24				.5			.2		
25				.4	51	.1	.2		
26				.4	e 50	.1	.2	102	.1
27				.4	e 50	.1	.2	118	.1
28				.3	83	.1	.2	102	.1
29				.3	e 80	.1	.2	102	.1
30				.2	49	--	.6	102	.2
31				--	--	--	.6	e 102	.2
Total				35.0	--	t 11.2	10.4	--	t 2.6

Day	January			February			March		
1	0.5	e 102	0.1	0.7			0.1		
2	.3	102	.1	.9	66	0.2	.1	32	--
3	.4			1.0			.1		
4	.6	26	--	1.4			0	--	0
5	.5			1.6			.1		
6	.6			1.4	28	.1	.1	e 32	--
7	.4	56	.1	1.0			.1		
8	.2			.8			0	--	0
9	.2			.6	26	--	0	--	0
10	.1			.6			0	--	0
11	.1			.6	e 20	--	0	--	0
12	.2	112	.1	.6	13	--	0	--	0
13	.4			17	1,220	s 220	0	--	0
14	.3			68	3,600	s 691	0	--	0
15	.3			25	1,010	s 75	0	--	0
16	.2			11	185	s 5.5	0	--	0
17	.2	78	--	7.2	107	2.1	0	--	0
18	.1			5.8	88	1.4	0	--	0
19	.1			3.2	56	.5	0	--	0
20	.2			2.2			0	--	0
21	.2	124	.1	1.2	52	.2	0	--	0
22	.1			.7			0	--	0
23	.1			.5			0	--	0
24	0	--	0	.4	34	--	0	--	0
25	0	--	0	.3			0	--	0
26	.1	--		.2			0	--	0
27	.1	--		.2	42	--	0	--	0
28	.2	--	--	.1			0	--	0
29	.1	--		--			0	--	0
30	.2	66		--			0	--	0
31	.8	e 66	.1	--			0	--	0
Total	7.8	--	t 2.0	154.2	--	t 998	0.6	--	t 0.1

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

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Suspended sediment, November 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	187	8,490	s 16,700	70	2,250	425
2	0	--	0	2,360	24,200	s166,000	51	873	120
3	0	--	0	268	10,000	s 7,840	88	1,420	s 378
4	0	--	0	142	2,750	1,050	44	470	56
5	0	--	0	49	850	112	111	6,000	1,800
6	0	--	0	24	176	11	53	1,000	143
7	0	--	0	16	159	6.9	40	590	64
8	0	--	0	12	149	4.8	33	356	32
9	0	--	0	9.2	297	7.4	28	268	20
10	0	--	0	200	10,300	s 19,800	34	1,100	101
11	0	--	0	5,840	32,400	s565,000	823	30,500	s 88,500
12	.1	242	.1	2,350	26,800	s186,000	357	23,800	22,900
13	.3	e 300	.2	1,350	21,400	s114,000	133	e 18,700	6,720
14	.1	332	.1	1,840	14,500	s 87,300	78	14,500	3,050
15	38	2,930	s 908	407	8,730	s 10,000	49	10,000	1,320
16	1,230	27,800	s106,000	264	e 4,800	3,420	27	e 3,000	219
17	2,260	33,100	s220,000	140	2,500	945	15	e 600	24
18	356	24,300	s23,500	110	1,500	446	8.2	e 400	8.9
19	154	22,200	9,230	1,910	32,700	s195,000	6.2	112	1.9
20	79	19,700	4,200	657	20,400	36,200	5.0	e 125	1.7
21	50	15,900	2,150	375	15,000	15,200	3.8	138	1.4
22	31	8,000	670	184	10,600	5,270	1.9	108	.5
23	19	1,500	77	110	6,250	1,860	1.1	e 289	.9
24	9.8	423	11	75	2,600	526	.7	100	.2
25	4.1	288	3.2	219	5,560	s 19,100	.3	74	.1
26	2.8	224	1.7	1,300	16,200	s 62,300	.1	74	--
27	2.4	258	1.7	1,390	16,000	60,000	0	--	0
28	2.0	224	1.2	776	15,100	31,600	0	--	0
29	1.1	e 200	.6	331	12,200	10,900	.6	74	.1
30	.9	178	.4	153	9,000	3,720	.2	79	--
31	--	--	--	98	5,500	1,460	--	--	--
Total	4,240.6	--	366,800	23,146.2	--	1,622,000	2,062.1	--	t125,900

Day	July			August			September		
1	0	--	0	51	e 6,500	895	0.8	122	0.3
2	0	--	0	157	10,300	s 6,430	.3	44	--
3	0	--	0	101	6,800	s 2,000	1,310	17,300	s58,000
4	0	--	0	53	1,300	186	1,800	14,300	s77,100
5	0	--	0	32	400	35	8,000	15,900	s339,000
6	0	--	0	22	220	13	3,220	24,400	s199,000
7	0	--	0	50	7,690	s 3,050	702	19,800	s38,700
8	0	--	0	105	20,000	5,670	366	13,200	13,000
9	25	15,100	s 2,100	63	9,000	1,530	215	7,500	4,350
10	45	30,000	3,640	30	3,200	259	129	4,900	1,710
11	36	22,000	2,140	22	750	45	103	2,500	695
12	32	19,000	1,640	12	e 500	16	92	1,500	373
13	28	11,000	832	7.0	100	1.9	936	11,900	s54,600
14	27	4,520	330	3.8	142	1.5	692	11,700	s22,400
15	18	4,750	231	2.3	240	1.5	953	16,800	s52,600
16	8.6	1,300	30	15	1,740	s 202	436	8,500	10,000
17	135	14,100	s 7,270	84	5,970	s 1,370	194	3,000	1,570
18	119	5,980	s12,200	54	1,180	s 206	108	1,590	464
19	464	26,200	s36,000	15	400	16	98	4,800	s 1,640
20	135	10,000	s 3,770	7.0	e 300	5.7	491	18,200	s24,000
21	119	7,020	s 7,070	4.1	e 250	2.8	454	17,300	21,200
22	480	27,000	s36,300	2.9	e 200	1.6	357	15,600	15,000
23	457	22,100	s27,700	2.6	166	1.2	419	13,200	14,900
24	2,170	27,300	s170,000	1.5	e 166	.7	384	11,500	11,900
25	1,050	20,000	s59,100	.9	54	.1	222	11,900	7,130
26	384	17,000	17,600	.5	e 100	.1	700	11,000	s35,000
27	154	17,100	s 7,140	.5	349	.5	140	3,750	1,420
28	312	22,000	s20,200	553	15,500	s30,700	184	4,980	2,470
29	157	19,300	8,180	78	4,250	s 999	136	3,900	1,430
30	92	10,500	2,610	15	750	30	80	2,400	518
31	69	9,000	1,680	3.5	189	1.8	--	--	--
Total	6,516.6	--	427,800	1,548.6	--	53,670	22,922.1	--	t1010,000

Total discharge for period Nov. 9 to Sept. 30 (second-foot-days) 60,644.2
Total load for period Nov. 9 to Sept. 30 (tons) 3,607,000

e Estimated.
s Computed by subdividing day.
t Includes days of sediment discharge less than 0.05 ton.

BRAZOS RIVER BASIN--Continued

DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Particle-size analyses of suspended sediment, February to September 1950
(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 (second-feet)	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. 14, 1950	6:05 p. m.	52	2,880	1,800	53	76	95	--	--	95	100	--		--		SBCW
Feb. 14	6:05 p. m.	52	2,880	1,900	--	16	24	--	--	95	99	100		--		SBN
Apr. 15	6:10 p. m.	16	6,330	1,550	71	86	95	99	100	--	--	--		--		SBCW
Apr. 17	7:20 p. m.	950	27,600	1,710	60	74	85	93	97	100	--	--		--		BCW
Apr. 19	2:40 p. m.	142	22,200	1,260	52	78	89	94	97	98	99	99		100		BCW
Apr. 23	10:00 a. m.	22	1,030	803	76	92	96	97	99	100	--	--		--		BCW
May 5	8:40 a. m.	55	852	591	79	89	97	98	98	100	--	--		--		BCW
May 10	5:15 p. m.	148	14,400	2,790	37	47	57	66	75	85	89	93		96	100	SBCW
May 11	7:15 a. m.	2,910	20,000	1,750	38	50	65	75	84	90	98	100		--		SBCW
May 11	1:50 p. m.	6,900	38,200	--	--	--	--	--	--	69	86	94		99		S
May 11	3:10 p. m.	8,740	57,700	--	--	--	--	--	--	70	84	94		99		S
May 11	5:30 p. m.	10,600	45,200	2,450	20	25	32	40	56	79	92	97		99		SBCW
May 11	6:30 p. m.	11,200	38,600	--	--	--	--	--	--	84	97	99		100		S
May 11	7:30 p. m.	9,680	35,600	4,100	32	46	55	66	76	87	96	100		--		SBCW
May 12	8:00 a. m.	2,910	30,900	2,930	--	5	8	89	93	94	99	100		--		SBN
May 12	8:00 a. m.	2,910	30,900	2,710	42	58	66	78	88	94	99	100		--		SBCW
May 12	1:00 p. m.	1,710	25,800	--	--	--	--	--	--	97	100	--		--		S
May 12	7:10 p. m.	1,010	22,400	2,130	61	66	78	87	92	100	--	--		--		BCW
May 14	9:00 a. m.	1,710	12,800	2,390	41	50	62	74	82	94	99	100		--		SBCW
May 17	12:45 p. m.	140	2,260	1,430	63	70	80	83	86	97	98	100		--		SBCW
May 19	11:00 a. m.	2,260	37,200	2,320	9	11	23	72	87	94	98	100		--		SBN
May 19	11:00 a. m.	2,260	37,200	2,080	53	57	69	79	86	94	99	100		--		SBCW
May 19	3:40 p. m.	1,520	38,800	3,030	54	58	70	79	85	91	96	100		--		SBCW
May 21	5:00 p. m.	322	13,600	2,640	65	88	95	97	98	99	100	--		--		SBCW
May 22	5:20 p. m.	160	9,770	1,930	80	86	90	91	94	100	--	--		--		BCW
May 25	5:10 p. m.	64	726	413	85	91	95	96	98	100	--	--		--		BCW
May 26	1:00 p. m.	1,370	8,570	1,650	45	61	70	78	84	97	100	--		--		SBCW
May 26	7:15 p. m.	1,140	7,620	2,090	50	60	70	82	89	99	100	--		--		SBCW
May 28	2:50 p. m.	648	15,500	1,390	22	28	43	92	93	96	99	100		--		SBN
May 28	2:50 p. m.	648	15,500	1,030	64	78	86	92	94	96	99	100		--		SBCW

June 6	2:25 p. m.	50	520	674	66	88	92	93	96	98	99	100		--	SBCW
June 10	6:40 p. m.	43	1,650	1,170	79	86	92	94	95	97	100	--		--	SBCW
June 11	11:00 a. m.	1,240	45,600	2,560	52	62	74	83	89	93	98	100		--	SBCW
June 11	5:20 p. m.	900	34,800	1,640	49	63	69	74	77	78	82	93		100	SBCW
June 15	9:30 a. m.	54	10,900	2,720	82	97	99	100	--	--	--	--		--	BCW
June 15	9:30 a. m.	54	10,900	2,810	--	14	16	45	99	100	--	--		--	BN
July 10	3:10 p. m.	44	31,000	2,090	79	98	99	100	--	--	--	--		--	SBCW
July 13	10:03 a. m.	28	10,900	1,950	82	97	98	100	--	--	--	--		--	SBCW
July 19	5:10 p. m.	215	17,800	1,610	62	77	87	98	99	100	--	--		--	BCW
July 22	3:15 p. m.	366	24,700	2,530	59	75	86	95	97	98	100	--		--	SBCW
July 22	3:15 p. m.	366	24,700	1,940	--	--	0	69	97	98	100	--		--	SBN
July 23	7:30 p. m.	601	22,300	1,840	55	67	75	84	92	97	100	--		--	SBCW
July 24	2:15 p. m.	1,430	25,400	2,200	35	44	53	65	79	91	97	99		100	SBCW
July 24	7:30 p. m.	2,910	27,800	1,830	36	52	58	70	81	92	98	100		--	SBCW
Aug. 2	11:10 a. m.	38	4,280	2,970	82	94	97	99	99	100	--	--		--	BCW
Sept. 4	6:30 p. m.	3,920	21,800	3,750	--	28	36	49	60	72	91	100		--	PCW
Sept. 5	9:50 a. m.	5,520	35,800	1,950	35	44	53	61	78	86	97	100		--	SBCW
Sept. 5	10:20 a. m.	8,510	27,600	4,160	30	37	44	56	67	79	96	100		--	SBCW
Sept. 5	10:35 a. m.	9,680	16,700	2,970	--	40	49	59	69	83	96	100		--	PCW
Sept. 5	11:50 a. m.	13,200	14,000	3,650	37	44	55	65	75	86	97	100		--	SBCW
Sept. 5	2:20 p. m.	15,400	9,990	6,740	36	44	52	61	66	81	94	100		--	SBCW
Sept. 5	6:45 p. m.	12,400	26,400	3,100	--	39	47	61	78	91	99	100		--	PCW
Sept. 15	5:20 p. m.	985	17,800	2,670	76	92	97	100	--	--	--	--		--	SBCW
Sept. 22	3:47 p. m.	340	14,600	2,110	33	49	65	82	93	99	100	--		--	SBW
Sept. 26	4:55 p. m.	165	4,340	3,100	--	75	81	86	92	100	--	--		--	PCW

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.

LOCATION.--Immediately below dam on Brazos River, 2.6 miles upstream from Loving Creek, 11.3 miles southwest of Graford, Palo Pinto County, and 20 miles upstream from gaging station near Palo Pinto.
DRAINAGE AREA.--22,550 square miles, of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: January 1942 to September 1950.
Water temperatures: October 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,270 ppm July 1-31; minimum, 1,120 ppm Jan. 1-31, Feb. 1-28.
Hardness: Maximum, 428 ppm July 1-31; minimum, 381 ppm Feb. 1-28, May 1-31.
Water temperatures: Maximum, 76°F Sept. 27-30; minimum, 50°F Jan. 28, Feb. 5, 15-22, Mar. 2-9.
EXTREMES, 1942-50.--Dissolved solids: Maximum, 2,130 ppm Feb. 2-9, 1942; minimum, 829 ppm Sept. 1-10, 1942.
Hardness: Maximum, 661 ppm Feb. 2-9, 1942; minimum, 318 ppm Dec. 21-31, 1942.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Palo Pinto for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-31, 1949 ..	1,116	7.4	2,060	10		125	20	278		101	282	440		0.8		1,210	1.65	3,650	394	311	61
Nov. 1-30.....	483	7.7	2,070	9.5		124	23	267		106	279	430		.8		1,190	1.62	1,550	404	317	59
Dec. 1-31.....	282	7.5	2,010	8.6		122	20	266		106	272	420		2.2		1,160	1.58	883	386	300	60
Jan. 1-31, 1950...	140	7.4	1,940	7.5		122	22	248		108	265	404		.8		1,120	1.52	423	395	306	58
Feb. 1-28.....	206	7.8	1,950	8.8		123	18	253		108	267	400		1.0		1,120	1.52	623	381	292	59
Mar. 1-31.....	269	7.7	2,040	9.5		128	19	259		110	263	422		.8		1,160	1.58	843	398	308	59
Apr. 1-30.....	261	7.9	2,030	10		124	21	273		113	282	428		1.0		1,200	1.63	846	396	304	60
May 1-31.....	692	7.4	2,000	7.8		123	18	271		115	273	420		.5		1,170	1.59	2,190	381	287	61
June 1-30	1,172	7.9	2,110	9.5		130	21	279		114	272	455		.8		1,220	1.66	3,860	411	318	60
July 1-31	2,255	7.6	2,200	12		135	22	287		108	286	472		.8		1,270	1.73	7,730	428	339	59
Aug. 1-31.....	1,775	7.4	2,160	11		128	23	281		110	279	455		2.5		1,230	1.67	5,890	414	324	60
Sept. 1-30	2,074	7.7	2,180	10		127	19	296		109	284	462		2.0		1,250	1.70	7,000	395	306	62
Weighted average	898	--	2,130	10		128	21	281		109	280	451		1.3		1,230	1.67	2,980	406	316	60

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER NEAR WHITNEY, TEX.

LOCATION.--At downstream side of Whitney Dam, Brazos River, 3.4 miles upstream from gaging station near Whitney, Hill County, and 5.8 miles southwest of Whitney. Prior to February 1950 samples collected at old gaging station at bridge on State Highway 22, 1.8 miles upstream from Towash Creek, and 5 miles southwest of Whitney.
DRAINAGE AREA.--26,190 square miles (above gaging station), of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to May 1948, October 1948 to September 1950.
Water temperatures: October 1947 to May 1948, October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,230 ppm Oct. 11-24; minimum, 242 ppm May 9, 16-21.
Hardness: Maximum, 405 ppm Oct. 11-24, Nov. 21-30, Dec. 1-10; minimum, 110 ppm Apr. 14-20.
Water temperatures: Maximum, 81°F Aug. 30; minimum, 36°F Jan. 6-7.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 1,560 ppm Oct. 1-10, 1948; minimum, 216 ppm May 17-22, 1949.
Hardness: Maximum, 542 ppm Oct. 1-10, 1948; minimum, 110 ppm Apr. 14-20, 1950.
Water temperatures: Maximum, 87°F July 12, 1949; minimum, freezing point Jan. 28-29, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station near Whitney for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949	997	7.8	1,960	8.8		114	22	259		114	258	408		0.8		1,130	1.54	3,040	375	282	60
Oct. 11-24	1,121	8.0	2,090	9.5		126	22	282		112	282	448		.8		1,230	1.67	3,720	405	313	60
Oct. 25, 27, 31	3,893	7.6	732	7.2		54	8.6	80		103	80	124		2.2		429	.58	4,510	170	86	51
Oct. 26, 28-30	2,700	7.8	636	7.0		46	7.5	68		95	63	105		2.2		362	.49	2,640	146	68	50
Nov. 1-10	1,040	7.8	1,810	9.2		115	18	236		119	245	370		.2		1,050	1.43	2,950	361	264	59
Nov. 11-20	706	8.0	1,870	11		121	23	240		129	260	385		.0		1,100	1.50	2,100	396	291	57
Nov. 21-30	424	7.8	1,840	9.4		121	25	233		146	251	375		.5		1,090	1.48	1,250	405	286	56
Dec. 1-10	294	7.9	1,890	8.1		121	25	239		155	244	385		.0		1,100	1.50	873	405	278	56
Dec. 11-20	397	7.8	1,760	6.5		114	25	221		155	226	358		.0		1,030	1.40	1,100	388	260	55
Dec. 21-31	412	7.5	1,930	5.6		116	26	250		142	246	402		.0		1,120	1.52	1,250	396	280	58
Jan. 1-10, 1950	260	7.6	1,690	5.6		108	27	207		156	222	334		.0		1,040	1.41	730	380	252	54
Jan. 11-14	776	7.6	1,470	3.7		100	22	176		164	188	278		.2		893	1.21	1,870	340	206	53
Jan. 15-20	755	7.6	703	5.5		58	13	67		130	76	112		.5		422	.57	860	198	92	42
Jan. 21-31	260	7.6	1,200	3.4		86	20	134		164	148	212		.0		725	.99	509	296	162	50
Feb. 1-11	1,623	7.9	1,070	11		86	12	114		161	128	174		1.2		640	.87	2,800	264	132	48
Feb. 12-14	5,173	7.7	417	12		49	7.1	25		139	37	37		1.8		272	.37	3,800	151	38	26
Feb. 15-19	1,265	7.7	632	13		67	9.1	49		183	61	68		2.2		386	.52	1,320	204	54	34
Feb. 20-28	536	7.9	649	9.9		70	9.5	46		202	49	68		1.8		387	.53	560	214	48	32
Mar. 1-4	559	8.0	749	7.4		64	12	76		169	86	101		1.2		446	.61	673	207	68	44
Mar. 5-10	477	7.6	1,080	6.2		84	14	124		172	134	181		1.2		699	.95	900	267	126	50
Mar. 11-20	551	7.8	1,190	6.1		86	14	150		156	154	218		1.2		766	1.04	1,140	272	144	54
Mar. 21-31	397	7.6	1,400	3.6		94	15	187		154	184	272		2.2		900	1.22	965	296	170	58

Apr. 1-13	305	7.6	1,720	4.1		104	18	227	144	226	335		1.2		1,060	1.44	873	334	216	60
Apr. 14-20	3,144	8.0	642	9.9		35	5.5	97	204	68	58		1.5		394	.54	3,340	110	0	66
Apr. 21-30	1,118	7.9	574	9.2		52	7.0	54	138	49	79		1.2		360	.49	1,090	158	46	43
May 1-8, 10	1,896	7.8	1,070	12		76	12	126	161	127	175		2.2		615	.84	3,150	239	107	53
May 9, 16-21	1,517	7.9	390	11		38	6.7	39	125	45	39		2.5		242	.33	991	122	20	41
May 11-15	981	7.5	903	12		72	12	95	169	97	137		2.8		555	.75	1,470	229	90	47
May 22-31	845	7.7	519	9.2		48	8.3	38	138	30	63		2.8		387	.39	655	154	41	35
June 1-10	1,927	7.7	1,790	9.5		112	19	226	133	227	355		2.2		1,020	1.39	5,310	358	248	58
June 11-20	1,902	7.4	1,960	8.4		111	31	239	120	248	400		4.0		1,100	1.50	5,650	404	306	56
June 21-30	687	7.4	1,930	9.8		113	29	235	121	242	395		4.0		1,090	1.48	2,020	401	302	56
July 1-11	947	7.4	1,670	8.8		93	20	213	122	203	328		3.0		989	1.35	2,530	314	214	60
July 12-20	4,098	7.7	580	10		42	8.4	58	119	53	78		2.5		311	.42	3,440	140	42	47
July 21-31	5,345	7.5	516	8.8		41	7.8	48	98	46	77		1.5		297	.40	4,290	134	54	44
Aug. 1-3	6,063	7.7	691	9.4		54	7.6	72	109	70	111		4.8		424	.58	6,940	166	76	49
Aug. 4-10	3,829	7.7	1,940	11		120	18	262	119	257	408		2.5		1,140	1.55	11,800	374	276	60
Aug. 11-20	2,616	7.7	2,090	9.4		126	19	281	119	272	440		2.5		1,210	1.65	8,550	392	295	61
Aug. 21-31	871	7.6	2,110	9.4		124	21	280	124	266	442		4.5		1,210	1.65	2,850	396	294	61
Sept. 1-10	1,161	7.8	1,050	7.5		68	11	123	104	116	194		4.0		627	.85	1,970	214	130	56
Sept. 11-20	2,738	7.8	2,000	6.6		117	19	262	112	242	420		5.0		1,130	1.54	8,350	370	278	61
Sept. 21-30	5,162	7.9	1,920	10		116	19	251	111	251	395		4.0		1,100	1.50	15,300	368	276	60
Weighted average	1,520	--	1,290	9.2		84	15	159	127	157	244		2.4		748	1.02	3,070	271	167	56

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER NEAR WHITNEY, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

BRAZOS RIVER AT RICHMOND, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Richmond, Fort Bend County, about 925 feet downstream from Texas & New Orleans Railroad bridge.
DRAINAGE AREA.--44,050 square miles, of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,150 ppm Aug. 21-31; minimum, 213 ppm Feb. 20-28.
Hardness: Maximum, 396 ppm Aug. 21-31; minimum, 74 ppm Jan. 13-14, 18-20.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 1,240 ppm Sept. 1-10, 1948; minimum, 133 ppm Aug. 27-31, 1947.
Hardness: Maximum, 446 ppm Sept. 1-10, 1948; minimum, 74 ppm Jan. 13-14, 18-20, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949	1,855	7.7	1,660	12		109	20	208		165	213	318	0.3	0.8		995	1.35	4,980	354	219	56
Oct. 11-20	1,830	7.5	1,680	12		106	18	215		154	207	328	.3	.8		997	1.36	4,920	338	212	58
Oct. 21-24	2,315	7.6	1,470	10		92	16	192		149	176	288	.3	.8		870	1.18	5,440	296	174	59
Oct. 25-31	13,450	7.6	571	9.8		47	6.1	59		118	55	82	.2	1.8		325	.44	11,800	142	46	48
Nov. 1-2, 13-14	6,428	7.7	639	10		49	8.4	64		109	59	103	.2	.8		378	.51	6,560	157	68	47
Nov. 3-12	5,997	7.8	434	10		37	5.4	41		100	29	64	.2	1.2		266	.36	4,310	114	33	44
Nov. 15-19	1,782	7.6	1,080	9.8		77	13	124		144	121	191	.3	.8		635	.86	3,060	246	128	52
Nov. 20-30	1,340	7.8	1,380	12		100	18	166	--	188	166	255	.2	1.0		871	1.18	3,150	324	170	55
Dec. 1-10	2,118	7.8	1,320	9.9		98	20	153		207	160	228	.3	.0		785	1.07	4,490	326	157	50
Dec. 11-20	7,434	7.6	424	12		32	6.4	37	--	114	33	53	.2	.8		264	.36	5,300	106	13	48
Dec. 21-22, 29-31	4,246	7.7	719	11		51	10	80		142	64	112	.2	.2		426	.58	4,880	168	52	51
Dec. 23-28	3,838	7.4	524	12		41	10	49		111	51	73	.3	1.8		333	.45	3,450	144	52	42
Jan. 1-10, 1950	3,290	8.2	676	15		55	9.1	72		139	69	102	.3	.8		412	.56	3,660	174	60	47
Jan. 11-12, 15-17	4,828	7.9	660	14		59	8.3	68		154	65	94	.2	.5		408	.55	5,320	181	55	45
Jan. 13-14, 18-20	7,636	7.8	390	16		25	2.8	55		134	27	39	--	1.0		247	.34	5,090	74	0	62
Jan. 21-31	4,427	8.1	504	14		43	7.8	50		120	47	70	.3	.8		320	.44	3,820	139	41	44
Feb. 1-10	4,492	7.6	638	15		61	10	55		178	54	78	.2	.8		384	.52	4,660	193	47	38
Feb. 11-19	23,760	8.0	385	13		47	4.7	24		139	30	29	.3	2.0		238	.32	15,300	137	23	28
Feb. 20-28	13,710	7.4	357	12		37	4.4	28		112	21	40	.3	.8		213	.29	7,880	110	19	36
Mar. 1-10	4,884	7.7	450	12		48	9.4	20		110	40	48	.3	1.0		280	.38	3,690	158	68	21
Mar. 11-20	2,210	7.8	604	9.9		60	8.6	54		176	59	68	.3	.8		349	.47	2,090	185	41	39
Mar. 21-31	1,856	7.7	768	11		67	9.2	78		182	84	98	.3	.8		448	.61	2,250	205	56	45
Apr. 1-10	1,223	7.8	800	11		71	11	93		225	84	108	.3	.5		491	.67	1,620	222	38	48
Apr. 11-18	1,606	7.8	895	10		79	12	91		224	89	119	.3	.2		520	.71	2,250	246	63	45
Apr. 19-30	18,180	7.8	381	10		44	4.4	29		132	32	34	.3	2.2		221	.30	10,800	128	20	33
May 1-10	7,340	7.7	417	11		44	5.0	35		126	35	47	.2	.8		245	.33	4,860	130	27	37
May 11-17, 26-27	4,638	7.6	660	14		56	9.2	64		144	65	91	.3	2.0		403	.55	5,050	178	60	44
May 18-25, 28-31	7,313	7.8	431	13		43	6.3	35		126	38	44	.3	3.2		270	.37	5,330	133	30	36

BRAZOS RIVER BASIN--Continued

BRAZOS RIVER AT RICHMOND, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
June 1-10, 1950 ...	22,820	8.0	375	16		42	6.8	28		142	28	34	0.3	0.0		226	0.31	13,900	133	16	32
June 11-16	10,200	7.9	499	19		49	6.6	43		138	46	58	.3	.2		306	.42	8,430	149	36	39
June 17-20	4,510	7.8	853	16		67	10	90		144	90	138	.2	.0		530	.72	6,450	208	90	49
June 21-30	2,663	7.8	1,230	16		85	15	144		158	144	218	.2	.0		749	1.02	5,390	274	144	53
July 1-10	1,170	7.8	1,210	19		85	17	140		180	137	210	.3	.0		742	1.01	2,340	282	134	52
July 11-19	1,970	7.9	1,280	16		88	18	150		182	147	224	.2	.0		776	1.06	4,130	294	144	53
July 20-30	5,086	7.9	557	15		52	8.0	48		145	48	68	.3	1.0		336	.46	4,610	163	44	39
Aug. 1-6.....	5,947	7.7	1,590	13		104	22	190		131	198	318	.3	.0		960	1.31	15,400	350	242	54
Aug. 7-10.....	4,230	7.7	769	16		54	9.8	84		120	80	124	.3	.0		482	.66	5,500	175	77	51
Aug. 11-20	3,084	7.4	1,870	14		120	20	236		142	236	375	.3	2.2		1,070	1.46	8,910	382	265	57
Aug. 21-31	2,033	7.4	2,010	13		124	21	260		144	254	408	.4	3.5		1,150	1.56	6,310	396	278	59
Sept. 1-9	1,636	7.5	1,730	13		111	21	213		175	202	332	.3	3.0		1,070	1.46	4,730	364	220	56
Sept. 10-15, 19-21	4,946	7.6	492	11		47	6.4	41		145	35	53	.2	3.5		280	.38	3,740	144	25	38
Sept. 16-18	2,560	7.6	851	13		65	11	88		131	85	142	.2	1.5		500	.68	3,460	207	100	48
Sept. 22-30	7,309	7.5	979	12		68	11	108		121	103	171	.2	1.8		577	.78	11,400	214	116	52
Weighted average	5,783	--	613	13		53	8.1	60		136	58	87	0.3	1.3		368	0.50	5,750	166	54	44

SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.

LOCATION.--At gaging station at bridge on county road from Peacock to Oriana, 1,000 feet upstream from Wichita Valley Railway (Burlington) bridge, 2.4 miles west of Peacock, Stonewall County, 2.9 miles upstream from bridge on U. S. Highway 380, and 9.1 miles downstream from Croton Creek.
DRAINAGE AREA.--4,260 square miles, of which 2,770 square miles is probably noncontributing.
RECORDS AVAILABLE.-- Chemical analyses: December 1949 to September 1950.
Water temperatures: December 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 33,700 ppm Apr. 14, 15; minimum, 934 ppm Sept. 26, 27-28.
Hardness: Maximum, 4,160 ppm Apr. 14, 15; minimum, 214 ppm Sept. 26, 27-28.
Water temperatures: Maximum, 93°F June 13, 18, 26; minimum, freezing point Jan. 4, 26-27, 30, Mar. 13.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for period December 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Dec. 16-31, 1949...	2.20	7.6	28,500	14		650	238	6,140		162	1,800	10,000		--		18,900	25.70	112	2,600	2,470	84
Jan. 1-31, 1950....	3.00	7.6	27,400	10		635	245	6,500		169	1,840	10,400		--		19,700	26.79	160	2,590	2,450	84
Feb. 1-28.....	1.58	7.7	25,400	9.9		687	224	6,660		160	1,960	10,600		--		20,200	27.47	86	2,640	2,500	85
Mar. 1-26	a.32	7.6	29,100	17		789	249	6,310		152	2,260	10,100		--		19,800	26.93	17	2,990	2,870	82
Apr. 14, 15	.19	7.3	45,100	13		1,050	375	11,200		123	3,250	17,800		--		33,700	45.83	17	4,160	4,060	85
Apr. 15.....	20.4	7.7	3,730	12		460	121	362		116	1,200	770		1.0		2,980	4.05	164	1,640	1,550	32
Apr. 16, 17, 18-19 .	102	7.7	5,950	12		196	78	971		178	632	1,500		1.0		3,480	4.73	958	810	664	72
Apr. 17, 21-22	21.9	7.5	16,500	12		438	165	3,280		143	1,310	5,270		--		10,500	14.28	621	1,770	1,650	80
Apr. 20.....	12	7.6	9,420	11		280	113	1,770		178	872	2,800		--		5,930	8.06	192	1,160	1,020	77
Apr. 23-29.....	.80	7.4	29,700	11		820	299	6,380		122	2,290	10,400		--		20,300	27.61	44	3,280	3,180	81
May 1	150	7.9	1,650	16		274	12	105		132	668	110		3.2		1,250	1.70	506	733	625	24
May 2, 10, 11, 17, 18, 21, 26-27, 30 .	666	7.8	6,620	17		262	124	1,010		129	693	1,800		5.0		3,970	5.40	7,140	1,160	1,060	65
May 3-9, 25.....	6.66	7.7	22,900	15		718	181	5,050		120	1,910	8,110		--		16,000	21.76	288	2,540	2,440	81
May 11, 12, 14-15, 18, 19-20, 28.....	1,262	7.9	2,880	15		106	25	467		156	267	690		4.0		1,650	2.24	5,620	368	240	73
May 13, 16, 29	238	7.9	4,240	14		126	35	735		138	346	1,120		3.5		2,450	3.33	1,570	458	346	78
May 22-24, 31	52.5	7.9	13,600	15		355	103	2,770		173	899	4,440		--		8,670	11.79	1,230	1,310	1,170	82
June 1-3, 11-14....	46.4	7.8	16,000	28		373	127	3,120		131	1,070	4,980		--		9,760	13.27	1,220	1,450	1,340	82
June 4-7	270	7.9	2,410	19		96	35	343		132	281	515		3.0		1,360	1.85	991	384	276	66
June 8-10	107	8.0	6,190	22		198	54	1,060		122	548	1,660		1.0		3,600	4.90	1,040	716	616	76
June 15-30	4.52	7.7	27,600	31		665	227	3,540		122	1,840	9,410		--		18,100	24.62	221	2,590	2,490	83

a Includes days of less than 0.05 second-foot flow.

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.--Continued

Chemical analyses, in parts per million, December 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
July 1, 1950	3.30	7.6	33,100	42		728	241	7,880		154	1,970	12,600		--		23,500	31.96	209	2,810	2,680	86
July 2, 8, 17, 18, 24, 27, 31	345	7.6	6,200	19		242	43	1,020		140	528	1,660		1.5		3,580	4.87	3,330	781	666	74
July 3, 12-13, 25-26	81.0	7.6	11,100	18		295	67	2,030		133	766	3,320		--		6,560	8.92	1,430	1,010	902	81
July 4-7, 14-16	2.09	7.6	21,100	24		536	148	4,400		132	1,450	7,020		--		13,600	18.50	77	1,950	1,840	83
July 9-11, 18 19-23, 28-30	353	7.6	2,830	17		120	19	437		130	305	640		2.0		1,600	2.18	1,520	378	271	72
Aug. 1-2, 7-9, 20	57.0	7.7	6,810	16		186	54	1,220		135	529	1,900		6.0		3,980	5.41	613	686	576	79
Aug. 3, 10-11, 18, 21	21.0	7.8	11,900	17		299	85	2,320		156	840	3,640		--		7,280	9.90	413	1,100	968	82
Aug. 4-6, 12-13, 22-23, 30-31	10.5	7.7	18,000	18		454	127	3,710		159	1,220	5,900		--		11,500	15.64	326	1,650	1,520	83
Aug. 14-16, 24-27	3.60	7.7	23,400	17		558	176	5,050		131	1,560	8,060		--		15,500	21.08	151	2,120	2,010	84
Aug. 17, 19, 28-29	18.0	7.4	3,720	9.2		316	29	455		72	804	708		3.5		2,360	3.21	115	908	848	52
Sept. 1, 2, 3	39.0	7.7	20,400	17		651	162	4,230		155	1,720	6,780		--		13,600	18.50	1,430	2,290	2,160	80
Sept. 3, 8, 9	887	7.8	2,940	13		134	23	443		108	323	682		4.2		1,680	2.28	4,020	429	340	69
Sept. 4, 10	750	7.8	6,660	16		226	48	1,170		140	568	1,840		7.5		3,940	5.36	7,980	762	647	77
Sept. 5-7	1,348	7.9	1,690	15		67	18	255		125	204	338		4.5		992	1.35	3,610	241	138	70
Sept. 11, 17, 25	79.0	7.9	6,510	15		172	52	1,180		161	463	1,840		10		3,810	5.18	813	643	511	80
Sept. 12, 16	212	7.7	4,300	14		146	40	708		135	372	1,110		7.7		2,460	3.35	1,410	529	418	74
Sept. 13-15, 19, 20-24, 26, 29-30	304	7.8	3,050	16		118	29	493		142	319	730		9.5		1,780	2.42	1,460	414	297	72
Sept. 18, 19	179	7.7	10,800	16		252	84	2,090		171	697	3,300		--		6,530	8.88	3,160	974	834	82
Sept. 26, 27-28	720	7.7	1,560	12		56	18	241		121	141	345		4.8		934	1.27	1,820	214	114	71
Weighted average	134	--	4,380	16		158	46	731		137	412	1,160		4.3		2,610	3.55	944	583	470	73

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR PEACOCK, TEX.--Continued

Temperature (°F) of water, December 1949 to September 1950 [a]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			--	50	35	39	--	60	83	91	89	66
2			--	56	44	44	--	55	--	89	72	66
3			--	61	35	39	--	81	65	70	90	72
4			--	31	--	46	--	81	65	72	91	71
5			--	40	--	63	--	51	63	70	91	72
6			--	36	65	71	--	56	66	72	73	70
7			--	35	48	42	--	69	67	77	72	72
8			--	48	48	39	--	71	89	75	83	75
9			--	43	40	58	--	70	--	74	76	--
10			--	41	40	62	--	67	72	82	73	75
11			--	45	51	47	--	63	77	75	72	74
12			--	50	50	42	--	61	86	79	70	70
13			--	48	39	32	--	65	93	72	73	82
14			--	41	40	38	55	60	87	69	90	76
15			50	46	37	44	52	63	85	74	73	75
16			43	35	39	41	65	65	89	78	75	74
17			--	47	45	45	57	68	90	73	72	74
18			69	38	44	54	60	69	93	74	70	74
19			76	45	40	48	52	67	92	74	68	73
20			80	52	50	48	59	67	91	74	67	85
21			54	48	53	45	65	77	69	73	66	75
22			42	49	40	44	62	67	90	--	71	71
23			48	49	40	49	68	76	89	76	--	77
24			45	61	41	44	75	80	73	72	75	70
25			--	65	45	55	52	71	71	76	53	78
26			55	31	60	51	51	55	93	74	50	73
27			60	32	51	--	64	62	79	82	--	66
28			48	44	67	--	60	67	90	89	52	70
29			48	36	--	--	67	70	73	84	49	71
30			51	32	--	--	--	69	71	80	70	73
31			51	34	--	--	--	84	--	89	72	--
Average			--	44	46	47	--	67	81	77	72	73

a Wide variations occur from day to day due to the small discharge and variable time of temperature measurement.

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR ASPERMONT, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 83, 5½ miles downstream from Dove Creek, and 13.2 miles northwest of Aspermont, Stonewall County.
DRAINAGE AREA.--4,834 square miles, of which 2,770 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1950.
Water temperatures: October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 48,900 ppm Apr. 1-15, 30; minimum, 1,820 ppm Sept. 6-10, 27-29.
Hardness: Maximum, 4,940 ppm Mar. 1-31; minimum, 521 ppm Sept. 6-10, 27-29.
Water temperatures: Maximum, 90°F June 25; minimum, 34°F Dec. 16.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 78,500 ppm Mar. 21, 24-28, 1949; minimum, 1,680 ppm July 16, 31, Aug. 1, 1949.
Hardness: Maximum, 5,330 ppm Mar. 21, 24-28, 1949; minimum, 434 ppm May 8-10, 1949.
Water temperatures: Maximum, 90°F June 17, 1949, June 26, 1950; minimum, freezing point on several days in January and February, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1-10, 1949	3.69	7.3	29,500	16		933	213	7,020		115	2,330	11,300		--		21,900	29.78	218	3,200	3,110	83
Oct. 11-20	.88	7.5	42,000	15		1,250	317	12,100		157	3,020	19,500		--		36,300	49.37	86	4,420	4,290	86
Oct. 21-23	110	7.1	42,000	11		900	198	11,100		94	1,510	18,100		--		31,900	43.38	9,470	3,060	2,980	89
Oct. 24-29	238	7.6	9,400	11		374	64	1,620		99	966	2,580		--		5,660	7.70	3,640	1,200	1,120	75
Oct. 30-31	31.0	7.6	17,800	15		564	117	3,560		144	1,410	5,700		--		11,400	15.50	954	1,890	1,770	80
Nov. 1-10	14.2	7.7	27,400	15		792	178	5,860		142	1,950	9,430		--		18,300	24.89	702	2,710	2,590	82
Nov. 11-20	3.29	7.6	40,500	13		1,100	261	9,230		144	2,520	15,000		--		28,200	38.35	251	3,820	3,700	84
Nov. 21-30	2.45	7.4	48,600	18		1,200	175	13,800		157	2,730	21,800		--		39,800	54.13	263	3,710	3,580	89
Dec. 1-31	4.86	7.2	61,000	10		1,160	422	15,900		143	2,660	25,800		--		46,000	62.56	604	4,630	4,510	88
Jan. 1-31, 1950	8.70	7.6	47,500	9.2		1,050	381	12,700		136	2,570	20,600		--		37,400	50.86	879	4,190	4,080	93
Feb. 1-28	5.97	7.1	62,100	8.4		1,160	359	16,300		124	2,780	26,100		--		46,800	63.65	754	4,370	4,270	89
Mar. 1-31	.58	7.5	56,400	13		1,340	387	14,800		161	3,430	23,700		--		43,700	59.43	68	4,940	4,800	87
Apr. 1-15, 30	a.41	7.7	60,900	11		1,440	274	16,900		159	3,440	26,800		--		48,900	66.50	54	4,720	4,590	89
Apr. 16, 25-29	a16.1	7.7	45,400	14		1,100	146	11,400		139	2,630	17,900		--		33,300	45.29	1,450	3,340	3,230	88
Apr. 17, 23-24	45.0	7.5	28,100	14		370	108	6,680		112	1,920	9,780		--		18,900	25.70	2,300	1,370	1,280	91
Apr. 18-22	54.2	7.8	13,900	12		405	90	2,720		109	1,180	4,240		--		8,700	11.83	1,270	1,380	1,290	81
May 1, 9, 26	97.4	7.7	44,600	13		1,100	249	10,600		119	2,710	17,000		--		31,700	43.11	8,340	3,770	3,670	86
May 2, 24-25	141	7.8	14,700	13		498	99	2,800		190	1,290	4,430		--		9,220	12.54	3,510	1,650	1,490	79
May 3-4, 6-8	17.3	7.8	26,400	13		742	124	5,690		106	1,770	9,080		--		17,500	23.80	817	2,360	2,270	84
May 5, 10, 23, 26, 27-28, 31	499	7.8	10,200	13		456	69	1,750		127	1,140	2,790		--		6,280	8.54	8,460	1,420	1,320	73
May 11-16, 18-19	2,304	7.8	3,960	14		240	29	584		117	612	888		3.5		2,430	3.30	15,100	718	622	64
May 17, 20-22, 29-30	198	7.8	6,370	13		220	49	1,090		116	578	1,710		6.0		3,720	5.06	1,990	750	656	76

a Includes days of less than 0.05 second-foot flow.

June 1, 12, 21.....	75.0	7.0	12,000	20		483	83	2,190	108	1,180	3,540		--		7,550	10.27	1,530	1,550	1,460	75
June 2-3.....	160	8.1	3,490	19		296	24	441	89	700	705		--		2,230	3.03	963	837	764	53
June 4-11.....	399	7.4	6,420	19		264	41	1,060	106	649	1,680		3.5		3,770	5.13	4,060	827	740	74
June 13-20, 28-30..	59.2	7.2	21,400	25		675	157	4,440	94	1,690	7,190		--		14,200	19.31	2,270	2,330	2,250	81
June 22-27.....	5.67	7.6	49,200	20		1,160	280	12,500	122	2,690	20,100		--		36,800	50.05	563	4,050	3,950	87
July 1, 12-15, 17, 18, 26.....	356	7.7	11,700	19		502	72	2,120	106	1,220	3,410		--		7,400	10.06	7,110	1,550	1,460	75
July 2-8, 16, 17....	40.4	7.6	22,700	16		849	153	4,630	85	2,070	7,510		--		15,300	20.81	1,670	2,750	2,680	79
July 9-10, 25, 28...	224	7.6	6,860	19		320	44	1,150	108	874	1,750		3.5		4,430	6.02	2,680	980	891	72
July 11, 19-24, 27, 29-31.....	324	7.7	4,430	19		340	31	555	119	512	1,100		1.5		2,620	3.56	2,290	976	878	55
Aug. 1, 9-11, 21, 30-31.....	42.4	7.8	11,400	26		449	78	2,010	111	1,140	3,220		--		6,980	9.49	799	1,440	1,350	75
Aug. 2-8, 12, 18-20, 22-23.....	53.8	7.8	15,800	29		572	113	3,010	114	1,480	4,830		--		10,100	13.74	1,470	1,890	1,800	78
Aug. 13-16.....	12.1	7.7	20,400	36		633	158	4,060	97	1,690	6,540		--		13,200	17.95	431	2,230	2,150	80
Aug. 17, 24-26.....	29.3	7.7	29,400	26		760	182	6,360	100	1,930	10,200		--		19,500	26.52	1,540	2,640	2,560	84
Aug. 27-29.....	108	8.0	6,220	20		360	47	967	121	937	1,500		5.0		3,900	5.30	1,140	1,090	992	66
Sept. 1-4.....	667	7.7	17,500	16		596	110	3,430	96	1,440	5,550		--		11,200	15.23	20,200	1,940	1,860	79
Sept. 5, 11-16, 20-26, 30.....	639	8.0	5,550	17		237	40	908	129	620	1,400		5.0		3,290	4.47	5,680	756	650	72
Sept. 6-10, 27-29...	1,004	7.8	3,060	15		166	26	448	116	435	670		4.0		1,820	2.48	4,930	521	426	65
Sept. 17-19.....	98.3	8.1	9,880	24		340	66	1,790	144	864	2,830		--		5,980	8.13	1,590	1,120	1,000	78
Weighted average..	166	--	7,640	16		320	52	1,400	117	786	2,230		--		4,870	6.62	2,180	1,010	916	75

BRAZOS RIVER BASIN--Continued

SALT FORK BRAZOS RIVER NEAR ASPERMONT, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 a

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

a Wide variations occur from day to day due to the variable discharge and time of temperature measurement.

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.

LOCATION.--At gaging station at county highway bridge in Nugent, Jones County, 4 miles upstream from Deadman Creek.
DRAINAGE AREA.--2,220 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1948 to September 1950.
Water temperatures: August 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 3,250 ppm Mar. 11-20; minimum, 181 ppm Oct. 22, 24, 26-28.
Hardness: Maximum, 1,400 ppm Mar. 11-20; minimum, 94 ppm July 8, 13, 27-31.
Water temperatures: Maximum, 90°F Aug. 10; minimum, 42°F Jan. 31, Feb. 1.
EXTREMES, 1948-50.--Dissolved solids: Maximum, 3,910 ppm Mar. 21-31, 1949; minimum, 158 ppm Sept. 15-16, 1949.
Hardness: Maximum, 1,490 ppm Mar. 21-31, 1949; minimum, 89 ppm Sept. 15-16, 1949.
Water temperatures: Maximum, 92°F June 2, 24, 1949; minimum, freezing point Jan. 29, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949....	0.69	8.0	762	17		58	25	58		173	94	94		1.2		449	0.61	0.8	248	106	34
Oct. 11-20.....	1.43	8.1	956	17		72	33	73		198	127	127		1.2		603	.82	2.3	315	153	34
Oct. 21, 23, 25,29-31	201	8.0	490	9.8		46	13	32		115	89	34		3.2		316	.43	171	168	74	29
Oct. 22, 24, 26-28.	234	7.3	294	9.0		33	8.2	13		106	36	13		1.8		181	.25	114	116	29	19
Nov. 1-10	2.29	8.2	555	11		49	16	42		132	93	51		2.2		360	.49	2.2	188	80	32
Nov. 11-20	.79	8.2	880	14		67	27	82		188	132	116		.8		572	.76	1.2	278	124	39
Nov. 21-30	1.65	8.2	1,050	14		84	35	90		218	165	141		.2		695	.95	3.1	354	175	36
Dec. 1-9	1.88	8.0	1,130	13		88	42	98		259	199	132		.5		775	1.05	3.9	392	180	35
Dec. 10-31	2.48	7.9	1,470	8.4		112	56	135		238	354	170		.0		952	1.29	6.4	510	315	36
Jan. 1-10, 1950....	4.06	7.8	2,510	3.7		251	95	230		258	737	382		.8		1,830	2.49	20	1,020	805	33
Jan. 11-20.....	3.45	7.8	2,880	4.6		288	102	271		233	989	358		2.5		2,130	2.90	20	1,140	947	34
Jan. 21-31.....	2.74	7.6	3,070	3.8		300	111	297		216	1,080	289		1.0		2,290	3.11	17	1,200	1,030	35
Feb. 1-10	3.40	7.8	3,100	6.5		264	113	323		181	1,040	420		1.8		2,260	3.07	21	1,120	974	38
Feb. 11-19	2.42	7.9	3,590	5.7		280	126	402		166	1,160	530		.8		2,590	3.52	17	1,220	1,080	42
Feb. 20-28	2.11	8.0	4,000	5.5		294	137	480		139	1,230	670		.2		2,890	3.93	16	1,300	1,180	45
Mar. 1-10.....	1.70	7.8	4,630	5.6		320	143	550		122	1,290	808		.8		3,180	4.32	15	1,390	1,290	46
Mar. 11-20.....	1.42	7.7	4,760	6.0		314	149	573		106	1,300	862		1.0		3,250	4.42	12	1,400	1,310	47
Mar. 21-31.....	.60	7.8	4,250	6.2		260	137	526		128	1,160	740		.8		2,890	3.93	4.7	1,210	1,110	49
Apr. 1-10	.45	7.9	3,890	5.1		216	138	476		152	991	698		.5		2,600	3.54	3.2	1,110	982	48
Apr. 11-12	.65	7.7	3,850	14		204	110	546		160	975	710		.8		2,640	3.59	4.6	962	830	55
Apr. 13-14	36	7.8	2,330	14		148	89	232		86	634	360		2.2		1,520	2.07	148	736	665	41
Apr. 15, 17, 19....	234	7.8	1,500	13		102	58	121		94	354	218		3.2		967	1.32	611	493	416	35
Apr. 16, 18.....	257	7.7	727	14		65	23	49		106	159	76		4.2		450	.61	312	256	170	29
Apr. 20-28	13.2	7.7	2,900	15		212	92	285		138	678	500		2.8		1,850	2.52	66	908	794	41
Apr. 29-30, May 1.	7.77	7.8	508	14		38	11	47		92	71	64		2.8		296	.40	6.2	140	64	42

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
May 2-3, 1950	3.00	7.8	1,050	14		78	33	91		152	191	143		2.2		638	0.87	5.2	330	206	37
May 4-10	6.23	7.8	1,620	14		122	48	170		208	389	210		1.0		1,060	1.44	18	502	332	42
May 11, 14, 17-20	209	7.7	428	16		43	9.3	30		134	50	32		4.2		272	.37	153	146	36	31
May 12-13	352	7.9	1,070	18		125	30	63		117	378	55		6.3		758	1.03	720	436	340	24
May 15-16, 27-29	1,085	7.7	301	16		36	6.0	18		116	37	11		4.4		198	.27	580	114	19	25
May 21-26, 28, 30-31	340	7.9	543	15		55	13	36		139	82	48		3.2		350	.48	321	190	76	29
June 1-4, 7-10	35.9	8.0	791	15		78	19	57	--	135	176	74		3.8		530	.72	51	272	162	32
June 5-6	192	8.0	408	25		50	8.4	19		107	55	37		4.2		278	.38	144	159	72	21
June 11-18	8.50	8.1	1,210	13		105	30	113		152	283	148		5.5		858	1.17	20	386	261	39
June 19-30	5.18	7.9	2,240	14		168	66	239		161	576	338		3.8		1,480	2.01	21	690	558	43
July 1-6, 9-10, 12, 13, 16, 18-19	32.4	7.7	2,440	14		173	70	266		131	667	350		3.8		1,610	2.19	141	719	612	45
July 7, 15, 20, 21, 23	61.8	8.0	1,520	14		93	33	180		139	303	231		3.5		971	1.32	162	368	254	52
July 8, 13, 27-31	263	7.7	300	15		26	7.0	24		107	22	23		2.5		187	.25	133	94	6	35
July 11, 12, 17	25.1	8.0	3,860	19		260	82	510		110	1,040	652		4.0		2,620	3.56	178	986	896	53
July 14, 15, 21, 22, 24-26	77.3	7.8	789	15		66	19	65		119	181	69		1.0		502	.68	105	242	145	37
Aug. 1-4, 17-20	118	7.8	398	15		33	10	31		112	47	34		3.0		241	.33	77	123	32	35
Aug. 5-7, 21, Sept. 1	35.6	7.8	1,020	16		78	25	97		136	217	120		2.2		649	.88	62	298	186	41
Aug. 8-9, 22-31	7.81	7.8	1,760	11		130	51	173		150	423	245		1.8		1,110	1.51	23	534	411	41
Aug. 10-16	5.44	7.7	3,170	13		190	59	433		132	677	598		1.0		2,040	2.77	30	716	608	57
Sept. 2-4, 5	31.8	7.7	2,200	5.6		162	59	242		159	580	310		1.0		1,440	1.96	124	646	516	45
Sept. 5, 7, 10	871	7.5	513	9.2		61	11	27		101	127	29		1.8		340	.46	800	198	115	23
Sept. 6, 8-9	619	7.6	315	9.2		40	9.6	9.1		106	57	8		2.0		212	.29	354	139	52	12
Sept. 11-14, 15, 17, 21, 22	42.3	7.8	604	13		61	14	41		124	120	50		3.0		382	.52	44	210	108	30
Sept. 15, 16, 18-20	80.2	8.0	1,090	12		142	28	58		135	383	60		3.2		802	1.09	174	470	359	21
Sept. 23-30	23.1	8.0	944	15		89	26	71		160	220	86		3.2		628	.85	39	329	198	32
Weighted average	64.6	--	624	14		59	17	47		119	131	59		3.2		410	0.56	72	217	120	32

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.

LOCATION.--At gaging station at bridge on Fort Griffin-Throckmorton highway, half a mile east of Fort Griffin, Shackelford County, and 1.3 miles upstream from Mill Creek.
DRAINAGE AREA.--3,974 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1949 to September 1950.
Water temperatures: November 1949 to September 1950.
Sediment records: November 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,680 ppm Apr. 17; minimum, 160 ppm Nov. 9-20.
Hardness: Maximum, 488 ppm Apr. 17; minimum, 94 ppm Apr. 18-19.
Water temperatures: Maximum, 89°F Aug. 27;
Sediment loads: Maximum daily, 40,700 tons May 28; minimum daily, 0 tons on many days.
REMARKS.--Sediment station established Nov. 9, 1949. Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, November 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Nov. 9-21, 1949	0.92	7.0	267	14		32	8.4	12		126	17	14		0.8		160	0.22	0.4	114	11	19
Apr. 13-16, 17, 1950	525	7.7	646	8.4		46	14	64		108	69	106		2.2		402	.55	570	172	84	45
Apr. 17	2,232	7.2	1,940	8.6		86	27	255		90	82	510		3.2		1,020	1.39	6,150	326	252	63
Apr. 17	2,064	7.2	3,120	8.4		123	44	445		84	112	898		4.2		1,680	2.28	9,360	488	419	66
Apr. 18-19	1,204	7.4	387	8.4		25	7.8	46		100	50	41		2.2		229	.31	744	94	12	51
Apr. 20-30	72.0	7.8	505	14		40	11	46		110	69	58		2.2		301	.41	59	145	55	41
May 1-4	94.2	7.2	708	13		60	17	61		116	144	74		4.2		454	.62	115	220	124	38
May 5-10	24.2	7.7	1,490	6.6		116	37	152		124	383	192		.5		956	1.30	62	442	340	43
May 11-12, 13, 14, 17	226	7.6	1,330	7.8		100	28	143		127	297	185		2.2		870	1.18	531	364	260	46
May 13, 15-16, 18-20	431	7.8	648	9.0		56	15	54		120	119	66		2.2		397	.54	462	201	102	37
May 21-25, 29, 31	562	7.8	555	14		50	13	39		121	73	61		3.2		320	.44	486	178	80	32
May 26-28, 30	2,000	7.9	376	13		42	7.2	23		126	29	33		4.2		219	.30	1,180	134	31	27
June 1-10	137	7.9	514	16		56	9.4	32		110	94	41		2.2		329	.45	122	178	88	27
June 11-30, July 1-6	10.1	7.5	459	16		52	11	22		135	71	26		2.0		296	.40	8.1	175	64	21
July 13-14, 24, 26-27, 28, 29, 30, 31	461	7.5	312	10		34	6.6	16		112	23	20		3.0		199	.27	248	112	20	23
July 15, 21-23, 25, 28, 30	372	7.5	512	11		44	12	40		113	72	55		2.5		308	.42	309	159	67	36
July 16-20	97.6	7.5	1,520	11		123	40	144		139	389	186		2.5		1,010	1.37	266	472	358	40
Aug. 1, 2, 3, 4-8	246	7.6	313	13		30	7.0	20		109	15	28		3.0		192	.26	128	104	14	29
Aug. 2, 3, 9-10	301	7.6	484	14		36	9.2	42		105	17	80		2.5		306	.42	249	128	42	42
Aug. 11-20	10.6	7.6	456	13		36	9.0	39		115	15	70		2.8		264	.36	7.6	127	33	40
Aug. 21-31	15.8	7.8	484	13		39	9.5	41		128	16	73		1.5		276	.38	12	136	31	40

Sept. 1-5, 8, 9-10	296	7.7	469	12		50	9.1	31	119	67	43		1.2		301	.41	241	162	65	29
Sept. 6, 8	1,500	7.8	291	14		32	7.8	10	128	10	12		2.8		183	.25	741	112	7	17
Sept. 7	1,860	7.7	1,030	10		62	24	109	118	119	189		2.2		652	.89	3,270	253	156	48
Sept. 11-15, 20	134	7.7	632	15		70	17	27	95	135	58		3.5		412	.56	149	244	166	19
Sept. 16-19	118	7.8	402	15		45	8.6	23	118	58	27		2.8		260	.35	83	148	51	25
Sept. 21-22, 24-26, 29-30	228	7.8	433	13		41	10	31	111	59	40		2.5		276	.38	170	143	52	32
Sept. 23, 27-28	83.0	7.8	675	13		53	15	59	111	92	93		3.8		420	.57	94	194	102	40
Weighted average	a131	--	544	12		47	12	45	117	68	67		2.9		333	0.45	118	167	71	37

a Mean discharge for water year October 1949 to September 1950 was 127 second-feet.

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Temperature (°F) of water, November 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		--					--	68	75	--	84	84
2		--					--	68	77	--	79	84
3		--					--	72	74	--	79	--
4		--					--	78	76	--	79	--
5		--					--	74	73	--	85	71
6		--					--	74	73	--	82	75
7		--					--	75	78	--	79	75
8		--					--	75	75	--	79	73
9		65					--	77	79	--	84	71
10		60					--	78	81	--	87	74
11		62					--	73	81	--	84	71
12		61					--	70	83	--	85	74
13		58					--	65	84	74	84	73
14		63					--	70	87	73	82	79
15		57					--	73	85	79	78	78
16		56					60	76	85	81	79	81
17		58					--	80	84	82	78	78
18		58					--	77	83	81	77	81
19		60					--	78	84	84	79	74
20		65					60	80	79	80	79	79
21		48					68	82	87	84	79	80
22		--					68	78	81	82	80	71
23		--					71	82	83	80	77	73
24		--					76	80	--	79	80	79
25		--					70	84	--	85	85	72
26		--					70	68	--	81	80	74
27		--					70	70	--	76	89	76
28		--					75	68	--	79	80	75
29		--					78	68	--	85	79	74
30		--					70	77	--	86	72	71
31		--					--	74	--	86	80	--
Average		--					--	75	--	--	81	76

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Suspended sediment, November 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1				--	--	--			
2				--	--	--			
3				--	--	--			
4				--	--	--			
5				--	--	--			
6				--	--	--			
7				--	--	--			
8				--	--	--			
9				3.2	100	0.9			
10				2.6	104	.7			
11				2.0	88	.5			
12				.7	74	.1			
13				.6	64	.1			
14				.6	70	.1			
15				.5	70	.1			
16				.2	54	--			
17				.2	50	--			
18				.2	52	--			
19				.2	39	--			
20				.1	38	--			
21				0	--	0			
22				0	--	0			
23				0	--	0			
24				0	--	0			
25				0	--	0			
26				0	--	0			
27				0	--	0			
28				0	--	0			
29				0	--	0			
30				0	--	0			
31				--	--	--			
Total				11.1	--	t2.6	0		0

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
Total	0		0	0		0	0		0

t Less than 0.05 ton.

BRAZOS RIVER BASIN--Continued

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Suspended sediment, November to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	154	200	83	209	500	s 301
2	0	--	0	91	110	27	111	216	65
3	0	--	0	73	104	20	120	336	109
4	0	--	0	59	62	9.9	63	210	36
5	0	--	0	46	38	4.7	79	154	33
6	0	--	0	31	34	2.8	79	175	s 45
7	0	--	0	22	28	1.7	300	290	235
8	0	--	0	17	33	1.5	197	282	150
9	0	--	0	15	24	1.0	127	202	69
10	0	--	0	14	24	.9	82	114	25
11	0	--	0	26	21	1.5	63	134	23
12	0	--	0	22	36	2.1	43	60	7.0
13	.6	e 100	.2	447	529	s 742	30	55	4.5
14	.6	e 75	.1	539	417	s 611	20	46	2.5
15	8.3	e 75	18	673	814	s 1,880	14	38	1.4
16	685	2,370	s 4,790	990	1,360	3,640	10	30	.8
17	2,320	4,220	s26,800	350	1,510	s 1,370	8.2	28	.6
18	1,700	2,810	s12,900	207	1,610	s 921	5.5	21	.3
19	707	2,210	s 4,410	111	500	150	4.8	18	.2
20	244	1,250	s 836	68	130	24	3.5	21	.2
21	194	755	395	46	101	13	4.2	28	.3
22	113	470	143	41	114	13	6.8	40	.7
23	64	186	32	29	127	9.9	3.2	26	.2
24	41	212	23	20	118	6.4	2.0	e 25	.1
25	25	92	6.2	147	183	s 415	7.8	e 200	4.2
26	19	95	4.9	1,560	2,380	s 10,600	16	e 150	6.5
27	15	57	2.3	2,110	4,200	s 24,900	7.8	e 75	1.6
28	11	71	2.1	2,960	4,700	s 40,700	4.5	e 50	.6
29	7.8	69	1.5	2,900	3,660	s 30,100	3.0	e 40	.3
30	58	215	s 106	1,370	2,020	s 7,510	2.2	e 30	.2
31	--	--	--	750	1,080	s 2,300	--	--	--
Total	6,213.3	--	50,470	15,888	--	126,100	1,626.5	--	1,120

Day	July			August			September		
1	1.5	e 20	0.1	156	1,000	s 723	2.0	24	0.1
2	1.0	e 20	.1	965	2,800	s 8,230	1.7	12	.1
3	.7	18	--	418	2,090	s 2,440	1.5	e 12	--
4	.5			420	1,400	1,590	2.0	120	.6
5	.2			269	733	s 532	111	300	s 298
6	.1			164	513	227	845	1,520	s 3,800
7	0	--	0	116	194	61	1,860	2,600	s 13,300
8	0	--	0	64	188	32	2,380	4,340	s 28,100
9	0	--	0	42	84	9.5	1,150	1,680	s 6,200
10	0	--	0	30	67	5.4	276	900	s 699
11	0	--	0	20	70	3.8	146	250	99
12	0	--	0	15	76	3.1	91	181	44
13	111	729	s 360	10	58	1.6	102	115	32
14	541	1,520	s 2,200	7.3	44	.9	86	129	30
15	358	454	s 595	5.0	47	.6	157	124	53
16	127	66	23	11	54	1.6	187	245	124
17	108	56	16	20	50	2.7	86	175	41
18	102	62	17	9.9	31	.8	71	182	35
19	68	31	5.7	4.5	32	.4	128	172	59
20	83	101	23	3.0	43	.3	219	367	s 896
21	59	38	6.1	44	67	8.0	951	1,340	s 3,820
22	40	45	4.9	34	64	5.9	360	1,200	s 1,160
23	39	100	s 15	26	44	3.1	179	980	474
24	119	198	s 63	20	47	2.5	100	360	97
25	111	100	s 31	16	38	1.6	85	132	30
26	142	206	79	11	40	1.2	62	148	25
27	1,130	1,660	s 5,920	8.2	30	.7	41	76	8.4
28	1,830	2,420	s12,100	5.5	34	.5	29	58	4.5
29	637	2,000	s 3,550	4.2	28	.3	22	60	3.6
30	551	1,510	s 2,210	2.8	34	.3	16	62	2.7
31	215	1,280	s 751	2.2	38	.2	--	--	--
Total	6,375.0	--	t27,970	2,923.6	--	13,890	9,747.2	--	t 59,440

Total discharge for period Nov. 9 to Sept. 30 (second-foot-days) 42,784.7
Total load for period Nov. 9 to Sept. 30 (tons) 279,000

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

CLEAR FORK BRAZOS RIVER AT FORT GRIFFIN, TEX.--Continued

Particle-size analyses of suspended sediment, April to September 1950

(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 (second-feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Apr. 16, 1950	8:25 a.m.	389	1,780	1,140	43	80	92	98	99	100	--					BCW
Apr. 17	3:47 p.m.	2,440	3,280	2,650	44	69	87	96	99	100	--					BCW
Apr. 17	5:15 p.m.	2,320	3,550	2,310	46	71	93	97	100	--	--					BCW
Apr. 18	8:45 a.m.	1,740	3,040	2,450	49	82	92	98	99	100	--					BCW
Apr. 18	11:15 a.m.	1,700	2,920	1,050	66	85	91	98	98	99	100					BCW
Apr. 18	11:15 a.m.	1,700	2,920	1,030	13	30	96	100	--	--	--					BN
Apr. 18	5:50 p.m.	1,640	2,690	2,050	59	82	92	95	99	100	--					BCW
Apr. 19	11:15 a.m.	650	2,330	1,770	65	79	93	98	98	100	--					BCW
May 13	7:45 a.m.	664	806	530	1	10	64	94	99	100	--					BN
May 13	7:45 a.m.	664	806	619	67	80	84	93	98	100	--					BCW
May 14	7:45 a.m.	692	--	--	--	--	--	--	--	100	--					S
May 15	11:00 a.m.	624	--	--	--	--	--	--	--	100	--					S
May 16	3:00 p.m.	1,010	--	--	--	--	--	--	--	100	--					S
May 17	6:00 p.m.	274	1,810	1,060	79	94	96	97	99	100	--					BCW
May 18	9:30 a.m.	235	--	--	--	--	--	--	--	100	--					S
May 19	10:30 a.m.	113	382	441	96	100	--	--	--	--	--					BCW
May 20	2:25 p.m.	64	--	--	--	--	--	--	--	99	100					S
May 22	8:45 a.m.	40	--	--	--	--	--	--	--	100	--					S
May 26	12:30 p.m.	1,170	2,340	1,560	12	19	66	94	98	100	--					BN
May 26	12:30 p.m.	1,170	2,340	1,650	66	76	88	95	97	100	--					BCW
May 27	8:00 a.m.	2,220	5,310	967	75	80	91	95	96	100	--					BCW
May 28	9:00 a.m.	2,730	3,240	1,110	43	70	83	93	96	100	--					BCW
May 28	9:00 a.m.	2,730	3,240	1,140	13	45	75	87	92	100	--					BN
May 28	6:00 p.m.	3,500	7,390	5,120	69	82	88	96	98	100	--					BCW
May 29	10:30 p.m.	3,120	3,450	1,010	83	84	94	98	98	100	--					BCW
May 29	7:30 p.m.	2,190	2,600	1,850	72	84	91	97	98	100	--					BCW
June 7, 8 a	--	--	--	800	82	94	95	99	100	--	--					BCW
July 13	8:30 a.m.	281	3,340	1,280	52	67	76	83	91	98	100					BCW
July 13	8:30 a.m.	281	3,340	1,210	42	67	76	93	97	99	100					BN
July 27	2:45 p.m.	1,530	1,800	1,330	51	62	71	80	92	100	--					BCW
August 6	10:25 a.m.	166	513	335	96	100	--	--	--	--	--					BCW
Sept. 6	4:00 p.m.	740	972	676	77	89	94	98	100	--	--					BCW
Sept. 8	7:00 p.m.	2,460	4,140	2,770	72	84	92	97	98	99	100					BCW

a Composite.

BRAZOS RIVER BASIN--Continued

PAINT CREEK NEAR HASKELL, TEX.

LOCATION.--At gaging station at Scott's Crossing, 450 feet downstream from California Creek, and 12 miles southeast of Haskell, Haskell County.
DRAINAGE AREA.--879 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950.
Water temperatures: April to September 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for period December 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 19, 1949	--	7.6	525	6.0		29	14	57		122	32	84		1.0		297	0.40	--	130	30	49
Oct. 26	--	--	365	9.4		26	10	39		98	32	54		2.5		238	.32	--	106	26	45
Apr. 19-21, 27,1950	23.6	7.7	463	18		39	8.2	46		94	67	58		4.2		305	.41	19	131	54	44
May 2, 3	27.3	7.7	345	18		25	8.2	35		74	59	34		4.0		220	.30	16	96	35	45
May 3	22.0	7.8	718	17		43	14	87		116	87	117		3.8		426	.58	25	165	70	53
May 11	57.0	7.7	542	19		42	13	51		142	59	62		3.8		320	.44	49	158	42	41
May 11, 12	86.7	7.8	1,950	18		91	33	268		128	140	490		4.0		1,110	1.51	260	362	258	62
May 12	10.0	7.7	308	19		25	7.3	34		110	22	36		4.0		201	.27	5.4	92	2	45
May 12	226	7.7	708	18		43	17	70		124	45	126		3.8		420	.57	256	178	76	46
May 13	138	7.7	531	19		34	13	57		130	40	78		4.2		328	.45	122	138	32	47
May 17-18	45.0	7.6	309	18		31	7.9	25		104	38	26		3.8		202	.27	25	110	25	33
May 28-29	180	7.7	468	18		43	11	33		117	48	53		4.0		295	.40	143	153	57	32
June 3, 5	22.0	7.7	651	18		54	23	43		135	126	55		4.0		428	.58	25	229	118	29
June 13	3.80	8.2	437	19		33	11	52		131	55	53		2.0		289	.39	3.0	128	20	47
June 17, 21	a0	8.4	588	14		40	14	58		148	40	85		.8		330	.45	.0	158	36	44
June 25	1.00	8.2	220	15		19	6.4	21		106	17	9.0		2.2		142	.19	.4	74	0	38
July 15, 17-18	94.4	8.3	308	18		32	9.4	17		145	14	15		2.0		178	.24	45	118	0	24
July 20-23	12.7	8.1	598	12		33	12	66		105	24	116		2.0		338	.46	12	132	46	52
July 24	57.0	8.2	244	15		18	6.5	28		104	18	18		3.0		158	.21	24	72	0	46
July 25-26, 28	67.5	8.0	2,260	14		98	40	294		93	100	615		1.8		1,210	1.65	221	409	333	61
July 27, 29-30	181	8.1	421	15		27	9.0	42		101	20	65		1.5		230	.31	112	104	22	47
Aug. 1-2, 4	121	8.1	505	17		36	10	48		113	16	89		1.0		290	.39	95	131	38	44
Aug. 3	141	8.0	1,810	18		92	25	223		82	23	512		3.0		1,090	1.48	415	332	266	59
Aug. 5, 7-8	16.4	8.1	278	16		23	7.1	22		104	14	24		1.8		162	.22	7.2	87	1	36
Aug. 11, 14, 24	a.07	8.2	374	12		31	8.0	33		128	17	42		1.2		214	.29	.04	110	5	40
Aug. 17	27.0	8.0	173	12		18	4.4	12		86	9	4.2		3.0		108	.15	7.9	63	0	28
Aug. 19	7.00	8.4	504	17		36	13	50		157	42	54		4.5		294	.40	5.6	144	15	43

a Includes days of less tban 0.05 second-foot flow.

Sept. 5, 10.....	316	8.0	282	12		29	7.2	22	112	16	28		2.2		171	.33	146	102	10	32
Sept. 11-13, 16-17 .	27.7	7.5	378	15		34	9.4	26	116	33	35		2.0		228	.31	17	124	28	32
Sept. 15	167	8.1	822	15		64	28	68	112	199	86		3.3		528	.72	238	274	182	35
Sept. 22-24, 29....	46.9	7.6	488	17		45	15	31	131	66	46		1.5		304	.41	38	174	66	28

BRAZOS RIVER BASIN--Continued

PAINT CREEK NEAR HASKELL, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							--	--	--	--	84	--
2							--	61	--	--	76	--
3							--	70	76	--	78	--
4							--	--	--	--	79	--
5							--	--	70	--	78	70
6							--	--	--	--	--	--
7							--	--	--	--	86	--
8							--	--	--	--	79	--
9							--	--	--	--	--	--
10							--	--	--	--	--	71
11							--	69	--	--	78	73
12							--	--	--	--	--	72
13							--	69	84	--	--	80
14							--	--	--	--	83	--
15							--	--	--	79	--	76
16							--	--	--	--	--	77
17							--	66	78	78	74	78
18							--	66	--	77	--	--
19							56	--	--	--	75	--
20							57	--	--	84	--	--
21							57	--	--	84	--	--
22							--	--	--	79	--	75
23							--	--	--	79	--	72
24							--	--	--	72	76	71
25							--	--	86	84	--	--
26							--	--	--	81	--	--
27							74	--	--	72	--	--
28							--	--	--	81	--	--
29							--	66	--	79	--	72
30							--	--	--	81	--	--
31							--	--	--	--	--	--
Average							--	--	--	--	--	--

MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
BRAZOS RIVER AT SEYMOUR																					
Apr. 10, 1950	1.47	--	13,300	--		--	--	--	--	--	--	3,750		--		--	--		--	--	--
May 1	57.4	--	2,590	--		--	--	--	--	--	499	518		--		--	--		--	--	--
May 10	80.1	--	6,280	--		--	--	--	--	--	871	1,600		--		--	--		--	--	--
May 24	385	7.7	3,540	13		164	33	536	144	435	805			4.0		2,060	2.80		544	426	68
May 31	530	7.7	5,610	13		228	36	964	115	617	1,470			3.5		3,390	4.61		717	623	75
June 14	390	8.1	3,950	22		214	43	587	134	565	910			6.9		2,410	3.28		711	60	64
Aug. 5	417	7.8	2,860	14		194	32	390	56	625	542			.0		1,820	2.48		616	570	58
Sept. 11	2,600	7.8	1,690	17		107	17	224	120	268	315			2.5		1,010	1.37		337	238	59
BRAZOS RIVER NEAR SOUTH BEND																					
Apr. 19, 1950	3,600		2,990								418	692									
May 25	526		2,770								378	645									
BRAZOS RIVER NEAR MARLIN																					
Nov. 9, 1949	1,200	8.1	1,720	8.8		114	20	233	127	247	362			1.0		1,080	1.47		366	262	58
Dec. 15	337	8.1	1,600	6.6		105	25	198	180	204	308			1.5		974	1.32		365	218	54
Jan. 27, 1950	299	8.1	1,190	6.8		88	17	139	187	147	202			1.0		742	1.01		290	136	51
Feb. 23	846	7.8	641	6.8		71	13	40	182	72	66			1.0		382	.52		230	82	28
Mar. 30	310	7.8	1,030	7.2		79	16	115	196	119	162			1.0		630	.86		263	102	49
July 11	15.6	8.0	1,800	11		105	21	233	116	225	372			1.0		1,020	1.39		348	254	59
Aug. 16	2,850	7.9	2,130	11		184	19	228	116	276	460			1.0		1,240	1.69		537	442	48
BRAZOS RIVER NEAR BRYAN																					
Nov. 8, 1949	1,300	8.1	1,290	7.5		90	17	164	138	170	255			2.8		784	1.07		294	182	55
Dec. 19	1,350	8.2	1,050	9.4		77	18	119	181	130	170			1.2		662	.90		266	118	49
Jan. 26, 1950	762	8.1	775	9.8		62	16	83	195	88	105			.8		495	.67		220	60	45
Feb. 21	2,410	7.6	607	9.9		64	9.8	48	182	63	63			.8		358	.49		200	51	34
Mar. 29	797	7.7	947	11		72	17	102	190	117	137			.8		563	.77		250	94	47
July 11	975	8.4	1,590	14		92	22	207	157	196	310			2.0		948	1.29		320	192	58
Aug. 15	3,090	7.7	2,010	9.9		135	19	240	119	263	400			1.0		1,130	1.54		415	318	56
Sept. 21	5,920	8.0	1,670	11		114	19	222	160	225	340			1.0		1,010	1.37		362	232	57

BRAZOS RIVER BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
PAINT CREEK 6½ MILES ABOVE CONFLUENCE WITH CALIFORNIA CREEK																					
Oct. 26, 1949	--	--	249	11		23	9.1	17		96	20	22		2.5		176	0.24		95	16	28
Apr. 19-20, 1950	--	7.5	355	12		38	11	18		95	77	13		3.0		232	.32		140	62	22
May 15	228	8.1	448	24		--	--	32		127	65	31		13		--	.38		156	52	31
June 13	--	8.2	1,310	--		30	35	195		192	155	229		--		781	1.06		219	62	66
PAINT CREEK ONE-FOURTH MILE ABOVE CONFLUENCE WITH CALIFORNIA CREEK																					
Oct. 19, 1949			504	17		42	13	37		158	20	61		2.5		299	0.41		158	29	34
Apr. 16, 1950	1,200	7.8	237	11		26	6.2	15		124	11	5.0		4.2		139	.19		90	0	27
CALIFORNIA CREEK APPROXIMATELY 6 MILES (AIR LINE) ABOVE CONFLUENCE WITH PAINT CREEK																					
Oct. 26, 1949		7.4	681	9.9		36	13	83		84	28	159		2.2		411	0.56		144	74	56
Apr. 19-20, 1950		7.7	489	16		38	9.9	48		112	45	69		3.8		300	.41		136	44	43
May 15		8.0	536	23		46	14	38		118	82	49		4.3		314	.43		172	76	32
June 13		8.0	667	32		28	10	69		75	54	144		.0		414	.56		111	50	65
LEON RIVER AT BRIDGE ON U. S. HIGHWAY 81 NEAR BELTON																					
Oct. 1-5, 1949		8.0	855	14		76	21	70		271	58	102		1.0		505	0.69		276	54	35

COLORADO RIVER ABOVE BULL CREEK NEAR KNAPP, TEX.

LOCATION.--About 2½ miles above mouth of Bull Creek, 4½ miles south of Knapp, Scurry County, 6.7 miles west of Ira, and 14½ miles southwest of Snyder.
RECORDS AVAILABLE.--Chemical analyses: April to September 1950.
Water temperatures: April to September 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 12, 1950		8.1	12,500	29		510	176	2,250		154	1,310	3,830		--		8,180	11.12		2,000	1,870	71
Apr. 13		7.4	3,080	16		123	36	461		50	311	768		13		1,750	2.38		455	414	69
Apr. 14		7.7	823	26		14	5.7	156		88	232	55		8.0		540	.73		58	0	85
Apr. 15-16		7.6	514	21		13	2.6	98		106	113	32		6.9		338	.46		43	0	83
Apr. 17-23		7.5	1,290	16		42	14	204		136	254	162		2.2		824	1.12		162	51	73
May 10, 12-16		7.4	391	16		20	5.2	55		123	51	23		5.4		245	.33		71	0	63
May 21, 23, 26-28.		7.6	456	14		22	5.2	68		124	63	38		5.4		277	.38		76	0	66
June 4		8.1	1,610	22		--	--	259		130	132	348		7.7		91	1.24		178	72	76
June 5		8.1	441	16		--	--	70		158	65	28		--		344	.47		85	0	64
June 14		8.0	1,010	17		--	--	156		120	70	200		7.5		605	.82		120	22	74
June 15		8.0	374	16		--	--	64		122	55	28		4.2		288	.39		60	0	70
June 16		7.9	2,840	17		88	26	466		126	170	748		4.2		1,580	2.15		326	224	76
June 17.....		7.9	4,000	20		114	64	610		113	216	1,100		7.5		2,190	2.98		548	455	71
June 19, 27.....		8.0	12,100	19		313	118	2,280		139	688	3,820		--		7,350	10.00		1,270	1,150	80
July 7		8.2	1,630	19		53	24	254		155	159	345		4.5		934	1.27		230	104	71
July 8-9, 12-15,17.		7.9	412	13		22	5.2	59		136	43	33		3.2		252	.34		76	0	63
July 11, 18-20		7.8	627	15		25	7.5	92		122	86	72		4.2		380	.52		94	0	68
July 21-22, 24, 26-29		7.9	404	13		18	5.1	62		118	50	35		2.5		244	.33		66	0	67
July 30.....		8.2	2,580	18		70	28	436		128	181	668		1.2		1,490	2.03		290	184	77
July 31, Aug. 1-2, 4		7.8	1,610	13		43	13	267		120	122	365		1.2		888	1.21		161	62	78
Aug. 8		8.1	3,690	14		80	34	665		125	262	1,000		1.5		2,120	2.88		340	237	81
Aug. 12		8.0	828	9.8		30	8.7	130		158	99	112		3.8		490	.67		111	0	72
Aug. 18-19, 25 ...		8.0	413	13		16	5.0	66		139	52	23		4.2		247	.34		60	0	70
Aug. 31		7.9	3,170	14		54	18	578		98	224	815		3.0		1,750	2.38		208	128	86
Sept. 4-7.....		8.0	323	13		19	4.0	44		125	28	18		3.8		192	.26		64	0	60
Sept. 8-9, 19-20 ..		7.9	452	15		19	5.4	67		122	54	40		3.5		270	.37		70	0	68
Sept. 13-17.....		7.9	2,360	13		66	20	381		123	147	580		3.2		1,270	1.73		246	146	77
Sept. 21-27, 30 ...		8.0	435	13		28	6.2	52		128	47	37		1.8		253	.34		95	0	54
Sept. 28.....		7.9	832	15		33	11	122		120	94	138		2.0		485	.66		128	29	68

COLORADO RIVER BASIN--Continued

COLORADO RIVER ABOVE BULL CREEK NEAR KNAPP, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							--	--	--	--	87	--
2							--	--	--	--	75	--
3							--	--	--	--	--	--
4							--	--	73	--	91	79
5							--	--	71	--	--	75
6							--	--	--	--	--	75
7							--	--	--	91	--	75
8							--	--	--	81	89	85
9							--	--	--	93	--	86
10							--	65	--	--	--	--
11							--	--	--	84	--	--
12							--	72	--	82	95	--
13							--	70	--	74	--	83
14							--	78	81	83	--	86
15							--	84	84	84	--	89
16							--	76	81	--	--	91
17							--	--	74	80	--	82
18							74	--	--	85	88	--
19							60	--	84	83	90	79
20							70	--	--	80	--	90
21							75	80	--	84	--	74
22							79	--	--	74	--	77
23							75	80	--	--	--	74
24							--	--	--	84	--	74
25							--	--	--	--	95	79
26							--	60	--	82	--	78
27							--	65	77	89	--	80
28							--	74	--	90	--	82
29							--	--	--	92	--	--
30							--	--	--	98	--	81
31							--	--	--	91	91	--
Average							--	--	--	--	--	--

COLORADO RIVER AT COLORADO CITY, TEX.

LOCATION.--At gaging station at Colorado City, Mitchell County, 3,517 feet upstream from bridge on U. S. Highway 80, 4,100 feet upstream from Texas & Pacific Railway bridge, and 1.6 miles upstream from Lone Wolf Creek.
DRAINAGE AREA.--4,082 square miles, of which 2,590 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: May 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 19,000 ppm Mar. 10, 20-31, Apr. 1-12; minimum, 264 ppm Sept. 5, 6-9.
Hardness: Maximum, 2,640 ppm Mar. 10, 20-31, Apr. 1-12; minimum, 75 ppm Sept. 5, 6-9.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 27,800 ppm Aug. 9-12, 1946; minimum, 176 ppm Oct. 26, 1947.
Hardness: Maximum, 4,500 ppm Aug. 9-12, 1946; minimum, 65 ppm Sept. 15-20, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-7, 10-11, 19, 1949	0.42	7.0	8,710	7.5		178	63	1,680		114	484	2,660		--		5,130	6.98	5.8	703	610	84
Oct. 8-9, 12-18, 20-22	a.0	7.1	10,300	5.6		212	82	2,020		106	607	3,220		--		6,200	8.43	.0	866	779	84
Oct. 23-26, 29-31	23.2	7.6	4,760	6.4		100	35	845		99	276	1,320		1.0		2,630	3.58	165	394	312	82
Oct. 27-28	14.5	7.7	2,870	7.4		62	21	495		106	168	748		1.2		1,550	2.11	61	241	154	82
Nov. 1-10	1.50	7.6	9,010	5.0		182	69	1,750		112	512	2,780		7.6		5,350	7.28	22	738	646	84
Nov. 11-30	.54	7.4	15,000	8.1		311	128	3,080		137	967	4,880		--		9,440	12.84	14	1,300	1,190	84
Dec. 1-31	1.35	7.0	19,700	5.6		412	177	4,120		137	1,260	6,590		--		12,600	17.14	46	1,760	1,640	84
Jan. 1-31, 1950	1.95	7.6	17,300	4.8		384	170	3,620		132	1,160	5,820		--		11,200	15.23	59	1,660	1,550	83
Feb. 1-28	1.87	7.6	20,200	4.8		442	191	4,230		115	1,350	6,790		--		13,100	17.82	66	1,890	1,790	83
Mar. 1-9, 11-19, Apr. 13-15	1.09	6.9	26,100	9.2		562	237	5,550		93	1,790	8,860		--		17,100	23.26	50	2,380	2,300	84
Mar. 10, 20-31, Apr. 1-12	a.0	7.4	28,100	8.1		641	253	6,180		125	2,060	9,810		--		19,000	25.84	.0	2,640	2,540	84
Apr. 16-18	97.0	7.6	8,440	7.2		168	60	1,630		93	519	2,550		--		4,900	6.66	1,280	666	590	84
Apr. 19-21	31.3	7.8	5,510	11		138	35	963		149	370	1,470		1.0		3,060	4.16	259	488	366	81
Apr. 22-23	7.35	7.8	2,850	12		67	20	481		132	191	700		1.0		1,540	2.09	31	249	141	81
Apr. 24-25	3.40	7.9	4,800	10		101	31	887		138	320	1,320		1.5		2,740	3.73	25	380	266	84
Apr. 26-30	1.20	7.7	12,700	6.5		236	110	2,530		86	807	3,990		--		7,720	10.50	25	1,040	971	84
May 1	4.2	7.5	14,000	7.2		267	123	2,860		80	896	4,540		--		8,730	11.87	99	1,170	1,110	84
May 2, 8-10	62.8	7.5	7,240	4.6		141	46	1,360		83	412	2,130		--		4,130	5.62	700	541	473	85
May 3-5	125	7.0	1,740	11		47	12	267		102	109	390		1.0		960	1.31	324	167	84	78

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT COLORADO CITY, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
May 6-7, 1950	11.2	7.8	4,060	11		90	29	734		126	232	1,130		1.0		2,290	3.11	69	344	240	82
May 11, 15-16	1,429	8.1	1,450	13		50	16	210		142	95	305		2.8		762	1.04	2,940	191	74	71
May 12-14	625	8.1	659	14		30	7.5	92		136	53	98		3.2		365	.50	616	106	0	65
May 17-20	40.0	8.0	2,720	14		77	27	425		123	172	670		1.8		1,450	1.97	157	303	202	75
May 21-25	18.2	8.1	4,610	14		113	44	777		144	261	1,250		1.5		2,530	3.44	124	463	345	78
May 26, 27-29	1,178	8.0	526	14		32	7.1	63		125	40	71		2.8		291	.40	926	109	7	56
May 26, 30-31	462	8.0	1,310	13		48	15	182		117	82	280		1.8		680	.92	848	182	86	69
June 1-3, 10, 17	26.4	7.6	2,640	16		71	24	434		121	169	668		2.0		1,440	1.96	103	276	176	77
June 4-5, 18-19	23.6	7.8	3,740	17		97	33	631		129	226	998		1.5		2,070	2.82	132	378	272	78
June 6, 9, 16	60.3	7.8	1,760	15		57	18	275		132	123	408		3.0		994	1.35	162	216	108	73
June 7, 20-23	30.9	7.7	5,070	16		122	43	874		131	300	1,390		2.5		2,810	3.82	234	482	374	80
June 8, 11, 14-15	319	7.9	1,110	17		41	10	179		132	79	242		2.0		635	.86	547	144	36	73
June 12-13	476	7.4	451	22		26	3.7	65		128	28	60		3.5		271	.37	348	80	0	64
June 24-28	1.40	7.9	7,620	13		174	64	1,370		130	441	2,200		--		4,330	5.89	16	697	590	81
June 29-30, July 1-6	a.0	7.4	9,110	16		203	74	1,500		104	558	2,420		--		4,820	6.56	.0	811	726	80
July 7-8, 31	64.3	7.5	4,640	11		102	32	813		102	238	1,290		3.0		2,540	3.45	441	386	302	82
July 9, 12, 16, 27	178	7.6	1,280	14		38	11	201		124	81	275		4.8		711	.97	342	140	38	76
July 10-11, 13, 14-15, 18, 19-20, 23, 24, 25	180	7.7	638	14		26	7.0	90		127	53	92		2.5		368	.50	179	94	0	68
July 13, 17, 21-22, 28-30	66.6	7.2	1,880	13		51	16	304		109	119	452		3.0		1,010	1.37	182	193	104	77
July 18, 24, 26	86.3	7.6	897	10		37	8.8	128		117	79	162		1.5		496	.67	116	128	32	68
Aug. 1, 2, 20-21	26.5	7.6	1,780	12		60	14	268		101	128	405		4.0		968	1.32	69	207	124	74
Aug. 1, 4-10	6.67	7.7	5,030	13		90	40	914		127	323	1,370		6.0		2,820	3.84	51	389	285	84
Aug. 3, 18-19, 22	47.0	7.7	2,920	11		68	23	495		107	197	738		8.2		1,590	2.16	202	264	176	80
Aug. 11-17	a3.81	7.5	7,480	11		169	63	1,370		95	536	2,150		--		4,350	5.92	45	680	602	81
Aug. 23-31	10.1	7.5	4,600	8.4		90	32	816		86	266	1,260		6.0		2,520	3.43	69	356	286	83
Sept. 1-3	7.07	7.5	4,340	6.5		78	30	777		76	255	1,190		1.5		2,380	3.24	45	318	254	84
Sept. 4, 5	172	7.6	2,860	10		69	23	478		110	155	745		4.5		1,540	2.09	715	266	176	80
Sept. 5, 6-9	1,091	7.8	482	10		22	5.0	65		116	35	60		1.8		264	.36	778	75	0	65
Sept. 10, 19, 20-23	631	7.9	691	14		28	7.6	101		127	64	106		1.5		384	.52	654	101	0	69
Sept. 11-12, 18, 19, 24-27	417	7.9	1,460	15		45	12	229		116	93	330		3.0		785	1.07	884	162	67	75
Sept. 13-15, 28-30	28.7	7.9	2,590	12		66	21	437		121	147	672		2.5		1,420	1.93	110	251	152	79
Sept. 16-17, 18	17.6	7.9	4,020	12		94	30	708		128	214	1,110		4.0		2,240	3.05	106	358	253	81
Weighted average	86.6	--	1,330	13		43	13	214		123	89	303		2.5		742	1.01	173	161	60	74

a Includes days of less than 0.05 second-foot flow.

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COLORADO RIVER AT ROBERT LEE, TEX.

LOCATION.--At gaging station at bridge on State Highway 208 in Robert Lee, Coke County, half a mile upstream from Mountain Creek.
DRAINAGE AREA.--15,770 square miles, of which 11,600 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
Sediment records: January 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 3,710 ppm May 5-8; minimum, 202 ppm Aug. 2, 3-4, 18-22.
Hardness: Maximum, 958 ppm Mar. 1-10; minimum, 82 ppm Sept. 11-13, 19.
Water temperatures: Maximum, 93°F June 27, July 10; minimum, 42°F Jan. 5, 31.
Sediment loads: Maximum daily, 344,000 tons May 12; minimum daily, 0 tons Mar. 23 to Apr. 1, Apr. 3-12.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 3,710 ppm May 5-8, 1950; minimum, 186 ppm June 8, 1949.
Hardness: Maximum, 958 ppm Mar. 1-10, 1950; minimum, 82 ppm Sept. 11-13, 19, 1950.
Water temperatures: Maximum, 94°F Aug. 13, 1949; minimum, freezing point Jan. 28, 1948, Jan. 29, 1949.
Sediment loads(January 1949-50):Maximum daily, 387,000 tons May 8, 1949; minimum daily, 0 tons on many days.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949	7.4	8.1	1,800	17		87	23	256		126	219	380		0.8		1,040	1.41	21	312	208	64
Oct. 11-20	2.06	8.1	2,110	9.4		110	30	293		147	284	438		.8		1,240	1.69	6.9	398	278	62
Oct. 21, 25-26, 29-31	28.5	7.9	2,260	9.2		127	31	305		114	351	460		.5		1,340	1.82	103	444	351	60
Oct. 22,24, 27-28	52.2	7.7	1,470	8.2		85	20	189		101	219	278		1.0		856	1.16	121	294	211	58
Oct. 23	26	7.6	731	7.8		61	13	66		80	149	91		1.2		444	.60	31	206	140	41
Nov. 1-10	8.79	7.9	2,130	11		116	22	324		130	315	460		1.5		1,310	1.78	31	380	274	65
Nov. 11-20	1.94	7.9	2,970	10		150	33	497		160	418	725		1.0		1,910	2.60	10	510	379	68
Nov. 21-30	.94	8.0	3,430	9.5		164	47	503		174	429	785		.0		2,020	2.75	5.1	602	460	64
Dec. 1-10	1.22	7.8	3,360	8.8		164	52	494		160	435	790		.0		2,020	2.75	6.7	623	492	63
Dec. 11-20	5.25	7.8	4,100	7.8		224	63	581		142	566	975		.5		2,490	3.39	35	818	702	61
Dec. 21-31	1.84	7.7	3,540	7.5		186	61	490		146	483	820		.8		2,120	2.88	11	715	596	60
Jan. 1-10, 1950	6.64	7.6	3,990	7.5		226	58	641		132	596	1,040		.5		2,630	3.58	47	802	694	63
Jan. 11-20	4.38	7.5	3,700	3.7		196	52	552		116	545	880		.5		2,290	3.11	27	703	608	63
Jan. 21-31	3.16	7.4	4,130	3.4		238	61	614		108	708	960		.5		2,640	3.59	23	845	756	61
Feb. 1-10	4.50	7.4	4,210	5.8		252	64	565		102	733	902		1.0		2,570	3.50	31	892	808	58
Feb. 11-19	4.32	7.4	4,710	4.0		250	67	673		100	740	1,070		.5		2,850	3.88	33	900	818	62
Feb. 20-28	2.81	7.3	4,900	3.7		250	70	714		91	751	1,140		.5		2,970	4.04	23	912	838	63
Mar. 1-10	1.58	7.7	5,190	4.6		264	73	758		101	784	1,210		.5		3,140	4.27	13	958	876	63
Mar. 11-20	.43	7.8	4,910	6.4		255	73	702		119	728	1,140		.0		2,960	4.03	3.4	936	838	62
Mar. 21-31	a.02	7.6	4,350	7.4		213	66	623		127	617	1,000		.0		2,590	3.52	.1	803	699	63

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 1-10, 1950	a0.01	7.8	3,960	9.5		190	48	587		102	565	905		1.0		2,360	3.21	0.1	672	588	66
Apr. 11-15, 16, 20..	a44.0	7.7	4,160	11		216	51	620		104	611	975		1.0		2,540	3.45	302	748	664	64
Apr. 16.....	680	7.4	1,380	6.4		109	16	154		74	282	225		1.8		909	1.24	1,670	338	278	50
Apr. 16.....	1,104	7.5	2,820	6.6		180	37	366		56	493	592		2.2		1,700	2.31	5,070	601	555	57
Apr. 16.....	3,296	7.7	877	10		65	11	95		92	140	136		.5		525	.71	4,670	207	132	50
Apr. 17.....	2,790	7.7	508	8.0		34	7.3	58		98	60	68		1.8		307	.42	2,310	115	35	52
Apr. 18.....	555	7.6	506	9.9		36	6.3	56		94	62	68		.8		285	.39	427	116	39	51
Apr. 19.....	199	7.7	757	9.5		50	10	88		108	98	118		1.2		440	.60	236	166	78	54
Apr. 21-30.....	32.3	7.6	5,750	10		190	63	966		120	512	1,560		1.0		3,360	4.57	293	733	634	74
May 1-4, 9-10.....	12.1	7.7	4,960	24		164	49	822		134	464	1,280		.5		2,870	3.90	94	610	500	75
May 5-8.....	88.5	7.8	6,340	23		192	59	1,000		138	568	1,700		.5		3,710	5.05	887	722	608	77
May 11.....	66.7	8.4	2,410	4.6		62	21	398		b68	227	578		.0		1,320	1.80	238	241	186	78
May 11, 12, 18-20 ..	2,167	8.4	1,150	7.4		56	14	160		b145	110	220		1.0		653	.89	3,820	197	78	64
May 13-17.....	622	7.9	678	10		34	7.5	92		124	68	100		3.2		390	.53	655	116	14	63
May 21-24, 25, 27 ..	603	7.8	1,460	11		70	21	193		114	158	300		.8		861	1.17	1,400	261	168	62
May 25, 26.....	430	8.2	2,210	19		91	31	323		120	231	508		1.8		1,260	1.71	1,460	354	256	66
May 27, 28-31.....	1,461	7.5	546	13		36	8.3	60		110	55	75		2.5		316	.43	1,250	124	34	51
June 1-2, 13, 14-19	185	8.1	702	17		40	9.0	92		125	73	110		3.0		430	.58	215	137	34	59
June 3-5, 6, 8, 12, 13, 20-23.....	202	7.9	1,110	17		58	16	152		119	135	213		2.8		682	.93	372	210	113	61
June 6, 7, 10-11,1950	239	8.0	1,960	16		86	32	292		112	222	465		2.8		1,170	1.59	755	346	254	65
June 9, 24-30.....	33.0	8.2	1,610	20		89	23	233		142	217	340		2.0		994	1.35	89	316	200	62
July 1-5, 6, 10, 11, 17-23, 24.....	108	7.6	1,890	17		76	23	273		124	195	405		3.0		1,050	1.43	306	284	182	68
July 6, 7, 12-13, 16, 24, 25-27, 28,30-31	224	7.2	969	15		48	15	119		109	107	168		3.0		558	.76	337	182	92	59
July 8-9, 10, 14-15, 28, 29.....	272	7.7	501	14		39	8.1	48		107	60	58		3.5		296	.40	217	131	44	44
Aug. 1, 2, 8-11, 23, 31.....	43.1	7.9	885	14		53	12	107		108	104	153		1.2		524	.71	61	182	93	56
Aug. 2, 3-4, 18-22..	206	7.9	334	13		31	7.3	23		91	37	31		1.8		202	.27	112	107	33	32
Aug. 5-7, 17.....	230	7.7	477	14		39	11	38		92	60	60		3.2		290	.39	180	143	67	37
Aug. 12-16, 17, 24 .	33.3	7.7	1,880	17		97	22	253		126	224	388		.5		1,060	1.44	95	332	230	62
Aug. 25-30.....	42.1	7.7	2,320	12		123	30	315		105	317	495		.5		1,340	1.82	152	430	344	61

a Includes days of less than 0.05 second-foot flow.

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

Sept. 1-3, 4, 6,7....	445	7.6	750	13		36	8.5	100	106	71	128		2.0		425	.58	511	125	38	64
Sept. 4, 5, 8-10....	669	7.6	453	10		29	9.2	49	120	45	50		2.2		261	.35	471	110	12	49
Sept. 6.....	534	7.7	1,980	13		91	29	271	102	249	420		5		1,120	1 52	1,610	346	262	63
Sept. 11-13, 19.....	192	8.5	504	10		23	6.0	69	c 90	55	72		.5		281	.38	146	82	8	65
Sept. 14-18, 20.....	669	8.2	914	10		39	11	127	107	95	165		.8		508	.69	918	142	55	66
Sept. 21-24, 25.....	652	7.9	558	14		24	7.2	81	120	70	66		2.5		324	.44	570	90	0	66
Sept. 25, 26-30.....	85.2	7.9	923	15		40	10	130	119	110	150		1.0		529	.72	122	141	44	67
Weighted average..	157	--	1,000	12		50	13	135	116	110	188		1.9		583	0.79	247	178	84	62

c Includes equivalent of 2 parts per million of carbonate (CO_3)

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

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

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	12	51	1.7	19	28	1.4	0.7	12	--
2	11	48	1.4	15			.7		
3	9.2	48	1.2	12			1.1		
4	8.5	72	1.7	9.2	28	.7	1.1	--	e0.1
5	7.3	84	1.7	7.3			1.1		
6	6.7	62	1.1	6.1			.9	--	e--
7	6.1	56	.9	6.1			1.1		
8	5.0	54	.7	5.0			1.2		
9	4.1	62	.7	4.1	26	.3	1.1	13	.2
10	4.1	51	.6	4.1			3.2		
11	3.7	52	.5	3.2			19		
12	3.2	26	.2	3.2	23	.2	11		
13	2.9	36	.3	2.6			6.1		
14	2.3	33	.2	2.0			5.0	24	.4
15	2.0	36	.2	2.0			3.2		
16	1.4	28	.1	1.4	20	.1	2.3		
17	1.4	30	.1	1.4			1.4		
18	1.4	41	.2	1.2			1.7		
19	1.2	43	.1	1.2			1.4	24	.1
20	1.1	78	.2	1.2			1.4		
21	31	88	7.4	1.2	24	.1	1.7		
22	49	68	9.0	1.2			1.1		
23	26	83	5.8	1.1			1.1		
24	54	96	14	1.1			1.1	16	--
25	20	60	3.2	.9			1.1		
26	16	48	2.1	.9	10	--	1.2		
27	49	53	7.0	.8			1.4		
28	57	88	14	.8			1.4	14	--
29	46	37	4.6	.7			1.1		
30	33	44	3.9	.7	12	--	2.9	73	.6
31	25	32	2.2	--	--	--	6.1	41	.7
Total	500.6	--	87	116.7	--	t8.0	84.9	--	t5.5

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	5.0			4.1	--	e0.3	2.0		
2	5.0			3.7			2.0	14	0.1
3	5.0	16	.3	3.7			2.3		
4	9.2			4.6	28	.3	2.3		
5	9.2			4.6			2.0		
6	7.9			4.6			1.7	12	.1
7	7.3	8	.2	5.0			1.2		
8	6.7			5.5			.9		
9	6.1			4.6	15	.2	.7		
10	5.0			4.6			.7		
11	5.0	12	.2	5.0			.6	22	--
12	4.6			5.0			.7		
13	5.0			5.0			.6		
14	4.6			4.6	12	.2	.5		
15	4.1			4.6			.4		
16	4.1	34	.4	4.6			.6	30	--
17	4.1			3.7			.4		
18	4.1			3.2			.2		
19	4.1			3.2	17	.2	.1		
20	4.1			3.2			.2	14	--
21	4.1	14	.2	4.6			.1		
22	4.1			3.7			.1		
23	4.1			2.9			0	--	0
24	3.7			2.3			0	--	0
25	3.2			2.3	20	.1	0	--	0
26	3.2	14	.1	2.3			0	--	0
27	2.9			2.0			0	--	0
28	2.3			2.0	14	.1	0	--	0
29	2.0			--	--	--	0	--	0
30	2.0	21	.1	--	--	--	0	--	0
31	3.2			--	--	--	0	--	0
Total	145.0	--	6.9	109.2	--	5.5	20.3	--	t1.2

e Estimated.
t Less than 0.05 ton.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	7.3	20	0.4	202	422	230
2	.1	26	--	6.7	22	.4	142	218	84
3	0	--	0	5.5	30	.4	102	142	39
4	0	--	0	7.2	129	s7.3	78	107	23
5	0	--	0	180	525	s282	115	210	65
6	0	--	0	90	182	44	292	704	s659
7	0	--	0	51	161	22	334	1,060	s961
8	0	--	0	33	135	12	246	800	531
9	0	--	0	25	130	8.8	228	450	277
10	0	--	0	21	114	6.5	163	192	84
11	0	--	0	1,050	1,270	s12,400	118	85	27
12	0	--	0	7,590	16,900	s344,000	670	6,410	s17,900
13	1.1	42	.1	1,680	13,400	s63,100	1,020	15,400	42,400
14	.2	42	--	630	8,710	s15,100	433	7,380	s9,500
15	94	371	s148	190	3,600	s1,870	185	1,720	s923
16	2,220	7,070	s57,200	138	1,600	596	101	558	s159
17	2,790	10,600	s84,900	470	2,780	s3,840	63	289	49
18	555	6,310	s10,100	340	1,490	s1,420	46	174	22
19	199	2,200	s1,310	168	638	s303	36	106	10
20	105	600	170	110	254	75	30	56	4.5
21	92	540	134	94	190	48	24	51	3.3
22	58	300	47	72	207	40	19	56	2.9
23	43	69	8.0	112	346	s122	14	64	2.4
24	39	50	5.3	122	303	100	11	40	1.2
25	30	38	3.1	110	221	s73	9.2	29	.7
26	19	28	1.4	474	1,780	s2,580	5.5	29	.4
27	14	32	1.2	4,710	12,200	s166,000	4.1	24	.3
28	11	39	1.2	2,810	8,220	s66,000	2.6	19	.1
29	9.2	22	.5	950	5,950	s15,300	2.3	16	.1
30	7.9	16	.3	459	3,790	s4,900	1.7	53	.2
31	--	--	--	262	1,320	s966	--	--	--
Total	6,287.5	--	t154,000	22,967.7	--	699,200	4,697.4	--	73,960

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1.2	68	0.2	66	362	65	31	236	20
2	.9	40	.1	866	11,000	s28,900	23	188	12
3	.7	45	.1	267	4,610	s3,760	19	196	10
4	.6	38	.1	144	1,640	s648	35	558	s122
5	.6	34	.1	71	617	s129	81	512	s87
6	60	1,160	s518	48	215	28	1,340	5,810	s31,300
7	217	1,050	s968	32	135	12	1,180	12,800	s40,200
8	28	191	14	23	98	6.1	1,750	11,000	s52,800
9	9.2	1 101	2.5	19	100	5.1	689	8,500	s16,200
10	132	1,100	s1,830	16	91	3.9	299	5,280	s4,380
11	456	3,650	s4,620	20	76	4.1	218	2,450	s1,470
12	259	2,320	s1,650	12	56	1.8	146	1,200	473
13	270	2,850	s3,240	8.5	56	1.3	94	600	152
14	413	4,230	s5,290	6.7	49	.9	57	230	35
15	268	1,820	s1,230	57	1,180	s508	44	126	15
16	248	875	s615	80	658	s168	324	933	s1,650
17	131	316	112	688	4,080	s13,300	177	840	401
18	80	167	36	222	2,650	s1,940	103	892	s331
19	107	121	35	50	800	s116	311	1,900	s2,290
20	213	366	210	28	350	26	3,310	18,400	s172,000
21	207	464	259	39	224	24	1,540	13,200	54,900
22	117	244	77	69	300	56	705	10,100	19,200
23	74	278	56	40	145	16	342	8,520	s7,960
24	166	588	s313	25	106	7.2	202	5,100	s2,880
25	176	629	s402	18	113	5.5	131	1,770	s647
26	397	9,070	s9,940	13	92	3.2	99	800	214
27	216	2,920	s1,800	11	82	2.4	83	350	78
28	696	7,820	s17,600	8.5	83	1.9	78	176	37
29	422	7,580	s9,130	116	--	e1,060	76	132	27
30	147	2,260	s1,020	86	692	s191	54	88	13
31	94	646	164	45	336	41	--	--	--
Total	5,607.2	--	61,130	3,194.7	--	51,030	13,541	--	409900

Total discharge for year (second-foot-days) 57,272.2
Total load for year (tons) 1,449,000

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

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Particle-size analyses of suspended sediment, April to September 1950
(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 (second-feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Apr. 16, 1950	6:30 a. m.	847	4,460	2,810	27	36	57	71	82	89	92	94		97	100	SBCW
Apr. 16	12:50 p. m.	2,500	5,400	3,520	27	52	64	77	87	97	99	100		--	--	SBCW
Apr. 16	3:10 p. m.	3,480	9,330	2,600	20	30	49	64	78	92	96	97		98	100	SBCW
Apr. 16	5:30 p. m.	4,480	12,800	3,750	0	3	21	78	87	95	98	99		99	100	SBN
Apr. 16	5:30 p. m.	4,480	12,800	3,640	32	47	60	76	85	92	96	98		100	--	SBCW
Apr. 17	7:30 a. m.	4,260	15,000	3,030	29	46	61	73	81	94	98	99		100	--	SBCW
Apr. 17	11:30 a. m.	3,920	14,900	4,680	32	49	65	78	87	93	97	98		100	--	SBCW
Apr. 18	3:35 p. m.	431	5,940	2,280	43	65	80	91	93	97	98	99		100	--	SBCW
May 12	9:30 a. m.	8,960	18,300	4,610	47	59	72	79	84	94	98	99		100	--	SBCW
May 12	10:45 a. m.	9,100	20,000	--	--	--	--	--	--	91	97	99		100	--	S
May 12	12:20 p. m.	9,380	22,500	5,400	44	57	67	76	82	87	91	97		99	100	SBCW
May 13	9:15 a. m.	1,760	14,700	2,720	57	69	80	90	95	98	99	100		--	--	SBCW
May 13	5:00 p. m.	1,190	11,500	1,620	62	81	87	94	96	98	98	100		--	--	SBCW
May 13	5:00 p. m.	1,190	11,500	1,830	8	14	75	85	88	89	91	94		99	100	SBN
May 16	5:30 p. m.	252	1,380	937	84	96	99	100	--	--	--	--		--	--	BCW
May 26	8:00 a. m.	356	1,030	586	12	40	66	78	88	100	--	--		--	--	BN
May 26	8:00 a. m.	356	1,030	792	58	69	78	84	94	98	100	--		--	--	SBCW
May 26	4:20 p. m.	702	2,310	1,430	40	54	59	68	75	80	86	97		100	--	SBCW
May 27	6:45 a. m.	4,940	20,100	5,730	47	57	66	75	83	87	93	99		100	--	SBCW
May 27	9:15 a. m.	5,290	15,200	4,620	45	52	62	71	80	86	93	98		100	--	SBCW
May 27	4:50 p. m.	5,290	12,500	4,270	2	7	57	72	79	85	92	99		100	--	SBN
May 27	4:50 p. m.	5,290	12,500	4,220	49	55	66	74	81	87	93	99		100	--	SBCW
May 28	7:27 a. m.	3,480	9,430	3,050	39	49	56	64	69	76	87	99		100	--	SBCW
May 28	2:30 p. m.	2,000	7,540	2,050	41	56	62	67	74	80	86	97		100	--	SBCW
June 7	10:00 a. m.	342	1,040	628	65	76	81	86	90	96	97	99		100	--	SBCW
June 12	6:00 p. m.	1,150	10,600	2,350	64	78	83	89	92	94	96	99		100	--	SBCW
June 12	6:00 p. m.	1,150	10,600	2,140	3	8	39	89	92	96	97	100		--	--	SBN
July 6	4:30 p. m.	66	1,340	736	81	85	97	99	100	--	--	--		--	--	BCW
July 12	5:30 p. m.	209	5,190	2,080	81	94	97	99	100	--	--	--		--	--	BCW
July 26	6:00 p. m.	324	8,300	2,290	75	85	93	98	100	--	--	--		--	--	BCW
July 28	7:30 a. m.	770	2,440	1,490	--	21	46	84	86	86	88	97		100	--	SBN
July 28	7:30 a. m.	770	2,440	1,800	64	77	87	91	92	93	94	99		100	--	SBCW

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT ROBERT LEE, TEX.--Continued

Particle-size analyses of suspended sediment, April to September 1950--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 (second-feet)	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	
Aug. 3, 1950	5:00 p. m.	189	2,350	1,330	82	92	97	98	99	100	--	--		--	--	BCW
Aug. 17	3:00 p. m.	1,450	7,570	1,730	56	64	76	88	94	96	97	98		100	--	SBCW
Sept. 4	7:00 p. m.	126	2,450	1,650	74	84	94	98	100	--	--	--		--	--	SBCW
Sept. 7	1:00 p. m.	990	13,000	2,390	63	78	89	96	98	99	100	--		--	--	SBCW
Sept. 10	3:30 p. m.	262	4,940	1,550	--	26	65	89	97	99	100	--		--	--	SBN
Sept. 10	3:30 p. m.	262	4,940	1,560	84	92	97	99	100	--	--	--		--	--	BCW
Sept. 22	8:20 a. m.	777	9,970	5,190	--	81	92	100	--	--	--	--		--	--	PCW
Sept. 24	5:30 p. m.	165	3,960	2,330	--	94	97	97	99	100	--	--		--	--	PCW

COLORADO RIVER NEAR SAN SABA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 190, 5.2 miles downstream from San Saba River, and 9.2 miles east of San Saba, San Saba County.
DRAINAGE AREA.--30,600 square miles, of which 11,900 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,070 ppm Aug. 2-3, 9; minimum, 209 ppm Sept. 11, 21-23, 25, 27.
Hardness: Maximum, 464 ppm Apr. 20-21; minimum, 113 ppm Sept. 11, 21-23, 25-27.
Water temperatures: Maximum, 91°F June 28; minimum, 40°F Jan. 6.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 1,530 ppm Oct. 15-19, 1947; minimum, 176 ppm Sept. 11-15, 1948.
Hardness: Maximum, 522 ppm Oct. 15-19, 1947; minimum, 71 ppm June 25-30, 1949.
Water temperatures: Maximum, 92°F Aug. 15, 1948; minimum, freezing point Jan. 29, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949....	127	7.8	567	13		53	15	40		176	51	59		1.2		338	0.46	116	194	50	31
Oct. 11-20	77.8	8.0	880	15		65	23	87		228	62	138		.8		522	.71	110	256	70	43
Oct. 21-23	114	8.2	893	13		61	22	88		224	49	140		1.2		508	.69	156	242	59	44
Oct. 24-31	2,788	8.1	480	11		43	11	38		153	35	50		2.5		281	.38	2,120	153	27	35
Nov. 1-10.....	354	8.0	441	13		44	13	29		174	19	44		2.2		263	.36	251	163	21	28
Nov. 11-20	313	8.1	468	18		46	13	32		180	18	50		1.8		279	.38	236	168	21	29
Nov. 21-30	179	8.0	532	11		52	17	33		216	19	52		1.8		308	.42	149	200	22	27
Dec. 1-10	117	8.1	584	12		58	21	32		261	18	48		.8		334	.45	106	231	17	23
Dec. 11-20	154	8.1	613	11		62	22	35		262	23	58		1.0		368	.50	153	245	30	24
Dec. 21-31.....	126	7.9	596	11		55	23	38		256	27	53		1.2		362	.49	123	232	22	26
Jan. 1-10, 1950....	186	8.1	640	12		61	23	42		255	36	63		1.8		378	.51	190	246	38	27
Jan. 11-20	210	8.0	677	12		64	22	45		241	46	71		2.0		402	.55	228	250	52	28
Jan. 21-31	151	7.9	729	9.5		67	25	49		246	60	79		1.8		435	.59	177	270	68	28
Feb. 1-9	397	8.0	883	10		70	23	78		216	89	118		1.8		544	.74	583	269	92	39
Feb. 10-19	712	7.5	512	10		49	15	33		188	29	49		2.2		296	.40	569	184	30	28
Feb. 20-28	156	8.0	526	12		54	19	29		233	23	41		2.2		312	.42	131	212	22	23
Mar. 1-10	116	8.1	549	13		55	23	28		257	21	41		2.0		323	.44	101	232	21	21
Mar. 11-20	84.9	8.2	606	12		57	25	33		259	28	52		1.8		355	.48	81	245	33	22
Mar. 21-31	59.6	7.8	602	9.9		54	14	56		260	23	54		1.0		350	.48	56	192	0	39

COLORADO RIVER BASIN--Continued

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 1-10, 1950...	102	8.2	629	13		52	24	45		250	28	65		1.0		351	0.48	97	228	23	30
Apr. 11-19	988	8.2	573	30		45	23	40		228	24	57		1.2		336	.46	896	207	20	29
Apr. 20-21.....	2,000	7.8	1,760	12		130	34	189		146	316	300		4.0		1,060	1.44	5,720	464	345	47
Apr. 22-30	438	7.9	763	15		59	14	79		174	91	98		1.0		450	.61	532	204	62	46
May 1-10	177	7.9	701	15		59	14	70		218	60	82		.8		418	.57	200	204	26	43
May 11-14, 19-20..	1,618	8.1	624	14		47	12	63		170	46	80		3.0		364	.50	1,590	167	28	45
May 15-18	2,440	7.9	957	16		51	12	126		172	72	165		1.5		549	.75	3,620	176	30	61
May 21-25, 30-31..	1,242	8.1	765	14		46	10	93		157	63	115		4.0		444	.60	1,490	156	28	57
May 26-29.....	2,736	8.0	416	15		38	7.1	35		146	19	42		2.2		253	.34	1,870	124	4	38
June 1-10.....	687	8.0	487	15		41	9.7	43		154	31	53		3.5		291	.40	540	142	16	40
June 11-20	444	8.1	528	16		45	11	46		165	42	55		2.5		314	.43	376	158	22	39
June 21-29	187	8.1	1,060	14		72	20	115		178	119	171		.8		600	.82	303	262	116	49
June 30, July 1-13	128	7.9	1,310	19		77	30	156		204	126	252		1.0		831	1.13	287	316	148	52
July 14-20	1,110	7.8	585	17		42	11	61		146	50	78		1.5		352	.48	1,050	150	30	47
July 21-31	296	7.7	504	16		44	12	40		134	53	56		2.0		315	.43	252	159	49	35
Aug. 1, 28, 30-31..	342	7.9	502	13		40	10	47		144	38	59		2.0		298	.41	275	141	23	42
Aug. 2-3, 9.....	379	8.0	1,890	17		86	19	276		141	182	415		1.8		1,070	1.46	1,090	292	177	67
Aug. 4-8, 10, 24...	363	7.9	1,060	15		54	14	138		157	88	192		2.2		619	.84	607	192	64	61
Aug. 11-20.....	113	8.2	1,030	16		51	14	141		173	92	178		2.0		609	.83	186	184	42	62
Aug. 21-23, 25-27, 29	146	8.0	717	14		48	14	78		183	56	97		2.0		418	.57	165	178	28	49
Sept. 1-4, 8	336	7.6	448	12		40	13	33		163	29	42		1.5		270	.37	245	153	20	32
Sept. 5-7, 9-10 ...	938	7.6	605	13		47	2.8	75		157	48	80		2.0		372	.51	942	129	0	56
Sept. 11, 21-23, 25, 27	2,167	7.7	345	12		34	6.9	26		128	21	28		3.2		209	.28	1,220	113	8	33
Sept. 12-15	793	7.8	1,200	14		56	17	164		133	107	240		9.2		716	.97	1,530	210	100	63
Sept. 16-20, 24....	1,693	7.8	669	14		40	10	82		149	49	102		2.8		388	.53	1,770	141	19	56
Sept. 26, 28-30 ...	786	7.8	429	16		37	10	36		149	25	43		3.0		261	.35	554	133	11	37
Weighted average.	508	--	642	14		49	14	63		170	51	88		2.4		380	0.52	521	180	40	43

COLORADO RIVER BASIN--Continued

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	60	54	58	46	58	65	67	75	85	86	79
2	75	54	54	62	48	56	69	66	78	86	87	--
3	72	54	56	62	46	55	--	74	77	85	85	79
4	74	62	56	58	48	54	--	75	79	86	89	77
5	74	60	55	44	55	--	--	77	71	85	82	80
6	70	62	62	40	--	55	69	78	76	81	88	81
7	75	60	56	50	55	60	--	79	75	81	89	79
8	72	62	56	46	--	55	66	76	76	82	89	78
9	80	64	52	51	--	52	70	75	83	87	84	74
10	72	65	56	53	--	59	75	78	85	82	89	80
11	79	62	64	52	--	63	74	71	85	85	88	79
12	70	60	55	58	--	54	74	74	82	78	80	81
13	65	62	60	55	55	56	59	73	85	80	83	83
14	65	62	48	55	--	48	59	74	85	80	85	84
15	70	61	47	60	55	64	65	69	80	81	87	84
16	69	--	50	52	55	62	63	70	85	83	87	79
17	70	64	50	55	52	65	59	77	85	84	85	83
18	68	54	56	58	54	65	--	75	86	84	80	79
19	69	54	52	51	54	60	61	80	86	85	85	81
20	70	62	57	50	61	55	66	75	86	85	83	82
21	68	55	57	54	63	--	64	78	85	85	83	83
22	66	51	53	63	50	--	66	80	82	86	82	79
23	64	52	46	60	58	--	67	80	85	86	84	77
24	--	50	48	60	59	--	75	81	84	87	83	75
25	60	61	52	64	59	--	65	80	86	90	84	72
26	61	53	52	58	62	--	65	78	87	80	88	75
27	58	64	50	51	62	--	68	65	90	79	81	76
28	58	54	50	54	65	--	75	73	91	81	81	77
29	57	60	57	63	--	--	77	75	85	89	86	73
30	--	54	52	60	--	--	69	78	--	85	83	78
31	58	--	55	48	--	--	--	82	--	86	80	--
Average	68	59	54	55	--	--	67	75	83	84	85	79

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT AUSTIN, TEX.

LOCATION.--At raw-water intake pipe of Austin City Water Plant 4½ miles upstream from gaging station at southeast edge of Austin, Travis County, which is at Montopolis Bridge on U. S. Highway 290, 2.8 miles upstream from Walnut Creek, 3.8 miles downstream from Waller Creek, and 5 miles downstream from Barton Creek.
DRAINAGE AREA.--38,160 square miles , of which 11,900 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 288 ppm Jan. 1 to Feb. 28; minimum, 251 ppm May 1-31.
Hardness: Maximum, 167 ppm Jan. 1 to Feb. 28, May 1-31; minimum, 152 ppm Nov. 1-30.
Water temperatures: Maximum, 84°F Aug. 1, 10-11; minimum, 58°F Feb. 1, 3-4, 14-15, 21.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 322 ppm Oct. 1-31, 1947; minimum, 251 ppm May 1-31, 1950.
Hardness: Maximum, 197 ppm Jan. 1-31, 1948; minimum, 152 ppm Nov. 1-30, 1949.
Water temperatures: Maximum, 87°F Aug. 12-13, 1948; minimum, 43°F Jan. 28, 1948, Feb. 4, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Discharge records for gaging station at Austin for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Oct. 1-31, 1949....	1,215	7.8	460	10		40	13	38		159	31	51	0.2	1.0		270	0.37	886	153	23	35
Nov. 1-30	1,299	8.2	455	11		38	14	34		155	30	48	.2	.8		277	.38	972	152	25	33
Dec. 1-31.....	1,225	8.1	458	9.2		40	14	35		162	30	48	.2	.8		277	.38	916	157	25	32
Jan. 1-Feb. 28, 1950	914	7.7	480	15		44	14	34		169	31	49	.2	1.0		288	.39	711	167	29	31
Mar. 1-31.....	720	8.1	475	11		42	14	36		168	31	49	.2	.8		278	.38	540	162	25	32
Apr. 1-30.....	856	7.8	461	10		44	11	36		162	30	48	.2	1.0		271	.37	626	155	22	33
May 1-31.....	1,643	7.6	456	12		44	14	32		166	30	48	.2	1.8		251	.34	1,110	167	31	29
June 1-30	1,887	8.0	471	13		40	15	32		160	30	47	.3	2.8		268	.36	1,370	162	30	30
July 1-31.....	1,878	8.1	461	11		40	14	31		155	30	45	.3	2.0		264	.36	1,340	157	30	30
Aug. 1-31	1,636	7.7	463	10		40	14	36		165	29	48	.3	1.2		267	.36	1,180	157	22	33
Sept. 1-30	935	8.1	466	9.8		40	15	31		158	31	47	.3	1.2		270	.37	682	162	32	30
Weighted average .	1,263	--	464	11		41	14	34		162	30	48	0.2	1.4		270	0.37	921	160	27	32

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT AUSTIN, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	--	--		58	66	67	70	75	79	84	79
2	--	69	--		60	62	68	70	74	79	82	--
3	78	68	--		58	62	68	71	73	79	83	--
4	75	67	--		58	62	67	72	73	79	83	--
5	76	67	--		60	62	65	73	73	80	83	80
6	77	67	65		60	61	65	73	72	79	83	78
7	77	72	65		59	62	65	75	72	80	83	78
8	78	71	64		60	62	66	75	75	79	83	79
9	--	68	62		63	61	67	75	75	79	83	--
10	79	69	64		60	62	68	75	76	79	84	--
11	82	69	64		64	64	68	74	76	79	84	--
12	78	69	64		60	62	69	71	77	79	81	79
13	78	69	62		60	59	69	72	77	79	81	79
14	73	69	62		58	60	65	75	77	78	80	82
15	73	70	62		58	61	67	76	78	79	80	81
16	--	68	59		59	64	65	74	68	79	81	--
17	72	66	61		60	62	65	74	78	79	81	--
18	79	66	63		61	63	67	76	78	80	81	82
19	80	65	63		60	62	66	75	79	80	81	71
20	81	67	64		60	63	66	73	76	81	81	81
21	78	67	65		58	62	67	74	77	81	81	81
22	72	66	60		60	64	67	75	79	82	80	80
23	--	64	--		61	64	68	74	76	82	80	79
24	72	65	65		61	65	68	74	78	83	81	79
25	68	65	65		63	67	67	74	78	81	81	78
26	70	65	65		65	66	68	74	79	81	82	78
27	69	68	65		65	67	69	74	79	81	82	77
28	69	69	65		67	68	70	74	81	82	83	79
29	68	66	59		--	66	72	74	79	82	82	80
30	--	66	61		--	66	70	75	79	81	81	80
31	67	--	62		--	66	--	76	--	82	80	--
Average	75	67	63		61	63	67	74	76	80	82	79

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT WHARTON, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Wharton, Wharton County, 1,000 feet downstream from Texas & New Orleans Railroad bridge, and 12 miles upstream from Jones Creek.
DRAINAGE AREA.--41,150 square miles of which 11,900 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: April 1944 to September 1950.
Water temperatures: October 1945 to September 1948, March to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 314 ppm Mar. 1-31; minimum, 160 ppm Jan. 1-6, 10-16, 20.
Hardness: Maximum, 198 ppm Mar. 1-31; minimum, 102 ppm Oct. 6, 9, 11-13, 23-26, 28.
Water temperatures: Maximum, 88°F July 27.
EXTREMES, 1944-50.--Dissolved solids: Maximum, 386 ppm Apr. 1-10, 1948; minimum, 144 ppm Feb. 24-28, 1949.
Hardness: Maximum, 231 ppm Feb. 1-10, 1947; minimum, 87 ppm Feb. 24-28, 1949.
Water temperatures: (1945-48, March to September 1950) Maximum, 94°F July 31, 1948; minimum, 45°F Jan. 15-16, 1946, Dec. 12, 1947.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-5, 7-8, 10, 14-22, 27, 29-31, 1949	1,979	8.1	475	13		44	13	34		173	30	45	--	1.2		285	0.39	1,520	163	22	31
Oct. 6, 9, 11-13, 23-26, 28	5,910	7.8	284	13		29	7.1	19		113	16	22	--	3.2		181	.25	2,890	102	9	29
Nov. 1-30	1,656	7.9	516	13		46	15	37		178	33	52	0.2	2.2		309	.42	1,380	176	30	31
Dec. 1-31	2,124	7.7	481	14		47	13	32		173	32	45	.3	2.5		280	.38	1,610	171	29	29
Jan. 1-6, 10-16, 20, 1950	1,637	7.8	278	13		32	6.6	14		108	21	18	.3	2.2		160	.22	707	107	18	23
Jan. 7-9, 17-19, 21-31	1,579	7.6	427	13		47	10	27		161	33	34	--	2.2		253	.34	1,080	158	26	27
Mar. 1-31	1,052	8.0	531	9.0		55	15	35		201	36	50	.2	1.8		314	.43	892	198	34	28
Apr. 1-18	951	7.9	522	9.0		47	15	37		185	35	50	.3	1.5		292	.40	750	179	28	31
Apr. 19-30	4,798	7.6	309	12		38	5.6	16		112	30	18	.3	4.2		190	.26	2,460	118	26	23
May 1-9, 14, 29, 31	2,381	7.6	375	11		45	11	18		148	33	28	.2	2.5		222	.30	1,430	158	36	20
May 10-13, 15-28,30	1,551	7.6	471	11		51	13	30		180	34	43	.3	2.2		274	.37	1,150	181	33	27
June 1-2, 13-30	1,229	8.0	479	13		49	14	28		177	34	41	--	2.2		286	.39	949	180	35	25
June 3-12	9,554	7.9	289	14		33	5.7	16		116	18	18	--	3.0		192	.26	4,950	106	11	25
July 1-31	1,282	8.1	488	14		44	14	33	--	174	31	46	.2	3.0		291	.40	1,010	167	25	31
Aug. 1-31	859	7.9	496	14		45	15	33		178	30	48	.3	1.0		284	.39	659	174	28	29
Sept. 1-16, 23-28	1,115	7.9	466	13		44	14	30		172	29	42	.4	1.2		271	.37	816	167	26	28
Sept. 17-22, 29-30	2,158	8.0	336	11		36	8.5	18		132	19	24	.3	1.5		196	.27	1,140	125	17	24
Weighted average a	2,038	--	402	13		42	10	25		149	28	33	--	2.6		242	0.33	1,330	146	24	27

a No samples collected during month of February. Concentrations estimated for computation of weighted average.

COLORADO RIVER BASIN--Continued

COLORADO RIVER AT WHARTON, TEX.--Continued

Temperature (°F) of water, March to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						--	77	79	82	--	84	77
2						--	69	78	81	--	84	78
3						74	70	80	80	84	84	79
4						76	71	79	78	81	84	--
5						77	64	80	79	84	85	82
6						72	62	79	78	83	84	78
7						79	61	80	78	85	85	--
8						69	66	80	80	83	85	--
9						57	67	--	80	--	85	79
10						63	69	79	80	82	85	80
11						65	69	79	82	81	86	79
12						70	70	77	83	81	84	82
13						60	71	79	82	83	83	83
14						57	65	79	82	--	83	80
15						61	66	79	83	84	84	81
16						63	68	79	82	--	84	81
17						64	67	81	83	--	84	83
18						64	68	80	83	84	85	82
19						65	67	81	84	83	86	82
20						63	66	81	83	82	86	82
21						66	65	78	84	--	83	82
22						63	69	79	83	81	84	83
23						65	71	80	81	83	84	82
24						69	69	80	83	83	84	81
25						70	70	81	82	84	84	81
26						71	68	80	84	87	84	78
27						71	71	81	81	88	84	78
28						67	73	81	84	85	85	78
29						65	78	81	85	86	84	79
30						63	78	82	84	86	84	78
31						65	--	82	--	84	82	--
Average						67	69	80	82	--	84	80

COLORADO RIVER BASIN--Continued

BULL CREEK NEAR IRA, TEX.

LOCATION.--At gaging station 267 feet upstream from county road crossing, 1.5 miles upstream from Colorado River, 5.5 miles upstream from Chimney Creek, 5.8 miles west of Ira, Scurry County, and 6.9 miles northwest of Cuthbert.
DRAINAGE AREA.--388 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April to September 1950.
Water temperatures: April to September 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, April to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 12-16, 17, 1950	a13.1	7.9	3,230	7.2		125	67	502		226	616	605		0.8		2,030	2.76	72	588	402	65
Apr. 17, 18-21.....	13.1	7.6	335	9.8		25	2.8	38		123	28	18		2.2		213	.29	7.5	74	0	53
Apr. 22-26.....	.12	7.5	583	12		36	5.8	75		144	49	74		3.2		344	.47	.1	114	0	59
Apr. 27-30.....	.10	7.5	852	12		44	8.6	119		169	71	134		2.8		504	.69	.1	146	7	64
May 1, 2.....	153	8.1	962	23		43	12	131		162	70	166		4.0		548	.75	226	157	24	65
May 2.....	110	7.4	263	12		24	4.6	23		114	17	11		4.0		152	.21	45	79	0	39
May 3-5.....	3.77	7.7	384	15		27	5.2	34		117	26	24		6.0		204	.28	2.1	89	0	45
May 6-10.....	11.6	7.3	570	14		38	8.1	66		140	45	73		7.8		330	.45	10	128	14	53
May 11-20.....	81.1	7.8	362	17		33	5.7	33		143	28	20		4.0		222	.30	49	106	0	40
May 21, 25, 26-29..	17.3	7.8	433	13		36	6.0	42		123	36	45		5.1		244	.33	11	114	14	44
May 22-24, 25, 30-31	10.8	7.7	701	16		45	9.0	86		159	58	99		6.1		397	.54	12	150	19	55
June 1-4.....	.15	7.9	871	15		54	9.5	109		172	69	139		1.2		482	.66	.2	174	32	58
June 5-10.....	36.7	7.7	556	13		39	6.6	62		132	51	69		1.8		310	.42	31	124	16	52
June 11-16.....	197	7.9	382	19		37	6.4	31		144	26	28		2.5		228	.31	121	119	6	36
June 17-24.....	.22	8.1	848	20		50	11	106		187	72	122		1.8		475	.65	.3	170	17	58
June 25-30, July 1-7	a0	8.1	1,270	19		61	16	178		214	107	224		1.2		717	.98	.0	218	42	64
July 8, 13-14, 20, 22	3.98	7.8	1,670	14		55	17	260		149	121	370		3.0		919	1.25	9.9	207	85	73
July 8, 9-12, 15-18, 22, 23-26, 28-29, 31.....	41.9	7.9	332	14		28	4.4	33		125	26	20		2.5		203	.28	23	88	0	45
July 19, 21, 27, 30, Aug. 1.....	1.28	7.9	470	13		30	5.1	56		117	42	54		3.0		275	.37	1.0	96	0	56
Aug. 2, 4, 6.....	.23	7.9	553	15		36	6.9	69		153	44	68		1.5		319	.43	.2	118	0	56
Aug. 3,5.....	.25	8.1	3,870	17		76	31	682		110	233	1,040		1.5		2,130	2.90	1.4	317	227	82
Aug. 7-15.....	a0	8.2	910	16		50	10	122		182	66	150		3.0		520	.71	.0	166	17	62
Aug. 16-20.....	.36	7.6	5,510	11		111	39	1,000		69	317	1,580		5.0		3,100	4.22	3.0	438	381	83
Aug. 21-31, Sept. 1-2.....	a0	8.2	1,230	16		58	16	174		191	94	235		3.5		711	.97	.0	210	54	64

a Includes days of less than 0.05 second-foot flow.

Sept. 3-8, 12.....	210	7.9	286	13		22	3.8	32	118	20	13		4.8		173	.24	98	70	0	50
Sept. 9-11, 13-17, 19-20	7.41	8.0	439	13		26	5.2	60	126	43	48		2.2		259	.35	5.2	86	0	60
Sept. 18, 21, 27 ..	14.6	8.0	512	14		30	7.4	62	124	36	71		2.2		300	.41	12	105	4	56
Sept. 22-26, 28-30	7.32	8.0	388	14		29	5.4	43	127	34	33		2.0		226	.31	4.5	95	0	50
Weighted average	b30.3	--	427	15		32	6.4	47	134	37	40		3.6		256	0.35	21	106	0	49

b Mean discharge for water year October 1949 to September 1950 was 14.4 second-feet.

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COLORADO RIVER BASIN--Continued

BULL CREEK NEAR IRA, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950 [a]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							--	63	75	86	85	--
2							--	71	79	91	78	--
3							--	68	78	--	89	--
4							--	78	75	85	90	76
5							--	71	69	--	91	74
6							--	70	74	--	83	73
7							--	72	--	--	--	74
8							--	77	70	81	90	81
9							--	75	82	81	81	82
10							--	61	74	84	--	--
11							--	69	74	84	83	--
12							--	71	82	81	--	80
13							--	73	81	75	--	80
14							--	75	81	83	--	83
15							--	75	84	79	--	82
16							--	78	80	--	--	90
17							--	74	75	77	--	77
18							--	78	83	79	86	79
19							60	79	83	81	--	80
20							60	78	75	79	--	78
21							61	78	82	83	--	75
22							75	75	78	74	82	77
23							76	78	83	79	--	73
24							75	70	79	78	--	73
25							65	75	89	--	--	73
26							61	61	85	79	--	74
27							76	69	85	89	--	80
28							70	74	79	88	83	76
29							81	76	74	83	--	78
30							77	86	80	87	--	80
31							--	76	--	81	85	--
Average							--	73	79	82	--	78

a Wide variations occur from day to day due to the small discharge and variable time of temperature measurement.

BLUFF CREEK NEAR IRA, TEX.

LOCATION.--At gaging station 1¾ miles upstream from Colorado River, 2.8 miles west of Ira, Scurry County, and 11.6 miles southwest of Snyder.
DRAINAGE AREA.--38 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April to September 1950.
Water temperatures: April to September 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex.

Chemical analyses, in parts per million, April to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 11-13, 1950		8.0	4,100	17		180	76	550		170	280	1,080		5.0		2,270	3.09		762	622	61
Apr. 14, 18-22		8.3	1,310	18		95	31	123		171	185	210		3.8		816	1.11		364	224	42
Apr. 15		8.2	323	17		48	6.8	17		158	26	13		11		226	.31		148	18	20
Apr. 16-17		8.3	833	18		66	16	74		128	80	142		4.2		522	.71		230	126	41
Apr. 23-30		8.1	1,980	19		115	52	212		140	285	388		4.5		1,140	1.55		501	386	48
May 1		8.0	2,480	19		115	60	270		94	321	500		5.4		1,340	1.82		534	456	52
May 2-6		8.1	766	13		58	14	75		130	106	102		3.8		453	.62		202	96	45
May 7-10		8.3	1,270	16		92	28	129		171	204	192		3.0		780	1.06		344	204	45
May 11-13		8.3	310	13		33	4.7	26		116	26	22		5.4		209	.28		102	7	35
May 14-15, 18-20		8.3	831	16		74	20	67		165	130	97		4.8		505	.69		266	132	35
May 16-17		8.3	553	18		52	12	45		142	57	68		5.6		394	.54		179	62	35
May 21-25		8.3	1,330	18		100	35	123		164	227	204		4.0		843	1.15		394	259	41
May 26-28		8.1	297	14		32	6.6	19		118	22	18		4.1		195	.27		107	10	28
May 29-31		8.3	762	16		70	18	64		169	121	86		3.2		498	.68		248	110	36
June 1-5		7.9	1,160	13		89	24	115		189	135	195		.5		729	.99		320	166	44
June 6-9		7.5	559	11		56	23	16		148	71	52		.5		361	.49		234	112	13
June 10-12		7.6	352	15		36	4.6	35		121	46	26		2.5		262	.36		109	10	41
June 13-16		7.8	760	16		68	16	62		155	107	90		1.0		444	.60		236	108	36
June 17-21		7.9	1,330	19		118	34	110		210	254	168		.5		897	1.22		434	262	36
June 22-30		7.7	1,840	23		152	57	169		260	418	230		1.0		1,220	1.66		614	400	37
July 1-10		8.0	1,900	23		156	60	184		262	459	242		.8		1,250	1.70		636	421	39
July 12, 17-18, 23-24, 27-28		8.0	447	9.9		43	9.2	32		128	41	47		1.8		266	.36		145	40	33
July 13-16, 19-22, 25-26, 29-31		8.1	900	13		71	21	85		176	135	114		2.2		561	.76		264	122	41

COLORADO RIVER BASIN--Continued

BLUFF CREEK NEAR IRA, TEX.--Continued

Chemical analyses, in parts per million, April to September 1950 -Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Aug. 1-5, 1950....		8.0	1,180	16		86	30	116		188	226	142		1.8		750	1.02		338	184	43
Aug. 6-10		7.9	1,770	19		125	42	196		266	333	245		.5		1,090	1.48		484	266	47
Aug. 11-20		8.0	1,760	28		110	52	194		172	416	238		.8		1,120	1.52		488	348	46
Aug. 21-29, 31 ...		8.0	1,860	22		135	55	198		228	453	238		.5		1,210	1.65		563	376	43
Aug. 30, Sept. 1 ..		8.2	3,960	17		120	55	662		258	423	930		1.5		2,340	3.18		526	314	73
Sept. 2-6		7.8	1,620	14		100	39	177		169	265	271		3.5		1,090	1.48		410	272	48
Sept. 7-10		7.8	2,740	12		151	56	327		202	268	618		1.0		1,530	2.08		607	442	54
Sept. 11-20		8.1	2,530	14		129	53	313		154	291	560		1.0		1,440	1.96		540	414	56
Sept. 21-30		8.0	2,680	14		147	61	327		192	343	578		.0		1,560	2.12		618	460	54

COLORADO RIVER BASIN--Continued

BLUFF CREEK NEAR IRA, TEX.--Continued

Temperature (°F) of water, April to September 1950 [a]

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							--	62	76	70	65	66
2							--	62	76	80	72	64
3							--	70	70	77	73	57
4							--	75	60	74	65	59
5							--	71	66	70	76	58
6							--	75	67	68	68	59
7							--	78	78	75	70	69
8							--	77	80	75	74	64
9							--	77	80	76	73	64
10							--	75	71	75	70	64
11							--	64	75	--	79	65
12							--	66	79	67	70	60
13							--	68	80	67	72	65
14							--	72	75	65	75	66
15							--	75	80	74	68	66
16							--	75	80	76	62	63
17							--	77	80	76	72	60
18							78	78	75	70	73	58
19							65	80	84	71	68	60
20							72	79	81	80	65	64
21							78	75	77	65	69	59
22							80	77	77	64	69	58
23							76	80	82	68	67	61
24							76	78	78	65	68	56
25							72	73	80	74	80	56
26							75	57	75	68	80	58
27							75	61	78	69	72	62
28							78	74	75	72	76	60
29							81	76	72	75	71	63
30							60	75	70	68	69	62
31							--	74	--	68	60	--
Average							--	73	76	71	71	62

a Wide variations occur from day to day due to the variable discharge and time of temperature measurement.

COLORADO RIVER BASIN--Continued

OAK CREEK NEAR BLACKWELL, TEX.

LOCATION.--At bridge on U. S. Highway 277, 5.2 miles southeast of Blackwell, Nolan County, 5.6 miles downstream from Brushy Creek, and 10.6 miles north of Bronte.
DRAINAGE AREA.--209 square miles.
RECORDS AVAILABLE.--Chemical analyses: April to July 1950.
Water temperatures: April to July 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, April to July 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																	Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Apr. 16-17, 21, 24, 27, 1950		80	7.6	245	20		36	4.2	10		102	32	6.0		3.8		162	0.22		107	23	17
May 11, 27		70	7.6	290	19		37	8.5	15		140	30	8.0		3.2		190	.26		127	13	20
June 5		65	7.6	170	20		26	5.6	14		104	26	3.0		2.2		116	.16		88	3	26
June 7		75	8.0	499	11		67	15	34		125	160	24		1.0		352	.47		229	126	25
July 7		88	7.0	255	9.5		--	--	20		99	54	6.0		1.0		165	.22		102	21	30

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
LAKE COLORADO CITY ON MORGAN CREEK 5 MILES SOUTHWEST OF COLORADO CITY																					
Feb. 7, 1950		7.3	498	7.5		47	9.5	54		167	59	45		0.8		313	0.43		148	15	43
Apr. 7		7.7	547							172		50							156		

GUADALUPE RIVER BASIN

GUADALUPE RIVER AT VICTORIA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Victoria, Victoria County, 1300 feet upstream from Texas & New Orleans Railroad bridge, and 10 miles upstream from Coleto Creek.
DRAINAGE AREA.--5,311 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1948 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 893 ppm July 23-24; minimum, 230 ppm May 30-31.
Hardness: Maximum, 340 ppm July 23-24; minimum, 150 ppm May 30-31.
EXTREMES, 1945-46, 1948-50.--Dissolved solids: Maximum, 1,040 ppm Jan. 11-17, 1946; minimum, 230 ppm May 30-31, 1950.
Hardness: Maximum, 428 ppm Jan. 11-17, 1946; minimum, 113 ppm Apr. 22, 27-30, 1949.
REMARKS.--Continuous records of specific conductance of daily samples from October 1945 to September 1950 available in district office at Austin, Tex. Some daily chloride determinations also available. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Oct. 1-10, 1949....	597	7.8	706	16		58	23	52		222	30	96	0.3	2.2		424	0.58	683	239	57	32
Oct. 11-13, 24-31..	6,553	7.7	540	13		47	11	43		143	21	82	.3	1.8		330	.45	5,840	162	46	37
Oct. 14-23	661	7.6	1,060	14		68	18	114		159	34	229	.3	2.5		674	.92	1,200	244	113	51
Nov. 1-10.....	1,047	7.8	722	16		65	16	58		200	35	106	.3	2.2		462	.63	131	228	64	35
Nov. 11-20.....	816	7.9	836	18		80	21	61		264	40	112	.3	2.2		518	.70	1,140	286	70	32
Nov. 21-30.....	699	8.1	779	14		76	22	56		261	37	104	.3	2.2		484	.66	913	280	66	30
Dec. 1-10.....	705	7.8	793	11		76	23	59		269	37	107	.3	2.2		488	.66	929	284	64	31
Dec. 11-19.....	1,329	8.1	715	12		72	21	47		249	32	91	.2	2.2		446	.61	1,600	266	62	28
Dec. 20-26.....	1,143	8.0	450	13		44	11	32		155	22	52	.2	2.2		277	.38	855	155	28	31
Dec. 27-31.....	740	8.0	1,030	14		88	25	94		273	46	179	.3	2.5		661	.90	1,320	322	99	39
Jan. 1-10, 1950....	686	8.0	913	18		86	24	53		270	44	112	.2	2.8		557	.76	1,030	313	92	27
Jan. 11-20	786	7.8	796	17		74	22	57		249	37	109	.3	2.8		472	.64	1,000	275	71	31
Jan. 21-31	655	8.0	846	16		74	24	65		253	38	123	.2	2.8		513	.70	907	283	76	33
Feb. 1-10.....	816	7.8	860	16		75	23	66		261	38	119	.3	3.2		488	.68	1,080	282	68	34
Feb. 11-19.....	1,019	7.7	991	16		82	22	83		250	43	158	.2	3.8		580	.79	1,600	295	90	38
Feb. 20-28.....	874	7.7	841	16		73	19	68		232	44	119	.3	3.8		474	.64	1,120	260	70	36
Mar. 1-10.....	699	7.7	915	19		80	22	75		250	43	142	.2	3.2		544	.74	1,030	290	85	36
Mar. 11-20.....	685	7.8	802	13		69	21	64		242	37	112	.2	2.8		458	.62	847	258	60	35
Mar. 21-31	644	7.8	742	14		62	20	63		246	33	96	.2	3.0		433	.59	753	236	35	37
Apr. 1-10.....	611	7.7	808	13		66	22	65		230	38	118	.2	2.5		474	.64	782	255	66	36
Apr. 11-19.....	865	7.7	794	15		66	21	66		236	36	114	.3	3.0		475	.65	1,110	251	58	37
Apr. 20-25.....	1,706	7.6	1,210	16		80	24	120		172	52	256	.3	2.5		744	1.01	3,430	298	157	47
Apr. 26-30.....	2,883	7.7	778	13		61	21	59		160	41	135	.3	3.0		457	.62	3,560	238	108	35
May 1-10.....	710	7.7	790	14		67	20	57		196	37	121	.3	2.5		465	.63	891	249	88	33
May 11-20	901	7.8	670	14		68	20	38		232	34	76	--	3.0		392	.53	954	252	62	25
May 21.....	1,320	7.8	1,160	15		84	23	135		202	100	230	--	2.8		698	.95	2,490	304	138	49
May 22-29	948	7.8	578	15		64	20	24		226	30	54	--	2.5		328	.45	840	242	56	18
May 30-31.....	1,610	7.8	389	14		42	11	22		154	20	34	--	3.0		230	.31	1,000	150	24	24

June 1-10	5,348	7.6	591	16		49	11	49		--	156	24	88	.3	1.8		340	.46	4,910	168	40	39
June 11-20	1,018	7.5	677	19		61	14		52		196	35	88	.3	1.8		387	.53	1,060	210	49	35
June 21-30	652	7.6	735	20		64	19		56		230	38	91	.3	1.2		429	.58	755	238	49	34
July 1-10	559	7.7	723	12		59	21	57		--	223	36	94	.3	.8		418	.57	631	234	51	35
July 11-20	712	7.5	674	18		56	21	50		--	219	35	81	.3	1.5		390	.53	750	226	46	32
July 21-22, 25-31	488	7.7	727	18		58	19		59		206	34	102	.3	1.8		422	.57	556	222	54	37
July 23-24	559	8.2	1,710	21		90	28		203		189	50	405	--	2.8		893	1.21	1,350	340	184	67
Aug. 1-10	388	7.9	644	23		55	20		47		221	33	73	.3	1.2		396	.54	415	219	38	32
Aug. 11-20	373	7.5	651	19		54	21		46		219	32	76	.2	1.0		392	.53	395	221	42	31
Aug. 21-31	347	7.5	629	20		53	20		45		215	33	70	.3	1.5		378	.51	354	214	38	31
Sept. 1-10	366	7.6	650	18		55	21		41		214	31	73	.3	1.2		380	.52	376	224	48	29
Sept. 11-20	390	7.6	616	18		53	20		42		216	31	66	.2	2.0		369	.50	389	214	37	30
Sept. 21-30	388	7.7	637	17		54	20		44		213	31	73	.3	1.5		384	.52	402	216	42	31
Weighted average	1,061	--	711	15		60	17		56		199	32	104	0.3	2.2		425	0.58	1,220	220	56	36

NUECES RIVER BASIN

NUECES RIVER NEAR TILDEN, TEX.

LOCATION.--At gaging station at bridge on State Highway 173, 2 miles upstream from Cow Creek, and 10.5 miles south of Tilden, McMullen County.
DRAINAGE AREA.--8,192 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1949 to September 1950.
Water temperatures: December 1949 to September 1950.
Sediment records: December 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 551 ppm Jan. 21-31; minimum, 181 ppm May 28-31.
Hardness: Maximum, 238 ppm Jan. 21-31; minimum, 64 ppm Apr. 21-23, 26-30.
Water temperatures: Maximum, 96°F Aug. 5; minimum, 48°F Dec. 16.
Sediment loads: Maximum daily, 6,140 tons May 12; minimum daily, 0 tons on many days.
REMARKS.--Sediment station established Dec. 5, 1949. Records of specific conductance of daily samples available in district office at Austin, Tex.
Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, December 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Dec. 5-9, 1949 ...	115	8.0	505	17		46	5.1	54		155	65	41		1.0		340	0.46	106	136	9	46
Dec. 10-18	114	8.0	338	21		31	3.1	37		122	34	25		1.2		245	.33	75	90	0	47
Dec. 19-31	17.8	8.2	561	14		50	6.9	61		182	57	56		.2		373	.51	18	154	4	47
Jan. 1-10, 1950...	3.28	8.0	582	15		55	7.9	58		188	51	62		1.2		360	.49	3.2	170	16	43
Jan. 11-20	1.23	8.0	749	16		68	9.1	80		215	57	102		.5		462	.63	1.5	207	31	46
Jan. 21-31	.61	8.0	918	13		79	10	102		238	59	144		.8		551	.75	.9	238	43	48
Feb. 1-10	9.71	8.0	934	11		72	9.5	108		234	61	140		.8		542	.74	14	218	27	52
Feb. 11-19	2.02	7.9	619	8.4		38	6.7	80		165	46	79		1.2		366	.50	2.0	122	0	59
Feb. 20-24	14.4	8.0	666	11		40	5.2	97		190	44	91		1.8		386	.52	15	122	0	63
Feb. 25-28	78.0	7.8	411	9.0		38	5.2	41		138	34	39		2.8		242	.33	51	116	3	44
Mar. 1-10	4.03	8.1	521	11		46	6.2	54		160	33	64		1.8		302	.41	3.3	140	10	45
Mar. 11-17	.69	7.8	729	11		61	7.8	81		197	39	112		1.2		416	.57	.8	184	22	49
Mar. 18-31	a0	8.2	805	7.7		68	6.6	88		212	43	118		2.8		454	.62	.0	196	23	49
Apr. 1-13	a0	8.2	825	6.2		69	7.0	93		219	43	126		1.2		468	.64	.0	201	22	50
Apr. 14, 16, 19-20	75.8	8.0	804	11		52	4.3	108		173	49	133		2.2		472	.64	97	147	5	62
Apr. 15, 17-18....	129	8.0	488	11		39	1.9	61		140	39	56		3.8		317	.43	110	105	0	56
Apr. 21-23, 26-30	15.9	7.7	721	22		24	1.1	128		175	31	116		2.8		452	.61	19	64	0	81
Apr. 24-25	110	7.6	446	20		29	.4	63		120	56	38		1.8		307	.42	91	74	0	65
May 1-10, 11	a.07	7.8	785	16		30	3.9	130		198	31	125		2.5		451	.61	.1	91	0	76
May 11, 12-20	1,295	7.7	385	15		36	4.4	41		140	29	35		2.2		232	.32	811	108	0	45
May 21-27	602	7.7	436	14		42	4.6	40		148	36	36		1.8		248	.34	403	124	2	41
May 28-31	1,876	7.6	278	14		30	3.4	26		122	16	20		2.0		181	.25	917	89	0	39

a Includes days of less than 0.05 second-foot flow.

June 1-10.....	3,854	8.1	319	25		37	3.3	25	143	18	16		2.5		212	.29	2,210	106	0	34
June 11-20	629	8.0	371	23		48	5.5	22	174	21	17		1.5		247	.34	419	142	0	25
June 21-30	47.4	8.2	494	24		54	6.4	38	192	33	38		3.2		314	.43	40	161	0	34
July 1-10.....	46.8	8.1	361	21		43	5.2	23	165	21	14		2.2		232	.32	29	129	0	28
July 11-17	6.81	8.2	425	21		45	5.5	35	162	32	30		3.0		269	.37	4.9	135	2	36
July 18-19, 20	2.44	7.9	893	24		38	5.9	138	199	22	164		3.5		532	.72	3.5	120	0	72
July 20, 21-31	126	7.9	363	19		43	5.7	25	166	26	14		1.8		236	.32	80	131	0	29
Aug. 1-7.....	1.69	8.1	451	21		53	5.8	33	190	30	28		1.2		289	.39	1.3	156	0	31
Aug. 8-20.....	a0	8.0	469	18		52	6.1	37	186	33	34		1.0		305	.41	.0	155	2	34
Aug. 21-31, Sept. 1-3, 4.....	a0	8.2	471	16		49	7.2	37	179	31	36		2.0		292	.40	.0	152	4	34
Sept. 4, 9	216	8.2	430	16		46	5.9	34	160	39	28		2.2		272	.37	159	139	8	35
Sept. 5-8, 10.....	474	8.2	317	16		42	5.5	16	150	22	9.8		3.5		207	.28	265	127	4	22
Sept. 11-20.....	18.2	8.2	339	17		45	5.1	20	163	21	14		1.5		220	.30	11	133	0	24
Sept. 21-25.....	17.5	8.0	715	17		52	4.4	83	116	42	131		6.3		450	.61	21	148	52	55
Sept. 26-30.....	990	8.1	336	17		36	3.3	30	136	28	18		2.8		218	.30	583	103	0	39
Weighted average	b275	--	346	21		38	3.9	30	144	23	22		2.3		223	0.30	166	111	0	37

a Includes days of less than 0.05 second-foot flow.
b Mean discharge for water year October 1949 to September 1950 was 246 second-feet.

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR TILDEN, TEX.--Continued

Temperature (°F) of water, December 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			--	66	63	68	80	78	81	86	91	84
2			--	71	62	61	75	84	80	89	94	80
3			--	72	62	58	83	86	82	88	92	--
4			--	66	58	56	67	84	84	85	94	83
5			68	68	63	60	73	89	84	85	96	83
6			66	56	66	65	70	78	80	88	94	84
7			66	55	69	69	70	78	84	84	91	82
8			68	53	--	63	76	86	83	89	89	83
9			62	66	68	62	80	86	87	90	94	80
10			64	64	69	63	82	81	87	89	91	84
11			66	63	71	74	81	75	84	89	92	87
12			63	63	70	70	78	76	83	88	92	86
13			61	70	69	62	78	82	81	85	92	87
14			52	67	59	59	64	78	88	81	94	88
15			49	62	58	70	66	78	89	84	92	86
16			48	71	66	66	69	80	87	87	88	83
17			52	73	64	65	68	80	87	89	88	86
18			54	75	67	69	79	81	88	88	84	84
19			62	73	65	64	75	84	89	89	87	--
20			65	65	70	66	--	80	87	87	--	84
21			68	64	71	71	75	85	88	89	89	88
22			61	72	65	71	78	80	87	89	89	85
23			58	73	59	75	77	82	89	90	87	--
24			56	73	65	80	74	82	85	89	89	--
25			60	77	66	78	72	84	86	--	88	76
26			62	68	67	85	78	81	90	89	87	76
27			62	63	70	72	81	78	83	90	89	78
28			63	63	74	75	82	78	86	86	85	81
29			62	74	--	76	83	80	90	92	90	80
30			64	74	--	72	78	80	84	90	90	81
31			69	70	--	73	--	82	--	91	--	--
Average			61	67	66	68	76	81	85	88	90	83

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR TILDEN, TEX.--Continued

Suspended sediment, December 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1							--	--	--
2							--	--	--
3							--	--	--
4							--	--	--
5							16	246	s 15
6							107	539	156
7							77	267	56
8							62	265	44
9							311	3,850	s 4,760
10							170	1,900	s 1,170
11							40	407	44
12							25	182	12
13							19	134	6.9
14							216	1,120	s 1,260
15							387	1,540	s 1,730
16							107	962	s 290
17							33	461	41
18							29	280	22
19							14	140	5.3
20							21	178	s 19
21							85	280	64
22							46	154	19
23							22	100	5.9
24							11	84	2.5
25							8.0	73	1.6
26							6.4	79	1.4
27							5.3	85	1.2
28							4.3	79	.9
29							3.4	77	.7
30							2.8	76	.6
31							2.5	64	.4
Total							1,830.7	--	a 9,730

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	2.3			0.5	107	0.1	10	304	8.2
2	2.4			.5	88	.1	6.9	243	4.5
3	8.0	76	0.9	.5	126	.2	5.9	236	3.8
4	5.5			.6	116	.2	4.3	170	2.0
5	3.8			.6	122	.2	3.5	170	1.6
6	2.8			.6	104	.2	2.8	150	1.1
7	2.4			28	170	13	2.3	150	.9
8	2.1	39	.2	41	e 200	22	1.9	210	1.1
9	1.8			17	e 250	11	1.5	120	.5
10	1.7			7.8	300	6.3	1.2	e 100	.3
11	1.5			4.9	282	3.7	1.1	e 100	.3
12	1.4			3.7	210	2.1	1.0	92	.2
13	1.3	44	.2	2.6	147	1.0	.8	160	.3
14	1.2			1.9	128	.7	.6	127	.2
15	1.2			1.4	116	.4	.6	116	.2
16	1.2			1.2	88	.3	.5	124	.2
17	1.2			1.0	88	.2	.2	77	--
18	1.2	44	.1	.8	72	.2	0	--	0
19	1.2			.7	145	.3	0	--	0
20	.9			.7	166	.3	0	--	0
21	.9			.9	246	.6	0	--	0
22	.8			9.4	264	s 7.1	0	--	0
23	.7	25	--	18	288	s 16	0	--	0
24	.6			43	373	s 55	0	--	0
25	.6			174	980	460	0	--	0
26	.6			80	725	157	0	--	0
27	.5			39	414	44	0	--	0
28	.5	20	--	19	313	16	0	--	0
29	.5			--	--	--	0	--	0
30	.5			--	--	--	0	--	0
31	.5	92	.1	--	--	--	0	--	0
Total	51.8	--	t 7	499.3	--	818	45.1	--	t 25

e Estimated.
s Computed by subdividing day.
t Less than 0.05 ton.
a Period Dec. 5 to Dec. 31.

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR TILDEN, TEX.--Continued

Suspended sediment, December 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0.4	e 70	0.1	2,940	95	754
2	0	--	0	.2	e 60	--	2,940	70	556
3	0	--	0	.1	e 50	--	3,240	200	1,750
4	0	--	0	0	--	0	3,390	174	1,590
5	0	--	0	0	--	0	3,900	69	727
6	0	--	0	0	--	0	5,290	69	986
7	0	--	0	0	--	0	6,450	67	1,170
8	0	--	0	0	--	0	4,750	50	641
9	0	--	0	0	--	0	3,230	25	218
10	0	--	0	0	--	0	2,410	90	586
11	0	--	0	43	277	s 139	1,620	228	997
12	0	--	0	666	3,350	s 6,140	1,310	140	495
13	0	--	0	970	2,090	s 5,420	1,340	134	485
14	171	2,060	s 1,150	1,060	1,250	3,580	1,360	280	1,030
15	100	975	s 277	1,260	840	2,860	385	290	301
16	11	e 850	25	1,580	500	2,130	110	380	113
17	91	e 1,680	676	2,180	430	2,530	68	350	64
18	196	1,520	s 809	2,360	364	2,320	46	200	25
19	98	625	s 173	1,340	471	1,700	32	170	15
20	23	e 540	34	624	2,160	s 3,710	22	132	7.8
21	6.6	e 540	9.6	930	1,200	3,010	16	110	4.7
22	14	e 750	28	970	600	1,570	12	106	3.4
23	79	e 1,350	650	740	938	s 1,860	9.5	84	2.2
24	193	1,800	s 1,210	666	575	s 1,040	6.9	80	1.5
25	28	308	23	457	540	666	5.3	53	.8
26	21	162	9.2	224	576	348	4.6	56	.7
27	3.4	118	1.1	230	668	415	3.8	59	.6
28	1.7	e 100	.5	885	893	s 2,160	37	131	s 18
29	1.0	e 90	.2	1,440	470	1,830	174	450	211
30	.6	e 80	.1	2,240	220	1,330	205	580	321
31	--	--	--	2,940	150	1,190	--	--	--
Total	1,038.3	--	5,080	23,805.7	--	t 45,950	45,307.1	--	13,070

Day	July			August			September		
1	160	410	177	4.5	149	1.8	0	--	0
2	101	275	75	2.9	78	.6	0	--	0
3	71	234	45	2.0	53	.3	0	--	0
4	47	190	24	1.3	47	.2	179	1,680	s 1,320
5	31	124	10	.7	87	.2	430	1,800	2,090
6	21	116	6.6	.3	50	--	568	1,500	2,300
7	15	125	5.1	.1	54	--	666	1,120	2,010
8	10	84	2.3	0	--	0	629	783	s 1,340
9	7.3	105	2.1	0	--	0	181	690	s 348
10	5.2	144	2.0	0	--	0	77	310	64
11	3.5	153	1.4	0	--	0	50	278	38
12	2.5	79	.5	0	--	0	33	239	21
13	4.6	285	s 6.4	0	--	0	21	155	8.8
14	13	746	s 30	0	--	0	13	144	5.1
15	2.0	270	1.5	0	--	0	8.6	188	4.4
16	8.1	122	2.7	0	--	0	6.1	99	1.6
17	14	148	5.6	0	--	0	4.6	112	1.4
18	4.0	124	1.3	0	--	0	8.4	250	5.7
19	1.9	112	.6	0	--	0	2.8	90	.7
20	17	385	s 73	0	--	0	35	323	s 53
21	296	1,460	s 1,160	0	--	0	56	336	51
22	358	960	928	0	--	0	12	145	4.7
23	266	550	395	0	--	0	4.3	e 150	1.7
24	156	555	s 242	0	--	0	6.4	e 200	3.5
25	164	1,020	s 537	0	--	0	9.0	e 453	13
26	58	270	42	0	--	0	405	3,410	s 4,040
27	36	178	17	0	--	0	756	1,290	s 2,620
28	23	144	8.9	0	--	0	970	800	2,100
29	14	118	4.5	0	--	0	1,260	300	1,020
30	9.0	102	2.5	0	--	0	1,560	210	885
31	6.3	106	1.8	0	--	0	--	--	--
Total	1,925.4	--	3,810	11.8	--	t 3	7,951.2	--	20,350

Total discharge for period Dec. 4 to Sept. 30 (second-foot-days) ---------- 82,466.4
Total load for period Dec. 4 to Sept. 30 (tons) ---------- 98,840

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

NUECES RIVER NEAR TILDEN, TEX.--Continued

Particle-size analyses of suspended sediment, December 1949 to September 1950
(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 (second-feet)	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, 1949	1:40 p. m.	498	7,570	5,280	--	13	20	100	--	--	--	--				BN
Feb. 20-24, 1950	--	--	--	1,760	80	97	99	100	--	--	--	--				BCW
Feb. 25	7:15 a. m.	200	970	1,560	63	94	96	98	100	--	--	--				BCW
Feb. 26	7:55 a. m.	91	630	1,010	79	95	99	100	--	--	--	--				BCW
Feb. 28	7:20 a. m.	16	327	503	94	96	97	100	--	--	--	--				BCW
Apr. 14	7:00 a. m.	272	2,720	1,600	74	88	92	96	98	100	--	--				BCW
Apr. 15	7:15 a. m.	144	859	1,030	89	96	99	99	100	--	--	--				BCW
Apr. 18	7:10 a. m.	187	1,640	858	61	86	94	95	97	100	--	--				BW
May 12	1:00 p. m.	666	4,340	2,910	71	89	94	99	100	--	--	--				BCW
May 13	12:00 m.	990	1,880	2,500	85	90	95	97	99	100	--	--				BCW
May 15	12:15 p. m.	1,260	757	2,310	74	84	90	92	96	98	100	--				SBCW
May 20	6:55 a. m.	512	2,120	1,520	78	87	91	96	99	99	100	--				SBCW
May 20	6:00 p. m.	740	2,840	2,060	81	88	95	98	100	--	--	--				BCW
May 23	6:10 p. m.	725	890	1,250	82	91	95	98	98	99	100	--				SBCW
May 28	7:30 p. m.	1,100	962	1,050	86	89	92	95	97	97	100	--				SBCW
May 31, June 1, 2	--	--	132	960	73	78	83	86	88	92	98	100				SBCW
June 5, 6	--	--	b 69	a 1,030	6	71	72	74	78	88	94	100				SBCW
June 29	--	--	476	1,330	0	36	84	98	99	100	--	--				BN
July 21	6:45 p. m.	334	1,330	1,830	85	89	91	93	98	100	--	--				BCW
Sept. 26	6:30 a. m.	250	3,230	2,700	--	82	84	99	100	--	--	--				PCW
Sept. 26	6:30 a. m.	250	3,230	2,260	--	10	31	98	99	100	--	--				PN

a Composite of 22 samples.
b Mean weighted ppm for June 5, 6.

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR MATHIS, TEX.

LOCATION.--At intake tower at Lake Corpus Christi near Mathis, San Patricio County, 0.8 mile upstream from gaging station which is at bridge on U. S. Highway 59, 200 feet downstream from Texas & New Orleans Railroad bridge, 0.8 mile downstream from Lake Corpus Christi Dam, and 4 miles southwest of Mathis.
DRAINAGE AREA.--16,660 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950.
Water temperatures: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 375 ppm May 1-31; minimum, 243 ppm June 1-30.
Hardness: Maximum, 167 ppm Apr. 1-30; minimum, 118 ppm Nov. 1-30.
Water temperatures: Maximum, 86°F July 9, 14, 23, 28-31, Aug. 25-27, Sept. 1; minimum, 56°F Jan. 5-8.
EXTREMES, 1947-50.--Dissolved solids: Maximum, 548 ppm June 1-30, 1948; minimum, 175 ppm Apr. 27-30, 1949.
Hardness: Maximum, 194 ppm July 1-6, 1948; minimum, 85 ppm Apr. 27-30, 1949.
Water temperatures: Maximum, 94°F July 27, 1948; minimum, 38°F Jan. 31, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local rain.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
Oct. 1-31, 1949 ..	459	8.1	472	22		50	5.8	41		179	34	38	0.2	0.5		292	0.40	362	149	2	37
Nov. 1-30	254	8.0	411	17		38	5.7	39		140	31	38	.2	2.2		252	.34	173	118	4	42
Dec. 1-31	299	8.0	454	16		44	6.2	43		160	34	44	.2	.8		279	.38	225	135	4	41
Jan. 1-31, 1950...	62.8	8.1	491	17		46	6.6	50		165	39	52	.1	.5		310	.42	53	142	7	43
Feb. 1-28	42.5	8.2	514	17		48	6.0	52		174	40	51	.3	.8		304	.41	35	144	2	44
Mar. 1-31.....	39.3	8.0	534	18		51	6.4	53		182	41	54	.3	.8		322	.44	34	154	4	43
Apr. 1-30	45.5	8.2	594	18		56	6.7	59		196	46	61	.2	.0		365	.50	45	167	6	43
May 1-31	652	7.8	637	18		53	6.3	74		186	54	78	--	.2		375	.51	660	156	6	50
June 1-30	1,955	8.0	381	24		40	4.6	32		159	21	24	--	1.8		243	.33	1,280	119	0	37
July 1-31	146	8.2	422	27		46	4.8	32	--	186	23	26	.3	1.8		274	.37	108	134	0	38
Aug. 1-31	69.3	7.9	464	27		50	5.6	41		194	26	35	.3	1.0		294	.40	55	148	0	38
Sept. 1-30	62.5	7.9	503	26		53	6.3	46		204	29	43	.2	1.2		327	.44	55	158	0	39
Weighted average	340	--	452	22		44	5.3	42		168	31	39	0.2	1.3		280	0.38	257	132	0	41

NUECES RIVER BASIN--Continued

NUECES RIVER NEAR MATHIS, TEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	63	--	--	64	65	73	77	82	83	85	86
2	78	--	67	66	--	--	--	78	82	83	85	84
3	78	64	68	60	58	59	70	--	83	84	--	81
4	79	66	66	--	59	59	73	80	83	84	85	82
5	78	68	67	56	63	59	69	80	83	82	85	84
6	--	67	68	56	67	63	--	82	82	--	85	81
7	80	67	--	56	68	66	69	82	--	85	83	83
8	81	67	68	56	--	62	70	81	--	85	82	84
9	81	66	65	60	67	--	72	81	83	86	82	84
10	82	--	70	61	65	64	72	80	84	83	--	84
11	83	64	71	--	68	69	73	--	84	83	84	--
12	79	66	65	61	68	70	--	79	83	--	83	84
13	--	66	63	66	66	61	71	81	83	85	82	84
14	74	68	--	67	63	59	68	78	--	86	82	84
15	74	67	58	68	--	64	68	77	85	85	82	85
16	76	68	58	68	62	--	72	78	85	84	83	85
17	78	--	60	68	65	63	68	79	--	82	--	84
18	79	69	61	--	65	67	68	--	84	81	85	--
19	79	68	64	66	66	66	69	81	84	84	85	83
20	--	70	66	65	63	66	--	81	84	--	85	85
21	81	66	66	66	64	66	72	79	83	84	85	85
22	77	65	--	68	--	68	73	78	--	85	85	84
23	79	65	59	69	63	--	73	78	84	86	84	83
24	76	--	68	68	67	73	71	82	84	85	--	83
25	73	66	68	69	67	74	72	--	85	85	86	--
26	--	69	65	--	65	77	70	82	85	--	86	85
27	69	70	59	63	65	67	--	81	85	83	86	82
28	70	69	60	66	67	67	75	82	84	86	84	82
29	70	69	60	69	--	71	77	82	--	86	84	82
30	72	--	63	68	--	--	77	83	83	86	83	82
31	84	--	68	68	--	72	--	82	--	86	83	--
Average	77	67	64	84	65	66	71	80	84	84	84	84

RIO GRANDE BASIN

RIO GRANDE NEAR LOBATOS, COLO.

LOCATION:--Two and one-half miles south of La Sauses, 7 miles downstream from Conejos River, and 11 miles upstream from gaging station, near Lobatos which is 7 miles downstream from Culebra Creek and 10 miles east of Lobatos, Conejos County.
DRAINAGE AREA:--7,700 square miles above gaging station (includes 2,940 square miles in closed basin).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 626 ppm June 21-30; minimum, 158 ppm May 21-25.
Hardness: Maximum, 286 ppm July 1-5, 7-10; minimum, 80 ppm May 12-20.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 691 ppm July 21-31, 1948; minimum, 104 ppm May 2-10, 1947.
Hardness: Maximum, 306 ppm July 21-31, 1948; minimum, 54 ppm June 1, 4-10, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949 ...	95.8	7.4	479	33	0.03	48	10	37	7.6	145	105	13	0.6	0.7	(a)	326	0.44	84.3	161	42	32
Oct. 11-20	123	7.5	450	36	.03	46	9.5	34	7.0	144	93	13	.6	.7	(a)	311	.42	103	154	36	31
Oct. 21-31	149	7.6	385	35	.03	40	8.4	27	6.2	139	71	10	.6	.5	(a)	267	.36	107	134	20	29
Nov. 1-7, 9-10 ...	167	7.6	386	37	.01	40	8.0	25	5.6	132	71	9	.6	1.2	0.1	262	.36	118	133	25	28
Nov. 11-20	304	7.5	308	32	.03	33	6.7	18	4.0	110	53	6.8	.4	1.7	.1	210	.29	172	110	20	25
Nov. 21-30	373	7.3	309	32	.01	33	7.0	20	4.4	112	54	6.5	.4	1.3	(a)	214	.29	216	112	20	27
Dec. 1-10	350	7.2	341	37	.04	36	7.6	21	4.8	122	58	8.0	.4	1.3	(a)	234	.32	221	121	21	26
Dec. 11-20	280	7.3	326	39	.03	35	7.4	17	7.4	120	55	6.5	.3	1.3	(a)	228	.31	172	118	20	22
Dec. 21-31	312	7.3	258	34	.03	28	6.1	15	4.0	104	37	5.2	.3	1.1	(a)	182	.25	153	95	10	25
Jan. 1-10, 1950 ...	288	7.6	243	33	.02	27	5.3	13	4.4	96	34	4.8	.3	2.1	(a)	171	.23	133	90	11	23
Jan. 11-20	314	8.1	228	32	.02	26	5.3	12	4.6	92	32	4.0	.3	2.1	(a)	163	.22	138	87	12	22
Jan. 21-31	300	7.5	249	31	.02	27	5.0	15	5.0	97	36	5.2	.4	2.1	(a)	175	.24	142	88	8	26
Feb. 1-10	364	7.5	257	31	.02	28	5.4	15	4.8	98	39	5.5	.4	2.1	(a)	179	.24	176	92	12	25
Feb. 11-20	437	7.6	289	31	.03	31	6.2	15	6.2	103	47	6.5	.4	2.7	(a)	197	.27	232	103	18	23
Feb. 21-28	466	7.8	288	31	.06	31	6.0	17	5.6	105	46	6.2	.4	2.2	(a)	197	.27	248	102	16	25
Mar. 1-10	414	7.6	423	34	.02	46	9.4	26	5.4	139	85	10	.5	2.5	(a)	287	.39	321	154	40	26
Mar. 11-20	251	7.5	420	34	.08	44	9.2	28	2.2	135	82	10	.5	2.4	(a)	279	.38	189	148	38	29
Mar. 21-31	136	7.6	396	36	.23	39	8.7	29	4.2	139	72	9.5	.6	.2	(a)	267	.36	98	134	20	31
Apr. 1-7, 9-10	129	7.4	334	30	.06	33	8.4	22	5.4	110	65	8.0	.4	1.0	(a)	227	.31	79	117	27	28
Apr. 11-20	116	7.3	253	22	.09	25	6.8	16	4.0	71	56	7.0	.4	.8	(a)	173	.24	54	90	32	27
Apr. 21-30	314	7.4	440	25	.05	42	10	30	5.0	98	115	12	.4	.3	(a)	288	.39	244	146	66	30
May 1-7, 9-11	205	7.8	525	26	.02	54	9.6	41	6.4	119	142	14	.5	1.0	(a)	354	.48	196	174	78	33
May 12-20	130	7.5	228	33	.04	24	4.9	15	6.6	122	14	2.0	.4	1.0	(a)	161	.22	57	80	0	27
May 21-25	225	7.4	228	30	.03	24	5.2	14	6.6	117	16	2.5	.6	1.4	(a)	158	.21	96	82	0	25
May 26-30	323	7.3	450	29	.03	42	9.0	36	6.8	113	112	11	.6	1.2	(a)	304	.41	265	142	50	34

(a) Less than 0.1 part per million of boron.

June 1-10.....	646	7.1	631	25	.01	49	12	64	6.0	145	162	20	.5	.9	.1	410	.56	715	172	53	44
June 11-13, 15-20.	282	7.3	829	32	.02	72	17	77	5.8	161	247	26	.7	.8	(a)	557	.76	424	250	118	39
June 21-30	102	7.3	922	32	.03	79	18	90	7.0	176	279	32	.9	.9	.1	626	.85	172	271	127	41
July 1-5, 7-10 ..	65.1	7.5	919	33	.02	82	20	82	9.6	195	266	32	1.0	1.3	.1	623	.85	110	286	126	37
July 11-12, 14-18..	b 25.2	7.7	640	32	.02	54	13	61	8.8	190	143	21	.8	1.6	.1	429	.58	29	188	32	40
July 19-31.....	(b)	7.8	744	33	.03	63	16	70	7.0	191	188	25	.9	1.1	.1	498	.68	---	223	66	40
Aug. 1-10	b 8.98	7.5	700	34	.04	62	14	67	9.0	191	169	21	.9	1.4	.2	472	.64	11	212	56	39
Aug. 11-20	60.4	7.4	704	36	.04	60	14	70	9.6	188	166	24	.9	1.4	.1	475	.65	77	207	53	41
Aug. 21-31	31.3	7.9	575	44	.02	44	11	57	6.8	187	106	18	1.1	.7	.1	381	.52	32	155	2	43
Sept. 1-10.....	24.7	7.8	596	41	.02	48	12	60	8.2	187	120	18	1.1	1.0	.1	401	.55	27	170	16	42
Sept. 11-20	35.7	7.8	582	39	.02	50	12	53	7.2	179	120	13	.8	1.0	.1	384	.52	37	174	28	39
Sept. 21-30	65.1	7.8	571	33	.01	50	12	49	6.2	170	124	17	.6	1.1	(a)	377	.51	66	174	35	37
Weighted average	210	--	397	32	0.03	39	8.4	29	5.4	121	84	10	0.5	1.5	(a)	270	0.37	153	132	33	31

a Less than 0.1 part per million of boron.
b No flow at gaging station July 16 to Aug. 6.

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.

LOCATION.--At gaging station a quarter of a mile downstream from bridge at Embudo, Rio Arriba County, and 2½ miles downstream from Embudo Creek.
DRAINAGE AREA.--10,400 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1950.
Sediment records: January 1948 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum observed, 72°F on several days in July and August; minimum observed, 33°F Dec. 13, 23, 25, Jan. 3, 28, 29.
Sediment loads: Maximum daily, 2,300 tons July 15; minimum daily, 14 tons Sept. 16, 18.
EXTREMES, 1948-50.--Water temperatures: (1949-50): Maximum observed, 72°F July 9, 1949 and on several days in July and August, 1950; minimum observed, 33°F on many days during winter months.
Sediment loads: Maximum daily, 51,000 tons May 25, 1948; minimum daily, 11 tons average during period Dec. 1-9, 1948 (revised).
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Temperature (°F) of water, water year October 1949 to September 1950
(Once-daily temperature measurement between 6 a. m. and 10 a. m.)

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

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	370	291	291	410	15	17	671	36	63
2	360			410			664		
3	352			410			658		
4	352			410			632		
5	342			405			606		
6	342			410	23	26	586	28	48
7	338	51	48	410			580		
8	329			415			619		
9	334			420			626		
10	347			430			697		
11	352			470			690		
12	356			498			568		
13	347			504			435		
14	347			520			415		
15	370			544			498		
16	365			580	49	76	580	44	64
17	365	30	31	626			568		
18	385			626			550		
19	395			612			574		
20	415			619			600		
21	420			619			630		
22	420			619			620		
23	425			626			600		
24	440			645			570		
25	425			638			560		
26	415			638	36	63	560	19	30
27	420	15	17	652			560		
28	425			671			580		
29	430			684			560		
30	430			678			580		
31	425			--	--	--	590		
Total	11,838	--	1,280	16,199	--	1,600	18,227	--	1,480

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	580			632			858	35	80
2	600			632			898		
3	630			658			866		
4	562			684			866		
5	540			690			843		
6	540			717	53	103	822		
7	540	18	27	780			787	36	78
8	550			822			766		
9	560			815			738		
10	550			794			717		
11	568			794			690		
12	568			822			652		
13	562			815			606		
14	532			710			606		
15	550			773			593		
16	550			794	39	85	556	23	35
17	574	21	32	829			550		
18	580			836			532		
19	593			866			504		
20	593			858			498		
21	606			890			470		
22	612			850			470		
23	626			815			450		
24	638			836			435		
25	652			836			435		
26	612			808	35	80	405	31	32
27	612	27	46	843			320		
28	632			850			304		
29	645			--	--	--	308		
30	645			--	--	--	300		
31	645			--	--	--	699	509	s 1,440
Total	18,247	--	1,080	22,049	--	2,520	18,544	--	2,940

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE AT EMBUDO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	492	190	252	550			520		
2	395	56	60	538	67	110	509	45	66
3	400	57	62	514			550		
4	410			509			731	90	178
5	400			526			922	415	1,030
6	400			520			1,230	449	1,490
7	410			498			1,200	451	1,460
8	425			470			1,020	261	719
9	470	36	41	450	27	33	1,000	130	351
10	450			440			930	137	344
11	415			420			850	86	197
12	415			415			780	156	329
13	435			395			717	180	348
14	420			380			678	e 130	238
15	395			375			593	e 80	128
16	395			356			538	40	58
17	385			360			487	36	47
18	390			356			450	27	33
19	405	45	50	365	37	41	405	23	25
20	420			415			375	e 20	20
21	400			455			360		
22	420			492			352		
23	450			460			352		
24	562			440			334		
25	731			445			320	35	31
26	787			532			312		
27	710	67	110	556	45	66	320		
28	612			586			304		
29	550			586			292		
30	550			593			300		
31	--	--	--	574			--	--	--
Total	14,099	--	2,050	14,571	--	1,560	17,731	--	7,500

Day	July			August			September		
1	347	691	s 693	216	68	40	205	49	27
2	316	50	43	208	44	25	205	60	33
3	292	25	20	236	77	49	202	65	35
4	296	e 25	20	236	467	298	202	59	32
5	312	350	295	212	196	112	205	52	29
6	288	422	s 332	208	98	55	212	60	34
7	276	e 450	335	212	72	41	205	42	23
8	304	412	338	205	40	22	219	50	30
9	366	e 498	s 691	198	33	18	233	71	45
10	435	1,340	s 1,620	194	52	27	236	97	62
11	308	160	133	194	40	21	244	46	30
12	288	103	80	216	60	35	240	34	22
13	342	661	s 718	219	62	37	230	31	19
14	370	1,000	s 1,060	222	60	36	219	34	20
15	448	1,780	s 2,300	230	60	37	216	32	19
16	410	1,540	s 1,830	236	59	38	219	24	14
17	324	370	324	248	56	37	208	72	40
18	292	233	184	280	92	70	222	23	14
19	272	162	119	280	99	75	252	269	s 190
20	256	106	73	260	53	37	256	250	173
21	264	214	s 174	264	60	57	260	114	80
22	288	365	s 291	244	33	22	268	65	47
23	252	224	152	240	67	43	272	38	28
24	248	175	117	233	60	38	276	59	44
25	256	110	76	226	66	40	288	61	47
26	244	216	142	230	55	34	280	59	45
27	230	299	186	230	55	34	284	57	44
28	252	268	182	226	42	26	276	28	21
29	236	108	69	222	40	24	296	40	32
30	219	198	117	219	43	25	292	60	47
31	216	75	44	208	69	39	--	--	--
Total	9,247	--	12,760	7,052	--	1,490	7,222	--	1,330

Total discharge for year (second-foot-days) 175,026
Total load for year (tons) 37,590

e Estimated.
s Computed by subdividing day.

RIO GRANDE AT EMBUDO, N. MEX.--Continued

Particle-size analyses of suspended sediment, May to September 1950
(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 (second-feet)	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	
May 23, 1950	2:00 p.m.	455	35	3,230	10	18	31	48	--	89	93	97		100		DSWCM
June 20	11:40 a.m.	385	16	1,370	17	28	41	49	--	76	84	89		99		DSWCM
July 10	8:10 a.m.	400	1,370	1,010	43	65	82	89	91	93	96	--		--		BWCM
Aug. 4	5:45 p.m.	212	1,190	865	92	94	97	99	100	--	--	--		--		BSWCM
Sept. 20	6:05 a.m.	256	347	1,440	41	56	69	86	--	--	--	--		--		DWCM

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.

LOCATION.--At gaging station in San Ildefonso Pueblo Grant 250 feet downstream from bridge on State Highway 4, 1¾ miles southwest of San Ildefonso Pueblo, 2½ miles downstream from Rio Pojoaque, and 7 miles west of Pojoaque, Santa Fe County.
DRAINAGE AREA.--14,300 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1950.
Water temperatures: October 1948 to September 1950.
Sediment records: October 1947 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 361 ppm Aug. 12; minimum, 188 ppm Feb. 11-20, 21-26, 28.
Hardness: Maximum, 259 ppm Aug. 12; minimum, 116 ppm Apr. 21-30.
Water temperatures: Maximum observed, 74°F June 18; minimum, freezing point on many days in December, January, and February.
Sediment loads: Maximum daily, 184,000 tons July 14; minimum daily, 57 tons Sept. 18.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 462 ppm Aug. 15, 18-20, 1947; minimum, 149 ppm May 1-10, 1948, June 21-30, 1949.
Hardness: Maximum, 274 ppm Aug. 15, 18-20, 1947; minimum, 85 ppm June 21-30, 1949.
Water temperatures (1948-50): Maximum observed, 77°F July 30, 1949; minimum, freezing point on many days during winter months.
Sediment loads (1947-50): Maximum daily, 184,000 tons July 14, 1950; minimum daily, 16 tons Oct. 11, 1948 (revised).
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949 ..	407	7.6	437	26	0.02	49	10	31	5.6	170	75	12	0.6	0.7	(a)	294	0.40	323	164	24	28
Oct. 11-20	448	7.7	418	26	.02	46	9.8	30	4.2	164	71	10	.7	.5	(a)	279	.38	337	156	21	29
Oct. 21-31	902	7.7	364	23	.03	44	8.7	21	3.6	143	62	7.0	.6	.7	(a)	241	.33	587	146	29	23
Nov. 1-10	531	7.8	412	24	.02	46	9.6	29	4.0	162	69	10	.6	.1	(a)	272	.37	390	154	22	28
Nov. 11-20	661	7.6	405	27	.02	44	9.8	26	5.2	153	67	9.5	.6	.5	(a)	265	.36	473	150	25	26
Nov. 21-30	748	7.5	357	27	.02	40	8.8	19	5.2	142	54	7.8	.5	.5	(a)	233	.32	471	136	20	23
Dec. 1-10	707	7.5	350	26	.02	39	7.9	23	5.4	140	54	7.8	.5	.5	(a)	233	.32	445	130	16	27
Dec. 11-20	625	7.5	389	30	.02	44	9.6	21	4.4	153	61	8.8	.5	1.0	(a)	256	.35	432	150	24	23
Dec. 21-31	686	7.6	360	33	.03	40	8.5	24	3.8	147	53	7.8	.5	1.0	(a)	244	.33	452	135	14	27
Jan. 1-10, 1950 ..	732	7.7	355	30	.02	40	8.3	20	3.2	146	50	7.8	.4	2.0	0	234	.32	462	134	14	24
Jan. 11-20	698	7.7	345	31	.03	38	8.8	23	3.4	148	47	7.5	.4	1.9	0	234	.32	441	131	10	24
Jan. 21-31	730	7.8	325	30	.03	36	8.2	21	3.2	136	45	7.0	.4	1.5	0	219	.30	432	124	12	26
Feb. 1-10	1,965	7.9	300	24	.03	35	7.5	15	3.6	118	48	4.5	.3	1.4	0	197	.27	1,050	118	22	21
Feb. 11-20	2,322	7.5	296	20	.05	37	7.8	12	1.6	116	48	3.5	.2	1.2	(a)	188	.26	1,180	124	30	17
Feb. 21-26, 28 ...	2,310	7.4	292	20	.06	37	7.5	12	1.4	109	51	3.5	.2	1.3	(a)	188	.26	1,170	124	34	17
Mar. 1-10	2,215	7.6	315	20	.06	38	8.3	15	1.4	113	59	4.5	.3	1.4	(a)	204	.28	1,220	129	36	20
Mar. 11-20.....	1,845	7.5	305	20	.05	37	8.1	14	1.0	109	58	4.0	.3	1.0	(a)	197	.27	981	126	36	19
Mar. 21-31	1,551	7.6	335	18	.09	39	9.9	15	1.2	110	69	4.5	.3	.7	(a)	212	.29	888	138	48	19

a Less than 0.1 part per million of boron.

Apr. 1-10.....	1,471	7.6	391	19	.03	46	11	17	3.6	132	81	5.8	.4	1.3	(a)	250	.34	993	160	52	18
Apr. 11-20.....	894	7.6	353	21	.04	40	9.3	20	3.8	133	60	7.5	.5	1.1	(a)	229	.31	553	138	29	23
Apr. 21-30	943	7.4	314	21	.04	34	7.6	20	3.4	119	51	7.5	.4	.7	(a)	205	.28	522	116	18	27
May 1-10	638	7.6	371	23	.03	39	9.2	25	2.6	129	68	9.0	.6	.6	(a)	241	.33	415	136	30	28
May 11-20	418	7.5	442	26	.02	48	9.4	33	4.8	159	82	10	.5	.9	(a)	293	.40	331	158	28	30
May 21-27, 29-31	872	7.6	374	24	.07	44	8.0	23	3.6	140	67	6.5	.4	1.3	(a)	247	.34	582	143	28	25
June 1-10	1,262	7.6	385	23	.04	43	8.1	26	5.0	132	77	7.5	.5	1.4	(a)	257	.35	876	141	33	28
June 11-20.....	929	7.3	419	21	.01	44	8.4	29	7.2	129	88	10	.5	.8	(a)	273	.37	685	144	39	29
June 21-30	626	7.4	368	18	.02	41	6.8	24	6.2	127	71	8.5	.4	.3	(a)	239	.33	404	130	26	27
July 1-10	873	7.5	433	23	.02	52	8.2	26	6.4	166	74	8.0	.5	.9	(a)	281	.38	662	163	27	25
July 11-20	931	7.4	430	23	.02	53	7.0	25	5.0	174	66	7.8	.5	1.1	(a)	274	.37	689	161	18	25
July 21-31	323	7.6	461	27	.02	54	9.2	31	5.0	194	67	7.5	.5	1.4	(a)	299	.41	261	172	14	27
Aug. 2-10	205	7.8	437	25	.02	55	8.5	26	5.2	188	62	8.0	.6	1.0	(a)	284	.39	157	172	18	24
Aug. 11, 13-20 ..	1,038	7.7	324	19	.02	45	6.6	13	4.2	141	50	3.5	.3	1.0	(a)	212	.29	594	140	24	16
Aug. 12.....	1,120	--	598	--	--	84	12	28		227	114	11	--	--	--	361	.49	1,090	259	73	19
Aug. 21-31	647	7.7	350	19	.02	44	7.6	16	4.4	140	59	3.5	.5	.8	(a)	224	.30	391	141	26	19
Sept. 1-10	590	7.8	370	21	.03	43	8.4	22	5.2	140	67	5.0	.5	1.3	(a)	242	.33	386	142	28	24
Sept. 11-18, 20..	266	7.6	406	27	.02	46	9.3	27	5.2	170	58	9.5	1.0	1.2	--	268	.36	192	153	14	27
Sept. 21-30	322	7.6	450	25	.02	50	9.7	32	5.6	182	70	11	1.0	1.2	--	296	.40	257	165	16	29
Weighted average	916	--	354	23	0.04	41	8.4	20	3.5	134	61	6.4	0.5	1.1	(a)	231	0.31	571	137	27	24

a Less than 0.1 part per million of boron.

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurement generally between 8 a. m. and 11 a. m.]

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

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	487	1,800	2,370	553	491	733	768	264	547
2	444	500	599	544	355	521	768	236	489
3	415	240	269	534	372	536	738	267	532
4	399	180	194	539	308	448	726	190	372
5	395	174	186	524	211	299	686	176	326
6	395	121	129	515	299	416	658	198	352
7	391	99	105	524	234	331	642	88	153
8	373	88	89	524	200	283	674	203	369
9	376	724	735	524	178	252	664	184	330
10	399	1,090	1,170	529	212	303	744	277	556
11	427	965	1,110	558	280	422	799	335	723
12	427	878	1,010	615	273	453	686	271	502
13	431	744	866	609	219	360	474	172	220
14	427	599	691	615	263	437	431	121	141
15	439	660	782	625	252	425	501	146	197
16	452	459	560	674	314	571	609	186	306
17	444	579	694	715	356	687	703	251	476
18	461	620	772	738	420	837	674	245	446
19	469	485	614	721	410	798	680	234	430
20	506	479	654	738	315	628	697	264	497
21	519	638	894	738	330	658	750	240	486
22	622	969	s2,210	721	418	814	721	243	473
23	1,280	4,080	14,100	732	332	656	620	224	375
24	1,060	2,480	7,100	750	309	626	686	313	580
25	1,030	2,970	8,260	744	295	593	692	286	534
26	1,030	2,140	5,950	726	318	623	664	234	420
27	1,020	1,580	4,350	750	234	474	664	212	380
28	1,050	1,730	4,900	768	298	618	652	198	349
29	1,040	1,530	4,300	775	341	714	697	221	416
30	674	725	1,320	775	261	546	697	214	403
31	594	542	869	--	--	--	703	204	387
Total	18,476	--	67,850	19,397	--	16,060	20,868	--	12,770
	January			February			March		
1	700	226	427	713	284	547	2,340	1,480	9,350
2	784	215	455	694	238	446	2,340	1,460	9,220
3	817	331	730	935	1,940	s9,930	2,340	1,350	8,530
4	682	201	370	2,340	6,200	39,200	2,220	1,220	7,310
5	682	196	361	2,340	4,800	30,300	2,280	1,500	9,230
6	676	168	307	2,340	3,940	24,900	2,220	1,320	7,910
7	694	226	423	2,650	5,400	38,600	2,170	1,480	8,670
8	780	303	638	2,780	5,750	43,200	2,120	1,060	6,070
9	760	408	837	2,460	3,800	25,200	2,060	1,100	6,120
10	750	206	417	2,400	2,850	18,500	2,060	1,260	7,010
11	713	136	262	2,340	2,340	14,800	2,000	1,520	8,210
12	700	194	367	2,400	2,390	15,500	2,000	1,530	8,260
13	713	216	416	2,340	1,780	11,200	1,900	1,410	7,230
14	658	229	407	2,220	2,650	15,900	1,850	1,080	5,390
15	652	250	440	2,220	1,800	10,800	1,850	1,180	5,890
16	658	210	373	2,220	1,710	10,200	1,800	1,050	5,100
17	688	190	353	2,340	1,860	11,800	1,750	1,240	5,860
18	713	190	366	2,400	1,910	12,400	1,800	918	4,460
19	739	420	838	2,340	1,960	12,400	1,750	820	3,870
20	746	613	1,230	2,400	2,040	13,200	1,750	1,020	4,820
21	746	512	1,030	2,400	2,180	14,100	1,700	973	4,470
22	732	473	935	2,340	1,660	10,500	1,700	880	4,040
23	732	475	939	2,340	1,500	9,480	1,650	822	3,660
24	739	506	1,010	2,280	1,680	10,300	1,600	762	3,290
25	778	649	1,360	2,280	1,510	9,300	1,560	1,050	4,420
26	682	472	869	2,220	1,550	9,290	1,600	756	3,270
27	664	390	699	2,280	1,420	8,740	1,520	1,020	4,190
28	694	460	862	2,340	1,520	9,600	1,470	818	3,250
29	758	388	794	--	--	--	1,380	856	3,190
30	765	371	766	--	--	--	1,360	943	3,460
31	739	354	706	--	--	--	1,520	920	3,780
Total	22,334	--	19,990	61,352	--	--	57,660	--	179,500

s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1,700	1,120	5,140	758	358	733	865	670	1,560
2	1,360	890	3,270	713	360	693	810	472	1,030
3	1,050	726	2,060	664	268	480	872	490	1,150
4	1,190	825	2,650	640	272	470	1,120	884	2,670
5	1,470	992	3,940	634	250	428	1,330	1,230	4,420
6	1,470	814	3,230	652	224	394	1,560	1,200	5,050
7	1,520	922	3,780	634	168	288	1,700	1,450	6,660
8	1,600	1,170	5,050	616	216	359	1,520	1,200	4,920
9	1,700	1,720	7,890	558	150	226	1,470	874	3,470
10	1,650	1,440	6,420	508	158	217	1,370	840	3,110
11	1,560	1,280	5,390	486	152	199	1,260	690	2,350
12	1,280	1,080	3,730	476	104	134	1,180	618	1,970
13	851	734	1,690	465	82	103	1,090	512	1,510
14	778	562	1,180	435	81	95	1,070	560	1,620
15	739	507	1,010	416	93	104	928	434	1,090
16	732	602	1,190	398	126	135	844	506	1,150
17	694	368	690	371	100	100	778	270	567
18	720	500	972	380	92	94	765	267	551
19	798	710	1,530	371	94	94	706	266	507
20	784	558	1,180	380	85	87	670	213	385
21	824	820	1,820	1,050	1,530	s 5,090	628	169	287
22	886	1,160	2,770	851	975	2,240	628	186	315
23	928	953	2,390	791	560	1,200	682	196	361
24	963	742	1,930	739	436	870	676	168	307
25	1,090	780	2,300	732	448	885	670	288	521
26	1,140	740	2,280	798	526	1,130	616	178	296
27	1,060	740	2,120	872	620	1,460	604	163	266
28	956	660	1,700	928	e 680	1,700	586	158	250
29	817	490	1,080	963	737	1,920	574	151	234
30	765	389	803	935	485	1,220	592	150	240
31	--	--	--	928	534	1,340	--	--	--
Total	33,075	--	81,180	20,142	--	24,490	28,164	--	48,820
	July			August			September		
1	918	5,110	s 12,000	224	9,830	s 14,900	641	1,660	s 3,590
2	732	4,860	9,610	195	2,300	1,210	1,040	3,150	8,850
3	664	833	1,490	325	18,100	s 18,200	1,070	2,670	7,710
4	586	474	750	199	8,500	4,570	795	2,000	4,290
5	658	625	1,110	166	868	389	542	1,210	1,770
6	676	506	924	174	1,300	611	622	1,380	2,320
7	622	1,120	1,880	209	5,000	2,820	416	2,120	2,380
8	1,900	15,900	s 108,000	190	364	187	276	687	512
9	851	2,830	6,500	186	260	131	255	346	238
10	1,120	5,240	15,800	184	195	97	240	294	191
11	949	5,600	14,300	180	165	80	243	338	222
12	804	3,500	7,600	1,120	15,400	s 53,900	243	212	139
13	1,000	7,720	20,800	1,150	6,800	21,100	230	130	81
14	1,710	32,200	s 184,000	1,130	4,720	14,400	222	150	90
15	978	7,900	20,900	1,100	3,840	11,400	218	107	63
16	1,000	3,600	9,720	1,190	6,400	20,600	213	100	58
17	817	3,100	6,840	1,130	4,600	14,000	213	143	82
18	778	1,610	3,380	1,150	3,480	10,800	218	96	57
19	752	1,290	2,620	1,150	3,050	9,470	492	21,100	s 40,600
20	520	707	993	1,160	2,850	8,930	363	11,500	s 14,800
21	384	392	406	1,150	2,780	8,630	310	2,280	1,910
22	367	511	506	963	2,440	6,340	321	2,870	2,490
23	347	7,150	s 15,100	580	1,700	2,660	318	1,880	1,610
24	347	6,560	6,150	530	1,370	1,960	321	1,500	1,300
25	304	1,260	1,030	542	1,460	2,140	371	3,460	3,470
26	318	1,630	1,400	592	2,570	4,110	347	1,720	1,610
27	318	4,000	3,430	598	2,040	3,290	321	1,150	997
28	451	20,200	s 28,800	564	1,700	2,590	307	999	828
29	282	4,300	3,270	525	1,050	1,490	304	704	578
30	220	772	459	542	1,080	1,580	304	624	512
31	220	5,600	s 4,420	530	1,040	1,490	--	--	--
Total	21,593	--	494,200	19,628	--	244,100	11,776	--	103,300

Total discharge for year (second-foot-days) 334,465
Total load for year (tons) 1,733,000

e Estimated.
s Computed by subdividing day.

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	7:30 a. m.	487	2,310	4,450	13	46	67	84	--	--	--	--		--		DWCM
Oct. 10	7:30 a. m.	380	1,240	--	--	--	--	--	--	19	72	94		99		S
Nov. 1	8:00 a. m.	558	588	--	--	--	--	--	--	14	33	52		86		S
Dec. 1	8:00 a. m.	768	373	1,470	12	15	18	22	--	31	51	84		96		DSWCM
Dec. 10	2:30 p. m.	744	304	1,160	12	15	20	25	--	--	--	85		97		DSWCM
Dec. 20	3:15 p. m.	692	379	1,380	15	20	27	35	--	55	64	89		97		DSWCM
Jan. 1, 1950	11:40 a. m.	682	263	1,100	14	17	19	24	--	25	38	72		96		DSWCM
Jan. 10	4:45 p. m.	739	292	1,040	14	17	20	25	--	--	--	83		94		DSWCM
Jan. 20	8:00 a. m.	713	495	--	--	--	--	--	--	44	76	91		99		S
Feb. 1	8:15 a. m.	720	287	--	--	--	--	--	--	21	42	85		100		S
Feb. 3	8:00 p. m.	1,900	6,610	12,500	2	3	5	8	--	45	77	89		96		DSWCM
Feb. 4	2:00 a. m.	2,400	7,750	6,350	9	11	17	23	36	62	88	96		99		BSWCM
Feb. 8	11:00 a. m.	3,360	7,670	5,240	7	9	12	18	29	54	82	93		99		BSWCM
Feb. 10	8:10 a. m.	2,400	3,140	--	--	--	--	--	--	22	51	83		99		S
Feb. 20	8:00 a. m.	2,400	1,920	6,900	7	10	14	19	--	31	51	84		97		DSWCM
Mar. 1	8:00 a. m.	2,340	1,760	5,600	6	8	10	14	--	21	38	83		99		DSWCM
Mar. 10	5:00 p. m.	2,060	1,830	6,620	4	5	6	8	--	17	28	65		96		DSWCM
Mar. 20	1:00 p. m.	1,750	1,080	--	--	--	--	--	--	12	24	67		97		S
Apr. 1	12:45 p. m.	1,600	1,270	--	--	--	--	--	--	20	62	89		100		S
Apr. 10	8:10 a. m.	1,650	1,870	6,150	7	11	14	17	--	26	41	69		95		DSWCM
Apr. 20	8:00 a. m.	778	657	--	--	--	--	--	--	30	43	70		98		S
May 1	9:00 a. m.	784	426	--	--	--	--	--	--	19	34	57		93		S
June 1	8:10 a. m.	935	775	--	--	--	--	--	--	12	28	59		96		S
June 10	12:30 p. m.	1,370	947	--	--	--	--	--	--	13	33	70		95		S
July 1	5:15 p. m.	824	9,520	2,770	43	59	79	94	96	98	99	--		--		BWCM
July 7	12:00 m.	646	1,160	4,060	25	37	61	80	--	--	--	--		--		DWCM
July 8	6:20 a. m.	2,990	37,000	1,080	69	74	82	86	88	90	99	100		--		BSWCM

RIO GRANDE BASIN--Continued

RIO GRANDE AT OTOWI BRIDGE NEAR SAN ILDEFONSO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--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 (second-feet)	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 8, 1950	5:00 p. m.	1,100	11,500	4,210	23	39	53	70	--	91	--	--		--		DSWCM
July 9	4:45 p. m.	830	2,820	3,370	21	31	44	58	--	72	--	--		--		DSWCM
July 10	8:00 a. m.	1,520	7,830	2,960	14	21	29	45	--	84	91	96		99		DSWCM
July 11	9:00 a. m.	1,210	5,270	2,120	31	47	59	73	--	84	--	--		--		DSWCM
July 12	12:30 p. m.	784	2,830	1,980	25	37	51	69	--	81	--	--		--		DSWCM
July 13	4:00 a. m.	1,030	14,100	7,000	13	25	39	61	--	90	--	--		--		DSWCM
July 14	8:15 a. m.	1,700	30,400	3,800	21	39	52	67	--	94	--	--		--		DSWCM
July 14	7:30 p. m.	2,000	27,600	1,500	54	62	67	74	80	86	93	97		99		BSWCM
July 20	8:30 a. m.	542	908	3,510	12	17	24	33	--	51	69	92		99		DSWCM
July 23	10:45 p. m.	865	135,000	3,450	15	21	28	40	--	86	96	99		100		DSWCM
July 27	11:30 p. m.	339	14,200	8,020	16	48	70	85	--	--	--	--		--		DWCM
July 28	6:00 a. m.	564	37,300	2,620	25	30	43	63	--	92	--	--		--		DSWCM
July 31	8:00 p. m.	304	48,700	2,560	24	35	49	66	--	95	--	--		--		DSWCM
Aug. 1	8:00 p. m.	791	76,000	3,140	20	28	42	57	--	94	--	--		--		DSWCM
Aug. 3	11:00 a. m.	536	28,400	1,460	64	65	71	77	83	86	96	98		99		BSWCM
Aug. 12	8:30 a. m.	1,420	27,000	2,300	18	25	33	49	--	85	95	99		--		DSWCM
Aug. 12	2:10 p. m.	1,330	19,100	1,060	49	52	58	64	71	81	92	97		99		BSWCM
Aug. 16	6:30 p. m.	1,140	12,500	2,570	20	31	42	80	--	87	--	--		--		DSWCM
Aug. 20	12:30 p. m.	1,190	3,630	--	--	--	--	--	--	30	57	70		85		S
Sept. 1	8:30 p. m.	1,050	4,850	3,030	6	7	10	16	--	56	80	92		99		DSWCM
Sept. 7	3:30 a. m.	542	1,490	3,080	18	24	34	50	--	66	86	97		--		DSWCM
Sept. 19	8:00 a. m.	435	19,300	1,860	72	80	86	89	93	95	98	99		--		BSWCM
Sept. 20	12:30 a. m.	778	66,200	2,490	18	25	37	51	--	89	--	--		--		DSWCM

RIO GRANDE NEAR BERNALILLO, N. MEX.

LOCATION.--At gaging station in Alameda Grant, 2 miles northwest of Sandia Pueblo, 3 miles southwest of Bernalillo, Sandoval County, 3.5 miles downstream from State Highway 44, and 8.5 miles downstream from Jemez River.
DRAINAGE AREA.--17,300 square miles approximately, (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1950.
Sediment records: November 1947 to September 1950.
EXTREMES, 1949-50.--Water temperatures: Maximum, 90°F Aug. 9, 10; minimum, freezing point on many days in December, January, and February.
Sediment loads: Maximum daily, 298,000 tons Aug. 2; minimum daily, 2 tons May 18, 19.
EXTREMES, 1947-50.--Water temperatures (1948-50): Maximum, 90°F Aug. 9, 10, 1950; minimum, freezing point on many days during winter months.
Sediment loads: Maximum daily, 320,000 tons July 24, 1949; minimum daily, 5 tons September 23, 1948 (revised).
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Temperature (°F) of water, water year October 1949 to September 1950
(Seven-day mercury actuated thermograph. Prior Jan. 1, 1950 once-daily temperature measurement at approximately 5:00 p. m.)

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

a Reading obtained at approximately 9:00 a. m.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	422	12,000	13,700	470	1,130	1,430	704	e 2,000	3,800
2	580	7,400	11,600	551	1,420	2,110	693	e 2,000	3,740
3	383	4,480	4,630	497	1,210	1,620	682	e 2,100	3,870
4	270	1,140	831	524	1,270	1,800	660	2,130	3,800
5	239	8,730	5,630	542	1,600	2,340	640	1,540	2,660
6	160	2,190	946	524	e 1,400	1,980	630	1,180	2,010
7	152	954	392	515	1,260	1,750	630	2,050	3,490
8	168	685	311	533	1,310	1,890	620	1,050	1,760
9	348	e 2,100	1,970	524	835	1,180	660	1,160	2,070
10	308	1,320	1,100	533	e 850	1,220	759	1,440	2,950
11	152	753	309	542	e 850	1,240	890	e 2,500	6,010
12	152	976	401	506	e 800	1,090	854	2,330	5,370
13	168	956	434	560	e 1,200	1,810	682	1,930	3,550
14	168	720	327	560	1,120	1,690	570	2,460	3,790
15	194	1,040	545	570	1,120	1,720	500	2,000	2,700
16	438	1,930	2,280	590	e 1,200	1,910	515	e 2,000	2,780
17	383	1,090	1,130	660	1,320	2,350	620	e 2,500	4,180
18	204	570	314	682	1,430	2,630	570	e 2,000	3,080
19	190	650	333	682	1,430	2,630	640	e 1,800	3,110
20	181	725	354	704	1,830	3,480	682	1,440	2,650
21	208	1,030	578	715	1,700	3,280	620	1,650	2,760
22	348	1,620	1,520	671	1,360	2,460	610	2,240	3,690
23	866	e 7,000	16,400	671	1,500	2,720	600	1,690	2,740
24	968	6,270	16,400	671	1,250	2,260	524	1,460	2,070
25	704	3,200	6,080	693	1,480	2,770	580	2,320	3,630
26	715	2,930	5,660	660	1,600	2,850	600	1,570	2,540
27	650	2,350	4,120	671	1,210	2,190	610	1,580	2,600
28	650	1,820	3,190	715	1,300	2,510	610	1,900	3,130
29	806	1,950	4,240	759	1,140	2,340	650	e 2,000	3,510
30	818	2,190	4,840	748	2,060	4,160	620	2,580	4,320
31	406	994	1,090	--	--	--	693	e 2,000	3,740
Total-	12,399	--	111,700	18,243	--	65,410	19,918	--	102,100
	January			February			March		
1	726	1,420	2,780	782	1,240	2,620	2,320	1,040	6,510
2	726	2,200	4,310	748	e 1,500	3,030	2,170	2,320	13,600
3	682	1,680	3,090	693	1,870	3,500	2,120	1,730	9,900
4	782	2,020	4,270	1,470	6,190	s 39,100	2,200	1,340	7,960
5	650	2,320	4,070	2,290	7,500	46,400	2,290	1,320	8,160
6	600	1,520	2,460	2,270	6,000	36,800	2,390	1,830	11,800
7	610	1,470	2,420	3,030	6,000	49,100	1,820	1,540	7,570
8	620	1,580	2,640	2,710	7,000	51,200	1,620	1,130	4,940
9	660	2,390	4,260	2,420	8,500	55,500	1,860	1,400	7,030
10	660	1,640	2,920	2,420	6,000	39,200	1,620	2,100	9,190
11	630	3,230	5,490	2,400	4,520	29,300	1,350	1,720	6,270
12	640	1,600	2,760	2,400	4,070	26,400	1,620	1,640	7,170
13	610	2,120	3,490	2,420	4,440	29,000	1,350	1,090	3,970
14	610	1,660	2,730	2,320	3,950	24,700	1,350	1,080	3,940
15	610	2,670	4,400	2,320	3,270	20,500	1,440	1,050	4,080
16	640	2,590	4,480	2,270	3,600	22,100	1,460	1,160	4,570
17	693	2,510	4,700	2,320	3,460	21,700	1,470	1,240	4,920
18	682	2,130	3,920	2,520	4,970	33,800	1,440	1,940	7,540
19	794	1,730	3,710	2,420	3,670	24,000	1,680	2,300	10,400
20	748	2,140	4,320	2,370	3,270	20,900	1,390	1,500	5,630
21	671	1,800	3,260	2,220	5,090	30,500	1,220	1,230	4,050
22	704	1,460	2,780	2,390	3,440	22,200	1,320	1,440	5,130
23	715	1,400	2,700	2,100	2,840	16,100	1,300	1,110	3,900
24	715	1,420	2,740	1,920	2,920	15,100	1,350	1,110	4,050
25	770	1,710	3,560	2,220	1,220	7,310	1,320	1,370	4,880
26	818	2,320	5,120	2,470	e 1,200	8,000	1,460	1,970	7,770
27	759	1,510	3,090	2,420	1,130	7,380	1,490	1,750	7,040
28	704	1,810	3,440	2,340	2,300	14,500	1,340	1,810	6,550
29	682	1,860	3,430	--	--	--	1,180	1,140	3,630
30	770	1,400	2,910	--	--	--	981	1,570	4,160
31	782	1,210	2,550	--	--	--	955	1,600	4,130
Total-	21,463	--	108,800	60,673	--	699,900	48,876	--	200,400

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1------	1,350	3,130	11,400	362	262	256	462	352	439
2------	1,580	1,700	7,250	308	214	178	414	248	277
3------	1,020	1,000	2,750	640	355	613	470	320	406
4------	650	552	969	320	258	223	830	1,000	2,240
5------	903	1,090	2,660	580	188	294	1,080	1,540	4,490
6------	1,120	1,210	3,660	239	178	115	955	1,070	2,760
7------	1,160	954	2,990	481	332	431	1,220	1,060	3,490
8------	1,270	1,150	3,940	208	56	31	1,240	1,380	4,620
9------	1,800	1,910	9,280	181	45	22	1,150	955	2,970
10------	1,760	1,850	8,790	123	33	11	1,180	636	2,030
11------	1,420	1,390	5,330	104	36	10	1,340	1,200	4,340
12------	1,340	1,350	4,880	88	36	9	1,300	4,800	16,800
13------	994	1,200	3,220	70	18	3	750	703	1,420
14------	715	868	1,680	297	436	350	551	477	710
15------	600	707	1,150	348	188	177	570	461	709
16------	981	1,330	3,520	72	53	10	506	321	439
17------	454	518	635	56	18	3	506	352	481
18------	355	500	479	41	19	2	671	902	1,630
19------	308	598	497	27	21	2	630	616	1,050
20------	406	496	544	20	90	5	308	194	161
21------	430	755	877	199	498	s 327	239	132	85
22------	454	500	613	730	1,070	s 2,230	190	106	54
23------	915	1,240	3,060	398	800	860	186	102	51
24------	551	1,180	1,760	314	409	347	255	424	292
25------	506	635	868	296	323	258	671	403	730
26------	610	728	1,200	290	310	243	715	316	610
27------	640	700	1,210	348	452	425	218	171	101
28------	560	675	1,020	693	662	1,240	152	92	38
29------	446	354	426	842	693	1,580	104	48	13
30------	737	573	1,140	497	385	517	95	49	13
31------	--	--	--	470	258	327	--	--	--
Total-	26,035	--	87,800	9,642	--	11,100	18,958	--	53,450
	July			August			September		
1------	144	152	59	475	39,500	s 57,700	88	600	143
2------	745	7,020	s 16,200	1,760	50,300	s 298,000	271	1,960	s 2,460
3------	640	9,000	15,600	189	21,800	s 17,100	890	4,980	12,000
4------	284	e 6,400	4,910	123	12,000	3,990	968	4,580	12,000
5------	181	656	321	88	12,400	2,950	446	2,150	2,590
6------	199	2,000	1,070	194	10,000	5,240	176	1,250	594
7------	290	2,900	2,270	181	2,770	1,350	148	730	292
8------	756	7,400	s 21,200	54	1,730	252	107	570	165
9------	1,160	17,000	s 57,400	30	1,060	86	52	1,160	163
10------	818	5,200	11,500	18	969	47	194	1,000	524
11------	842	10,000	22,700	14	690	26	190	578	297
12------	506	6,700	9,150	14	638	24	39	194	20
13------	414	5,300	5,920	556	20,800	s 34,600	35	204	19
14------	1,150	8,670	s 35,200	842	11,900	27,100	30	186	15
15------	1,490	22,700	91,300	497	5,080	6,820	26	166	12
16------	1,100	14,200	42,200	533	4,180	6,020	21	108	6
17------	878	5,790	13,700	630	5,000	8,500	110	394	117
18------	302	1,920	1,570	590	4,700	7,490	163	5,000	2,200
19------	290	1,500	1,170	737	4,800	9,550	225	18,200	s 18,400
20------	284	892	684	1,080	6,240	18,200	494	40,100	s 78,600
21------	194	2,990	s 6,960	955	4,660	12,000	123	18,800	6,240
22------	353	14,600	s 17,600	580	2,530	3,960	75	6,600	1,340
23------	1,400	35,400	s 158,000	488	1,680	2,210	82	5,100	1,130
24------	1,330	38,600	s 160,000	218	917	540	266	4,750	3,410
25------	488	15,800	20,800	181	780	381	308	6,000	4,990
26------	296	5,000	4,000	194	1,020	534	80	5,750	1,240
27------	50	1,140	154	470	2,570	3,260	45	2,580	313
28------	31	936	78	462	2,900	3,620	33	1,200	107
29------	136	10,600	s 4,580	130	1,260	442	28	946	72
30------	234	11,000	6,950	98	939	248	36	949	92
31------	274	11,000	s 16,500	98	626	166	--	--	--
Total-	17,259	--	749,700	12,479	--	532,400	5,749	--	149,600

Total discharge for year (second-foot-days) 271,694
Total load for year (tons) 2,872,000

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNALILLO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	8:00 a.m.	383	11,500	10,800	14	55	69	83	--	--	--	--		--		DWCM
Oct. 10	6:00 a.m.	334	1,280	2,530	27	41	52	66	--	92	--	--		--		DSWCM
Oct. 20	4:15 p.m.	176	812	1,880	18	33	50	61	--	81	--	--		--		DSWCM
Oct. 21	6:30 a.m.	194	1,150	1,380	33	52	76	88	--	--	--	--		--		DWCM
Nov. 1	5:00 p.m.	308	1,220	5,040	8	12	17	21	--	68	87	98		100		DSWCM
Nov. 21	5:00 p.m.	671	1,700	3,020	4	5	9	13	--	56	77	95		100		DSWCM
Dec. 10	2:30 p.m.	737	1,420	5,590	5	7	10	14	--	62	83	99		100		DSWCM
Dec. 20	2:00 p.m.	693	1,810	3,790	4	--	7	11	--	48	77	95		99		DSWCM
Jan. 2, 1950	5:00 p.m.	693	1,800	5,360	9	13	17	21	--	56	83	96		99		DSWCM
Jan. 20	11:30 a.m.	682	2,190	7,520	5	7	8	12	--	59	74	88		99		DSWCM
Feb. 1	12:00 m.	782	1,120	4,340	5	7	10	14	--	37	64	85		99		DSWCM
Feb. 4	12:15 p.m.	2,390	13,200	10,300	3	5	7	12	30	71	94	99		100		BSWCM
Feb. 5	12:01 a.m.	2,600	8,770	6,800	12	17	25	34	47	72	96	100		--		BSWCM
Feb. 5	12:00 m	2,240	7,000	4,600	9	13	18	24	35	63	94	100		--		BSWCM
Feb. 10	4:00 p.m.	2,500	5,450	9,330	4	7	11	15	--	47	77	95		99		DSWCM
Feb. 20	11:30 a.m.	2,370	2,190	7,790	4	6	11	17	--	31	74	98		100		DSWCM
Mar. 1	12:35 p.m.	2,290	1,160	3,460	8	12	16	21	--	58	87	98		--		DSWCM
Mar. 2	11:15 a.m.	2,090	2,400	--	--	--	--	--	--	26	53	83		99		S
Mar. 10	10:45 a.m.	1,550	2,830	--	--	--	--	--	--	14	40	78		99		S
Mar. 20	12:10 p.m.	1,320	1,210	4,590	7	9	12	17	--	41	73	98		100		DSWCM
Apr. 1	1:20 p.m.	1,600	2,910	5,100	5	6	8	13	--	46	71	96		100		DSWCM
Apr. 10	11:40 a.m.	1,800	1,970	6,660	11	15	20	26	--	50	73	98		100		DSWCM
Apr. 20	2:00 p.m.	462	452	1,600	31	42	53	64	--	86	--	--		--		DSWCM
May 1	3:15 p.m.	302	343	--	--	--	--	--	--	51	69	89		100		S
May 22	1:55 p.m.	1,030	900	3,460	10	15	21	--	--	73	86	97		100		DSWCM
June 5	11:30 a.m.	1,090	1,650	5,470	12	22	34	47	--	70	81	92		99		DSWCM
June 12	11:45 a.m.	1,550	9,720	1,550	44	61	78	86	89	91	96	--		--		BWCM
June 19	11:30 a.m.	682	824	2,530	15	21	26	34	--	53	69	93		--		DSWCM

July 8	8:15 p. m.	2,060	9,520	2,790	24	34	46	60	76	87	93	97		100		BSWCM
July 9	10:15 a. m.	1,130	17,600	4,850	25	38	52	71	--	98	--	--		--		DSWCM
July 11	9:20 a. m.	1,120	5,640	3,460	28	42	59	77	--	--	--	--		--		DWCM
July 14	8:30 p. m.	2,100	12,600	2,690	17	23	32	48	--	90	96	99		100		DSWCM
July 23	5:30 a. m.	2,880	47,100	1,300	31	44	57	72	82	94	98	--		--		BWCM
Aug. 1	2:00 a. m.	748	40,300	2,320	23	34	48	64	--	97	--	--		--		DSWCM
Aug. 2	4:15 a. m.	4,780	71,900	3,750	23	32	45	56	72	90	97	100		--		BSWCM
Aug. 2	5:00 p. m.	462	37,500	3,740	29	43	58	74	--	99	--	--		--		DSWCM
Aug. 21	7:45 a. m.	1,050	5,390	3,480	8	12	17	26	--	86	87	98		99		DSWCM
Sept. 4	9:00 a. m.	1,050	5,280	1,420	15	20	25	38	--	77	91	95		98		DSWCM
Sept. 10	9:00 a. m.	208	1,050	1,600	30	40	49	58	--	94	--	--		--		DSWCM
Sept. 19	1:45 p. m.	610	39,200	6,380	--	58	--	79	--	92	94	97		99	100	PSWCM
Sept. 20	6:35 a. m.	830	84,400	1,620	41	55	70	79	87	95	99	--		--		BWCM
Sept. 20	11:15 a. m.	515	42,700	2,580	30	43	58	70	--	96	--	--		--		DSWCM
Sept. 21	6:35 a. m.	152	17,600	2,840	31	46	64	79	--	--	--	--		--		DWCM

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.

LOCATION.--At gaging station at bridge on U. S. Highway 60, 2¼ miles east of Bernardo, Socorro County, and 3½ miles upstream from Rio Puerco.
DRAINAGE AREA.--19,230 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Sediment records: October 1949 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 180,000 tons Aug. 3; minimum daily, 0 tons May 31, June 5, and July 3,55.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 240,000 tons July 24, 1949; minimum, 0 tons Oct. 4, 5, 1947, May 31, June 5, July 3, 5, 1950.
REMARKS.-- Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1------	808	e31,000	s81,000	602	2,560	4,160	820	1,980	4,380
2------	248	18,000	12,100	655	3,130	5,540	800	1,830	3,950
3------	250	10,000	6,750	672	2,780	5,040	820	1,880	4,160
4------	205	4,520	2,500	690	2,560	4,770	820	1,680	3,720
5------	215	2,350	1,360	655	2,240	3,960	800	1,720	3,720
6------	157	2,050	869	655	2,520	4,460	780	1,600	3,370
7------	151	1,200	489	655	2,020	3,570	760	1,700	3,490
8------	143	1,100	425	655	1,940	3,430	760	1,500	3,080
9------	98	730	193	672	1,840	3,340	742	1,380	2,760
10------	111	740	222	672	1,700	3,080	725	1,160	2,270
11------	151	1,100	448	655	1,890	3,340	760	1,630	3,340
12------	151	1,130	461	655	1,700	3,010	820	2,100	4,650
13------	177	1,110	530	655	1,640	2,900	940	2,700	6,850
14------	169	672	307	672	1,620	2,940	820	1,800	3,990
15------	100	281	76	690	1,970	3,670	672	1,480	2,690
16------	89	264	63	690	2,100	3,910	602	1,500	2,440
17------	94	300	76	708	1,980	3,780	585	1,800	2,840
18------	131	492	174	725	1,940	3,800	655	1,700	3,010
19------	145	626	245	742	2,060	4,130	780	2,000	4,210
20------	155	828	347	780	1,950	4,110	800	1,680	3,630
21------	155	1,240	519	780	1,820	3,830	780	1,750	3,690
22------	129	312	109	800	2,030	4,380	780	1,970	4,150
23------	115	250	78	800	2,020	4,360	800	2,120	4,580
24------	157	800	339	800	2,060	4,450	820	2,100	4,650
25------	470	5,950	7,550	800	2,040	4,410	725	1,740	3,410
26------	312	3,340	2,810	800	1,780	3,840	725	1,600	3,130
27------	335	2,700	2,440	800	1,720	3,720	742	1,520	3,050
28------	362	1,800	1,760	820	1,640	3,630	742	1,760	3,530
29------	374	2,160	2,180	800	1,540	3,330	725	1,410	2,760
30------	425	2,100	2,410	800	1,720	3,720	760	1,500	3,080
31------	470	1,910	2,420	--	--	--	760	1,540	3,160
Total-	7,052	--	131,200	21,555	--	116,600	23,620	--	111,700

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	742	1,700	3,410	820	1,600	3,540	2,110	3,600	20,500
2	760	1,580	3,240	780	1,080	2,270	1,960	3,700	19,600
3	742	1,880	3,770	780	1,300	2,740	1,850	3,900	19,500
4	800	2,010	4,340	780	1,280	2,700	1,750	3,400	16,100
5	860	2,460	5,710	1,400	5,530	s 25,900	1,650	3,100	13,800
6	742	1,400	2,800	1,980	6,320	33,800	1,700	3,600	s 17,100
7	690	1,100	2,050	1,980	5,200	27,800	2,060	3,460	19,200
6	655	1,400	2,480	2,200	5,480	32,600	1,900	3,400	17,400
9	638	1,520	2,620	2,440	5,800	38,200	1,650	3,600	16,000
10	672	1,700	3,080	2,340	5,800	36,600	1,480	3,000	12,000
11	725	1,760	3,450	2,210	4,800	28,600	1,360	3,000	11,000
12	708	1,480	2,830	2,250	4,510	27,400	1,400	3,100	11,700
13	690	1,470	2,740	2,310	4,480	27,900	1,540	3,750	s 16,300
14	655	1,340	2,370	2,200	3,970	23,600	1,200	1,600	5,180
15	725	1,560	3,050	2,130	4,100	23,600	960	1,700	4,410
16	672	1,360	2,470	2,020	4,000	21,800	840	1,600	3,630
17	655	1,500	2,650	2,120	3,900	22,300	820	1,320	2,920
18	690	1,500	2,790	2,120	4,000	22,900	820	1,550	3,430
19	708	1,640	3,140	2,170	3,600	21,100	1,070	2,240	s 6,550
20	742	1,700	3,410	2,280	4,300	26,500	1,390	3,070	s 12,200
21	760	1,880	3,860	2,270	3,700	22,700	940	1,480	3,760
22	780	1,690	3,560	2,270	3,900	23,900	960	1,270	3,290
23	780	1,600	3,370	2,270	4,200	25,700	940	1,440	3,650
24	780	1,330	2,800	2,220	3,300	19,800	880	937	2,230
25	760	1,510	3,100	2,210	3,400	20,300	820	1,180	2,610
26	780	1,740	3,660	2,160	3,900	22,700	1,480	2,920	s 11,800
27	860	2,050	4,760	2,110	3,900	22,200	1,750	3,600	17,000
28	820	1,760	3,900	2,110	3,700	21,100	1,520	2,400	9,850
29	760	1,500	3,080	--	--	--	1,280	1,940	6,700
30	742	1,580	3,170	--	--	--	900	1,230	2,990
31	800	1,530	3,300	--	--	--	672	974	1,770
Total	22,893	--	101,000	54,930	--	630,200	41,632	--	314,200

Day	April			May			June		
1	672	722	1,310	308	368	306	19	46	2
2	796	1,060	2,280	298	266	294	20	30	2
3	1,320	2,200	7,840	262	350	248	19	18	1
4	780	893	1,880	395	584	623	17	29	1
5	568	514	788	298	622	500	15	8	00
6	532	500	718	179	162	78	16	77	3
7	873	1,150	s 2,790	215	240	139	60	248	40
8	900	917	2,230	123	126	42	161	490	213
9	1,190	1,920	s 6,560	85	75	17	202	611	333
10	1,710	3,030	s 14,600	84	79	18	292	590	465
11	1,280	2,200	7,600	65	66	12	332	472	423
12	900	1,360	3,300	79	100	21	347	450	422
13	1,040	1,580	4,440	60	51	8	350	390	369
14	960	1,140	2,950	68	52	10	568	667	s 1,050
15	602	892	1,450	60	43	7	259	300	210
16	515	955	1,330	47	66	8	120	170	55
17	550	800	1,190	47	43	5	95	120	31
18	532	1,000	1,440	41	54	6	92	130	32
19	410	407	451	38	50	5	88	161	38
20	295	407	324	46	18	2	76	93	19
21	228	400	246	37	8	1	85	122	28
22	181	450	220	31	10	1	73	201	40
23	208	500	281	30	10	1	64	99	17
24	198	500	267	27	35	3	43	90	10
25	268	684	495	27	7	1	39	86	9
26	240	391	253	26	12	1	28	71	5
27	205	405	224	24	11	1	22	59	4
28	167	333	150	34	103	99	21	40	2
29	242	403	263	31	18	2	18	35	2
30	322	402	349	24	35	2	16	20	1
31	--	--	--	21	8	0	--	--	--
Total	18,684	--	68,220	3,110	--	2,370	--	--	3,830

s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	14	42	2	98	1,800	476	26	152	11
2	16	33	1	319	29,000	s30,600	28	80	6
3	17	6	0	1,300	42,400	s180,000	22	52	3
4	14	26	1	270	15,000	10,900	26	49	3
5	14	3	0	188	5,500	2,790	266	5,790	s4,460
6	40	88	10	149	1,800	724	450	5,580	6,780
7	72	87	17	133	1,090	391	250	4,600	3,100
8	74	122	24	111	764	229	79	650	139
9	84	102	23	89	662	159	77	286	59
10	94	300	76	79	448	96	77	229	48
11	79	983	210	74	300	60	77	85	18
12	255	4,380	s3,330	82	404	89	60	51	8
13	400	3,880	4,190	74	286	57	30	58	5
14	250	4,400	2,970	64	244	42	14	58	2
15	300	2,000	1,620	59	198	32	16	57	2
16	600	12,600	20,400	133	8,840	s4,200	12	56	2
17	500	e11,400	15,400	52	869	122	10	46	1
18	410	8,340	9,230	34	392	36	10	42	1
19	485	6,800	8,900	24	176	11	29	4,560	s699
20	230	2,000	1,240	43	426	49	20	2,850	154
21	125	1,900	641	34	400	37	19	400	21
22	371	22,400	s36,100	98	3,700	s1,240	41	8,700	963
23	1,210	38,200	s151,000	111	2,700	809	74	4,000	799
24	837	27,600	s76,000	70	1,200	227	167	4,300	s5,060
25	1,010	29,000	s94,600	57	732	113	154	5,610	s2,880
26	440	15,100	17,900	43	382	44	98	1,960	519
27	269	10,300	s7,520	32	286	25	95	1,820	467
28	127	3,800	1,300	29	240	19	92	1,400	348
29	71	1,500	288	32	300	26	66	1,050	187
30	115	2,460	s1,170	45	605	74	56	697	105
31	359	21,600	s35,300	40	500	54	--	--	--
Total	8,882	--	489,500	3,966	--	233,700	2,441	--	26,850

Total discharge for year (second-foot-days) 212,322
Total load for year (tons) 2,229,000

e Estimated.
s Computed by subdividing day.

RIO GRANDE NEAR BERNARDO, N. MEX--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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. 10, 1949	9:00 a. m.	100	808	1,320	34	47	66	79	--	--	--	--		--		DWCM
Oct. 20	9:00 a. m.	163	810	2,650	13	47	63	71	--	82	--	--		--		DSWCM
Nov. 1	7:00 a. m.	568	2,590	5,600	14	22	34	49	--	73	82	98		100		DSWCM
Nov. 10	8:00 a. m.	672	1,780	1,240	29	36	50	59	62	66	75	98		100		BSWCM
Nov. 20	7:00 a. m.	780	2,340	8,490	3	18	26	38	--	51	63	96		100		DSWCM
Dec. 1	8:00 a. m.	800	2,180	9,700	4	15	22	33	--	48	60	96		100		DSWCM
Dec. 10	8:00 a. m.	708	1,140	4,620	10	17	25	36	--	61	74	96		100		DSWCM
Dec. 20	8:00 a. m.	800	1,680	1,370	19	24	36	47	54	57	70	97		100		BSWCM
Jan. 1, 1950	8:00 a. m.	780	2,240	7,470	7	11	18	26	--	39	52	96		--		DSWCM
Jan. 10	3:00 p. m.	655	1,920	6,890	6	10	17	26	--	42	57	94		100		DSWCM
Jan. 20	4:00 p. m.	780	2,040	8,020	5	12	20	30	--	46	57	91		98		DSWCM
Feb. 1	3:00 p. m.	820	1,270	3,950	10	16	27	40	--	65	79	98		--		DSWCM
Feb. 5	5:30 p. m.	1,900	7,440	3,660	12	14	28	46	73	83	90	97		100		BSWCM
Feb. 10	6:30 a. m.	2,250	5,900	5,120	17	21	31	40	52	60	76	92		100		BSWCM
Feb. 20	8:00 a. m.	2,250	4,170	16,600	8	12	16	22	--	47	66	96		100		DSWCM
Mar. 1	5:00 p. m.	2,150	3,470	12,200	5	7	11	16	--	40	60	92		100		DSWCM
Mar. 10	10:35 a. m.	1,440	2,650	4,050	8	11	14	20	--	42	58	91		99		DSWCM
Mar. 20	5:00 p. m.	1,400	2,840	3,090	9	11	15	21	--	51	72	99		100		DSWCM
Apr. 1	8:00 a. m.	672	827	3,220	9	15	20	29	--	54	77	98		--		DSWCM
Apr. 10	4:00 p. m.	2,050	3,760	8,870	8	11	15	21	--	62	77	97		100		DSWCM
May 22	10:20 a. m.	30	14	1,240	19	25	37	53	--	83	--	--		--		DSWCM
June 16	11:00 a. m.	122	236	1,540	37	48	60	64	66	80	92	99		100		BSWCM
June 16	11:00 a. m.	122	236	1,510	0	11	41	66	75	80	92	99		100		BSN
June 16	11:00 a. m.	122	236	2,640	21	33	48	65	--	80	92	99		100		DSWCM
June 16	11:00 a. m.	122	236	2,220	0	11	37	58	--	80	92	99		100		DSN
July 12	5:00 p. m.	210	4,630	3,850	22	58	75	87	--	--	--	--		--		DWCM
July 16	4:00 p. m.	515	9,560	3,600	33	45	59	74	--	90	--	--		--		DSWCM
July 17	8:00 a. m.	515	13,400	5,910	16	29	69	86	--	--	--	--		--		DWCM
July 20	5:00 p. m.	149	1,440	2,870	36	55	71	88	--	--	--	--		--		DWCM
July 25	9:00 a. m.	600	24,000	1,800	29	41	55	75	--	95	--	--		--		DSWCM

RIO GRANDE BASIN--Continued

RIO GRANDE NEAR BERNARDO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--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 (second-feet)	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	
Aug. 3, 1950	8:00 a.m.	1,950	45,800	1,630	32	38	46	49	52	56	81	96		100		BSWCM
Aug. 10	5:00 p.m.	85	469	1,360	26	37	55	72	--	94	--	--		--		DSWCM
Aug. 20	4:00 p.m.	49	498	1,190	30	44	65	82	--	--	--	--		--		DWCM
Sept. 10	8:00 a.m.	79	344	978	35	47	63	82	--	--	--	--		--		DWCM
Sept. 20	5:00 p.m.	21	947	1,740	28	42	61	77	--	--	--	--		--		DWCM

RIO GRANDE AT SAN ACACIA, N. MEX.

LOCATION.--At San Acacia diversion dam, 0.2 mile above gaging station, 0.7 mile east of San Acacia, Socorro County, and 1.8 miles downstream from Rio Salado.
DRAINAGE AREA.--26,770 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.)
RECORDS AVAILABLE.--Chemical analyses: July to December 1937, March 1939 to September 1950.
Water temperatures: October 1947 to September 1950.
Sediment records: July 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,360 ppm July 28-31; minimum, 279 ppm Feb. 12-20.
Hardness: Maximum, 741 ppm July 28-31; minimum, 154 ppm Feb. 12-20.
Water temperatures: Maximum observed, 85°F July 9; minimum observed, 33°F on several days in December and January.
Sediment loads: Maximum daily, 481,000 tons Sept. 21; minimum daily, 0 tons on several days during summer months.
EXTREMES, 1947, 1939-50.--Dissolved solids: Maximum, 2,470 ppm July 18, 1946; minimum, 183 ppm June 1-10, 1942.
Hardness: Maximum, 1,190 ppm Aug. 13-14, 1945; minimum, 101 ppm June 11-20, 1942.
Water temperatures (1947-50): Maximum observed, 87°F July 11, 1948; minimum, freezing point on several days during winter months in most years.
Sediment loads (1946-50): Maximum daily, 1,570,000 tons Aug. 17, 1947; minimum daily, 0 tons on several days during summer months in 1946 and 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. Discharges and sediment loads reported do not include discharge for Socorro Main Canal North which heads at San Acacia diversion dam. Records for the Canal are given on page 414.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-7, 9-10, 1949	304	7.8	928	30	0.05	95	18	84	6.4	238	241	39	0.6	2.4	0.2	634	0.86	520	311	116	36
Oct. 11-20	81.7	7.8	881	33	.01	82	16	84	6.6	240	201	44	.6	2.1	.1	588	.80	130	270	74	40
Oct. 21-31	248	7.8	815	30	.02	80	15	76	5.6	220	187	40	.5	1.7	.1	544	.74	364	261	80	38
Nov. 1-5, 7-10	646	7.9	682	28	.03	70	14	58	5.2	209	142	30	.5	1.7	.1	452	.61	788	232	60	35
Nov. 11-18	688	7.4	669	29	.01	68	12	57	4.8	205	135	29	.5	1.4	.1	438	.60	814	219	51	36
Nov. 21-30	786	7.7	611	28	.01	62	11	49	3.2	190	114	26	.5	1.5	.1	389	.53	826	200	44	34
Dec. 1-10	782	7.8	597	27	.02	62	11	47	6.2	195	113	24	.4	1.4	--	388	.53	819	200	40	33
Dec. 12-20	762	7.8	601	28	.03	62	11	49	5.2	197	114	25	.4	1.3	--	393	.53	809	200	38	34
Dec. 21-24, 26-30	754	7.7	593	28	.02	62	10	49	5.2	196	109	25	.5	2.0	--	387	.53	788	196	35	35
Jan. 1-10, 1950	729	7.8	613	28	.03	61	10	54	4.8	193	112	31	.5	2.1	--	399	.54	785	193	35	37
Jan. 11-14, 16-20	708	7.9	590	30	.04	60	10	50	4.2	188	108	26	.5	2.3	(a)	384	.52	734	190	36	36
Jan. 21-31	776	7.9	588	30	.04	59	10	51	4.0	185	107	28	.5	2.4	(a)	383	.52	802	188	36	37
Feb. 1-4, 7-10	1,506	7.9	523	28	.07	56	9.4	39	4.4	173	92	23	.5	2.4	(a)	340	.46	1,380	178	36	32
Feb. 12-20	2,291	7.9	426	23	.07	48	8.1	29	5.0	145	78	15	.5	1.3	(a)	279	.38	1,726	154	34	28
Feb. 21-28	2,154	7.5	453	24	.05	51	9.1	32	1.8	154	78	16	.4	2.0	(a)	290	.39	1,690	164	38	29
Mar. 1-10	1,807	7.5	471	24	.06	51	9.4	33	2.2	151	86	19	.4	2.1	(a)	301	.41	1,470	166	42	30
Mar. 11-20	1,072	7.6	506	25	.08	55	9.9	35	3.2	162	94	21	.4	1.7	(a)	325	.44	941	178	45	30
Mar. 21-24, 26-31	993	7.7	544	24	.03	59	11	37	6.6	168	110	17	.5	3.2	(a)	351	.48	941	192	54	29
Apr. 2-6, 8-10	721	7.7	588	26	.04	61	12	43	6.2	176	124	23	.6	1.6	(a)	384	.52	748	202	58	31
Apr. 11-20	667	7.7	640	27	.05	66	12	52	7.2	192	130	28	.5	1.6	(a)	419	.57	755	214	56	34
Apr. 21-30	123	7.7	821	37	.02	77	14	80	7.2	225	177	43	.6	1.7	(a)	544	.74	181	250	65	40

a Less than 0.1 part per million of boron.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
May 1-2, 4-10, 1950	121	7.8	854	36	0.03	82	14	84	6.6	229	187	43	0.6	1.3	(a)	568	0.77	186	262	74	40
May 11-12, 14-20	6.6	7.8	1,040	35	.02	89	20	112	9.0	241	249	63	.6	1.1	(a)	698	.95	12	304	106	44
May 22-31	4.9	7.8	1,060	37	.02	87	21	115	7.8	224	264	68	.7	.8	(a)	711	.97	9.4	304	120	44
June 1-7, 9-10	27.0	7.9	1,010	36	.05	88	19	102	8.4	222	245	60	.6	1.5	0.1	670	.91	48.8	298	116	42
June 11-14, 16-20	91.6	7.5	816	33	.02	77	14	70	7.6	200	187	41	.6	1.9	.1	531	.72	131	250	86	37
June 21-29	2.7	7.9	1,010	34	.03	83	19	102	8.0	216	250	62	.6	1.1	.1	666	.91	4.9	285	108	43
July 1-3, 6-8, 10	8.9	7.8	1,070	33	.03	86	21	116	8.4	224	274	67	.4	1.7	.1	718	.98	17	301	118	45
July 11-15	146	7.9	1,130	32	.12	130	23	88	8.0	242	343	48	.3	2.4	(a)	794	1.08	313	419	220	31
July 16-20	369	7.8	779	30	.12	80	15	68	7.6	241	168	28	.4	1.9	(a)	518	.70	516	261	64	35
July 21, 23-27	652	7.8	994	29	.16	126	20	66	7.2	235	302	31	.4	1.9	(a)	700	.95	1,230	396	204	26
July 28-31	258	7.9	1,770	27	.25	236	37	140	9.4	241	719	70	.5	1.7	.2	1,360	1.85	947	741	544	29
Aug. 4-5, 7-8, 10	324	7.5	1,090	31	.05	116	21	95	8.6	241	308	49	.6	7.2	.1	755	1.03	660	376	178	35
Aug. 11, 14, 16-19	b 544	7.6	1,400	26	.05	122	26	156	7.8	278	409	67	.6	5.5	.2	957	1.30	141	412	184	45
Aug. 21-23, 25, 26, 28-30	b .6	7.7	965	33	.03	88	19	92	7.0	236	230	51	.7	5.7	.2	642	.87	1.0	298	104	39
Sept. 1-2, 4-10	43.2	7.6	937	32	.02	89	18	88	6.6	238	225	47	.8	2.4	--	626	.85	73	296	101	39
Sept. 11-16, 19	1.2	7.6	1,040	34	.02	90	20	108	6.6	251	243	64	.8	2.0	--	692	.94	22	306	101	43
Sept. 22, 24-30	445	7.7	1,470	21	.02	142	28	152	7.6	272	503	48	.9	2.7	--	1,040	1.41	1,250	470	246	41
Weighted average	560	--	612	27	0.05	65	12	49	4.8	183	130	25	0.5	2.0	--	405	0.55	612	212	62	33

a Less than 0.1 part per million of boron.
b No flow during a part of period.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
/Once-daily temperature measurement at approximately 8 a. m./

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

a Reading obtained at approximately 6:00 p. m.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1,390	57,800	225,000	642	2,240	3,880	826	2,860	6,380
2	500	32,000	44,800	716	4,910	9,490	837	2,490	5,630
3	282	16,000	12,200	623	4,350	7,320	837	4,200	9,490
4	214	8,790	5,080	652	4,690	8,260	815	4,740	10,400
5	165	3,860	1,720	642	4,310	7,470	770	2,410	5,010
6	136	2,450	900	623	4,000	6,730	770	2,200	4,570
7	102	1,430	394	642	3,440	5,960	815	3,990	8,780
8	94	1,450	368	642	3,580	6,210	726	2,360	4,630
9	83	1,410	316	632	5,230	8,920	716	3,000	5,800
10	77	1,220	254	642	4,310	7,470	705	2,000	3,810
11	106	1,110	318	603	3,860	6,280	770	5,100	10,600
12	123	1,230	408	603	4,000	6,510	792	3,200	6,840
13	106	1,060	303	663	e3,500	6,270	900	1,270	3,090
14	110	1,490	443	632	3,000	5,120	850	1,800	4,130
15	74	1,270	254	705	2,600	4,950	652	4,000	7,040
16	57	780	120	674	2,610	4,750	613	5,500	9,100
17	54	588	86	674	2,950	5,370	613	5,890	9,750
18	50	678	92	747	3,170	6,390	792	5,050	10,800
19	54	750	109	770	2,490	5,180	826	4,090	9,120
20	83	892	200	804	4,500	9,770	815	3,500	7,700
21	115	952	296	815	4,260	9,370	770	2,100	4,370
22	74	874	175	781	3,900	8,220	758	2,620	5,360
23	70	2,100	s760	837	2,580	5,830	770	3,960	8,230
24	115	4,400	1,370	792	2,080	4,450	792	4,000	8,550
25	407	4,540	s6,140	781	2,400	5,060	770	5,480	11,400
26	353	4,200	4,000	781	2,060	4,340	726	3,460	6,780
27	263	3,060	2,170	758	2,130	4,360	726	3,100	6,080
28	309	2,190	1,830	781	2,720	5,740	726	4,600	9,020
29	282	2,290	1,740	747	3,530	7,120	758	1,490	3,050
30	338	2,350	2,140	792	2,420	5,170	747	3,590	7,240
31	399	2,460	2,650	--	--	--	747	1,800	3,630
Total	6,585	--	316,600	21,196	--	192,000	23,730	--	216,400

Day	January			February			March		
1	736	1,420	2,820	837	2,450	5,540	2,030	2,700	14,800
2	747	2,360	4,760	804	9,400	20,400	1,960	2,690	14,200
3	684	2,540	4,690	804	7,520	16,300	1,980	4,000	21,400
4	781	6,100	12,900	815	3,700	8,140	1,820	2,540	12,400
5	849	3,400	7,790	945	5,500	14,000	1,710	e2,550	11,800
6	750	1,860	3,770	1,880	9,000	45,700	1,670	2,560	11,500
7	716	5,000	9,670	1,960	6,480	34,300	1,740	2,580	12,100
8	652	4,100	7,220	2,050	6,520	36,100	1,910	4,140	21,300
9	684	2,650	4,890	2,490	6,500	43,700	1,670	2,140	9,650
10	694	1,950	3,650	2,470	7,220	48,200	1,580	3,120	13,300
11	694	1,860	3,490	2,290	5,650	34,000	1,250	2,090	7,050
12	747	5,600	11,300	2,310	6,210	38,700	1,280	2,190	7,570
13	716	4,270	8,250	2,470	6,000	40,000	1,510	1,700	6,930
14	705	4,210	8,010	2,370	6,200	39,700	1,110	3,260	9,770
15	726	5,040	9,880	2,470	4,220	28,100	981	1,440	3,810
16	705	2,370	4,510	2,200	7,000	41,600	804	1,660	3,600
17	663	2,800	5,010	2,160	8,140	47,500	716	1,580	3,050
18	694	8,200	15,400	2,110	5,440	31,000	758	1,850	3,790
19	705	2,640	5,030	2,240	4,650	28,100	981	1,080	2,860
20	726	2,150	4,210	2,290	4,840	29,900	1,330	1,490	5,350
21	736	5,810	11,500	2,240	10,000	60,500	920	2,640	6,560
22	781	3,290	6,940	2,180	4,520	26,600	945	4,090	10,400
23	781	5,570	11,700	2,200	6,500	38,600	781	1,570	3,310
24	758	3,090	6,320	2,180	2,120	12,500	684	1,270	2,350
25	736	2,970	5,900	2,140	5,170	29,900	705	819	1,560
26	770	2,620	5,450	2,130	4,500	25,900	1,220	806	2,650
27	849	3,160	7,240	2,130	4,790	27,500	1,640	2,530	11,200
28	849	4,220	9,670	2,030	3,480	19,100	1,480	1,610	6,430
29	747	3,820	7,700	--	--	--	1,230	1,400	4,650
30	736	3,990	7,930	--	--	--	770	768	1,600
31	792	2,660	5,690	--	--	--	545	950	1,400
Total	22,909	--	223,300	55,195	--	871,600	39,710	--	248,300

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	518	1,580	2,210	175	292	138	3	120	1
2	527	1,740	2,480	197	275	146	3	90	1
3	1,080	2,060	6,010	231	280	175	107	11,500	s 10,000
4	684	1,970	3,640	146	314	124	30	11,200	s 1,680
5	492	1,110	1,470	203	378	207	3	305	2
6	338	900	821	94	282	72	3	229	2
7	500	950	1,280	50	270	36	3	244	2
8	716	1,050	2,030	57	222	34	8	671	14
9	945	1,150	2,930	44	207	25	23	440	27
10	1,410	2,270	8,640	16	145	6	87	504	118
11	1,300	1,620	5,690	11	200	6	150	392	159
12	969	1,740	4,550	10	186	5	165	306	136
13	908	1,500	3,680	8	120	3	160	310	134
14	969	1,500	3,920	7	80	2	214	402	232
15	623	1,880	3,160	7	120	2	197	730	388
16	474	885	1,130	7	140	3	20	490	26
17	424	1,390	1,590	4	165	2	2	305	2
18	483	1,380	1,800	4	110	1	2	198	1
19	302	440	358	4	107	1	3	159	1
20	220	476	283	4	116	1	3	160	1
21	160	1,650	713	4	e 160	2	3	137	1
22	119	569	183	4	368	4	3	122	1
23	136	218	80	6	882	14	3	150	1
24	94	729	185	4	580	6	3	278	2
25	102	354	97	4	510	6	3	130	1
26	146	1,750	690	7	610	12	3	128	1
27	90	280	68	6	300	5	3	48	0
28	83	268	60	4	462	5	2	37	0
29	102	915	252	6	288	5	2	38	0
30	197	498	265	6	351	6	2	55	0
31	--	--	--	3	81	1	--	--	--
Total	15,111	--	60,300	1,333	--	1,060	1,213	--	12,930

Day	July			August			September		
1	2	17	0	80	22,700	s 14,400	0	--	0
2	2	54	0	300	36,500	s 48,000	1	577	2
3	2	26	0	2,200	50,700	s 400,000	1	e 400	1
4	1	16	0	380	27,700	28,400	1	462	1
5	30	47,000	s 5,180	127	11,000	3,770	64	2,900	s 1,050
6	1	8,000	22	52	10,500	1,470	242	6,060	s 3,960
7	1	1,890	5	27	1,400	102	115	5,800	1,800
8	1	644	2	23	870	54	6	4,300	70
9	44	25,300	s 9,800	25	559	38	1	1,050	3
10	5	18,000	243	25	588	40	1	764	2
11	1	3,620	10	21	624	35	1	591	2
12	46	15,000	s 1,670	43	25,300	s 8,500	1	496	1
13	407	36,100	s 50,100	246	e 63,500	s 96,300	1	384	1
14	170	12,000	5,510	30	82,000	6,890	1	382	1
15	105	7,130	s 4,180	90	56,600	s 23,600	1	498	1
16	555	21,200	s 35,300	110	45,800	s 13,100	2	374	2
17	663	16,100	28,800	3	44,000	370	1	287	1
18	244	12,600	8,300	1	24,800	67	1	588	2
19	214	8,900	5,140	0	--	0	2	31,400	170
20	170	6,000	2,750	0	--	0	1,100	84,300	s 316,000
21	50	4,500	607	0	--	0	1,470	107,000	s 481,000
22	610	33,000	s 78,700	0	--	0	180	55,000	27,700
23	965	34,000	s 103,000	1	3,400	9	250	54,000	37,800
24	1,030	26,600	s 78,900	0	--	0	610	49,700	s 132,000
25	1,210	19,800	s 68,900	0	--	0	500	58,600	82,000
26	400	19,000	20,500	1	1,130	3	500	91,100	132,000
27	300	26,500	s 27,700	0	--	0	200	57,500	31,000
28	490	54,600	s 72,800	1	1,450	4	70	29,000	5,480
29	35	15,800	1,490	1	790	2	14	17,200	650
30	100	45,900	12,400	1	983	3	1	12,600	34
31	406	41,900	s 56,600	1	1,260	3	--	--	--
Total	8,260	--	678,600	3,789	--	645,200	5,338	--	1,253,000

Total discharge for year (second-foot-days) 204,369
Total load for year (tons) 4,719,000

e Estimated.
s Computed by subdividing day.

RIO GRANDE AT SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950[a]
(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 (second-feet)	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, 1949	6:00 a.m.	940	65,000	4,290	16	49	64	78	--	--	--	--		--		DWCM
Oct. 10	6:00 p.m.	150	1,160	3,860	9	23	68	82	--	--	--	--		--		DWCM
Oct. 20	8:00 a.m.	175	1,010	2,080	22	37	55	70	--	96	--	--		--		DSWCM
Nov. 1	8:00 a.m.	717	1,610	3,490	28	46	70	87	--	--	--	--		--		DWCM
Nov. 10	8:00 a.m.	755	5,240	5,210	8	13	21	29	--	89	99	100		--		DSWCM
Nov. 20	4:00 p.m.	828	6,940	2,960	10	14	20	27	38	55	75	98		100		BSWCM
Dec. 1	8:15 a.m.	911	2,830	5,320	8	16	25	35	--	90	99	100		--		DSWCM
Dec. 10	9:00 a.m.	728	1,330	2,570	17	28	36	54	--	98	--	--		--		DSWCM
Dec. 20	4:45 p.m.	815	6,840	7,780	5	8	11	17	--	37	54	86		99		DSWCM
Jan. 1, 1950	9:00 a.m.	716	1,430	3,840	14	23	37	50	--	88	93	100		--		DSWCM
Jan. 10	3:00 p.m.	726	1,470	1,100	17	19	35	43	59	76	94	100		--		BSWCM
Feb. 1	5:00 p.m.	908	2,730	5,820	7	11	18	26	--	62	85	99		100		DSWCM
Feb. 6	2:00 p.m.	1,960	6,650	4,240	15	20	32	41	53	66	81	98		100		BSWCM
Feb. 10	1:30 p.m.	2,430	6,910	4,960	15	22	30	38	50	65	88	99		100		BSWCM
Feb. 20	8:00 a.m.	2,350	4,850	12,800	6	10	14	20	--	54	76	95		99		DSWCM
Mar. 1	7:00 a.m.	2,160	2,910	9,660	10	16	22	30	--	69	92	100		--		DSWCM
Mar. 10	8:00 a.m.	1,720	5,410	4,470	7	11	13	20	36	65	98	100		--		BSWCM
Mar. 20	7:00 a.m.	1,210	1,190	4,000	14	21	28	39	--	83	98	99		--		DSWCM
Apr. 10	6:00 p.m.	1,670	2,280	7,640	12	17	23	33	--	88	100	--		--		DSWCM
Apr. 20	6:00 p.m.	349	577	2,420	18	25	31	37	--	76	99	100		--		DSWCM
June 10	7:00 p.m.	300	656	2,020	32	32	48	75	--	99	--	--		--		DSWCM
July 5	8:00 a.m.	132	58,000	3,610	29	43	58	76	--	--	--	--		--		DWCM
July 9	5:30 p.m.	312	106,000	2,390	69	76	86	93	97	98	99	--		--		BSWCM
July 10	6:00 a.m.	124	25,600	2,750	33	48	63	79	--	--	--	--		--		DWCM
July 13	8:00 a.m.	398	21,200	3,740	33	47	62	76	--	--	--	--		--		DWCM
July 13	3:30 p.m.	721	97,200	3,740	42	49	56	63	68	72	82	98		100		BSWCM
July 17	2:00 p.m.	821	14,200	3,530	35	50	65	81	--	--	--	--		--		DWCM
July 22	8:00 a.m.	1,120	26,300	3,350	23	35	53	72	--	91	--	--		--		DSWCM
Aug. 1	6:00 a.m.	177	22,200	5,410	17	43	74	91	--	--	--	--		--		DWCM
Aug. 10	7:00 a.m.	73	706	2,510	32	50	69	87	--	--	--	--		--		DWCM

a Size samples taken above Socorro Main Canal North. Discharge is sum of canal and river stations.

Aug. 20	8:00 a.m.	25	7,220	7,510	12	37	77	88	--	--	--	--		--	DWCM
Sept. 1	7:00 a.m.	33	1,260	2,790	25	33	78	88	--	-	--	--		--	DWCM
Sept. 10	6:00 a.m.	51	840	1,900	26	41	61	80	--	--	--	--		--	DWCM
Sept. 20	11:30 a.m.	1,710	114,000	2,010	71	77	87	94	98	100	--	--		--	BWCM
Sept. 26	11:00 a.m.	500	94,900	2,550	31	42	54	71	--	99	--	--		--	DSWCM

a Size samples taken above Socorro Main Canal North. Discharge is sum of canal and river stations.

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.

LOCATION.--At water-stage recorder at Atchison, Topeka & Santa Fe Railway bridge over Tiffany Channel, 3 miles northeast of San Marical, Socorro County. Tiffany Channel is bypass channel carrying water around the main channel station at San Marcial.
RECORDS AVAILABLE.--Chemical analyses: April to September 1950.
Sediment records: April to September 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Values reported for dissolved solids concentrations are residue on evaporation. Discharge record for Tiffany Channel for water year October 1949 to September 1950 is composited with the discharge record for Rio Grande at San Marcial as given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, April to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Apr. 22, 26, 27, 30, 1950	8.9	7.8	1,180	19		78	19	152		238	230	120		0.5		736	1.00	18	272	78	55
May 4	10	7.7	1,200	20		82	18	150		243	223	123		.6		737	1.00	20	278	80	54
May 15	8	7.7	1,260	29		85	18	144		253	191	135		1.0		728	.99	16	286	78	52
May 21, 22, 25, 30	4.1	7.7	1,280	29		87	18	159		251	226	138		.9		782	1.06	8.7	291	86	54
June 1, 3, 5	0.4	7.7	1,330	30		85	20	173		250	237	155		.9		824	1.12	0.89	294	89	56
June 21, 23, 25, 27, 29	0.6	7.3	1,380	33		96	20	179		271	263	151		1.0		876	1.19	1.4	322	100	55
July 1, 4, 6, 9	0.4	7.4	1,310	33		92	19	169		264	241	146		1.2		831	1.13	0.90	308	91	54
July 11, 13, 16, 18	1.0	7.1	1,130	30		79	17	149		242	198	130		2.8		725	.99	2.0	267	68	55
July 21, 29	6.5	7.3	1,290	31		88	18	174		259	243	145		1.9		829	1.13	15	294	82	56
Aug. 1, 4, 5, 8	14	7.7	1,180	27		94	17	142		220	273	104		2.1		767	1.04	29	304	124	50
Aug. 12, 14, 17, 20	4.5	7.6	1,260	27		86	17	170		251	247	135		.6		807	1.10	9.8	284	79	56
Aug. 23, 30	2.0	7.9	1,310	32		91	18	175		257	248	150		1.2		842	1.15	4.5	301	90	56
Sept. 12, 19	--	7.6	1,370	32		90	19	185		258	249	165		1.2		868	1.18	--	302	91	57
Sept. 22-23, 26, 30	4.5	7.6	1,710	23		146	29	213		269	533	120		2.6		1,200	1.63	15	484	263	49

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, April to September 1950

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1				6	130	2	1	a 286	1
2				8	180	4	1	273	1
3				9	285	7	1	a 265	1
4				10	a 322	9	1	280	1
5				10	300	8	0	--	0
6				10	276	7	0	--	0
7				10	250	7	0	--	0
8				9	230	6	0	--	0
9				9	a 201	5	0	--	0
10				13	190	7	0	--	0
11				20	210	11	0	--	0
12				18	a 157	8	0	--	0
13				13	180	6	0	--	0
14	1	34	s 0	10	245	7	0	--	0
15	14	32	1	8	a 272	6	0	--	0
16	13	a 32	1	8	270	6	0	--	0
17	13	100	4	7	270	5	0	--	0
18	11	110	3	7	267	5	0	--	0
19	10	a 103	3	7	265	5	0	--	0
20	11	110	3	6	262	4	0	--	0
21	12	a 112	4	5	258	3	0	--	0
22	11	a 167	5	5	a 255	3	0	--	0
23	10	160	4	5	260	4	1	a 363	1
24	10	155	4	5	262	4	2	355	2
25	9	145	4	5	a 269	4	1	a 309	1
26	9	a 139	3	5	245	3	1	330	1
27	7	122	2	5	a 216	3	1	a 368	1
28	7	125	2	4	210	2	0	--	0
29	7	128	2	3	203	2	0	--	0
30	7	a 130	2	2	a 252	1	0	--	0
31	--	--	--	1	260	1	--	--	--
Total	162	--	47	243	--	155	10	--	10

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1	a 394	1	7	a 613	12	1	420	1
2	1	370	1	7	640	12	1	430	1
3	0	--	0	17	790	36	1	410	1
4	0	--	0	43	1,290	150	1	380	1
5	0	--	0	14	a 1,060	40	1	350	1
6	0	--	0	14	875	33	1	320	1
7	1	280	1	13	700	25	1	280	1
8	1	365	1	10	a 516	14	1	240	1
9	0	--	0	8	460	10	0	--	0
10	0	--	0	7	465	9	0	--	0
11	0	--	0	7	480	9	0	--	0
12	1	378	1	7	a 500	9	0	--	0
13	1	a 643	2	5	520	7	0	--	0
14	0	--	0	4	a 554	6	0	--	0
15	1	470	1	4	575	6	0	--	0
16	0	--	0	5	600	8	0	--	0
17	1	432	1	5	a 630	9	0	--	0
18	1	413	1	4	640	7	0	--	0
19	2	397	2	2	640	3	0	--	0
20	3	a 379	3	2	a 628	3	0	--	0
21	3	a 375	3	2	525	3	0	--	0
22	4	400	4	2	410	2	.10	a 41,700	s 1,620
23	5	425	6	2	a 301	2	3	a 20,000	162
24	7	450	9	2	260	1	2	8,000	43
25	8	475	10	2	240	1	6	7,700	125
26	8	a 501	11	2	250	1	2	a 5,500	104
27	11	545	16	2	260	1	5	1,800	24
28	7	465	9	2	290	2	5	1,500	20
29	7	a 424	8	2	345	2	4	1,300	14
30	6	435	7	2	a 395	2	3	1,250	10
31	6	520	8	2	a 410	2	--	--	--
Total	86	--	106	207	--	427	53	--	2,130

Total discharge for period Apr. 14 to Sept. 30 (second-foot-days) 761
Total load for period Apr. 14 to Sept. 30 (tons) 2,880

s Computed by subdividing day.
a Samples collected on these days, other days estimated or interpolated.

RIO GRANDE BASIN--Continued

RIO GRANDE TIFFANY CHANNEL AT SAN MARCIAL, N. MEX.--Continued

Particle-size analyses of suspended sediment, June to September 1950
(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 (second-feet)	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	
June 1, 1950	12:45 p. m.	0.8	460	1,470	25	40	53	78								DWCM
July 16	11:05 a. m.	.4	632	1,830	50	69	80	98								DWCM
July 20	12:40 p. m.	2.8	488	1,290	48	60	77	97								DWCM
Aug. 1	1:35 p. m.	6.8	670	2,330	26	41	64	82								DWCM
Aug. 20	1:30 p. m.	2.0	744	2,160	32	51	75	88								DWCM
Sept. 12	2:00 p. m.	.3	394	1,460	38	58	75	93								DWCM
Sept. 21	9:00 a. m.	22	75,300	2,280	82	90	96	97	99	100						BWCM

RIO GRANDE AT SAN MARCIAL, N. MEX.

LOCATION.--At gaging station in Pedro Armendaris Grant 33, at Atchison, Topeka and Santa Fe Railway bridge, 1.1 miles downstream from San Marcial, Socorro County.
DRAINAGE AREA.--27,700 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Chemical analyses: July 1946 to September 1950.
Water temperatures: January 1949 to September 1950.
Sediment records: July 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,150 ppm Sept. 21-23, 25-27, 29-30; minimum, 322 ppm Feb. 21-28.
Hardness: Maximum, 474 ppm Sept. 21-23, 25-27, 29-30; minimum, 164 ppm Feb. 21-28.
Water temperatures: Maximum, 84°F July 28, Aug. 31; minimum, freezing point Dec. 13, 16, 22, Jan. 6, 28.
Sediment loads: Maximum daily, 94,100 tons Aug. 4; minimum daily, 2 tons June 11, 14-20.
EXTREMES, 1946-50.--Dissolved solids: Maximum, 1,670 ppm Aug. 11-16, 19-22, 1946; minimum, 252 ppm June 21-30, 1949.
Hardness: Maximum, 820 ppm Aug. 11-16, 19-22, 1946; minimum, 141 ppm May 1-10, 1948.
Water temperatures (1949-50): Maximum observed, 84°F July 28, Aug. 31, 1950; minimum, freezing point Dec. 13, 16, 22, 1949, Jan. 6, 28, 1950.
Sediment loads: Maximum daily, 366,000 tons July 25, 1949; minimum daily, 0 tons on several days in summers of 1946 and 1947.
REMARKS.--Records of specific conductance of daily samples available in district office in Albuquerque, N. Mex. Records of chemical analyses and sediment loads for years prior to 1946 have been published in Water Bulletins of International Boundary and Water Commission. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178, is composite of main channel and Tiffany Channel.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-10, 1949.....	295	--	1,020	--		--	--	--		--	--	--		--		--	--	--	--	--	--
Oct. 11-20.....	71.5	--	949	31		81	15	132		228	201	69		1.0		642	0.87	124	--	21	58
Oct 21-23, 25, 27-31 .	177	--	872	--		--	--	--		--	--	--		--		--	--	--	--	--	--
Nov. 1-7, 9-10.....	518	--	770	--		--	--	--		--	--	--		--		--	--	--	--	--	--
Nov. 11-20.....	559	--	748	28		72	14	96		210	156	41		1.1		512	70	773	--	14	53
Nov. 21-27, 29.....	670	--	685	--		--	--	--		--	--	--		--		--	--	--	--	--	--
Dec. 1-10.....	691	7.8	682	24		66	13	64		204	133	36		1.1		437	.59	815	218	51	39
Dec. 11-20.....	547	7.8	765	26		74	14	73		215	153	46		.7		493	.67	728	242	66	40
Dec. 21-31.....	622	7.7	801	26		74	15	79		220	157	52		.8		512	.70	860	246	66	41
Jan. 1-10, 1950.....	610	7.7	798	28		72	14	83		219	156	53		1.1		515	.70	848	237	58	43
Jan. 11-20.....	734	7.8	680	26		66	13	63		200	130	38		1.3		436	.59	864	218	54	38
Jan. 21-23, 25-31...	697	7.8	676	26		63	12	68		194	130	42		1.1		438	.60	824	206	48	42
Feb. 1-2, 4-10.....	1,261	7.8	612	27		60	11	55		182	114	32		1.9		391	.53	1,331	194	46	38
Feb. 11-20.....	2,250	7.7	505	21		52	9.3	44		161	94	22		2.1		323	.44	1,962	168	36	36
Feb. 21-28.....	2,126	7.8	503	24		50	9.5	43		148	96	25		1.2		322	.44	1,850	164	42	36
Mar. 1-10.....	1,868	7.8	534	22		56	11	42		164	101	25		1.6		340	.46	1,710	184	50	33
Mar. 11-20.....	1,054	7.8	658	22		61	12	61		180	123	42		.1		410	.56	1,170	202	54	40
Mar. 21-31.....	1,010	7.9	643	24		62	12	61		181	131	36		1.1		416	.57	1,130	204	56	39

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
Apr. 1-10, 1950.....	553	7.7	837	22		70	14	93		203	173	62		0.7		535	0.73	837	232	66	47
Apr. 11-19	769	7.8	697	22		64	13	69		182	149	41		.7		449	.61	932	213	64	41
Apr. 21-27, 29-30 ..	153	7.8	1,080	22		80	19	127		233	213	100		.6		677	.92	280	278	86	50
May 1-2, 5-6, 8-10 ..	113	7.9	1,140	28		82	19	138		238	224	109		.5		718	.98	219	282	88	51
May 11-17, 19, 20 ..	73.8	7.4	1,310	28		89	19	171		267	244	140		1.0		824	1.12	164	300	81	55
May 21-25, 27-31 ...	42.2	7.6	1,270	29		88	18	164		255	235	138		1.0		799	1.09	91	294	84	55
June 1-3, 5-10.....	16.1	7.8	1,360	30		87	19	180		251	247	158		1.2		846	1.15	37	295	90	57
June 11-15, 17-20 ...	3.39	7.4	1,510	36		80	23	217		259	270	192		1.1		947	1.29	8.7	294	82	62
June 21-30	13.4	7.4	1,400	32		97	21	181		267	271	156		1.1		891	1.21	32	328	110	55
July 1-4, 6-10	11.3	7.8	1,290	33		88	19	171		259	243	144		1.9		828	1.13	25	298	86	56
July 11-20.....	16.0	7.2	1,160	29		86	17	141		230	216	125		2.7		730	.99	32	284	96	52
July 21-31.....	203	7.4	1,100	27		104	18	111		222	276	72		4.2		721	.98	395	334	152	42
Aug. 1, 3-8, 10.....	334	7.4	1,200	24		128	21	111		211	359	70		3.8		821	1.12	740	406	233	37
Aug. 12-17, 19-20 ..	63.5	7.5	1,330	26		107	20	163		258	307	121		2.0		873	1.19	150	349	138	50
Aug. 21-27, 29-31 ..	225	7.7	1,300	30		93	20	162		256	248	140		1.7		821	1.12	499	314	104	53
Sept. 1, 3-8, 10	15.2	7.6	1,370	31		92	19	180		259	255	156		2.2		863	1.17	35	308	96	56
Sept. 11-12, 14-20 ..	12.2	7.8	1,370	34		90	20	184		257	251	165		1.0		872	1.19	29	306	96	57
Sept. 21-23, 25-27, 29-30.....	253	7.8	1,600	22		144	28	197		264	523	100		1.1		1,150	1.56	786	474	258	47
Weighted average ..	501	--	692	24		65	12	67		186	139	40		1.3		440	0.60	595	212	59	41

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurements generally between 9 a. m. and 2 p. m.]

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

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	613	15,000	24,800	320	1,940	1,680	680	1,300	2,930
2	874	33,400	81,700	435	2,050	2,410	710	1,120	2,150
3	442	20,500	24,500	568	2,150	3,300	710	1,160	2,220
4	270	18,200	13,300	550	2,040	3,030	720	1,220	2,370
5	204	11,500	6,330	577	2,180	3,400	710	1,090	2,090
6	145	6,740	2,640	559	1,930	2,910	710	1,160	2,220
7	130	4,310	1,510	550	1,700	2,520	700	1,080	2,040
8	109	3,030	892	542	1,700	2,490	700	1,060	2,000
9	90	1,800	437	542	1,640	2,400	660	1,000	1,780
10	77	441	92	534	1,640	2,360	613	1,240	2,050
11	72	330	64	534	2,140	3,090	622	1,180	1,980
12	58	410	64	550	1,660	2,470	494	700	934
13	60	520	84	526	1,540	2,190	460	580	720
14	97	638	167	534	1,370	1,980	442	740	883
15	99	863	231	534	1,500	2,160	449	725	879
16	88	842	200	559	1,430	2,160	350	350	331
17	75	542	110	586	1,440	2,280	428	600	693
18	70	586	111	586	1,560	2,470	720	1,200	2,330
19	56	1,100	166	577	1,560	2,430	817	1,300	2,870
20	40	280	30	604	1,420	2,320	690	950	1,770
21	45	190	23	640	1,460	2,520	650	823	s 1,600
22	58	e 350	55	650	1,420	2,490	577	350	545
23	86	520	121	680	1,280	2,350	507	585	s 909
24	136	1,150	422	590	1,370	2,550	518	590	825
25	184	1,880	934	680	1,290	2,370	394	550	585
26	224	2,000	1,210	660	1,360	2,420	595	720	1,160
27	315	3,300	2,810	660	1,320	2,350	604	400	652
28	184	2,100	1,040	670	e 1,280	2,320	640	350	605
29	228	1,750	1,080	690	1,240	2,310	631	520	886
30	228	2,000	1,230	680	1,210	2,220	807	1,060	s 2,480
31	260	1,860	1,310	--	--	--	922	1,320	3,290
Total	5,617	--	167,700	17,467	--	73,950	19,230	--	48,240
	January			February			March		
1	806	1,520	3,310	670	920	1,660	2,060	1,240	6,900
2	784	1,150	2,430	751	820	1,660	2,110	1,410	8,030
3	577	1,200	1,870	773	e 800	1,670	2,040	1,260	6,940
4	510	879	1,210	762	770	1,580	1,950	990	5,210
5	509	770	s 1,300	730	747	1,470	1,750	919	4,340
6	400	250	270	795	917	s 2,140	1,550	1,300	5,440
7	376	392	398	1,870	2,610	13,200	1,710	1,010	4,660
8	486	350	459	1,970	2,750	14,600	1,690	883	4,030
9	588	1,130	s 2,260	2,020	2,560	14,000	1,970	1,060	5,640
10	1,060	1,740	s 5,350	2,270	2,800	17,200	1,850	854	4,270
11	910	1,550	3,810	2,470	3,190	21,300	1,470	678	2,690
12	934	1,570	3,960	2,420	2,810	18,400	1,260	607	2,070
13	773	1,270	2,650	2,370	2,650	17,000	1,280	617	2,130
14	680	1,120	2,060	2,290	2,720	16,800	1,420	628	2,410
15	690	1,340	2,500	2,270	2,300	14,100	1,230	574	1,910
16	680	1,740	3,190	2,250	1,820	11,100	966	558	1,460
17	720	1,770	3,440	2,110	1,990	11,300	726	510	1,000
18	640	1,170	2,020	2,110	1,600	9,120	732	579	1,140
19	680	920	1,690	2,130	1,600	9,200	690	384	715
20	631	988	1,680	2,080	1,550	8,700	768	594	1,230
21	650	915	1,610	2,170	1,700	9,960	1,120	550	1,660
22	700	e 1,000	1,890	2,200	2,060	12,200	875	516	1,220
23	680	976	1,790	2,200	1,580	9,390	756	464	988
24	622	1,040	1,750	2,150	1,580	9,170	720	438	851
25	622	953	1,600	2,130	1,420	8,170	566	545	833
26	660	1,020	1,820	2,040	1,360	7,490	605	375	613
27	680	1,110	2,040	2,040	1,220	6,720	988	480	1,280
28	839	1,160	2,630	2,080	1,250	7,020	1,780	771	3,710
29	817	993	2,190	--	--	--	1,600	570	2,460
30	751	870	1,760	--	--	--	1,280	412	1,420
31	650	920	1,610	--	--	--	816	422	930
Total	21,105	--	66,550	52,121	--	276,300	40,328	--	88,180

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	526	423	601	99	288	77	24	438	28
2	474	313	401	140	355	134	29	444	35
3	405	352	385	144	e 320	124	25	324	22
4	822	484	1,070	148	e 280	112	21	e 260	15
5	738	437	871	140	256	97	18	218	11
6	498	246	331	110	238	71	19	232	12
7	328	315	279	111	e 300	90	9.6	349	9
8	372	311	312	90	413	100	6.0	238	4
9	615	401	666	80	321	69	5.0	233	3
10	756	328	670	71	378	72	4.5	328	4
11	1,340	466	1,690	158	372	159	3.7	212	2
12	1,280	584	2,020	102	278	77	4.0	310	3
13	1,050	448	1,270	76	287	59	4.0	310	3
14	834	465	1,050	67	354	64	3.4	184	2
15	875	453	1,070	58	353	55	2.2	255	2
16	685	442	817	62	350	59	2.5	e 250	2
17	466	389	489	55	478	71	2.5	243	2
18	411	415	461	53	e 400	57	3.1	221	2
19	405	441	482	52	336	47	4.0	219	2
20	342	311	287	55	398	59	4.5	204	2
21	280	350	265	52	350	49	6.5	263	5
22	240	348	226	50	326	44	8.5	393	9
23	174	320	150	51	374	51	9.6	231	6
24	147	325	129	46	318	39	28	400	30
25	129	275	96	40	416	45	21	444	25
26	118	251	80	39	e 400	42	15	304	12
27	104	240	67	43	328	38	14	289	11
28	118	e 240	76	43	324	38	11	345	10
29	112	233	70	40	318	34	10	243	7
30	104	236	66	33	275	25	10	273	7
31	--	--	--	27	323	24	--	--	--
Total	14,748	--	16,450	2,335	--	2,080	328.6	--	287

Day	July			August			September		
1	9.6	371	10	132	24,000	8,550	18	474	23
2	9.6	211	55	114	e 19,700	6,060	16	e 430	19
3	8.5	247	6	476	6,270	s 7,020	15	391	16
4	8.5	267	6	1,270	22,000	s 94,100	14	320	12
5	9.6	e 340	9	610	13,100	s 24,700	16	345	15
6	10	388	10	285	8,770	6,750	16	e 360	16
7	16	310	13	210	4,200	2,380	15	e 370	15
8	14	450	17	104	1,100	309	14	392	15
9	18	785	38	72	e 850	165	14	375	14
10	9.6	226	6	63	728	124	14	397	15
11	7.0	209	4	56	e 620	94	14	334	13
12	7.0	205	4	55	523	78	14	335	13
13	13	460	16	50	530	72	13	323	11
14	5.5	264	4	55	465	69	13	321	11
15	6.5	300	5	66	11,600	2,070	13	300	11
16	21	845	s 63	75	24,300	4,920	12	302	10
17	6.0	280	5	105	14,000	3,970	10	310	8
18	7.5	337	7	86	e 7,200	1,670	10	269	7
19	14	460	17	53	4,300	615	11	259	8
20	68	1,760	323	34	1,400	129	12	422	14
21	70	1,450	274	29	592	46	14	305	12
22	61	581	96	29	457	36	326	44,900	s 53,000
23	58	709	110	26	445	31	310	43,900	38,100
24	150	1,940	786	22	485	29	186	e 39,000	20,300
25	242	2,650	1,730	19	442	23	276	44,200	s 35,500
26	432	2,930	s 3,650	19	457	23	555	24,600	s 41,900
27	556	3,360	s 5,420	20	547	30	410	39,200	s 48,100
28	238	4,900	3,150	21	e 490	28	255	e 42,500	30,300
29	224	12,000	7,260	21	439	25	120	22,500	7,290
30	138	11,200	4,170	21	445	25	79	19,500	4,160
31	63	5,000	850	20	339	18	--	--	--
Total	2,500.9	--	28,060	4,218	--	164,200	2,805	--	278,900

Total discharge for year (second-foot-days) 182,803.5
Total load for year (tons) 1,211,000

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO GRANDE AT SAN MARCIAL, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	4:30 p. m.	442	13,800	1,020	43	65	87	99	--	--	--	--		--		DWCM
Oct. 2	10:42 a. m.	1,050	40,700	5,120	24	67	85	95	--	--	--	--		--		DWCM
Oct. 10	3:40 p. m.	81	508	771	41	57	79	92	--	--	--	--		--		DWCM
Oct. 20	10:47 a. m.	36	348	786	47	69	85	96	--	--	--	--		--		DWCM
Oct. 25	11:40 a. m.	168	633	678	68	90	98	99	--	100	--	--		--		BWCM
Nov. 1	4:10 p. m.	310	1,960	4,480	11	66	87	95	--	--	--	--		--		DWCM
Nov. 10	1:00 p. m.	542	1,590	2,610	37	61	82	93	--	--	--	--		--		DWCM
Nov. 20	3:25 p. m.	604	1,440	734	62	85	100	--	--	--	--	--		--		BWCM
Dec. 1	2:40 p. m.	670	1,350	4,830	6	58	81	93	--	--	--	--		--		DWCM
Dec. 10	12:00 m.	577	1,260	4,320	10	27	83	93	--	--	--	--		--		DWCM
Dec. 20	9:30 a. m.	640	1,130	3,860	42	61	76	90	--	--	--	--		--		DWCM
Jan. 1, 1950	9:15 a. m.	773	2,500	10,200	15	23	27	31	--	41	64	99		100		DSWCM
Jan. 10	11:00 a. m.	862	2,980	1,930	20	25	30	30	31	36	71	99		100		BSWCM
Jan. 20	11:15 a. m.	622	1,200	853	46	54	62	64	--	--	72	99		100		BSWCM
Feb. 1	11:15 a. m.	640	1,160	4,030	10	30	51	59	--	61	--	--		--		DSWCM
Feb. 6	12:00 p. m.	1,680	2,460	1,160	35	42	53	58	--	61	86	100		--		BSWCM
Feb. 7	1:15 p. m.	1,950	2,430	1,670	38	57	65	67	68	70	91	100		--		BSWCM
Feb. 10	10:00 a. m.	2,320	4,410	14,600	5	29	40	45	--	49	68	100		--		DSWCM
Feb. 20	2:00 p. m.	2,130	1,790	6,730	23	48	60	67	--	72	--	--		--		DSWCM
Mar. 1	10:15 a. m.	2,000	1,500	4,130	28	44	58	65	--	67	--	--		--		DSWCM
Mar. 10	11:00 a. m.	1,830	978	3,160	34	52	67	74	--	80	--	--		--		DSWCM
Mar. 20	1:00 p. m.	680	607	1,940	37	50	69	83	--	--	--	--		--		DWCM
Apr. 1	11:00 a. m.	502	465	1,480	38	52	68	84	--	--	--	--		--		DWCM
Apr. 10	11:20 a. m.	695	412	1,350	39	54	70	85	--	--	--	--		--		DWCM
May 1	10:25 a. m.	96	354	1,410	43	59	80	92	--	--	--	--		--		DWCM
May 10	1:30 p. m.	64	477	1,580	23	40	57	78	--	--	--	--		--		DWCM
May 20	9:30 a. m.	55	550	1,530	27	43	61	82	--	--	--	--		--		DWCM
June 1	10:00 a. m.	22	538	1,830	28	47	67	85	--	--	--	--		--		DWCM
June 10	11:30 a. m.	5	472	1,710	30	50	69	87	--	--	--	--		--		DWCM
July 1	5:30 a. m.	10	486	1,860	46	62	73	86	--	--	--	--		--		DWCM
July 16	9:25 a. m.	20	974	3,320	42	64	80	95	--	--	--	--		--		DWCM
July 20	10:20 a. m.	70	1,850	3,370	32	53	69	82	--	--	--	--		--		DWCM
July 26	10:00 a. m.	360	2,570	4,740	10	18	84	95	--	--	--	--		--		DWCM
July 30	8:20 a. m.	154	12,200	4,070	40	62	79	94	--	--	--	--		--		DWCM

Aug.	11:40 a. m.	124	24,200	2,600	42	58	72	87	--	--	--	--		--	DWCM
Aug. 10	11:35 a. m.	64	845	2,860	33	52	76	89	--	--	--	--		--	DWCM
Aug. 20	10:45 a. m.	34	890	2,350	34	54	76	84	--	--	--	--		--	DWCM
Sept. 1	10:55 a. m.	18	569	2,220	42	54	65	77	--	--	--	--		--	DWCM
Sept. 10	11:20 a. m.	15	450	1,730	41	64	80	91	--	--	--	--		--	DWCM
Sept. 20	12:15 p. m.	12	522	1,930	40	56	76	89	--	--	--	--		--	DWCM
Sept. 22	11:15 a. m.	242	64,700	2,790	73	90	96	98	100	--	--	--		--	BWCM
Sept. 23	10:30 a. m.	305	40,600	5,660	40	59	73	86	--	--	--	--		--	DWCM
Sept. 27	12:20 p. m.	506	37,100	4,170	62	82	90	95	97	99	100	--		--	BWCM

RIO GRANDE BASIN--Continued

RIO GRANDE AT MISSION PUMPING PLANT NEAR MISSION, TEX.

LOCATION.--At Mission pumping plant 3 miles south of Mission, Hidalgo County.
DRAINAGE AREA.--171,800 square miles (estimated).
RECORDS AVAILABLE.--Chemical analyses: July 1945 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,100 ppm May 1-13; minimum, 396 ppm May 28-31.
Hardness: Maximum, 371 ppm June 13-20; minimum, 183 ppm May 28-31.
EXTREMES, 1945-50.--Dissolved solids: Maximum, 1,440 ppm May 9-11, 1947; minimum, 209 ppm June 28-30, 1948.
Hardness: Maximum, 672 ppm May 9-11, 1947; minimum, 95 ppm June 28-30, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949 ...		7.9	1,040	26		82	14	107		157	195	112		6.0	0.13	641	0.87		262	134	47
Oct. 11-20		8.1	951	24		76	16	99		153	179	109		6.6	.19	599	.81		256	130	46
Oct. 21-31		7.9	877	17		70	14	92		161	140	106		6.3	.19	554	.75		232	100	46
Nov. 1-10		7.8	723	20		62	14	70		156	114	82		4.0	.19	456	.62		212	84	42
Nov. 11-20		7.8	1,120	23		86	21	124		178	185	162		3.5	.00	722	.98		301	155	47
Nov. 21-30		7.8	1,140	23		79	24	132		168	195	170		3.0	.12	725	.99		296	158	49
Dec. 1-10		7.9	997	32		66	21	112		150	168	137		3.0	.29	628	.85		251	128	49
Dec. 11-20		8.1	1,170	38		74	25	137		174	194	168		4.0	.29	752	1.02		288	145	51
Dec. 21-31		8.0	1,240	30		80	27	142		182	204	180		4.0	.40	792	1.08		310	162	50
Jan. 1-10, 1950 ...		8.0	1,240	32		76	26	142		154	208	184		5.1	.51	792	1.08		296	170	51
Jan. 11-20		8.0	1,270	29		77	25	150		156	216	188		3.0	.43	812	1.10		295	167	52
Jan. 21-30		8.0	1,300	19		78	27	151		158	216	196		3.5	.44	815	1.11		306	176	52
Feb. 1-10		8.0	1,390	23		83	27	165		162	230	214		4.0	.13	872	1.19		318	186	53
Feb. 11-19.....		8.1	1,400	20		87	27	165		168	229	218		4.0	.45	886	1.20		328	190	52
Feb. 20-28		8.1	1,430	19		89	27	169		172	226	228		2.0	.45	895	1.22		333	192	52
Mar. 1-10		8.0	1,450	23		84	30	176		150	241	240		3.5	.19	920	1.25		333	210	53
Mar. 11-20.....		8.0	1,500	22		93	32	178		162	251	250		4.0	.52	958	1.30		364	231	52
Mar. 21-31.....		8.0	1,510	20		90	31	182		162	243	255		4.0	.26	952	1.29		352	220	53
Apr. 1-10		7.5	1,490	21		83	30	181		160	240	242		2.8	.50	918	1.25		330	200	54
Apr. 11-20		7.8	1,480	18		85	31	177		161	240	240		4.2	.60	905	1.23		340	208	53
Apr. 21-30		7.9	1,490	18		90	26	180		151	248	240		4.5	.68	920	1.25		332	208	54
May 1-13		7.6	1,870	22		86	37	249		143	290	345		2.8	--	1,100	1.50		366	250	60
May 14-20.....		8.1	1,290	21		70	25	158		138	207	205		3.2	--	779	1.06		278	164	55
May 21-27		8.0	1,170	17		74	20	138		132	218	162		4.4	--	722	.98		266	158	53
May 28-31		7.9	678	13		52	13	66		124	114	73		4.4	--	396	.54		183	82	44

June 1-12		7.8	744	19		56	14	79	136	114	96		5.0	.42	463	.63		197	86	47
June 13-20		7.9	1,680	26		96	32	206	153	274	288		3.8	.53	1,070	1.46		371	246	55
June 21-30		7.9	1,140	24		78	20	124	145	195	156		4.2	.45	721	.98		276	158	49
July 1-10		8.0	1,450	30		81	24	178	136	226	240		4.0	.26	919	1.25		300	189	56
July 11-16		8.2	1,820	33		92	32	240	142	296	322		4.5	.41	1,090	1.48		361	244	59
July 17-26		8.0	729	20		62	14	65	145	117	75		8.2	.14	459	.62		212	93	40
July 27-29, 31 ...		8.1	1,210	22		107	17	123	160	270	131		8.5	.29	302	1.09		337	206	44
Aug. 1-10.....		7.8	1,090	27		90	16	115	146	239	118		6.9	.12	728	.99		290	171	46
Aug. 11-20.....		7.7	1,060	22		83	15	114	151	209	121		5.1	.24	680	.92		268	145	48
Aug. 21-31		8.0	1,520	23		104	24	178	149	287	228		4.5	.23	983	1.34		358	236	52
Sept. 1-4		7.9	1,450	26		90	27	170	126	288	212		4.0	.08	936	1.27		336	232	52
Sept. 5-10		8.1	1,110	24		74	22	121	139	198	152		3.5	.09	707	.96		275	161	49
Sept. 11-22		8.1	1,310	24		90	23	138	158	242	165		4.8	.13	840	1.14		319	190	48
Sept. 23-28		7.9	806	15		64	13	81	144	128	95		4.2	.05	500	.68		213	95	45

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.

LOCATION.--At gaging station at bridge on State Highway 96, in Juan Jose Lobato Grant, 1¾ miles upstream from El Rito Creek, 5 miles downstream from Abiquiu, Rio Arriba County, and 13.5 miles downstream from Abiquiu dam site.
DRAINAGE AREA.--2,170 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: January 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 44,100 tons Feb. 8; minimum daily, 1 ton May 15, 17-19.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 102,000 tons July 13, 1949; minimum daily, 1 ton May 15, 17-19, 1950 (revised).
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	76	2,100	431	94	30	8	60	e30	5
2	56	930	141	83	16	4	60	23	4
3	55	790	117	78	16	3	55	45	7
4	53	523	75	78	26	5	45	65	8
5	47	300	38	74	13	3	40	80	9
6	46	155	19	72	14	3	35	110	10
7	44	101	12	67	35	6	35	80	8
8	42	66	7	67	23	4	30	102	8
9	49	155	21	67	26	5	35	60	6
10	51	185	25	67	30	5	40	72	8
11	49	165	22	74	58	12	50	48	6
12	47	74	9	76	60	12	35	94	9
13	46	70	9	69	68	13	30	110	9
14	42	66	7	67	72	13	25	79	5
15	44	63	7	67	86	16	30	118	10
16	51	65	9	67	51	9	35	60	6
17	49	54	7	65	18	3	40	64	7
18	55	52	8	65	10	2	40	50	5
19	56	70	11	65	18	3	35	42	4
20	60	78	13	65	18	3	40	52	6
21	67	113	20	65	18	3	35	43	4
22	602	5,880	s 21,000	62	19	3	30	60	5
23	724	1,680	s 3,970	62	39	7	35	48	5
24	563	1,500	2,280	62	45	8	40	65	7
25	521	1,680	2,360	65	40	7	40	66	7
26	541	700	1,020	65	22	4	40	40	4
27	530	362	518	60	60	10	30	42	3
28	530	420	601	60	28	5	35	50	5
29	401	320	346	60	32	5	40	24	3
30	137	57	21	60	30	5	45	36	4
31	105	56	16	--	--	--	45	45	5
Total	5,939	--	33,140	2,048	--	189	1,210	--	192

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	50	42	6	27	41	3	1,480	900	3,600
2	50	22	3	27	65	5	1,460	728	2,870
3	50	42	6	984	3,540	s 15,700	1,480	720	2,840
4	55	58	9	1,650	5,400	24,100	1,440	e 550	2,140
5	50	44	6	1,510	3,700	15,100	1,420	508	1,950
6	50	48	6	1,640	3,000	13,300	1,410	572	2,180
7	60	36	6	1,760	5,700	27,100	1,390	e 500	1,880
8	60	26	4	1,830	8,370	s 44,100	1,370	489	1,810
9	65	12	2	1,620	3,060	13,400	1,370	326	1,210
10	60	18	3	1,560	1,840	7,750	1,360	396	1,450
11	55	23	3	1,550	1,600	6,700	1,360	505	1,850
12	50	14	2	1,510	1,440	5,870	1,370	392	1,450
13	50	14	2	1,440	1,460	5,660	1,370	590	2,180
14	50	e 18	2	1,410	1,190	4,530	1,370	466	1,720
15	50	e 20	3	1,390	1,400	5,250	1,340	500	1,810
16	55	30	4	1,410	1,220	4,640	1,320	500	1,780
17	60	35	6	1,420	1,120	4,290	1,310	508	1,800
18	65	51	9	1,460	2,100	8,280	1,310	e 500	1,770
19	70	75	14	1,440	2,000	7,780	1,310	422	1,490
20	65	98	17	1,440	1,350	5,250	1,290	468	1,630
21	60	110	18	1,440	1,180	4,590	1,290	402	1,400
22	50	85	11	1,420	1,160	4,450	1,290	352	1,230
23	45	78	9	1,420	1,050	4,030	1,280	374	1,290
24	50	121	16	1,440	988	3,530	1,260	305	1,040
25	50	115	16	1,460	752	2,960	1,240	324	1,080
26	40	81	9	1,460	866	3,490	1,230	336	1,120
27	35	150	14	1,480	799	3,190	1,230	312	1,040
28	40	159	17	1,490	881	3,540	1,200	258	836
29	50	80	11	--	--	--	1,180	350	1,120
30	40	86	9	--	--	--	1,150	e 360	1,120
31	35	50	5	--	--	--	1,140	368	1,130
Total	1,615	--	248	38,688	--	248,600	41,000	--	51,820

Day	April			May			June		
1	1,120	288	871	60	186	30	384	60	62
2	838	362	819	56	169	26	392	80	85
3	652	218	384	53	165	24	416	71	80
4	932	400	1,010	49	166	22	416	78	88
5	1,140	384	1,180	46	132	16	416	80	90
6	1,140	448	1,380	42	114	13	416	62	70
7	1,120	432	1,310	38	96	10	416	56	63
8	1,120	600	1,810	29	82	6	400	64	69
9	1,120	446	1,350	22	85	5	400	58	63
10	1,090	648	1,910	18	85	4	400	58	63
11	1,080	508	1,480	16	76	3	400	78	84
12	604	394	643	14	44	2	400	120	130
13	200	232	125	12	51	2	392	50	53
14	160	182	79	13	46	2	392	55	58
15	137	444	164	14	38	1	392	50	53
16	116	512	160	12	52	2	292	34	36
17	99	140	37	11	17	1	384	39	40
18	91	140	34	9.0	26	1	384	46	48
19	83	140	31	8.3	34	1	376	40	41
20	76	120	25	321	1,090	s 2,640	368	50	50
21	72	130	25	624	1,000	s 2,120	368	63	63
22	69	70	13	392	214	226	384	78	81
23	78	83	17	384	160	166	392	56	59
24	88	141	34	384	150	156	376	70	71
25	91	196	48	384	140	145	368	56	56
26	86	226	52	384	120	124	360	55	53
27	65	262	46	384	112	116	360	130	126
28	65	284	50	384	91	94	353	168	160
29	60	260	42	384	85	88	360	112	109
30	72	202	39	384	66	68	497	e 3,440	s 8,440
31	--	--	--	384	66	68	--	--	--
Total	13,664	--	15,170	5,315.5	--	6,180	11,754	--	10,540

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR ABIQUIU, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	555	8,880	s 17,700	20	1,100	59	922	1,630	s 4,990
2	368	1,000	994	169	7,180	s 15,400	1,140	2,050	6,310
3	368	593	589	118	17,800	s 6,620	1,080	1,050	3,060
4	368	310	317	28	2,200	166	408	640	705
5	392	600	635	16	435	19	384	230	238
6	392	2,100	2,220	8.5	442	10	374	3,330	s 3,500
7	408	1,570	1,730	8.0	250	5	83	618	138
8	467	2,840	3,580	6.5	264	5	53	999	143
9	413	4,400	s 6,330	5.7	203	3	32	1,270	110
10	416	2,280	2,580	3.9	143	2	22	790	47
11	424	6,870	7,860	422	11,800	s 41,200	18	250	12
12	392	2,400	2,540	1,080	10,400	30,300	14	e 150	6
13	1,030	10,500	s 37,400	1,000	5,600	15,100	12	e 150	5
14	500	5,210	s 8,490	1,040	2,300	6,460	10	204	6
15	424	3,200	3,660	1,030	5,600	15,600	10	110	3
16	440	852	1,010	1,080	5,500	16,000	8.5	95	2
17	424	807	924	1,080	1,540	4,490	9.0	546	13
18	376	716	727	1,090	1,390	4,090	28	755	s 105
19	248	800	536	1,060	1,200	3,430	51	596	82
20	94	223	57	1,000	e 1,000	2,700	105	440	125
21	51	588	81	974	e 900	2,370	58	e 380	60
22	44	383	46	587	862	1,370	39	330	35
23	58	411	s 84	392	610	646	31	300	25
24	114	3,690	s 1,420	408	869	957	61	e 800	s 182
25	136	15,000	s 6,720	467	1,180	1,490	90	e 1,660	s 441
26	126	15,900	s 5,550	458	1,030	1,270	36	820	80
27	201	25,700	s 17,300	440	1,100	1,310	23	380	24
28	119	16,100	5,170	432	440	513	17	e 220	10
29	58	3,100	485	432	450	525	12	158	5
30	27	e 700	51	458	417	516	12	168	5
31	22	600	36	432	1,210	1,410	--	--	--
Total	9,455	--	136,800	15,765.6	--	174,000	5,142.5	--	20,470
Total discharge for year (second-foot-days)									151,596.6
Total load for year (tons)									697,300

e Estimated or interpolated.
s Computed by subdividing day.

RIO CHAMA NEAR ABIQUIU, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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. 10, 1949	6:00 p.m.	44	178	421	22	32	41	53	--	80	--	--		--		DSWCM
Oct. 22	10:00 a.m.	541	14,600	4,830	7	12	19	30	--	87	97	99		100		DSWCM
Dec. 10	7:30 a.m.	40	88	264	31	48	64	74	--	--	--	--		--		DWCM
Dec. 20	9:30 a.m.	42	81	302	26	39	56	72	--	--	--	--		--		DWCM
Feb. 3, 1950	1:00 p.m.	1,650	7,260	4,400	10	15	22	26	36	51	76	90		98		BSWCM
Feb. 3	6:00 p.m.	1,890	6,310	3,830	9	12	18	25	38	62	80	90		98		BSWCM
Feb. 7	9:00 a.m.	1,690	6,770	6,420	12	19	26	35	--	62	83	92		97		DSWCM
Feb. 8	9:30 a.m.	1,820	11,400	6,190	10	21	31	41	--	62	87	97		99		DSWCM
Feb. 10	9:00 a.m.	1,560	2,010	6,580	8	13	17	22	--	40	68	93		95		DSWCM
Feb. 20	11:30 a.m.	1,440	1,380	3,110	14	21	29	38	--	55	71	97		99		DSWCM
Mar. 1	10:00 a.m.	1,480	804	--	--	--	--	--	--	33	51	93		100		S
Mar. 10	11:00 a.m.	1,370	250	--	--	--	--	--	--	48	74	96		100		S
Mar. 20	8:00 a.m.	1,310	305	--	--	--	--	--	--	35	56	90		98		S
Mar. 29	11:30 a.m.	1,180	351	--	--	--	--	--	--	30	42	92		99		S
Apr. 1	11:00 a.m.	1,140	305	--	--	--	--	--	--	33	45	87		97		S
May 20	6:00 p.m.	890	3,500	1,740	39	50	66	79	92	99	100	--		--		BWCM
May 23	11:00 a.m.	384	143	1,180	42	53	68	76	--	81	91	99		100		BSWCM
May 23	11:00 a.m.	384	143	1,280	26	39	53	67	77	81	91	99		100		BSNM
July 8	5:30 a.m.	467	3,870	5,990	11	50	68	84	--	--	--	--		--		DWCM
July 9	5:30 a.m.	900	45,500	2,940	23	34	45	55	72	90	99	100		--		BSWCM
July 9	7:00 p.m.	449	6,440	3,050	19	29	40	56	--	87	--	--		--		DSWCM
July 10	8:00 a.m.	392	538	1,640	20	30	42	58	--	94	--	--		--		DSWCM
July 11	7:30 a.m.	476	11,000	6,710	10	23	60	82	--	--	--	--		--		DWCM
July 13	8:30 a.m.	618	12,200	5,630	17	30	49	69	--	99	--	--		--		DSWCM
July 20	8:00 a.m.	105	272	1,010	25	38	53	64	--	85	--	--		--		DSWCM
Aug. 1	2:00 p.m.	20	1,390	5,350	7	25	64	81	--	--	--	--		--		DWCM
Aug. 11	5:00 p.m.	1,100	57,600	3,260	25	36	51	70	90	99	100	--		--		BWCM
Aug. 16	11:00 a.m.	1,030	3,860	3,210	12	17	23	35	--	84	99	100		--		DSWCM
Sept. 1	9:00 a.m.	1,020	2,660	3,000	11	14	18	26	--	83	99	100		--		BSWCM
Sept. 10	10:00 a.m.	22	910	1,760	35	56	68	86	--	--	--	--		--		DWCM

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.

LOCATION.--At gaging station 200 feet downstream from Espanola-Ojo Caliente highway bridge, 2½ miles upstream from mouth, and 2½ miles northwest of Chamita, Rio Arriba County.
DRAINAGE AREA.--3,200 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: October 1947 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 46,400 tons Aug. 12; minimum daily, 0 tons Aug. 2, 8-10.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 83,700 tons May 27, 1948; minimum daily, 0 tons Aug. 2, 8-10, 1950 (revised).
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	102	8,460	2,330	88	123	29	73	53	10
2	75	782	158	83	65	15	71	56	11
3	62	226	38	88	84	20	68	e 90	17
4	55	146	22	75	83	17	64	e 120	21
5	53	153	22	68	68	12	64	135	23
6	49	179	24	68	60	15	57	85	13
7	48	188	24	68	64	12	51	66	9
8	49	260	34	66	98	17	49	101	13
9	60	164	27	66	66	12	49	146	19
10	60	241	39	68	64	12	57	116	18
11	57	216	33	68	66	12	70	90	17
12	57	169	26	78	190	40	60	94	20
13	55	127	19	71	182	35	60	90	15
14	55	96	14	71	104	20	45	104	13
15	55	88	13	75	108	22	35	90	9
16	57	87	13	73	120	24	40	190	21
17	55	106	16	73	98	19	50	130	18
18	60	239	39	83	124	28	55	110	16
19	60	203	33	91	174	43	55	90	13
20	68	195	36	88	242	57	50	80	11
21	71	2,560	491	83	159	36	55	70	10
22	314	6,790	s 11,300	78	e 120	25	45	80	10
23	660	2,700	4,810	80	e 110	24	50	170	23
24	548	1,080	1,600	83	96	22	55	140	21
25	493	1,040	1,380	80	106	23	60	190	31
26	493	926	1,230	83	107	24	60	130	21
27	493	932	1,240	80	96	21	60	140	23
28	508	1,100	1,510	75	164	33	60	130	21
29	458	100	124	78	114	24	60	140	23
30	166	78	35	75	46	9	70	160	30
31	94	92	23	--	--	--	60	160	35
Total	5,490	--	26,700	2,304	--	702	1,798	--	555

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	90	150	36	80	150	32	1,400	e1,520	5,750
2	90	200	49	60	170	28	1,410	e1,050	4,000
3	90	220	53	524	5,580	s18,600	1,410	1,010	3,850
4	90	140	34	1,460	5,400	21,300	1,400	1,270	4,800
5	80	390	84	1,450	2,300	9,000	1,400	1,290	4,880
6	80	270	58	1,800	3,800	16,400	1,390	1,220	4,580
7	90	e180	39	1,800	4,650	22,600	1,370	1,230	4,550
8	100	100	27	1,940	8,300	s45,900	1,360	1,190	4,370
9	100	50	14	1,710	e2,500	11,500	1,340	984	3,560
10	100	100	27	1,630	2,000	8,800	1,330	1,010	3,630
11	100	170	46	1,570	1,900	8,050	1,320	996	3,550
12	90	120	29	1,530	1,800	7,440	1,310	1,210	4,280
13	80	120	26	1,530	1,750	7,230	1,290	1,280	4,390
14	80	100	22	1,490	1,700	6,840	1,280	966	3,340
15	80	70	15	1,460	1,650	6,500	1,260	e786	2,670
16	80	80	17	1,400	1,600	6,050	1,250	890	3,000
17	80	160	35	1,390	1,600	6,000	1,240	e912	3,050
18	90	400	97	1,430	1,800	6,950	1,220	1,070	3,520
19	100	670	181	1,400	2,100	7,940	1,210	1,090	3,560
20	100	820	221	1,400	1,850	6,990	1,190	e1,100	3,530
21	100	820	221	1,410	1,700	6,470	1,160	918	2,880
22	90	840	156	1,400	1,600	6,050	1,140	e982	3,020
23	90	600	146	1,430	1,550	5,980	1,120	e984	2,980
24	90	580	136	1,400	1,400	5,290	1,100	711	2,110
25	90	210	51	1,410	1,500	5,710	1,100	e1,080	3,210
26	80	240	52	1,410	1,650	6,280	1,210	1,360	4,440
27	70	220	42	1,410	e1,700	6,470	1,170	e1,000	3,160
28	70	270	51	1,410	1,800	6,850	1,150	e738	2,290
29	80	340	73	--	--	--	1,130	896	2,730
30	90	320	78	--	--	--	1,090	890	2,620
31	90	200	49	--	--	--	1,070	880	2,540
Total	2,730	--	2,160	38,134	--	273,300	38,820	--	110,800

Day	April			May			June		
1	1,060	650	1,860	166	710	318	358	1,080	1,040
2	890	500	1,200	141	525	200	382	766	790
3	660	495	882	134	475	172	376	700	711
4	879	1,470	s3,890	131	475	168	465	863	1,080
5	1,090	1,620	4,770	131	500	177	430	602	699
6	1,090	2,440	7,180	128	686	237	418	962	1,090
7	1,140	3,600	11,100	124	719	241	412	989	1,100
8	1,230	4,950	16,400	112	445	135	394	938	998
9	1,290	4,720	16,400	86	350	81	382	900	928
10	1,210	4,250	13,900	88	365	87	388	904	947
11	1,180	3,420	10,900	86	375	87	376	594	603
12	767	2,760	5,720	78	505	106	382	512	528
13	406	2,220	2,430	75	454	92	388	541	567
14	376	2,300	2,330	83	479	107	358	550	532
15	376	2,180	2,210	68	338	62	358	687	664
16	352	2,100	2,000	73	262	52	358	642	621
17	300	2,670	2,160	57	239	37	340	448	411
18	358	2,540	2,480	62	280	47	358	443	428
19	340	2,490	2,290	55	250	37	340	452	415
20	322	1,670	1,450	80	488	s276	328	543	481
21	364	1,330	1,310	549	5,280	s8,670	340	508	466
22	437	3,450	4,070	300	1,640	1,330	364	378	371
23	451	3,350	4,080	280	1,000	756	376	386	392
24	424	2,150	2,480	300	968	784	382	646	666
25	340	2,120	1,950	328	1,180	1,040	382	413	426
26	290	1,480	1,160	334	1,220	1,100	358	471	455
27	255	1,510	1,040	334	936	844	358	478	462
28	245	1,990	1,320	376	1,420	1,440	364	405	398
29	202	1,300	709	370	890	889	358	272	263
30	186	958	481	364	1,160	1,140	364	e300	295
31	--	--	--	352	1,020	969	--	--	--
Total	18,510	--	130,100	5,825	--	21,680	11,237	--	18,830

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	575	19,700	s 37,800	2.0	600	3	598	2,960	s 5,840
2	400	3,750	4,050	0	00	0	880	3,950	9,390
3	370	1,200	1,200	145	40,100	s 19,600	951	3,400	8,730
4	364	1,200	1,180	23	9,650	599	522	1,800	s 2,760
5	382	1,390	1,430	3.0	1,000	8	382	1,200	1,240
6	394	1,700	1,810	14	2,820	s 261	454	3,840	4,710
7	382	3,060	3,160	4.3	400	5	187	2,320	s 1,330
8	571	12,800	s 21,200	0	--	0	67	450	81
9	499	7,440	s 13,100	0	--	0	42	613	70
10	460	4,400	s 5,750	0	--	0	34	766	70
11	523	11,500	s 17,200	75	3,290	s 6,240	29	458	36
12	458	7,300	9,030	946	17,400	s 46,400	22	206	12
13	892	10,600	s 44,500	930	8,550	21,500	16	119	5
14	739	16,100	s 37,600	930	4,350	10,900	12	85	3
15	479	8,210	10,600	930	3,200	8,040	10	51	1
16	465	3,400	4,270	1,060	7,300	20,900	7.7	38	1
17	437	2,390	2,820	984	3,500	9,300	6.4	37	1
18	437	2,110	2,490	880	3,590	8,530	9.6	721	s 126
19	383	1,270	1,310	900	3,450	8,380	79	17,400	s 3,970
20	133	411	148	831	3,150	7,070	87	9,430	s 2,700
21	68	224	41	804	2,950	6,400	53	2,480	355
22	42	302	34	634	2,300	3,940	42	4,600	522
23	28	406	31	388	1,640	1,730	35	1,500	142
24	81	1,650	s 415	412	1,700	1,890	51	3,190	s 853
25	53	1,980	s 345	444	1,970	2,360	58	5,900	s 990
26	62	11,200	1,870	400	3,550	3,830	32	1,520	131
27	207	29,400	s 26,000	394	2,810	2,990	18	696	34
28	96	18,900	s 8,400	394	1,900	2,020	11	385	11
29	42	6,500	s 786	382	1,650	1,700	8.4	243	6
30	13	2,800	98	394	1,670	1,780	8.4	183	4
31	4.0	1,950	21	400	1,480	1,600	--	--	--
Total	10,039.0	--	258,700	13,703.3	--	197,700	4,712.5	--	44,120

Total discharge for year (second-foot-days) 153,302.8

Total load for year (tons) 1,085,000

s Computed by subdividing day.

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	8:00 a.m.	71	8,380	710	9	12	28	49	--	94	--	--		--		DSWCM
Oct. 10	8:00 a.m.	62	213	678	34	47	59	82	--	--	--	--		--		DWCM
Oct. 20	7:00 a.m.	73	202	558	13	34	55	79	--	--	--	--		--		DWCM
Nov. 1	7:00 a.m.	89	80	298	8	16	38	60	--	89	--	--		--		DSWCM
Nov. 10	7:00 a.m.	71	65	185	19	25	46	69	--	--	--	--		--		DWCM
Dec. 10	8:30 a.m.	49	167	454	29	47	53	66	--	86	--	--		--		DSWCM
Dec. 20	9:00 a.m.	50	87	272	18	49	64	79	--	--	--	--		--		DWCM
Jan. 20, 1950	9:00 a.m.	100	720	2,470	8	25	39	58	--	91	--	--		--		DSWCM
Feb. 3	5:00 p.m.	795	29,600	12,300	5	6	9	14	25	51	83	97		100		BSWCM
Feb. 3	9:15 p.m.	1,400	14,100	11,000	7	8	11	16	25	45	77	93		100		BSWCM
Feb. 8	11:30 a.m.	2,300	10,500	4,330	20	26	34	42	50	59	75	88		98		BSWCM
Apr. 27	8:20 a.m.	322	2,890	--	--	--	--	--	--	9	37	87		99		S
May 1	7:00 a.m.	170	1,110	--	--	--	--	--	--	9	47	97		100		S
May 23	12:30 p.m.	290	832	3,740	10	12	15	16	19	22	48	92		99		BSWCM
May 23	12:30 p.m.	290	832	3,460	2	4	8	10	13	14	43	91		99		BSN
May 23	12:30 p.m.	290	832	5,320	6	9	12	17	--	23	48	92		99		DSWCM
May 23	12:30 p.m.	290	832	4,290	3	7	10	15	--	21	45	91		99		DSN
June 1	6:30 a.m.	358	1,660	--	--	--	--	--	--	7	26	92		100		S
June 20	6:00 p.m.	300	1,140	--	--	--	--	--	--	15	25	82		94		S
July 1	6:00 a.m.	890	30,500	2,640	63	75	87	95	98	99	99	100		--		BSWCM
July 8	6:30 p.m.	580	17,700	3,260	29	41	59	75	--	98	--	--		--		DSWCM
July 9	6:00 p.m.	760	8,250	7,470	19	30	44	61	--	97	--	--		--		DSWCM
July 10	8:30 a.m.	451	3,080	3,050	20	28	37	50	--	74	82	95		99		DSWCM
July 11	7:30 a.m.	564	11,400	2,990	29	40	58	71	--	98	--	--		--		DSWCM
July 11	6:30 p.m.	437	11,700	4,640	27	45	84	82	--	--	--	--		--		DWCM
July 13	7:30 a.m.	750	18,900	5,070	15	25	40	59	--	91	--	--		--		DSWCM
July 14	9:30 a.m.	560	16,000	3,760	18	29	44	64	--	94	--	--		--		DSWCM
July 15	4:00 p.m.	486	7,180	4,760	15	22	36	47	--	74	89	98		99		DSWCM
July 20	6:30 a.m.	148	467	1,540	21	33	47	61	--	85	--	--		--		DSWCM

RIO GRANDE BASIN--Continued

RIO CHAMA NEAR CHAMITA, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950--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 (second-feet)	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 26, 1950	6:30 a.m.	75	9,130	5,950	21	40	80	94	--	--	--	--		--		DWCM
July 27	1:30 p.m.	141	56,800	3,380	32	45	65	83	--	--	--	--		--		DWCM
July 27	7:45 p.m.	795	81,800	3,130	39	47	54	62	72	82	89	96		99		BSWCM
July 27	12:00 p.m.	275	32,400	3,390	64	72	83	88	93	95	97	99		100		BSWCM
July 28	2:00 p.m.	89	18,700	3,670	36	53	72	86	--	--	--	--		--		DWCM
Aug. 3	3:00 p.m.	97	40,700	2,170	32	50	67	82	--	--	--	--		--		DWCM
Aug. 12	7:00 a.m.	920	20,500	3,110	16	24	31	46	--	93	99	100		--		DSWCM
Aug. 12	7:45 p.m.	822	10,800	2,880	25	28	32	37	51	64	80	97		100		BWCM
Aug. 16	11:45 a.m.	940	18,700	2,410	18	27	38	56	--	84	--	--		--		DSWCM
Aug. 20	1:15 p.m.	880	3,720	5,520	5	7	9	13	--	36	69	97		100		DSWCM
Sept. 1	7:30 p.m.	1,050	4,850	3,730	8	10	13	19	--	56	78	97		100		DSWCM
Sept. 6	8:15 p.m.	424	7,970	2,830	65	70	82	85	87	89	96	100		--		BWCM
Sept. 19	9:20 a.m.	68	23,600	2,840	36	48	62	83	--	--	--	--		--		DWCM
Sept. 20	8:15 a.m.	89	13,200	3,720	36	51	66	85	--	--	--	--		--		DWCM
Sept. 25	8:10 a.m.	57	8,970	5,020	44	80	74	90	--	--	--	--		--		DWCM

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.

LOCATION.--At gaging station in Santo Domingo Pueblo Grant, at highway bridge, 0.3 miles northeast of Domingo, Sandoval County, 2¾ miles east of Santo Domingo Pueblo, and 4 miles upstream from mouth.
DRAINAGE AREA.--640 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: January 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 355,000 tons Aug. 1; minimum daily, 0 tons on many days.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 355,000 tons Aug. 1, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	41	e 15,000	1,660						
2	8	e 10,000	216						
3	2	e 5,000	27						
4	0	--	0						
5	0	--	0						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	0	--	0						
10	0	--	0						
11	0	--	0						
12	0	--	0						
13	0	--	0						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	0	--	0						
23	0	--	0						
24	0	--	0						
25	0	--	0						
26	0	--	0						
27	0	--	0						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	0	--	0						
Total	51	--	1,900	0	--	0	0	--	0

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0	--	0			
2	0	--	0	0	--	0			
3	0	--	0	0	--	0			
4	0	--	0	0	--	0			
5	0	--	0	0	--	0			
6	0	--	0	0	--	0			
7	0	--	0	0	--	0			
8	0	--	0	0	--	0			
9	0	--	0	0	--	0			
10	0	--	0	0	--	0			
11	0	--	0	0	--	0			
12	1	134	0	1	e1,500	4			
13	0	--	0	1	e1,500	4			
14	0	--	0	0	--	0			
15	0	--	0	0	--	0			
16	0	--	0	0	--	0			
17	1	2,020	5	0	--	0			
18	0	--	0	0	--	0			
19	0	--	0	0	--	0			
20	0	--	0	0	--	0			
21	0	--	0	0	--	0			
22	0	--	0	0	--	0			
23	0	--	0	0	--	0			
24	0	--	0	0	--	0			
25	0	--	0	0	--	0			
26	0	--	0	0	--	0			
27	0	--	0	0	--	0			
28	0	--	0	0	--	0			
29	0	--	0	--	--	--			
30	0	--	0	--	--	--			
31	0	--	0	--	--	--			
Total	2	--	5	2	--	8	0	--	0

Day	April			May			June		
1							0	--	0
2							0	--	0
3							23	e12,400	s3,510
4							0	--	0
5							1	33,400	94
6							0	--	0
7							0	--	0
8							0	--	0
9							0	--	0
10							0	--	0
11							65	14,300	s11,500
12							12	22,600	s1,260
13							2	1,900	10
14							0	--	0
15							0	--	0
16							0	--	0
17							0	--	0
18							8	e30,000	648
19							2	e15,000	81
20							1	e4,000	11
21							0	--	0
22							0	--	0
23							0	--	0
24							0	--	0
25							0	--	0
26							0	--	0
27							0	--	0
28							0	--	0
29							0	--	0
30							0	--	0
31							--	--	--
Total	0	--	0	0	--	0	114	--	17,110

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	11	46,500	s 2,210	1,150	64,600	s 355,000			
2	1	7,500	20	893	51,300	s 240,000			
3	0	--	0	33	7,500	668			
4	0	--	0	5	e 1,560	s 33			
5	7	8,700	s 1,320	1	e 1,500	4			
6	11	31,200	927	0	--	0			
7	134	60,500	s 27,700	1	e 1,200	3			
8	73	66,400	s 17,500	0	--	0			
9	0	--	0	0	--	0			
10	0	--	0	0	--	0			
11	127	54,300	s 29,600	0	--	0			
12	0	--	0	2	e 30,000	162			
13	120	37,300	s 20,400	1	e 10,000	27			
14	49	24,000	s 6,870	0	--	0			
15	6	31,000	502	0	--	0			
16	13	26,000	913	0	--	0			
17	0	--	0	0	--	0			
18	0	--	0	0	--	0			
19	0	--	0	0	--	0			
20	0	00	0	0	--	0			
21	110	22,900	s 21,700	0	--	0			
22	957	25,600	s 250,000	0	--	0			
23	186	34,500	s 42,400	0	--	0			
24	533	35,800	s 106,000	0	--	0			
25	2	2,250	17	0	--	0			
26	0	--	--	0	--	0			
27	0	--	--	0	--	0			
28	0	--	--	0	--	0			
29	0	--	--	0	--	0			
30	0	--	--	0	--	0			
31	137	22,600	s 50,400	0	--	0			
Total-	2,477	--	578,500	2,086	--	595,900	0	--	0

Total discharge for year (second-foot-days) 4,732
Total load for year (tons) 1,193,000

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

GALISTEO CREEK AT DOMINGO, N. MEX.--Continued

Particle-size analyses of suspended sediment, June to August 1950
(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 (second-feet)	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	
June 5, 1950	9:30 a.m.	6	61,300	2,120	56	70	91	98	99	100	--	--		--		BWCM
June 5	1:30 p.m.	3	47,900	1,740	57	83	97	100	--	--	--	--		--		BWCM
June 11	7:25 p.m.	306	69,800	1,500	28	39	53	66	75	86	95	99		100		BSWCM
June 12	1:15 p.m.	3	18,800	912	69	88	95	96	--	99	100	--		--		BWCM
July 1	8:05 a.m.	48	120,000	1,180	33	48	64	86	--	--	--	--		--		DWCM
July 2	10:00 a.m.	1	3,670	1,670	47	66	81	96	--	--	--	--		--		DWCM
July 22	7:30 p.m.	4,270	84,900	2,630	12	16	20	29	--	67	89	97		--		DSWCM
Aug. 2	12:30 a.m.	6,750	96,900	1,250	35	39	43	47	53	63	78	91		98		BSWCM
Aug. 2	6:00 a.m.	572	76,600	2,300	15	22	28	41	--	67	87	97		--		DSWCM

JEMEZ RIVER NEAR JEMEZ SPRINGS, N. MEX.

LOCATION.--At gaging station at Battleship Rock, about 500 feet upstream from East Fork, and 5 miles north of Jemez Springs, Sandoval County.
RECORDS AVAILABLE.--Chemical analyses: Monthly samples June 1949 to October 1950 (discontinued).
REMARKS.--Records of discharge for period July to September 1949 and water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million for period June 1949 to October 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
June 28, 1949	--	8.2	173	53	--	17	3.3	17		88	15	2	1.0	1.1	(a)	153	0.21	--	56	0	40
July 21	9.9	7.1	180	53	0.05	18	3.1	15		82	17	2.5	.9	.5	(a)	150	.20	4.0	58	0	37
Aug. 23	8.4	--	198	56	--	19	4.5	16		63	40	2.8	1.0	.4	--	171	.23	3.9	66	14	34
Aug. 31	7.5	--	174	--	--	--	--	--		89	--	3.0	--	--	--	--	--	--	--	--	--
Oct. 20	9.2	--	161	60	--	13	2.4	20		78	15	3.0	1.1	.3	--	153	.21	3.8	42	0	51
Nov. 21	7.3	--	175	--	--	--	--	--		87	--	3.0	--	--	--	--	--	--	--	--	--
Dec. 21	7.5	--	161	--	--	--	--	--		82	--	2.8	--	--	--	--	--	--	--	--	--
Jan. 20, 1950	8.4	--	162	60	--	12	2.2	20		73	15	3.0	1.1	.2	--	150	.20	3.4	39	0	53
Feb. 22	9.9	--	176	58	--	16	3.3	17		73	23	2.5	1.0	.6	--	157	.21	4.2	54	0	41
Mar. 20	24	--	145	38	--	15	4.0	9.2		59	19	2.0	.7	.4	--	117	.16	7.6	54	6	27
Apr. 20	11	--	162	48	--	15	4.5	13		70	20	2.5	.8	.2	--	138	.19	4.1	56	0	33
May 16	7.5	--	169	60	.01	14	2.9	17	3.8	85	13	2.0	1.1	.7	(a)	157	.21	3.2	47	0	41
June 20	5.6	7.8	191	79	.03	15	2.9	23		102	10	2.5	1.0	.6	--	184	.25	2.8	50	0	51
July 20	6.5	--	181	--	--	--	--	--		94	--	--	--	--	--	--	--	--	--	--	--
Aug. 21	6.3	--	174	--	--	--	--	--		90	--	5.0	--	--	--	--	--	--	--	--	--
Sept. 11	7.3	--	165	--	--	--	--	--		88	--	2.5	--	--	--	--	--	--	--	--	--
Oct. 10	--	--	169	60	--	--	--	--		87	--	--	1.2	--	--	--	--	--	--	--	--

a Less than 0.1 part per million of boron.

JEMEZ RIVER ABOVE RIO GUADALUPE NEAR JEMEZ, N. MEX.

LOCATION.--Just above mouth of Rio Guadalupe about three-fourths of a mile upstream from gaging station and 4 miles north of Jemez, Sandoval County.
RECORDS AVAILABLE.--Chemical analyses: June 1949 to October 1950 (discontinued).
EXTREMES, 1949-50.--Dissolved solids: Maximum, 587 ppm June 11-14, 16-18, 20; minimum, 256 ppm Apr. 1-10.
Hardness: Maximum, 174 ppm Dec. 11-20; minimum, 92 ppm Apr. 1-10.
EXTREMES, June 1949 to October 1950.--Dissolved solids: Maximum, 587 ppm June 11-14, 16-18, 20, 1950; minimum, 256 ppm Apr. 10, 1950.
Hardness: Maximum, 174 ppm Dec. 11-20, 1949; minimum, 92 ppm Apr. 1-10, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. No discharge records available for this station.

Chemical analyses, in parts per million, June 1949 to October 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
June 28-30, 1949...		8.2	781	54	0.03	43	6.1	114		220	18	126	1.2	0.3	--	471	0.64		132	0	65
July 1-9.....		8.3	723	51	.02	40	7.0	93	14	202	17	118	1.2	.3	0.72	441	.60		129	0	58
July 11-20.....		8.1	603	47	.04	38	6.1	69	10	177	18	90	2.0	.6	.66	368	.50		120	0	53
July 21-31.....		8.2	538	45	.06	33	5.3	60	11	161	15	80	2.0	.5	.55	331	.45		104	0	52
Aug. 1-9.....		8.1	594	58	.04	40	6.1	68	13	197	16	87	1.0	.5	.53	387	.53		125	0	51
Aug. 11-20.....		8.2	710	57	.03	38	5.9	92	16	196	16	121	1.2	.4	1.0	444	.60		120	0	59
Aug. 21-29, 31		8.1	751	59	.02	34	6.3	104	17	190	17	135	1.2	.4	1.1	468	.64		111	0	63
Sept. 1-8, 10.....		8.1	774	59	.02	36	6.4	104	17	201	16	137	1.2	.4	1.1	476	.65		116	0	62
Sept. 11-20.....		8.2	747	58	.02	36	6.1	101	16	197	16	132	1.2	.4	1.0	464	.63		115	0	62
Sept. 21-30.....		8.1	741	64	.02	38	6.0	91	18	212	17	120	1.2	.4	1.0	460	.63		120	0	58
Oct. 1-5, 7-10		7.9	701	59	.02	39	6.0	92	16	202	16	110	1.1	.2	.94	439	.60		122	0	58
Oct. 11-20		8.2	711	58	.02	42	5.9	89	16	207	15	113	1.2	.1	.95	442	.60		130	0	56
Oct. 21-24, 26-31..		8.1	733	54	.04	49	5.8	93	16	227	16	112	1.1	.1	1.0	459	.62		146	0	55
Nov. 1-9.....		8.2	773	57	.02	51	6.2	96	16	241	15	120	1.2	.1	.97	481	.65		152	0	55
Nov. 11-20.....		8.2	751	57	.02	50	5.9	93	15	234	16	112	1.2	.2	.92	466	.63		150	0	55
Nov. 21-30.....		8.0	749	56	.03	49	5.9	92	16	233	16	114	1.2	.2	.91	465	.63		147	0	54
Dec. 1-10.....		8.0	724	57	.03	48	6.0	89	15	228	14	109	1.2	.2	1.0	452	.61		150	0	54
Dec. 11-20.....		8.0	910	57	.03	58	7.2	112	17	267	18	146	1.2	.2	.98	548	.75		174	0	55
Dec. 21-24, 26-28, 31.....		8.0	770	55	.04	51	5.9	90	15	241	16	115	1.2	.2	.88	468	.64		152	0	53
Jan. 1-6, 8-10, 1950		8.1	870	56	.04	56	6.3	104	18	266	17	135	1.2	.2	.93	525	.71		166	0	55
Jan. 11-20.....		8.2	828	53	.03	54	6.2	99	16	253	16	126	1.2	.2	.99	496	.67		160	0	54
Jan. 21-31		8.0	746	55	.04	49	5.9	89	15	226	16	112	1.1	.4	.83	454	.62		147	0	54
Feb. 1-10.....		8.0	687	56	.05	46	5.8	81	13	212	16	100	1.1	.4	.75	423	.58		139	0	53
Feb. 11-18, 20		8.1	643	55	.05	44	5.2	75	12	200	17	93	1.0	.5	.74	402	.55		132	0	53
Feb. 21-28.....		--	573	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--

Mar. 1, 3-10.....		7.8	470	40	.01	36	4.4	53	9.8	146	17	68	.9	.4	.48	302	.41		108	0	49
Mar. 11-18, 20....		7.7	480	40	.07	34	4.5	52	9.4	146	17	64	.9	.4	.48	294	.40		104	0	49
Mar. 21-31		8.1	427	38	.10	31	5.0	46	9.2	136	17	55	.9	.4	.41	270	.37		98	0	48
Apr. 1-10.....		8.0	407	38	.10	29	4.9	44	8.2	125	16	52	.9	.5	.37	256	.35		92	0	48
Apr. 11-20.....		8.0	534	46	.13	35	5.2	65	10	165	17	75	.9	.3	.52	336	.46		109	0	54
Apr. 21-23, 25-30		8.2	708	58	.02	44	6.7	85	14	211	18	108	1.1	.4	.95	439	.60		133	0	54
May 1-3, 7-10.....		8.0	794	59	.01	46	6.7	99	16	223	18	128	1.2	.5	1.1	484	.66		142	0	57
May 11-14, 16, 17, 19, 20.....		8.0	826	56	.01	44	6.9	107	16	223	17	139	1.2	.4	1.2	498	.68		139	0	59
May 21-25, 27-31..		7.9	889	56	.01	43	7.4	119	18	226	18	155	1.3	.6	1.2	529	.72		138	0	62
June 1-4, 7-10		7.8	865	55	.01	38	7.8	119	19	205	19	155	1.3	.7	1.5	516	.70		127	0	63
June 11-14, 16-18, 20		7.7	988	54	.01	37	8.2	142	27	224	21	185	1.4	1.4	1.5	587	.80		126	0	66
June 21-25, 27-30..		8.1	930	61	.01	36	8.6	132	21	216	18	175	1.3	1.7	1.4	561	.76		126	0	65
July 1-6, 8-10.....		8.1	824	60	.02	41	7.4	111	17	217	16	144	1.3	.4	1.2	505	.69		133	0	61
July 12-16, 18-20..		8.1	743	59	.02	43	6.5	95	15	211	15	121	1.1	.2	1.0	460	.63		134	0	57
July 21-26, 28-31..		8.2	712	56	.02	38	6.0	94	15	194	14	121	1.2	.3	1.0	442	.60		120	0	60
Aug. 1-4, 6-10		8.2	785	57	.03	42	7.1	102	16	215	15	132	1.1	.4	1.2	479	.65		134	0	59
Aug. 11-20.....		7.9	806	68	.01	32	7.1	113	19	196	14	148	1.3	.4	1.2	500	.68		109	0	65
Aug. 21-31.....		7.9	854	61	.01	34	6.9	121	19	198	17	160	1.3	1.1	1.3	519	.71		114	0	66
Sept. 1-7, 9-10....		8.0	848	61	.01	35	7.3	120	19	203	16	160	1.3	.9	1.3	521	.71		118	0	65
Sept. 11-15, 17....		7.9	871	63	.01	40	7.4	119	19	217	16	158	1.3	.6	1.3	531	.72		130	0	63
Sept. 21-22,24-28,30		8.0	777	58	.01	48	6.6	95	18	235	18	125	1.2	.2	1.0	480	.65		147	0	55
Oct. 1-2, 4-5, 10..		--	817	62	--	47	7.3	120		219	16	138	1.3	.1	--	508	.69		148	0	64

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR JEMEZ, N. MEX.

LOCATION.--At gaging station in Canon de San Diego Grant, 0.7 mile downstream from Rio Guadalupe, and 3½ miles north of Jemez, Sandoval County.
RECORDS AVAILABLE.--Chemical analyses: Monthly samples June 1949 to October 1950 (discontinued).
REMARKS.--Records of discharge for period August to September 1949 and water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, June 1949 to October 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Noncarbonate	
June 14, 1949 ...	--	7.7	399	34	--	42	6.0	38		171	16	37	1.6	0.2	0.10	259	0.35	--	130	0	39
June 28.....	--	8.2	519	38	--	48	7.4	56		174	15	59	.8	.2	.6	328	.45	--	150	0	45
July 18	--	8.0	543	41	0.02	43	6.4	64		178	16	68	.9	.1	--	335	.46	--	134	0	51
July 21	--	8.2	546	46	.03	38	5.7	70		170	14	73	1.0	.2	.5	339	.46	--	118	0	56
Aug. 2	--	--	557	--	--	47	6.3	63		210	14	65	1.2	.6	--	300	.41	--	144	0	49
Aug. 23	18	--	693	--	--	--	--	--		245	--	93	--	--	--	--	--	--	--	--	--
Aug. 31	17	--	696	54	--	52	8.5	86		235	17	94	--	.1	--	432	.59	20	164	0	53
Sept. 22	20	--	674	--	--	--	--	--		229	--	95	--	--	--	--	--	--	--	--	--
Oct. 20	26	--	612	--	--	--	--	--		205	--	76	--	--	--	--	--	--	--	--	--
Nov. 21	26	--	630	--	--	--	--	--		233	--	79	--	--	--	--	--	--	--	--	--
Dec. 20	23	--	660	--	--	--	--	--		228	--	86	--	--	--	--	--	--	--	--	--
Jan. 20, 1950....	26	--	607	--	--	--	--	--		211	--	75	--	--	--	--	--	--	--	--	--
Feb. 22	34	--	531	45	--	46	5.5	60		182	16	63	.9	.4	--	334	.45	31	--	0	49
Mar. 20	67	--	335	31	--	32	5.2	30		127	13	34	.7	.3	--	209	.28	38	102	0	39
Apr. 20	88	--	273	22	--	32	4.5	20		120	8.6	23	.6	.3	--	170	.23	40	98	0	30
May 16	31	7.9	512	39	.03	56	8.5	47		205	31	53	.6	.4	--	337	.46	28	174	6	--
June 20	12	7.8	766	52	.04	47	6.0	107		257	15	104	1.0	.3	--	459	.62	15	142	0	62
July 20	15	--	825	--	--	--	--	--		261	--	124	--	--	--	--	--	--	--	--	--
Aug. 21	13	--	808	--	--	--	--	--		242	--	120	--	--	--	--	--	--	--	--	--
Sept. 11	16	--	794	--	--	--	--	--		236	--	113	--	--	--	--	--	--	--	--	--
Oct. 10	--	--	683	--	--	--	--	--		207	--	92	--	--	--	--	--	--	--	--	--

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.

LOCATION.--At gaging station about 2 miles upstream from mouth and 6.2 miles north of Bernalillo, Sandoval County.
DRAINAGE AREA.--1,040 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: April 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 98, 100 tons Sept. 20; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 98,100 tons Sept. 20, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Papers 1178 and 1212.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	4	25,500	275	7	3,800	72	34	1,920	176
2	3	18,500	150	13	4,000	140	28	2,090	158
3	2	13,400	72	24	5,300	343	28	1,980	150
4	0	--	0	20	4,200	227	24	1,350	87
5	40	36,200	s5,890	19	4,870	250	20	1,050	57
6	14	18,000	680	18	2,200	107	24	1,780	115
7	8	9,800	212	14	2,040	77	17	e1,850	85
8	0	--	0	10	2,720	73	14	e1,800	68
9	7	9,080	s408	8	4,960	107	14	e1,250	47
10	0	--	0	4	7,270	79	17	500	23
11	8	12,700	274	5	8,740	118	8	348	8
12	9	9,500	231	6	12,400	s236	1	311	1
13	7	8,000	151	8	6,500	140	0	--	0
14	4	10,500	113	8	5,700	123	0	--	0
15	6	14,000	227	14	e3,500	132	1	e350	1
16	6	8,100	131	15	1,830	74	1	317	1
17	4	6,000	65	16	1,910	83	2	297	2
18	4	7,500	81	14	3,130	118	2	309	2
19	2	8,600	46	11	e3,000	89	4	272	3
20	11	9,500	282	12	e3,000	97	2	195	1
21	12	10,500	340	10	e2,900	78	1	201	1
22	12	9,500	308	11	2,550	76	0	--	0
23	17	9,600	441	14	2,110	80	0	--	0
24	18	9,500	462	20	2,300	124	1	398	1
25	14	8,500	321	24	2,000	130	2	295	2
26	15	7,000	284	26	1,670	117	2	268	1
27	24	6,040	391	25	3,180	215	1	419	1
28	14	5,500	208	25	3,570	241	1	e1,200	3
29	2	3,410	18	34	3,540	325	1	2,280	6
30	0	--	0	35	2,580	244	2	2,250	12
31	2	e2,000	11	--	--	--	3	3,400	28
Total	269	--	12,070	470	--	4,320	255	--	1,040

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	4	4,160	45	5	2,350	32	54	1,300	190
2	3	4,640	38	6	4,200	68	62	1,900	318
3	0	--	0	10	e4,050	109	62	3,100	519
4	0	--	0	12	3,030	98	32	2,300	199
5	0	--	0	10	2,590	70	29	2,500	196
6	0	--	0	12	2,700	87	30	10,400	842
7	0	--	0	19	2,320	119	22	7,100	422
8	0	--	0	24	2,560	166	18	2,900	141
9	2	650	4	24	3,310	214	29	1,750	137
10	4	850	9	23	4,050	252	22	2,380	141
11	4	394	4	25	4,900	331	19	2,400	123
12	3	316	3	34	4,950	454	23	2,750	171
13	3	312	3	40	3,890	420	22	1,180	70
14	2	237	1	32	3,910	338	19	1,080	55
15	0	--	0	22	3,750	223	12	2,050	66
16	0	--	0	24	3,600	233	8	1,650	36
17	1	330	1	15	2,000	81	14	1,600	60
18	5	2,270	31	23	1,950	121	18	1,670	81
19	10	3,000	81	32	3,400	294	24	1,520	98
20	12	2,740	89	35	3,000	284	20	2,000	108
21	10	2,490	67	32	3,140	270	18	1,840	89
22	12	2,700	87	22	3,500	208	28	1,770	134
23	12	1,900	62	19	3,950	203	24	1,870	121
24	7	2,350	44	25	3,050	206	19	1,300	67
25	6	3,850	62	29	2,020	158	14	1,370	52
26	8	4,600	99	35	1,450	137	23	2,800	174
27	6	e4,050	66	45	1,600	194	25	3,800	256
28	8	e3,500	76	52	1,950	274	9	1,500	36
29	10	2,800	76	--	--	--	8	1,680	36
30	10	2,450	66	--	--	--	14	e1,600	60
31	8	1,800	39	--	--	--	15	2,350	95
Total	150	--	1,050	686	--	5,640	736	--	5,090

Day	April			May			June		
1	18	e2,820	137	22	2,750	163			
2	34	2,850	262	13	1,700	60			
3	34	e2,250	207	7	1,000	19			
4	32	1,740	150	2	e1,300	7			
5	35	1,950	184	2	1,600	9			
6	40	1,800	194	24	1,450	94			
7	52	2,600	365	17	1,020	47			
8	65	5,450	956	13	450	16			
9	60	e4,350	705	5	e250	3			
10	62	3,550	594	0	--	0			
11	68	3,100	569	0	--	0			
12	68	e3,850	707	0	--	0			
13	104	6,600	1,850	0	--	0			
14	108	6,200	1,810	0	--	0			
15	108	3,050	888	0	--	0			
16	114	3,250	1,000	0	--	0			
17	82	3,650	808	0	--	0			
18	58	3,900	611	0	--	0			
19	56	3,250	491	0	--	0			
20	73	3,550	700	0	--	0			
21	70	3,900	737	0	--	0			
22	87	3,350	787	0	--	0			
23	68	e2,700	496	0	--	0			
24	56	5,200	786	0	--	0			
25	47	3,100	393	0	--	0			
26	40	2,700	292	0	--	0			
27	32	2,150	186	0	--	0			
28	30	1,550	126	0	--	0			
29	25	1,250	84	0	--	0			
30	23	1,240	77	0	--	0			
31	--	--	--	0	--	0			
Total	1,749	--	17,150	105	--	418	0	--	0

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO,,N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0	--	0	0	--	0
2	0	--	0	4	8,620	s405	0	--	0
3	0	--	0	0	--	0	0	--	0
4	0	--	0	0	--	0	0	--	0
5	0	--	0	0	--	0	0	--	0
6	0	--	0	0	--	0	0	--	0
7	0	--	0	0	--	0	0	--	0
8	0	--	0	0	--	0	0	--	0
9	0	--	0	0	--	0	0	--	0
10	0	--	0	0	--	0	0	--	0
11	0	--	0	0	--	0	0	--	0
12	0	--	0	0	--	0	0	--	0
13	0	--	0	0	--	0	0	--	0
14	0	--	0	0	--	0	0	--	0
15	0	--	0	0	--	0	0	--	0
16	0	--	0	0	--	0	0	--	0
17	0	--	0	0	--	0	0	--	0
18	0	--	0	0	--	0	0	--	0
19	0	--	0	0	--	0	309	65,300	s93,100
20	0	--	0	0	--	0	167	66,700	s98,100
21	2	e8,500	s1,180	0	--	0	30	25,000	2,020
22	12	56,500	s2,890	0	--	0	25	16,000	1,080
23	9	29,500	s1,070	0	--	0	10	13,000	351
24	3	8,000	65	0	--	0	20	11,000	594
25	0	--	0	0	--	0	79	28,000	5,970
26	0	--	0	0	--	0	25	18,500	1,250
27	0	--	0	0	--	0	15	9,380	380
28	0	--	0	0	--	0	10	7,460	201
29	0	--	0	0	--	0	6	4,850	79
30	0	--	0	0	--	0	8	5,000	108
31	0	--	0	0	--	0	--	--	--
Total	26	--	5,200	4	--	405	a704	--	203,200

Total discharge for year (second-foot-days) 5,154
Total load for year (tons) 255,600

e Estimated or interpolated.
s Computed by subdividing day.
a Daily discharges for period Sept. 21-30 have been revised and are shown in Water-Supply Paper 1212.

RIO GRAND BASIN--Continued

JEMEZ RIVER NEAR BERNALILLO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	5:00 p. m.	14	12,300	2,680	25	41	56	68	--	83	--	--		--		DSWCM
Nov. 1	11:00 a. m.	9	2,260	3,830	25	38	54	70	--	94	--	--		--		DSWCM
Nov. 10	10:00 a. m.	5	6,570	1,380	60	72	86	97	98	99	100	--		--		BWCM
Dec. 1	3:00 p. m.	26	1,750	5,190	4	14	29	47	--	91	96	98		100		DSWCM
Dec. 10	12:00 m.	20	379	1,140	34	53	72	88	--	--	--	--		--		DWCM
Dec. 20	1:00 p. m.	2	204	661	39	41	54	66	--	96	--	--		--		DSWCM
Jan. 1, 1950	1:00 p. m.	4	2,700	2,080	34	44	63	82	95	99	100	--		--		BWCM
Jan. 10	1:00 p. m.	4	723	2,810	21	32	42	58	--	84	--	--		--		DSWCM
Jan. 20	4:00 p. m.	15	2,850	5,170	17	28	39	57	--	95	--	--		--		DSWCM
Feb. 1	4:00 p. m.	9	2,720	2,000	32	40	52	70	81	90	95	--		--		BWCM
Feb. 10	1:00 p. m.	25	3,560	4,720	12	17	24	37	--	72	88	99		--		DSWCM
Feb. 20	1:00 p. m.	38	3,660	10,400	10	15	19	26	--	55	82	99		100		DSWCM
Feb. 23	12:10 p. m.	43	3,800	3,360	21	26	34	45	61	74	94	100		--		BSWCM
Mar. 1	5:00 p. m.	54	1,150	3,960	21	30	64	77	--	--	--	--		--		DWCM
Mar. 10	10:30 a. m.	26	2,490	1,840	20	28	40	54	77	88	97	99		100		BSWCM
Apr. 10	9:00 a. m.	56	4,120	3,760	11	16	23	34	--	76	91	99		--		DSWCM
Apr. 18	11:00 a. m.	87	4,010	2,780	25	31	40	54	66	79	97	100		--		BSWCM
May 1	12:10 p. m.	29	3,840	4,460	17	23	31	41	--	77	95	100		--		DSWCM
July 22	12:00 p. m.	84	86,600	2,250	52	62	74	32	85	90	94	--		--		BWCM
Aug. 2	7:00 p. m.	41	49,300	2,010	29	39	55	73	--	93	--	--		--		DSWCM
Sept. 19	12:10 p. m.	206	91,100	3,540	37	55	71	87	--	--	--	--		--		DWCM
Sept. 20	1:20 a. m.	6,430	162,000	2,300	22	29	35	42	50	56	70	94		100		BSWCM
Sept. 20	7:50 a. m.	290	71,800	4,260	30	43	56	70	--	85	--	--		--		DSWCM
Sept. 25	12:00 m.	80	26,800	1,660	34	46	60	76	--	--	--	--		--		DWCM

EAST FORK JEMEZ RIVER NEAR JEMEZ SPRINGS, N. MEX.

LOCATION.--At gaging station 200 feet upstream from mouth, at Battleship Rock, 4 miles north of Jemez Springs, Sandoval County.
RECORDS AVAILABLE.--Chemical analyses: Monthly samples June 1949 to October 1950 (discontinued).
REMARKS.--Records of discharge for period August to September 1949 and for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, June 1949 to October 1950

Date of collection	Mean discharge (second-feet)	Temperature (° F)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
June 28, 1949	--		8.4	117	47	--	11	3.1	11		68	5.3	1.0	0.8	0.2	(a)	113	0.15	--	40	0	38
July 21	--		7.7	117	43	0.04	11	2.7	9.2	3.5	66	5.1	1.2	.8	.3	(a)	109	.15	--	38	0	32
Aug. 23	5.2		--	122	--	--	--	--	--	--	68	--	2.5	--	--	--	--	--	--	--	--	--
Aug. 31	5.2		--	127	54	--	10	3.2	14		74	4.0	2.0	--	.1	--	124	.17	1.7	38	0	44
Oct. 20	8.0		--	115	54	--	9.0	2.4	15		65	5.6	2.5	.7	.2	--	121	.16	2.6	32	0	50
Nov. 21	5.7	68	--	118	--	--	--	--	--		67	--	2.2	--	--	--	--	--	--	--	--	--
Dec. 20	5.5		--	117	--	--	--	--	--		68	--	2.2	--	--	--	--	--	--	--	--	--
Jan. 20, 1950	5.2		--	140	58	--	8.6	2.7	15		67	4.3	3.0	.8	.5	--	126	.17	1.8	32	0	51
Feb. 22	6.3		--	115	57	--	10	2.7	11		63	3.5	2.0	.8	.7	--	119	.16	2.0	36	0	40
Mar. 20	21		--	83.8	30	--	7.6	3.9	5.1		47	3.9	1.0	.6	.5	--	76	.10	4.3	35	0	24
Apr. 20	8.3		--	110	42	--	11	4.1	6.0		60	4.9	1.5	.6	.3	--	100	.14	2.2	44	0	23
May 16	5.7		7.4	124	52	.01	9.1	3.1	12	4.2	69	3.4	1.8	.7	.3	(a)	121	.16	1.9	35	0	39
June 20	4.2		7.4	136	60	.04	9.8	3.0	16		76	3.2	2.0	.8	.7	--	133	.18	1.5	37	0	48
July 20	5.2		--	125	--	--	--	--	--		71	--	--	--	--	--	--	--	--	--	--	--
Aug. 21	5.0		--	122	--	--	--	--	--		72	--	2.0	--	--	--	--	--	--	--	--	--
Sept. 11	5.2		--	121	--	--	--	--	--		73	--	2.0	--	--	--	--	--	--	--	--	--
Oct. 10	--		--	124	53	--	--	--	--		69	--	--	.9	--	--	--	--	--	--	--	--

a Less than 0.1 part per million of boron.

302334 O - 54 - 26

RIO GRANDE BASIN--Continued

RIO GUADALUPE AT MOUTH NEAR JEMEZ SPRINGS, N. MEX.

LOCATION.--About 300 feet above confluence with Jemez River, 3 miles downstream from gaging station near Jemez Springs, Sandoval County.
RECORDS AVAILABLE.--Chemical analyses: June 1949 to September 1950 (discontinued).
EXTREMES, 1949-50.--Dissolved solids: Maximum, 295 ppm July 11-16, 18-20; minimum, 103 ppm Apr. 21-29.
Hardness: Maximum, 186 ppm July 11-16, 18-20; minimum, 72 ppm Apr. 21-29.
EXTREMES, June 1949 to September 1950.--Dissolved solids: Maximum, 295 ppm July 11-16, 18-20, 1950; minimum, 103 ppm Apr. 21-29, 1950.
Hardness: Maximum, 186 ppm July 11-16, 18-20, 1950; minimum, 72 ppm Apr. 21-29, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Discharge records for gaging station near Jemez Springs for water years October 1948 to September 1949 and October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, June 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
June 14, 1949	--	8.1	260	25	--	42	5.6	11		162	14	2	0.8	0.2	0.02	180	0.24	--	128	0	16
June 28-30	--	8.2	413	35	0.03	48	5.7	34		192	13	31	.7	.4	.1	262	.36	--	144	0	34
July 1-9	--	7.9	391	34	.03	50	6.6	22	4.2	209	10	17	.7	.6	.13	248	.34	--	152	0	23
July 11-20	--	7.9	319	30	.02	45	6.3	13	4.8	182	8.6	7.0	.5	.4	.11	205	.28	--	138	0	16
July 21-31	--	8.0	310	26	.03	44	6.2	13	3.6	182	8.3	7.0	.6	.4	.02	199	.27	--	136	0	17
Aug. 1-9	--	7.8	309	29	.02	46	6.0	13	4.4	188	7.4	5.0	.5	.6	.00	205	.28	--	140	0	16
Aug. 11-20	11.1	8.0	286	34	.02	44	5.4	12	3.6	178	7.1	3.5	.6	.4	.01	198	.27	5.9	132	0	16
Aug. 21-29, 31	9.89	8.0	285	33	.02	43	5.4	13	3.2	177	6.7	4.0	.6	.3	.03	196	.27	5.2	130	0	18
Sept. 1-8, 10	9.98	8.0	309	37	.02	45	5.8	15	4.0	188	7.6	6.5	.6	.4	.05	215	.29	5.8	136	0	19
Sept. 11-20	11.2	7.9	319	35	.02	46	5.7	16	4.0	189	7.7	7.5	.6	.3	.00	216	.29	6.5	138	0	20
Sept. 21-22, 25, 27-30	10.7	7.9	293	34	.01	43	5.1	13	3.0	177	7.1	4.5	.6	.4	.34	198	.27	5.7	128	0	18
Oct. 1-2, 4-10	10.3	8.0	309	33	.02	44	5.2	15	4.0	185	7.3	5.5	.6	.1	.06	206	.28	5.7	132	0	19
Oct. 11-20	10.2	8.1	208	34	.01	45	5.7	14	2.8	188	7.6	4.8	.6	.1	.05	207	.28	5.7	136	0	18
Oct. 21-30	11.0	8.1	290	32	.02	43	5.0	13	3.0	176	6.8	5.0	.6	.1	.10	195	.27	5.8	128	0	18
Nov. 1-10	10.0	8.1	293	32	.02	43	4.8	14	2.6	178	7.3	4.5	.6	.1	.03	197	.27	5.3	127	0	19
Nov. 11-20	9.80	8.1	289	32	.02	42	5.0	14	2.6	174	7.3	5.0	.6	.3	.06	195	.27	5.2	126	0	19
Nov. 21-30	9.73	8.0	303	33	.02	45	5.2	14	1.8	181	7.7	5.0	.6	.2	.07	202	.27	5.3	134	0	18
Dec. 1-6, 8-10	9.95	8.1	293	33	.04	44	5.2	14	2.0	179	7.5	4.5	.6	.2	.08	199	.27	5.3	132	0	19
Dec. 11-20	6.80	8.1	341	34	.04	50	6.0	16	2.6	202	9.3	6.2	.7	.2	.07	225	.31	4.1	150	0	19
Dec. 21-23, 26-31	7.96	7.9	318	34	.03	46	4.9	15	3.2	189	7.9	6.0	.6	.1	.07	211	.29	4.5	135	0	19
Jan. 2-7, 1950	8.21	7.6	289	29	.04	40	4.3	13	5.6	167	7.7	5.5	.6	.2	.07	188	.26	4.2	118	0	19
Jan. 8-20	7.48	7.7	278	33	.03	60	7.7	22	4.2	246	11	12	.7	.2	.09	272	.37	5.5	181	0	20
Jan. 21-31	9.92	7.9	323	35	.03	47	5.8	14	3.0	194	8.0	5.0	.6	.4	.01	215	.29	5.8	142	0	17
Feb. 1-10	12.0	7.8	296	35	.04	44	5.2	13	2.8	176	7.1	4.8	.6	.4	.0	200	.27	6.5	132	0	17
Feb. 11-20	12.9	7.8	267	30	.07	40	4.8	12	3.4	161	6.4	4.0	.5	.4	.04	181	.25	6.3	120	0	17
Feb. 21-28	16.2	8.0	276	27	.02	42	4.9	11	3.6	168	6.3	4.0	.6	.6	.04	183	.25	8.0	125	0	16

Mar. 1-10	16.3	7.9	272	25	.02	42	4.9	11	3.4	167	6.3	3.8	.5	.4	.05	179	.24	7.9	125	0	16
Mar. 11-18, 20.....	14.9	8.0	333	28	.02	50	6.6	14	3.6	201	8.2	5.5	.6	.4	.26	216	.29	8.7	152	0	16
Mar. 21-31	17.5	7.9	293	27	.02	44	5.0	12	3.0	176	5.7	4.5	.5	.2	.03	189	.26	8.9	130	0	16
Apr. 1-4, 7-10.....	38.5	7.8	236	21	.04	37	4.0	8.3	2.4	142	6.7	2.8	.5	.4	.03	153	.21	16	109	0	14
Apr. 11-14, 17-20..	56.1	7.9	182	22	.04	29	3.1	6.7	1.8	109	5.9	2.0	.4	.3	.02	125	.17	19	85	0	14
Apr. 21-29.....	75.9	7.5	158	15	.05	25	2.2	4.7	3.2	91	5.2	1.5	.3	.5	.08	103	.14	21	72	0	12
May 1-10	35.6	7.5	204	19	.02	32	3.0	6.8	2.4	118	6.4	2.5	.3	.5	.10	131	.18	13	92	0	14
May 11-13, 16-20 ..	21.3	7.8	280	25	.02	41	4.7	9.9	3.4	157	7.4	8.0	.5	.4	.17	177	.24	10	122	0	15
May 21-31	15.0	7.9	328	29	.02	47	6.0	14	3.4	191	8.2	7.0	.6	.4	--	210	.29	8.5	142	0	17
June 1-3, 5-10	11.6	8.0	320	30	.02	45	6.2	14	3.8	190	7.9	6.5	.6	.3	--	208	.28	6.5	138	0	18
June 11-14, 16-18, 20	6.96	7.8	349	32	.01	48	6.7	18	5.2	202	9.0	8.5	.7	.3	.19	227	.31	4.3	148	0	19
June 21-25, 27-30 ..	4.50	8.0	409	33	.02	52	8.3	23	4.4	225	11	14	.7	.5	.13	258	.35	3.1	164	0	23
July 1-9	3.25	7.9	464	33	.01	58	9.5	28	4.4	248	12	22	.7	.9	.09	291	.40	2.6	184	0	24
July 11-16, 18-20...	4.24	7.9	475	34	.02	59	9.4	28	4.8	252	12	22	.7	1.2	.16	295	.40	3.4	186	0	24
July 21-31	4.83	7.9	463	32	.02	58	9.1	29	5.2	246	12	22	.7	.5	.11	290	.39	3.8	182	0	25
Aug. 1-5, 7-10.....	4.75	7.9	421	32	.02	56	9.1	22	4.2	240	11	12	.7	.3	.06	265	.36	3.4	177	0	21
Aug. 11-20.....	4.77	7.8	391	33	.01	51	8.0	22	4.6	220	11	12	.6	.3	.11	251	.34	3.2	160	0	22
Aug. 21-31.....	4.24	7.7	416	33	.00	53	8.6	23	4.6	229	11	15	.7	.6	.09	262	.36	3.0	168	0	22
Sept. 1-7, 9-10.....	4.99	7.7	412	34	.01	55	8.7	23	4.8	235	11	13	.7	.5	.15	267	.36	3.6	173	0	22
Sept. 11-15, 17-19 .	7.48	7.7	399	33	.00	54	8.3	21	4.4	229	9.5	11	.7	.4	.07	255	.35	5.1	168	0	21
Sept. 21-22, 24-28, 30	8.90	7.7	373	33	.01	54	7.2	17	4.6	220	7.6	8.0	.7	.4	.04	241	.33	5.8	164	0	18
Weighted average .	14.2	--	270	26	0.03	40	4.7	12	3.1	158	7.1	5.1	0.5	0.4	0.07	177	0.24	68	120	0	17

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.

LOCATION.--A quarter of a mile upstream from mouth of Chico Arroyo, 4½ miles southwest of Cabezon, Sandoval County, and 5¼ miles downstream from gaging station at Cabezon.
DRAINAGE AREA.--397 square miles (above gaging station).
RECORDS AVAILABLE.--Sediment records: April 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 155,000 tons Sept. 19; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 155,000 tons Sept. 19, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for gaging station at Cabezon for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1	6,400	17						
2	0		0						
3	0		0						
4	0		0						
5	0		0						
6	0		0						
7	0		0						
8	0		0						
9	0		0						
10	0		0						
11	0		0						
12	0		0						
13	0		0						
14	0		0						
15	0		0						
16	0		0						
17	0		0						
18	0		0						
19	0		0						
20	0		0						
21	0		0						
22	0		0						
23	0		0						
24	0		0						
25	0		0						
26	0		0						
27	0		0						
28	0		0						
29	0		0						
30	0		0						
31	0		0						
Total	1		17	0	--	0	0	--	0

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1				0	--	0	4	15,000	162
2				0	--	0	2	9,700	52
3				0	--	0	4	10,800	117
4				0	--	0	4	13,200	143
5				0	--	0	1	e 6,000	16
6				0	--	0	1	e 1,000	3
7				9	c 28,000	s 966	0	--	0
8				17	33,500	1,590	0	--	0
9				6	30,500	494	0	--	0
10				2	16,100	87	0	--	0
11				2	14,200	77	0	--	0
12				4	20,000	216	0	--	0
13				2	e 18,800	102	0	--	0
14				1	e 15,000	40	0	--	0
15				1	e 11,400	31	0	--	0
16				1	e 7,700	21	0	--	0
17				1	e 13,800	37	0	--	0
18				9	28,100	683	0	--	0
19				13	30,000	1,050	0	--	0
20				8	e 27,500	594	0	--	0
21				5	26,700	360	0	--	0
22				2	e 22,500	122	0	--	0
23				1	e 9,600	26	0	--	0
24				1	5,200	14	0	--	0
25				1	4,570	12	0	--	0
26				0	--	0	0	--	0
27				1	4,900	13	0	--	0
28				3	12,500	101	0	--	0
29				--	--	--	0	--	0
30				--	--	--	0	--	0
31				--	--	--	0	--	0
Total-	0	--	0	90	--	6,640	16	--	493

Day	April			May			June		
1	0	--	0						
2	0	--	0						
3	0	--	0						
4	0	--	0						
5	0	--	0						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	0	--	0						
10	0	--	0						
11	0	--	0						
12	0	--	0						
13	0	--	0						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	4	e 14,200	s 912						
23	6	72,000	1,210						
24	8	68,500	1,530						
25	5	52,900	741						
26	3	e 44,900	377						
27	1	e 25,700	69						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	--	--	--						
Total-	27	--	4,840	0	--	0	0	--	0

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO PUERCO BELOW CABEZON, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0				0	--	0
2	0	--	0				0	--	0
3	0	--	0				0	--	0
4	0	--	0				0	--	0
5	0	--	0				0	--	0
6	0	--	0				0	--	0
7	0	--	0				0	--	0
8	0	--	0				0	--	0
9	0	--	0				0	--	0
10	0	--	0				0	--	0
11	0	--	0				0	--	0
12	0	--	0				0	--	0
13	41	105,000	s 20,200				0	--	0
14	4	56,800	808				0	--	0
15	0	--	0				0	--	0
16	0	--	0				0	--	0
17	0	--	0				0	--	0
18	0	--	0				136	36,500	s 40,000
19	0	--	0				345	139,000	s 155,000
20	0	--	0				52	93,000	14,000
21	0	--	0				3	56,000	470
22	0	--	0				2	e 38,000	213
23	0	--	0				0	--	0
24	0	--	0				73	72,900	s 34,100
25	0	--	0				72	112,000	23,400
26	0	--	0				15	e 78,000	3,280
27	0	--	0				5	e 70,000	980
28	0	--	0				1	e 62,000	174
29	0	--	0				0	--	0
30	0	--	0				0	--	0
31	0	--	0				--	--	--
Total-	45	--	21,010	0	--	0	704	--	271,600

Total discharge for year (second-foot-days) 883
Total load for year (tons) 304,600

e Estimated or interpolated.
s Computed by subdividing day.

RIO PUERCO BELOW CABEZON, N. MEX.--Continued

Particle-size analyses of suspended sediment, February to September 1950

(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 (second-feet)	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. 8, 1950	5:00 p.m.	18	33,700	3,330	60	74	87	94	96	97	98	--				BWCM
Feb. 21	12:30 p.m.	6	20,600	8,410	7	8	78	89	--	--	--	--				DWCM
Mar. 1	5:00 p.m.	4	16,000	2,420	65	86	97	100	--	--	--	--				BWCM
Apr. 24	4:00 p.m.	4	68,800	2,130	65	82	96	99	100	--	--	--				BWCM
July 23 a	1:15 a.m.	100	125,000	1,840	27	37	50	70	--	93	--	--				DSWCM
Sept. 24	8:55 p.m.	304	108,000	2,180	23	30	37	50	--	70	86	96				DSWCM
Sept. 25	7:30 a.m.	81	128,000	2,270	35	48	59	68	78	88	95	99		100		BSWCM
Sept. 25	6:15 p.m.	52	89,800	3,140	32	46	59	76	--	--	--	--				DWCM

a No discharge at gaging station at Cabezon, inflow between sampling point and gaging station. Discharge estimated by sampler.

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.

LOCATION.--At gaging station in hamlet of Rio Puerco in San Clemente Grant, at Atchison, Topeka & Santa Fe Railway bridge, 7 miles downstream from San Jose River, and 15 miles west of Los Lunas, Valencia County.
DRAINAGE AREA.--5,160 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1950.
Sediment records: July 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 1,090,000 tons Sept. 20; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 1,090,000 tons Sept. 20, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Temperature (°F) of water, water year October 1949 to September 1950; once-daily measurement a

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				--						--	--	--
2				--						--	72	--
3				--						--	72	--
4				--						--	70	--
5				--						--	65	--
6				--						--	--	--
7				--						--	73	--
8				--						--	--	--
9				--						--	--	--
10				--						79	--	--
11				--						83	--	--
12				33						88	76	--
13				--						--	72	--
14				--						71	65	--
15				--						76	--	--
16				--						77	74	--
17				--						75	60	--
18				--						68	--	--
19				40						82	--	60
20				--						--	--	62
21				--						--	--	63
22				--						76	--	62
23				--						75	--	65
24				--						83	--	62
25				--						82	--	63
26				--						--	--	63
27				--						66	--	61
28				--						76	--	55
29				--						76	--	--
30				--						70	--	--
31				--						73	--	--
Average												

a No flow most of the time when no temperatures are shown.

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	134	80,300	30,100				0		0
2	15	71,500	3,000				0		0
3	5	e 40,000	560				0		0
4	1	e 10,000	27				0		0
5	0	--	0				0		0
6	0	--	0				0		0
7	0	--	0				0		0
8	0	--	0				1		e 1
9	0	--	0				1		e 1
10	0	--	0				0		0
11	0	--	0				0		0
12	0	--	0				0		0
13	0	--	0				0		0
14	0	--	0				0		0
15	0	--	0				0		0
16	0	--	0				0		0
17	0	--	0				0		0
18	0	--	0				0		0
19	0	--	0				0		0
20	0	--	0				0		0
21	0	--	0				0		0
22	0	--	0				0		0
23	0	--	0				0		0
24	0	--	0				0		0
25	0	--	0				0		0
26	0	--	0				0		0
27	0	--	0				0		0
28	0	--	0				0		0
29	0	--	0				0		0
30	0	--	0				0		0
31	0	--	0				0		0
Total-	155	--	33,690	0	--	0	2		e 2

Day	January			February			March		
1	0		0						
2	3		e 5						
3	1		e 3						
4	1		e 1						
5	0		0						
6	0		0						
7	0		0						
8	0		0						
9	0		0						
10	0		0						
11	0		0						
12	0		0						
13	1		e 1						
14	1		e 1						
15	0		0						
16	0		0						
17	0		0						
18	0		0						
19	2	578	3						
20	1		e 2						
21	1		e 1						
22	0		0						
23	0		0						
24	0		0						
25	0		0						
26	0		0						
27	0		0						
28	0		0						
29	0		0						
30	0		0						
31	0		0						
Total-	11		e 17	0	--	0	0	--	0

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

RIO PUERCO AT RIO PUERCO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
Total-	0	--	0	0	--	0	0	--	0

Day	July			August			September		
1	0	--	0	15	e 50,000	2,100	0	--	0
2	0	--	0	304	76,200	s 63,500	0	--	0
3	0	--	0	160	35,000	17,300	0	--	0
4	0	--	0	30	20,000	1,620	0	--	0
5	0	--	0	8	3,000	65	0	--	0
6	0	--	0	1	e 2,000	5	0	--	0
7	0	--	0	0	--	0	0	--	0
8	0	--	0	0	--	0	0	--	0
9	0	--	0	0	--	0	0	--	0
10	88	102,000	s 39,600	0	--	0	0	--	0
11	38	80,000	8,510	0	--	0	0	--	0
12	9	64,000	1,610	245	65,200	s 182,000	0	--	0
13	1	e 21,000	57	256	140,000	s 129,000	0	--	0
14	31	37,800	s 4,830	28	96,000	7,800	0	--	0
15	114	121,000	s 48,600	8	e 77,000	1,720	0	--	0
16	25	89,000	6,450	18	66,900	s 3,920	0	--	0
17	8	73,000	1,640	30	39,000	3,280	0	--	0
18	3	56,000	470	8	e 18,000	389	0	--	0
19	15	60,600	s 3,300	2	e 11,000	59	692	89,000	s 292,000
20	1	e 24,000	65	0	--	0	2,290	168,000	s 1,090,000
21	0	--	0	0	--	0	335	103,000	100,000
22	46	63,700	s 13,200	0	--	0	160	82,300	s 49,300
23	14	27,300	1,030	0	--	0	110	76,000	23,400
24	36	58,100	s 11,100	0	--	0	20	51,000	2,860
25	9	68,500	1,730	0	--	0	500	85,000	s 258,000
26	0	--	0	0	--	0	320	106,000	s 104,000
27	110	14,400	s 18,000	0	--	0	40	75,000	8,400
28	45	112,000	s 19,200	0	--	0	2	70,000	392
29	23	90,000	6,000	0	--	0	2	e 50,000	280
30	14	86,000	3,370	0	--	0	4	e 58,000	650
31	20	60,000	3,360	0	--	0	--	--	--
Total-	650	--	192,100	1,113	--	412,800	4,475	--	1,929,000

Total discharge for year (second-foot-days) 6,406
Total load for year (tons) 2,568,000

e Estimated or interpolated
s Computed by subdividing day.

RIO PUERCO AT RIO PUERCO, N. MEX.--Continued

Particle-size analyses of suspended sediment, January to September 1950
(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 (second-feet)	Suspended sediment											Methods of analysis
			Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Jan 3, 1950	3:45 p. m.	4	708	2,390	17	45	69	81	--	--	--	--				DWCM
July 10	6:45 a. m.	279	160,000	1,300	33	43	54	74	--	96	--	--				DSWCM
July 11	4:05 p. m.	33	61,000	2,660	38	54	68	87	--	--	--	--				DWCM
July 15	3:45 a. m.	390	205,000	2,250	45	56	69	77	87	91	96	--				BWCM
July 24	2:45 p. m.	190	160,000	2,480	27	36	45	60	--	83	--	--				DSWCM
July 27	3:30 p. m.	1,960	53,000	2,580	27	35	45	59	--	90	--	--				DSWCM
Aug. 2	1:10 p. m.	729	112,000	2,160	25	33	45	61	--	90	--	--				DSWCM
Aug. 16	7:45 p. m.	125	118,000	1,540	62	76	86	90	91	93	96	--				BWCM
Sept. 19	2:30 p. m.	1,390	75,400	2,960	14	20	25	32	--	70	96	100				DSWCM
Sept. 20	10:00 a. m.	2,460	191,000	4,110	13	18	23	32	--	57	80	98				DSWCM
Sept. 20	2:00 p. m.	6,560	127,000	2,990	32	42	52	62	72	82	91	97		100		BSWCM
Sept. 20	6:15 p. m.	1,650	191,000	2,200	19	25	30	41	--	65	87	97				DSWCM
Sept. 21	6:00 p. m.	166	87,500	3,940	31	45	56	71	--	92	--	--				DSWCM
Sept. 25	6:30 p. m.	1,690	161,000	2,130	20	26	33	46	--	72	--	--				DSWCM

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.

LOCATION.--At gaging station at bridge on U. S. Highway 85, 1.2 miles southwest of Bernardo, Socorro County, 3 miles upstream from mouth, and 16 miles south of Belen.
DRAINAGE AREA.--5,860 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: October 1947 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 895,000 tons Sept. 20; minimum daily, 0 tons on many days.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 958,000 tons July 24, 1949; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No flow during period January to June; record is deleted.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	312	85,500	74,700						
2	92	85,000	21,900						
3	32	76,600	6,860						
4	9	68,900	1,740						
5	2	e48,000	269						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	0	--	0						
10	0	--	0						
11	0	--	0						
12	0	--	0						
13	0	--	0						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	0	--	0						
23	0	--	0						
24	0	--	0						
25	0	--	0						
26									
27	0	--	0						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	0	--	0						
Total	447	--	105,500	0	--	0	0	--	0

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	24	84,300	s 7,880	0	--	0
2	0	--	0	12	59,000	1,980	0	--	0
3	0	--	0	424	88,800	s 121,000	0	--	0
4	0	--	0	60	47,500	7,980	0	--	0
5	0	--	0	34	44,400	s 6,510	0	--	0
6	0	--	0	4	e 56,000	627	0	--	0
7	0	--	0	1	41,000	115	0	--	0
8	0	--	0	0	--	0	0	--	0
9	0	--	0	0	--	0	0	--	0
10	0	--	0	0	--	0	0	--	0
11	0	--	0	0	--	0	0	--	0
12	25	109,000	s 10,400	0	--	0	0	--	0
13	10	125,000	3,620	244	138,000	s 172,000	0	--	0
14	2	31,000	167	80	127,000	29,500	0	--	0
15	81	e 66,400	s 47,800	43	108,000	s 15,200	0	--	0
16	55	155,000	25,600	9	87,000	2,270	0	--	0
17	14	118,000	4,790	7	62,500	s 2,360	0	--	0
18	8	100,000	2,320	19	110,000	6,060	1	e 22,300	s 323
19	4	75,000	840	4	104,000	1,210	53	20,700	s 19,100
20	9	84,000	2,120	1	e 27,000	73	1,560	185,000	s 895,000
21	3	63,000	529	0	--	0	1,350	150,000	s 667,000
22	0	--	0	0	--	0	145	98,800	s 43,600
23	28	60,500	s 8,770	0	--	0	191	102,000	s 59,000
24	19	61,000	3,250	0	--	0	41	75,200	8,630
25	17	45,000	2,140	0	--	0	18	65,000	3,280
26	12	e 27,500	891	0	--	0	634	155,000	s 368,000
27	2	e 12,000	65	0	--	0	124	101,000	s 37,500
28	102	59,900	s 27,400	0	--	0	48	80,000	10,800
29	46	72,000	9,270	0	--	0	7	75,300	1,480
30	19	120,000	6,610	0	--	0	1	71,800	201
31	7	101,000	2,050	0	--	0	--	--	--
Total	463	--	158,600	966	--	374,800	4,173	--	2,114,000

Total discharge for year (second-foot-days) 6,049
Total load for year (tons) 2,753,000

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO PUERCO NEAR BERNARDO, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	8:00 a.m.	415	93,500	2,530	18	42	57	72	--	98	--	--		--		DSWCM
July 12, 1950	2:00 p.m.	29	109,000	2,780	39	52	68	83	--	--	--	--		--		DWCM
July 13	4:30 p.m.	9	106,000	3,210	47	62	78	89	--	--	--	--		--		DWCM
July 20	9:00 a.m.	22	99,200	2,340	46	60	75	86	--	--	--	--		--		DWCM
July 28	5:00 a.m.	483	176,000	3,860	41	47	59	72	82	89	94	98		100		BSWCM
July 28	12:00 m.	122	68,700	3,540	32	45	60	78	--	--	--	--		--		DWCM
July 30	7:00 a.m.	24	137,000	3,290	37	51	67	84	--	--	--	--		--		DWCM
Aug. 3	6:45 a.m.	890	114,000	3,410	25	34	44	56	--	92	--	--		--		DSWCM
Aug. 3	1:00 p.m.	322	78,400	4,020	25	35	48	64	--	95	--	--		--		DSWCM
Aug. 13	10:00 a.m.	640	286,000	2,230	21	28	35	49	--	80	90	97		100		DSWCM
Sept. 20	3:00 a.m.	865	245,000	2,340	21	27	34	46	--	72	85	97		100		DSWCM
Sept. 20	11:30 a.m.	1,340	181,000	2,390	21	27	34	45	--	81	93	98		100		DSWCM
Sept. 20	8:00 p.m.	2,170	218,000	1,980	28	30	34	39	44	57	75	92		100		BSWCM
Sept. 26	1:00 a.m.	1,340	294,000	2,200	15	19	24	33	--	60	79	90		100		DSWCM
Sept. 26	1:45 a.m.	1,590	309,000	3,130	30	32	37	39	47	60	77	94		100		BSWCM
Sept. 26	7:00 a.m.	955	173,000	2,420	20	28	36	48	--	82	95	97		99		DSWCM
Sept. 26	9:05 a.m.	820	164,000	3,450	24	31	40	51	--	82	--	--		--		DSWCM
Sept. 27	7:30 a.m.	153	95,000	2,800	32	46	62	79	--	--	--	--		--		DWCM

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.

LOCATION.--At gaging station a quarter of a mile upstream from mouth, 5 miles northwest of Guadalupe, Sandoval County, and 8.1 miles by road west of Cabezon.
DRAINAGE AREA.--1,390 square miles.
RECORDS AVAILABLE.--Sediment records: July 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 636,000 tons Sept. 19; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 636,000 tons Sept. 19, 1950; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No flow during period April to June; record is deleted.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	11	34,000	1,050						
2	7	28,200	533						
3	1	5,000	14						
4	0	--	0						
5	0	--	0						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	0	--	0						
10	0	--	0						
11	0	--	0						
12	0	--	0						
13	0	--	0						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	0	--	0						
23	0	--	0						
24	2	32,000	179						
25	1	14,000	38						
26	0	--	0						
27	0	--	0						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	0	--	0						
Total	22	--	1,810	0	--	0	0	--	0

RIO GRANDE BASIN--Continued

CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0		0						
2	0		0						
3	0		0						
4	0		0						
5	0		0						
6	0		0						
7	0		0						
8	0		0						
9	0		0						
10	0		0						
11	0		0						
12	0		0						
13	0		0						
14	0		0						
15	1		e 10						
16	1		e 10						
17	1		e 10						
18	0		0						
19	0		0						
20	0		0						
21	0		0						
22	0		0						
23	0		0						
24	0		0						
25	0		0						
26	0		0						
27	0		0						
28	0		0						
29	0		0						
30	0		0						
31	0		0						
Total	3		30	0	--	0	0	--	0

Day	July			August			September		
1	0	--	0	0	--	0	0	--	0
2	0	--	0	0	--	0	0	--	0
3	0	--	0	33	41,100	s 5,720	0	--	0
4	0	--	0	2	e 13,000	70	0	--	0
5	0	--	0	0	--	0	0	--	0
6	0	--	0	0	--	0	0	--	0
7	0	--	0	0	--	0	0	--	0
8	233	91,500	s 83,800	0	--	0	0	--	0
9	67	49,900	s 20,700	0	--	0	0	--	0
10	1	6,620	s 25	0	--	0	0	--	0
11	0	--	0	196	8,880	s 42,400	0	--	0
12	0	--	0	401	66,900	s 119,000	0	--	0
13	149	24,300	s 53,400	10	28,000	756	0	--	0
14	82	48,400	s 13,100	3	3,000	24	0	--	0
15	11	29,000	861	1	e 1,500	4	0	--	0
16	1	e 10,000	27	0	--	0	0	--	0
17	1	e 3,500	9	0	--	0	0	--	0
18	0	--	0	0	--	0	178	63,600	s 45,100
19	0	--	0	0	--	0	1,630	106,000	s 636,000
20	0	--	0	0	--	0	484	74,700	s 141,000
21	3	488	s 458	0	--	0	18	30,000	1,460
22	44	49,200	s 7,940	0	--	0	10	11,500	310
23	25	35,200	s 3,980	0	--	0	7	8,000	151
24	1	12,000	32	0	--	0	401	32,800	s 104,000
25	0	--	0	1	9,200	s 121	355	57,500	s 82,000
26	141	28,100	s 40,800	1	e 2,000	s 12	15	22,000	891
27	63	51,000	9,000	0	--	0	2	11,500	62
28	10	40,000	1,120	0	--	0	1	e 3,500	9
29	1	4,380	s 15	0	--	0	0	--	0
30	0	--	0	0	--	0	0	--	0
31	0	--	0	0	--	0	--	--	--
Total	833	--	235,300	648	--	168,100	3,101	--	1,011,000

Total discharge for year (second-foot-days) 4,607
Total load for year (tons) 1,416,000

e Estimated.
s Computed by subdividing day.

CHICO ARROYO NEAR GUADALUPE, N. MEX.--Continued

Particle-size analyses of suspended sediment, July to September 1950
(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 (second-feet)	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 8, 1950	10:30 p. m.	2,200	158,000	3,370	22	29	38	47	58	73	92	99		100		BSWCM
July 22	12:01 a. m.	328	116,000	1,480	26	36	46	62	--	84	--	--		--		DSWCM
July 26	5:30 p. m.	1,250	160,000	2,320	16	20	25	36	--	64	79	94		--		DSWCM
July 26	6:30 p. m.	1,150	111,000	2,930	16	21	27	37	--	69	86	97		--		DSWCM
Aug. 11	11:15 p. m.	2,950	94,900	2,090	23	29	36	49	--	75	91	97		--		DSWCM
Aug. 12	7:30 a. m.	424	75,600	2,610	27	36	43	50	52	63	81	98		100		BSWCM
Sept. 19	7:55 p. m.	3,250	104,000	1,930	24	30	40	52	--	77	--	--		--		DSWCM
Sept. 25	6:00 p. m.	108	38,100	2,230	32	44	55	69	--	78	--	--		--		DSWCM

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RIO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.

LOCATION.--At gaging station 0.6 mile upstream from U. S. Highway 66, 0.7 mile northeast of Correo, Valencia County, and 13 miles upstream from mouth.
DRAINAGE AREA.--2,610 square miles.
RECORDS AVAILABLE.--Sediment records: July 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 45,400 tons Aug. 2; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 79,400 tons Sept. 26, 1948; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No flow during period April to June; record is deleted.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0.6	e1,000	2						
2	0		0						
3	0		0						
4	0		0						
5	0		0						
6	0		0						
7	0		0						
8	0		0						
9	0		0						
10	0		0						
11	0		0						
12	0		0						
13	0		0						
14	0		0						
15	0		0						
16	0		0						
17	0		0						
18	0		0						
19	0		0						
20	0		0						
21	0		0						
22	0		0						
23	0		0						
24	0		0						
25	0		0						
26	0		0						
27	0		0						
28	0		0						
29	0		0						
30	0		0						
31	0		0						
Total	0.6		2	0	--	0	0	--	0

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	January			February			March		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0	--	0	0.1	--	e 0			
2	0	--	0	0	--	0			
3	0	--	0	0	--	0			
4	0	--	0	0	--	0			
5	0	--	0	0	--	0			
6	0	--	0	0	--	0			
7	0	--	0	0	--	0			
8	0	--	0	0	--	0			
9	0	--	0	0	--	0			
10	0	--	0	0	--	0			
11	0	--	0	2	e 1,000	5			
12	0	--	0	1.5	e 800	3			
13	0	--	0	2.1	806	5			
14	0	--	0	.6	544	1			
15	0	--	0	.6	629	1			
16	0	--	0	.8	e 700	2			
17	0	--	0	1.4	1,280	5			
18	0	--	0	.2	e 800	0			
19	0	--	0	.1	e 500	0			
20	0	--	0	0	--	0			
21	0	--	0	0	--	0			
22	0	--	0	0	--	0			
23	0	---	0	0	--	0			
24	.4	e 800	1	0	--	0			
25	2.4	e 1,000	6	0	--	0			
26	.6	e 800	1	0	--	0			
27	0	--	0	0	--	0			
28	0	--	0	0	--	0			
29	0	--	0	--	--	--			
30	.8	e 1,000	2	--	--	--			
31	0	--	0	--	--	--			
Total	4.2	--	10	9.4	--	22	0	--	0

Day	July			August			September		
1	0	--	0	12	8,500	s 2,020	0	--	0
2	0	--	0	324	42,600	s 45,400	0	--	0
3	0	--	0	26	11,100	s 1,020	0	--	0
4	0	--	0	31	22,400	1,870	0	--	0
5	0	--	0	7.6	9,100	187	0	--	0
6	0	--	0	32	9,480	s 1,280	0	--	0
7	0	--	0	9.8	8,700	230	0	--	0
8	0	--	0	1.0	e 3,000	8	0	--	0
9	13	13,700	s 756	0	--	0	0	--	0
10	22	20,000	s 1,390	0	--	0	0	--	0
11	6.5	5,020	s 123	0	--	0	0	--	0
12	0	--	0	8	25,700	s 903	0	--	0
13	36	12,600	s 4,660	0	--	0	0	--	0
14	23	24,800	s 1,820	0	--	0	0	--	0
15	.8	2,950	s 10	0	--	0	0	--	0
16	2.4	e 1,250	s 193	51	14,300	s 3,170	0	--	0
17	5.8	e 11,800	s 346	6.4	5,580	s 153	0	--	0
18	0	--	0	.3	e 800	1	75	7,430	s 4,520
19	1.2	e 917	s 8	0	--	0	304	28,100	s 30,000
20	.3	e 500	0	0	--	0	51	26,400	s 4,780
21	13	9,750	s 2,180	0	--	0	5.5	14,300	212
22	63	22,400	s 4,570	0	--	0	155	50,600	s 39,600
23	1.5	6,220	s 33	0	--	0	22	22,300	s 2,300
24	0	--	0	0	--	0	1.4	e 1,800	7
25	0	--	0	0	--	0	.4	e 500	1
26	0	--	0	.1	e 570	s 1	0	--	0
27	0	--	0	0	--	0	1.0	e 3,860	s 22
28	12	45,500	s 1,900	0	--	0	0	--	0
29	.8	18,900	s 55	0	--	0	0	--	0
30	18	16,700	s 1,860	0	--	0	0	--	0
31	3.7	15,400	s 210	0	--	0	--	--	--
Total	223.0	--	20,110	509.2	--	56,240	615.3	--	81,440

Total discharge for year (second-foot-days) 1,361.7

Total load for year (tons) 157,800

e Estimated or interpolated.

s Computed by subdividing day.

RIO GRANDE BASIN--Continued

SAN JOSE RIVER AT CORREO, N. MEX.--Continued

Particle-size analyses of suspended sediment, February to September 1950
(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 (second-feet)	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. 13, 1950	4:00 p.m.	2.1	899	2,930	13	16	70	84	--	--	--	--		--		DWCM
July 14	2:35 p.m.	11.3	21,200	1,870	80	94	98	99	99	99	100	--		--		BSWCM
July 23	10:00 a.m.	.7	5,280	3,350	52	71	83	87	--	--	--	--		--		DWCM
July 30	2:10 p.m.	45	34,600	2,820	28	42	52	63	--	82	--	--		--		DSWCM
Aug. 4	3:15 p.m.	28	20,600	8,430	41	72	88	97	--	--	--	--		--		DWCM
Aug. 16	8:30 a.m.	114	30,200	2,450	33	49	65	80	--	--	--	--		--		DWCM
Sept. 18	10:00 p.m.	415	17,400	1,820	22	33	43	55	--	86	--	--		--		DSWCM
Sept. 19	10:00 a.m.	410	20,900	1,730	74	79	83	85	86	89	95	99		100		BSWCM
Sept. 19	9:30 p.m.	395	71,800	3,820	22	32	46	58	--	90	--	--		--		DSWCM
Sept. 20	6:00 p.m.	20	18,600	3,440	49	65	75	82	--	--	--	--		--		DWCM
Sept. 22	1:20 p.m.	572	83,500	1,960	50	56	61	67	76	84	93	99		100		BSWCM

RIO GRANDE BASIN--Continued

RIO SALADO NEAR SAN ACACIA, N. MEX.

LOCATION.--At gaging station 1 mile upstream from mouth, 2 miles northeast of San Acacia, Socorro County, 1.7 miles downstream from bridge on U. S. Highway 85, and 15 miles north of Socorro.
DRAINAGE AREA.--1,380 square miles, approximately.
RECORDS AVAILABLE.--Sediment records: July 1948 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 167,000 tons Sept. 24; minimum daily, 0 tons on many days.
EXTREMES, 1948-50.--Sediment loads: Maximum daily, 280,000 tons July 23, 1949; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178. No flow during period January to March; record is deleted.

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	10	36,700	1,030						
2	1	--	e 60						
3	0	--	0						
4	0	--	0						
5	0	--	0						
6	0	--	0						
7	0	--	0						
8	0	--	0						
9	0	--	0						
10	0	--	0						
11	0	--	0						
12	0	--	0						
13	0	--	0						
14	0	--	0						
15	0	--	0						
16	0	--	0						
17	0	--	0						
18	0	--	0						
19	0	--	0						
20	0	--	0						
21	0	--	0						
22	0	--	0						
23	0	--	0						
24	19	50,000	s 2,810						
25	1	e 20,500	55						
26	0	--	0						
27	0	--	0						
28	0	--	0						
29	0	--	0						
30	0	--	0						
31	0	--	0						
Total	31	--	3,960	0	--	0	0	--	0

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

RIO SALADO NEAR SAN ACACIA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1							0		0
2							0		0
3							88	e 33,000	s 26,700
4							0		0
5							0		0
6							0		0
7							0		0
8							0		0
9							0		0
10							0		0
11							0		0
12							0		0
13							0		0
14							0		0
15							0		0
16							0		0
17							0		0
18							0		0
19							0		0
20							0		0
21							0		0
22							0		0
23							0		0
24							0		0
25							0		0
26							0		0
27							0		0
28							0		0
29							0		0
30							0		0
31							--		--
Total	0	--	0	0	--	0	88		26,700

Day	July			August			September		
1	0	--	--	115	70,000	s 41,700	0	--	0
2	0	--	--	110	76,500	s 29,100	0	--	0
3	0	--	--	196	99,300	s 82,700	0	--	0
4	2	--	e 200	21	59,800	s 3,680	0	--	0
5	170	94,000	s 68,000	0	--	0	0	--	0
6	4	78,200	s 1,060	1	16,000	s 82	0	--	0
7	0	--	0	0	--	0	11	68,800	s 2,440
8	0	--	0	0	--	0	2	40,000	224
9	40	36,800	s 17,600	0	--	0	0	--	0
10	29	106,000	s 12,200	0	--	0	0	--	0
11	4	82,000	s 1,820	0	--	0	0	--	0
12	2	110,000	s 724	85	78,800	s 29,400	0	--	0
13	163	117,000	s 65,100	0	--	0	0	--	0
14	8	69,500	s 1,670	0	--	0	0	--	0
15	3	44,500	s 301	10	11,400	s 1,080	0	--	0
16	1	83,500	234	10	80,500	s 2,920	0	--	0
17	0	--	0	5	113,000	1,640	0	--	0
18	0	--	0	1	76,000	213	0	--	0
19	1	67,800	s 222	0	--	0	8	72,100	s 2,500
20	0	--	0	0	--	0	0	--	0
21	0	--	0	0	--	0	0	--	0
22	35	97,700	s 16,300	0	--	0	0	--	0
23	2	90,000	522	0	--	0	23	e 60,000	5,150
24	1	68,000	190	0	--	0	408	71,400	s 167,000
25	0	--	0	0	--	0	a 131	91,000	s 36,100
26	30	74,400	s 12,100	0	--	0	10	58,000	1,620
27	145	111,000	s 69,900	0	--	0	0	--	0
28	80	87,600	20,300	0	--	0	0	--	0
29	40	89,500	s 12,800	0	--	0	0	--	0
30	110	96,000	s 31,600	0	--	0	0	--	0
31	95	95,200	s 30,900	0	--	0	--	--	--
Total	965	--	363,700	554	--	192,500	593	--	215,000

Total discharge for year (second-foot-days) 2,231

Total load for year (tons) 801,900

e Estimated or interpolated.

s Computed by subdividing day.

a Discharge for Sept. 25 revised and does not agree with W. S. P. 1178.

RIO SALADO NEAR SAN ACACIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, water year October 1949 to September 1950
(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 (second-feet)	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, 1949	7:30 a.m.	4	34,900	1,520	30	56	80	93	--	--	--	--		--		DWCM
July 5, 1950	9:00 a.m.	85	82,000	1,670	24	41	58	73	--	93	--	--		--		DSWCM
July 6	10:15 a.m.	30	81,900	4,310	34	55	71	85	--	--	--	--		--		DWCM
July 9	7:00 p.m.	208	152,000	1,860	46	62	75	84	92	95	98	--		--		BWCM
July 10	3:00 a.m.	56	109,000	1,940	38	56	72	82	--	--	--	--		--		DWCM
July 10	7:30 p.m.	a1.5	97,700	3,340	37	56	71	88	--	--	--	--		--		DWCM
July 11	8:00 a.m.	a2.1	117,000	3,050	40	60	75	88	--	--	--	--		--		DWCM
July 13	12:00 m.	720	223,000	2,590	19	27	35	47	--	68	78	91		--		DSWCM
July 13	4:00 p.m.	339	120,000	1,720	24	33	42	57	--	81	--	--		--		DSWCM
July 27	6:00 p.m.	1,030	298,000	1,640	25	30	38	45	54	65	81	96		100		BSWCM
July 30	7:30 a.m.	136	95,200	2,780	27	39	50	65	--	92	--	--		--		DSWCM
July 30	8:00 p.m.	80	96,900	2,430	34	47	59	78	--	--	--	--		--		DWCM
Aug. 1	7:00 p.m.	1,150	229,000	3,060	12	15	19	25	--	47	64	85		99		DSWCM
Aug. 12	4:00 a.m.	376	84,400	2,780	32	45	57	74	--	96	--	--		--		DSWCM
Aug. 16	5:30 p.m.	56	149,000	2,770	33	46	58	76	--	--	--	--		--		DWCM
Aug. 17	2:00 p.m.	4	104,000	1,470	45	61	76	89	--	--	--	--		--		DWCM
Sept. 7	10:00 a.m.	16	206,000	1,980	55	70	84	94	97	99	100	--		--		BWCM
Sept. 19	5:00 a.m.	37	155,000	1,750	30	44	58	78	--	--	--	--		--		DWCM
Sept. 24	5:15 p.m.	2,750	215,000	6,000	8	11	13	17	23	40	62	85		98		BSWCM
Sept. 25	6:00 p.m.	72	94,500	3,970	30	44	58	75	--	93	--	--		--		DSWCM

a No gage-height record, discharge estimated.

RIO GRANDE BASIN--Continued

SOCORRO MAIN CANAL NORTH AT SAN ACACIA, N. MEX.

LOCATION.--At San Acacia diversion dam, half a mile upstream from canal gaging station, and 0.7 mile east of San Acacia, Socorro County.
RECORDS AVAILABLE.--Sediment records: October 1947 to September 1950.
EXTREMES, 1949-50.--Sediment loads: Maximum daily, 20,600 tons Aug. 14; minimum daily, 0 tons on many days.
EXTREMES, 1947-50.--Sediment loads: Maximum daily, 29,900 tons Aug. 1, 1948; minimum daily, 0 tons on many days.
REMARKS.--Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Monthly and annual summary of suspended-sediment discharge, water year October 1949 to September 1950

Month	Water discharge (second-foot-days)	Suspended sediment (tons)
1949		
October	2,664	28,500
November	1,232	11,730
December	629	5,290
1950		
January	0	0
February	9	166
March	2,679	15,050
April	4,102	12,540
May	2,540	1,740
June	2,494	4,290
July	2,703	118,500
August	1,995	100,500
September	1,486	77,370
Total for year	22,533	a375,700

a Total load for Rio Grande at San Acacia Diversion Dam is the sum of the load for the Rio Grande at the San Acacia gaging station and the load for Socorro Main Canal North, or 5,095,000 tons.

PECOS RIVER AT PUERTO DE LUNA, N. MEX.

LOCATION.--At bridge at Puerto de Luna, Guadalupe County, 17 miles upstream from gaging station near Puerto de Luna, and 31 miles upstream from Alamogordo Dam.
DRAINAGE AREA.--3,970 square miles (above gaging station; contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1939 to September 1941, November 1946 to September 1950.
Water temperatures: June 1949 to September 1950.
Sediment records: January 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 2,490 ppm May 21-27, 29-31; minimum, 384 ppm July 21-22.
Hardness: Maximum, 1,770 ppm June 11-17; minimum, 302 ppm July 21-22.
Water temperatures: Maximum observed, 85°F July 9, Aug. 23, 31; minimum, freezing point Jan. 5.
Sediment loads: Maximum daily, 408,000 tons June 18; minimum daily, 7 tons May 22.
EXTREMES, 1939-41, 1946-50.--Dissolved solids: Maximum, 2,530 ppm July 1-10, 1947; minimum, 287 ppm May 11-16, 18-20, 1941.
Hardness: Maximum, 1,770 ppm June 11-17, 1950; minimum, 200 ppm May 11-16, 18-20, 1941.
Water temperatures (June 1949 to September 1950): Maximum observed, 98°F July 5, 19, 1949; minimum, freezing point Jan. 5, 1950.
Sediment loads (January 1949 to September 1950): Maximum daily, 450,000 tons Sept. 10, 1949; minimum daily, 7 tons May 22, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Discharge records for gaging station near Puerto de Luna for water year October 1949 to September 1950 given in Water-Supply Paper 1178. 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 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 1-2, 1949	1,400	8.1	856	15		150	17	17		179	291	22		0.9		601	0.82	2,270	444	298	8
Oct. 3-10	200	8.0	2,030	15		404	53	34		174	1,000	83		.7		1,680	2.28	907	1,230	1,080	6
Oct. 11-20	127	8.0	2,410	16		480	66	55		159	1,260	104		.5		2,060	2.80	706	1,470	1,340	8
Oct. 21-31	131	8.0	2,440	16		492	68	55		171	1,280	108		.8		2,100	2.86	743	1,510	1,370	7
Nov. 1-10	128	8.1	2,470	16		498	72	44		165	1,290	110		.4		2,100	2.87	729	1,540	1,400	6
Nov. 11-20	135	8.0	2,490	15		498	68	68		169	1,310	119		.8		2,160	2.94	787	1,520	1,380	9
Nov. 21-30	126	7.7	2,550	16		500	75	60		168	1,320	124		.7		2,180	2.96	742	1,560	1,420	8
Dec. 1-10	125	7.8	2,520	17		514	73	49		163	1,340	114		.8		2,190	2.98	739	1,580	1,450	6
Dec. 11-20	120	7.7	2,560	16		520	72	54		168	1,350	118		1.0		2,210	3.01	716	1,590	1,460	7
Dec. 21-30	122	7.7	2,560	17		518	73	58		181	1,350	116		.7		2,220	3.02	731	1,590	1,440	7
Jan. 1-10, 1950	121	7.7	2,610	16		524	71	79		180	1,400	118		.5		2,300	3.13	751	1,600	1,450	10
Jan. 11-20	123	7.3	2,590	17		520	71	52		178	1,340	115		.6		2,200	2.99	731	1,590	1,440	7
Jan. 21-24, 26-31	118	7.4	2,630	16		530	66	60		171	1,360	119		.8		2,240	3.05	714	1,590	1,450	8
Feb. 1-10	120	7.4	2,580	16		510	69	59		174	1,320	118		.7		2,180	2.96	706	1,560	1,410	8
Feb. 11-20	111	7.6	2,580	16		516	73	59		171	1,350	121		.5		2,220	3.02	665	1,590	1,450	8
Feb. 21-23, 25-28	110	7.6	2,600	15		528	74	54		169	1,380	116		.5		2,250	3.06	668	1,620	1,480	7
Mar. 1-10	98.8	7.7	2,620	16		530	75	55		168	1,380	125		.7		2,260	3.07	603	1,630	1,490	7
Mar. 11-20	103	7.8	2,670	15		540	73	67		174	1,410	129		.4		2,320	3.16	645	1,650	1,500	8
Mar. 21-25, 27-31	98.9	7.6	2,680	16		544	65	86		162	1,440	127		.9		2,360	3.21	630	1,620	1,490	10

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Apr. 1-10, 1950	101	7.7	2,690	16		544	67	85		163	1,440	131		0.7		2,360	3.21	644	1,630	1,500	10
Apr. 11-12, 14-16, 18-20	94.0	7.7	2,670	16		532	66	88		161	1,420	128		.2		2,330	3.17	591	1,600	1,470	11
Apr. 21-28	93.7	7.7	2,730	17		564	66	85		163	1,490	127		.3		2,430	3.30	615	1,680	1,540	10
May 1-6, 8-10	94.9	7.4	2,780	16		562	78	85		154	1,540	127		.3		2,480	3.37	635	1,720	1,600	10
May 11-20	111	7.5	2,770	16		564	76	79		149	1,530	126		.3		2,460	3.35	737	1,720	1,600	9
May 21-27, 29-31	102	7.5	2,790	16		570	75	84		155	1,540	130		.6		2,490	3.39	686	1,730	1,600	10
June 1-3, 5-10a	103	7.5	2,740	17		550	75	82		167	1,480	129		.9		2,420	3.29	673	1,680	1,540	10
June 4a	307	--	1,030	16		161	23	46		196	382	27		1.1		753	1.02	624	496	336	17
June 11-17	180	7.4	2,740	19		586	74	54		167	1,520	116		.8		2,450	3.33	1,190	1,770	1,630	6
June 18-20	1,760	7.6	1,180	19		213	30	18		208	448	40		.8		871	1.18	4,140	655	484	6
June 21-30	146	7.5	2,480	18		520	67	33		174	1,310	98		1.2		2,130	2.90	840	1,570	1,430	4
July 1-4, 9b	168	7.6	2,500	18		528	68	34		171	1,330	103		1.7		2,170	2.95	984	1,600	1,460	4
July 5-8b	1,704	7.6	1,230	16		229	29	15		176	500	40		2.0		918	1.25	4,220	590	546	4
July 10-14	980	7.8	700	15		116	15	12		158	211	19		1.0		467	0.64	1,240	351	222	7
July 15-20	323	7.5	1,720	16		323	42	28		161	784	71		1.1		1,340	1.82	1,170	978	846	6
July 21-22c	1,657	7.8	609	16		101	12	10		209	131	11		0.3		384	0.52	1,720	302	130	7
July 23-31c	416	7.7	1,180	14		205	26	25		173	458	37		2.5		853	1.16	958	618	476	8
Aug. 1-4	1,587	7.6	840	12		140	15	22		184	265	21		1.8		568	0.77	2,430	411	260	10
Aug. 5-8, 10	252	7.5	1,790	11		329	40	53		162	829	74		2.1		1,420	1.93	966	986	853	11
Aug. 9	173	7.6	1,150	9.7		206	24	17		154	447	43		3.7		826	1.12	386	612	486	6
Aug. 11-20	151	7.5	2,580	15		514	66	71		170	1,350	115		0.9		2,220	3.02	905	1,550	1,410	9
Aug. 21-31	99.7	7.7	2,640	19		528	70	69		156	1,400	120		0.9		2,280	3.10	614	1,610	1,480	9
Sept. 1-10	116	7.6	2,640	11		536	72	58		172	1,390	121		0.8		2,270	3.09	711	1,630	1,490	7
Sept. 11-20	96.0	7.5	2,580	18		516	70	61		170	1,350	115		1.0		2,220	3.02	575	1,580	1,440	8
Sept. 21-30	125	7.6	2,540	16		516	68	53		170	1,320	119		1.4		2,180	2.96	736	1,570	1,430	7
Weighted average	215	--	1,780	16		348	46	40		173	859	73		1.1		1,470	2.00	853	1,060	916	8

a Discharge for June 5 included with discharge reported for June 4.
b Discharge for July 4 included in discharge reported for July 5-8.
c Discharge for July 23 included in discharge reported for July 21-22.

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
[Once-daily temperature measurement generally between 9 a. m. and 6 p. m.]

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

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1,800	17,000	82,600	132	381	136	122	261	86
2	1,000	6,500	17,600	126	513	174	126	267	91
3	350	5,500	5,200	126	621	211	126	356	121
4	250	4,500	3,040	129	366	127	122	346	114
5	300	4,440	3,600	129	482	168	109	292	86
6	170	1,500	688	126	383	130	122	576	190
7	140	834	315	132	368	131	136	244	90
8	135	597	218	126	302	103	126	298	101
9	130	639	224	126	470	160	136	271	100
10	128	437	151	129	318	111	129	252	88
11	126	414	141	132	355	126	132	291	104
12	126	577	196	136	374	137	118	273	87
13	129	432	150	140	410	155	85	295	68
14	136	380	140	129	253	88	115	390	121
15	126	258	88	129	272	95	132	337	120
16	129	420	146	129	314	109	122	349	115
17	126	535	182	129	348	121	126	481	164
18	129	327	114	136	331	122	122	388	128
19	118	461	147	150	480	194	129	525	183
20	122	489	161	140	384	145	122	239	79
21	129	453	158	136	423	155	118	216	69
22	129	401	140	140	512	194	122	240	79
23	129	610	212	126	204	69	129	488	170
24	132	546	194	132	388	138	115	270	84
25	136	608	223	132	652	232	126	298	101
26	140	430	162	129	377	131	126	143	49
27	132	762	272	122	387	127	122	227	75
28	126	477	162	118	317	101	126	181	62
29	129	204	71	109	386	114	122	379	125
30	126	406	138	115	258	80	122	360	118
31	132	629	224	--	--	--	115	434	135
Total	7,110	--	117,000	3,890	--	4,080	3,800	--	3,300
	January			February			March		
1	118	522	166	126	121	41	106	202	58
2	129	294	102	126	334	114	112	232	70
3	126	269	92	136	222	82	109	167	49
4	115	372	116	126	231	78	106	306	88
5	100	188	51	126	182	62	94	510	129
6	115	339	105	122	195	64	97	336	88
7	118	315	100	118	130	41	88	138	33
8	122	393	129	112	247	75	91	188	46
9	136	504	185	109	618	182	85	397	91
10	129	201	70	103	259	72	100	175	47
11	122	338	111	103	219	61	88	204	48
12	126	264	90	103	241	67	94	323	82
13	143	191	74	115	273	85	100	267	72
14	122	297	98	115	268	83	109	280	82
15	118	342	109	118	272	87	115	554	172
16	115	457	142	112	372	112	106	303	87
17	103	434	121	106	292	84	109	309	91
18	115	850	264	109	351	103	109	399	117
19	136	368	135	112	229	69	97	459	120
20	129	514	179	118	235	75	100	e 500	135
21	118	480	153	115	289	90	91	e 300	74
22	118	310	99	115	197	61	91	150	37
23	112	223	67	112	e 200	60	94	346	88
24	112	218	66	106	228	65	100	139	38
25	112	228	69	109	381	112	109	371	109
26	118	421	134	112	205	62	100	321	87
27	109	208	61	112	351	106	91	476	117
28	122	263	87	103	186	52	97	256	67
29	122	610	201	--	--	--	97	312	82
30	122	95	31	--	--	--	115	541	168
31	129	654	228	--	--	--	103	284	79
Total	3,731	--	3,640	3,199	--	2,240	3,103	--	2,650

e Estimated or interpolated.

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	106	256	73	103	104	29	106	e 300	86
2	106	333	95	91	88	22	97	309	81
3	106	e 200	57	94	128	32	97	960	251
4	115	143	44	88	415	99	265	3,920	s 7,590
5	94	192	49	97	413	108	349	4,000	3,770
6	94	317	80	103	e 500	139	146	e 700	276
7	97	270	71	97	177	46	106	550	157
8	106	214	61	94	259	66	91	350	86
9	97	175	46	91	178	44	94	e 300	76
10	88	178	42	91	76	19	88	260	62
11	103	118	33	103	182	51	162	700	306
12	97	195	51	122	167	55	547	30,300	s 58,000
13	100	273	74	112	220	66	182	8,000	3,930
14	103	180	50	109	130	38	112	1,800	544
15	91	137	34	115	249	77	85	762	175
16	88	595	141	106	443	127	82	666	147
17	82	145	32	109	143	42	88	1,830	s 534
18	91	75	18	103	86	24	3,930	25,600	s 408,000
19	94	131	33	112	92	28	1,150	13,500	42,000
20	91	75	18	115	34	10	200	5,500	2,970
21	85	178	41	109	51	15	150	2,000	810
22	88	547	130	109	24	7	130	547	192
23	88	837	199	103	82	23	118	397	126
24	103	78	22	97	538	141	94	305	77
25	91	135	33	97	257	67	78	396	83
26	97	71	18	100	407	110	88	125	30
27	97	122	32	106	251	72	85	184	42
28	97	91	24	103	752	209	291	17,800	s 22,700
29	97	e 100	26	103	156	43	270	8,000	5,830
30	94	172	44	88	275	65	158	3,000	1,280
31	--	--	--	103	49	14	--	--	--
Total	2,886	--	1,670	3,173	--	1,890	9,439	--	560,200

Day	July			August			September		
	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (second-feet)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	115	1,140	354	1,660	19,800	s 97,100	82	191	42
2	103	418	116	2,910	21,800	s 193,000	78	119	25
3	302	1,550	1,260	1,120	20,500	62,000	80	157	34
4	1,270	34,300	s 195,000	658	9,000	16,000	88	366	87
5	1,500	23,300	s 108,000	314	6,500	5,510	220	3,000	1,780
6	5,000	21,000	284,000	258	4,000	2,790	210	10,900	s 8,910
7	500	10,500	14,200	174	1,500	705	115	1,800	559
8	250	3,500	2,360	132	700	249	100	107	29
9	150	1,500	608	173	1,430	s 2,190	94	574	146
10	1,500	7,380	s 70,000	382	4,750	s 5,860	91	1,080	265
11	500	10,000	13,500	195	2,000	1,050	91	727	179
12	1,000	12,500	33,800	143	1,300	502	94	499	127
13	1,200	14,000	45,400	129	700	244	85	462	106
14	700	11,000	20,800	122	602	198	82	505	112
15	500	4,500	6,080	126	659	224	88	311	74
16	200	2,500	1,350	112	400	121	72	546	106
17	150	1,000	405	316	2,180	s 9,810	70	455	86
18	350	1,700	1,610	174	1,400	658	75	405	82
19	470	12,000	15,200	97	259	68	103	393	109
20	270	3,500	2,550	100	383	103	200	12,800	s 10,800
21	1,060	22,700	s 78,700	109	285	84	182	8,500	4,180
22	2,910	25,800	s 224,000	115	434	135	129	3,000	1,040
23	1,000	13,000	35,100	112	597	180	109	1,300	382
24	300	6,500	5,260	106	238	68	97	1,200	314
25	750	10,200	s 26,000	100	251	68	178	3,000	1,440
26	598	12,500	20,200	91	241	59	129	473	165
27	276	4,200	3,130	91	274	67	118	470	150
28	400	6,500	7,020	91	195	48	112	393	119
29	300	8,000	6,480	94	222	56	103	313	87
30	200	4,200	2,270	97	168	44	97	241	63
31	500	7,670	s 18,700	91	227	56	--	--	--
Total	24,324	--	1,243,000	10,392	--	399,200	3,372	--	31,600

Total discharge for year (second-foot-days) 78,419
Total load for year (tons) 2,370,000

e Estimated or interpolated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

PECOS RIVER AT PUERTO DE LUNA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1949 to August 1950
(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 disperzed)

Date of collection	Time	Discharge (second-feet)	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, 1949	7:30 a.m.	a400	6,830	1,390	31	39	56	65	70	77	83	95		99		BSWCM
June 4, 1950	5:10 p.m.	1,400	24,600	3,110	--	16	--	28	--	50	72	91		99	100	PSWCM
June 12	6:40 a.m.	800	42,300	3,920	--	30	--	50	--	83	95	99		100		PSWCM
June 18	8:50 a.m.	10,000	48,200	1,900	16	20	25	31	37	44	54	71		94		BSWCM
June 18	8:50 a.m.	10,000	48,200	3,720	17	22	28	33	40	44	54	71		94		PSWCM
June 18	12:45 p.m.	4,500	38,600	4,780	--	31	--	48	--	73	91	98		100		PSWCM
June 28	7:00 a.m.	600	41,400	4,000	--	52	--	74	--	92	99	100		--		PSWCM
July 4	6:15 a.m.	1,500	66,800	3,880	18	24	30	40	51	66	90	99		100		BSWCM
July 4	6:15 a.m.	1,500	66,800	3,700	20	26	35	38	54	66	90	99		100		PSWCM
July 5	2:50 a.m.	3,700	40,100	3,650	--	19	--	30	--	53	70	82		93		PSWCM
July 10	12:05 p.m.	3,200	21,200	3,380	--	14	--	23	--	53	72	87		99		PSWCM
July 12	1:12 p.m.	1,500	18,200	4,370	--	41	--	60	--	75	88	94		99		PSWCM
Aug. 9	7:15 p.m.	700	7,810	2,250	26	30	39	47	61	82	94	99		100		BSWCM

a Estimated.

PECOS RIVER BELOW ALAMOGORDO DAM, N. MEX.

LOCATION.--At gaging station 1,200 feet downstream from Alamogordo Dam, 1¼ miles downstream from Alamogordo Creek, and 4½ miles northeast of Guadalupe, De Baca County.
DRAINAGE AREA.--4,390 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: June 1937 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 1,480 ppm June 1-10; minimum, 751 ppm Oct. 1-10.
Hardness: Maximum, 1,070 ppm June 21-30; minimum, 538 ppm Oct. 1-10.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 2,590 ppm Apr. 21-30, 1938; minimum, 435 ppm Oct. 1-8, 1941.
Hardness: Maximum, 1,800 ppm Jan. 11-16, 18-20, 1948; minimum, 294 ppm Oct. 1-8, 12-20, 1941.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949..	610	7.5	1,020	10		178	23	21		109	437	28		0.7		751	1.02	1,249	538	449	8
Oct. 11-20.....	102	7.7	1,050	11		190	22	19		110	456	29		.5		782	1.06	215	564	474	7
Oct. 21-31	102	7.9	1,110	10		190	24	29		119	473	32		.6		817	1.11	225	572	475	10
Nov. 1-10	88.2	8.0	1,120	10		199	27	21		117	489	34		.4		838	1.14	200	608	512	7
Nov. 11-20	59.3	7.9	1,230	10		222	31	21		126	546	39		.4		932	1.27	149	682	578	6
Nov. 21-30	26.8	7.9	1,290	8.6		230	32	26		130	576	40		.7		977	1.33	71	706	599	8
Dec. 1-10	19.5	7.9	1,340	8.7		239	35	30		132	611	44		.6		1,030	1.40	54	740	632	8
Dec. 11-20	20.4	7.8	1,410	8.5		253	37	26		133	637	47		.7		1,070	1.46	59	783	674	7
Dec. 21-31	71.3	7.8	1,360	7.0		245	34	30		135	619	44		.9		1,050	1.43	202	752	641	8
Jan. 1-10, 1950..	89.0	7.6	1,420	8.1		249	34	41		137	649	44		.5		1,090	1.48	262	762	649	10
Jan. 11-20	92.0	7.6	1,430	6.8		255	34	41		136	663	45		.3		1,110	1.51	276	776	664	10
Jan. 21-31	92.1	7.7	1,440	6.9		258	35	39		135	667	47		.0		1,120	1.52	279	788	677	10
Feb. 1-10	85.8	7.7	1,460	7.6		262	37	41		137	686	49		.1		1,150	1.56	266	806	693	10
Feb. 11-20	92.8	7.7	1,490	7.6		280	43	10		136	686	51		.5		1,150	1.56	288	876	764	3
Feb. 21-28	94.8	7.8	1,510	6.7		284	43	5.8		137	693	45		.5		1,140	1.55	292	886	773	1
Mar. 1-10	87.2	7.7	1,560	8.0		296	45	12		137	728	55		.5		1,210	1.65	285	924	811	3
Mar. 12-16, 20..	100	7.7	1,560	8.2		290	48	12		137	727	55		.3		1,210	1.65	327	921	808	3
Mar. 21-31.....	98.5	7.8	1,620	8.8		300	39	36		142	757	58		.6		1,270	1.73	338	909	792	8
Apr. 1-10	481	7.7	1,640	8.0		310	37	43		140	789	58		.2		1,310	1.78	1,700	926	811	9
Apr. 11-20	333	7.6	1,690	7.5		318	36	46		140	807	62		.4		1,350	1.84	1,210	942	827	10
Apr. 21-30	90.5	7.8	1,690	7.9		310	38	54		141	810	63		.2		1,350	1.84	330	930	814	11
May 1-10.....	78.8	7.5	1,720	9.1		313	46	41		139	821	64		.4		1,360	1.85	289	970	856	8
May 11-20	68.3	7.4	1,730	6.4		317	45	48		138	840	66		.5		1,390	1.89	256	976	863	10
May 21-31.....	739	7.4	1,780	7.8		330	45	47		135	868	68		.7		1,430	1.94	2,850	1,010	898	9

RIO GRANDE BASIN--Continued

PECOS RIVER BELOW ALAMOGORDO DAM, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
June 1-10, 1950 ...	228	7.5	1,020	7.2		329	49	58		136	900	70		0.5		1,480	2.01	911	1,020	911	11
June 11-20	212	7.5	1,840	9.8		346	47	38		135	891	72		.9		1,470	2.00	841	1,060	946	7
June 21-30	1,329	7.5	1,830	9.4		338	54	33		133	892	71		.9		1,460	1.99	5,240	1,070	956	6
July 2-10	405	7.5	1,720	11		319	45	42		133	940	63		.9		1,390	1.89	1,520	981	872	9
July 11-20	104	7.4	1,480	10		270	36	34		119	698	50		.5		1,160	1.58	326	822	724	8
July 21-31	106	7.6	1,390	9.0		242	33	39		116	638	46		.7		1,060	1.44	303	740	644	10
Aug. 1-10.....	620	7.6	1,290	11		225	30	32		112	581	40		.8		975	1.33	1,630	685	593	9
Aug. 11-20	156	7.6	1,300	9.6		222	31	33		114	576	42		.8		970	1.32	409	682	588	9
Aug. 21-31	112	7.6	1,320	8.0		228	32	34		119	588	45		.8		995	1.35	301	700	603	9
Sept. 1-3, 7-10 ...	111	7.6	1,350	11		239	34	30		123	611	45		.7		1,030	1.40	309	736	636	8
Sept. 11-20	111	7.6	1,390	13		249	32	36		126	636	47		.9		1,080	1.47	324	753	650	9
Sept. 21-30	111	7.6	1,430	13		253	34	39		129	654	49		.6		1,110	1.51	333	771	666	10
Weighted average	204	--	1,550	9.1		284	40	36		129	734	55		0.7		1,220	1.66	672	873	768	8

PECOS RIVER NEAR ACME, N. MEX.

LOCATION.--At bridge on U. S. Highway 70, approximately 3 miles above gaging station which is 1 mile southeast of Melena railroad station, 3½ miles downstream from Salt Creek, 5 miles southwest of Acme, Chaves County, and 13 miles northeast of Roswell.
DRAINAGE AREA.--11,380 square miles above gaging station (contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 4,900 ppm May 1-2; minimum, 986 ppm Sept. 6-7.
Hardness: Maximum, 2,330 ppm May 1-2; minimum, 652 ppm Sept. 6-7.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 19,870 ppm May 23 to June 2, 1938; minimum, 806 ppm May 24, 1941.
Hardness: Maximum, 5,320 ppm May 23 to June 2, 1938; minimum, 528 ppm May 24, 1941.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-3, 5-10, 1949	940	7.8	1,790	14		297	42	77		134	787	107		1.1		1,390	1.89	3,530	914	804	15
Oct. 12-20	59.7	7.6	2,610	15		372	73	159		135	1,070	246		1.7		2,000	2.72	322	1,230	1,120	22
Oct. 21-31	82.2	7.7	2,780	13		358	73	196		134	1,020	316		1.6		2,040	2.77	453	1,190	1,080	26
Nov. 1-10	77.5	7.8	2,530	13		352	70	162		136	1,020	244		1.8		1,930	2.62	404	1,170	1,050	23
Nov. 11-14,16-18 .	82.3	7.8	2,470	12		344	69	153		136	983	240		1.4		1,870	2.54	416	1,140	1,030	23
Nov. 23-28, 30....	a39.1	7.5	3,750	12		434	108	312		138	1,290	530		1.6		2,760	3.75	291	1,530	1,410	31
Nov. 29	(a)	7.7	6,670	11		468	137	913		135	1,470	1,470		2.8		4,540	6.17	--	1,730	1,620	53
Dec. 1-5, 7-10 ...	29.3	7.8	4,190	13		480	112	375		151	1,410	625		1.4		3,090	4.20	244	1,660	1,530	33
Dec. 11-20.....	29.5	7.8	3,110	12		406	89	228		150	1,180	370		1.9		2,360	3.21	188	1,380	1,260	26
Dec. 21-24, 27-30.	47.8	7.7	2,820	11		370	80	190		149	1,040	325		2.0		2,090	2.84	270	1,250	1,130	25
Jan. 3-10, 1950 ...	76.0	7.3	2,640	11		352	72	163		146	1,030	238		1.6		1,940	2.64	398	1,170	1,050	23
Jan. 11-20	87.5	7.4	2,660	9.4		360	72	173		141	1,020	278		1.3		1,980	69	468	1,190	1,080	24
Jan. 21-31	75.4	7.6	2,680	8.8		374	78	167		137	1,080	268		1.0		2,040	2.77	415	1,250	1,140	22
Feb. 1-10	79.1	7.7	1,190	8.5		360	72	178		130	1,040	278		1.0		2,000	2.72	427	1,190	1,090	25
Feb. 11-20	77.2	7.6	2,680	9.0		372	80	154		126	1,060	271		3.6		2,010	2.73	419	1,260	1,150	21
Feb. 21-28	90.0	7.6	2,700	9.6		382	82	153		125	1,100	264		3.3		2,060	2.80	501	1,290	1,190	20
Mar. 1-10	77.5	7.7	2,920	9.9		394	81	199		128	1,180	294		1.5		2,220	3.02	465	1,320	1,210	25
Mar. 11-20	63.9	7.7	2,780	9.7		394	81	170		129	1,170	256		1.5		2,150	2.92	371	1,320	1,210	22
Mar. 21-31	52.5	7.7	2,940	10		436	78	182		127	1,260	276		.9		2,310	3.14	327	1,410	1,300	22
Apr. 1-3, 7-10 ...	215	7.7	2,790	13		428	69	171		133	1,210	250		1.6		2,210	3.01	1,280	1,350	1,240	22
Apr. 11-20.....	426	7.7	2,630	12		420	66	146		124	1,170	224		.8		2,100	2.86	2,420	1,320	1,220	19
Apr. 21-30	8.6	7.7	4,770	14		584	115	459		129	1,770	694		.6		3,700	5.03	86	1,930	1,820	34
May 1,2	b2.3	7.4	6,560	17		664	163	741		90	2,030	1,240		2.9		4,900	6.66	30	2,330	2,250	41
May 28-31	b724	7.8	2,240	11		368	55	91		119	965	170		1.5		1,720	2.34	3,360	1,140	1,050	15

a Discharge for Nov. 29 included in discharge for Nov. 23, 28, 30.
b No flow at gaging station May 7-27. Discharge for May 5-6 included in discharge reported for May 1-2.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ACME, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
June 1-10, 1950	693	7.7	2,070	12		364	54	64		107	961	128		1.7		1,640	2.23	3,070	1,130	1,040	11
June 11-13, 15, 19-20	c 15.8	7.7	3,160	15		494	85	168		119	1,360	306		2.4		2,490	3.39	106	1,580	1,480	19
June 16-18	1.0	7.6	5,820	15		636	137	596		156	1,760	1,050		6.2		4,280	5.82	12	2,150	2,020	38
June 21-30	c 1,092	7.7	2,110	13		382	57	48		134	998	100		1.6		1,670	2.27	4,920	1,190	1,080	8
July 1-10	1,796	7.7	2,300	14		328	52	148		134	858	248		2.0		1,720	2.34	8,340	1,030	922	24
July 11-20	206	7.5	2,390	14		370	56	132		127	999	210		1.8		1,850	2.52	1,030	1,150	1,050	20
July 21-25	1,088	7.9	1,660	14		292	33	57		124	711	103		2.3		1,270	1.73	3,730	864	762	13
July 26-31	132	7.8	2,440	14		372	56	138		130	978	236		2.3		1,860	2.53	663	1,160	1,050	21
Aug. 1-10	370	7.7	2,100	14		350	52	89		123	935	146		2.1		1,650	2.24	1,650	1,090	986	15
Aug. 11-20	215	7.6	3,470	15		484	96	256		107	1,460	390		1.4		2,760	3.75	1,600	1,600	1,510	26
Aug. 21-31	d 4	7.6	4,820	17		554	125	487		116	1,730	750		1.4		3,720	5.06	40	1,900	1,800	36
Sept. 1-3	(d)	7.5	6,370	15		476	121	887		113	1,510	1,380		2.9		4,450	6.05	--	1,680	1,590	53
Sept. 6-7	e 643	7.3	1,380	13		222	24	57		140	500	99		1.8		986	1.34	1,710	652	538	16
Sept. 8-20	e 76.2	7.3	2,750	14		360	79	197		124	1,060	315		1.8		2,090	2.84	430	1,220	1,120	26
Sept. 21-30	116	7.4	2,590	14		366	77	156		115	1,090	240		2.5		2,000	2.72	626	1,230	1,140	22
Weighted average	235	--	2,260	13		352	56	115		129	946	190		1.7		1,740	2.37	1,100	1,110	1,000	18

c Discharge for June 20 included in discharge reported for June 21-30.
d No flow at gaging station Aug. 22 to Sept. 4.
e Discharge for Sept. 8 included in discharge reported for Sept. 6-7.

PECOS RIVER NEAR ARTESIA, N. MEX.

LOCATION.--At gaging station at bridge on State Highway 83, 4.3 miles east of Artesia, Eddy County, 7.0 miles north of mouth of Rio Penasco, and 17 miles north of McMillan Dam.
DRAINAGE AREA.--15,300 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1950.
Water temperatures: April 1949 to September 1950.
Sediment records: January 1949 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 8,560 ppm May 16; minimum, 653 ppm July 25, 27.
Hardness: Maximum, 2,620 ppm May 1-10; minimum, 422 ppm July 25, 27.
Water temperatures: Maximum observed, 85°F Aug. 30; minimum, 37°F Jan. 5, 8.
Sediment loads: Maximum daily, 116,000 tons July 23; minimum daily, 1 ton Aug. 31, Sept. 1.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 10,900 ppm Aug. 11-13, 17-21, 1945; minimum, 653 ppm July 25, 27, 1950.
Hardness: Maximum, 3,430 ppm Aug. 11-13, 17-21, 1945; minimum, 326 ppm June 6, 1949.
Water temperatures(April 1949 to September 1950): Maximum observed, 89°F June 28, 1949; minimum, 37°F Jan. 5, 8, 1950.
Sediment loads(January 1949 to September 1950): Maximum daily, 116,000 tons July 23, 1950; minimum daily, less than half a ton Mar. 27, Apr. 2, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-2, 1949	582	7.6	5,170	19		468	142	572		167	1,470	940		3.0		3,700	5.03	5,810	1,750	1,610	42
Oct. 3-6, 8-10	1,032	7.8	2,520	15		372	62	143		139	991	245		4.1		1,900	2.58	5,290	1,180	1,070	21
Oct. 11-20	166	7.6	4,980	18		476	142	526		153	1,480	885		2.4		3,600	4.90	1,610	1,770	1,650	39
Oct. 21-31	180	7.6	5,300	18		456	149	600		155	1,470	990		2.4		3,760	5.11	1,830	1,750	1,620	43
Nov. 1-10	176	7.7	5,460	18		476	155	612		187	1,500	1,020		3.8		3,880	5.28	1,840	1,820	1,670	42
Nov. 11-18	189	7.8	5,070	17		456	143	551		190	1,410	920		3.2		3,590	4.88	1,830	1,730	1,570	41
Nov. 21-30	175	7.7	5,530	16		476	155	616		203	1,480	1,030		5.6		3,880	5.28	1,830	1,820	1,660	42
Dec. 1-10	152	7.7	6,380	17		514	182	762		217	1,620	1,290		5.4		4,500	6.12	1,850	2,030	1,850	45
Dec. 11-20	149	7.8	6,660	18		518	193	811		223	1,660	1,370		7.1		4,690	6.38	1,890	2,090	1,900	46
Dec. 21-31	156	7.9	6,380	19		524	183	749		226	1,640	1,270		6.5		4,500	6.12	1,900	2,060	1,880	44
Jan. 1-10, 1950	192	7.5	5,430	17		474	156	616		206	1,490	1,020		6.4		3,880	5.28	2,010	1,820	1,660	42
Jan. 11-20	181	7.7	5,160	16		460	147	572		196	1,460	930		4.8		3,690	5.02	1,800	1,750	1,590	42
Jan. 21-31	159	7.7	5,360	14		472	156	604		186	1,530	980		5.2		3,850	5.24	1,650	1,820	1,670	42
Feb. 1-10	165	7.7	5,320	14		472	150	595		175	1,510	970		4.6		3,800	5.17	1,690	1,790	1,650	42
Feb. 11-20	154	7.7	5,440	14		476	156	608		177	1,530	1,000		3.0		3,870	5.26	1,610	1,830	1,680	42
Feb. 21-28	153	7.8	5,430	14		468	156	612		158	1,550	990		3.0		3,870	5.26	1,600	1,810	1,680	42
Mar. 1-10	133	7.8	5,690	14		494	163	659		164	1,610	1,080		3.2		4,100	5.58	1,470	1,900	1,770	43
Mar. 11-20	110	7.8	6,040	16		516	174	718		173	1,700	1,170		2.7		4,380	5.96	1,300	2,000	1,860	44
Mar. 21-30	82.7	7.6	6,320	17		534	189	734		178	1,790	1,200		4.0		4,560	6.20	1,020	2,110	1,960	43

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Apr. 1-10, 1950..	108	7.3	6,990	16		568	193	866		170	1,900	1,400		1.9		5,030	6.84	1,470	2,210	2,070	46
Apr. 11-20.....	507	7.4	3,060	14		438	85	143		160	1,210	255		3.9		2,230	3.03	3,050	1,440	1,310	18
Apr. 21-30.....	67.5	7.2	6,600	15		552	187	784		135	1,830	1,300		2.7		4,740	6.45	864	2,150	2,040	44
May 1-10	40.9	7.4	8,870	17		620	261	1,210		160	2,240	1,980		4.0		6,410	8.72	708	2,620	2,490	50
May 11-15, 17-20.	50.1	7.3	8,600	15		554	239	1,210		145	2,020	1,960		4.0		6,070	8.26	821	2,360	2,250	53
May 16	72	7.0	14,200	9.5		508	201	2,310		83	1,900	3,590		--		8,560	11.6	1,660	2,090	2,030	71
May 21-30	75.8	7.4	9,250	17		604	260	1,340		170	2,120	2,230		--		6,660	9.06	1,360	2,580	2,440	53
May 31, June 1-10	630	7.6	2,930	15		450	73	168		137	1,240	270		4.7		2,290	3.11	3,900	1,420	1,310	20
June 11-16.....	62.5	7.6	4,730	16		488	135	461		126	1,480	800		3.6		3,450	4.69	582	1,770	1,670	36
June 17-23.....	56.6	7.7	7,530	17		570	193	988		130	1,920	1,600		2.8		5,350	7.28	818	2,220	2,110	49
June 24-30.....	909	7.8	2,740	13		468	71	114		132	1,260	202		2.3		2,200	2.99	5,400	1,460	1,350	14
July 1-10	1,731	7.8	2,550	14		448	52	118		125	1,180	180		3.6		2,060	2.80	9,630	1,330	1,230	16
July 11-20	365	7.6	3,400	15		430	78	206		126	1,180	360		3.4		2,330	3.17	2,300	1,390	1,290	24
July 21-22	668	7.3	4,170	17		500	106	387		146	1,470	620		2.1		3,170	4.31	5,720	1,680	1,560	33
July 23-24, 26, 28-31.....	993	7.4	2,790	15		370	64	202		135	979	350		3.3		2,050	2.79	5,500	1,190	1,080	27
July 25, 27.....	1,540	7.8	964	15		138	19	52		195	251	78		4.2		653	.89	2,720	422	262	21
Aug. 1-10.....	482	7.2	3,390	15		422	82	285		157	1,160	476		4.4		2,520	3.43	328	1,390	1,260	31
Aug. 11-19	280	7.6	3,210	14		412	80	262		136	1,150	436		3.3		2,420	3.29	1,830	1,360	1,250	30
Aug. 20-28.....	43.6	7.3	5,770	14		506	145	705		115	1,620	1,140		4.0		4,190	5.70	493	1,860	1,760	45
Aug. 29-31.....	13.9	7.2	9,190	16		654	209	1,330		141	2,140	2,160		--		6,580	8.95	247	2,490	2,380	54
Sept. 1-6	60.7	7.5	9,480	15		654	221	1,360		147	2,170	2,210		--		6,700	9.11	1,100	2,540	2,420	54
Sept. 7a.....	--	--	4,740	--		--	--	--		--	--	855		--		--	--	--	--	--	--
Sept. 8-10.....	884	7.7	2,350	14		318	47	174		141	818	280		5.2		1,730	2.35	4,130	987	872	28
Sept. 11-20.....	121	7.8	4,570	16		424	113	491		126	1,290	810		2.6		3,210	4.37	1,050	1,520	1,420	41
Sept. 21-25.....	122	7.7	5,070	17		420	128	577		148	1,270	980		4.1		3,470	4.72	1,140	1,570	1,450	44
Sept. 26-30.....	429	7.8	3,050	15		318	71	280		143	874	470		5.5		2,100	2.86	2,430	1,090	968	36
Weighted average	293	--	3,760	15		434	97	335		152	1,250	554		3.9		2,760	3.75	2,180	1,480	1,360	33

a Discharge for Sept. 7 included in discharge reported for Sept. 8-10.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Temperature (°F) of water, water year October 1949 to September 1950
(Once-daily temperature measurement, generally between 9 a. m. and 6 p. m.)

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

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950

Day	October			November			December		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	163	168	74	170	212	97	149	176	71
2	1,000	4,770	s 23,400	161	296	129	161	202	88
3	1,960	7,290	s 39,100	160	199	86	157	154	65
4	2,710	6,350	46,400	163	211	93	153	177	73
5	1,680	4,900	s 23,600	163	184	81	152	182	75
6	638	2,650	4,560	166	252	113	155	180	75
7	455	1,800	2,210	172	197	91	153	188	78
8	319	1,200	1,030	185	258	129	152	183	75
9	267	1,050	757	221	213	127	146	162	64
10	224	1,250	756	204	178	98	138	211	79
11	201	800	434	190	192	98	147	178	71
12	201	682	370	195	162	85	150	152	62
13	185	689	344	185	206	103	150	202	82
14	163	515	277	180	178	87	146	164	65
15	160	469	203	183	205	101	147	267	106
16	152	357	147	188	190	96	147	219	87
17	142	477	183	190	227	116	155	170	71
18	149	369	148	194	254	133	149	177	71
19	152	376	154	195	179	94	149	136	55
20	150	273	111	192	190	98	150	144	58
21	144	284	110	217	201	118	153	142	59
22	157	323	137	208	243	136	157	148	63
23	178	331	159	187	241	122	150	192	78
24	177	372	178	173	214	100	149	128	51
25	213	313	180	168	221	100	147	148	59
26	206	294	164	163	243	107	150	136	55
27	194	307	161	161	238	103	141	174	66
28	185	321	160	160	198	86	132	125	45
29	182	258	127	160	204	88	160	129	56
30	175	303	143	150	159	64	182	108	53
31	168	227	103	--	--	--	195	119	63
Total	13,050	--	145,800	5,404	--	3,080	4,722	--	2,120

Day	January			February			March		
1	202	99	54	161	142	62	132	146	52
2	206	114	63	164	143	63	136	98	36
3	203	105	58	164	135	60	137	240	89
4	203	134	73	164	124	55	136	185	68
5	191	120	62	166	123	55	136	146	54
6	186	143	72	172	127	59	144	181	70
7	183	135	67	167	128	58	134	140	51
8	181	191	93	167	121	55	132	70	25
9	181	163	80	164	124	55	124	62	21
10	180	206	100	158	132	56	118	58	18
11	191	177	91	148	114	46	111	49	15
12	200	358	193	145	120	47	118	50	16
13	188	149	76	152	89	37	126	49	17
14	180	113	55	149	75	30	121	86	28
15	176	130	62	154	102	42	112	64	19
16	176	94	45	154	123	51	100	68	18
17	176	151	72	154	83	35	96	50	13
18	175	125	59	155	131	55	103	170	47
19	175	159	75	160	103	44	104	86	24
20	172	124	58	164	101	45	104	122	34
21	170	110	50	160	104	45	91	73	18
22	162	150	66	154	129	54	80	50	11
23	161	97	42	149	202	81	81	68	15
24	160	140	60	154	238	99	87	76	18
25	161	178	77	154	252	105	82	98	22
26	160	122	53	156	237	100	84	107	24
27	154	115	48	151	120	49	90	59	14
28	155	70	29	144	141	55	83	85	19
29	155	115	48	--	--	--	80	111	24
30	156	174	73	--	--	--	80	111	24
31	156	102	43	--	--	--	72	82	16
Total	5,475	--	2,100	4,404	--	1,600	3,334	--	920

s Computed by subdividing day.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Suspended sediment, water year October 1949 to September 1950--Continued

Day	April			May			June		
	Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment		Mean discharge (second-feet)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	66	63	11	49	223	30	722	2,160	4,210
2	72	106	21	43	168	20	756	2,060	4,200
3	82	101	22	36	197	19	807	2,080	4,530
4	78	62	13	35	224	21	920	2,400	5,960
5	49	50	7	41	211	23	592	2,280	s3,600
6	48	97	13	40	412	44	1,550	8,550	s39,100
7	44	74	9	40	326	35	442	3,580	s4,510
8	35	62	6	46	333	41	244	1,950	1,280
9	54	175	s68	44	318	38	160	950	410
10	550	1,780	s2,720	35	227	21	109	354	104
11	642	2,080	3,610	35	245	23	93	303	76
12	658	2,000	3,550	37	251	25	98	186	49
13	756	2,290	4,670	39	227	24	81	280	61
14	790	2,350	5,010	47	168	21	39	130	14
15	690	2,050	3,820	114	146	45	33	116	10
16	626	1,620	2,740	72	255	50	31	152	13
17	396	1,220	1,340	52	50	7	30	207	17
18	217	780	458	44	59	7	29	221	17
19	167	452	204	41	154	17	31	382	32
20	126	270	92	42	201	23	32	267	23
21	102	133	37	39	164	17	35	298	28
22	83	85	19	42	222	25	101	952	260
23	83	226	51	39	154	16	138	907	s510
24	82	258	57	32	232	20	948	5,320	s13,900
25	68	202	37	32	144	12	722	3,650	7,120
26	63	193	33	34	199	18	960	3,220	8,350
27	61	148	24	33	152	14	860	3,040	7,060
28	48	289	37	30	128	10	842	2,700	6,140
29	44	190	23	33	380	34	880	2,590	6,150
30	41	178	20	444	1,130	s1,400	1,150	2,970	s9,890
31	--	--	--	626	1,900	3,210	--	--	--
Total	6,821	--	28,720	2,316	--	5,310	13,435	--	128,600

Day	July			August			September		
1	2,910	7,620	s62,100	238	1,000	642	4.6	e40	1
2	777	4,570	s10,200	214	681	393	9.7	216	6
3	603	3,760	s6,230	212	520	298	22	53	3
4	480	3,280	s4,260	1,040	2,650	s15,300	46	126	16
5	1,130	5,720	s17,500	1,580	6,950	s30,600	67	72	13
6	1,590	6,320	s28,400	552	3,700	5,510	215	205	119
7	4,490	8,530	s102,000	396	2,050	2,190	662	1,550	s6,030
8	3,450	5,840	s55,700	271	950	695	1,940	6,250	s34,800
9	1,210	3,410	s11,900	188	590	299	592	3,170	s5,260
10	674	1,800	3,280	127	420	144	341	1,500	1,380
11	496	1,320	1,770	94	392	99	230	800	497
12	432	1,390	1,620	605	3,140	s6,090	164	550	243
13	352	620	589	739	3,950	7,880	138	490	183
14	553	1,480	s3,060	418	2,310	s2,820	114	286	88
15	595	3,690	s6,040	198	900	481	109	199	59
16	363	2,450	2,410	154	550	229	101	250	68
17	295	1,300	1,040	129	530	185	95	290	74
18	229	600	371	102	400	110	96	307	80
19	176	386	183	85	282	e 65	81	150	33
20	155	222	93	93	282	71	81	195	43
21	275	380	282	78	120	25	164	150	66
22	1,060	5,640	s25,000	63	35	6	129	133	46
23	3,280	12,700	s116,000	43	266	31	87	170	40
24	1,350	9,270	s33,800	32	36	3	91	110	27
25	2,070	8,200	s51,500	24	176	11	139	278	s115
26	920	4,970	s12,800	19	245	13	868	3,530	s8,280
27	1,010	4,080	s12,300	20	590	32	550	4,920	s7,090
28	396	1,600	1,710	20	51	3	310	5,600	4,690
29	330	1,500	1,330	18	44	2	225	3,200	1,940
30	363	1,140	1,120	15	46	2	191	1,300	670
31	310	905	757	8.8	e40	1	--	--	--
Total	32,324	--	575,300	7,775.8	--	74,230	7,862.3	--	71,960

Total discharge for year (second-foot-days) 106,923.1
Total load for year (tons) 1,040,000

e Estimated.
s Computed by subdividing day.

RIO GRANDE BASIN--Continued

PECOS RIVER NEAR ARTESIA, N. MEX.--Continued

Particle-size analyses of suspended sediment, October 1949 to July 1950
(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 (second-feet)	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. 2, 1949	4:50 p.m.	2,300	10,800	8,720	23	38	51	66	--	92	--	--		--		DSWCM
Oct. 4	5:20 p.m.	2,750	5,490	4,430	22	30	41	54	--	89	--	--		--		DSWCM
Oct. 10	9:45 a.m.	224	1,860	1,480	10	14	19	20	24	26	58	99		100		BSWCM
Dec. 28	9:30 a.m.	132	71	824	--	14	16	17	18	22	38	98		100		BSWCM
Apr. 10, 1950	12:22 a.m.	363	1,450	1,030	25	30	36	40	59	65	87	98		100		BWCM
Apr. 10	11:00 a.m.	581	2,110	758	--	42	66	81	89	92	98	--		--		BWCM
June 24	11:50 a.m.	1,110	5,910	1,700	43	49	59	70	85	90	96	99		100		BSWCM
July 1	11:30 a.m.	3,780	8,810	3,330	48	49	56	70	82	--	--	--		--		PWCM
July 7	2:30 p.m.	4,650	7,690	2,040	39	46	56	64	70	80	95	100		--		BSWCM

PECOS RIVER NEAR MALAGA, N. MEX.

LOCATION.--One and one-half miles upstream from gaging station which is 3 miles southeast of Malaga Eddy County, and 3 miles downstream from Black River.
DRAINAGE AREA.--19,190 square miles above gaging station (contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 4,480 ppm June 21-30; minimum, 1,150 ppm July 25-27.
Hardness: Maximum, 2,150 ppm Apr. 21-30; minimum, 664 ppm July 25-27.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 5,290 ppm Aug. 2-10, 1946; minimum, 384 ppm Sept. 21-22, 1941.
Hardness: Maximum, 2,290 ppm Aug. 20, 1947; minimum, 254 ppm Sept. 21-22, 1941.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949	736	7.8	4,250	18		466	128	271		166	1,450	600		4.0		3,120	4.24	6,200	1,690	1,550	32
Oct. 11-20	231	7.8	4,410	17		490	127	406		164	1,470	680		5.3		3,280	4.46	2,050	1,740	1,610	34
Oct. 21-31	209	7.7	4,890	20		496	158	473		200	1,580	780		7.2		3,610	4.91	2,040	1,890	1,720	35
Nov. 1-10	298	7.5	4,640	18		492	149	434		192	1,550	715		6.1		3,460	4.71	2,780	1,750	1,600	34
Nov. 11-20	286	7.8	4,650	16		526	149	399		179	1,590	700		5.0		3,470	4.72	2,680	1,920	1,780	31
Nov. 21-30	283	7.7	4,630	15		514	148	422		181	1,610	695		4.0		3,500	4.76	2,670	1,890	1,740	33
Dec. 1-10	283	7.7	4,580	17		516	150	407		176	1,610	685		3.9		3,480	4.73	2,660	1,900	1,760	32
Dec. 11-20	216	7.8	4,660	17		522	149	419		183	1,620	700		3.4		3,520	4.79	2,050	1,920	1,760	32
Dec. 21-31	237	7.8	4,650	15		502	156	420		189	1,590	705		4.3		3,490	4.75	2,230	1,890	1,740	33
Jan. 1-4, 7-10, 1950	284	7.4	4,470	15		506	140	394		173	1,560	655		6.0		3,360	4.57	2,580	1,840	1,700	32
Jan. 11-20	250	7.5	4,510	15		506	137	411		173	1,570	665		5.8		3,390	4.61	2,290	1,830	1,680	33
Jan. 21-31	235	7.6	4,560	15		510	142	402		174	1,580	665		5.8		3,410	4.64	2,160	1,860	1,710	32
Feb. 1-10	147	7.5	4,790	15		532	149	428		167	1,640	725		5.5		3,580	4.87	1,420	1,940	1,800	32
Feb. 11-20	146	7.8	5,000	13		524	158	477		167	1,690	775		5.5		3,720	5.06	1,470	1,960	1,820	35
Feb. 21-28	153	7.8	5,000	13		502	164	484		163	1,660	790		4.8		3,700	5.03	1,530	1,930	1,790	35
Mar. 1-10	98.8	7.7	5,350	15		508	170	553		183	1,690	890		6.3		3,920	5.33	1,050	1,970	1,820	38
Mar. 11-20	192	7.8	4,820	14		500	155	454		177	1,620	735		4.3		3,570	4.86	1,850	1,880	1,740	34
Mar. 21-31	98.9	7.5	5,230	15		556	161	509		166	1,780	825		5.2		3,930	5.34	1,050	2,050	1,910	35
Apr. 1-10	72.7	7.7	5,690	14		556	178	599		158	1,830	980		6.1		4,240	5.77	832	2,120	1,990	38
Apr. 11-20	68.0	7.8	5,910	16		548	186	642		184	1,830	1,040		6.3		4,360	5.93	800	2,130	1,980	40
Apr. 21-30	114	7.8	5,690	14		546	192	582		184	1,800	985		4.7		4,210	5.73	1,300	2,150	2,000	37
May 1-10	120	7.4	5,460	15		512	186	572		177	1,770	920		2.2		4,060	5.52	1,320	2,040	1,900	38
May 11-20	93.4	7.7	5,580	16		526	188	584		171	1,800	950		2.4		4,150	5.64	1,050	2,090	1,950	38
May 21-31	91.2	7.4	5,550	17		504	184	598		184	1,750	950		3.0		4,100	5.58	1,010	2,010	1,860	39

PECOS RIVER NEAR MALAGA, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
June 1-10, 1950..	78.6	7.4	5,320	18		476	175	595		179	1,700	910		3.4		3,970	5.40	843	1,910	1,760	40
June 11-20	78.1	7.5	5,320	17		488	168	574		168	1,660	915		1.5		3,910	5.32	825	1,910	1,770	40
June 21-30	62.5	7.7	5,980	19		546	184	689		158	1,860	1,100		1.4		4,480	6.09	756	2,120	1,990	41
July 1-10.....	94.5	7.7	5,460	19		514	175	603		159	1,750	965		.9		4,100	5.58	1,050	2,000	1,870	40
July 11-20.....	76.3	7.7	5,430	20		514	170	604		160	1,730	965		1.6		4,080	5.55	841	1,980	1,850	40
July 21-23	299	7.7	5,410	22		500	173	592		168	1,670	970		2.9		4,010	5.45	3,240	1,960	1,820	40
July 24, 28-31 ...	1,219	7.8	2,810	14		342	80	243		134	1,020	380		2.3		2,150	2.92	7,080	1,180	1,070	31
July 25-27	1,462	7.9	1,700	13		184	50	121		126	500	214		2.4		1,150	1.56	4,540	664	562	28
Aug. 1-10	326	7.5	3,990	15		458	116	392		143	1,400	635		1.2		3,090	4.20	2,720	1,620	1,500	34
Aug. 11-14, 16-20	81.5	7.5	5,440	19		530	161	603		160	1,730	965		3.4		4,090	5.56	900	1,980	1,850	40
Aug. 21-31	92.0	7.4	5,660	20		526	170	635		168	1,740	1,020		4.5		4,200	5.71	1,040	2,010	1,870	41
Sept. 1-10	217	7.6	5,110	18		486	171	495		179	1,580	850		3.4		3,690	5.02	2,160	1,920	1,770	36
Sept. 11-20	146	7.6	5,300	19		502	179	598		190	1,780	905		4.6		4,080	5.55	1,610	1,990	1,830	40
Sept. 21-30	181	7.4	5,190	19		492	177	529		196	1,640	875		4.8		3,830	5.21	1,870	1,960	1,790	37
Weighted average	208	--	4,470	16		471	141	425		168	1,490	696		4.1		3,330	4.53	1,870	1,760	1,620	34

PECOS RIVER AT RED BLUFF, N. MEX.

LOCATION.--About 1 mile upstream from gaging station at Red Bluff, Eddy County, which is just downstream from Red Bluff Creek, and 5½ miles upstream from Delaware River.
DRAINAGE AREA.--19,540 square miles above gaging station (contributing area).
RECORDS AVAILABLE.--Chemical analyses: October 1937 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 6,580 ppm June 21-30; minimum, 1,760 ppm Aug. 6.
Hardness: Maximum, 2,260 ppm Apr. 13-15, 17-30; minimum, 958 ppm Aug. 6.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 11,900 ppm Aug. 11-20, 1947; minimum, 456 ppm June 3, 1948.
Hardness: Maximum, 2,810 ppm Aug. 11-20, 1947; minimum, 256 ppm June 3, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Noncarbonate	Percent sodium
Oct. 10, 1949	692	7.8	5,390	18		462	139	628		165	1,450	1,020		8.4		3,810	5.18	7,120	1,720	1,590	44
Oct. 11-20.....	270	7.9	5,440	16		480	133	635		166	1,460	1,040		4.6		3,850	5.24	2,810	1,740	1,610	44
Oct. 21-31	199	7.7	6,390	19		518	165	794		183	1,640	1,300		9.0		4,540	6.17	2,440	1,970	1,820	47
Nov. 1-10	293	7.9	5,520	17		506	162	597		184	1,580	1,010		8.4		3,970	5.40	3,140	1,930	1,780	40
Nov. 11-20	283	7.9	5,530	15		534	153	596		174	1,640	995		5.9		4,020	5.47	3,070	1,960	1,820	40
Nov. 21-30	289	7.8	5,460	16		518	160	595		176	1,680	955		4.6		4,020	5.47	3,140	1,950	1,810	40
Dec. 1-10	292	7.8	5,410	15		514	155	581		176	1,630	950		5.1		3,940	5.36	3,110	1,920	1,780	40
Dec. 11-20	225	7.8	5,750	16		520	159	650		184	1,660	1,050		5.0		4,150	5.64	2,520	1,950	1,800	42
Dec. 21-23, 28-31 .	240	7.7	5,550	16		520	163	601		185	1,660	985		5.8		4,040	5.49	2,620	1,970	1,820	40
Jan. 1-10, 1950 ...	302	7.5	5,240	15		500	147	577		177	1,620	900		6.2		3,850	5.24	3,140	1,850	1,710	40
Jan. 11-20	276	7.5	5,270	15		514	146	563		171	1,620	905		5.2		3,850	5.24	2,870	1,880	1,740	39
Jan. 21-31	246	7.5	5,650	14		514	152	638		168	1,630	1,030		8.6		4,070	5.54	2,700	1,910	1,770	42
Feb. 1-10	161	7.5	6,110	13		522	154	730		160	1,640	1,190		6.9		4,330	5.89	1,880	1,940	1,800	45
Feb. 11-20	148	7.8	6,860	14		532	170	871		159	1,780	1,370		5.2		4,820	6.56	1,930	2,030	1,900	48
Feb. 21-28	153	7.8	6,480	14		514	169	793		158	1,720	1,260		4.7		4,550	6.19	1,880	1,980	1,850	47
Mar. 1-10	108	7.7	7,640	13		518	187	1,040		165	1,770	1,660		4.5		5,270	7.17	1,540	2,060	1,930	52
Mar. 11-19	201	7.7	6,040	12		494	170	709		176	1,650	1,140		4.4		4,270	5.81	2,320	1,930	1,790	44
Mar. 21, 25	115	7.4	6,820	12		552	170	846		142	1,790	1,370		3.2		4,810	6.54	1,490	2,080	1,960	47
Apr. 1-3	80.7	7.6	7,420	13		570	177	955		141	1,860	1,540		2.9		5,190	7.06	1,130	2,150	2,030	49
Apr. 13-15, 17-20	72.0	7.5	9,210	14		570	205	1,340		165	1,940	2,150		--		6,300	8.57	1,220	2,260	2,130	56
Apr. 21-30	108	7.6	8,390	14		568	205	1,160		171	1,930	1,870		3.7		5,830	7.93	1,700	2,260	2,120	53
May 1-10	125	7.4	7,330	15		532	194	957		158	1,840	1,530		3.2		5,150	7.00	1,740	2,120	2,000	49
May 11, 14-20	108	7.4	7,520	15		516	192	1,030		157	1,820	1,620		3.7		5,270	7.17	1,540	2,080	1,950	52
May 21-26, 30, 31.	105	7.5	7,710	15		506	195	1,060		161	1,790	1,680		3.1		5,330	7.25	1,510	2,060	1,930	53

RIO GRANDE BASIN--Continued

PECOS RIVER AT RED BLUFF, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
June 1, 3-10, 1950	85.6	7.4	8,050	17		496	205	1,140		169	1,800	1,810		3.4		5,550	7.55	1,280	2,080	1,940	54
June 11-20	79.6	7.5	7,640	18		498	192	1,080		154	1,760	1,720		1.9		5,350	7.28	1,150	2,030	1,910	54
June 21-30	58.8	7.4	9,460	16		524	209	1,490		135	1,940	2,330		--		6,580	8.95	1,040	2,170	2,060	60
July 1-10	98.2	7.6	8,560	18		540	201	1,270		141	1,910	2,010		.7		6,020	8.19	1,600	2,170	2,060	56
July 11-20	a168	7.6	8,050	19		534	184	1,170		143	1,850	1,830		.7		5,660	7.70	2,570	2,090	1,970	55
July 25-28, 30-31.	1,546	7.2	2,560	13		276	74	243		134	803	406		4.0		1,880	2.56	7,850	993	883	35
July 29	1,490	7.6	4,150	15		390	108	460		119	1,230	735		2.4		3,000	4.08	12,100	1,420	1,320	41
Aug. 1-5, 7-10	327	7.5	5,090	15		448	124	594		142	1,390	960		2.1		3,600	4.90	3,180	1,630	1,510	44
Aug. 6	607	7.7	2,530	12		282	62	210		135	784	344		3.5		1,760	2.39	2,880	958	848	32
Aug. 11-20	99.6	7.4	8,040	16		520	166	1,210		154	1,740	1,890		3.8		5,620	7.64	1,510	1,980	1,850	57
Aug. 21-31	93.7	7.4	9,410	15		546	196	1,460		149	1,890	2,300		--		6,480	8.81	1,640	2,170	2,050	59
Sept. 1-2, 6, 9, 10	233	7.5	7,270	18		504	177	998		162	1,720	1,580		4.7		5,080	6.91	3,200	1,990	1,850	52
Sept. 7-8	518	7.7	4,370	12		416	123	428		146	1,320	695		1.5		3,070	4.18	4,290	1,540	1,420	38
Sept. 11-20	154	7.6	6,710	16		470	180	874		162	1,610	1,420		3.1		4,650	6.32	1,930	1,910	1,780	50
Sept. 21-29	188	7.6	5,660	15		474	162	643		151	1,560	1,060		3.6		3,990	5.43	2,030	1,850	1,720	43
Weighted average	218	--	5,720	15		475	157	695		161	1,520	1,130		5.0		4,080	5.55	2,400	1,830	1,700	45

a Includes discharge for July 21-24.

PECOS RIVER NEAR ORLA, TEX.

LOCATION.--At gaging station 600 feet upstream from Pasotex pipe-line crossing, 6 miles southeast of Orla, Reeves County, 11 miles downstream from Salt (Screwbean) Draw, and 14 miles downstream from Red Bluff Dam.
DRAINAGE AREA.--21,300 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 6,180 ppm Oct. 11-20; minimum, 1,690 ppm Sept. 26-30.
Hardness: Maximum, 2,230 ppm Mar. 1-9, 11-12; minimum, 739 ppm Sept. 26-30.
EXTREMES, 1937-50.--Dissolved solids: Maximum, 9,640 ppm Oct. 21-31, 1947; minimum, 1,090 ppm June 1-2, 1948.
Hardness: Maximum, 3,240 ppm Feb. 11, 13, 16-19, 1946; minimum, 602 ppm June 1-2, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-10, 1949....	16.9	7.6	8,680	14		530	178	1,320		96	1,780	2,120		--		5,990	8.15	273	2,050	1,980	58
Oct. 11-20	6.25	7.7	8,900	13		530	206	1,340		101	1,880	2,160		--		6,180	8.40	104	2,170	2,090	57
Oct. 21-31	7.26	7.8	8,460	13		506	202	1,250		105	1,810	2,020		--		5,850	7.96	115	2,090	2,010	57
Nov. 1-30.....	8.07	7.6	7,300	9.9		516	185	1,020		112	1,780	1,640		1.5		5,210	7.09	114	2,050	1,960	52
Dec. 1-31	14.0	7.8	6,070	13		500	178	709		126	1,710	1,160		2.5		4,330	5.89	164	1,980	1,880	44
Jan. 1-31, 1950 ...	8.91	7.6	6,970	14		534	186	917		120	1,830	1,480		.0		5,020	6.83	121	2,100	2,000	49
Feb. 1-28.....	10.1	7.9	7,140	9.9		542	178	916		123	1,840	1,460		1.0		5,010	6.81	137	2,080	1,980	49
Mar. 1-9, 11-12 ..	61.6	7.9	7,810	14		588	185	1,050		110	1,960	1,680		2.0		5,530	7.52	920	2,230	2,140	51
Mar. 10, 13-31 ...	319	7.8	5,430	12		480	144	631		130	1,580	1,000		1.5		3,910	5.32	3,370	1,790	1,680	43
Apr. 1-30	404	7.7	5,580	16		484	144	645		134	1,600	1,010		3.0		3,970	5.40	4,330	1,800	1,690	44
May 1-31	310	7.6	5,840	17		492	151	727		107	1,690	1,120		3.0		4,250	5.78	3,560	1,850	1,760	46
June 1-30	262	7.6	6,250	19		500	167	762		136	1,740	1,180		3.0		4,440	6.04	3,140	1,930	1,820	46
July 1-31	456	7.4	6,290	22		508	179	764		109	1,740	1,250		2.0		4,520	6.15	5,570	2,000	1,910	45
Aug. 1-31.....	522	7.6	5,090	22		408	131	602		103	1,380	950		4.8		3,550	4.83	5,000	1,560	1,470	46
Sept. 1-25	102	8.0	6,710	19		454	154	919		111	1,560	1,450		3.5		4,610	6.27	1,270	1,770	1,670	53
Sept. 26-30	11.7	7.8	2,580	9.9		240	34	282		81	635	440		5.0		1,690	2.30	53	739	672	45
Weighted average	195	--	5,800	19		474	153	702		117	1,610	1,110		3.0		4,130	5.60	2,170	1,810	1,720	46

PECOS RIVER BELOW GRANDFALLS, TEX.

LOCATION.--At gaging station at bridge on State Farm to Market Road 11 between Grandfalls and Imperial, 7.1 miles southeast of Grandfalls, Ward County, and 10 miles downstream from Chacatori Draw.
DRAINAGE AREA.--27,820 square miles (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April 1939 to June 1942, October 1946 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum, 11,400 ppm Dec. 1-31, Feb. 1-28; minimum, 8,670 ppm Oct. 1-31.
Hardness: Maximum, 3,450 ppm July 1-31; minimum, 2,820 ppm Oct. 1-31.
EXTREMES, 1939-42, 1946-50.--Dissolved solids: Maximum, 12,000 ppm Feb. 1-10, 1941; minimum, 776 ppm June 5, 1947.
Hardness: Maximum, 3,630 ppm July 21-31, 1947; minimum, 339 ppm June 5, 1947.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Records of discharge for water year October 1949 to September 1950 given in Water-Supply Paper 1178.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1-31, 1949...	28.4	7.9	12,200	30		627	306	1,990		146	2,530	3,120				8,670	11.79	665	2,820	2,700	61
Nov. 1-30.....	20.7	7.6	15,300	19		745	366	2,620		187	2,820	4,230				10,900	14.82	609	3,360	3,210	63
Dec. 1-31.....	28.0	7.6	15,600	19		745	372	2,790		191	2,930	4,430				11,400	15.50	862	3,390	3,230	64
Jan. 1-31, 1950...	30.2	7.8	15,300	19		718	380	2,640		187	2,880	4,220				10,900	14.82	889	3,350	3,200	63
Feb. 1-28.....	27.3	7.7	16,500	14		741	369	2,800		171	2,940	4,440				11,400	15.50	840	3,370	3,230	64
Mar. 1-31.....	34.8	7.7	16,100	19		746	375	2,740		160	3,010	4,330				11,300	15.37	1,060	3,400	3,270	64
Apr. 1-30.....	19.6	7.4	12,600	28		713	377	1,850		143	2,700	3,130				8,870	12.06	469	3,330	3,210	55
May 1-31	20.0	7.8	13,800	21		734	326	2,330		137	2,950	3,590				10,000	13.60	540	3,180	3,060	61
June 1-30.....	13.9	7.7	14,400	28		726	365	2,340		111	3,000	3,680				10,200	13.87	383	3,310	3,220	61
July 1-31.....	19.3	7.2	14,800	24		744	387	2,480		101	3,120	3,900				10,700	14.55	558	3,450	3,360	61
Aug. 1-31.....	18.9	8.0	13,600	24		737	347	2,250		136	2,940	3,540				9,900	13.46	505	3,270	3,150	60
Sept. 1-30	40.3	8.0	12,600	20		655	307	2,060		142	2,580	3,240				8,930	12.14	972	2,900	2,780	61
Weighted average	25.1	--	14,400	22		715	354	2,420		154	2,850	3,840				10,300	14.01	700	3,240	3,110	62

CARLSBAD PROJECT MAIN CANAL NEAR CARLSBAD, N. MEX.

LOCATION.--At head of Carlsbad project main canal at Avalon Dam, 5.0 miles north of Carlsbad, Eddy County. Samples collected from canal whenever there was flow in canal; otherwise samples were collected from Lake Avalon at head gates and are those for which specific conductance values only are given.
RECORDS AVAILABLE.--Chemical analyses: February 1939 to September 1950.
EXTREMES, 1949-50.--Dissolved solids: Maximum,4,270 ppm May 11-19; minimum, 1,660 ppm Aug. 19-22.
Hardness: Maximum, 2,210 ppm May 11-19; mininum, 956 ppm Aug. 19-22.
EXTREMES, 1939-50 .--Dissolved solids: Maximum, 6,310 ppm Apr. 11-12, 1949; minimum, 1,340 ppm Sept. 2-4, 1946.
Hardness: Maximum, 2,810 ppm June 1-10, 1945; minimum, 744 ppm Sept. 2-4, 1946.
REMARKS.--Records of specific conductance of daily samples available in district office at Albuquerque, N. Mex. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
Oct. 1, 10, 1949...		--	3,340	--		--	--	--		--	--	--		--		--	--		--	--	--
Oct. 2-9.....		7.8	3,670	15		468	105	295		133	1,390	485		1.2		2,820	3.84		1,600	1,490	29
Oct. 11-20.....		8.0	4,070	15		508	115	329		139	1,510	545		1.8		3,090	4.20		1,740	1,630	29
Oct. 21-31.....		8.0	4,320	18		548	127	336		140	1,600	595		2.5		3,300	4.49		1,890	1,780	28
Nov. 1-10.....		--	4,350	--		--	--	--		--	--	--		--		--	--		--	--	--
Nov. 11-20.....		--	4,350	--		--	--	--		--	--	--		--		--	--		--	--	--
Nov. 21-30.....		--	4,320	--		--	--	--		--	--	--		--		--	--		--	--	--
Dec. 1-10		--	4,270	--		--	--	--		--	--	--		--		--	--		--	--	--
Dec. 11-22.....		7.4	4,280	15		538	122	366		143	1,670	555		2.1		3,340	4.54		1,840	1,730	30
Dec. 23-31.....		--	4,200	--		--	--	--		--	--	--		--		--	--		--	--	--
Jan. 1-10, 1950 ...		--	4,190	--		--	--	--		--	--	--		--		--	--		--	--	--
Jan. 11-20.....		--	4,190	--		--	--	--		--	--	--		--		--	--		--	--	--
Jan. 21-29.....		--	4,190	--		--	--	--		--	--	--		--		--	--		--	--	--
Jan. 30-31.....		7.5	4,220	14		546	121	356		147	1,690	535		.9		3,330	4.53		1,860	1,740	29
Feb. 9-10.....		--	4,220	--		--	--	--		--	--	--		--		--	--		--	--	--
Feb. 11-20.....		7.9	4,200	14		544	121	345		139	1,660	540		1.4		3,290	4.47		1,860	1,740	29
Feb. 21-28.....		7.9	4,250	12		552	122	352		138	1,680	554		1.2		3,340	4.54		1,880	1,770	29
Mar. 1-3, 5-10....		--	4,340	--		--	--	--		--	--	--		--		--	--		--	--	--
Mar. 11-20		--	4,420	--		--	--	--		--	--	--		--		--	--		--	--	--
Mar. 22-31		7.6	4,500	13		582	126	374		142	1,740	605		2.6		3,510	4.77		1,970	1,850	29
Apr. 1-10.....		7.6	5,090	12		576	147	494		145	1,800	795		3.5		3,900	5.30		2,040	1,920	34
Apr. 11-20.....		7.6	5,430	11		576	159	549		140	1,830	895		3.3		4,090	5.56		2,090	1,980	36
Apr. 21-30.....		7.7	4,490	11		548	128	399		134	1,680	640		0.6		3,470	4.72		1,890	1,780	31
May 1-10		7.3	4,720	14		564	137	432		129	1,730	710		2.3		3,650	4.96		1,970	1,860	32
May 11-19		7.2	5,530	13		622	159	556		128	1,930	920		3.2		4,270	5.81		2,210	2,100	35
May 20-June 1		--	5,130	--		--	--	--		--	--	--		--		--	--		--	--	--

RIO GRANDE BASIN--Continued

CARLSBAD PROJECT MAIN CANAL NEAR CARLSBAD, N. MEX.--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
June 2-10, 1950		7.4	3,400	11		384	96	285		113	1,160	475		1.8		2,470	3.36		1,350	1,260	31
June 11-20		7.5	4,410	12		540	129	371		126	1,640	620		1.4		3,380	4.60		1,880	1,780	30
June 21-30		7.5	4,610	14		546	134	406		125	1,690	665		1.4		3,520	4.79		1,920	1,820	32
July 1, 5-10		7.5	4,140	13		532	117	328		118	1,550	575		1.8		3,170	4.31		1,810	1,710	28
July 2-4		--	3,920	--		--	--	--		--	--	--		--		--	--		--	--	--
July 11-20		7.7	3,920	13		514	113	286		122	1,480	515		2.2		2,980	4.05		1,750	1,650	26
July 21-24		7.4	3,180	12		436	86	250		119	1,250	415		1.9		2,510	3.41		1,440	1,340	27
July 25-31		--	2,020	--		--	--	--		--	--	--		--		--	--		--	--	--
Aug. 1-7		--	3,050	--		--	--	--		--	--	--		--		--	--		--	--	--
Aug. 8-10		7.5	4,000	14		510	106	330		145	1,470	550		2.3		3,050	4.15		1,710	1,590	30
Aug. 11-18		7.4	4,080	14		512	108	359		141	1,510	576		2.2		3,150	4.28		1,720	1,610	31
Aug. 19-22		7.7	2,350	12		276	65	170		100	784	302		3.1		1,660	2.26		956	874	28
Aug. 23-31		7.7	3,860	8.9		478	108	331		135	1,390	565		2.3		2,950	4.01		1,640	1,530	31
Sept. 1-10		7.3	4,480	14		554	132	372		143	1,640	644		3.3		3,430	4.66		1,920	1,810	30
Sept. 11-20		7.4	4,600	14		574	135	397		140	1,740	654		3.1		3,590	4.88		1,990	1,870	30
Sept. 21-30		7.4	4,550	14		574	134	387		135	1,740	638		3.0		3,560	4.84		1,980	1,870	30

RIO GRANDE BASIN--Continued

REFINERY INTAKE CANAL NEAR LOVING, N. MEX.

(Weekly samples taken from canal in sec. 13, T-23-S, R-28-E, representing water in Harroun Canal diverted from Pecos River at dam in sec. 11, T-23-S, R-28-E)

Date of collection	Specific conductance (micromhos at 25°C)	Chloride (Cl) ppm	Date of collection	Specific conductance (micromhos at 25°C)	Chloride (Cl) ppm
Oct. 6, 1949	4,520	690	Apr. 6, 1950	4,650	705
Oct. 13	3,670	485	Apr. 13	4,770	750
Oct. 20	4,500	685	Apr. 20	4,720	730
Oct. 27	4,520	695	Apr. 27	4,710	735
Nov. 3	4,390	640	May 4	4,720	735
Nov. 10	4,430	625	May 11	4,550	720
Nov. 17	4,440	630	May 18	4,620	730
Nov. 24	4,410	615	May 25	4,680	725
Dec. 1	4,400	615	June 1	4,360	675
Dec. 8	4,360	620	June 9	4,110	650
Dec. 15	4,350	640	June 15	4,410	695
Dec. 22	4,370	625	June 22	4,610	730
Dec. 29	4,450	645	June 29	4,570	725
Jan. 5, 1950	4,320	595	July 6	4,530	715
Jan. 12	4,320	595	July 13	4,440	705
Jan. 19	4,310	595	July 20	4,450	725
Jan. 26	4,350	595	July 27	1,430	175
Feb. 2	4,370	610	Aug. 3	3,720	515
Feb. 9	4,580	675	Aug. 10	4,230	615
Feb. 16	4,540	680	Aug. 17	4,550	705
Feb. 23	4,500	690	Aug. 24	4,690	745
			Aug. 31	4,730	755
Mar. 2	4,560	695			
Mar. 9	4,590	715	Sept. 11	4,530	735
Mar. 16	4,440	620	Sept. 14	4,320	715
Mar. 23	4,580	655	Sept. 21	4,570	725
Mar. 30	4,740	705	Sept. 28	4,220	635

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RIO GRANDE BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN NEW MEXICO

Chemical analyses, in parts per million, water year October 1949 to September 1950

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	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: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Total	Hardness as $CaCO_3$: Non-carbonate	Percent sodium
RIO GRANDE AT EMBUDO																					
Jan. 11, 1950			302							130											
May 23		8.0	398			40	9.4	29		129	80	8				258	0.35		138	33	31
SAN ANTONIO CREEK NEAR LOS ALAMOS																					
July 21, 1949	2.6		80.6	--		--	--	--		41	--	1.8	--	--		--	--	--	--	--	--
Aug. 23	2.5		80.4	57		5.9	2.1	9.4		40	2.4	2.2	1.8	0.7		101	0.14	0.68	23	0	47
Feb. 20, 1950	2.6		78.9	--		--	--	--		--	--	--	2.0	--		--	--	--	--	--	--
June 20	2.2		86.5	60		7.2	.6	12		45	2.1	1.8	2.2	.2		108	.15	0.64	20	0	57
Oct. 10	--		82.7	57		--	--	--		42	--	--	2.0	--		--	--	--	--	--	--
EAST FORK JEMEZ RIVER NEAR LOS ALAMOS																					
July 21, 1949	1.9	7.5	95.4	57	0.02	7.0	1.3	12		47	4.9	2.2	0.8	0.5	0.5	109	0.15	0.56	23	0	53
Aug. 23	1.9		80.3	59		5.4	1.5	11		46	2.1	1.8	.7	.2		104	.14	.53	20	0	56
June 20, 1950	1.9		87.2	65		6.8	2.4	9.4		50	2.6	1.5	.8	.1		114	.16	.58	27	0	43
Oct. 10	--		83.7	60		--	--	--		47	--	--	.8	--		--	--	--	--	--	--
McMILLAN RESERVOIR NEAR LAKEWOOD																					
Oct. 11, 1949			2,840			376	76	247		117	1,070	410		--		2,240	3.05		1,250	1,150	30
Nov. 22			3,670			408	104	346		126	1,300	525		0.4		2,750	3.74		1,450	1,340	34
Jan. 4, 1950			5,150			472	154	535		165	1,490	910		6.8		3,650	4.96		1,810	1,680	39
Feb. 9			5,300			--	--	--		143	--	955		--		--	--		--	--	--
Mar. 22			5,950			532	157	689		144	1,730	1,100		1.9		4,280	5.82		1,970	1,860	43
May 2			4,550			532	135	381		141	1,650	620		4.9		3,390	4.61		1,880	1,770	31
June 13			3,740			--	--	--		92	--	430		--		--	--		--	--	--
July 24			2,650			434	70	146		120	1,200	240		2.1		2,150	2.92		1,370	1,270	19
Sept. 5			2,980			--	--	--		117	--	340		--		--	--		--	--	--
PECOS RIVER AT FORD IN MAJOR JOHNSON SPRING AREA NEAR LAKEWOOD																					
Oct. 11, 1949			4,370			536	135	348		151	1,660	565		--		3,320	4.52		1,890	1,770	29
Nov. 22			4,220			532	144	329		152	1,680	540		--		3,300	4.49		1,920	1,800	27

PECOS RIVER AT FORD IN MAJOR JOHNSON SPRING AREA NEAR LAKEWOOD--Continued

Jan. 4			4,210			542	146	307	154	1,690	520				3,280	4.46		1,950	1,830	25
Feb. 9			4,230			--	--	--	155	--	540		--		--	--		--	--	--
Mar. 22			4,480			578	142	328	164	1,680	605		1.7		3,420	4.65		2,030	1,890	26
July 24			2,130			264	71	117	162	683	255		1.2		1,470	2.00		950	818	21
Sept. 5			4,500			--	--	--	153	--	540		--		--	--		--	--	--
PECOS RIVER AT DAM SITE 3, NEAR LAKEWOOD																				
Oct. 11, 1949			4,490			538	133	372	140	1,650	615		--		3,380	4.60		1,890	1,780	30
Nov. 21			4,260			516	126	364	138	1,620	565		0.2		3,260	4.43		1,810	1,690	30
Jan. 4, 1950			4,130			520	126	342	136	1,640	525		1.2		3,220	4.38		1,820	1,700	29
Feb. 10			4,150			--	--	--	139	--	540		--		--	--		--	--	--
Mar. 21			4,430			566	126	353	144	1,650	610		1.6		3,380	4.60		1,930	1,810	28
May 2			4,590			--	--	--	131	--	650		--		--	--		--	--	--
June 14			4,760			576	142	421	144	1,730	720		1.1		3,660	4.98		2,020	1,900	31
July 24			549			92	12	4.4	183	109	16		3.4		327	.44		279	129	3
Sept. 6			4,640			--	--	--	155	--	670		--		--	--		--	--	--
PECOS RIVER AT CARLSBAD																				
Oct. 12, 1949			3,780			408	131	308	216	1,250	530		--		2,730	3.71		1,560	1,380	30
Nov. 22			4,200			490	128	356	159	1,520	575		0.4		3,150	4.28		1,750	1,620	31
Jan. 4, 1950			4,060			476	130	340	166	1,500	540		2.1		3,070	4.18		1,720	1,590	30
Feb. 10			3,740			--	--	--	201	--	520		--		--	--		--	--	--
Mar. 21			4,140			500	124	331	167	1,480	565		3.2		3,090	4.20		1,760	1,620	29
May 2			3,730			--	--	--	202	--	520		--		--	--		--	--	--
June 14			3,480			364	119	305	211	1,180	465		2.9		2,540	3.45		1,400	1,220	32
July 25			933			114	23	46	99	270	82		2.0		586	.80		379	298	21
Sept. 6			3,500			--	--	--	211	--	495		--		--	--		--	--	--
SOUTH BERRENDO CREEK SEC. 15, T10S., R24E, NEAR ROSWELL																				
Oct. 10, 1949			3,010			242	92	285	153	741	500		5.1		1,940	2.64		982	857	39
May 1, 1950			3,070			259	84	298	194	735	505				1,980	2.69		992	832	40

RIO GRANDE BASIN--Continued

MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN NEW MEXICO--Continued

Chemical analyses, in parts per million, water year October 1949 to September 1950--Continued

Date of collection	Mean discharge (second-feet)	pH	Specific conductance (micromhos at 25° C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium
																Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	
HAGERMAN CANAL AT DEXTER																					
Oct. 10, 1949			5,180			368	125	649		233	1,070	1,090	--			3,420	4.65		1,430	1,240	50
Nov. 21			3,370			406	170	185		221	1,400	335	4.4			2,610	3.55		1,710	1,530	19
Jan. 3, 1950			4,790			404	149	503		239	1,200	895	7.7			3,280	4.46		1,620	1,420	40
Feb. 9			4,610			--	--	--		236	--	935	--			--	--		--	--	--
Mar. 20			5,050			370	121	604		237	1,050	1,020	9.2			3,290	4.47		1,420	1,230	48
May 1			5,370			--	--	--		214	--	1,120	--			--	--		--	--	--
June 13			5,650			--	--	--		207	--	1,220	--			--	--		--	--	--
July 24			3,420			--	--	--		244	--	635	--			--	--		--	--	--
Sept. 5			3,260			288	108	309		193	853	555	6.6			2,210	3.01		1,160	1,000	37
BLACK RIVER AT FOREHAND CROSSING NEAR MALAGA																					
Oct. 11, 1949			1,880			378	72	0.2		195	1,010	20	--			1,580	2.15		1,240	1,080	0
Nov. 22			1,840			364	72	10		208	963	19	0.4			1,520	2.07		1,200	1,030	--
Jan. 4, 1950			1,780			358	66	1.4		211	932	16	2.3			480	2.01		1,160	992	0
Feb. 10			1,780			--	--	--		215	--	17	--			--	--		--	--	--
Mar. 21			1,970			370	69	23		197	1,020	22	1.8			1,600	2.18		1,210	1,040	4
May 2			2,030			--	--	--		186	--	21	--			--	--		--	--	--
June 14			1,860			--	--	--		162	--	20	--			--	--		--	--	--
July 25			1,250			--	--	--		154	--	12	--			--	--		--	--	--

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