1964

Surface Water Records of New Mexico

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY

Prepared in cooperation with the State of New Mexico
and with other agencies

United States Department of the Interior
Geological Survey - Water Resources Division

SURFACE WATER RECORDS OF NEW MEXICO

1964

Prepared in cooperation with

Office of the State Engineer
Interstate Stream Commission
State Department of Game and Fish
Pecos River Commission
State Highway Department
Rio Grande Compact Commission
Costilla Creek Compact Commission
Bureau of Reclamation, U. S. Department of the Interior
Corps of Engineers, U. S. Army
Bureau of Indian Affairs, U. S. Department of the Interior
Fish and Wildlife Service, U. S. Department of the Interior
Soil Conservation Service, U. S. Department of Agriculture
National Park Service, U. S. Department of the Interior
Weather Bureau, U. S. Department of Commerce

Copies of this report may be obtained from
District Engineer, Surface Water Branch
U. S. Geological Survey
Federal Building
Cathedral Place
P. O. Box 1750
Santa Fe, N. Mex.

CALENDAR FOR WATER YEAR 1964

OCTOBER 1963

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
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27	28	29	30	31		

NOVEMBER 1963

S	M	T	W	T	F	S
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3	4	5	6	7	8	9
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DECEMBER 1963

S	M	T	W	T	F	S
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29	30	31				

JANUARY 1964

S	M	T	W	T	F	S
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FEBRUARY 1964

S	M	T	W	T	F	S
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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
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MARCH 1964

S	M	T	W	T	F	S
1	2	3	4	5	6	7
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29	30	31				

APRIL 1964

S	M	T	W	T	F	S
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MAY 1964

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24	25	26	27	28	29	30
31						

JUNE 1964

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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

JULY 1964

S	M	T	W	T	F	S
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST 1964

S	M	T	W	T	F	S
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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					

SEPTEMBER 1964

S	M	T	W	T	F	S
		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			

CONTENTS

SURFACE WATER RECORDS OF NEW MEXICO, 1964

INTRODUCTION

The surface-water records for the 1964 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of New Mexico are given in this report. For convenience there are also included records for a few pertinent gaging stations in bordering States. The records were collected and computed by the Water Resources Division of the U. S. Geological Survey, under the direction of W. L. Heckler, district engineer, Surface Water Branch.

This report is the fourth in a series presenting, annually, basic data on surface-water records by States. Through September 30, 1960, the records of discharge and stage of streams and contents and stage of lakes or reservoirs were published in an annual series of U. S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in New Mexico were contained in Parts 7, 8, and 9 of that series.

Beginning with the 1961 water year, streamflow records and related data will be released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports will be limited and primarily for local needs. The records later will be published in Geological Survey water-supply papers at 5-year intervals. These 5-year water-supply papers will show daily discharge and will be compiled on the same geographical areas previously used for the annual series; however, some of the 14 parts of conterminous United States will be further subdivided.

The records for New Mexico will be published in water-supply papers covering Part 7 for stations in the Lower Mississippi River drainage, Part 8 for Western Gulf of Mexico drainage, and Part 9 for Colorado River drainage. For 1960 water year, the WSP Numbers for these parts were 1711, 1712, 1713 respectively. A compilation of records for these parts through 1950 water year is contained in WSP Nos. 1311, 1312, 1313 respectively; a 1951-60 compilation series will have WSP Nos. 1731, 1732, 1733.

COOPERATION

The first gaging station established by the Geological Survey in the United States was on the Rio Grande at Embudo Jan. 1, 1889. Cooperation with the Territory of New Mexico began about 1907, and Territory or State cooperation in varying amounts continued until 1915, the work being directed from the Denver office. From 1916 to 1930 the State conducted its own stream-gaging program. In 1931 a new State cooperative program was begun and a Geological Survey district office established in Santa Fe. Agreements have also existed with county, municipal, and private organizations, and with other Federal agencies. Organizations that supplied data are acknowledged in station descriptions.

Organizations that assisted in collecting data through cooperative agreements with the Survey in 1964 are:

Office of the State Engineer, S. E. Reynolds
Interstate Stream Commission, S. E. Reynolds, Secretary
State Department of Game and Fish
Pecos River Commission, Berkely Johnson, Federal Representative and Chairman, T. E. Lusk, Commissioner for New Mexico, J. C. Wilson, Commissioner for Texas.
State Highway Department, T. B. White, State Highway Engineer
Rio Grande Compact Commission, Berkely Johnson, Federal Representative and Chairman, J. E. Whitten, Commissioner for Colorado, S. E. Reynolds, Commissioner for New Mexico, L. A. Scott, Commissioner for Texas.
Costilla Creek Compact Commission, S. E. Reynolds, Commissioner for New Mexico, J. E. Whitten, Commissioner for Colorado.

Assistance in the form of funds or services was furnished by the following Federal Agencies.

Corps of Engineers, U. S. Army in the operation of 24 gaging stations.
Bureau of Reclamation, U. S. Department of the Interior in the operation of 17 gaging stations.
Bureau of Indian Affairs, U. S. Department of the Interior in the operation of 4 gaging stations.
Fish and Wildlife Service, U. S. Department of the Interior in the operation of 4 gaging stations.
Soil Conservation Service, U. S. Department of Agriculture in the operation of 2 gaging stations.
National Park Service, U. S. Department of the Interior in the operation of 1 gaging station.

Assistance in the form of funds or services was also given by the following organizations:

Forest Service, U. S. Department of Agriculture; Weather Bureau, U. S. Department of Commerce; Public Health Service, U. S. Department of Health, Education and Welfare; the City of Ruidoso; Carlsbad Irrigation District; Public Service Company of New Mexico; Middle Rio Grande Conservancy District.

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Capacity, as applied to reservoirs, expresses space available for contents below a specific elevation or gage height; hence, capacity table.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface run-off from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports, or pending reports.

DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in the same downstream order used in the water-supply papers. Records are listed in a downstream direction along the main stem with all stations on a tributary entering above a main-stem station listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations, so that the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete number for each station, such as 09-3545.00, includes the part number "9" and a six digit station number. In this report, the part number and only the essential digits of the station number are shown. For example, the complete number 09-3545.00 would appear as 9-3545, just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. Records of stage are obtained from a water-stage recorder that gives a continuous record of fluctuations or from direct readings on a non-recording gage. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge. Low-flow measurements may also be made by volumetric methods or by use of portable flumes or weirs of rated capacity.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is in effect the shifting-control method.

At some gaging stations the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute the daily discharge. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins.

The data in this report generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the 1964 water year is shown on page II to facilitate finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given periods for which there are published records for the present station or for stations generally equivalent to the present one. Under "Gage" are given the type of gage currently in use and the datum of the gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. The references to "datum of 1929" and adjustments of other years are to the datum and adjustments of the U. S. Coast and Geodetic Survey. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum daily discharge, and/or the minimum discharge if it is meaningful. In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and to conditions which affect the natural flow at the gaging station is given under "Remarks."

Skeleton rating tables are published for all stations except those for which the daily discharge for the greater part of the open-water period was determined by the shifting-control method, the slope method, or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables generally are not published for canals, ditches, drains, or springs.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharges for several parts of a day.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Total discharge, or runoff for the month is in acre-feet.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights for most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can be presented. Peak discharges are not published for any stream for which the peaks are subject to substantial control by man, unless they are meaningful. Time of day is expressed in 24-hour time, for example 12:30 a.m. is 0030, 1:30 p.m. is 1330.

Footnotes to the table of daily discharge indicate periods for which discharge was computed or estimated by unusual or special methods because of no gage-height record, ice effect, or other conditions that reduce the degree of accuracy of the records. The footnotes are either reference footnotes, with corresponding symbols used in the table of daily discharge to indicate the days included, or general footnotes, introduced by the word "Note," in which the days included are stated.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. A skeleton table of capacity at given stages is not published for reservoirs for which only monthly data are given.

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at

those stations where adjustments are made, large errors in computed runoff may occur when relatively large negative adjustments are made or when evaporation is large in comparison with the observed discharge.

SUPPLEMENTAL DATA

Data collected at partial-record stations and at miscellaneous sites are given at the end of each report. Data for partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements at miscellaneous sites are given in a third table.

Seepage investigations are presented following measurements at miscellaneous sites. These consist of text and tabulations summarizing data derived primarily from associated series of discharge measurements and observations made within a short time period along a given reach of channel, preferably during a period of relatively stable conditions. The objectives may vary, but usually include the study of seepage gains or losses, surface inflow, diversions (including pumps), areas of springs, water temperatures, low-flow characteristics of the area, and chemical quality (not published herein). These investigations may be repeated periodically or at random intervals for some reaches of certain channels. Indicated gains and/or losses as shown may be substantially affected by small inaccuracies of open channel measurements. Small differences between large measurements will have a lower degree of accuracy than the same differences between smaller measurements.

Information of a more detailed nature than that published for most of the gaging stations is on file in the district office. About half the gaging-station records in the state (through 1954 for Part 9, 1958 for Parts 7 and 8) have been analyzed by electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year. This information is now available in printed form under title, "Flow Characteristics of New Mexico Streams," an unnumbered special Report, from New Mexico State Engineer, Capitol Building, Santa Fe, N. Mex.

HYDROLOGIC CONDITIONS

Wide variations in hydrologic conditions and runoff are characteristic in the State. Streams fed by the mountainous areas with heavy ground cover usually fare better during drought periods. Many streams in the east, south, and central west are essentially arroyo-type, and derive a large part of their runoff from scattered storms.

This year can be called a drought year. In terms of mean annual discharge a cross-section of 23 gaging stations ranged from 4.5 to 75 percent of long-term averages. Median of this group was 36 percent. The 4.5 percent was for Mora River near Shoemaker which suffered from heavy irrigation diversions during sustained low flow. The 75 percent was for Rio San Jose near Correo which received runoff from some heavy local storms.

October brought good runoff in the Gila River basin and upper Canadian; flow was deficient in upper Rio Grande basin, and near median elsewhere. Storage in major reservoirs (excepting Navajo on San Juan River) was quite low; combined storage in Elephant Butte and Caballo increased, but still was only about 16 percent of average.

November was essentially a repeat of October, with no outstanding features. December runoff was deficient in Canadian and upper Rio Grande basins, near median in the Gila River basin, and slightly above median in the upper Pecos River basin. Storage in major reservoirs changed only slightly. Precipitation was light and winter snowpack subnormal.

With below-normal precipitation January runoff was above median only in the upper Pecos River basin, near median in Canadian River basin, below median in Gila basin and deficient in upper Rio Grande. February followed the January pattern. Flow at Otowi station almost tied the all-time low of record in 1903. Precipitation was nearer to normal in some areas.

March produced light precipitation, had little snow to melt, and runoff was generally deficient except in the upper Pecos basin where it approached median flow. April precipitation was improved except in the central and southeast areas. Runoff, bolstered by some snowmelt, rose above median in Canadian. However, it was below median in upper Rio Grande and deficient elsewhere. Forecasting agencies selected 50 to 60 percent of normal for annual totals.

May runoff increased but was below median or deficient in most areas. The public became acutely aware of general drought conditions which carried over to June. Below median or deficient runoff continued, though local storms produced flash runoff. One such arroyo flow on Eagle Draw caused property damage in Artesia of $1,030,350 and additional heavy crop damage around Artesia. Conchas Reservoir was below gravity diversion for Conchas Canal and irrigation water for the 35,000-acre Tucumcari Project was lifted by pumps into the canal. Carlsbad Spring went dry June 14.

July precipitation was fair to good, but flash flows failed to bring runoff for the month up to median. August rains, falling on improved soil moisture, brought runoff in upper Rio Grande above median. Gila basin remained below median, Canadian and Pecos basins were deficient. September rains were fair to good. Streamflow was excessive in Gila basin; upper Rio Grande and Pecos basins were below median and Canadian basin was deficient.

The water year saw new lows for many gaging sites. Groundwater levels dropped because of depleted recharge and heavy withdrawal for supplementary irrigation. Crops in some dry-farming areas were not worth the cost of harvest, and heavy acreage went fallow. Carryover storage in most reservoirs was well below average.

7-1535. Cimarron River near Guy, N. Mex.

Location.--36°59'15", long 103°25'25", in SE¼ sec.21, T.32 N., R.33 E., on right bank 1.5 miles upstream from Baker damsite, 1.7 miles northwest of Valley filling station, 12 miles north of Guy, and 27 miles northwest of Kenton, Okla.

Drainage area.--545 sq mi.

Records available.--April 1942 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,900 ft (from topographic map). Prior to Oct. 1, 1943, at datum 0.44 ft higher.

Average discharge.--22 years, 10.7 cfs (7,750 acre-ft per year).

Extremes.--Maximum discharge during year, 2,070 cfs Aug. 7 (gage height, 7.80 ft, from floodmark); no flow at times.
1942-64: Maximum discharge, 8,500 cfs Oct. 5, 1954 (gage height, 20.5 ft), from rating curve extended above 3,000 cfs on basis of velocity-area study and logarithmic plotting; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 6,500 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	1.3	1.9	2.0	1.3	1.3	1.4	1.1	20	0.3	0.9	0.4
2	2.1	1.5	1.9	1.9	1.2	1.2	1.4	1.0	50	.1	.8	.3
3	2.0	1.5	1.9	2.0	.9	1.3	1.4	.9	20	.1	.7	.2
4	1.9	*1.2	*1.9	1.4	.3	1.2	2.0	.9	10	0	134	.2
5	1.5	1.4	2.1	1.8	1.0	1.2	2.5	.6	7	0	121	.2
6	1.5	1.4	2.1	*1.5	1.0	1.2	2.5	.6	5	0	6.5	.5
7	1.5	1.4	2.1	1.9	1.9	1.2	2.5	.6	4	0	100	.6
8	1.7	1.4	1.8	1.0	2.0	1.2	2.5	.5	3	0	450	.3
9	1.5	1.5	1.9	1.0	2.0	1.2	* 2.3	.6	3	2.6	150	.3
10	1.3	1.4	1.8	1.3	2.0	1.4	2.0	.9	2	12	50	.3
11	1.0	1.5	1.0	1.8	1.9	1.3	1.9	* 1.2	2	.6	20	.3
12	.5	1.3	1.5	1.0	1.8	* 1.3	1.8	1.2	2	.6	5	.6
13	.6	1.3	1.0	.5	1.5	1.3	1.2	1.1	10	.1	* 2.7	.9
14	.7	1.4	1.0	.7	1.3	1.3	1.3	1.0	3	0	2.4	1.4
15	.8	1.4	1.5	1	1.3	1.2	1.3	.9	1	0	2.0	1.1
16	.9	1.4	1.9	1.4	1.3	1.3	1.2	.7	* .6	*147	1.7	4.2
17	1.0	1.4	2.1	2	1.7	1.3	1.2	.6	.3	46	1.2	4.7
18	.9	1.5	2.4	2.4	1.5	1.5	1.2	.6	.3	78	1.2	1.8
19	.9	1.7	2.1	2.8	1.3	1.7	1.2	.5	.3	91	1.5	1.0
20	.9	1.8	2.1	2.3	1.4	1.5	1.2	28	.3	107	1.2	.8
21	1.1	1.9	2.0	2.3	1.2	1.4	1.2	3.2	.3	12	1.0	*.9
22	1.2	1.8	1.8	2.4	1.2	1.5	1.2	1.3	.3	4.4	.9	1.0
23	1.2	1.8	1.8	2.3	1.5	1.2	1.2	.7	.3	2.7	.7	.8
24	1.0	1.8	2.0	1.7	1.8	1.2	1.2	.4	.3	1.9	.6	.7
25	1.1	1.9	2.0	1.4	1.7	1.2	1.0	.5	.3	1.7	.5	.6
26	1.0	1.9	2.1	1.8	1.5	1.4	.9	10	.1	1.8	.6	.5
27	1.0	2.0	2.0	1.5	* 1.6	1.4	.9	235	.1	3.5	.6	.4
28	1.2	1.9	1.8	1.5	1.2	1.4	.9	50	.1	2.0	.6	.4
29	1.3	1.9	1.5	1.7	1.2	1.4	1.0	100	0	1.8	.5	.4
30	1.2	1.9	1.0	1.3	----------	1.4	1.0	30	.2	1.4	.4	.4
31	1.2	----------	1.4	1.4	----------	1.4	----------	10	----------	1.2	.5	----------
Total	38.0	47.5	55.4	51.0	41.5	41.0	44.5	484.6	145.8	519.8	1059.7	26.2
Mean	1.23	1.58	1.79	1.65	1.43	1.32	1.48	15.6	4.86	16.8	34.2	0.87
Ac-ft	75	94	110	101	82	81	88	961	289	1,030	2,100	52

Calendar year 1963: Max 1,080 Min 0 Mean 7.76 Ac-ft 5,620
Water year 1963-64: Max 450 Min 0 Mean 6.98 Ac-ft 5,060

Peak discharge (base, 1,000 cfs).--July 16 (2030) 1,390 cfs (6.10 ft); Aug. 7 (2330) 2,070 cfs (7.80 ft, from floodmark).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11-14, 29, 30, Jan. 8, 9, 12-15, Feb. 6. No gage-height record May 27 to June 15; Aug. 7-12.

7-1545. Cimarron River near Kenton, Okla.

Location.--Lat 36°56', long 102°57', in SE¼ sec.4, T.5 N., R.1 E., near right bank on downstream side of pier of highway bridge, 1.5 miles upstream from Carrizo Creek, 1.7 miles northeast of Kenton, 2.2 miles downstream from Carrizozo Creek, and at mile 594.0.

Drainage area.--1,106 sq mi, of which 68 sq mi is probably noncontributing.

Records available.--April 1904 to July 1905 (gage heights only), October 1950 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,267.08 ft above mean sea level, datum of 1929 (levels by State Highway Commission). April 1904 to July 1905 staff gage at site 0.9 mile upstream at different datum.

Average discharge.--14 years, 21.4 cfs (15,490 acre-ft per year).

Extremes.--Maximum discharge during year, 4,000 cfs Aug. 8 (gage height, 6.58 ft); no flow at times.
1950-64: Maximum discharge, 26,300 cfs July 6, 1958 (gage height, 13.67 ft), from rating curve extended above 6,000 cfs by logarithmic plotting; no flow at times in most years.

Remarks.--Records fair except those for periods of ice effect, which are poor. Diversions for irrigation of about 7,400 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	* 0.1	0.8	1.4	0.8	0.9	0.3	* 0.1	0.7	0	0	
2	6	.1	.8	1.3	.8	.9	.1	0	*.5	0	0	
3	6	.1	.8	1.1		.9	*0	0	.7	0	0	
4	* 5.6	0	.8			.8	.2	0	.5	0	0	
5	4.6	0	.8			1.0	1.2	0	.3	0	196	
6	4.0	0	.8			1.0	.8	0	.1	* 0	7.5	
7	3.5	0	.8		.7	.9	.8	0	0	0	3.2	
8	3.2	0				1.0	.8	0	0	0	843	
9	2.8	.1				.9	.6	0	0	0	527	
10	2.4	.5				1.0	.4	.5	0	0	10	
11	1.8	.6				.9	.3	1.3	0	0	3	
12	1.6	.6	(*)		1.7	.9	0	.4	0	0	0	
13	1.3	.6		.6	1.4	.9	0	.2	0	0	0	
14	1.3	.7		(*)	* 1.3	.8	0	0	0	0	0	(*)
15	1.1	.8			1.1	.8	0	0	* 0	.4	0	
16	1.1	.8			1	.9	0	0	0	0	0	
17	1.1	.7			1.2	.9	*0	0	0	7.8	0	
18	* 1.1	.6			1.1	.9	.3	* 0	0	1.9	0	
19	1.0	.6	.6		1.1	1.0	.4	0	0	0	0	
20	1.1	.5	(*)		1.1	.8	.3	0	0	* 3.6	0	
21	1.1	.5			1	.8	.1	0	0	1.7	* 0	
22	1.0	.6			1	.8	0	0	0	0	0	
23	.8	.4		.8	1	* .8	0	0	0	0	0	
24	.8	.7		*.9	1	.8	0	0	0	0	0	
25	.5	.8		.7	1.1	.8	0	0	0	0	0	
26	.3	.8		.7	1.1	.8	0	14	0	0	0	
27	.2	.8		.7	.9	.9	0	1.1	0	0	0	
28	0	.8		.9	* .8	1.0	0	.3	0	0	0	(*)
29	0	.8		.9	.8	.8	0	.2	0	0	0	
30	.1	.8		.8	------	.8	0	.8	0	0	0	
31	.1	------		.8	------	.4	------	1.1	------	0	* 0	------
Total	62.5	14.4	20.0	22.4	27.6	26.8	6.6	20.0	2.8	15.4	1,539.7	0
Mean	2.02	0.48	0.65	0.72	0.95	0.86	0.22	0.65	0.09	0.50	51.3	0
Ac-ft	124	29	40	44	55	53	13	40	5.6	31	3,150	0

Calendar year 1963: Max 4,720 Min 0 Mean 44.3 Ac-ft 32,070
Water year 1963-64: Max 843 Min 0 Mean 4.94 Ac-ft 3,580

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-8	1600	6.58	4,000				

* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8-31, Jan. 4-22, 25-27, Feb. 3-11, 15, 16, 21-24, 28, 29, Mar. 4, 9.

7-1990. Canadian River near Hebron, N. Mex.

Location.--Lat 36°47'10", long 104°27'45", in Maxwell Grant, near right bank at downstream end of bridge pier on U. S. Highways 64 and 85, 3¼ miles north of Hebron, 5 miles upstream from Chicorica Creek, and 8 miles south of Raton.

Drainage area.--229 sq mi.

Records available.--June 1946 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,250 ft (from topographic map). June 1, 1946, to Sept. 30, 1952, on bridge pier 150 ft upstream and Oct. 1, 1952, to July 13, 1955, on bridge pier 200 ft upstream, both at present datum. July 14, 1955, to Aug. 11, 1964, at present site at datum 1.10 ft lower.

Average discharge.--18 years, 4.98 cfs (3,610 acre-ft per year).

Extremes.--Maximum discharge during year, 1,250 cfs Aug. 4 (gage height, 5.06 ft, datum then in use), from rating curve extended above 116 cfs on basis of logarithmic plotting and shape of curves at former site 200 ft upstream; no flow for many days.

1946-64: Maximum discharge, 6,860 cfs May 19, 1955; maximum gage height, 11.6 ft Aug. 24, 1951 (backwater from temporary dam downstream); no flow at times.

Flood in 1942 reached a stage of about 26 ft, at site 150 ft upstream from, information by local residents.

Remarks.--Records poor. Diversions above station for irrigation of a few hundred acres. Part or all of low flow can be diverted to left bank a few hundred yards above station for stock water, off-channel storage and irrigation.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0.2	0.2	0.2	0.1	* 0.1	0.1	0.4	0.3	0	0
2	(*)	0	.2	.3	.1	.2	0	.1	9.7	.2	0	0
3		0	.1	.2	0	0	.1	.1	* .5	.2	0	0
4		0	.2	.1	0	0	.5	.1	.1	.1	70	0
5		0	.2	.1	.1	.1	.2	.1	.1	0	* 28	0
6		0	.2	0	0	.1	.1	.1	.1	0	1.8	0
7		0	.2	.1	0	.1	.2	* 0	.1	0	0	0
8		0	.1	0	0	0	.1	0	0	0	1.4	0
9		0	.2	0	.1	0	.5	.1	0	0	0	0
10		0	.1	.2	.1	0	4.0	.1	0	0	0	0
11		0	.1	.1	* .1	* .1	10	.1	0	0	0	0
12		0	* .1	0	.1	.1	12	.1	0	0	* 0	0
13		* 0	.1	0	0	.2	3.7	.1	7.6	0	0	0
14		0	.1	.1	0	.2	1.6	.1	1.6	0	73	.5
15		0	.1	.1	0	.2	.5	.1	.5	0	5	.2
16		0	.1	.1	.1	.1	.3	.1	.3	0	.2	* 0
17		.1	.2	.3	.1	.1	* .5	.1	.2	.9	.1	0
18		.1	.2	.5	.1	.1	.4	.1	.1	0	0	0
19		.1	.2	.3	.1	.1	.3	1.1	.1	0	0	0
20		.2	.2	.3	0	.1	.2	.2	.1	6.8	0	0
21		.1	0	.4	0	.1	.1	.2	.1	0	0	1.8
22		.1	0	.4	0	.1	.1	.2	.1	0	0	.2
23		.1	.1	.2	0	.1	.1	.1	.1	0	0	0
24		.1	.2	0	.1	.1	.1	.1	.2	0	0	0
25		.1	.2	.1	.1	.1	.1	.1	.2	0	0	0
26		.1	.1	.1	0	.1	.1	.2	.2	0	.1	0
27		.1	.1	* .1	0	.1	.1	19	.2	0	0	0
28		.1	.1	.1	0	.1	.1	.2	.1	0	0	0
29	(*)	.1	0	.1	.1	.1	.1	0	.1	0	0	0
30		.1	0	.1	----------	.1	.1	0	.2	1.6	0	0
31		----------	.1	.1	----------	.1	----------	0	----------	0	0	----------
Total	0	1.5	4.0	4.7	1.5	3.0	36.3	23.0	23.0	10.1	179.6	2.7
Mean	0	0.05	0.13	0.15	0.05	0.10	1.21	0.74	0.77	0.33	5.79	0.09
Ac-ft	0	3.0	7.9	9.3	3.0	6.0	72	46	46	20	356	5.4

Calendar year 1963: Max 146 Min 0 Mean 1.62 Ac-ft 1,170
Water year 1963-64: Max 73 Min 0 Mean 0.79 Ac-ft 575

Peak discharge (base, 1,000 cfs).--Aug. 4 (1430) 1,250 cfs (5.06 ft).

* Discharge measurement made on this day (some less than 0.05 cfs).

Note.--No gage height record Oct. 1, Dec. 4-11, Jan. 12-15. Stage-discharge relation affected by ice Nov. 23 to Dec. 3, Dec. 12 to Jan. 11, Jan. 16 to Mar. 12, Mar. 20.

7-2030. Vermejo River near Dawson, N. Mex.

Location.--Lat 36°40'50", long 104°47'05", T.28 N., R.20 E., in Maxwell Grant, on left bank, 1½ miles north of Dawson.

Drainage area.--301 sq mi.

Records available.--October 1915 to July 1918, April 1919 to May 1921, January 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,540 ft (from topographic map). Prior to Sept. 17, 1921, staff gage and Sept. 17, 1921, to May 31, 1923, water-stage recorder, at sites 1 mile upstream at different datums. Feb. 25, 1927, to Sept. 23, 1953, water-stage recorder at several sites about three-quarters of a mile upstream at datums 8 to 12 ft higher.

Average discharge.--40 years (1915-17, 1919-20, 1927-64), 19.4 cfs (14,045 acre-ft per year).

Extremes.--Maximum discharge during year, 482 cfs May 26 (gage height, 4.08 ft); minimum daily, 0.3 cfs Sept. 18-20, 25-28.
1927-64: Maximum discharge, about 9,000 cfs Aug. 6, 1940 (gage height, 11.88 ft, site and datum then in use, from flood-mark in well), from rating curve extended above 360 cfs on basis of slope-area measurements of 3,250 and 5,000 cfs at later site; no flow at times.
A major flood occurred Aug. 2, 1921, when discharge probably exceeded 10,000 cfs.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor. Diversions for irrigation of small acreage and mountain meadows above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 26				May 27 to Sept. 30			
1.4	0.56	2.0	12	1.3	0.17	1.9	13
1.5	1.5	2.2	20	1.4	.9	2.1	20
1.6	2.8	2.5	42	1.5	2.5	2.3	29
1.8	6.6	2.8	84	1.7	7.6	2.6	54

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	3.3	4.7	2.3	3.0	4.0	7.8	5.1	21	11	2.5	0.8
2	*2.6	5.1	3.6	2.4	2.5	3.5	9.2	4.7	17	3.6	5.0	*.6
3	2.1	5.4	4.0	2.0	2.5	3.5	9.8	6.8	*21	2.5	7.0	.5
4	2.1	5.3	4.4	1.8	3.5	3.5	8.4	8.9	16	2.2	4.3	.6
5	2.2	* 5.1	4.7	1.7	4.0	3.5	8.1	7.6	14	2.0	*7.8	.6
6	2.0	4.9	*4.7	1.9	3.5	4.0	9.2	5.7	12	1.6	15	.6
7	2.1	4.7	3.4	2.0	3.0	3.5	8.1	*3.9	11	1.8	12	.5
8	2.2	4.7	4.5	1.7	3.5	3.0	7.6	3.1	9.7	* 2.0	30	.5
9	1.8	4.7	4.7	*1.5	4.0	3.0	6.6	3.8	8.1	2.0	17	.5
10	1.8	4.5	4.5	1.6	* 4.0	* 4.0	6.6	5.7	6.2	5.0	12	.5
11	1.7	4.3	3.5	1.3	4.0	4.0	7.4	6.4	4.6	2.3	8.6	.5
12	1.7	4.3	3.0	1.2	3.0	4.5	8.1	6.4	4.3	2.2	8.6	.5
13	2.0	4.3	2.0	1.1	3.0	5.0	8.9	6.4	6.7	2.0	8.6	.4
14	1.8	4.3	2.0	1.3	3.0	4.5	6.4	6.6	8.1	1.8	9.5	.4
15	1.8	4.1	2.3	1.5	3.0	4.0	4.7	7.6	9.7	1.8	9.9	.6
16	1.8	4.1	2.6	1.7	3.5	5.7	5.5	7.1	6.7	2.3	7.8	* 1.0
17	1.7	4.3	3.2	1.9	4.0	5.5	*6.1	5.1	4.8	47	7.8	.4
18	1.8	3.2	2.9	1.7	5.0	5.9	13	6.4	* 3.8	20	8.4	.3
19	2.1	3.3	2.9	1.7	* 5.5	6.6	18	7.4	3.1	12	5.1	.3
20	3.6	3.3	2.8	1.5	4.5	6.4	17	9.2	2.9	7.3	3.1	.3
21	3.4	3.9	2.0	1.4	4.0	5.5	13	8.9	2.7	4.3	3.4	.6
22	3.1	4.1	2.4	1.3	4.0	6.1	7.6	7.8	4.3	2.9	2.9	.8
23	3.0	3.5	2.8	1.2	4.0	6.4	6.8	6.4	3.1	* 2.9	2.0	.4
24	2.6	3.6	3.1	1.2	4.5	6.6	6.8	8.4	2.5	2.5	2.2	.4
25	2.8	3.8	3.3	1.3	4.0	5.9	7.6	12	2.3	2.7	2.0	.3
26	2.6	4.1	2.7	1.5	3.7	4.9	9.8	76	2.5	2.7	2.2	.3
27	3.1	3.8	2.9	1.5	3.5	4.7	9.2	57	2.3	4.3	2.0	.3
28	3.1	3.9	2.4	*1.5	3.8	4.7	6.4	33	2.2	3.1	1.3	.3
29	* 3.1	3.6	2.0	2.0	4.0	4.9	4.5	27	2.0	2.3	1.2	2.5
30	2.6	4.1	1.8	2.7	----------	5.7	5.1	23	2.7	2.9	1.0	1.8
31	2.6	----------	2.1	3.0	----------	* 6.4	----------	23	----------	2.7	.8	----------
Total	74.9	125.6	97.9	52.4	107.5	149.4	253.3	406.4	217.3	165.7	211.0	18.1
Mean	2.42	4.19	3.16	1.69	3.71	4.82	8.44	13.1	7.24	5.35	6.81	0.60
Ac-ft	149	249	194	104	213	296	502	806	431	329	419	36

Calendar year 1963 : Max 473 Min 0.2 Mean 7.37 Ac-ft 5,330
Water year 1963-64 : Max 76 Min 0.3 Mean 5.14 Ac-ft 3,730

Peak discharge (base, 800 cfs). --No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-19, 23, Dec. 3-5, 8, 10-14, Jan. 29 to Mar. 15, 17, 21. Doubtful gage-height record Dec. 15 to Jan. 28.

7-2050. Six Mile Creek near Eagle Nest, N. Mex.

Location.--Lat 36°31'09", long 105°16'30", in Maxwell Grant, on left upstream wingwall of concrete control, 250 ft downstream from concrete box culvert on U. S. Highway 64, and 2½ miles southwest of Eagle Nest, Colfax County.

Drainage area.--10.5 sq mi.

Records available.--April 1928 to September 1955, July 1958 to September 1964. No winter records 1928-31, 1933-55. Prior to October 1930 monthly discharge only, published in WSP 1311. Records for December 1930 to March 1931 have been found to be unreliable and should not be used. Published as "near Therma" 1928-34.

Gage.--Water-stage recorder. Concrete control Sept. 11, 1931, to May 1933, and since Sept. 13, 1934. Datum of gage is 8,195.16 ft above mean sea level, datum of 1929. Prior to May 18, 1928, staff gage 88 ft upstream at datum 0.98 ft higher. May 18, 1928, to Sept. 11, 1938, water-stage recorder at site 88 ft upstream at datum 0.43 ft higher.

Average discharge.--7 years (1931-32, 1958-64), 2.28 cfs (1,650 acre-ft per year).

Extremes.--Maximum discharge during year, 20 cfs July 24 (gage height, 1.53 ft); maximum gage height, 2.25 ft Jan. 16 (ice backwater); minimum discharge, 0.1 cfs Oct. 29.

1930-55, 1958-64: Maximum discharge not determined, occurred Apr. 11, 1937 (discharge probably exceeded 125 cfs); maximum gage height recorded, 3.38 ft Apr. 2, 1937 (ice jam), site and datum then in use; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 300 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 23				June 24 to Sept. 30			
0.6	0.2	0.9	3.2	0.37	0.2	0.6	1.2
.7	.7	1.0	5.1	.4	.3	.7	2.0
.8	1.8	1.1	7.6	.5	.6	.8	3.2

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	0.7	0.9	0.9	0.7	1.1	4	3.3	1.1	0.6	1.2	1.1
2	1.0	.8	.9	.9	.7	1.2	*3.5	3.3	1.0	.6	1.5	.9
3	.7	1.0	.8	.8	.7	1.2	2	3.5	.9	.4	1.0	* 1.0
4	* 1.0	1.0	.8	.8	.7	1.1	1.8	3.7	* .8	.4	2.1	1.2
5	1.1	.9	* .8	.8	.7	1.1	1.7	3.9	.8	.4	1.8	1.4
6	1.1	* 1.0	.7	.8	.7	1.1	1.5	* 3.9	.6	.5	* 1.3	1.0
7	1.1	1.1	.7	*.8	.7	1.0	1.4	3.7	.5	.7	1.4	1.0
8	1.1	1.1	.7	.8	.7	1.0	1.5	3.7	.5	.8	1.4	1.0
9	1.1	1.2	.7	.7	.8	1.0	1.9	3.3	.4	* .5	1.0	1.0
10	1.1	1.1	.7	.7	.8	1.2	2.5	3.3	.4	.7	1.0	1.1
11	.9	1.1	.6	.7	.8	1.3	4.4	3.0	.4	.5	1.1	1.2
12	.8	1.0	.6	.6	* .8	* 1.3	4.2	2.8	.4	.6	2.7	1.1
13	.8	1.0	.6	.6	.8	1.2	4.1	3.0	.3	.7	2.6	1.1
14	* .7	1.0	.6	.6	.7	1.1	4.7	3.0	.3	.6	2.6	1.0
15	.5	1.0	.7	.6	.6	1.1	6.4	3.2	.4	.5	2.5	1.1
16	.4	.9	.7	.6	.6	1.2	*7.9	3.2	.4	.4	2.0	1.1
17	.4	1.0	.7	.7	.6	1.2	7.6	3.2	* .3	.8	1.8	1.1
18	.5	1.0	.8	.7	.6	1.3	6.6	3.0	.3	.7	1.6	1.0
19	.7	.9	.8	.7	.6	1.4	6.1	2.7	.3	.7	1.7	1.0
20	.8	.9	.8	.7	.6	1.5	5.8	2.4	.3	.8	1.7	1.1
21	.6	.8	.8	.8	.6	1.5	5.4	2.4	.3	.8	1.4	.8
22	.6	.9	.7	.8	.6	1.5	4.9	* 2.1	.2	.7	1.4	1.1
23	.5	.8	.7	.7	.6	1.5	4.4	1.9	.2	.8	1.4	1.0
24	.3	.9	.8	.7	.6	1.5	4.2	1.6	.2	2.7	1.1	1.0
25	.7	.9	.9	.6	.7	1.4	4.2	1.6	.3	.8	1.3	.9
26	.7	.9	.9	.7	.7	1.3	3.7	1.8	.3	1.0	1.2	.9
27	.7	.9	.9	.7	.8	1.3	3.3	1.6	.2	1.1	1.0	.6
28	.5	.9	.8	*.7	.8	1.5	2.8	1.4	.2	1.1	1.1	.5
29	.3	.9	.8	.7	.9	2.3	2.8	1.2	.2	1.1	1.1	.6
30	.4	.9	.8	.7	----------	3.0	2.7	1.1	.5	1.1	1.1	.6
31	.2	----------	.9	.7	----------	3.7	----------	1.1	----------	1.0	1.0	----------
Total	22.3	28.5	23.6	22.3	20.2	44.1	118.0	82.9	13.0	24.1	47.1	29.5
Mean	0.72	0.95	0.76	0.72	0.70	1.42	3.93	2.67	0.43	0.78	1.52	0.98
Ac-ft	44	57	47	44	40	87	234	164	26	48	93	59

Calendar year 1963: Max 6.1 Min 0.2 Mean 1.39 Ac-ft 1,000
Water year 1963-64: Max 7.9 Min 0.2 Mean 1.30 Ac-ft 940

Peak discharge (base, 15 cfs).--July 24 (1430) 20 cfs (1.53 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1, 2, 14, 16, 18-30, Dec. 1 to Mar. 28, Apr. 1-7 (no gage-height record Jan. 8, 16-27, 31, Feb. 1-9, 11-29, Mar. 1-12, June 20-23).

7-2055. Eagle Nest Reservoir near Eagle Nest, N. Mex.

Location.--Lat 36°32'05", long 105°14'00", about sec.26, T.27 N., R.16 E. (projected), in Maxwell Grant, at upstream face of Eagle Nest Dam on Cimarron Creek, 2 miles southeast of Eagle Nest and 6¼ miles west of Ute Park.

Drainage area.--167 sq mi.

Records available.--December 1927 to December 1944 (month-end contents only, published in WSP 1311), May 1950 to September 1964.

Gage.--Wire-weight gage since May 1950 read 1 to 4 times a month (at random intervals). Datum of gage is at mean sea level, datum of 1929. Current mapping activity has indicated that datum may be changed. Prior to 1950, nonrecording gage (type unknown) at same site and datum.

Extremes.--Maximum contents observed during year, 21,050 acre-ft May 5 (elevation, 8,103.30 ft); minimum determined, 13,000 acre-ft Sept. 30 (elevation, 8,094.00 ft).

1927-44, 1950-64: Maximum contents observed, 78,800 acre-ft May 31, 1942 (elevation, 8,136.9 ft); minimum observed, 635 acre-ft Dec. 14, 1954 (elevation, 8,061.33 ft).

Remarks.--Reservoir is formed by concrete dam with spillway cut in natural rock; completed June 30, 1918; storage began in June 1917. Capacity, 79,120 acre-ft between elevations 8,035.0 (sill of outlet gate) and 8,137.0 ft (crest of ungated spillway). Dead storage negligible. Records given herein represent usable contents. Water released is used for irrigation. Lake is recreational area. Diversions for irrigation of about 2,500 acres above reservoir.

Cooperation.--Elevation readings furnished by employee of Springer Land and Cattle Co. or by Cimarron Creek watermaster.

Month-end elevation and contents, water year October 1963 to September 1964

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	-	a19,550	-
Oct. 31	-	a17,950	-1,600
Nov. 30	-	a18,040	+90
Dec. 31	-	a18,220	+180
Calendar year 1963	-	-	-10,160
Jan. 31	-	a18,460	+240
Feb. 29	-	a18,780	+320
Mar. 31	8,101.60	19,350	+570
Apr. 30	-	a20,940	+1,590
May 31	-	a19,740	-1,200
June 30	8,097.80	15,950	-3,790
July 31	-	a14,980	-970
Aug. 31	-	a14,120	-860
Sept. 30	-	a13,000	-1,120
Water year 1963-64	-	-	-6,550

a No gage-height record; contents estimated or interpolated from a total of 49 observations during the year and outflow records (Cimarron Creek below Eagle Nest Dam, see following page).

7-2060. Cimarron Creek below Eagle Nest Dam, N. Mex.

Location.--Lat 36°32'05", long 105°13'55", about sec.26, T.27 N., R.16 E. (projected), in Maxwell Grant,on left bank 300 ft downstream from Eagle Nest Dam, 2 miles southeast of Eagle Nest, and 6¼ miles west of Ute Park.

Drainage area.--167 sq mi.

Records available.--May 1950 to September 1964. Prior to October 1952, published as Cimarron River below Eagle Nest Dam.

Gage.--Water-stage recorder (digital since June 1964) and Parshall flume. Altitude of gage is 8,000 ft (from topographic map). Prior to May 15, 1951, at datum 0.81 ft higher.

Average discharge.--14 years, 13.2 cfs (9,560 acre-ft per year).

Extremes.--Maximum discharge during year, 121 cfs May 29 (gage height, 1.93 ft); no flow at times.
1950-64: Maximum discharge, 205 cfs June 14, 1955 (gage height, 2.79 ft); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by Eagle Nest Reservoir (see No. 2055). Diversions for irrigation of about 2,500 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0	0.0	0.7	23
.1	1.0	1.0	42
.2	3.1	1.5	80
.4	9.4	2.0	128

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	21				0.1	28	13	119	29	19	18
2	14	21				.1	*28	3.9	119	29	19	18
3	*16	7.1				.1	28	16	119	26	20	18
4	16	0				.1	28	23	*119	19	21	18
5	16	0				.1	7.2	23	118	26	28	18
6	16	*0				.1	.2	*29	118	30	29	18
7	16	0				.1	9.4	32	118	30	*28	18
8	22	0				.1	16	34	118	26	28	16
9	25	0				.1	16	10	118	23	36	15
10	25	0				.1	16	23	118	*22	24	17
11	26	0				.1	15	32	118	20	24	20
12	7.7	0				.1	5.1	32	81	24	28	20
13	20	0				*.1	.2	32	25	27	29	22
14	32	0				.1	.2	32	37	27	28	20
15	35	0				.1	.2	32	40	27	28	16
16	37	0				.1	.2	8.2	40	27	35	15
17	52	0				.1	.2	23	*40	27	36	10
18	56	0				.1	.2	32	40	20	26	8.7
19	34	0				.1	.2	32	40	18	20	15
20	38	0				.1	.2	32	26	18	18	30
21	30	0				.1	.2	28	33	18	18	30
22	27	0				.1	.2	24	38	23	18	24
23	25	0				.1	.2	7.1	37	20	18	21
24	25	0				.1	.2	21	37	19	18	21
25	25	0				.1	.2	30	36	18	18	15
26	25	0				.1	9.3	30	31	18	19	6.0
27	25	0				.1	13	30	18	18	24	23
28	25	0				.1	13	30	17	19	20	25
29	23	0				.1	13	95	26	20	18	24
30	8.0	0				.1	13	120	30	21	18	23
31	11	------				16	------	119	------	21	18	------
Total	766.7	49.1	0	0	0	19.0	260.8	1028.2	1974	710	731	562.7
Mean	24.7	1.64	0	0	0	0.61	8.69	33.2	65.8	22.9	23.6	18.8
Ac-ft	1,520	97	0	0	0	38	517	2,040	3,920	1,410	1,450	1,120

Calendar year 1963: Max 187 Min 0 Mean 21.0 Ac-ft 15,180
Water year 1963-64: Max 120 Min 0 Mean 16.7 Ac-ft 12,100

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 4 to Apr. 1, Apr. 6, 13-25, July 11, 12, 18-21, 23-28, Aug. 1-3, 11, 12, 18-26, Aug. 28 to Sept. 3.

7-2062. McEvoy Creek near Eagle Nest, N. Mex.

Location.--Lat 36°33'00", long 105°13'30", in Maxwell Grant, on left bank 1.4 miles north of Eagle Nest Dam, and 2 miles east of Eagle Nest, Colfax County.

Drainage area.--1.95 sq mi.

Records available.--September 1961 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 8,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 0.71 cfs Aug. 19 (gage height, 0.60 ft); minimum, 0.04 cfs July 5.
1961-64: Maximum discharge 1.37 cfs Apr. 30, 1962 (gage height, 0.82 ft); minimum, 0.003 cfs Nov. 3, 1962, result of freezeup.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.05	0.4	0.26
.3	.13	.5	.46
		.6	.71

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	0.12	0.12	0.15	0.13	0.09	0.11	0.22	0.37	0.27	0.09	0.10	0.13
2	.13	.13	.12	.13	.09	.11	.23	.37	.27	.08	.09	.10
3	.12	.13	.11	.12	.10	.11	.25	.35	.24	.08	.08	*.09
4	* .12	.13	.11	.12	.10	.11	.28	.34	* .23	.07	.10	.12
5	.12	.13	*.10	.13	.10	.11	.27	.36	.22	.07	.08	.11
6	.12	* .14	.10	.13	.10	.11	.25	* .37	.21	.07	.08	.10
7	.12	.15	.09	* .13	.10	.11	.24	.37	.19	.09	.10	.10
8	.12	.15	.08	.13	.10	.11	.23	.34	.18	.13	*.11	.09
9	.12	.15	.07	.12	.10	.11	.22	.36	.17	.10	.19	.09
10	.12	.15	.07	.12	.10	.11	.24	.35	.16	* .10	.15	.10
11	.12	.15	.08	.12	.10	.11	.30	.33	.15	.09	.17	.10
12	.12	.15	.09	.12	*.11	.11	.27	.32	.15	.10	.29	.09
13	.12	.15	.09	.10	.11	* .12	.28	.33	.14	.13	.27	.09
14	.12	.15	.10	.09	.11	.12	.28	.34	.14	.11	.32	.09
15	.12	.15	.09	.08	.11	.12	.34	.36	.13	.09	.41	.11
16	.13	.16	.09	.07	.11	.12	*.47	.39	.12	.18	.38	.11
17	* .13	.10	.09	.07	.11	.12	.50	.40	* .12	.15	.36	.10
18	.12	.07	.10	.08	.11	.13	.49	.44	.12	.15	.33	.09
19	.14	.08	.10	.08	.11	.13	.46	.47	.11	.13	.37	.10
20	.14	.12	.10	.08	.11	.13	.47	.47	.11	.12	.30	.11
21	.14	.19	.11	.08	.11	.14	.42	.46	.10	.11	.27	.12
22	.13	.16	.10	.08	.11	.14	.40	*.43	.10	.11	.24	.12
23	.13	.13	.11	.07	.11	.14	.40	.40	.10	.10	.20	.11
24	.13	.15	.11	.07	.11	.14	.41	.37	.10	.11	.17	.11
25	.13	.16	.12	.07	.11	.14	.43	.36	.10	.11	.15	.11
26	.12	.14	.12	.08	.11	.14	.42	.36	.10	.12	.14	.10
27	.12	.16	.12	.08	.11	.13	.44	.33	.09	.10	.13	.10
28	.11	.16	.12	.08	.11	.14	.40	.31	.09	.09	.13	.10
29	.10	.15	.13	*.08	.11	.15	.39	.29	.09	.11	.12	.10
30	.10	.13	.13	.09	------	.16	.36	.29	.10	.11	.11	.10
31	.12	------	.13	.09	------	.20	------	.27	------	.09	.11	------
TOTAL	3.80	4.19	3.23	3.02	3.06	3.93	10.36	11.30	4.40	3.29	6.05	3.09
MEAN	.123	.140	.104	.097	.106	.127	.345	.365	.147	.106	.195	.103
AC-FT	7.5	8.3	6.4	6.0	6.1	7.8	21	22	8.7	6.5	12	6.1

CALENDAR YEAR 1963	MAX .33	MIN .07	MEAN .151	AC-FT 108
WATER YEAR 1963-64	MAX .50	MIN .07	MEAN .163	AC-FT 118

* Discharge measurement made on this day.

7-2063. Tolby Creek near Eagle Nest, N. Mex.

Location.--Lat 36°31'20", long 105°13'30", in Maxwell Grant, on right bank, 1 mile upstream from mouth and 2.5 miles southeast of Eagle Nest, Colfax County.

Drainage area.--8.5 sq mi.

Records available.--October 1961 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 8,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 16.2 cfs Apr. 24 (gage height, 1.59 ft); minimum, 0.33 cfs Nov. 17.
1961-64: Maximum discharge, 27.3 cfs Apr. 20, 1962 (gage height, 2.04 ft); minimum, 0.15 cfs Dec. 5, 1962.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.22	0.6	1.31	0.9	3.73
.4	.46	.7	1.95	1.1	6.27
.5	.82	.8	2.76	1.5	14.0

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	0.98	0.76	0.74	0.57	0.47	0.67	2.04	10.6	2.30	0.71	0.70	0.59
2	.94	.77	.68	.55	.49	.70	1.86	11.2	2.36	.64	.70	.57
3	.92	.78	.63	.52	.51	.71	1.51	11.0	2.28	.60	.58	*.47
4	*.89	.77	.64	.48	.49	.71	1.33	10.4	* 1.98	.56	.72	.51
5	.85	.73	*.62	.49	.47	.71	1.21	9.97	1.85	.53	.74	.60
6	.82	*.74	.61	.52	.45	.68	1.16	* 9.14	1.71	.53	*.58	.53
7	.82	.77	.63	*.49	.45	.66	1.10	8.35	1.58	.72	.88	.49
8	.82	.77	.45	.48	.49	.62	1.14	7.68	1.52	.99	.96	.47
9	.79	.76	.46	.47	.53	.62	1.43	7.06	1.41	*1.11	.88	.48
10	.78	.75	.46	.46	.56	.66	2.37	6.48	1.34	.82	.77	.64
11	.78	.74	.47	.44	.57	.70	3.63	6.04	1.29	.75	.74	.62
12	.77	.75	.48	.43	*.58	* .68	4.13	5.83	1.21	.74	1.74	.55
13	.76	.74	.49	.42	.54	.64	3.65	5.71	1.19	.98	.96	.54
14	.75	.76	.52	.40	.50	.62	3.81	5.65	1.14	1.21	1.08	.52
15	.74	.75	.56	.40	.47	.62	* 5.22	5.46	1.09	.85	1.08	.68
16	*.73	.78	.58	.41	.47	.62	6.95	5.25	1.00	.72	.90	.67
17	.73	.63	.59	.43	.48	.64	8.27	5.03	*.94	.79	.77	.61
18	.70	.70	.60	.45	.48	.74	8.44	4.85	.90	.77	.73	.56
19	.78	.74	.60	.46	.49	.80	8.80	4.66	.90	.72	.78	.55
20	.89	.74	.60	.47	.49	.78	9.94	4.48	.85	.69	.73	.68
21	.78	.78	.57	.46	.49	.78	9.58	4.61	.80	.63	.65	.70
22	.75	.79	.53	.45	.49	.79	10.5	* 4.24	.78	.62	.61	.83
23	.74	.74	.53	.45	.50	.78	11.8	3.85	.77	.86	.57	.63
24	.72	.76	.55	.44	.51	.78	12.8	3.51	.76	*.76	.56	.60
25	.71	.78	.57	.44	.53	.78	12.8	3.44	.74	.73	.51	.59
26	.70	.74	.57	.46	.55	.78	11.2	3.55	.76	.87	.51	.58
27	.71	.75	.56	.48	.59	.77	10.3	3.27	.73	.86	.53	.56
28	.70	.78	.56	.50	.61	.79	10.7	2.85	.67	.94	.50	.57
29	.70	.73	.55	.49	.62	1.01	10.3	2.63	.68	.82	.49	.55
30	.73	.70	.54	.47	------	1.37	9.69	2.46	.77	.78	.49	.55
31	.73	------	.54	.46	------	1.69	------	2.39	------	.72	.48	------
TOTAL	24.21	22.48	17.48	14.44	14.87	23.90	187.66	181.64	36.30	24.02	22.92	17.49
MEAN	.781	.749	.564	.466	.513	.771	6.26	5.86	1.21	.775	.739	.583
AC-FT	48	45	35	29	29	47	372	360	72	48	45	35

CALENDAR YEAR 1963 MAX 5.03 MIN .35 MEAN 1.05 AC-FT 764
WATER YEAR 1963-64 MAX 12.8 MIN .40 MEAN 1.60 AC-FT 1,165

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 10 to Mar. 11 (doubtful gage-height record Dec. 17 to Mar. 11).

.7-2064. Clear Creek near Ute Park, N. Mex.

Location.--Lat 36°31'35", long 105°10'30", in Maxwell Grant, on right bank a quarter of a mile upstream from mouth, and 4 miles southwest of Ute Park, Colfax County.

Drainage area.--7.44 sq mi.

Records available.--September 1961 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 7,860 ft (from topographic map).

Extremes.--Maximum discharge during year, 15.2 cfs May 27-29 (gage height, 1.57 ft); minimum, 0.24 cfs Nov. 18.
1961-64: Maximum discharge, 28.3 cfs May 13, 1962 (gage height, 1.90 ft); minimum, 0.09 cfs Dec. 5, 1962.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.26	0.6	1.42	1.1	6.33
.4	.52	.7	2.07	1.3	9.56
.5	.90	.9	3.86	1.6	16.0

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	2.97	0.66	0.46	0.42	0.30	0.32	* 1.24	4.18	10.8	1.43	0.68	0.43
2	2.71	.62	.43	.43	.32	.32	1.16	4.88	9.58	1.36	.64	.38
3	* 2.46	.66	.40	.42	.32	.35	.76	5.16	8.11	1.29	.58	.34
4	2.30	* .62	.40	.38	.32	.32	.83	5.17	* 7.00	1.21	.75	* 1.30
5	2.07	.62	* .38	.34	.32	.32	.69	* 5.26	6.14	1.14	.67	1.19
6	1.86	.62	.38	.36	.32	.32	.64	5.12	5.60	1.12	.58	.88
7	1.73	.59	.38	.38	.32	.32	.62	5.04	5.25	1.13	* .73	.61
8	1.60	.59	.28	* .36	.32	.32	.64	5.13	5.08	1.23	.85	.51
9	1.47	.59	b .29	.34	.32	.32	1.09	5.03	4.94	1.27	.68	.47
10	1.42	.59	b .32	.33	.32	.32	1.93	4.98	4.90	* 1.19	.62	.48
11	1.30	.55	b .36	.32	* .32	* .32	2.74	5.04	4.76	1.09	.55	.51
12	1.25	.55	b .39	.31	.32	.32	2.92	5.38	4.59	1.09	1.02	.51
13	1.14	.55	.40	.30	.30	.35	2.36	6.02	4.41	1.30	.69	.47
14	1.09	.55	.40	.29	.28	.32	* 2.43	7.11	4.14	1.14	.78	.42
15	* 1.04	.52	.40	.29	.28	.32	3.41	8.08	3.84	.99	.76	.52
16	.99	.55	.40	.30	.28	.35	4.71	9.05	* 3.48	.95	.66	* .52
17	.95	.49	.40	.31	.28	.35	5.51	10.4	3.24	.99	.59	.46
18	.90	.49	.40	.32	.28	.43	5.42	12.4	3.02	.95	.58	.39
19	.95	.52	.38	.33	.28	.43	5.13	13.3	2.82	1.04	.60	.39
20	.95	.49	.38	.34	.29	.40	5.21	13.4	2.63	.95	.57	.50
21	.86	.52	.38	.34	.29	.40	4.44	* 13.4	2.45	.86	.51	.48
22	.82	.49	.38	.33	.29	.46	4.31	13.5	2.29	.82	.50	.51
23	.77	.49	.39	.32	.30	.43	4.48	13.9	2.17	.82	.49	.43
24	.73	.49	.40	.31	.30	.40	4.84	14.2	2.03	* .73	.46	.42
25	.73	.49	.41	.31	.31	.38	4.86	14.4	1.93	.75	.44	.39
26	.70	.49	.43	.31	.31	.38	4.24	14.7	1.85	.97	.44	.36
27	.70	.49	.43	.32	.31	.35	3.67	15.1	1.73	.79	.42	.36
28	.66	.49	.44	* .32	.31	.38	3.50	15.2	1.62	.72	.41	.37
29	.66	.46	.43	.32	.31	.52	3.75	14.8	1.55	.93	.39	.35
30	.66	.46	.41	.32	------	.82	3.81	13.7	1.53	.84	.38	.34
31	.70	------	.41	.32	------	.99	------	12.3	------	.71	.37	------
TOTAL	39.14	16.29	12.14	10.39	8.82	12.33	91.34	295.33	123.48	31.80	18.39	15.29
MEAN	1.26	.543	.392	.335	.304	.398	3.04	9.53	4.12	1.03	.593	.510
AC-FT	78	32	24	21	17	24	181	586	245	63	36	30

CALENDAR YEAR 1963	MAX 5.47	MIN .18	MEAN .827	AC-FT 599
WATER YEAR 1963-64	MAX 15.2	MIN .28	MEAN 1.84	AC-FT 1,337

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Doubtful gage-height record Dec. 23 to Jan. 28, Feb. 13-29.

7-2070. Cimarron Creek near Cimarron, N. Mex.

Location.--Lat 36°31'00", long 104°58'35", about sec.6, T.26 N., R.19 E. (projected), in Maxwell Grant, on right bank 3.8 miles west of Cimarron.

Drainage area.--294 sq mi.

Records available.--May 1950 to September 1964. Prior to October 1952, published as Cimarron River near Cimarron.

Gage.--Water-stage recorder. Concrete control since Nov. 6, 1963. Datum of gage is 6,599.58 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 20.2 cfs (14,620 acre-ft per year).

Extremes.--Maximum discharge during year 218 cfs July 15 (gage height, 2.96 ft); minimum daily, 1 cfs Jan. 12-16, Feb. 15, 16, Mar. 4, 5, 8-11.
1950-64: Maximum discharge, 580 cfs June 6, 1958 (gage height, 3.10 ft); no flow Sept. 14-30, Oct. 1-10, 1956, Feb. 18, 1960.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Flow regulated by Eagle Nest Reservoir (capacity, 79,120 acre-ft). Diversions above station for irrigation of about 3,500 acres, part of which is below station. Cimarroncito ditch (locally known as Philmont ditch) diverts from left bank 1½ miles above station, flumes under creek ¾ mile above and bypasses station for off-channel storage and irrigation below. See table below for diversion by this ditch.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 3)

0.7	1.8	1.1	7.6	1.7	38	2.5	136
.9	3.3	1.4	19	2.0	68		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	20	3.1	2.5	2.5	2	10	28	126	24	18	15
2	21	24	2.9	2.5	2.5	2.3	24	28	128	24	11	17
3	*21	22	2.8	2	1.5	2	24	24	*128	23	16	16
4	20	*10	2.8	1.5	1.5	1	27	35	121	19	17	*20
5	20	*10	*3.0	1.5	2	1	28	37	120	12	*19	17
6	19	9.5	3.5	1.5	1.5	1.4	14	38	117	20	22	16
7	19	7.9	2.5	2	1.5	1.4	10	44	115	22	19	16
8	19	7.1	2.4	*2	1.5	1	16	44	115	24	21	16
9	24	6.2	3.5	1.5	2	1	19	45	115	*25	21	14
10	25	5.7	3.0	1.5	2	1	21	50	113	22	25	12
11	25	4.9	2.5	1.5	*2	*1	24	54	113	20	16	15
12	24	*4.5	2	1	1.5	1.5	25	56	106	11	22	15
13	12	4.1	2	1	1.4	2	17	54	32	22	21	16
14	*24	3.9	2	1	1.3	2.0	*14	35	32	25	22	18
15	29	3.7	2.5	1	1	2.2	14	30	37	31	21	16
16	32	3.7	2.5	1	1	2.2	15	30	*35	24	22	15
17	38	3.9	3	2	1.3	2.3	*17	40	35	25	25	*13
18	47	3.6	3	2.5	1.5	2.2	19	65	33	22	23	9.5
19	44	3.7	3	2	1.5	2.3	18	65	33	12	22	8.9
20	35	3.5	3	2	1.5	2.3	19	60	28	15	20	15
21	34	3.4	2.5	2.5	1.5	2.0	18	*50	20	15	19	22
22	31	3.3	2	2.5	1.5	2.2	18	45	30	17	18	23
23	28	3.1	2	2	1.5	2.2	18	39	30	20	17	18
24	28	3.6	2.5	1.7	1.5	2.2	18	30	30	18	16	17
25	28	3.3	3	1.8	1.5	2.2	20	47	30	17	16	17
26	28	*3.2	2.5	2.3	1.5	2.1	20	49	30	9.8	15	14
27	28	3.5	2.5	*2.3	1.5	2.4	25	49	19	14	15	11
28	28	3.1	2	2.3	1.5	2.4	26	48	14	15	15	17
29	27	2.9	2	2.3	1.5	2.4	28	72	16	18	15	18
30	24	3.3	1.5	2.3	----------	2.3	*28	121	23	23	15	19
31	14	----------	2	2.3	----------	2.4	----------	126	----------	19	15	----------
Total	817	194.6	79.5	57.8	46.0	58.9	594	1538	1924	607.8	579	476.4
Mean	26.4	6.49	2.56	1.86	1.59	1.90	19.8	49.6	64.1	19.6	18.7	15.9
Ac-ft	1,620	386	158	115	91	117	1,180	3,050	3,820	1,210	1,150	945
(†)	0	0	0	0	0	0	0	0	428	111	153	0

Calendar year 1963: Max 188 Min 1.0 Mean 23.3 Ac-ft 16,900
Water year 1963-64: Max 128 Min 1 Mean 19.1 Ac-ft 13,840

* Discharge measurement made on this day.
Note.--Stage-discharge reliation affected by ice Dec. 10 to Mar. 13. No gage-height record Oct. 13, Nov. 4, 5, Dec. 23, 24, May 10-20. Doubtful gage-height record Aug. 19 to Sept. 3.
† Diversion, in acre-feet, by Cimarroncito dich which bypasses station.

7-2075. Ponil Creek near Cimarron, N. Mex.

Location.--Lat 36°34'35", long 104°56'55", about sec.8, T.27 N., R.19 E. (projected), on left bank 1½ miles downstream from confluence of Middle and North Ponil Creeks and 5 miles northwest of Cimarron.

Drainage area.--171 sq mi.

Records available.--November 1915 to June 1919, August 1919 to July 1925, September 1925, September 1927 to July 1929, May 1950 to September 1964. Prior to May 1950 monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,670 ft (from topographic map). Prior to May 8, 1922, at site about an eighth of a mile downstream at different datum. May 8, 1922, to Aug. 8, 1929, at site about three-eighths of a mile upstream at different datum.

Average discharge.--25 years (1915-25, 1927-28, 1950-64), 12.5 cfs (9,050 acre-ft per year).

Extremes.--Maximum discharge during year, 44 cfs Aug. 14 (gage height, 1.85 ft); no flow for many days.
1915-29, 1950-64: Maximum discharge, about 5,200 cfs (estimate by State engineer) Aug. 8, 1929, when gage was washed out; no flow at times.
Flood in September 1948 reached a stage of about 7 ft, from floodmarks (discharge, about 1,900 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of 200 to 300 acres above station. Diversions 1,000 ft below station for irrigation of about 300 acres (about 1,200 acres total irrigated from Ponil Creek).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 6				Mar. 7 to Sept. 30					
0.5	0.2	0.8	0.8	0.6	0.01	0.9	2.0	1.2	8.8
.7	.2	.9	2.0	.7	.15	1.0	3.6	1.4	16
				.8	.75	1.1	6.0	1.6	26

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	1.6	1.8	1.5	0.6	1.0	*3.8	13	7.4	0	0	
2	*1.0	1.6	1.6	1.8	.6	1.4	5.0	14	7.7	0	0	
3	.9	1.5	1.7	1.6	.4	1.2	5.8	15	*7.4	0	0	
4	.9	*1.5	1.8	1.2	.6	1.0	5.5	15	6.6	0	0	
5	.8	1.6	2.0	1.0	.8	.8	5.8	*14	5.8	0	1.0	
6	.7	1.6	*2.0	.6	.7	.9	6.3	13	5.0	0	.1	
7	.7	1.6	2.2	.8	.4	.9	5.8	13	4.3	0	1.0	
8	.7	1.8	1.5	*.5	1.0	1.0	4.3	12	3.4	0	.3	
9	.7	1.8	2.0	.4	1.0	1.0	4.8	12	3.1	0	1.2	
10	.6	1.6	2.0	.8	1.4	*1.2	5.3	12	2.6	0	.1	
11	.6	1.6	1.0	.8	1.4	1.2	7.7	11	2.3	0	0	
12	.7	1.6	.7	.4	1.2	1.3	11	10	2.0	0	0	
13	.7	1.8	.7	.5	*.8	1.4	11	10	2.7	0	0	
14	.7	1.8	.7	.6	.8	1.8	11	10	2.0	0	2.8	
15	.7	1.6	1.0	.8	.4	1.6	12	10	1.6	0	2.0	
16	.7	1.6	1.4	1.0	.4	1.7	*17	11	1.2	0	.7	
17	*.7	1.8	1.8	1.4	.5	1.7	23	11	.9	0	.3	
18	.7	1.5	1.4	2.0	.7	2.0	24	11	.7	.1	1.0	
19	.8	1.5	1.6	1.2	.7	2.3	23	12	.4	0	.7	
20	1.4	1.6	1.8	1.2	.7	2.4	25	13	.2	0	.2	
21	1.3	1.8	1.2	1.4	.4	2.4	23	12	.1	0	.1	
22	1.2	1.6	.8	2.0	.4	2.3	20	11	0	0	0	
23	1.2	1.3	1.0	1.6	.4	2.4	19	9.5	0	0	0	
24	1.2	1.6	1.5	.6	.4	2.3	20	8.2	0	0	0	
25	1.2	1.8	2.0	.6	.7	2.3	20	8.5	0	0	0	
26	1.2	1.6	1.8	.8	.5	2.3	17	9.5	0	0	0	
27	1.2	1.8	1.7	*.4	.4	2.2	16	14	0	0	0	
28	1.2	1.9	1.6	.5	.4	2.0	14	11	0	0	0	
29	1.2	1.8	1.4	.6	.7	2.0	15	8.8	0	0	0	
30	1.3	1.9	.8	.6	----------	2.3	14	7.7	0	0	0	
31	1.4	----------	1.0	.6	----------	2.9	----------	7.7	----------	0	0	----------
Total	29.5	49.7	45.5	29.8	19.4	53.2	395.1	349.9	67.4	0.1	11.5	0
Mean	0.95	1.66	1.47	0.96	0.67	1.72	13.2	11.3	2.25	0.003	0.37	0
Ac-ft	59	99	90	59	38	106	784	694	134	0.2	23	0

Calendar year 1963: Max 41 Min 0 Mean 1.85 Ac-ft 1,340
Water year 1963-64: Max 25 Min 0 Mean 2.87 Ac-ft 2,090

Peak discharge (base, 200 cfs). --No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 18-20, 23, Dec. 1 to Mar. 6.

7-2085. Rayado Creek at Sauble Ranch, near Cimarron, N. Mex.

Location.--Lat 36°22', long 104°58', in sec.30, T.25 N., R.19 E. (projected), in Maxwell Grant, on left bank at Sauble Ranch, 10 miles southwest of Cimarron and 16 miles upstream from mouth.

Drainage area.--65 sq mi.

Records available.--June to October 1908 (discharge measurements only), January 1909 to January 1910, July and August 1910, May 1911 to May 1913, July 1913 to February 1915, October 1915 to September 1918, March 1919 to September 1920, June 1923 to September 1924, March to May 1927, August 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Records for April and May 1910, as published in WSP 287, are unreliable and should not be used. Published as "at," "near," or "above Abreu's Ranch near Cimarron" prior to October 1925 and as Rayado River at Sauble Ranch, near Cimarron, October 1925 to September 1952.

Gage.--Water-stage recorder. Altitude of gage is 6,880 ft (from topographic map). Prior to May 4, 1911, chain or staff gage at site about 2 miles downstream at different datum, May 4, 1911, to Sept. 8, 1925, water-stage recorder about 3 miles upstream at 2 sites within 100 ft at 3 different datums. Sept. 9, 1925, to July 16, 1934, water-stage recorder at site 700 ft upstream at different datum. July 17, 1934 to Sept. 30, 1954, at site 20 ft downstream at datums 0.00 to 0.48 ft lower.

Average discharge.--45 years (1911-12, 1913-14, 1915-20, 1923-24, 1927-64), 14.0 cfs (10,140 acre-ft per year).

Extremes.--Maximum discharge during year, 202 cfs Apr. 16 (gage height, 3.44 ft); minimum, 0.8 cfs Dec. 8.

1909-12, 1913-64: Maximum discharge, about 850 cfs Apr. 23, 1942 (gage height, 4.94 ft), from rating curve extended above 190 cfs by logarithmic plotting; maximum gage height, 5.93 ft Sept. 20, 1963 (backwater from drift); minimum daily discharge, 0.4 cfs Nov. 16, 1956.

The major flood of June 10, 1913, destroyed the gage (maximum stage or discharge not determined). Another major flood probably occurred Sept. 29 or 30, 1904.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	1.6	1.8	4.5	2.1	13	2.8	74
1.7	2.9	1.9	6.7	2.4	31	3.2	144

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	5.5	3.2	2.9	3.0	3.2	14	37	16	4.3	6.4	2.3
2	10	5.8	3.0	2.9	3.0	3.2	16	36	17	4.0	5.3	2.5
3	9.6	6.0	3.0	3.0	2.6	3.0	12	34	20	3.8	4.0	2.1
4	9.0	15	3.0	3.0	3.0	2.8	8.4	33	14	3.5	4.2	2.6
5	8.4	6.2	3.0	2.8	3.2	3.0	10	34	13	3.7	4.3	3.8
6	7.9	4.9	3.0	2.8	3.0	3.0	8.7	30	11	3.4	4.3	2.6
7	7.9	4.7	3.2	2.8	2.7	3.0	7.9	31	10	3.5	*4.9	2.3
8	7.3	4.7	2.1	2.8	3.2	2.8	7.6	30	9.6	4.7	5.3	2.2
9	7.0	4.5	3.5	*2.8	3.2	2.6	8.2	29	9.0	7.3	4.5	2.6
10	6.4	4.5	3.0	3.0	*3.0	3.0	10	28	8.4	*5.8	3.7	2.6
11	6.2	4.3	2.5	2.8	3.0	3.0	15	26	8.2	6.2	4.0	3.4
12	6.2	4.2	*2.8	2.5	3.2	3.0	19	27	7.6	5.1	4.5	3.2
13	6.0	4.3	2.5	2.3	3.0	3.2	20	27	7.6	4.7	4.2	2.8
14	5.8	4.2	2.5	2.3	2.8	3.2	*22	28	7.9	4.2	3.7	3.0
15	*5.5	4.0	2.7	2.4	2.5	3.4	41	28	7.0	3.8	3.8	3.7
16	5.5	4.0	2.9	2.6	2.5	3.4	94	28	6.4	3.7	5.1	3.5
17	5.8	3.7	3.0	3.0	2.6	3.5	85	28	*6.0	5.9	4.0	*3.0
18	5.5	2.8	3.2	3.0	2.7	3.5	70	29	5.5	7.6	3.7	2.6
19	5.5	4.0	3.2	3.0	2.7	3.8	67	33	5.5	6.2	3.4	2.6
20	6.4	3.8	3.4	3.2	2.5	3.7	71	31	5.3	5.1	3.0	3.7
21	6.0	4.2	3.2	3.2	2.5	4.0	49	*29	4.9	4.0	2.9	3.5
22	5.5	3.7	2.8	3.2	2.5	4.2	52	28	4.7	4.0	2.8	4.2
23	5.5	3.4	3.0	2.9	2.5	4.2	54	24	4.7	4.0	2.6	3.5
24	5.1	4.0	3.2	2.7	2.7	4.2	54	22	4.9	3.7	2.3	3.5
25	5.1	4.2	3.2	2.7	2.8	4.5	49	22	5.1	3.8	2.3	3.0
26	4.7	3.0	3.0	3.0	2.8	4.2	36	28	5.1	4.0	2.2	2.8
27	4.7	*3.7	3.0	3.0	2.7	4.5	35	31	4.7	4.9	2.1	3.7
28	4.7	4.5	3.0	3.0	*3.1	4.2	35	*21	4.2	3.7	2.1	3.0
29	4.7	3.8	3.0	*2.8	3.2	4.9	36	18	4.5	4.0	2.1	*2.6
30	*4.7	3.2	*3.0	2.6	----------	*6.2	*34	17	*4.9	*5.3	2.0	2.5
31	4.9	----------	3.0	2.8	----------	8.7	----------	16	----------	4.9	*2.0	----------
Total	198.5	138.8	92.1	87.8	82.2	117.1	1040.8	863	242.7	142.8	111.7	89.4
Mean	6.40	4.63	2.97	2.83	2.83	3.78	34.7	27.8	8.09	4.61	3.60	2.98
Ac-ft	394	275	183	174	163	232	2,060	1,710	481	283	222	177

Calendar year 1963: Max 236 Min 1.4 Mean 6.46 Ac-ft 4,680
Water year 1963-64: Max 94 Min 2.0 Mean 8.76 Ac-ft 6,350

Peak discharge (base, 100 cfs).--Apr. 16 (1900) 202 cfs (3.44 ft); Apr. 19 (2200) 120 cfs (3.08 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 29, 30, Dec. 1, 3-7, 9-16, 21-23, 26-31, Jan. 4-21, 24-31, Feb. 1-8, 11, 13-29, Mar. 1, 2, 4, 5, 7-12, 14, 15, 26, 27.

7-2110. Cimarron Creek at Springer, N. Mex.

Location.--Lat 36°21'30", long 104°35'50", in southeast corner of Maxwell Grant, on left bank at Springer, Colfax County, 270 ft downstream from highway bridge, 6 miles downstream from Rayado Creek, and 6 miles upstream from mouth.

Drainage area.--1,032 sq mi.

Records available.--August 1907 to December 1909, January 1921 to February 1922, October 1924 to January 1926, September 1926 to September 1964. Prior to October 1952, published as Cimarron River at Springer.

Gage.--Water-stage recorder (digital). Concrete control since Nov. 5, 1954. Altitude of gage is 5,770 ft (from nearby level line). July 13, 1907, to Dec. 31, 1909, staff gage and Dec. 20, 1919, to Feb. 8, 1930, chain gages at site 270 ft upstream at various datums to Nov. 19, 1924, and thereafter at datum 3.34 ft higher than present datum. Feb. 9, 1930, to July 12, 1934, water-stage recorder at site 270 ft upstream at datum 3.66 ft higher. July 13, 1934, to Apr. 13, 1942, water-stage recorder at site 30 ft downstream at different datum. May 8 to July 16, 1942, water-stage recorder at site 270 ft upstream at datum 3.33 ft lower.

Average discharge.--40 years (1920-21, 1924-25, 1926-64), 17.3 cfs (12,520 acre-ft per year).

Extremes.--Maximum discharge during year, 63 cfs Aug. 7 (gage height, 4.05 ft); minimum recorded, 0.01 cfs Aug. 29.
1930-64: Maximum discharge, 6,250 cfs June 6, 1958 (gage height, 10.55 ft), from rating curve extended above 1,300 cfs on basis of slope-area measurement of peak flow; no flow at times in 1954, 1956-57.
Maximum stage known, about 22 ft Sept. 29, 1904 (backwater from debris on railroad bridge). Another major flood occurred June 11, 1913. Maximum discharge of these floods probably exceeded 10,000 cfs.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow partly regulated by Eagle Nest Reservoir (see No. 2055). Diversions for irrigation of about 23,000 acres above station and a few hundred acres between station and mouth.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.1	0.01	3.3	0.56	3.5	4.5	3.7	17
3.2	.16	3.4	1.7	3.6	9.7		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	* 4.6	5.0	4.6	4.0	3.5	3.0	3.1	4.6	6.0	0.6	0.2	0.1
2	4.1	3.9	4.7	4.5	3.5	3.5	3.1	4.0	* 5.0	.7	.2	* .1
3	3.2	3.6	4.8	3.5	3.0	3.5	3.3	4.3	6.5	.6	.2	.1
4	3.0	3.3	4.9	3.0	3.0	3.0	4.8	* 4.1	7.7	.5	* 1.4	.1
5	2.7	3.3	4.7	3.0	3.5	3.0	5.3	3.6	8.6	.5	.5	.4
6	2.6	3.2	5.0	3.0	3.5	3.5	6.2	3.9	7.1	* .4	.3	.3
7	2.5	* 3.1	5.5	3.0	3.5	3.0	6.1	4.5	5.3	.5	13	.2
8	2.5	3.1	4.8	3.0	4.0	3.0	5.6	3.0	4.9	.4	2.9	.1
9	2.3	3.1	5.0	3.5	4.0	3.0	4.9	2.8	3.7	.4	1.3	.2
10	2.3	3.0	5.0	* 3.5	* 4.0	3.5	4.3	4.3	3.2	.6	.9	.1
11	2.4	3.1	5.0	3.0	4.0	* 3.6	3.7	4.8	3.6	.3	.7	.2
12	2.5	3.0	* 4.5	2.5	3.5	3.3	3.4	4.7	3.6	.5	.7	.2
13	2.4	3.1	4.0	2.5	3.0	3.2	3.1	4.9	3.3	.6	.5	.2
14	2.3	3.1	4.0	2.5	3.0	3.1	3.1	4.8	3.5	.5	.7	.3
15	2.5	3.1	4.0	2.5	3.0	3.1	3.1	4.3	3.7	.3	.7	.4
16	2.4	3.0	4.0	2.5	3.0	3.1	3.1	5.0	2.7	.4	2.2	.3
17	2.5	3.1	4.5	3.0	3.0	3.2	2.9	7.4	2.2	.5	1.7	.2
18	3.0	3.1	4.0	4.0	3.0	3.2	2.8	7.2	1.7	.5	2.1	.1
19	2.8	3.4	4.1	4.0	3.0	3.3	2.8	6.4	1.4	1.1	1.0	.1
20	3.8	3.3	3.9	3.5	3.0	3.1	2.8	8.0	1.4	1.3	.8	.2
21	4.1	3.4	3.8	3.5	3.0	3.1	2.7	7.8	1.3	.9	.6	.5
22	4.5	3.4	3.5	4.0	3.0	3.1	2.8	7.1	1.2	.4	.5	.5
23	5.4	4.0	3.5	3.5	3.5	3.1	2.8	8.3	.9	.4	.3	.4
24	4.9	4.5	3.7	3.0	3.0	3.1	2.8	8.7	1.2	.3	.3	.3
25	4.9	4.5	3.8	3.5	3.0	3.1	2.6	6.5	1.2	.3	.3	.3
26	4.9	4.6	3.8	4.0	3.0	3.1	2.6	5.6	.9	.3	.2	.1
27	4.9	4.6	3.5	3.5	3.0	3.0	2.8	8.6	.8	.3	.2	.1
28	4.5	4.7	3.5	4.0	3.0	2.9	4.2	9.1	1.0	.2	.2	.2
29	4.5	4.9	3.5	3.5	3.0	2.8	4.6	6.2	.9	.3	.1	.3
30	* 5.4	4.7	3.5	3.5	------	2.7	4.2	6.3	.8	.4	.1	.4
31	5.2	------	3.5	3.5	------	* 3.0	------	6.0	------	.3	.1	------
TOTAL	109.6	109.2	130.6	103.5	94.5	97.2	109.6	176.8	95.3	15.3	34.9	7.0
MEAN	3.54	3.64	4.21	3.34	3.26	3.14	3.65	5.70	3.18	.49	1.13	.23
AC-FT	217	217	259	205	187	193	217	351	189	30	69	14

CALENDAR YEAR 1963 MAX 419 MIN .2 MEAN 5.39 AC-FT 3,892
WATER YEAR 1963-64 MAX 13 MIN .1 MEAN 2.96 AC-FT 2,148

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 9-30. Stage-discharge relation affected by ice Dec. 9-18, 22, 23, Dec. 27 to Mar. 10.

7-2140. Canadian River near Roy, N. Mex.

Location.--Lat 35°55'10", long 104°21'10", in E½ sec.35, T.20 N., R.24 E., on right bank 1,080 ft upstream from bridge on State Highway 120 and 9 miles west of Roy.

Drainage area.--4,066 sq mi, of which 107 sq mi is probably noncontributing.

Records available.--April 1936 to September 1964. Monthly discharge only for April 1936, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,892.55 ft above mean sea level (levels by Corps of Engineers). Prior to Oct.9, 1942, Jan. 5, 1943, to Jan. 20, 1945, and Aug. 6, 1945, to Apr. 30, 1946, at site 1,080 ft downstream at datum 0.39 ft higher. Oct. 10, 1942, to Jan. 4, 1943, Jan. 21 to Aug. 5, 1945, and May 1, 1946, to Sept. 30, 1958, at present site at datum 1.00 ft higher.

Average discharge.--28 years, 125 cfs (90,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,900 cfs Sept. 24 (gage height, 5.40 ft); no flow for many days.
1936-64: Maximum discharge, 63,800 cfs Apr. 23, 1942 (gage height, 14.22 ft, former site and datum); no flow at times.
Maximum flood known occurred Sept. 29 or 30, 1904, when peak near Taylor Springs was computed as 91,100 cfs (see WSP 842, 847).

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor. Diversions for irrigation of about 30,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.55	0	1.1	15	2.0	119	3.3	500
.7	1.0	1.4	37	2.3	185	3.8	740
.9	5.4	1.7	71	2.8	318		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	18	11	9.4	11	17	11	4.7	1.7	* 9.0	0	2.4	2.5
2	17	12	9.0	11	15	15	4.4	1.3	7.2	0	9.4	2.0
3	15	15	8.5	11	13	17	4.1	.5	7.2	0	4.4	2.0
4	13	15	8.0	9.5	13	18	6.1	.3	8.0	0	2.6	2.0
5	12	*14	7.6	9.0	15	17	9.4	.4	7.2	0	1.9	1.5
6	10	12	7.6	8.0	13	15	10	.1	13	0	150	1.5
7	9.0	10	8.5	8.5	11	15	18	0	11	.3	77	1.5
8	8.5	9.4	8.0	8.0	9.0	12	* 28	0	7.6	0	209	1.0
9	7.6	8.5	8.0	7.0	9.0	11	25	0	5.4	0	143	1.0
10	6.8	8.0	7.5	6.5	9.0	10	22	0	3.8	0	51	1.0
11	6.4	7.6	6.0	7.0	11	10	23	0	2.4	0	45	.9
12	6.1	7.6	6.0	6.0	14	11	12	0	2.0	0	21	.8
13	6.1	7.6	6.0	5.5	13	12	10	0	1.3	0	12	.8
14	5.0	7.6	6.5	5.5	11	11	8.5	0	1.0	0	8.5	7.0
15	5.0	7.6	7.0	6.0	10	9.9	6.1	0	.8	0	6.8	9.5
16	4.5	7.6	7.0	6.5	9.0	8.5	5.1	0	.3	0	305	7.5
17	4.0	7.6	7.0	6.5	9.5	7.6	4.1	0	*0	0	125	6.5
18	4.0	7.6	7.2	7.5	10	7.6	3.8	0	0	0	75	5.5
19	4.5	7.2	8.5	8.5	10	8.0	5.4	2.3	0	0	* 30	5.0
20	6.1	7.2	8.0	11	9.5	6.8	4.4	6.4	0	0	23	4.5
21	* 5.7	7.2	7.5	12	9.0	6.8	3.8	4.4	0	0	15	4.5
22	5.7	7.6	7.0	14	9.5	7.6	3.3	5.1	0	1.4	10	* 14
23	5.4	7.6	7.5	16	10	5.4	* 3.3	3.8	0	6.3	7.0	20
24	5.7	8.0	8.0	* 12	10	*6.1	3.6	2.8	0	13	5.5	614
25	5.7	8.0	8.0	11	* 12	6.1	2.6	3.3	0	6.8	5.0	355
26	6.4	8.5	9.9	12	11	5.7	1.7	4.1	0	3.3	4.0	91
27	7.6	9.4	* 9.9	15	10	5.1	1.5	6.1	0	1.7	3.5	44
28	7.6	9.9	11	17	10	5.1	1.3	8.0	0	.9	3.0	28
29	8.0	* 9.0	10	17	10	4.7	1.1	15	0	.4	3.0	20
30	8.0	9.9	7.6	17	------	4.7	1.4	8.0	0	*.1	2.5	15
31	9.4	------	8.5	17	------	4.4	------	10	------	0	2.5	------
TOTAL	243.8	275.2	246.2	319.5	322.5	295.1	237.7	83.6	87.2	34.2	1,363.0	1,269.5
MEAN	7.87	9.17	7.94	10.3	11.1	9.52	7.92	2.70	2.91	1.10	44.0	42.3
AC-FT	484	546	488	634	640	585	471	166	173	68	2,700	2,520

CALENDAR YEAR 1963 MAX 2,380 MIN 0 MEAN 47.1 AC-FT 34,097
WATER YEAR 1963-64 MAX 614 MIN 0 MEAN 13.1 AC-FT 9,475

Peak discharge (base, 4,000 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--Doubtful gage-height record Oct. 14-19, Jan. 14-18, Aug. 21 to Sept. 21. Stage-discharge relation affected by ice Dec. 10-17, 21, 23, Jan. 3-13, Feb. 2-3, 13-29, Mar. 8-10.

7-2145. Rio Agua Negra near Holman, N. Mex.

Location.--Lat 36°07'00", long 105°22'35", on right bank 150 ft upstream from bridge, 2½ miles south of Chacon, 4½ miles downstream from confluence of Luna and Lujan Creeks, 5.0 miles north of Holman, and 8½ miles southwest of Guadalupita, Mora County.

Drainage area.--57 sq mi.

Records available.--January 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,876 ft (by barometer).

Average discharge.--11 years, 12.5 cfs (9,050 acre-ft per year).

Extremes.--Maximum discharge during year, 302 cfs Aug. 7 (gage height, 2.79 ft); minimum, 0.3 cfs Jan. 24, 31 (during freezeup).
1953-64: Maximum discharge, 4,700 cfs July 22, 1954 (gage height, 6.10 ft), from rating curve extended above 300 cfs on basis of slope-area measurement of peak flow; minimum, 0.1 cfs July 18, 1954, Sept. 21, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,600 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 16 to Apr. 8)

Oct. 1 to Aug. 7				Aug. 7 to Sept. 30			
0.7	1.5	1.3	22	0.8	0.9	1.1	10
.8	3.4	1.5	35	.9	2.6	1.3	22
1.0	9.6			1.0	5.6		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	*3.7	2.5	2.5	1.5	2.5	12	18	18	3.0	2.2	1.2
2	4.6	3.0	2	2.5	1.5	* 2.5	13	18	21	3.0	1.8	1.2
3	4.8	2.8	2.5	2.5	1.5	2.5	8.0	21	19	2.8	1.8	1.4
4	4.8	2.6	* 2.5	2.5	1.5	2.5	8.3	22	17	2.6	1.8	2.0
5	4.8	2.2	2.5	2.5	* 1.5	2.5	8.9	24	16	3.0	1.5	2.6
6	5.1	2.0	2.5	2	1.5	2.5	9.3	22	14	3.0	1.5	2.2
7	4.6	2.0	2	2	1	1.5	8.3	22	12	2.8	1.8	1.8
8	4.6	2.2	2.5	1.5	1.5	1	8.6	20	9.6	2.6	7.4	1.8
9	4.8	2.8	3	1.5	1.5	1.5	* 7.1	18	8.6	3.0	6.1	* 1.8
10	* 4.0	2.8	3	2	2.5	2	10	15	* 8.3	4.4	5.3	2.0
11	4.3	2.8	2	2.5	2.5	2.5	12	14	8.0	4.6	* 5.0	2.2
12	4.6	2.6	2.5	.5	2.5	1.5	14	* 12	6.6	4.8	5.3	2.4
13	4.3	2.8	2.5	.5	2.5	.5	11	12	6.0	4.6	5.3	2.0
14	4.0	2.8	2.5	.5	2	.5	13	13	5.1	* 4.3	5.0	2.6
15	3.7	2.6	2.5	1	2	1	20	13	3.7	4.0	5.0	3.1
16	3.4	2.6	3	1.5	2	2.0	23	14	2.4	3.7	4.3	4.0
17	4.8	2.5	3	* 1.5	2	3.4	25	14	1.8	3.7	3.7	3.1
18	4.0	2.4	3	1.5	2	3.4	23	16	2.2	4.0	3.1	2.4
19	4.3	2.4	3	2	2	3.2	22	19	2.6	8.5	2.6	2.4
20	5.7	2.5	2.5	2.5	2	3.4	25	19	1.5	4.3	2.4	3.1
21	4.8	2.5	2	3	1	3.5	22	20	2.2	6.1	2.2	2.8
22	4.8	2.5	2	2	1	3.5	* 22	20	1.8	4.0	2.0	* 2.8
23	4.0	2.5	2.5	1.5	2	3.5	24	18	1.4	3.0	1.6	2.6
24	3.7	2.5	2.5	.5	1.5	* 3.5	27	17	1.8	2.8	1.4	2.8
25	* 3.4	2	3	.5	2	3.5	28	* 17	1.6	3.7	1.2	2.4
26	3.2	2	2.5	2	2	3.5	26	19	1.4	3.2	1.1	2.4
27	2.8	2.5	2.5	2	2	4.0	24	22	1.4	2.6	1.1	3.1
28	3.0	2.5	2.5	2	2	5.0	19	22	1.5	2.2	1.2	2.4
29	3.0	2.5	2.5	1.5	2	6.0	20	20	1.5	2.2	1.4	2.2
30	2.4	2.5	2.5	1.5	----------	7.0	18	20	2.6	2.2	1.1	2.2
31	2.2	----------	2.5	1.5	----------	8.0	----------	21	----------	* 2.0	1.1	----------
Total	127.3	76.1	78.5	53.5	52.5	93.4	511.5	562	200.6	110.7	104.5	71.0
Mean	4.11	2.54	2.53	1.73	1.81	3.01	17.0	18.1	6.69	3.57	3.37	2.37
Ac-ft	252	151	156	106	104	185	1,010	1,110	398	220	207	141

Calendar year 1963: Max 24 Min 0.7 Mean 5.45 Ac-ft 3,940
Water year 1963-64: Max 28 Min 0.5 Mean 5.58 Ac-ft 4,040

Peak discharge (base, 150 cfs).--July (1320) 299 cfs (2.78 ft); Aug. 7 (1230) 302 cfs (2.79 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17 to Mar. 15 (no gage-height record Jan 11-16, Feb. 23) and Mar. 21-28.

7-2148. Rio de la Casa near Cleveland, N. Mex.

Location.--Lat 35°58'30", long 105°23'10", in Mora Grant, on left bank 1½ miles southwest of Cleveland.

Drainage area.--23.0 sq mi.

Records available.--May 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,625 ft (by barometer).

Average discharge.--8 years, 14.0 cfs (10,140 acre-ft per year).

Extremes.--Maximum discharge during year, 137 cfs May 26 (gage height, 3.09 ft); minimum, about 0.5 cfs Jan. 12 or 13 result of freezeup.

1956-64: Maximum discharge, 2,260 cfs Aug. 6, 1959 (gage height 6.0 ft), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.2 cfs Sept. 21, 22, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	1.4	2.2	18
1.8	3.1	2.4	32
1.9	5.6	2.6	52
2.0	8.9	2.8	78

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	* 4.1	2.5	2.1	2	2.5	7.2	8.2	34	7.9	5.9	3.1
2	5.1	3.8	2.5	1.9	2	2	7.2	8.2	32	7.6	5.9	2.8
3	4.8	4.1	2.5	1.9	2	* 1.9	5.4	8.9	30	5.9	4.8	2.6
4	4.6	3.6	* 3	2	2	1.9	6.6	10	29	5.6	7.5	3.1
5	4.6	3.1	3	2	*2	2	7.2	10	29	5.1	9.7	4.6
6	4.4	3.4	2.5	1.5	1.5	2.1	5.1	10	27	4.8	6.9	3.8
7	4.1	3.1	2	1.5	1.5	2.1	*4.4	10	26	4.8	6.3	3.1
8	4.1	3.1	2.5	1	1.5	1.5	4	10	26	5.1	8.2	2.8
9	4.1	3.1	2.5	1	1.5	2	5.9	10	24	6.9	7.9	* 3.4
10	* 4.1	3.1	2.4	1.5	1.9	2.5	8.2	12	*21	8.2	8.6	3.8
11	4.1	3.1	2	.8	2.2	3	11	11	20	8.2	*8.6	4.6
12	4.1	2.9	2.5	.6	1.9	2	11	*16	19	9.7	9.3	4.1
13	4.1	3.1	2.5	.6	1.5	2.6	8.9	19	19	9.7	10	3.6
14	3.8	2.9	2.5	* 1	1.5	2.5	8.2	22	18	* 7.2	10	3.4
15	3.8	2.8	2.5	1.5	1.5	3	9.7	20	18	7.6	10	3.6
16	3.8	2.8	2.4	1.5	1.5	2.4	12	20	17	7.9	9.3	3.8
17	4.1	2.6	2.2	2	1.5	2.9	13	26	16	10	8.2	4.4
18	4.4	2.5	2.1	2	1	2.9	12	40	14	8.6	7.6	3.1
19	4.4	3.1	2.1	2	1	2.9	13	34	12	8.2	7.2	2.9
20	5.6	2.9	1.9	2.1	1	3	14	30	10	7.6	6.6	4.4
21	5.6	2.9	1.9	2.1	.8	3	*12	33	11	6.6	5.9	4.6
22	5.4	3.1	1.5	2	.8	3	11	45	8.9	6.6	5.1	5.6
23	5.4	2.9	2.1	1	.8	3	9.7	53	8.9	6.6	4.8	4.8
24	4.8	3	2.1	.8	1	* 3.1	10	54	8.2	5.9	4.4	4.6
25	4.1	3	2.2	.8	1.5	3.1	12	*52	8.2	5.4	4.1	5.4
26	4.1	3	2.1	1.9	1.5	3	10	65	7.9	7.9	3.8	4.4
27	4.1	3	2.2	2.1	1.5	3	8.6	59	7.6	8.6	3.6	4.4
28	3.8	3	2	2	1.5	3	7.9	51	7.9	8.6	3.6	4.4
29	3.8	2.5	2	2	2	3.5	10	48	9.3	6.9	3.4	3.8
30	3.8	2.5	2	2	----------	4.5	8.9	44	11	6.6	2.9	3.6
31	3.8	----------	2	2	----------	4.5	----------	38	----------	* 6.6	2.9	----------
Total	136.2	92.1	70.2	49.2	43.9	84.4	274.1	877.3	529.9	222.9	203.0	116.6
Mean	4.39	3.07	2.26	1.59	1.51	2.72	9.14	28.3	17.7	7.19	6.55	3.89
Ac-ft	270	183	139	98	87	167	544	1,740	1,050	442	403	231

Calendar year 1963: Max 27 Min 0.8 Mean 6.08 Ac-ft 4,400
Water year 1963-64: Max 65 Min 0.6 Mean 7.38 Ac-ft 5,350

Peak discharge (base, 60 cfs).--May 22 (2030) 67 cfs (2.68 ft); May 26 (1245) 137 cfs (3.09 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice; Nov. 18, Nov. 24 to Dec. 9, Dec. 11-15, 22, 28-31, Jan. 4-19, 22-25, Jan. 28 to Feb. 9, Feb. 13-17, Mar. 5, 8-12, 14, 15, 20-23, 26-31, Apr. 8. (no gage-height record Feb. 18 to Mar. 2).

7-2151. La Cueva Canal below La Cueva, N. Mex.

Location.--Lat 35°56'20", long 105°15'05", in Mora Grant, on right bank 500 ft downstream from head and half a mile west of La Cueva, Mora County.

Records available.--June 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,015 ft (from topographic map).

Extremes.--1956-64: Maximum daily discharge, 32 cfs Aug. 21, 1957: no flow at times in each year.

Remarks.--Records good except those for December to February, which are poor. During 1964 a total of 34 discharge measurements were made on diversion and wasteway. Canal diverts water from left bank of Mora River for irrigation and off-channel storage below La Cueva. Published record represents flow below wasteway half a mile downstream from head of canal. Flow shown is total diversion less flow in wasteway.

Monthly discharge, in cubic feet per second, water year 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	8.8	1.4	6.25	384
November	13	0	10.1	600
December	11	6.6	8.16	502
Calendar year 1963	13	0	5.14	3,720
January	8.2	4.8	6.87	423
February	8.6	5.3	7.38	424
March	9.0	0	4.28	263
April	6.2	0	2.02	120
May	10	0	3.19	196
June	13	1.0	5.57	331
July	10	1.6	5.07	312
August	15	0	5.02	309
September	7.5	0	2.84	169
Water year 1963-64	15	0	5.56	4,030

Note.--Composite (total diversion less wasteway flow).

7-2155. Mora River at La Cueva, N. Mex.

Location.--Lat 35°56'15", long 105°15'05", in Mora Grant, on right bank 300 ft downstream from Las Vegas-Mora highway bridge, a quarter of a mile southeast of La Cueva, half a mile downstream from La Cueva damsite, Mora County.

Drainage area.--173 sq mi.

Records available.--August 1903 to April 1905 (gage heights and discharge measurements only), May 1905 to July 1911, April 1931 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Figures of daily discharge for February to April 1905 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital after June 8). Datum of gage is 6,998.7 ft above mean sea level, datum of 1929. April 1931 to Apr. 18, 1962, at site 300 ft upstream at datum about 2 ft higher. Aug. 25, 1903, to Sept. 29, 1904, staff gage at different datum (destroyed by flood of Sept. 29, 1904). Feb. 22, 1905, to July 31, 1911, staff gages at different datums.

Average discharge.--37 years (1906-10, 1931-64), 28.0 cfs (20,270 acre-ft per year).

Extremes.--Maximum discharge during year, 275 cfs Aug. 7 (gage height, 4.68 ft), from rating curve extended above 30 cfs on basis of slope-area measurement at gage height 8.33 ft; minimum, about 0.2 cfs Jan. 13 or 14.

1931-64: Maximum discharge, 1,530 cfs Sept. 23, 1941, from rating curve extended above 400 cfs by logarithmic plotting; maximum gage height, 8.55 ft July 23, 1962, present site and datum; no flow at times.

Flood of Sept. 29, 1904, may have exceeded 20,000 cfs; another major flood occurred June 11, 1913, but is believed less than that of 1904.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 7,000 acres, part of which is below station. This record plus La Cueva Canal below La Cueva (see No. 2151) equals total flow in valley cross section.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-12, Apr. 12 to May 26, June 9 to Aug. 18)

Oct. 1 to 1600 hours June 9						1600 hours June 9 to Sept. 30			
2.0	0.6	2.3	5.8	2.8	40	1.6	2.2	2.2	25
2.1	1.5	2.4	10	3.0	61	1.8	7.5	2.4	37
2.2	3.2	2.6	23			2.0	15	2.7	57

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.9	1.8	2.1	2	1	0.8	5.2	4.6	18	16	8.2	7.4
2	4.4	1.6	2	2	1	.8	4.6	3.0	19	15	8.2	7.4
3	4.9	1.6	2	2	.6	.8	4.6	3.2	25	14	10	7.6
4	6.2	1.5	2	1.5	.6	*.7	4.9	3.0	20	14	8.9	11
5	8.7	2.8	2	1	.6	.7	6.0	3.2	12	14	6.3	11
6	9.6	2.8	2	.5	*1	.7	8.2	2.6	19	13	8.6	13
7	11	2.2	2.5	.5	.5	.6	8.7	2.4	19	13	21	13
8	12	2.1	2	.5	.5	.8	*8.7	2.8	*17	13	13	*10
9	*12	2.1	2	.5	1	1.0	8.2	3.4	19	15	6.5	13
10	12	2.4	2.5	.5	1.2	.8	7.4	4.1	18	13	10	14
11	11	2.2	2	.8	1.0	.8	11	2.2	22	14	15	15
12	7.1	2.2	1.5	.5	.8	.6	7.8	*1.1	29	16	*18	14
13	2.8	2.4	1	.3	1.5	.6	7.8	1.0	32	*14	20	13
14	2.1	2.2	1	.3	1.1	.7	7.8	.9	34	13	19	12
15	1.9	*2.2	1.2	.4	1.2	.8	7.8	1.0	32	13	17	11
16	1.9	2.1	*1.5	*.5	1.6	5.1	7.8	1.9	30	42	17	9.7
17	2.1	2.2	2	.6	1.4	9.6	7.0	2.2	29	33	15	13
18	1.6	7.6	2	1	1.3	10	7.0	2.4	29	26	14	11
19	2.1	10	2	1.5	1.0	10	7.0	2.8	29	14	13	12
20	1.9	5.8	2	1.5	.9	9.6	7.0	3.4	33	19	11	15
21	1.6	2.6	1.5	2	1.0	8.7	6.2	3.9	30	18	8.9	14
22	1.5	2.4	1	1.5	1.0	8.2	*4.4	2.6	24	20	9.1	*16
23	1.4	2.4	1	1	1.3	7.4	3.4	3.6	20	20	7.5	8.9
24	1.4	2.2	1.5	.5	.9	6.6	3.2	5.4	20	17	6.7	8.4
25	1.4	2.2	2	.5	.8	5.8	3.9	5.5	22	15	7.6	7.5
26	1.4	3.0	2	1	1.0	*5.2	6.6	*44	18	16	7.6	7.6
27	1.2	3.0	2	1	.9	4.9	4.1	55	18	18	8.0	7.2
28	*1.9	2.6	2	1	1.2	5.2	3.0	11	20	16	5.7	8.1
29	2.1	2.2	1.5	1	1.1	5.2	3.2	14	17	*16	4.8	7.0
30	1.9	3	1	1	----------	4.4	3.9	12	16	16	6.6	*7.0
31	1.8	----------	1.5	1	----------	4.6	----------	19	----------	15	7.0	----------
Total	136.8	85.4	54.3	29.9	29.0	121.7	186.4	227.2	690	531	339.2	324.8
Mean	4.41	2.85	1.75	0.96	1.00	3.93	6.21	7.33	23.0	17.1	10.9	10.8
Ac-ft	271	169	108	59	58	241	370	451	1,370	1,050	673	644

Calendar year 1963: Max 80 Min 1 Mean 7.78 Ac-ft 5,630
Water year 1963-64: Max 55 Min 0.3 Mean 7.53 Ac-ft 5,460

Peak discharge (base, 300 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 23, 24, 26, 27, 30, Dec. 2 to Feb. 9.

7-2165. Mora River near Golondrinas, N. Mex.

Location. --Lat 35°53'40", long 105°09'30", in Mora Grant, at downstream end of left abutment of highway bridge, 1.2 miles upstream from Coyote Creek, 2 miles east of Golondrinas, Mora County, and 4 miles downstream from Cebolla River.

Drainage area. --267 sq mi.

Records available.--March 1915 to May 1921, October 1921 to March 1922, May, August to September 1922, July 1923 to July 1924, December 1924 to September 1964. Monthly discharge only 1915-30, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 6,734.1 above mean sea level, datum of 1929. Mar. 10, 1915, to June 4, 1921, water-stage recorder at site 3½ miles upstream at different datum. July 6, 1921, to Jan. 5, 1929, staff gage or water-stage recorder at present site at datum 1.0 ft higher.

Average discharge.--47 years (1915-20, 1921-22, 1923-64), 34.9 cfs (25,270 acre-ft per year).

Extremes. --Maximum discharge during year, 168 cfs Sept. 5 (gage height, 3.47 ft); minimum, 0.8 cfs Mar. 17.
1915-64: Maximum discharge, 14,000 cfs Aug. 22, 1952 (gage height, 14.4 ft), from rating curve extended above 700 cfs on basis of slope-area measurement of peak flow; no flow at times.
Floods of Sept. 29, 1904, and June 11, 1913, probably exceeded 25,000 cfs.

Remarks. --Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 12,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 10 to Mar. 16)

1.4	1.0	1.8	9.1
1.5	2.1	2.1	21
1.6	3.9	2.4	40

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.3	2.9	2.5	4.5	5	4	5.0	1.8	10	8.2	16	5.7
2	5.5	2.8	2.5	5	5	3.5	5.3	1.7	8.8	6.5	11	5.7
3	5.5	2.9	2.5	4.8	5	3.3	6.2	1.7	9.1	7.1	10	5.5
4	6.2	2.8	2.5	3.9	4	3	8.5	1.6	10	7.1	14	5.5
5	5.7	2.6	2.5	3.1	4	2.5	8.0	1.6	7.9	6.8	12	30
6	6.5	2.8	3	3	4.1	2.5	8.0	1.5	9.1	7.4	11	12
7	7.6	3.3	4.5	3	3.5	2.6	12	1.4	6.0	6.0	24	11
8	8.2	2.9	3	3	4.5	2.5	8.5	1.4	7.1	5.7	22	* 10
9	* 9.8	3.1	* 3	3	4.5	2.5	7.9	1.4	* 7.4	8.2	12	10
10	9.1	3.1	4	3	4.6	2.5	* 7.4	1.4	5.0	12	* 10	9.4
11	8.5	2.9	3	3.5	5.0	2.8	7.1	* 1.4	3.3	8.2	13	13
12	7.9	2.8	2.5	2.5	4.1	2.6	6.5	1.4	2.8	12	16	13
13	5.3	2.9	2.5	2.5	4	1.4	5.0	1.3	4.1	12	16	12
14	5.0	2.8	2.6	2.5	4	1.1	5.3	1.3	4.6	* 11	17	10
15	4.4	2.6	2.7	* 2.5	4	1.0	5.0	1.4	5.7	8.5	15	10
16	4.1	2.6	2.8	3.5	4	1.0	5.5	1.4	5.3	13	14	8.5
17	3.9	2.6	2.9	5	* 4.5	* 1.3	4.4	1.3	5.5	2.5	13	11
18	3.7	* 3.5	2.9	6	6	1.6	4.1	1.4	5.7	18	12	11
19	3.9	6.2	3.1	6.5	5	1.7	3.7	1.4	6.0	19	12	8.8
20	4.1	5.7	2.9	6.8	4.5	1.7	3.7	1.3	7.6	12	11	12
21	3.9	3.3	3	6.5	3.5	1.3	3.7	1.4	8.5	11	8.5	13
22	3.7	1.8	2.5	6.8	4	1.5	3.1	1.4	6.2	11	7.6	13
23	3.1	1.8	2.7	5.0	4.5	2.0	2.3	1.3	5.3	10	7.4	12
24	* 2.9	2.0	3.5	5.5	4	1.7	2.0	1.3	4.6	10	7.1	7.1
25	3.1	2.0	4.8	6	4.5	2.3	1.8	1.4	5.7	8.5	6.8	7.4
26	2.9	2.4	4.1	6.0	4.5	2.4	2.0	1.6	6.2	9.8	7.1	6.8
27	2.8	3	3.7	5.7	4	4.1	1.8	34	5.5	11	6.8	6.2
28	2.9	2.9	4.4	6.8	4	4.1	1.8	7.6	7.4	12	6.2	* 6.8
29	2.9	2.5	5.7	6.2	4	4.1	2.0	9.1	8.2	22	5.0	6.8
30	2.8	2.5	3.5	6.5	----------	5.0	2.0	6.8	8.2	18	5.0	6.2
31	2.8	----------	2.5	6.5	----------	5.0	----------	8.5	----------	16	5.5	----------
Total	154.0	88.0	98.3	145.1	126.3	78.6	149.6	103.5	196.8	353.0	354.0	299.4
Mean	4.97	2.93	3.17	4.68	4.36	2.54	4.99	3.34	6.56	11.4	11.4	9.98
Ac-ft	305	175	195	288	251	156	297	205	390	700	702	594

Calendar year 1963: Max 74 Min 0.7 Mean 7.33 Ac-ft 5,300
Water year 1963-64: Max 34 Min 1.0 Mean 5.86 Ac-ft 4,260

Peak discharge (base, 400 cfs). --No peak above base.

* Discharge measurement made on this day.

Note. --Stage-discharge relation affected by ice Nov. 27, 29, 30, Dec. 1-17, 21-23, 30, 31, Jan. 1, 2, 6-19, 24, 25, Feb. 1-5, 7-9, 13-29, Mar. 1, 2, 4-6, 8-10, Apr. 5, 6.

2-2171. Coyote Creek above Guadalupita, N. Mex.

Location. --Lat 36°10'30", long 105°13'35", in Mora Grant, on right bank 1½ miles north of Guadalupita, Mora County.

Drainage area. --71 sq mi.

Records available. --May 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (from topographic map).

Average discharge. --8 years, 9.29 cfs (6,730 acre-ft per year).

Extremes.--Maximum discharge during year, 34 cfs Apr. 16 (gage height, 2.15 ft); minimum, 0.06 cfs June 29.
1956-64: Maximum discharge, 1,390 cfs June 6, 1958 (gage height, 6.08 ft), from rating curve extended above 150 cfs by logarithmic plotting; minimum, 0.04 cfs June 16, 1963.

Remarks. --Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.26	0.01	1.6	5.8
1.3	.3	1.7	9.4
1.4	1.0	1.9	19
1.5	2.8	2.1	32

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	4.0	3.1	2.3	2.6	2.7	16	8.0	3.7	0.7	2.6	0.5
2	2.1	4.3	2.8	2.4	2.3	*2.8	15	8.3	4.6	.6	2.3	.6
3	1.9	4.3	2.8	2.3	2.2	2.8	14	8.3	4.9	.6	2.1	.7
4	1.9	4.3	*2.8	2.2	2.2	2.8	13	8.3	4.6	.4	2.6	.9
5	1.7	4.6	2.6	2.2	*2.2	2.8	9.4	8.0	4.9	.5	3.1	1.4
6	1.7	4.3	2.6	2.1	2.1	2.8	4.0	8.0	4.0	.4	4.3	1.2
7	*1.5	3.7	2.3	2.0	2.0	2.9	6.2	8.0	3.1	.3	4.6	.9
8	1.5	3.7	2.1	1.9	2.1	3.0	7.7	8.0	2.8	.5	3.7	.8
9	1.4	3.4	2.5	1.8	2.3	2.9	*8.3	8.0	*2.6	.9	3.1	*1.0
10	1.5	3.4	2.3	1.6	2.5	2.6	7.6	8.0	2.1	.9	2.6	1.0
11	1.5	3.4	2.2	1.7	2.4	2.8	11	*8.3	1.5	1.0	3.1	1.0
12	1.7	3.4	2.3	1.2	2.3	3.2	23	8.7	1.4	1.5	*2.6	.8
13	1.9	3.4	2.3	1.2	2.2	4.0	23	8.3	1.2	*1.2	2.4	.9
14	2.1	3.4	2.4	*1.4	2.2	4.0	20	8.3	1.0	.6	2.4	1.5
15	2.1	3.7	2.4	1.6	2.1	4.5	23	8.0	1.0	.9	3.5	1.7
16	2.1	4.0	2.4	1.9	2.1	5.2	32	7.6	.9	1.9	2.4	1.5
17	3.4	4.0	2.4	2.2	2.0	5.5	28	7.6	.9	2.9	1.7	1.5
18	2.4	3.7	2.3	2.3	2.0	6.2	22	7.6	.8	3.1	1.5	1.2
19	2.8	4.0	2.4	2.5	1.9	5.8	18	8.7	.8	2.3	1.5	1.2
20	3.4	4.0	2.3	3.0	1.9	5.8	16	9.0	.7	2.1	1.2	1.9
21	2.8	4.0	2.2	3.0	1.6	5.5	13	8.7	.7	1.9	1.0	1.9
22	2.8	3.4	2.0	3.0	1.6	4.6	*12	8.7	.7	1.7	1.2	2.1
23	2.8	3.4	2.3	2.8	1.7	4.6	10	8.3	.7	1.7	1.0	1.7
24	3.1	3.4	2.5	2.5	1.8	*4.3	9.4	8.0	.6	1.7	.9	1.2
25	3.1	3.4	2.6	2.8	1.9	4.0	9.0	*7.2	.6	1.7	.9	1.5
26	2.8	3.4	2.6	3.0	2.0	3.1	8.3	6.9	.6	1.0	.4	1.4
27	2.6	3.4	2.6	3.0	2.2	3.4	8.0	5.5	.6	1.5	.6	1.7
28	2.6	4.0	2.5	3.0	2.3	3.4	7.2	4.0	.1	1.2	.6	1.7
29	2.6	3.7	2.3	3.0	2.5	4.6	6.9	2.4	.2	1.5	.6	1.7
30	2.6	3.4	2.1	3.0	----------	5.8	6.9	2.6	.6	1.2	.5	1.7
31	*3.1	----------	2.1	3.0	----------	8.7	----------	3.4	----------	1.9	.5	----------
Total	71.8	112.5	75.1	71.9	61.2	127.1	407.9	228.7	52.9	40.3	61.5	38.8
Mean	2.32	3.75	2.42	2.32	2.11	4.10	13.6	7.38	1.76	1.30	1.98	1.29
Ac-ft	142	223	149	143	121	252	809	454	105	80	122	77

Calendar year 1963: Max 30 Min 0.1 Mean 3.52 Ac-ft 2,550
Water year 1963-64: Max 32 Min 0.1 Mean 3.69 Ac-ft 2,680

Peak discharge (base, 100 cfs). --No peak above base.

* Discharge measurement made on this day.

Note. --Stage-discharge relation affected by ice Nov. 23-25, Dec. 3-16, 20-24, 28-31, Jan. 1, Jan. 4 to Mar. 12, Mar. 15.

7-2180. Coyote Creek near Golondrinas, N. Mex.

Location.--Lat 35°54'40", long 105°09'50", in Mora Grant, on left bank a third of a mile downstream from Coyote Creek damsite, 2 miles upstream from mouth, and 2 miles northeast of Golondrinas.

Drainage area.--215 sq mi.

Records available.--April 1928 to September 1964. Prior to October 1930 monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map). Prior to Apr. 26, 1938, at site 0.4 mile downstream at different datum (staff gage prior to Apr. 20, 1929). Apr. 26, 1938, to Sept. 25, 1946, at site 139 ft downstream at same datum.

Average discharge.--36 years, 11.8 cfs (8,470 acre-ft per year).

Extremes.--Maximum discharge during year, 785 cfs Aug. 7 (gage height, 5.17 ft); minimum, 0.3 cfs Oct. 18.
1928-64: Maximum discharge, 4,050 cfs Aug. 17, 1961 (gage height, 9.60 ft), from rating curve extended above 245 cfs on basis of slope-area measurements at gage heights 5.54, 7.74, and 9.60 ft; maximum gage height, 10.1 ft Aug. 30, 1936 (site and datum then in use); no flow Aug. 4, 1945, Apr. 10, May 9, 10, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions (including off-channel storage) for irrigation of about 4,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 4 to Apr. 24, Aug. 12 to Sept. 4, Sept. 18, 19, Sept. 28-30)

1.6	0.4	2.0	6.5
1.7	1.0	2.1	9.0
1.8	2.5	2.3	16
1.9	4.5	2.5	25
		2.9	57

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.9	1.0	4.0	4.0	3.5	3.5	1.8	2.0	1.8	0.8	3.3	1.2
2	2.5	1.8	4.0	3.8	3.5	3.0	1.2	2.4	1.9	.6	2.5	1.2
3	2.2	1.6	4.0	3.6	3.5	2.8	1.8	2.7	7.4	.5	2.5	.9
4	2.0	1.6	4.0	3.5	4.0	2.9	3.7	1.6	3.3	2.5	1.9	57
5	2.0	1.4	4.0	3.4	4.0	2.5	9.0	.8	2.5	1.3	2.7	11
6	2.0	.9	4.0	3.3	3.5	2.5	16	.6	2.4	.9	1.8	4.9
7	2.0	2.5	3.5	3.2	3.0	2.4	9.3	.6	2.2	.6	51	2.7
8	2.0	1.8	4.0	3.1	3.5	2.5	8.8	.6	2.2	.6	32	* 2.0
9	* 2.0	1.4	* 4.5	3.1	3.5	2.5	9.0	1.9	* 2.0	.9	8.8	1.9
10	2.0	1.3	3.5	3.5	4.0	2.0	* 7.2	3.1	2.0	1.0	* 4.5	1.8
11	2.0	1.3	3.0	3.0	4.0	2.5	5.5	* 1.9	1.8	.8	3.1	2.0
12	2.0	1.3	3.0	2.5	4.0	2.5	7.8	1.0	1.2	1.0	1.4	2.0
13	2.0	1.3	3.5	2.5	4.0	2.5	14	1.0	.9	1.2	1.3	2.0
14	2.0	1.4	3.5	3.1	3.8	2.5	10	2.7	.8	* .8	1.3	2.0
15	2.0	1.3	3.5	* 3.5	3.5	2.5	7.8	1.2	1.4	.8	1.0	2.0
16	1.4	1.3	4.0	3.5	3.5	2.2	9.6	1.2	2.9	2.0	13	2.0
17	.4	1.4	3.7	4.0	* 3.5	* 2.5	13	1.2	1.8	2.4	2.2	1.9
18	.4	* 1.7	4.0	4.0	3.5	2.4	14	.9	1.0	1.4	1.2	1.6
19	.5	1.9	3.9	4.5	3.0	1.9	13	.7	.8	1.2	.9	1.3
20	.9	2.0	3.7	4.5	3.0	1.8	9.3	.6	.7	1.0	.7	2.5
21	.6	2.2	3.5	4.0	2.5	2.2	6.8	.7	.8	.9	.5	2.0
22	.6	2.2	3.3	4.0	2.5	2.0	5.9	.8	.4	.9	.6	* 1.9
23	.6	2.0	3.7	3.5	2.5	1.9	4.5	.8	.4	.6	.5	1.8
24	.6	2.0	4.3	3.0	3.0	1.8	3.9	.8	.4	1.0	.6	10
25	* .6	2.0	4.6	3.5	3.0	1.6	3.1	.7	.4	2.7	.6	4.3
26	.5	2.7	4.5	4.0	3.0	2.0	2.9	1.4	.5	1.3	.6	2.4
27	.6	3.1	4.1	4.0	3.0	1.6	2.9	1.2	.5	1.2	1.6	2.0
28	.6	3.5	3.8	4.0	3.0	2.2	1.8	1.3	.5	1.0	2.5	1.9
29	.6	3.7	3.6	4.0	3.0	2.7	1.0	1.0	.7	1.3	1.4	1.4
30	.7	4.0	3.5	4.0	----------	2.2	1.3	1.2	.8	1.3	1.2	1.4
31	.6	----------	4.0	4.0	----------	2.0	----------	1.9	----------	1.4	1.0	----------
Total	41.8	57.6	118.2	111.6	97.3	72.1	205.9	40.5	46.4	35.9	148.2	133.0
Mean	1.35	1.92	3.81	3.60	3.36	2.33	6.86	1.31	1.55	1.16	4.78	4.43
Ac-ft	83	114	234	221	193	143	408	80	92	71	294	264

Calendar year 1963: Max 21 Min 0.4 Mean 3.81 Ac-ft 2,760
Water year 1963-64: Max 57 Min 0.4 Mean 3.03 Ac-ft 2,200

Peak discharge (base, 180 cfs).--Aug. 7 (1700) 785 cfs (5.17 ft); Sept. 4 (1700) 451 cfs (4.48 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18, 19, 23, 24, Nov. 26 to Dec. 16, Dec. 18, Dec. 20 to Mar. 3, Mar. 5, 6, 8-12, 14, 15, 17.

7-2186. Sapello Canal at Sapello, N. Mex.

Location.--Lat 35°46'10", long 105°15'00", in Las Vegas Grant, on right bank 20 ft downstream from highway crossing in Sapello, San Miguel County.

Records available.--June 1956 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 7,010 ft (from topographic map).

Extremes.--1956-64: Maximum daily discharge, 2.8 cfs June 1, 1957; no flow for long periods each year.

Remarks.--Records good. Canal diverts water from right bank of Sapello River for irrigation of land downstream from Sapello River gage (see No. 2200).

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	0.7	0	0.29	18
November	1.5	.4	.92	55
December	1	0	.43	27
Calendar year 1963	1.5	0	0.22	157
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	1.8	0	.53	32
May	1.7	.5	1.34	83
June	1.8	.3	1.03	61
July	.7	0	.36	22
August	.8	.1	.48	30
September	.9	.1	.52	31
Water year 1963-64	1.8	0	0.49	359

7-2200. Sapello River at Sapello, N. Mex.

Location.--Lat 35°46'10", long 105°15'05", in Las Vegas Grant, on downstream end of bridge pier nearest left bank, on State Highway 3, in town of Sapello, half a mile downstream from Manuelitas Creek, San Miguel County.

Drainage area.--132 sq mi.

Records available.--May to October 1915, January 1916 to November 1918, February 1919 to May 1921, July to September 1921, July 1956 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Gage heights and discharge measurements published under same name for August 1903 to March 1904 are for a site above Manuelitas Creek, and are not equivalent. Records for November to December 1915, December 1918, January 1919, and October 1921 to December 1928 have been found unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 6,910 ft (by barometer). May 1915 to September 1921, staff gage at site 300 ft upstream at different datum.

Average discharge.--13 years (1915-20, 1956-64), 25.4 cfs (18,390 acre-ft per year).

Extremes.--Maximum discharge during year, 1,700 cfs Aug. 7 (gage height, 4.35 ft); minimum, 0.04 cfs Aug. 27.
1915-20, 1956-64: Maximum discharge determined, 6,160 cfs Aug. 4, 1957 (gage height, 7.40 ft), from rating curve extended above 1,500 cfs on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 4,200 acres. Station is bypassed by Sapello Canal (see No. 2186).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.65	0.1	1.0	6.0
.7	.3	1.2	15
.8	1.2	1.4	28
.9	3.2	1.7	58

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5	2.7	0.8	2.5	3.5	4.5	2.7	2.4	3.2	0.6	0.5	0.3
2	5.1	3.2	.8	2.5	3.5	5.0	3.2	1.2	2.4	.5	.5	.3
3	3.9	2.9	* .8	2.5	3.5	5.1	3.6	1.2	2.7	.4	.4	.2
4	5.4	2.4	.7	2	3.6	* 4.5	5.4	1.7	2.4	.6	26	.3
5	3.4	2.2	.7	2	3.6	4.5	5.1	1.2	2.4	.2	1.5	.5
6	2.7	2.0	.7	2	* 3.5	4.5	6.4	1.4	2.4	.3	.3	1.8
7	2.7	2.2	.8	2	3.0	4.5	6.5	2.2	2.0	.3	55	.2
8	2.4	2.0	.9	2	3.5	4	* 7.0	2.2	2.0	.3	3.9	.2
9	2.0	1.9	1.0	1.5	4	4	12	3.4	1.5	.2	1.0	*.1
10	2.0	1.7	1.1	1.5	4	3.5	16	2.9	2.7	.3	.6	2.8
11	2.0	1.9	1.2	1.5	4	4	15	2.4	1.9	.2	.5	.8
12	2.2	1.7	1.3	1	3.6	4.8	14	1.9	* .9	.3	* .4	.3
13	2.4	1.7	1.3	1.5	3.5	5.4	10	1.4	.9	1.9	.5	.3
14	2.0	1.5	1.6	2	3	5.5	5.4	* 1.7	1.5	1.9	.6	6.7
15	2.0	* 1.9	1.9	* 2.5	3	6	4.5	2.0	1.2	* .6	.5	1.5
16	1.7	1.9	1.5	2.5	3	6	3.6	1.5	.7	.6	.4	.3
17	1.9	1.4	2.0	3	3	6	3.9	.9	.5	.5	.3	.3
18	2.0	.7	1.9	3	2.5	6	5.7	.9	.3	.4	.3	.3
19	2.2	.9	2	2.7	2.5	6	5.7	1.4	.5	4.9	.4	1.0
20	2.2	1.5	1.9	2.5	2.5	6.0	3.2	1.5	.3	.9	.3	1.4
21	2.2	1.5	1.9	3	2.5	6.4	2.9	1.4	.6	.3	.3	.5
22	* 2.0	1.7	1.5	3	2.5	6.7	2.9	1.9	.5	.2	.3	.8
23	1.9	1.5	2	2.5	3	6.4	2.9	1.4	.4	.2	.3	.5
24	2.2	1.7	1.9	2	3.5	6.0	2.9	1.4	.5	.2	.2	.6
25	2.4	1.5	2	2	3.5	5.4	2.4	2.4	.6	.2	.2	.3
26	1.9	1.2	2	2.5	3.5	* 4.5	3.9	2.9	.2	.2	.2	.2
27	1.7	1.0	2.2	3	3.5	4.2	3.2	2.7	.5	.3	.2	.2
28	1.5	.9	2	3.5	3.7	3.9	2.9	2.9	.4	.2	.2	.2
29	1.2	.9	2	3.5	4.0	3.6	3.6	2.4	.2	.3	.2	.2
30	1.9	.9	2	3.5	----------	3.6	3.6	2.7	.9	1.2	.2	.6
31	* 2.7	----------	2.5	3.5	----------	2.9	----------	3.6	----------	.8	.2	----------
Total	76.3	51.1	46.9	74.7	96.0	153.4	170.1	61.1	37.2	20.0	96.4	23.7
Mean	2.46	1.70	1.51	2.41	3.31	4.95	5.67	1.97	1.24	0.65	3.11	0.79
Ac-ft	151	101	93	148	190	304	337	121	74	40	191	47

Calendar year 1963: Max 60 Min 0.1 Mean 3.65 Ac-ft 2,650
Water year 1963-64: Max 55 Min 0.1 Mean 2.48 Ac-ft 1,800

Peak discharge (base, 800 cfs).--Aug. 4 (1600) 916 cfs (3.55 ft); Aug. 7 (1400) 1,700 cfs (4.35 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2-5, 10-14, 19, 22, 23, 25, 26, Dec. 28 to Jan. 18, Jan. 20 to Feb. 3, Feb. 6-11, Feb. 13 to Mar. 2, Mar. 4-11, 14-19, Apr. 7.

7-2201. Lake Isabel feeder canal near Sapello, N. Mex.

Location.--Lat 35°44'40", long 105°09'30", in Mora Grant, 1 mile northwest of the site of Los Alamos and 5 miles southeast of Sapello.

Records available.--September 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,700 ft (from topographic map).

Extremes.--1956-64: Maximum daily discharge, 190 cfs Oct. 20, 1957; no flow at times.

Remarks.--Records good October, November, May to July, September, others poor. Canal diverts water from left bank of Sapello River to fill Lake Isabel which stores water for irrigation.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	3.9	0	0.75	46
November	.6	0	.28	16
December	.4	0	.16	10
Calendar year 1963	149	0	2.17	1,570
January	.4	0	.13	7.9
February	.5	0	.07	3.8
March	8.1	0	3.18	195
April	2.1	0	.27	16
May	0	0	0	0
June	0	0	0	0
July	.6	0	.02	1.2
August	10	0	.52	32
September	0	0	0	0
Water year 1963-64	10	0	.45	328

7-2210. Mora River near Shoemaker, N. Mex.

Location.--Lat 35°48', long 104°47', in S½ sec.11, T.18 N., R.20 E., (projected) in Mora Grant, on left bank 4½ miles east of Shoemaker, and 23 miles upstream from mouth.

Drainage area.--1,104 sq mi, of which 71 sq mi is probably noncontributing.

Records available.--October 1914 to July 1915, October 1915 to August 1918, May 1919 to July 1924, September to November 1924, March to July 1925, June 1927 to September 1964. Prior to October 1930, monthly discharge only, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 6,170 ft (from topographic map). Prior to Oct. 10, 1934, at site 2,000 ft upstream at different datum.

Average discharge.--46 years (1914-18, 1919-24, 1927-64), 59.4 cfs (43,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,230 cfs Sept. 24 (gage height, 4.30 ft); no flow at times.
1914-64: Maximum discharge, 15,200 cfs June 3, 1948 (gage height, 12.79 ft), from rating curve extended above 2,800 cfs on basis of slope-area measurements at gage heights 10.09 and 12.79 ft; no flow at times.
Floods of Sept. 29, 1904, and June 11, 1913, probably exceeded 30,000 cfs.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 26,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	0.0	0.6	7.5
.2	.3	.8	16
.3	1.0	1.0	29
.4	2.3	1.5	87
.5	4.5	2.0	195

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	1.9	1.5	5.1	6.0	b 10	1.8	0.9	0.9	0.5	0.2	0
2	1.5	1.8	1.5	5.4	3.2	9.8	1.6	.8	*.9	.7	0	0
3	1.5	1.5	1.5	5.4	1.9	7.9	1.8	.8	1.5	.5	0	0
4	1.4	1.4	1.5	5.4	.6	4.8	3.4	*.8	1.2	.3	*0	0
5	1.2	1.4	1.5	6.0	1.9	3.2	3.2	.7	.9	.1	0	0
6	1.2	1.5	1.5	5.4	b 5.0	2.7	2.2	.7	.7	*0	0	0
7	1.4	* 1.5	1.2	4.5	b 4.5	2.5	2.0	.8	.5	0	0	0
8	1.4	1.5	1.4	5.1	b 5.2	2.7	2.0	.6	.3	0	.8	0
9	1.4	1.5	* 1.5	5.4	b 5.0	2.7	1.9	.5	.2	0	.5	0
10	1.4	1.5	1.5	* 5.7	b 5.5	2.3	* 1.9	.6	.2	0	.3	0
11	* 1.4	1.6	1.6	5.7	b 6.0	2.2	1.8	.6	.3	0	.3	0
12	1.4	1.6	1.5	5.4	b 6.5	2.2	1.6	.7	.2	0	.3	0
13	1.2	1.6	1.4	b 4	b 6.5	2.0	1.2	.8	.3	0	.2	0
14	1.2	1.5	1.4	b 3	b 6.5	1.8	1.4	.8	.7	0	.2	0
15	1.2	1.4	1.5	a 3	b 6.0	1.9	1.8	.8	.6	0	.1	0
16	1.2	1.2	1.5	a 3	b 5.5	1.9	1.8	.8	.4	.2	0	0
17	1.4	1.1	1.6	a 4	b 6.5	* 1.9	1.9	.8	.2	.2	0	0
18	1.5	1.1	1.6	a 5	7.5	2.0	2.0	.9	.2	.2	0	0
19	1.8	1.4	1.5	5.7	7.9	2.0	2.0	.9	.2	.2	0	0
20	1.8	1.4	1.5	6.3	* 7.5	1.8	1.4	.9	.2	8.3	0	0
21	1.5	1.4	1.5	6.6	b 6.0	1.9	1.0	.8	.3	2.7	0	0
22	1.5	1.4	1.6	7.2	b 6.0	1.9	1.5	.8	.3	.9	0	60
23	1.5	1.4	1.6	6.3	6.6	1.6	1.8	.7	.4	.5	0	10
24	1.2	1.4	2.7	7.5	6.9	1.6	1.1	.6	.8	.3	0	145
25	1.4	1.5	4.5	6.0	9.8	1.8	.8	.7	.9	.3	0	6.5
26	1.4	1.5	4.8	5.4	11	1.8	.8	12	.9	.6	0	2.0
27	1.5	1.5	4.5	5.1	b 9	1.9	.5	28	.8	.5	0	1.2
28	1.5	1.5	5.1	5.4	b 9	2.0	.7	3.8	.5	.5	0	1.0
29	1.5	1.5	4.1	5.7	b 9	1.9	1.0	1.9	.3	.6	0	.8
30	1.4	1.5	b 4.0	6.3	----------	1.9	1.1	.9	.3	.3	0	.7
31	1.5	----------	4.5	6.6	----------	1.9	----------	.9	----------	.2	0	----------
Total	43.9	44.0	68.6	166.6	178.5	88.5	49.0	66.3	16.1	18.6	2.9	227.2
Mean	1.42	1.47	2.21	5.37	6.16	2.85	1.63	2.14	0.54	0.60	0.09	7.57
Ac-ft	87	87	136	330	354	176	97	132	32	37	5.8	451

Calendar year 1963 : Max 348 Min 0.3 Mean 9.10 Ac-ft 6,580
Water year 1963-64: Max 145 Min 0 Mean 2.65 Ac-ft 1,920

Peak discharge (base, 800 cfs)--Sept. 24 (0220) 1,230 cfs (4.30 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

7-2215. Canadian River near Sanchez, N. Mex.

Location.--Lat 35°39'15", long 104°22'30", in S½ sec.34, T.17 N., R.24 E., at downstream end of bridge pier on State Highway 65, 1 mile upstream from Lagartija Creek, 3 miles northeast of Sanchez, 10 miles downstream from Mora River and 24 miles southwest of Mosquero.

Drainage area.--6,015 sq mi, of which 303 sq mi is probably noncontributing.

Records available.--April 1912 to December 1914, October 1935 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 4,500 ft (from topographic map). Apr. 12, 1912, to Dec. 31, 1914, at two sites within 100 ft about 3 miles upstream at different datums. October 1935 to September 1963 at datum 2.00 ft higher.

Average discharge.--31 years (1912-14, 1935-64), 227 cfs (164,340 acre-ft per year).

Extremes.--Maximum discharge during year, 4,720 cfs Sept. 24 (gage height, 6.55 ft); no flow for long periods.
1912-14, 1935-64: Maximum discharge, 87,800 cfs Sept. 2, 1942 (gage height, 21.3 ft, from floodmarks), from rating curve extended above 48,000 cfs on basis of slope-area measurement of peak flow; no flow at times.
Maximum flood known occurred Sept. 29 or 30, 1904 (discharge probably exceeded 100,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 56,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	0.0	2.2	23	3.0	275
1.8	.8	2.4	54	3.5	580
1.9	2.8	2.6	105	4.0	1,010
2.0	6.5	2.8	180	4.5	1,530

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	12	12	10	19	22	7.0	1.4	* 5.6		0	0
2	21	14	11	14	19	22	6.0	.9	7.5		0	0
3	19	14	12	17	14	23	5.6	.8	7.0		0	0
4	17	14	12	14	8.7	27	8.1	.4	6.0		0	0
5	14	14	12	13	12	28	11	.2	4.8		0	0
6	12	17	11	10	10	26	11	0	3.4		0	0
7	11	16	10	11	12	23	11	0	2.6		10	0
8	11	14	10	10	13	20	* 12	0	1.4		188	0
9	10	15	10	8	14	19	16	0	.8		172	0
10	9.3	14	10	9	15	19	24	0	1.4		119	0
11	8.1	13	9	9	15	16	21	0	1.9		54	0
12	8.1	* 12	8	8	16	15	19	0	.9		36	0
13	7.0	12	6.5	7	17	15	15	0	.7		28	0
14	6.0	11	7	7	16	12	11	0	.8		18	81
15	5.6	11	8	* 8	15	14	11	0	.2		13	20
16	5.2	11	9.3	8	15	14	8.1	0	.1		8.7	32
17	4.8	10	9.3	9	16	13	6.0	0	0		218	24
18	4.8	10	11	10	17	12	5.6	0	0		130	16
19	26	10	10	11	19	11	5.2	0	0		* 70	8.1
20	85	11	13	12	19	10	4.0	0	0		41	6.0
21	* 17	10	12	13	18	9.3	2.8	0	0		24	126
22	11	10	10	17	20	9.3	2.6	0	0		15	* 1,080
23	10	9.3	8.7	19	23	8.7	2.3	0	0		10	68
24	7.5	9.7	11	* 12	* 23	* 8.1	2.1	0	0		6.5	1,420
25	7.0	9.3	12	12	22	7.5	1.9	0	0		4.0	822
26	6.5	9.3	13	14	21	7.5	1.6	0	0		3.1	300
27	6.5	10	* 13	16	22	7.0	1.3	0	0		1.9	122
28	6.5	10	13	18	19	6.5	.9	2.2	0		1.3	70
29	6.5	11	13	19	20	6.5	.9	11	0		.7	45
30	7.0	11	7.0	19	----------	6.0	1.4	5.2	0		.3	33
31	8.1	----------	8.0	19	----------	6.5	----------	3.1	----------		0	----------
Total	405.5	354.2	321.8	383	489.7	443.9	235.4	25.2	45.1	0	1,172.5	4,273.1
Mean	13.1	11.8	10.4	12.4	16.9	14.3	7.85	0.81	1.50	0	37.8	142
Ac-ft	804	703	638	760	971	880	467	50	89	0	2,330	8,480

Calendar year 1963: Max 3,670 Min 0 Mean 67.3 Ac-ft 48,740
Water year 1963-64: Max 1,420 Min 0 Mean 22.3 Ac-ft 16,170

Peak discharge (base, 5,000 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7, 8, 10-15, 22, 30, 31, Jan. 1, 6-19, 27, 28, Feb. 5-22.

7-2225. Conchas River at Variadero, N. Mex.

Location.--Lat 35°24'10", long 104°26'35", in NE¼NE¼ sec.36, T.14 N., R.23 E., on left bank 1.5 miles northeast of Variadero and 15 miles west of Conchas Dam.

Drainage area.--523 sq mi, of which 130 sq mi is probably noncontributing.

Records available.--October 1936 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,430 ft (from topographic map). Prior to Mar. 30, 1942, at site 1½ miles upstream at different datum. Mar. 30, 1942, to May 18, 1950, at present site at datum 0.5 ft higher.

Average discharge.--28 years, 18.3 cfs (13,250 acre-ft per year).

Extremes.--Maximum discharge during year, 3,670 cfs July 18 (gage height, 6.60 ft), from rating curve extended above 760 cfs on basis of slope-area measurements at gage heights 10.0 and 19.5 ft; no flow at times.
1936-64: Maximum discharge, 44,000 cfs Sept. 1, 1942 (gage height, 19.96 ft, present datum), from slope-area measurement of peak flow; no flow at times.

Remarks.--Records fair. Diversions for irrigation of about 300 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	0.3	0.3	0.3	0.2	0.4	0.1	0.1	*0	0	0	0
2	1.6	0	.3	.3	0	.4	.1	.1	0	0	0	0
3	1.2	0	.3	.3	0	.4	.1	0	.1	0	0	0
4	.9	0	.3	.3	0	.4	0	0	.1	0	0	0
5	.7	0	.3	0	0	.4	0	0	0	0	0	0
6	.4	0	.3	0	0	.4	.1	0	0	0	0	0
7	.4	0	.3	0	0	.3	.1	0	0	0	0	0
8	.3	0	.3	0	0	.4	*0	0	0	0	0	0
9	0	0	.3	0	0	.4	.1	0	0	0	0	0
10	0	0	.3	0	0	.4	.1	0	0	0	0	0
11	0	0	.3	0	.3	.4	.1	0	0	0	0	132
12	0	*0	.3	0	.3	.3	.1	*0	0	0	0	13
13	0	.3	.3	0	.3	.3	.1	0	0	0	0	3.4
14	0	.3	.3	0	.3	.2	.1	0	0	0	.6	1.2
15	0	.3	.3	*0	.3	.2	.1	0	0	0	5.4	.7
16	0	0	.3	0	.4	.2	.1	.1	0	0	2.2	.3
17	0	0	.3	0	.4	.2	.1	.1	0	0	.9	.1
18	0	0	.3	0	.4	.3	.1	.1	0	317	.1	.1
19	0	0	.3	0	.4	.4	.1	.1	0	63	*0	0
20	0	.3	.3	0	.4	.2	0	.1	0	1.9	0	.1
21	*0	0	.3	0	.5	.2	0	0	0	.5	0	.1
22	0	0	.3	0	.5	.2	0	0	0	.2	0	*123
23	0	0	.4	0	.5	.2	*0	0	0	0	0	34
24	0	0	.4	*0	*.5	*.2	0	0	0	0	0	430
25	0	0	.4	0	.5	.1	0	0	0	0	0	71
26	0	0	.4	0	.5	.2	0	0	0	0	0	20
27	0	0	*.4	0	.5	.2	0	0	0	0	0	6
28	0	0	.4	0	.4	.2	0	0	0	0	0	3
29	0	*.3	.4	0	.4	.2	.1	0	0	0	0	2
30	0	.3	.3	0	----	.2	.1	0	0	0	0	1
31	0	----	.3	0	----	.2	----	0	----	0	0	----
Total	12.2	6.7	10.0	6.6	9.8	8.7	2.4	0.7	0.2	382.6	9.2	841.0
Mean	0.39	0.22	0.32	0.21	0.34	0.28	0.08	0.02	0.01	12.3	0.30	28.0
Ac-ft	24	13	20	13	19	17	4.8	1.4	0.4	759	18	1,670

Calendar year 1963: Max 471 Min 0 Mean 3.36 Ac-ft 2,400
Water year 1963-64: Max 430 Min 0 Mean 3.52 Ac-ft 2,560

Peak discharge (base, 1,500 cfs).--July 18 (2030) 3,670 cfs (6.60 ft); Sept. 24 (0540) 1,540 cfs (4.50 ft).

* Discharge measurement made on this day.

7-2230. Bell Ranch Canal near Conchas Dam, N. Mex.

Location.--Lat 35°24'00", long 104°11'05", in Pablo Montoya Grant, on left bank 1,270 ft downstream from Conchas Dam and 1¾ miles north of Conchas Dam Post Office, San Miguel County.
Records available.--October 1942 to September 1964.
Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,150 ft (from headgate elevations).
Extremes.--1942-64: Maximum daily discharge, 21 cfs July 10-13, Sept. 7-10, 1948, June 27, Aug. 7, 1951; no flow at times each year.
Remarks.--Records good October to February, others fair. Canal diverts from Conchas Reservoir for irrigation of about 700 acres on Bell Ranch.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	7.3	0	2.64	162
November	5.8	0	3.84	229
December	6.1	.5	3.49	215
Calendar year 1963	13	0	3.24	2,350
January	3.6	0	2.94	180
February	0	0	0	0
March	9.8	0	1.60	98
April	12	0	7.28	433
May	12	0	3.84	236
June	10	0	5.40	322
July	9.6	0	4.50	277
August	7.6	0	2.38	146
September	4.4	0	1.02	61
Water year 1963-64	12	0	3.25	2,360

7-2233. Conchas Canal below Conchas Dam, N. Mex.

Location.--Lat 35°21'45", long 104°10'15", in S½ sec.3, T.13 N., R.26 E., on left bank at upstream end of tunnel transition section, about 1 mile downstream from headgates in Conchas Dam and 22 miles north of Newkirk.
Records available.--September 1945 to June 1949, April 1954 to June 1955, September 1961 to September 1964.
Gage.--Water-stage recorder and concrete control. Datum of gage is 4,156.9 ft above mean sea level (from Bureau of Reclamation elevation of concrete structure). Prior to Nov. 19, 1948, at site three-quarters of a mile upstream at different datum.
Extremes.--1945-49, 1954-55, 1961-64: Maximum daily discharge, 751 cfs Aug. 31, 1961; no flow during most of each winter period.
Remarks.--Records good above 100 cfs and poor below. No diversion or wasteway between canal headworks and gage.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	130	0	4.5	278
November	0	0	0	0
December	0	0	0	0
Calendar year 1963	649	0	159	115,000
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	478	0	259	15,410
May	392	184	269	16,540
June	309	161	222	13,230
July	321	69	221	13,590
August	278	115	205	12,620
September	296	0	96.8	5,760
Water year 1963-64	478	0	107	77,430

7-2235. Conchas Reservoir near Conchas Dam, N. Mex.

Location. --Lat 35°24'10", long 104°11'25", in Pablo Montoya Grant, stilling well within concrete portion of Conchas Dam on Canadian River, 1¾ miles northwest of Conchas Dam Post Office and about 24 miles north of Newkirk.

Drainage area. --7,409 sq mi, of which 433 sq mi is probably noncontributing.

Records available.--December 1938 to September 1964.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Extremes. --Maximum contents during year, 198,300 acre-ft Oct. 1 (elevation, 4,178.58 ft); minimum, 82,840 acre-ft Sept. 12, 13. (elevation, 4,156.05 ft).

1938-64: Maximum contents, 479,600 acre-ft Apr. 24, 1942 (elevation, 4,208.41 ft); minimum after initial filling, 93,460 acre-ft Sept. 24, 1954 (elevation, 4,155.80 ft).

Remarks.--Reservoir is formed by dam consisting of concrete main section and earthfill wings, completed Sept. 15, 1939; storage began Dec. 29, 1938. Capacity, 352,600 acre-ft between elevations 4,060.0 and 4,201.0 ft (crest of 300-foot ungated service spillway); dead storage, 79,600 acre-ft at elevation 4,155 ft. Reservoir usually not drawn below elevation, 4,157.35 ft (sill of irrigation outlet, capacity, 86,990 acre-ft, except for minor sluicing and operation of small powerplant; during 1954-55, 1964 there was some pumping into Conchas Canal. Capacity of 198,200 acre-ft between elevations 4,201.0 (crest of 300-foot ungated service spillway) and 4,218.0 ft (crest of 3,000-foot ungated emergency spillway) acts as detention storage in the control of floods. Figures given herein represent total contents. Reservoir is used for irrigation, flood control, and recreation. Diversion above station for irrigation of about 57,000 acres. Direct diversions through Conchas Dam to Conchas Canal and Bell Ranch Canal (see Nos. 2230, 2233) irrigate about 36,000 acres near Tucumcari and on Bell Ranch.

Cooperation. --Records furnished by Corps of Engineers.

Month-end elevation and contents, water year October 1963 to September 1964

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	4,178.60	198,500	-
Oct. 31	4,178.22	196,200	-2,300
Nov. 30	4,177.78	193,600	-2,600
Dec. 31	4,177.57	192,400	-1,200
Calendar year 1963	-	-	-97,000
Jan. 31	4,177.36	191,200	-1,200
Feb. 29	4,177.42	191,500	+300
Mar. 31	4,177.21	190,300	-1,200
Apr. 30	4,173.77	171,100	-19,200
May 31	4,169.89	151,200	-19,900
June 30	4,165.91	132,600	-18,600
July 31	4,161.91	*102,800	-29,800
Aug. 31	4,157.97	89,020	-13,780
Sept. 30	4,159.44	93,980	+4,960
Water year 1963-64	-	-	-104,520

† Elevation at 2400.

* Capacity table dated 7-1-64 used beginning July 1; for elevation 4,161.91 ft the superseded table gives 115,900 acre-ft (actual change during July is about 16,700 acre-ft). If superseded table were used for entire year, annual change would be, -92,100 acre-ft.

7-2245. Canadian River below Conchas Dam, N. Mex.

Location.--Lat 35°24'30", long 104°10'10", in sec.27, T.14 N., R.26 E. (projected), in Pablo Montoya Grant, on right bank 2.4 miles north of Conchas Dam Post Office (1960 location) and 2.8 miles downstream from Conchas Dam.

Drainage area.--7,417 sq mi, of which 433 sq mi is probably noncontributing.

Records available.--May 1936 to December 1938, January 1942 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,021.90 ft above mean sea level, datum of 1929. Prior to Dec. 13, 1941, at site 0.7 mile downstream at datum 6.2 ft higher.

Average discharge.--23 years (1941-64), 94 cfs (68,050 acre-ft per year).

Extremes.--Maximum discharge during year, 9 cfs Jan. 16 (gage height, 4.84 ft); maximum gage height, 4.85 ft Sept. 24; minimum daily discharge, 2 cfs Sept. 30.

1936-64: Maximum discharge, 73,000 cfs June 3, 1937; maximum gage height, 20.34 ft May 30, 1938, present datum (backwater from temporary construction dam); no flow at times.

Remarks.--Records poor. Flow regulated by Conchas Reservoir (see preceding page). Diversions above station for irrigation of about 90,000 acres, 36,000 of which are below station. Bell Ranch Canal (see No. 2230) diverts directly from Conchas Dam and flumes from right to left bank just above River gage for irrigation of about 700 acres on Bell Ranch. Conchas Canal (see No. 2233) diverts directly from Conchas Dam and bypasses gage for irrigation of about 35,000 acres around Tucumcari.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	8	5	7	5	6	6	4	4	7	6	6
2	*3	7	4	7	5	6	5	4	4	7	6	6
3	3	7	4	7	5	7	5	4	4	7	*5	6
4	3	7	4	8	5	7	5	4	4	7	5	6
5	3	7	4	8	5	7	5	4	4	6	5	6
6	3	7	4	8	5	7	*5	4	4	6	5	6
7	3	7	4	8	5	5	5	4	4	6	5	6
8	4	7	4	8	5	5	5	4	4	6	5	6
9	4	7	4	8	5	5	5	4	4	6	5	6
10	4	8	4	*8	5	5	5	4	4	6	5	*6
11	4	8	4	8	5	5	5	4	4	6	6	6
12	4	8	4	8	5	6	5	4	4	6	6	5
13	4	*8	*3	8	5	6	5	4	4	6	5	5
14	4	8	3	8	5	6	5	4	5	6	5	5
15	4	8	3	8	5	6	5	4	5	6	5	5
16	4	8	3	9	5	6	6	5	5	6	5	5
17	5	8	4	8	5	6	6	5	5	*5	5	5
18	5	8	4	7	5	6	5	5	5	6	5	5
19	5	7	4	6	5	*6	5	5	5	6	5	5
20	5	7	4	6	5	6	5	5	5	5	5	5
21	5	7	6	6	5	6	5	5	5	5	5	5
22	5	7	5	6	5	6	5	5	5	5	5	5
23	5	7	5	6	5	6	5	5	5	5	5	5
24	5	6	5	6	*5	6	*5	5	5	6	5	5
25	5	6	6	6	5	6	5	5	5	6	*5	4
26	5	6	6	6	6	6	5	*5	*7	6	5	3
27	5	7	6	6	6	6	5	5	7	6	5	3
28	5	5	6	5	6	6	5	5	7	6	5	3
29	6	4	6	5	6	6	5	4	7	6	5	3
30	7	5	6	5	----------	6	5	4	7	6	5	2
31	7	----------	7	*5	----------	6	----------	4	----------	6	6	----------
Total	137	210	141	215	149	185	153	137	147	185	160	149
Mean	4.4	7.0	4.5	6.9	5.1	6.0	5.1	4.4	4.9	6.0	5.2	5.0
Ac-ft	272	417	280	426	296	367	303	272	292	367	317	296

Calendar year 1963 : Max 17 Min 2 Mean 4.2 Ac-ft 3,000
Water year 1963-64 : Max 9 Min 2 Mean 5.4 Ac-ft 3,900

* Discharge measurement made on this day.

7-2265. Ute Creek near Logan, N. Mex.

Location.--Lat 35°24', long 103°30', in NE¼ sec.35, T.14 N., R.32 E., on right bank a quater of a mile downstream from Logan-Trigg Ranch road crossing, 5½ miles upstream from mouth, and 6 miles northwest of Logan. This station is within Ute Reservoir. A replacement station has been constructed about 4 miles upstream and above flow line of Ute Reservoir.

Drainage area. --2,073 sq mi, of which 617 sq mi is probably noncontributing.

Records available. --August 1904 to June 1906 and April 1909 to May 1914 (gage heights and discharge measurements only), January 1942 to September 1964. Records of discharge for August 1904 to June 1906, April 1909 to December 1911, published in WSP 307, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 3,757.50 ft above mean sea level, datum of 1929. Prior to Aug. 1, 1911, staff gage at site 1½ miles downstream at different datum. Aug. 1, 1911, to May 23, 1914, water-stage recorder at site 1¾ miles downstream at different datum. January 1942 to December 1955, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge. --22 years, 17.4 cfs (21,140 acre-ft per year).

Extremes. --Maximum discharge during year, 5,250 cfs Sept. 24 (gage height, 5.10 ft); no flow for long periods.

1942-64: Maximum discharge, 24,500 cfs May 28, 1946, July 12, 1951 (gage height, 9.4 ft, present datum), from rating curve extended above 7,700 cfs on basis of slope-area measurements at gage heights 6.2 and 8.2 ft (present datum); no flow at times.

Flood of May 1, 1914, reached a stage of 22.95 ft, site and datum then in use. Another major flood reached a stage of 17.0 ft (present datum) sometime in 1941, from information furnished by Bureau of Reclamation (discharge, about 70,000 cfs).

Remarks.--Records poor. Discharge measurements or observations of no flow made twice a month. Diversions for irrigation of a few hundred acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 23-30)

1.3	0.0	1.5	1.4	1.7	15	2.0	115	2.8	790
1.4	.3	1.6	5.0	1.8	35	2.3	300	3.3	1,450

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0							0	0	0	0	0
2	0							0	0	0	0	0
3	0							0	0	0	0	0
4	0							0	0	0	0	0
5	0							0		0	0	0
6	0							0	0	0	20	0
7	0							0	0	0	3	0
8	0							0	0	0	30	0
9	0							0	0	0	1	0
10	0							0	0	0	1	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	26	187
15	0							0	1	0	928	577
16	0							0	0	0	216	26
17	0							0	0	0	47	1
18	0							0	0	52	4	0
19	17							0	0	63	0	0
20	8							0	0	15	0	0
21	1							0	0	1	0	0
22	0							0	0	0	0	1,400
23	0							0	0	0	0	302
24	0							0	0	0	0	1,080
25	0							0	0	0	0	650
26	0							0	0	0	0	228
27	0							0	0	0	0	92
28	0							100	0	0	0	33
29	0							225	0	0	0	12
30	0				----------			28	0	0	0	4
31	0	----------			----------		----------	7	----------	0	0	----------
Total	26	0	0	0	0	0	0	360	1	131	1,276	4,592
Mean	0.84	0	0	0	0	0	0	11.6	0.03	4.23	41.2	153
Ac-ft	52	0	0	0	0	0	0	714	2	260	2,530	9,110

Calendar year 1963 : Max 625 Min 0 Mean 9.60 Ac-ft 6,950
Water year 1963-64 : Max 1,400 Min 0 Mean 17.4 Ac-ft 12,670

Peak discharge (base, 6,000 cfs). --No peak above base.

Note.--Stage-discharge relation affected by ice Jan. 18 and for several other days, though daily flow was less than 0.5 cfs for entire winter period. No gage-height record Oct. 22-31, Dec. 10-22, Jan. 11-17, Feb. 7-10.

7-2268. Ute Reservoir near Logan, N. Mex.

Location. --Lat 35°21', long 103°26', in NW¼ sec.21, T.13 N., R.33 E., 2½ miles southwest of Logan and 3½ miles downstream from Ute Creek.

Drainage area. --11,140 sq mi, of which 1,110 sq mi is probably noncontributing.

Records available.--May 1963 to September 1964.

Gage. --Inclined cable gage. Datum of gage is at mean sea level (levels by Interstate Stream Commission).

Extremes. --Maximum contents during year, 32,550 acre-ft Sept. 26 (elevation, 3,733.1 ft); minimum, 22,230 acre-ft Aug. 7 (elevation, 3,726.2 ft).
1963-64: Maximum contents, that of Sept. 26, 1964. Minimum (this is initial filling period), that of Aug. 7, 1964.

Remarks. --Reservoir is fromed by an earthfill dam, 121 ft high above streambed, 5,750 ft long, completed in May 1963; storage began Dec. 13, 1962. Capacity, 109,600 acre-ft at elevation 3,760.0 ft (crest of 800-ft ungated service spillway; gates included in future plans). Maximum-design capacity, 307,000 acre-ft at elevation 3,791.0 ft (maximum safe water level, first-stage of construction); the 197,400 acre-ft of capacity above service spillway is for use in detention of floods and for protection of structure. Dead storage, 20,710 acre-ft at elevation 3,725.0 ft (crest of outlet tower); inactive or conservation pool below 3,741.6 ft (capacity, 49,870 acre-ft). Figures given herein represent total contents and are based on once-daily gage readings. Reservoir is planned for flood control, industrial and municipal use, and recreation. Diversions above station for irrigation of about 90,200 acres.

Cooperation. --Interstate Stream Commission furnishes elevation record and capacity table.

Month-end elevations and contents, water year October 1963 to September 1964

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	3,728.6	25,500	-
Oct. 31	3,728.2	24,940	-560
Nov. 30	3,727.9	24,520	-420
Dec. 31	3,727.6	24,100	-420
Calendar year 1963	-	-	-
Jan. 31	3,727.6	24,100	0
Feb. 29	3,727.9	24,520	+420
Mar. 31	3,727.9	24,520	0
Apr. 30	3,727.5	23,970	-550
May 31	3,727.9	24,520	+550
June 30	3,727.1	23,420	-1,100
July 31	3,726.5	22,620	-800
Aug. 31	3,727.5	23,970	+1,350
Sept. 30	3,733.0	32,380	+8,410
Water year 1963-64	-	-	+6,880

7-2270. Canadian River at Logan, N. Mex.

Location.--Lat 35°21'20", long 103°25'20", in NE¼ sec.15, T.13 N., R.33 E., on left bank 1,100 ft upstream from bridge on U. S. Highway 54, half a mile south of Logan, 1½ miles upstream from Chicago, Rock Island & Pacific Railroad Co. bridge, 2 miles downstream from Ute Dam, 4¼ miles upstream from Revuelto Creek (formerly Tucumcari Creek), and 5½ miles downstream from Ute Creek.

Drainage area.--11,141 sq mi, of which 1,110 sq mi is probably noncontributing.

Records available.--June 1904 to November 1905 (gage heights and discharge measurements only), December 1908 to September 1909, February 1910, April to July 1910, August 1910 to September 1911 (gage heights and discharge measurements only), October 1911 to May 1914, January to May 1924, September 1924 to July 1925, January 1927 to April 1934, August 1934 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Records for December 1909, January 1910, and May to July 1934, published in WSP 267, 287, and 762 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder at present site since Aug. 5, 1910; at different datums prior to Oct. 21, 1928, and at datum 1.54 ft lower Oct. 21, 1928, to Sept. 30, 1934. Altitude of present gage is 3,670 ft (from river-profile study). Prior to Aug. 5, 1910, staff gages 1½ miles downstream at different datums (datum of gage, 3,651 ft above mean sea level Dec. 22, 1908, to Aug. 4, 1910).

Average discharge.--15 years (1908-9, 1911-13, 1926-38), 392 cfs (283,800 acre-ft per year), prior to completion of Conchas Dam; 24 years (1938-62), 257 cfs (186,100 acre-ft per year), prior to completion of Ute Dam.

Extremes.--Maximum discharge during year, 692 cfs May 26 (gage height, 5.78 ft); minimum daily, 0.3 cfs June 18.

1930-64: Maximum discharge, 219,000 cfs Sept. 22, 1941 (gage height, 29.3 ft, from floodmarks), from rating curve extended above 75,000 cfs by logarithmic plotting; no flow at times prior to completion of Ute Dam.

Maximum discharge known, 278,000 cfs Sept. 30, 1904 (gage height, about 36.5 ft, site and datum used in 1909), from rating curve extended above 14,000 cfs, from Ninth Biennial Report of State engineer.

Remarks.--Records good except those for periods of ice effect, which are poor. Flow regulated by Conchas Reservoir, 45 miles upstream (see No. 2235) and Ute Dam, 2 miles upstream (see No. 2268). Diversions for irrigation of about 90,000 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1.4	*1.8	1.8	1.6	1.8	1.2	2.0	1.8	*1.4	0.9	1.2	1.2
2	1.4	1.8	1.8	1.4	1.6	1.4	*1.2	1.4	1.2	.8	1.2	1.2
3	1.4	1.8	*1.8	1.4	b 1.5	1.6	1.8	1.2	1.0	.9	1.2	*1.0
4	1.2	1.8	2.0	1.6	b 1.5	1.8	2.2	1.2	1.2	.6	*1.2	2.0
5	1.0	1.8	2.0	1.4	b 1.5	1.4	1.8	1.2	.9	.5	1.4	2.0
6	1.2	1.8	2.0	1.6	b 1.5	1.0	1.4	*1.2	.8	.5	1.2	.9
7	1.2	1.8	2.0	1.6	b 1.5	1.2	2.2	1.0	.6	.6	3.7	.9
8	1.4	1.8	2.0	1.4	b 1.5	1.6	1.8	1.0	.4	1.2	2.4	.8
9	1.2	1.8	2.0	b 1.5	1.6	1.6	1.8	1.4	3.2	*1.2	1.6	.8
10	1.2	1.8	2.0	b 1.5	1.6	1.2	33	1.2	.9	.8	1.4	1.2
11	1.2	1.8	b 2	1.6	*1.6	*1.2	3.4	1.2	.9	.9	1.2	1.8
12	1.2	1.8	b 2	1.8	1.4	1.4	1.8	1.2	.8	1.0	1.4	1.6
13	1.2	1.8	b 2	*b 1.5	1.4	1.0	2.0	1.0	1.0	1.0	1.2	1.4
14	1.2	2.0	b 2	b 1.2	1.2	1.0	2.0	1.0	.8	.8	2.4	3.6
15	1.0	2.0	b 2	b 1.2	1.4	1.2	1.6	1.0	.6	.8	2.2	2.7
16	*1.4	1.6	b 2	b 1.4	1.4	1.2	1.6	.9	.5	1.0	1.6	2.0
17	1.4	1.4	b 2	b 1.5	1.4	1.6	1.6	1.0	.4	1.0	1.4	1.6
18	1.2	1.8	2.0	1.6	1.4	2.0	1.8	1.0	.3	1.2	1.6	1.0
19	2.2	2.0	2.0	1.4	b 1.5	1.8	1.6	.9	.4	1.2	1.2	1.0
20	1.6	1.8	2.0	1.4	b 1.5	1.4	1.0	.8	.5	1.2	1.0	1.6
21	1.2	1.8	2.0	1.4	b 1.5	1.8	1.4	.8	.5	1.4	1.2	11
22	1.2	1.6	b 2	1.4	1.8	1.8	*1.4	.8	.4	1.0	1.2	2.2
23	1.0	1.6	b 2	1.4	2.2	1.6	1.6	.8	.6	.9	1.2	2.6
24	1.0	1.6	*1.8	1.2	2	1.6	1.4	.8	.5	.9	1.0	1.2
25	1.4	1.6	1.8	1.6	*1.6	1.8	1.4	.8	*.6	1.0	1.0	1.0
26	1.4	1.8	1.6	1.8	1.6	2.0	1.4	31	.8	1.0	1.6	.8
27	1.2	1.8	1.6	1.6	1.2	1.8	1.2	*3.0	.8	1.0	1.4	.9
28	1.4	1.6	1.6	*1.6	1.2	2.0	1.6	2.0	.8	1.2	1.4	1.0
29	1.4	1.8	1.4	1.6	1.2	2.0	2.4	1.8	.6	1.8	1.2	1.0
30	1.4	2.0	1.4	1.6	----------	2.2	2.7	1.4	.8	1.2	1.2	1.0
31	1.6	----------	1.6	1.8	----------	2.4	----------	1.6	----------	1.0	1.0	----------
Total	40.4	53.2	58.2	46.6	44.1	48.8	84.1	67.4	24.2	30.5	45.1	52.0
Mean	1.30	1.77	1.88	1.50	1.52	1.57	2.80	2.17	0.81	0.98	1.45	1.73
Ac-ft	80	106	115	92	87	97	167	134	48	60	89	103

Calendar year 1963: Max 56 Min 0.1 Mean 1.28 Ac-ft 930
Water year 1963-64: Max 33 Min 0.3 Mean 1.62 Ac-ft 1,180

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

7-2271. Revuelto Creek near Logan, N. Mex.

Location.--Lat 35°20'30, long 103°23'30", in NE¼NW¼ sec.24, T.13 N., R.33 E., on right bank a quarter of a mile upstream from bridge on State Highway 39, 2 miles upstream from mouth, and 2 miles southeast of Logan.

Drainage area.--786 sq mi.

Records available.--August 1959 to September 1964. Unpublished records collected by Bureau of Reclamation for the period October 1941 to July 1947 are for a site 500 ft downstream at different datum. They are not equivalent because of major irrigation development; major peaks should be comparable.

Gage.--Water-stage recorder. Altitude of gage is 3,650 ft (from topographic map).

Average discharge.--5 years, 73.1 cfs (52,920 acre-ft per year).

Extremes.--Maximum discharge during year, 1,190 cfs July 18 (gage height, 3.58 ft); no flow at times.

1959-64: Maximum discharge, 26,700 cfs July 9, 1960 (gage height, 14.3 ft), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; no flow at times.

1941-47: Maximum discharge determined, about 13,400 cfs Sept. 18, 1946 (gage height, 9.04 ft, site and datum then in use), computed by Bureau of Reclamation.

A peak of 26,100 cfs (time and date unknown; gage height, 12.9 ft) was measured by slope-area method in May 1957.

Remarks.--Records poor. Low flows supplemented by surface and ground water return from irrigation in vicinity of Tucumcari.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 39	*1	0	2	1	1	0	25	5	0	0	0
2	42	2	0	2	0	0	0	15	6	0	0	0
3	43	2	* 0	2	0	0	0	6	* 6	0	0	0
4	35	1	0	1	1	1	0	5	6	0	0	0
5	26	0	0	0	3	3	0	2	5	0	0	6
6	22	0	0	0	3	5	0	* 1	2	0	17	0
7	13	0	0	0	2	1	0	1	0	0	79	0
8	6	0	0	0	2	1	0	3	0	0	35	0
9	3	0	0	0	3	1	0	4	0	0	5	0
10	1	0	0	0	5	1	0	7	0	0	0	0
11	1	0	0	0	* 33	* 0	0	15	0	0	0	0
12	1	0	0	0	80	0	0	18	0	0	0	0
13	0	0	1	* 0	39	0	0	8	0	0	0	0
14	0	0	1	0	29	0	0	7	0	0	4	18
15	0	0	1	0	21	0	0	4	0	0	5	64
16	* 0	0	1	1	12	0	0	3	0	0	0	38
17	0	0	1	3	12	0	0	3	0	0	0	7
18	0	0	1	5	10	0	0	24	0	9	* 66	* 1
19	0	0	1	5	7	0	2	37	0	35	11	1
20	31	0	1	4	6	0	2	23	0	23	38	2
21	25	0	1	5	5	0	0	17	0	7	4	2
22	20	0	1	4	5	0	* 2	9	0	0	0	2
23	5	0	1	2	5	0	5	7	0	0	0	2
24	3	0	* 1	1	5	0	10	5	0	0	0	2
25	1	0	1	1	* 4	0	12	2	0	0	0	1
26	0	0	6	1	4	0	19	5	0	0	0	0
27	0	0	4	1	4	0	22	* 34	0	0	0	0
28	0	0	3	* 0	2	0	22	31	0	0	0	0
29	0	0	3	0	1	0	21	16	0	2	0	0
30	0	0	2	0	----------	0	27	8	0	4	0	0
31	0	----------	2	1	----------	0	----------	5	----------	0	0	----------
Total	317	6	33	41	304	14	144	350	30	80	264	146
Mean	10.2	0.20	1.1	1.3	10.5	0.5	4.8	11.3	1.0	2.6	8.5	4.9
Ac-ft	629	12	65	81	603	28	286	694	60	159	524	290

Calendar year1963: Max 1,050 Min 0 Mean 40.9 Ac-ft 29,630
Water year1963-64: Max 80 Min 0 Mean 4.7 Ac-ft 3,430

Peak discharge (base, 4,500 cfs). --No peak above base.

* Discharge measurement made on this day (some less than 0.05 cfs).

Note.--No gage-height record Oct. 11-15, 21-31; Dec. 6-18, 21-23, Mar. 12 to Apr. 1. Stage-discharge relation affected by ice Dec. 24, 25, Jan. 8-20, Feb. 7-10.

8-806. Running Water Draw near Clovis, N. Mex.

Location.--Lat 34°31'55", long 103°12'05", in W½NE¼ sec.31, T.4 N., R.36 E., on left bank a quarter of a mile upstream from State Highway 18 and 8 miles north of Clovis.

Drainage area.--109 sq mi, of which about 14 sq mi is probably noncontributing.

Records available.--October 1952 to September 1956 (annual maximum only), October 1956 to September 1964 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 4,250 ft (from topographic map). Prior to October 1956, crest-stage gage at site 900 ft downstream at datum 0.4 ft lower. Operation of crest-stage gage will be resumed.

Average discharge.--8 years, 1.79 cfs (1,300 acre-ft per year).

Extremes.--Maximum discharge during year, 84 cfs Sept. 15 (gage height, 4.47 ft); no flow for most of year.
1952-64: Maximum discharge, 7,090 cfs Sept. 6, 1957 (gage height, 9.95 ft, from floodmarks), from rating curve extended above 1,800 cfs on basis of indirect measurements of flow at gage heights 7.73, and 9.95 ft; no flow for most of time.

Remarks.--Records fair. Precipitation at Clovis (8 mi south) was 10.78 inches during year, and at Clovis 13 N (5 mi north), 10.56 inches. During the year there were 11 observations of no flow.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1									0		0	0.4
2									0		0	.1
3									0		0	0
4									0		0	0
5									0		0	0
6									0		0	0
7									0		0	0
8									0		0	0
9									0		0	0
10									0		0	0
11									0		0	0
12									0		0	0
13									3.2		.2	0
14									0		.4	.3
15									0		.2	14
16									0		.1	1.9
17									0		.1	0
18									0		.4	0
19									0		0	0
20									0		0	3.0
21									0		0	.1
22									0		0	0
23									0		0	0
24									0		0	0
25									0		0	0
26									0		0	0
27									0		0	0
28									0		0	0
29									0		.1	0
30					----------				0		.7	0
31		----------			----------		----------		----------		.5	----------
Total	0	0	0	0	0	0	0	0	3.2	0	2.7	19.8
Mean	0	0	0	0	0	0	0	0	0.11	0	0.09	0.66
Ac-ft	0	0	0	0	0	0	0	0	6.3	0	5.4	39

Calendar year 1963: Max 997 Min 0 Mean 5.64 Ac-ft 4,090
Water year 1963-64: Max 14 Min 0 Mean 0.07 Ac-ft 50.7

Peak discharge (base, 150 cfs). --No peak above base.

8-2525. Costilla Creek above Costilla Dam, N. Mex.

Location.--Lat 36°53'50", long 105°15'20", in Sangre de Cristo Grant, on left bank 2 miles upstream from Costilla Dam and 17 miles southeast of Costilla, Taos County.

Drainage area.--25.1 sq mi.

Records available.--April 1937 to September 1964 (no winter records). Published as "above reservoir, near Costilla" 1937-51. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 9,280 ft (from topographic map). Prior to July 9, 1940, at wooden control 660 ft downstream at datum 9.53 ft lower. July 9, 1940, to July 22, 1954, at concrete control 600 ft downstream at datum 7.75 ft lower. July 23, 1954, to June 16, 1959, 200 ft upstream at datum 2.53 ft higher.

Extremes.--Maximum discharge during year, about 14 cfs May 23, 27 (gage height, unknown); minimum, 0.3 cfs July 5.
1937-64: Maximum discharge, 3,870 cfs July 22, 1954 (gage height, 7.0 ft, from floodmarks, at present site and datum), on basis of slope-area measurement of peak flow; no flow Apr. 29, 1963.
The flood in 1954 is highest known since about 1909, from information by local range rider.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor. A total of about 1,300 acres irrigated above this station and Casias Creek near Costilla, N. Mex. proportion between streams varying with current conditions.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

2.4	0.4	2.8	5.6
2.5	1.4	3.0	9.4
2.6	2.8	3.2	14

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	b 2						a 10	9.7	2.1	3.0	*1.7
2	2.1	b 2						*a 10	*8.8	1.7	2.3	1.4
3	2.1	b 2						a 9	8.8	1.4	2.2	1.2
4	2.1	b 2						a 8	6.5	1.6	4.6	2.3
5	2.0	b 2						a 8	5.7	1.3	2.7	2.7
6	1.9	*b 2						a 7	4.7	1.6	*2.7	2.4
7	1.9	-						a 7	4.6	*2.4	5.6	2.4
8	2.1	-						d 8	4.8	2.1	3.1	1.9
9	2.1	-						d 6	4.3	3.0	4.8	1.9
10	*2.0	-						d 6	3.8	a2.3	3.6	2.3
11	1.9	-						d 7	3.5	a2.0	4.0	2.1
12	1.9	-						d 7	3.5	a2.0	4.0	1.7
13	1.7	-						d 7	3.1	a1.9	3.5	1.6
14	1.7	-						* 7.9	3.0	a1.9	3.9	2.6
15	1.7	-						8.5	2.8	a1.9	4.6	3.1
16	1.7	-						d 10	2.7	a2.3	2.8	2.6
17	1.9	-						d9	2.4	a2.6	2.6	2.1
18	1.9	-						d 10	2.4	a2.3	*2.4	1.9
19	2.0	-						d 10	2.3	a2.0	2.3	2.7
20	2.8	-						d 11	2.1	a1.9	3.4	3.6
21	2.6	-						d 11	2.1	a1.9	2.6	3.2
22	*2.1	-						d 11	1.9	*2.3	2.1	*3.4
23	2.0	-						d 13	*1.7	3.1	2.0	2.3
24	1.9	-						d 12	1.9	4.0	1.9	2.1
25	1.9	-						d 11	1.9	3.6	1.9	2.0
26	2.0	-						d 12	1.9	4.0	2.0	1.9
27	1.9	-						d 13	1.9	3.4	1.9	1.7
28	1.9	-						d 11	1.6	2.1	1.6	1.7
29	1.9	-						d 10	1.7	1.6	1.6	1.7
30	1.9	-			----------			10	2.4	2.3	1.6	1.7
31	2.1	----------			----------		----------	10	----------	2.3	1.6	----------
Total	61.7	-	-	-	-	-	-	290.4	108.5	70.9	88.9	65.9
Mean	1.99	-	-	-	-	-	-	9.37	3.62	2.29	2.87	2.20
Ac-ft	122	-	-	-	-	-	-	576	215	141	176	131

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

8-2530. Casias Creek near Costilla, N. Mex.

Location.--Lat 36°53'50", long 105°15'35", in Sangre de Cristo Grant, on left bank 200 ft downstream from road crossing, 2 miles upstream from Costilla Dam, and 17 miles southeast of Costilla, Taos County.

Drainage area.--16.6 sq mi.

Records available.--April 1937 to September 1964 (no winter records). Nov. 1-7, 1947, and Nov. 1-8, 13-16, 1948, discharge records have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 9,270 ft (from topographic map). Prior to July 18, 1940, water-stage recorder and wooden control 100 ft downstream at datum 1.56 ft lower.

Extremes.--Maximum discharge during year, 33 cfs May 14 (gage height, 1.12 ft); minimum recorded, 1.4 cfs July 5.
1937-64: Maximum discharge, 122 cfs June 11, 1957; maximum gage height recorded, 1.90 ft June 14, 1938 (backwater from Costilla Reservoir); minimum recorded, 0.8 cfs June 29, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are fair. A total of about 1,300 acres irrigated above this station and Costilla Creek above Costilla Dam, proportion between streams varying with current conditions.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.5	1.0	0.8	10
.6	3.2	.9	16
.7	6.2		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2							5.9	7.8	3.1	3.0	4.1
2	3.2							*5.9	*5.7	3.0	3.0	4.1
3	3.5							5.9	5.4	2.8	3.0	4.1
4	3.5							5.9	4.5	2.8	4.5	4.8
5	3.2							5.7	4.1	2.8	3.3	5.0
6	3.2							5.9	4.1	2.8	4.2	4.5
7	3.0							5.9	3.8	3.3	8.0	4.5
8	3.0							6.5	4.3	2.8	4.5	4.1
9	3.0							6.2	3.8	3.5	6.3	4.3
10	*3.0							6.2	3.3	3.1	4.8	4.5
11	3.0							6.5	3.3	3.6	6.2	4.1
12	3.0							6.8	3.3	3.1	6.8	3.8
13	2.8							8.1	3.3	3.0	7.4	3.8
14	2.8							*11	3.3	3.3	7.8	4.1
15	2.8							12	3.3	3.0	7.8	4.8
16	2.5							14	3.4	3.6	6.5	4.3
17	2.5							13	3.8	3.4	6.2	4.1
18	2.5							13	3.8	3.3	*5.7	3.8
19	2.5							13	3.8	2.8	5.7	4.3
20	3.2							14	3.6	2.8	6.5	5.2
21	2.8							14	3.6	2.8	5.7	5.0
22	*2.5							14	3.6	*2.8	5.4	*5.0
23	2.5							16	*3.6	3.1	5.2	4.1
24	2.5							15	3.3	3.6	4.8	4.1
25	2.5							13	3.1	3.3	4.5	4.1
26	2.5							14	3.0	3.4	4.5	3.8
27	2.5							11	3.0	3.1	4.3	4.1
28	2.5							10	3.0	3.0	4.1	4.1
29	2.5							9.4	3.0	2.8	4.1	3.8
30	2.8				----------			9.0	3.4	3.1	4.1	3.8
31	2.8	----------			----------		----------	8.7	----------	3.0	4.1	----------
Total	87.8	-	-	-	-	-	-	305.5	114.3	95.9	162.0	128.2
Mean	2.83	-	-	-	-	-	-	9.85	3.81	3.09	5.23	4.27
Ac-ft	174	-	-	-	-	-	-	606	227	190	321	254

Calendar year	: Max	Min	Mean	Ac-ft
Water year	: Max	Min	Mean	Ac-ft

Peak discharge (base, 50 cfs).--No peak above base.

* Discharge measurement made on this day.

8-2535. Santistevan Creek near Costilla, N. Mex.

Location.--Lat 36°53'05", long 105°16'50", in Sangre de Cristo Grant, on left bank 200 ft upstream from road crossing, 0.9 mile upstream from Costilla Dam, and 16 miles southeast of Costilla, Taos County.

Drainage area.--2.15 sq mi.

Records available.--April 1937 to September 1964 (no winter records). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 9,300 ft (from topographic map). Prior to June 27, 1940, water-stage recorder and wooden control at same site at datum 0.99 ft lower.

Extremes.--Maximum discharge during year, 4.7 cfs July 9 (gage height, 0.62 ft); minimum recorded, 0.1 cfs Nov. 1.
1937-64: Maximum discharge recorded, 18 cfs Aug. 11, 1941, July 12, 1957; maximum gage height recorded, 1.73 ft Aug. 11, 1941; minimum discharge recorded, 0.1 cfs Apr. 29, 1963; Nov. 1, 1963.

Remarks.--Records fair. No diversion above or below station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.1	0.3	0.4	2.4
.2	.8	.5	3.4

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	0.5						0.6	2.6	1.8	1.2	0.7
2	.7	.7						*.6	2.8	1.7	1.1	.6
3	.7	.6						.7	*2.9	1.6	1.1	.6
4	.6	.6						.7	2.8	1.6	1.2	.8
5	.6	.5						.7	2.8	1.5	1.1	.8
6	.6	.5						.7	2.8	1.6	1.1	.7
7	.6	-						.8	2.7	1.6	1.3	.7
8	.6	-						.8	2.9	1.5	1.2	.6
9	.6	-						.9	2.7	1.9	1.1	.6
10	*.6	-						.8	2.7	1.6	1.0	.8
11	.6	-						.8	2.6	1.8	1.2	.7
12	.6	-						1.0	2.5	1.6	1.2	.6
13	.6	-						1.1	2.5	1.5	1.2	.6
14	.6	-						*1.2	2.4	1.4	1.2	.7
15	.6	-						1.3	2.4	1.7	1.1	.7
16	.6	-						1.5	2.4	1.7	1.0	.7
17	.6	-						1.7	2.3	1.4	1.0	.6
18	.6	-						1.7	2.4	1.4	*.9	.6
19	.6	-						1.8	2.3	1.4	.8	.7
20	.7	-						1.8	2.2	*1.3	1.0	.8
21	.7	-						1.8	2.2	1.4	.8	.8
22	*.6	-						1.8	2.1	*1.3	.8	*.8
23	.6	-						1.8	*2.1	1.2	.8	.7
24	.6	-						1.9	2.1	1.8	.8	.6
25	.6	-						1.9	2.0	1.8	.8	.6
26	.6	-						2.5	1.9	1.4	.8	.6
27	.6	-						2.6	1.9	1.3	.7	.6
28	.6	-						2.4	1.8	1.2	.7	.6
29	.6	-						2.4	1.9	1.2	.7	.7
30	.6	-			----------			2.5	2.0	1.4	.7	.7
31	.6	----------			----------		----------	2.6	----------	1.2	.7	----------
Total	19.1	-	-	-	-	-	-	45.4	71.7	46.8	30.3	20.3
Mean	0.62	-	-	-	-	-	-	1.46	2.39	1.51	0.98	0.68
Ac-ft	38	-	-	-	-	-	-	90	142	93	60	40

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base 6 cfs). --No peak above base.
* Discharge measurement made on this day.

8-2540. Costilla Creek below Costilla Dam, N. Mex.

Location.--Lat 36°52'35", long 105°16'45", in Sangre de Cristo Grant, on left bank 125 ft downstream from outlet of lake and 16 miles southeast of Costilla, Taos County.

Drainage area.--54.6 sq mi.

Records available.--April 1937 to September 1964 (no winter records 1937-44, 1948-49). Prior to October 1951, published as "below reservoir near Costilla." Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 9,180 ft (from topographic map).

Average discharge.--18 years (1944-47, 1949-64), 16.6 cfs (12,020 acre-ft per year).

Extremes.--Maximum discharge during year, 97 cfs June 28 (gage height, 1.71 ft); no flow at times.
1937-64: Maximum discharge, 286 cfs May 9, 10, 1942 (gage height, 2.65 ft); no flow at times.

Remarks.--Records good. Flow regulated by Costilla Lake (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 1,300 acres above Lake.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	0.1	0.5	4.4	1.1	33
.2	.5	.6	7.1	1.3	50
.3	1.2	.7	11	1.5	71
.4	2.4	.9	20	1.7	96

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	0.1	0	0	0	0	0.1	0.1	30	34	5.2	4.2
2	3.4	.1	0	0	0	0	.1	.1	30	6.8	5.2	4.4
3	.1	.1	0	0	0	0	.1	.1	*30	6.8	5.2	4.4
4	.1	.1	0	0	0	0	.1	.1	31	5.3	13	4.4
5	.1	.1	0	0	0	0	.1	.1	16	5.9	26	4.4
6	.1	.1	0	0	0	0	.1	.1	8.8	18	19	4.7
7	.1	.1	0	0	0	0	.1	.1	16	33	6.0	4.7
8	.1	.1	0	0	0	0	.1	.1	41	39	6.0	4.9
9	.1	.1	0	0	0	0	.1	.1	49	63	6.0	4.9
10	*.1	.1	0	0	0	0	.1	.1	49	26	6.0	4.9
11	.1	.1	0	0	.1	0	.1	0	49	5.5	6.0	4.9
12	.1	.1	0	0	.1	.1	.1	0	22	14	6.3	5.2
13	.1	.1	0	0	.1	.1	.1	*0	9.2	32	6.3	5.2
14	.1	.1	0	0	0	.1	.1	0	22	31	6.3	5.2
15	.1	.1	0	0	0	.1	.1	0	60	26	6.3	5.2
16	.1	.1	0	0	0	.1	.1	4.0	60	14	6.0	5.2
17	.1	.1	0	0	0	.1	.1	23	60	8.1	6.0	5.2
18	.1	0	*0	.1	0	.1	.1	43	60	5.5	*17	5.2
19	.1	**0	0	.1	0	.1	.1	68	26	13	57	5.2
20	.1	0	.1	.1	0	.1	.1	68	8.8	20	59	5.2
21	.1	0	.1	.1	0	.1	*.1	69	27	15	23	5.2
22	**.1	0	0	.1	0	.1	.1	34	73	*15	5.2	*5.2
23	.1	0	0	.1	0	.1	.1	13	*76	10	23	5.5
24	.1	0	0	0	0	.1	.1	24	91	6.3	51	5.2
25	.1	0	0	0	0	.1	.1	46	90	6.3	47	5.5
26	.1	0	0	0	0	.1	.1	42	37	6.6	18	5.5
27	.1	0	0	0	0	.1	0	42	11	17	4.4	19
28	.1	0	0	0	0	.1	.1	41	35	38	4.4	44
29	.1	0	0	0	0	.1	.1	29	93	25	4.4	40
30	.1	0	0	0	----------	.1	.1	20	75	5.2	4.4	17
31	.1	----------	0	0	----------	.1	----------	20	----------	5.2	4.2	----------
Total	12.6	1.7	0.2	0.6	0.3	2.0	2.9	587.0	1285.8	556.5	462.8	249.7
Mean	0.41	0.06	0.006	0.02	0.01	0.06	0.10	18.9	42.9	18.0	14.9	8.32
Ac-ft	25	3.4	0.4	1.2	0.6	4.0	5.8	1,160	2,550	1,100	918	495
(†)	860	1,100	1,250	1,340	1,540	2,030	3,090	3,300	1,130	481	215	137

Calendar year 1963: Max 106 Min 0 Mean 12.4 Ac-ft 8,950
Water year 1963-64: Max 93 Min 0 Mean 8.64 Ac-ft 6,260

* Discharge measurement made on this day.
** Field estimate made on this day.
Note: Stage-discharge relation affected by ice Nov. 19-28, Dec. 18 to Feb. 17. No gage-height record Nov. 7-18, Nov. 29 to Dec. 17, Feb. 18 to Apr. 20.
† Contents, in acre-feet, at end of month, in Lake above station.

8-2545. Costilla Creek near Amalia, N. Mex.

Location.--Lat 36°52'15", long 105°23'10", in Sangre de Cristo Grant, on right bank 50 ft downstream from third bridge upstream from Amalia, 1.5 miles downstream from Latir Creek, 6¼ miles southeast of Amalia, and 12 miles southeast of Costilla.

Drainage area.--152 sq mi.

Records available.--May 1949 to September 1959, April 1961 to September 1964 (no winter records).

Gage.--Water-stage recorder. Altitude of gage is 8,500 ft (from topographic map). Prior to May 3, 1956, at site 50 ft upstream at datum 1.0 ft higher.

Extremes.--Maximum discharge during year, 118 cfs May 19 (gage height, 3.42 ft); minimum discharge recorded, 2.3 cfs Nov. 2. 1949-59, 1960-64: Maximum discharge recorded, 689 cfs Apr. 25, 1958, from rating curve extended above 400 cfs; maximum gage height recorded, 3.85 ft May 13, 1958; minimum discharge recorded, 1.4 cfs June 23, 1963.

Remarks.--Records good. Flow regulated by Costilla Lake (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 1,300 acres above Costilla Lake.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

2.5	2.1	2.8	14
2.6	4.5	3.0	34
2.7	8.5	3.2	65
		3.5	134

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	6.9					-	24	* 53	56	9.7	* 7.3
2	11	6.5					-	24	51	12	8.5	6.5
3	8.5	6.5					-	22	51	9.1	7.7	6.1
4	5.3	6.5					-	21	45	8.5	13	7.3
5	4.9	5.7					-	22	34	10	* 34	10
6	4.3	* 4.5					-	19	20	14	31	8.5
7	4.0	-					-	21	19	* 35	13	7.3
8	4.0	-					-	20	48	40	13	6.9
9	4.0	-					-	20	58	79	12	6.9
10	* 4.0	-					-	20	58	49	9.7	8.1
11	4.0	-					-	20	58	12	11	8.1
12	4.0	-					-	21	40	9.7	17	6.9
13	4.0	-					-	* 23	15	34	16	6.5
14	4.0	-					-	25	17	35	14	7.3
15	4.0	-					-	27	63	35	14	8.5
16	4.0	-					-	28	65	21	13	8.5
17	4.0	-					-	53	65	14	11	7.7
18	4.0	-					-	80	63	10	* 11	6.9
19	4.5	-					-	116	43	10	51	7.7
20	6.9	-					-	113	13	28	62	9.7
21	6.9	-					* 47	111	13	23	38	10
22	* 5.7	-					31	75	71	24	10	* 12
23	5.7	-					30	41	77	* 21	18	9.7
24	5.3	-					32	41	* 96	20	65	8.1
25	5.3	-					27	83	96	22	62	8.1
26	5.3	-					20	92	57	15	40	7.7
27	5.3	-					21	92	13	16	9.7	12
28	5.3	-					21	79	20	51	8.1	53
29	5.7	-					24	65	101	45	7.7	53
30	5.7	-			----------		22	47	96	16	7.3	54
31	6.1	----------			----------		----------	44	----------	12	7.3	----------
Total	166.7							1,489	1,519	786.3	644.7	360.3
Mean	5.38	-					-	48.0	50.6	25.4	20.8	12.0
Ac-ft	331	-					-	2,950	3,010	1,560	1,280	715

Calendar year	: Max	Min	Mean	Ac-ft
Water year	: Max	Min	Mean	Ac-ft

* Discharge measurement made on this day.

8-2555. Costilla Creek near Costilla, N. Mex.

Location.--Lat 36°57'55", long 105°30'10", in Sangre de Cristo Grant, on left bank 1 mile upstream from diversion dam and 2 miles southeast of Costilla, Taos County.

Drainage area.--195 sq mi.

Records available.--March 1936 to September 1964 (no winter records 1936-41). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Oct. 13, 1952. Altitude of gage is 7,810 ft (from topographic map). Prior to June 18, 1944, at site half a mile downstream at different datum.

Average discharge.--23 years (1941-64), 43.9 cfs (31,780 acre-ft per year).

Extremes.--Maximum discharge during year, 150 cfs Apr. 16 (gage height, 2.89 ft); minimum, 1.2 cfs Mar. 30 (result of freezeup).
1936-64: Maximum discharge, 1,150 cfs May 11, 1942 (gage height, 5.37 ft, site and datum then in use); minimum daily recorded, 2 cfs Dec. 30, 1946.
The greatest flood known occurred in 1886, from information by local residents.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Regulation by Costilla Lake 20 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions for irrigation of about 2,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	2.0	1.5	8.0	2.0	34	2.6	100
1.3	3.5	1.7	16	2.3	62		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.4	4.1	4	4	3.5	3	27	29	48	65	10	6.2
2	9.0	5.3	4.5	5	4	3.5	30	27	50	22	9.4	6.0
3	7.8	5.1	4.5	4.5	3.5	4	18	24	54	16	8.0	5.8
4	5.5	5.8	4.5	3.5	3.5	3.5	12	22	49	13	9.2	5.8
5	5.1	5.1	*4	3.5	3.5	4	16	20	45	12	23	9.0
6	4.7	4.1	3.5	2.5	3.5	4	*14	16	28	13	25	9.0
7	4.3	*4.7	3	*3.5	2.5	4	12	17	23	27	15	7.5
8	3.9	5.3	2.5	3	2.5	4	11	16	39	32	14	6.2
9	*3.7	4.5	3	2.5	3	3	12	16	53	59	12	6.5
10	3.7	4.9	3.5	3	3.5	4	15	16	55	49	10	6.2
11	3.5	5.1	3	3.5	4.5	3.5	22	15	55	18	9.8	7.2
12	3.5	4.7	2.5	2	4.5	4.5	27	16	48	15	16	6.2
13	3.4	4.5	2.5	2	4.5	6	23	18	22	32	18	6.2
14	3.4	4.9	2.5	2	3.5	6	28	19	20	34	14	6.8
15	3.5	4.7	3	2.5	2.5	6	48	19	48	37	14	7.5
16	3.9	5.5	3.5	3.5	3	*6	76	21	56	25	11	8.4
17	4.1	4	4	4	3.5	6	73	30	56	19	9.4	7.0
18	4.1	3	*4	4.5	*3.5	6	57	46	56	12	8.7	6.5
19	4.3	*3.5	4	4.5	3.5	6	46	*78	48	9.8	*37	6.5
20	5.8	4.5	4	4.5	3.5	6	51	85	30	20	60	7.5
21	*6.5	6	5	4.5	3.5	8	33	89	25	18	47	8.4
22	6.2	6	3.5	4.5	2.5	10	*39	79	51	20	12	*9.0
23	5.5	4.5	3.5	3.5	3.5	12	41	43	60	*20	9.0	8.0
24	5.3	5.5	4	3	3.5	11	36	38	*74	15	42	7.2
25	5.1	5.5	4	3	3.5	9.1	33	62	80	21	48	*6.8
26	4.5	4.5	4.5	3	3.5	9.5	28	70	66	14	38	6.8
27	3.7	5.5	5	*3	3	10	27	82	23	12	11	6.8
28	4.3	5.5	4.5	3.5	3	10	26	69	18	34	8.0	*28
29	4.7	4.5	4	3.5	2.5	11	32	62	70	39	7.2	35
30	4.1	4	3.5	3.5	----------	14	27	49	85	18	7.0	30
31	3.9	----------	3.5	3.5	----------	17	----------	43	----------	14	6.5	----------
Total	150.4	144.8	115.0	106.5	98.0	214.6	940	1,236	1,435	754.8	569.2	284.0
Mean	4.85	4.83	3.71	3.44	3.38	6.92	31.3	39.9	47.8	24.3	18.4	9.47
Ac-ft	298	287	228	211	194	426	1,860	2,450	2,850	1,500	1,130	563

Calendar year 1963: Max 90 Min 2.5 Mean 20.2 Ac-ft 14,640
Water year 1963-64: Max 89 Min 2 Mean 16.5 Ac-ft 12,000

Peak discharge (base, 250 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 29 to Jan. 6, Jan. 8-26, Jan. 28 to Feb. 17, Mar. 4-21, Apr. 23-26, June 29 to July 5. Stage-discharge relation affected by ice Nov. 17 to Dec. 13, Jan. 7, 27, Feb. 18 to Mar. 3. Doubtful gage-height record Dec. 14-28.

8-2605. Costilla Creek below diversion dam, at Costilla, N. Mex.

Location.--Lat 36°58'00", long 105°30'55", in Sangre de Cristo Grant, on right bank 650 ft downstream from diversion dam and 1.5 miles southeast of Costilla, Taos County.

Drainage area.--197 sq mi.

Records available.--April 1952 to September 1964 (no winter records).

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 7,790 ft (from topographic map).

Extremes.--Maximum discharge recorded during year, 61 cfs June 22 (gage height, 1.73 ft); no flow Oct. 14.
1952-64: Maximum discharge recorded, 525 cfs July 22, 1954; maximum gage height, 5.05 ft July 24, 1957; no flow Oct. 14, 1963.

Remarks.--Records good. Flow partly regulated by Costilla Lake about 21 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions above station for irrigation of about 5,000 acres, 3,000 of which lies below station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.5	0	0.8	3.0
.6	.3	.9	5.7
.7	1.3	1.0	9.5
		1.2	20

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	0.9					-	0.3	0.5	0.2	1.2	0.2
2	.7	.8					-	.2	.5	.1	1.1	.2
3	.6	.6					-	.1	.7	.4	.9	.2
4	.4	.6					-	.1	1.2	.1	.8	.2
5	.3	.5					-	.1	2.9	.4	.9	.2
6	.3	.5					-	.2	1.1	.3	2.6	.2
7	.2	* .5					-	.9	.9	.3	7.7	.2
8	.2	-					-	.4	.3	1.1	2.4	.1
9	* .2	-					-	2.0	.8	.7	2.2	.1
10	.2	-					-	5.2	.2	5.4	1.9	.1
11	.2	-					-	2.4	.1	7.0	1.4	.1
12	.1	-					-	1.9	.1	2.2	1.0	.1
13	.1	-					-	1.9	.4	1.6	.7	.1
14	0	-					-	2.0	.7	1.7	.6	.1
15	.1	-					-	1.7	1.0	1.9	.5	.2
16	.1	-					-	1.9	.6	1.7	.5	.2
17	.1	-					-	1.7	.5	1.1	.4	.2
18	.1	-					-	1.6	.8	1.0	.4	.5
19	.1	-					-	* 4.1	11	.8	* .4	1.4
20	.1	-					-	7.6	20	.8	.5	1.4
21	.1	-					-	12	7.6	.6	.4	*1.7
22	.1	-					* 0.6	11	7.2	* .6	.2	1.7
23	.1	-					.6	.7	2.1	.6	.2	1.7
24	1.8	-					.6	.6	.7	.2	1.0	1.7
25	2.4	-					.5	.9	* .2	1.0	.4	1.6
26	1.7	-					.3	1.3	2.8	.6	1.4	1.6
27	1.4	-					.2	8.9	1.0	.5	.4	1.4
28	1.3	-					3.9	2.6	.7	.6	.3	1.6
29	1.1	-					9.2	2.8	3.4	.7	.3	1.6
30	1.0	-			----------		1.9	2.6	2.0	.5	.3	3.3
31	.9	----------			----------		----------	.8	----------	.6	.2	----------
Total	16.7	-					-	80.5	72.0	35.3	33.2	23.9
Mean	0.54	-					-	2.60	2.40	1.14	1.07	0.80
Ac-ft	33	-					-	160	143	70	66	47

Calendar year	: Max	Min	Mean	Ac-ft
Water year	: Max	Min	Mean	Ac-ft

Peak discharge (base, 300 cfs).--No peak above base.

* Discharge measurement made on this day.

8-2610. Costilla Creek at Garcia, Colo.

Location.--Lat 36°59'30", long 105°32'00", in Sangre de Cristo Grant, on left bank 200 ft downstream from old highway bridge, a quarter of a mile upstream from New Mexico-Colorado State line, and 0.6 mile south of Garcia.

Drainage area.--200 sq mi, approximately.

Records available.--June 1944 to September 1964 (no winter records).

Gage.--Water-stage recorder. Altitude of gage is 7,750 ft (based on estimated relation to former station). Prior to Apr. 20, 1950, at site 1,000 ft downstream at datum 7,747.43 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 25 cfs Apr. 29 (gage height, 2.94 ft); no flow for many days.
1944-64: Maximum discharge, 460 cfs July 24, 1957 (gage height, 4.76 ft); no flow at times in most years.
The greatest flood known occurred in 1886, information by local residents. Flood of May 11, 1942, probably reached a discharge of 1,000 cfs.

Remarks.--Records fair. Flow partly regulated by Costilla Lake about 23 miles upstream (capacity, 15,700 acre-ft, original survey). Diversions above station for irrigation of about 5,500 acres, 2,000 of which lies below station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.8	0	2.2	1.8
1.9	.2	2.4	4.6
2.0	.6	2.6	9.7

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6						-	0	0.1	0	0	
2	.8						-	0	0	0	0	
3	.7						-	0	0	0	0	
4	.4						-	0	0	0	0	
5	.2						-	0	.7	0	0	
6	.1						-	0	.1	0	0	
7	.1						-	.1	0	0	2.7	
8	.1						-	0	0	0	0	
9	.1						-	.1	.1	0	0	
10	-						-	.9	0	.8	0	
11	-						-	.8	0	1.8	0	
12	-						-	.2	0	0	0	
13	-						-	0	0	0	0	
14	-						-	.1	0	0	0	
15	-						-	0	0	0	0	
16	-						-	0	0	0	0	
17	-						-	0	0	0	0	
18	-						-	0	0	0	0	
19	-						-	* .1	3.2	0	0	
20	-						-	1.3	4.4	0	0	
21	-						-	3.3	0	0	0	
22	-						* 2.8	6.8	0	0	0	
23	-						2.5	.1	.2	0	0	
24	-						3.4	0	0	0	0	
25	-						2.1	.4	0	0	0	
26	-						.2	0	.2	0	0	
27	-						0	6.0	.1	0	0	
28	-						1.6	.7	0	0	0	
29	-						8.4	1.4	.4	0	0	
30	-				----------		1.1	.8	.1	0	0	
31	-	----------			----------		----------	.4	----------	0	0	----------
Total	-	-	-	-	-	-	-	23.5	9.6	2.6	2.7	0
Mean	-	-	-	-	-	-	-	0.76	0.32	0.08	0.09	0
Ac-ft	-	-	-	-	-	-	-	46.6	19.0	5.2	5.4	0

Calendar year	: Max	Min	Mean	Ac-ft
Water year	: Max	Min	Mean	Ac-ft

Peak discharge (base, 200 cfs).--No peak above base.

* Discharge measurement made on this day.

Principal diversions from Costilla Creek, New Mexico-Colorado

Records of discharge are collected at 8 gaging stations on 4 diversions from Costilla Creek. Each of these stations is equipped with a water-stage recorder (digital, as noted) and a Parshall flume. Water diverted is used for irrigation in the Sangre de Cristo Grant in New Mexico and Colorado below the gaging station on Costilla Creek near Costilla, N. Mex. Records collected during irrigation seasons only except for No. 8-2620. Discharge measurements generally made twice a month except during winter period.

8-2560. Acequia Madre at Costilla, N. Mex.--Lat 36°58'00", long 105°30'50", 275 ft downstream from diversion dam. Records available, May 1944 to September 1964. Acequia diverts from right bank of Costilla Creek. Digital recorder since July 23.

8-2565. Mesa ditch near Garcia, Colo.--Lat 36°59'50", long 105°30'45", 429 ft north of milepost No. 136+54 on New Mexico-Colorado State line. Records available, June 1944 to September 1964. Ditch diverts from right bank of Acequia Madre for irrigation in Colorado.

8-2575. Cordillera ditch at Garcia, Colo.--Lat 36°59'40", long 105°31'40", 570 ft south of New Mexico-Colorado State line. Records available, June 1944 to September 1964. Ditch diverts from Acequia Madre for irrigation in Colorado. Digital recorder since July 22.

8-2580. Cerro Canal at Costilla, N. Mex. --Lat 36°57'50", long 105°31'10", 1,400 ft downstream from diversion dam. Records available, April 1944 to September 1964. Canal diverts from left bank of Costilla Creek. Digital recorder since July 22.

8-2585. Association ditch at Costilla, N. Mex.--Lat 36°57'45", long 105°32'20", 100 ft downstream from new diversion from Cerro Canal. Records available, May 1955 to September 1964. Ditch diverts from left bank of Cerro Canal.

8-2590. Cerro Canal near Jaroso, Colo.--Lat 36°59'35", long 105°34'35". Records available, June 1944 to September 1964. Flow measured is delivered to Colorado and to New Mexico branch of Cerro Canal.

8-2595. New Mexico Branch Cerro Canal near Jaroso, Colo.--Lat 36°59'35", long 105°34'45", 225 ft downstream from headgate. Records available, June 1944 to September 1964. Canal diverts from left bank of Cerro Canal for irrigation in New Mexico.

8-2620. Eastdale No.1 intake canal near Jaroso, Colo. --Lat 37°02'40", long 105°37'00", 750 ft downstream from headgate. Records available, June 1944 to September 1964. Canal diverts from right bank of Costilla Creek to Eastdale Reservoir No.1 for irrigation in Colorado.

Diversions, in acre-feet, water year October 1963 to September 1964

Month	Acequia Madre	Mesa ditch	Cordillera ditch	Cerro Canal at Costilla	Association ditch	Cerro Canal near Jaroso, Colo.	New Mexico branch Cerro canal	Eastdale No.1 intake Canal
October	89	-	-	157	-	-	-	0
November	-	-	-	-	-	-	-	0
December	-	-	-	-	-	-	-	0
January	-	-	-	-	-	-	-	0
February	-	-	-	-	-	-	-	0
March	-	-	-	-	-	-	-	108
April	-	-	-	-	-	-	-	1,010
May	630	0	35	1,640	788	628	84	10
June	685	0	69	1,960	934	660	74	0
July	373	0	43	1,030	285	543	40	0.8
August	339	0	13	704	258	284	90	0
September	127	0	28	390	123	203	0.2	0
Water year 1963-64	-	-	-	-	-	-	-	1,128.8

8-2630. Latir Creek near Cerro, N. Mex.

Location.--Lat 36°49'45", long 105°32'45", in S½SW¼ sec.15, T.30 N., R.13 E., on right bank at mouth of canyon, 100 ft upstream from heading of Cerro community ditch and 6 miles northeast of Cerro.

Drainage area.--10 sq mi, approximately.

Records available.--June 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Records for April and May 1937, published in WSP 828, have been found to be unreliable (unknown portion of flow bypassing gage) and should not be used.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,250 ft (from topographic map).

Average discharge.--27 years, 6.24 cfs (4,520 acre-ft per year).

Extremes.--Maximum discharge during year, 25 cfs May 26 (gage height, 2.06 ft); minimum daily, 1.0 cfs Dec. 12, 13, Jan. 12-14. 1937-64: Maximum discharge determined, 121 cfs June 3, 1942, from rating curve extended above 56 cfs by logarithmic plotting; maximum gage height recorded, 4.2 ft July 19, 1945 (log jam; discharge not determined, but may have exceeded 121 cfs); minimum daily discharge, 0.2 cfs Jan. 20-21, 24, 1961.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 25		Feb. 26 to Sept. 30			
0.1	0.5	1.1	1.0	1.4	5.1
.2	1.6	1.2	2.1	1.6	10.4
.3	3.0	1.3	3.4	1.8	16

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	* 2.5	1.5	1.6	1.6	1.6	2.0	* 4.0	6.2	3.5	3.1	2.6
2	2.6	2.4	1.5	1.7	1.6	1.6	1.9	4.0	6.5	3.1	3	2.6
3	2.6	2.5	1.5	1.5	1.5	1.6	1.9	4.2	7.0	3.1	3.2	2.5
4	2.6	2.4	1.5	1.5	1.7	1.6	1.9	4.6	5.7	3.0	3.5	2.9
5	2.4	2.1	* 1.5	1.3	1.7	1.6	1.7	4.0	5.3	3.0	3.2	3.8
6	2.4	2.1	1.5	1.2	1.7	1.6	* 1.6	3.7	5.3	3.1	4	3.8
7	2.5	2.1	1.5	* 1.3	1.6	1.6	1.6	4.4	5.7	3.4	4.5	3.8
8	* 2.5	2.1	1.1	1.2	1.4	1.6	1.6	3.5	6.2	3.4	3.5	3.3
9	2.5	2.1	1.1	1.1	1.5	1.6	1.7	4.4	5.5	3.3	4.5	3.1
10	2.5	2.1	1.4	1.2	1.7	1.6	1.9	4.2	4.9	3.1	3.5	3.1
11	2.5	2.1	1.2	1.3	1.8	1.6	2.1	4.7	4.7	3.4	4	3.0
12	2.5	1.9	1.0	1.0	1.8	1.5	2.1	5.5	4.6	3.5	4.5	3.0
13	2.4	2.1	1.0	1.0	1.8	1.5	2.1	6.5	4.6	3.1	4.7	3.0
14	2.4	2.1	1.1	1.0	1.6	1.5	2.5	6.8	4.2	3.4	5	3.1
15	2.2	1.9	1.3	1.2	1.4	1.5	3.3	7.6	4.2	5.1	5	* 3.4
16	2.2	1.6	1.5	1.3	1.5	1.5	3.5	8.7	4.0	4.7	4.7	3.3
17	2.5	1.5	* 1.8	1.5	1.5	* 1.5	3.8	10	3.8	3.7	* 4.4	2.9
18	2.5	1.4	1.8	1.7	1.5	1.5	3.3	8.4	3.7	3.4	4.4	2.6
19	2.5	1.5	1.8	1.6	1.5	1.5	2.8	6.8	3.5	3.1	4.0	2.6
20	3.0	* 1.5	1.8	1.6	1.5	1.4	2.9	* 8.4	3.4	3.1	4.0	3.3
21	3.0	1.7	2.0	1.7	1.5	1.5	2.9	9.8	3.3	3.1	3.7	3.7
22	2.8	1.7	1.5	1.7	1.5	1.6	3.4	9.8	3.3	3.1	3.4	4.0
23	* 2.5	1.7	1.3	1.5	1.5	1.6	4.0	9.8	3.1	3.0	3.1	3.5
24	2.5	1.7	1.4	1.3	1.5	1.6	4.7	9.6	3.1	6.3	3.1	3.0
25	2.5	1.5	1.5	1.4	1.5	1.6	3.7	10	* 3.1	5.1	3.1	2.9
26	2.5	1.5	1.6	1.5	* 1.6	1.6	2.9	15	3.1	3.7	3.1	3.0
27	2.5	1.5	1.7	* 1.6	1.6	1.7	2.8	15	3.1	* 3.4	3.3	3.0
28	2.5	1.5	1.6	1.6	1.6	1.7	4.2	11	3.1	3.0	3.1	3.0
29	2.5	1.5	1.5	1.6	1.6	1.9	4.4	9.6	3.1	3	3.0	3.0
30	2.5	1.5	1.3	1.6	----------	2.2	3.7	8.2	4.6	3	2.9	3.0
31	2.4	----------	1.5	1.6	----------	2.1	----------	6.8	----------	3.5	2.8	----------
Total	78.1	55.8	45.3	43.9	45.8	50.1	82.9	229.0	131.9	108.7	115.3	93.8
Mean	2.52	1.86	1.46	1.42	1.58	1.62	2.76	7.39	4.40	3.51	3.72	3.13
Ac-ft	155	111	90	87	91	99	164	454	262	216	229	186

Calendar year 1963 : Max 7.9 Min 1.0 Mean 2.81 Ac-ft 2,040
Water year 1963-64 : Max 15 Min 1.0 Mean 2.95 Ac-ft 2,140

Peak discharge (base, 40 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 16-20, Feb. 23-25, July 29 to Aug. 16. Stage-discharge relation affected by ice Nov. 17 to Dec. 21, Jan. 8-15, Jan. 21 to Feb. 22. Doubtful gage-height record Dec. 22 to Jan. 7.

8-2635. Rio Grande near Cerro, N. Mex.

Location.--Lat 36°44'05", long 105°41'05", in N½ sec.20, T.29 N., R.12 E., on left bank 4 miles southwest of Cerro, 5½ miles northwest of Questa, and 7 miles upstream from Red River.

Drainage area.--8,440 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--May 1948 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,100 ft (from river-profile map).

Average discharge.--16 years, 329 cfs (238,200 acre-ft per year).

Extremes.--Maximum discharge during year, 429 cfs Nov. 12 (gage height, 3.96 ft); minimum, 46 cfs July 28.
1948-64: Maximum discharge, 9,740 cfs June 22, 1949 (gage height, 15.78 ft); minimum, 43 cfs Sept. 22, 1956.

Remarks.--Records good. Diversions for irrigation of about 626,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.1	42	3.0	259
1.5	73	4.0	437
2.0	120		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	80	87	169	157	196	257	*68	104	57	48	63
2	53	84	80	170	157	190	246	67	99	56	48	*62
3	52	83	78	170	159	189	245	67	99	56	51	60
4	52	*84	81	169	147	204	224	67	93	56	51	59
5	52	85	88	173	142	208	197	67	91	55	59	67
6	52	85	87	169	153	214	187	67	90	55	*56	68
7	53	94	87	160	157	206	*166	67	87	54	48	63
8	53	98	75	*159	166	216	157	71	83	*53	48	61
9	53	95	86	159	162	216	147	78	78	52	49	60
10	54	92	*94	152	157	215	144	81	84	51	54	58
11	60	257	93	153	155	215	137	83	*98	69	59	55
12	61	420	83	150	156	229	132	90	84	62	87	57
13	63	273	81	142	165	227	122	91	79	53	61	55
14	*65	153	82	142	170	240	115	92	75	53	55	55
15	65	123	91	141	172	224	114	110	73	54	55	54
16	65	111	89	135	182	254	114	121	73	54	51	58
17	67	101	94	133	186	*278	113	132	70	54	52	59
18	70	*97	96	135	*183	277	113	133	66	53	69	61
19	70	89	*97	141	183	292	105	142	65	53	79	59
20	76	89	98	143	183	295	92	203	66	51	*71	58
21	77	92	99	144	180	287	77	165	63	51	64	58
22	79	96	101	148	179	289	75	*120	60	49	62	60
23	*82	93	102	151	191	278	74	99	59	48	61	71
24	80	93	105	152	190	256	69	86	58	48	80	70
25	77	92	111	156	196	289	67	185	*58	48	81	63
26	77	92	116	153	191	248	67	194	57	47	76	62
27	76	86	124	153	191	270	67	142	57	47	71	60
28	77	87	130	*153	197	292	67	122	56	*47	89	*58
29	77	92	139	152	196	282	70	128	57	52	86	56
30	77	85	168	153	----------	287	69	138	57	53	77	55
31	77	----------	173	156	----------	273	----------	120	----------	50	68	----------
Total	2,045	3,501	3,115	4,736	5,003	7,636	3,829	3,396	2,239	1,641	1,966	1,805
Mean	66.0	117	100	153	173	246	128	110	74.6	52.9	63.4	60.2
Ac-ft	4,060	6,940	6,180	9,390	9,920	15,150	7,590	6,740	4,440	3,250	3,900	3,580

Calendar year 1963: Max 437 Min 46 Mean 137 Ac-ft 98,850
Water year 1963-64: Max 420 Min 47 Mean 112 Ac-ft 81,140

Peak discharge (base, 1,000 cfs).--No peak above base.

* Discharge measurement made on this day.

8-2640. Red River near Red River, N. Mex.

Location.--Lat 36°37'30", long 105°23'20", in NE¼ sec.36, T.28 N., R.14 E. (projected), on right bank 100 ft downstream from confluence of Middle and East Forks and 6 miles south of Red River.

Drainage area.--19.1 sq mi.

Records available.--July 1940 to September 1964, discontinued (no winter records 1956 to 1962). Prior to October 1947, published as "Rio Colorado near Red River."

Gage.--Water-stage recorder. Datum of gage is 9,394.2 ft above mean sea level (plane-table levels by Division of Water and Power).

Average discharge.--17 years (1940-55, 1962-64), 17.5 cfs (12,670 acre-ft per year).

Extremes.--Maximum discharge during year, 85 cfs May 26 (gage height, 2.75 ft); maximum gage height, 3.76 ft Dec. 23 (ice jam); minimum daily discharge, 2 cfs Dec. 13, Feb. 28.

1940-64: Maximum discharge recorded, 264 cfs June 12, 1952 (gage height, 3.16 ft); maximum gage height recorded, 4.19 ft during period Jan. 9 to May 11, 1960 (ice jam); minimum daily discharge determined, 2.0 cfs Mar. 6-9-1965, Jan. 12, 13, 1963, Dec. 13, 1963, Feb. 28, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.0	2.3	2.3	15
2.1	4.4	2.4	26
2.2	8.0	2.7	77

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*5.5	4.8	3.6	3.8	3.8	2.3	3.1	6.9	34	16	11	9.4
2	5.8	4.8	3.6	3.8	3.6	2.5	b 3	6.9	33	16	11	*9.4
3	5.8	5.5	b 3	3.8	3.6	2.5	b 3	6.9	29	15	9.4	9.4
4	5.8	5.5	b 3.5	b 3.5	* 3.6	2.7	b 3	7.3	28	13	10	10
5	5.5	5.5	*b 3.5	b 3	3.6	2.7	b 3.5	8.0	29	13	10	12
6	5.1	5.1	b 3.5	b 3.5	3.6	a 2.7	b 3.5	8.0	34	13	*8.7	11
7	5.5	4.8	b 3	3.8	b 3	a 2.7	3.4	8.7	40	17	9.4	8.7
8	5.5	4.2	b 3	3.8	3.4	a 2.7	3.4	8.7	41	*15	11	8.0
9	5.5	4.4	3.1	b 3.5	3.4	a 2.7	* 3.4	9.4	38	14	12	8.0
10	5.1	4.8	b 3	3.8	3.4	a 2.7	3.4	10	*36	14	12	8.7
11	4.8	5.1	3.1	3.6	3.4	a 2.5	3.4	10	36	14	14	8.0
12	4.4	5.1	b 2.5	b 2.5	3.4	a 2.5	3.4	14	34	16	46	7.6
13	4.4	4.8	b 2	b 2.5	3.6	a 2.6	3.4	17	34	16	53	7.3
14	4.4	5.1	b 2.5	b 2.5	b 3	a 2.7	3.8	22	34	14	50	7.3
15	*4.4	4.8	b 3	b 3	b 3	a 2.8	4.2	25	33	14	45	*8.0
16	4.4	b 4	3.1	3	3.6	a 2.9	4.8	29	33	*14	34	7.6
17	4.4	b 3.5	3.1	3.6	3.8	a 3	5.5	33	31	14	28	7.3
18	4.4	3.1	3.1	3.6	3.6	a 2.8	5.1	34	28	13	24	6.9
19	4.8	3.6	*3.4	3.6	3.6	* 2.5	5.5	31	26	13	24	6.6
20	5.8	*3.6	3.6	3.4	3.6	2.5	5.5	*31	26	13	*23	7.3
21	5.8	3.8	3.6	3.1	b 3.5	b 2.5	5.1	33	24	12	22	8.7
22	5.5	3.8	3.6	3.4	b 3	2.5	5.8	41	23	12	19	10
23	5.5	b 3.5	b 3.5	3.1	3.6	b 2.5	* 6.6	48	22	12	15	8.0
24	5.1	3.8	3.6	3.1	3.4	2.5	6.9	52	20	13	15	7.6
25	5.1	4.0	3.8	3.1	* 2.9	b 2.5	6.9	57	18	14	13	7.3
26	5.1	b 3	3.8	3.1	2.5	b 2.5	6.2	72	*17	14	12	7.3
27	5.1	4.0	3.8	3.1	2.5	2.7	6.2	70	17	14	12	7.3
28	5.1	3.8	3.8	3.4	b 2	2.7	6.6	62	17	12	12	6.9
29	*5.1	3.6	3.8	3.4	2.3	2.7	6.9	55	18	12	12	6.9
30	5.5	b 3.5	b 3.5	3.4	----------	2.9	6.6	50	22	12	10	6.9
31	5.5	----------	3.8	3.6	----------	2.9	----------	41	----------	11	9.4	----------
Total	159.7	128.9	102.8	103.4	95.3	81.9	141.1	907.8	855	425	596.9	245.4
Mean	5.15	4.30	3.32	3.34	3.29	2.64	4.70	29.3	28.5	13.7	19.3	8.18
Ac-ft	317	256	204	205	189	162	280	1,800	1,700	843	1,180	487

Calendar year 1963 : Max 29 Min 2 Mean 7.38 Ac-ft 5,340
Water year 1963-64 : Max 72 Min 2 Mean 10.5 Ac-ft 7,620

Peak discharge (base, 50 cfs).--May 26 (2300) 85 cfs (2.75 ft); Aug. 14 (1700) 63 cfs (2.68 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2645. Red River below Zwergle damsite, near Red River, N. Mex.

Location.--Lat 36°40'25", long 105°22'50", in NE¼SW¼ sec.7, T.28 N., R.15 E. (projected), on right bank 2,000 ft upstream from Goose Creek, 1.9 miles downstream from Bear Canyon, 2¾ miles southeast of Red River.

Drainage area.--25.7 sq mi.

Records available.--April 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 8,871.88 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 96 cfs May 26 (gage height, 2.91 ft); minimum discharge determined, 2.0 cfs Apr. 3 (may have been less during winter period).
1963-64: Maximum and minimum discharges, those of 1964 water year.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	3.2
1.8	5.4
2.0	12.1
2.2	24
2.5	51
2.9	95

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 6.6	5.0	3.5	4.5	4.5	3.4	5.8	10	48	18	10	11
2	6.3	5.0	3.5	5.0	4.2	3.5	5.0	10	43	18	10	*10
3	6.3	5.2	3.5	4.9	3.7	3.5	4.5	9.7	40	18	9.7	10
4	6.3	5.3	3.6	4.7	*4.0	3.5	5.0	11	37	17	10	11
5	6.3	5.4	* 3.8	4.5	3.9	3.5	5.4	12	39	16	9.7	13
6	5.6	5.3	3.7	4.7	3.7	3.5	5.1	12	42	17	* 9.7	13
7	5.8	5.0	3.5	5.0	3.5	3.5	*4.8	13	45	20	9.5	12
8	5.8	5.0	3.2	5.0	3.7	3.5	4.7	*13	47	20	9.5	11
9	5.8	5.2	3.2	*4.5	3.9	3.5	4.5	13	43	18	13	11
10	5.6	5.4	3.5	4.0	4.0	3.5	5.1	14	42	18	13	12
11	5.1	5.4	3.6	3.5	4.0	3.0	6.1	13	*42	19	20	10
12	5.1	5.5	3.0	3.1	4.0	3.5	6.3	13	41	19	*41	10
13	5.1	5.5	2.5	3.0	3.7	3.6	6.3	17	40	20	46	10
14	5.1	5.6	2.9	3.1	3.6	3.7	6.9	20	39	*20	41	10
15	* 4.8	5.9	3.2	3.3	3.5	3.8	8.2	23	38	15	45	* 11
16	4.8	6.0	3.5	3.6	3.5	3.8	9.3	25	35	14	35	10
17	4.8	5.0	* 3.8	4.0	3.7	3.8	10	28	34	*14	25	10
18	4.8	4.0	4.1	4.4	3.8	3.9	10	31	33	13	20	9.7
19	5.1	4.4	4.3	4.7	3.9	* 4.0	11	35	30	12	22	9.3
20	5.8	*4.7	4.5	4.7	* 3.9	4.0	10	* 34	28	13	*24	10
21	5.6	5.0	4.4	4.5	3.7	4.0	9.7	35	27	12	21	11
22	5.6	4.0	4.1	4.3	3.5	4.0	9.7	41	25	13	20	13
23	5.4	3.5	4.3	4.0	3.8	3.9	*9.7	51	23	13	17	11
24	5.4	3.5	4.6	3.8	3.9	3.7	9.7	55	22	14	16	10
25	5.1	4.0	5.0	4.1	3.9	3.5	10	56	21	14	14	9.7
26	5.1	3.0	4.9	4.5	3.5	3.6	9.3	82	* 20	14	14	9.7
27	5.1	3.5	4.8	4.8	3.3	3.7	8.9	*84	18	13	14	9.7
28	5.1	4.0	4.7	5.0	3.2	3.9	9.3	74	18	12	13	9.3
29	* 5.1	4.0	4.5	5.0	3.1	4.2	10	65	22	13	13	8.9
30	5.4	3.5	4.2	4.9	----------	4.8	10	56	21	13	12	8.9
31	5.4	----------	4.1	4.7	----------	5.6	----------	50	----------	12	12	----------
Total	169.2	141.8	120.0	133.8	108.6	116.9	230.3	1,005.7	1,003	482	589.1	315.2
Mean	5.46	4.73	3.87	4.32	3.74	3.77	7.68	32.4	33.4	15.5	19.0	10.5
Ac-ft	336	281	238	265	215	232	457	1,990	1,990	956	1,170	625

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 84 Min 2.5 Mean 12.1 Ac-ft 8,760

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1 to Mar. 30, Apr. 2-4, 7-9 (no gage-height record Nov. 1-19, Dec. 14-16, Dec. 19 to Feb. 3). No gage-height record July 9-15, Aug. 7, 8, 15-19.

8-2650. Red River near Questa, N. Mex.

Location.--Lat 36°42'10", long 105°34'03", in NE¼SE¼ sec.32, T.29 N., R.13 E. (projected), on left bank 1¼ miles upstream from Cabresto Creek and 1.5 miles east of Questa.

Drainage area.--113 sq mi.

Records available.--April to October 1910 and January to September 1911 (gage heights and discharge measurements only), October 1912 to September 1925 (fragmentary prior to September 1915), January to March 1926, September 1926 to September 1964. Published as "above Questa" January 1926 to September 1930, and as Rio Colorado near Questa October 1930 to September 1947. Monthly discharge only for some periods, published in WSP 1312. Previously published figures of discharge for October to December 1925 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Wood or concrete control since Mar. 20, 1936. Datum of gage is 7,451.92 ft above mean sea level, datum of 1929 (1957 adjustment). Apr. 5 to Oct. 14, 1910, and Jan. 27 to Sept. 4, 1911, staff gages at sites 1½ and 3½ miles upstream, respectively, each at different datum. Oct. 6, 1912, to Aug. 21, 1920, chain gage at site 200 ft upstream at various datums. Aug. 22, 1920, to June 16, 1921, staff gage at present site at datum 2.29 ft lower. June 17, 1921, to Apr. 30, 1934, water-stage recorder at present site at datum 2.55 ft lower and May 1, 1934, to Oct. 3, 1938, at datum 1.41 ft lower.

Average discharge.--51 years (1912-25, 1926-64), 55.8 cfs (40,400 acre-ft per year).

Extremes.--Maximum discharge during year, 150 cfs Aug. 9 (gage height, 3.44 ft); minimum, 3.2 cfs Dec. 13 (result of freezeup).
1930-64: Maximum discharge, 886 cfs May 25, 1942 (gage height, 2.32 ft), from rating curve extended above 450 cfs by logarithmic plotting; minimum, 1.5 cfs Nov. 23, 1957.
The peak of June 15, 1921, may have equaled or exceeded the peak of May 25, 1942.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Diversions for irrigation of a few hundred acres above station. "Figures of discharge do not include South ditch, which diverts from left bank 1,500 ft upstream and bypasses gage for irrigation (and stock water) below. See monthly table below for record of ditch (record of daily discharge available in district files)." Miscellaneous measurements made in 1963 were: Aug. 2, 5.12 cfs; Sept. 6, 5.2; Sept. 12, 6.0; Sept. 17, 0.81; Sept. 26, 3.00.

Rating table, except periods of ice effect (gage height, in feet, and discharge in cubic feet per second)

1.9	7.7	2.1	14	2.3	25	2.6	52	3.0	96	3.4	145

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*14	13	11	10	12	11	16	47	81	33	23	20
2	14	13	10	11	12	12	16	45	78	30	22	19
3	14	13	9	12	11	12	14	44	78	29	20	18
4	14	13	*8	11	13	10	14	47	72	27	20	19
5	13	12	8	10	12	10	15	52	69	24	20	23
6	13	12	8.5	*10	12	12	14	49	68	22	18	22
7	14	13	8	11	11	12	*14	47	70	26	18	20
8	14	13	6	10	10	11	13	48	72	29	18	18
9	14	13	7.5	7.5	11	9	15	50	66	*25	23	19
10	14	13	8.8	9	13	12	16	49	63	25	18	23
11	14	13	8.8	10	13	9.5	16	42	*62	28	22	20
12	13	13	7	6	12	11	17	45	61	28	65	19
13	8.3	13	5	6	12	12	17	52	60	29	60	18
14	8.3	13	6	7	12	12	18	62	58	28	55	18
15	*8.3	13	7.7	8	9.5	12	21	66	56	30	60	19
16	8.8	15	8.3	8.5	9	12	25	73	54	28	55	21
17	9.7	12	*8.5	8.5	9.5	12	31	77	52	27	50	19
18	9.4	9.9	9.1	9	10	*13	38	70	51	25	*31	18
19	9.7	11	9.1	9.9	10	13	36	64	48	23	35	17
20	13	*12	9.1	9.9	*10	12	38	59	46	24	37	21
21	11	14	9.4	9.9	9	12	33	56	43	24	33	24
22	10	14	9	10	10	13	36	60	40	23	30	28
23	9.7	10	8	9	11	12	41	70	37	23	29	*24
24	8.8	10	9	8	11	12	41	90	36	25	28	21
25	8.5	13	10	9.5	11	11	40	120	35	24	26	*21
26	8.8	10	11	11	11	10	41	*132	*34	24	25	20
27	8.5	11	14	12	11	11	40	*135	32	24	25	21
28	8.3	12	12	*12	10	12	38	125	31	23	24	21
29	9.1	11	11	11	9	13	46	112	31	22	22	20
30	13	10	9	11	----------	15	43	91	37	26	21	20
31	*13	----------	10	11	----------	16	----------	84	----------	24	20	----------
Total	349.2	367.9	275.8	298.7	317	366.5	803	2163	1621	802	953	611
Mean	11.3	12.3	8.90	9.64	10.9	11.8	26.8	69.8	54.0	25.9	30.7	20.4
Ac-ft	693	730	547	592	629	727	1,590	4,290	3,220	1,590	1,890	1,210
(†)	255	77	52	8.7	0	0	4.6	60	69	42	38	115

Calendar year 1963 : Max 48 Min 5 Mean 18.0 Ac-ft 13,070
Water year 1963-64: Max 135 Min 5 Mean 24.4 Ac-ft 17,710

Peak discharge (base, 160 cfs). --No peak above base.

* Discharge measurement made on this day.
† Diversion, in acre-feet, by South ditch.
Note.--No gage-height record May 21-25, Aug. 13-17, Sept. 23-24. Stage-discharge relation affected by ice Nov. 23 to Dec. 9, Dec. 12-14, Dec. 22 to Jan. 18, Jan. 23-26, Feb. 3, 7-9, Feb. 15 to Mar. 5, Mar. 9, 11, 12, Mar. 25-28. Doubtful gage-height record Aug. 10-12.

8-2655. Llano ditch near Questa, N. Mex.

Location.--Lat 36°43'45", long 105°33'00", in SE¼SE¼ sec.21, T.29 N., R.13 E., on left bank 150 ft downstream from heading, 3¼ miles northeast of Questa, and 3¾ miles upstream from mouth of Cabresto Creek.

Records available.--September 1943 to September 1964 (no winter records).

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,877 ft above mean sea level (river-profile survey).

Extremes.--1943-64: Maximum daily discharge recorded, 42 cfs June 6,7, 1958; no flow at times.

Remarks.--Records good. Ditch diverts water from right bank of Cabresto Creek for irrigation of about 800 acres near Questa.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	0	0	0	0
November	-	-	-	-
December	-	-	-	-
Calendar year 1963	-	-	-	-
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April	-	-	-	-
May	0.5	0	0.03	2.0
June	0	0	0	0
July	6.7	0	0.34	21
August	0	0	0	0
September	0	0	0	0
Water year 1963-64	-	-	-	-

8-2660. Cabresto Creek near Questa, N. Mex.

Location.--Lat 36°43'45", long 105°33'10", in SE¼SE¼ sec.21, T.29 N., R.13 E., on right bank a quarter of a mile downstream from Llano ditch heading, 2½ miles downstream from Lake Fork, 3 miles northeast of Questa, and 3½ miles upstream from mouth.

Drainage area.--36.7 sq mi.

Records available.--September 1943 to September 1964.

Gage.--Water-stage recorder (digital after July 9) and Parshall flume. Datum of gage is 7,845 ft above mean sea level (river-profile survey).

Average discharge.--21 years, 9.76 cfs (7,070 acre-ft per year).

Extremes.--Maximum discharge during year, 21 cfs May 27 (gage height, 2.24 ft); minimum daily, 1.5 cfs Jan. 12-14.
1943-64: Maximum discharge, 176 cfs June 8, 1957 (gage height, 4.44 ft); minimum daily, 1 cfs Jan. 19, 1960.
The high water of May 25, 1942, reached a stage of 4.18 ft (discharge probably exceeded 200 cfs).

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Llano ditch (the only diversion above station) diverts from right bank a quarter of a mile above gage for irrigation of about 800 acres below. Flow regulated by Cabresto Reservoir (capacity, 732 acre-ft) on Lake Fork 1 mile above its mouth.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	1.5	1.7	8.6
1.1	2.0	1.9	12
1.3	3.5	2.2	20
1.5	5.7		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	3.6	3.2	2.5	2.6	2.3	2.3	4.5	13	16	11	6.9	4.6
2	3.6	3.2	2.5	3.0	2.5	2.5	4.5	13	16	9.4	6.6	4.5
3	3.6	3.2	2.5	2.7	2.3	2.5	4.3	14	17	7.0	6.5	4.5
4	3.6	3.2	* 2.5	2.5	2.2	2.0	4.2	15	15	6.1	6.3	4.7
5	3.6	3.2	2.5	2.5	2.2	2.3	4.3	15	14	5.7	6.5	5.2
6	3.6	3.2	2.5	2.3	2.2	2.5	4.2	13	14	7.0	6.6	5.0
7	3.6	3.2	2.5	* 2.5	2.0	2.5	* 4.1	14	13	8.6	6.6	4.9
8	3.6	3.2	2.3	2.2	2.0	2.5	4.0	13	13	9.8	6.6	4.7
9	3.6	3.2	2.5	2.0	2.2	2.0	4.1	13	12	9.1	6.2	4.6
10	3.6	3.2	2.8	2.5	2.5	2.0	4.3	14	12	8.8	4.5	4.6
11	3.6	3.2	2.8	2.5	2.7	2.0	4.6	13	12	8.8	5.0	4.6
12	3.5	3.2	2.4	1.5	2.7	2.5	5.1	14	11	8.6	7.2	4.5
13	3.5	3.2	2.0	1.5	2.7	3.0	4.9	14	11	8.1	6.0	4.5
14	3.5	3.2	2.0	1.5	2.5	3.0	5.3	14	10	7.6	6.1	4.5
15	* 3.5	3.3	2.3	2.0	2.0	3.0	6.5	14	10	8.1	6.6	* 5.0
16	3.5	3.5	2.3	2.2	2.2	3.0	7.9	14	10	8.1	5.7	5.0
17	3.5	2.8	* 2.3	2.5	2.4	3.3	9.6	16	9.8	7.6	5.3	5.0
18	3.5	2.5	2.3	2.7	2.4	* 3.5	10	16	9.6	7.6	* 5.2	4.9
19	3.6	2.5	2.5	2.7	2.4	3.5	9.3	17	11	7.2	5.0	4.6
20	4.2	* 2.5	2.5	2.7	* 2.4	3.3	9.4	* 16	12	7.6	5.1	5.1
21	4.1	2.7	2.7	2.7	2.4	3.3	8.6	16	12	8.6	5.2	5.5
22	4.1	2.7	2.4	2.5	2.0	3.5	9.6	16	12	8.4	5.0	5.7
23	3.9	2.5	2.4	2.3	2.5	3.4	10	16	12	8.1	5.0	5.0
24	3.9	2.7	2.4	2.0	2.5	3.5	12	15	11	8.0	5.0	4.9
25	3.6	2.5	2.4	2.0	2.5	3.4	12	16	* 11	8.4	4.9	4.7
26	3.1	2.5	2.5	2.1	2.3	3.1	11	18	11	8.8	4.9	4.6
27	3.0	2.5	2.5	2.2	2.3	3.4	10	19	10	7.8	4.9	4.7
28	3.0	2.7	2.5	* 2.2	2.1	3.5	11	17	10	* 7.2	4.9	4.6
29	3.0	2.7	2.4	2.2	2.0	3.6	13	16	9.8	7.2	4.7	4.6
30	3.0	2.5	2.3	2.2	------	3.8	12	16	11	7.6	4.6	4.6
31	* 3.0	------	2.4	2.2	------	4.0	------	16	------	7.3	4.6	------
TOTAL	109.6	87.9	75.4	71.2	67.4	91.7	224.3	466	358.2	249.2	174.4	143.9
MEAN	3.54	2.93	2.43	2.30	2.32	2.96	7.48	15.0	11.9	8.04	5.63	4.80
AC-FT	217	174	150	141	134	182	445	924	710	494	346	285

CALENDAR YEAR 1963	MAX	16	MIN	2.0	MEAN	5.38	AC-FT	3,893		
WATER YEAR 1963-64	MAX	19	MIN	1.5	MEAN	5.79	AC-FT	4,202		

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Mar. 17 (doubtful or no gage-height record Nov. 21 to Dec. 3, Dec. 25 to Jan. 6, Jan. 13 to Mar. 17).

8-2670. Red River at mouth, near Questa, N. Mex.

Location.--Lat 36°39'00", long 105°41'30", in NW¼ sec.20 T.28 N., R.12 E., on left bank 250 ft upstream from Rio Grande and 6.5 miles southwest of Questa.

Drainage area.--190 sq mi.

Records available.--October 1950 to September 1964. Monthly discharge only for October and November 1950, published in WSP 1732.

Gage.--Water-stage recorder. Altitude of gage is 6,600 ft (from topographic map).

Average discharge.--14 years (1950-64), 79.1 cfs (57,270 acre-ft per year).

Extremes.--Maximum discharge during year, 678 cfs Aug. 12 (gage height, 6.05 ft), from rating curve extended above 500 cfs on basis of slope-area measurement at gage height 5.71 ft; minimum, 37 cfs Dec. 13.
1950-64: Maximum discharge, that of Aug. 12, 1964; minimum, 35 cfs Jan. 18, 1957.

Remarks.--Records good except those for period of no gage-height record, which are poor. Diversions for irrigation of about 3,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.7	36	3.0	154
2.0	59	3.5	212
2.5	103		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*46	52	47	49	49	49	45	66	130	64	54	59
2	47	51	46	49	49	49	46	65	123	60	54	57
3	44	49	44	50	49	49	45	64	124	58	53	55
4	42	49	43	48	50	48	45	65	111	57	53	57
5	43	49	43	49	49	47	46	66	102	57	56	73
6	45	49	*45	45	49	48	45	67	99	57	53	57
7	46	48	45	51	49	48	*45	67	102	58	53	55
8	46	49	42	*49	48	47	44	67	106	61	54	53
9	45	49	43	43	49	45	45	69	100	61	63	53
10	45	48	44	45	49	48	46	71	98	59	71	54
11	46	47	44	48	49	45	47	67	97	61	76	53
12	46	47	43	43	50	46	46	66	96	62	133	52
13	46	47	40	43	49	47	46	63	94	60	127	52
14	*45	47	40	44	49	46	46	72	91	59	*105	51
15	46	46	42	45	48	46	46	80	85	61	110	53
16	46	48	43	47	48	47	49	88	81	63	103	53
17	45	47	44	49	48	*46	53	92	79	61	a97	53
18	45	45	45	49	*49	47	59	104	77	59	a90	51
19	45	47	*46	49	49	47	60	103	74	57	a95	51
20	49	48	46	47	49	46	61	*98	70	54	a100	53
21	52	*51	46	47	49	44	56	93	63	54	a80	59
22	50	50	46	48	46	45	57	100	61	55	a70	63
23	48	47	44	48	52	45	60	107	61	56	a70	57
24	47	46	46	45	49	45	60	112	65	55	a70	*55
25	46	48	47	45	49	44	59	119	*64	55	a65	53
26	46	45	49	48	49	43	62	164	65	53	a65	53
27	45	45	49	48	49	44	62	207	61	53	*63	53
28	45	48	48	*48	46	44	61	186	61	53	65	52
29	45	46	49	48	49	44	64	166	61	*53	61	51
30	46	45	46	49	----------	45	64	151	66	66	60	49
31	*50	----------	49	49	----------	45	----------	139	----------	56	58	----------
Total	1428	1433	1394	1465	1416	1429	1570	3044	2567	1798	2327	1640
Mean	46.1	47.8	45.0	47.3	48.8	46.1	52.3	98.2	85.6	58.0	75.1	54.7
Ac-ft	2,830	2,840	2,760	2,910	2,810	2,830	3,110	6,040	5,090	3,570	4,620	3,250

Calendar year 1963 : Max 98 Min 40 Mean 55.0 Ac-ft 39,820
Water year 1963-64 : Max 207 Min 40 Mean 58.8 Ac-ft 42,660

Peak discharge (base, 220 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-27	0600	3.58	222	8-12	1800	6.05	678
7-30	1600	4.65	384	9- 5	1600	4.44	348

* Discharge measurement made on this day.
a No gage-height record.

8-2675. Rio Hondo near Valdez, N. Mex.

Location.--Lat 36°32'30", long 105°33'20", in SW¼SE¼ sec.28, T.27 N., R.13 E., on right bank 500 ft upstream from first diversion, a quarter of a mile upstream from Forest Service gate, 1½ miles east of Valdez, 4 miles downstream from South Fork, and 9 miles upstream from mouth.

Drainage area.--36.2 sq mi.

Records available.--August 1934 to September 1964.

Gage.--Water-stage recorder (digital after June 29). Concrete control since Oct. 28, 1938. Datum of gage is 7,650.0 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1938, at datum 1.92 ft lower.

Average discharge.--30 years, 35.9 cfs (25,990 acre-ft per year).

Extremes.--Maximum discharge during year, 108 cfs May 27 (gage height, 2.84 ft); maximum gage height, 3.25 ft Dec. 16 (ice jam); minimum discharge, 3.6 cfs Feb. 17 (result of freezeup).

1934-64: Maximum discharge, 541 cfs May 13, 1941, from rating curve extended above 300 cfs by logarithmic plotting; maximum gage height, 4.05 ft Dec. 15, 1953 (ice jam); minimum discharge, about 1 cfs Jan. 27, 1942 (result of freezeup).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	5.8	2.2	35
1.8	9.3	2.5	68
2.0	18	2.8	103

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	11	*11	8.0	8.0	7.2	6.5	12	22	75	27	20	19
2	* 11	11	8.0	8.0	7.1	7.0	11	22	* 69	26	18	18
3	11	11	* 8.5	7.8	7.4	7.5	9.0	* 22	66	24	16	17
4	11	11	8.5	7.0	7.6	6.5	8.5	22	61	23	15	19
5	11	10	8.5	7.5	7.4	7.0	8.7	22	59	22	15	21
6	11	10	8.5	7.0	7.2	7.0	8.7	22	58	22	15	18
7	11	10	8.0	8.0	6.5	7.0	8.5	22	58	23	15	17
8	11	10	6.5	7.0	6.0	7.0	* 7.5	22	58	22	15	16
9	11	10	7.5	6.0	7.4	7.0	8.9	22	55	21	15	17
10	11	10	8.0	* 7.0	7.2	7.0	9.3	23	54	20	15	18
11	11	9.6	7.0	6.0	7.1	7.5	11	24	52	20	18	15
12	11	9.3	6.5	5.0	7.1	7.0	12	27	52	20	41	15
13	11	9.3	6.0	5.0	7.2	7.5	12	32	51	19	44	15
14	11	9.3	6.0	5.0	7.0	7.0	13	39	50	18	35	14
15	* 10	9.3	6.5	5.5	6.0	7.5	18	39	47	* 20	31	16
16	10	9.6	7.0	6.0	6.5	7.5	22	52	44	18	27	* 16
17	10	8.4	7.0	7.0	* 6.5	7.5	22	58	43	17	26	15
18	10	8.4	7.5	8.0	6.5	* 8.0	20	61	42	16	24	14
19	11	* 9.3	7.5	7.8	6.5	7.5	19	60	38	16	* 27	14
20	15	9.3	* 8.0	7.4	6.5	7.5	20	61	35	16	31	18
21	13	10	8.0	7.2	6.5	8.0	18	* 66	34	17	31	18
22	12	10	8.0	7.1	6.0	8.2	19	69	33	16	30	21
23	11	8.5	6.0	7.2	6.5	7.8	20	74	33	16	29	18
24	11	8.5	8.2	6.0	6.5	7.8	22	76	* 34	20	27	16
25	11	8.5	8.2	6.5	6.5	7.6	21	80	35	19	27	15
26	11	8.0	8.7	7.1	6.5	7.6	19	* 97	33	18	25	15
27	11	8.0	8.0	6.9	6.5	7.8	17	* 103	31	16	24	15
28	10	9.3	8.2	6.9	6.5	7.4	18	97	30	16	23	14
29	10	8.5	8.2	* 7.1	6.0	8.5	* 19	92	29	15	22	14
30	11	8.0	6.0	7.1	------	10	20	87	32	15	21	14
31	11	------	6.5	7.1	------	11	------	81	------	16	20	------
TOTAL	342	283.1	233.0	212.2	195.4	235.7	454.1	1,596	1,391	594	742	492
MEAN	11.0	9.44	7.52	6.85	6.74	7.60	15.1	51.5	46.4	19.2	23.9	16.4
AC-FT	678	562	462	421	388	468	901	3,170	2,760	1,180	1,470	976

CALENDAR YEAR	1963	MAX	60	MIN	6.0	MEAN	17.1	AC-FT 1,702
WATER YEAR	1963-64	MAX	103	MIN	5.0	MEAN	18.5	AC-FT 13,436

Peak discharge (base, 100 cfs) --May 27 (0010, 108 cfs (2.84 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 23-27, Nov. 29 to Dec. 16, Dec. 23, 30, 31, Jan. 4-8, 10-18, 24, 25, Feb. 7, 8, 14-17, Mar. 9-21, Apr. 3, 4, 8; no gage-height record Dec. 17-19, Jan. 3, Feb. 18 to Mar. 8, June 13-23.

8-2682. Rio Hondo at damsite, at Valdez, N. Mex.

Location.--Lat 36°32'07", long 105°36'07", in T.27 N., R.13 E. (projected), on right bank one mile west of Valdez, 6.5 miles upstream from mouth, and 9 miles north of Taos.

Drainage area.--40.3 sq mi.

Records available.--April 1963 to September 1964. Monthly discharges for January 1916 to September 1934, published in WSP 1312 (at Valdez) are probably comparable.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (from topographic map).

Extremes.--Maximum discharge during year, 91 cfs May 27 (gage height, 1.27 ft); minimum, 5.5 cfs Apr. 8. 1963-64: Maximum discharge, that of May 27, 1964; minimum, that of Apr. 8, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	3.5	0.7	24
.3	6.0	.9	40
.4	9.0	1.1	64
.5	13	1.3	96

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	*10	9.0	b 9	9.4	b 8	11	19	47	15	14	11
2	*7.8	10	9.4	9.8	b 8	b 9	8.7	19	*44	14	12	11
3	7.8	11	*10	9.8	b 8	9.0	7.8	18	41	13	9.4	*11
4	7.8	11	9.4	b 9	b 8	b 8	7.2	17	37	12	9.0	11
5	7.8	11	9.8	b 8	b 8.5	b 8.5	7.5	16	36	12	8.7	12
6	7.8	11	b 10	b 7.5	b 8	9.0	7.5	16	35	11	8.7	11
7	7.2	10	b 9	b 8	b 8	9.0	7.2	*16	33	11	*8.4	9.8
8	7.2	10	b 8	b 8	b 7	b 8.5	*7.2	16	33	11	7.8	9.0
9	6.6	10	b 8	b 7.5	b 8.5	b 7.5	6.9	12	31	*10	7.8	10
10	6.6	8.7	b 8.5	b 8	9.0	b 8	7.5	12	30	10	8.7	11
11	6.6	8.7	b 8	b 8	8.7	b 8	7.8	12	*30	15	10	9.8
12	6.6	8.7	b 8	b 7	8.7	9.0	8.7	13	30	26	23	9.0
13	6.6	8.7	b 7	7	8.7	9.0	8.7	14	29	19	42	9.0
14	6.0	8.7	b 7	*6	b 8	b 9	10	17	29	12	35	8.4
15	*6.0	8.7	b 8	b 7	b 7.5	9.0	13	22	28	13	30	9.8
16	5.8	9.0	b 9	b 8	b 8	9.0	16	26	27	12	28	9.8
17	6.0	8.4	b 10	b 9	*b 8.5	9.8	14	28	25	11	26	9.0
18	6.9	7.8	11	b 10	b 8.5	*9.8	14	32	25	9.8	25	8.4
19	8.1	8.4	*11	b 9	b 8.5	9.4	12	32	24	8.4	*27	8.4
20	11	*8.4	9.8	b 8.5	b 8	8.7	13	33	23	8.4	30	11
21	10	8.7	10	b 8	b 7.5	9.0	12	*34	23	8.7	30	14
22	9.8	8.7	10	b 8	b 7.5	9.0	11	35	22	8.1	28	16
23	9.4	8.7	b 8	b 8	b 7.5	8.7	12	38	22	8.1	26	13
24	9.0	8.4	b 9	b 7	b 8	8.4	14	42	*20	9.8	21	*12
25	8.7	8.4	11	b 8	b 8	8.4	14	46	19	10	14	11
26	8.7	8.1	11	b 8	b 8	9.0	12	67	19	9.4	14	11
27	8.7	9.0	10	b 8.5	b 7.5	9.0	11	*81	18	12	13	11
28	9.0	9.0	11	b 9	b 7.5	8.4	*13	68	16	*17	12	11
29	9.0	9.4	10	*b 8.5	b 7	9.0	19	59	16	11	12	9.8
30	9.0	9.4	b 8	8.7	----------	9.8	19	50	18	11	11	9.8
31	9.8	----------	b 8	8.7	----------	12	----------	50	----------	12	11	----------
Total	245.1	276.0	285.9	254.5	234.0	275.9	332.7	960	830	370.7	562.5	318.0
Mean	7.91	9.20	9.22	8.21	8.07	8.90	11.1	31.0	27.7	12.0	18.1	10.6
Ac-ft	486	547	567	505	464	547	660	1,900	1,650	735	1,120	631

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 81 Min 5.8 Mean 13.5 Ac-ft 9,810

Peak discharge (base, 100 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2685. Rio Hondo at Arroyo Hondo, N. Mex.

Location.--Lat 36°31'55", long 105°41'05", in sec.32, T.27 N., R.12 E. (projected), on right bank 1 mile downstream from Arroyo Hondo and 1¼ miles upstream from mouth.

Drainage area.--65.6 sq mi.

Records available.--April 1910 to June 1912, fragmentary (gage heights and discharge measurements only), July 1912 to December 1928, and January 1932 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Published as "near Arroyo Hondo" prior to 1928.

Gage.--Water-stage recorder (digital after June 11). Concrete control since Aug. 12, 1938. Altitude of gage is 6,670 ft (from topographic map). Prior to Feb. 29, 1928, staff gage at site 1.1 miles downstream at different datums. Feb. 29 to Dec. 31, 1928, and Jan. 21, 1932, to Aug. 13, 1934, staff gage at present site at datum 0.4 ft lower. Aug. 13, 1934, to Aug. 11, 1938, water-stage recorder at site half a mile downstream at different datum. Aug. 12, 1938, to Sept. 10, 1963, water-stage recorder on left bank at present datum.

Average discharge.--48 years (1912-28, 1932-64), 28.8 cfs (20,850 acre-ft per year).

Extremes.--Maximum discharge during year, 84 cfs May 27 (gage height, 3.16 ft); minimum, 5.4 cfs Apr. 25.

1938-64: Maximum discharge, 1,060 cfs July 19, 1948 (gage height, 3.75 ft), from rating curve extended above 200 cfs by logarithmic plotting; minimum, 3.8 cfs Aug. 1 and 6, 1963.

Maximum gage height observed, 5.45 ft (site and datum then in use) Aug. 23, 1935 (discharge uncertain, but probably exceeded 1,100 cfs). A minimum daily discharge of 3 cfs occurred Oct. 19, 1912 (statement in WSP 328 that there was no flow in January and much of February 1912 is believed erroneous). Discharge not determined for the major floods of Oct. 6, 1911, Sept. 1, 1932, and July 22, 1934.

Revisions.--Figure of maximum discharge for 1963 has been revised to 48 cfs Aug. 21, 1963 (gage height, 2.92 ft), superseding figure published in 1963 State report. No daily discharges were revised.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation of about 2,500 acres, most of which is outside basin.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 30 to Aug. 5)

2.1 5.7 2.3 9.8 2.5 16 2.7 28 2.9 46 3.1 73

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.1	8.0	12	12	12	12	13	6.6	34	9.2	7.5	7.9
2	*6.8	6.8	12	12	11	13	12	6.6	*20	8.6	7.5	7.8
3	7.0	7.1	*12	11	11	12	10	6.4	20	8.6	7.2	7.8
4	6.8	7.7	13	9	12	11	8.5	6.2	20	8.2	7.2	9.5
5	6.6	*6.8	13	9.5	12	12	7	5.9	15	8.0	7.1	8.8
6	6.4	7.3	15	9	12	14	6.5	6.1	15	7.9	7.2	8.8
7	6.4	8.0	14	10	11	14	*6.4	6.2	12	8.2	7.4	8.2
8	6.4	6.8	12	9	10	13	6.4	6.8	11	8.8	7.1	7.8
9	6.4	8.4	14	8	12	10	6.4	6.6	11	10	7.0	7.8
10	6.4	9.1	17	9	14	11	6.4	6.6	10	8.2	7.0	7.7
11	6.8	7.0	15	8	13	10	6.2	6.4	10	8.2	8.8	7.5
12	7.0	6.8	11	7	13	11	6.6	6.4	9.5	9.0	11	7.4
13	6.6	6.8	9.5	8	13	12	6.8	6.2	9.1	9.3	*20	7.4
14	7.0	7.0	9.5	*9	13	12	7.1	6.6	8.3	8.2	23	7.3
15	*7.5	7.1	10	10	11	12	12	6.6	8.6	8.7	20	9.4
16	6.8	8.0	12	11	12	12	16	6.4	8.6	8.5	19	*8.3
17	6.4	8.2	16	12	12	*13	15	7.7	8.3	8.2	17	7.5
18	6.4	7.5	16	14	*12	13	13	7.1	8.3	8.2	10	7.4
19	6.8	*8.0	*15	14	12	13	8.6	7.3	7.8	7.8	9.4	7.4
20	7.3	9.3	15	14	12	12	8.0	8.0	7.7	7.7	11	8.9
21	6.6	13	14	14	12	12	7.0	*8.6	7.6	*7.7	11	10
22	6.6	12	12	13	11	12	6.6	8.9	*7.8	7.6	9.6	9.1
23	6.6	11	10	11	12	11	6.4	9.8	7.6	7.9	9.2	8.1
24	6.4	12	11	10	12	11	6.4	10	7.8	8.0	9.0	8.1
25	6.6	11	11	11	12	10	6.4	12	8.4	8.3	8.6	8.2
26	7.1	11	12	12	11	11	6.2	32	8.9	8.5	8.7	8.1
27	6.8	11	12	12	10	12	6.2	*72	9.1	8.4	9.3	8.1
28	7.1	11	11	12	11	11	6.8	60	8.1	7.4	9.3	8.1
29	7.5	11	11	*12	11	12	*6.6	48	9.0	7.1	8.9	8.1
30	7.3	12	10	12	----------	13	6.8	37	9.6	8.0	8.2	8.1
31	8.4	----------	11	12	----------	14	----------	37	----------	7.8	8.0	----------
Total	211.9	266.7	388.0	336.5	342	371	247.3	468.0	338.1	256.2	321.2	244.6
Mean	6.84	8.89	12.5	10.9	11.8	12.0	8.24	15.1	11.3	8.26	10.4	8.15
Ac-ft	420	529	770	667	678	736	491	928	671	508	637	485

Calendar year 1963: Max 24 Min 5.0 Mean 10.9 Ac-ft 7,890
Water year 1963-64: Max 72 Min 5.9 Mean 10.4 Ac-ft 7,520

Peak discharge (base, 100 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 13, Feb. 19 to Apr. 7. Stage-discharge relation affected by ice Dec. 12-16, Dec. 22 to Jan. 12, Jan. 14-17, Jan. 23 to Feb. 9, Feb. 15-18.

8-2687. Rio Grande near Arroyo Hondo, N. Mex.

Location.--Lat 36°32'05", long 105°42'35", in NW¼ sec.31, T.27 N., R.12 E., on right bank 350 ft downstream from Rio Hondo, 400 ft downstream from State Road 111 bridge, 2¼ miles west of Arroyo Hondo and 11½ miles northwest of Taos.

Drainage area.--8,760 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--February 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,460 ft (from topographic map).

Extremes.--Maximum discharge during year, 565 cfs Nov. 12 (gage height, 1.97 ft); minimum, 146 cfs Oct. 3.
1963-64: Maximum discharge, 655 cfs Mar. 6, 1963 (gage height, 2.15 ft); minimum, 136 cfs Aug. 2, 1963.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.8	133
1.0	178
1.2	235
1.4	304
1.7	430
2.0	580

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	189	189	290	272	312	381	189	316	173	164	171
2	152	189	189	293	279	312	368	189	290	171	161	164
3	150	189	186	293	279	308	368	186	286	168	159	159
4	148	186	*192	290	275	312	356	181	265	166	166	159
5	148	*186	200	297	258	324	327	181	255	164	164	197
6	150	192	200	286	272	339	312	186	242	164	178	183
7	152	200	200	290	275	335	*293	189	238	164	161	173
8	152	205	183	279	279	339	282	192	232	171	159	166
9	152	205	192	275	282	339	268	194	229	171	168	166
10	152	202	197	272	282	339	268	202	226	*166	178	171
11	156	308	208	275	275	339	261	197	245	166	183	166
12	159	545	192	268	272	347	258	197	235	217	286	161
13	159	450	183	255	279	351	242	202	226	176	300	164
14	*161	286	183	*252	290	360	235	211	220	173	235	161
15	161	235	192	255	290	351	235	223	208	176	232	168
16	161	226	197	255	300	368	242	248	205	*183	229	166
17	164	211	205	255	308	*390	235	272	202	178	211	164
18	168	200	208	255	*304	398	242	286	192	176	200	166
19	176	*197	*208	258	304	421	235	286	189	173	*223	164
20	181	189	208	261	304	430	211	331	183	166	208	168
21	181	194	208	265	308	421	194	*339	178	166	202	173
22	181	202	214	265	297	426	186	290	173	166	183	178
23	183	200	208	268	312	416	186	265	173	166	178	*173
24	181	197	217	265	312	364	183	252	*176	164	186	176
25	178	192	220	268	316	426	178	300	173	164	194	171
26	178	197	232	272	312	360	178	470	176	161	189	168
27	178	189	238	272	308	390	178	480	173	161	183	166
28	178	192	245	272	308	421	181	426	168	159	186	161
29	178	194	248	*268	312	412	*186	381	173	171	197	159
30	181	192	268	268	----------	408	192	381	178	178	183	159
31	183	----------	293	272	----------	394	----------	347	----------	168	176	----------
Total	5,138	6,739	6,503	8,409	8,464	11,452	7,461	8,273	6,425	5,286	6,022	5,041
Mean	166	225	210	271	292	369	249	267	214	171	194	168
Ac-ft	10,190	13,370	12,900	16,680	16,790	22,710	14,800	16,410	12,740	10,480	11,940	10,000

Calendar year 1963 : Max - Min - Mean - Ac-ft -
Water year 1963-64 : Max 545 Min 148 Mean 233 Ac-ft 169,010

Peak discharge (base, 1,400 cfs).--No peak above base.

* Discharge measurement made on this day.

8-2690. Rio Pueblo de Taos near Taos, N. Mex.

Location.--Lat 36°26'30", long 105°30'10", in sec.36, T.26 N., R.13 E., on right bank 2½ miles east of Taos Pueblo, 4½ miles northeast of Taos, and 5 miles upstream from Rio Lucero.

Drainage area.--66.6 sq mi.

Records available.--March to December 1910, discharge measurements only. January 1911 to December 1951, May 1952 to November 1962 (annual maximum only), October 1962 to September 1964.

Gage.--Water-stage recorder and concrete contol since Nov. 20, 1962. Altitude of gage is 7,400 ft (from topographic map). Prior to Dec. 19, 1910, staff gage, and Dec. 19, 1910, to Dec. 2, 1916, water-stage recorder (pressure type) at same site and different datums. Jan. 31, 1940, to Dec. 31, 1951, water-stage recorder and May 8,1952 to Nov. 19, 1962, crest-stage gage 0.2 of a mile upstream at different datums.

Average discharge.--19 years (1910-16, 1940-51, 1962-64), 31.3 cfs (22,660 acre-ft per year).

Extremes.--Maximum discharge during year, 82 cfs May 27 (gage height, 1.54 ft); minimum, about 0.9 cfs Jan. 9 (result of freezeup). 1910-16, 1940-64: Maximum discharge, 970 cfs May 14, 1941 (gage height, 3.90 ft, from floodmark), from rating curve extended above 290 cfs by logarithmic plotting; minimum (except 1952-62), that of Jan. 9, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	0.9	1.0	16
.6	2.2	1.2	32
.7	4.2	1.4	57
.8	7.3	1.5	74

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	6.1	5.2	4	4	4	11	33	35	9.2	7.3	8.0
2	4.8	5.8	5	4	4	4	11	35	33	8.4	8.0	7.3
3	*4.5	6.1	*4.5	4	3.5	4.5	8.4	35	30	8.0	6.4	*6.7
4	4.5	6.1	4	3	3.5	4.5	8.4	36	28	7.7	6.1	7.0
5	4.2	5.8	4	3	3.5	4.5	8.4	38	27	7.3	7.3	9.2
6	4.2	5.4	4	2.5	4	4.5	8.0	36	26	7.3	6.4	8.0
7	4.2	5.4	4	3.5	3.5	4.5	7.7	35	26	9.2	7.7	7.0
8	4.2	5.1	3.5	3	3	4.5	*6.7	36	27	9.2	8.0	6.4
9	4.2	5.1	4	2.5	3.5	3.5	8.0	35	25	9.2	9.9	6.4
10	4.0	5.1	4.5	*3.5	4.5	4.5	9.2	36	24	9.2	9.2	6.4
11	4.0	5.1	4	4	4.5	4	12	35	22	12	11	5.8
12	4.2	5.1	3.5	3	5	4.5	16	40	22	11	23	5.8
13	4.5	5.1	3	2	4	5.1	15	47	21	10	21	5.4
14	4.2	5.1	3	2	4	5.4	16	56	20	8.8	20	5.8
15	4.5	5.1	3.5	2.5	3	5.5	22	62	19	9.5	33	7.3
16	4.5	5.8	3.5	3	3	5.4	28	67	18	8.4	27	*8.0
17	4.8	5.4	4	3.5	3	5.1	33	67	17	8.0	22	7.3
18	4.8	4.0	4	3.5	3	*6.4	33	74	16	7.7	19	6.4
19	5.8	5.8	4.5	3.5	3	6.4	31	69	16	8.0	18	5.8
20	8.0	*4.8	*4.5	4	4	5.8	34	62	15	9.2	17	7.0
21	7.0	6.4	4.8	4	3.5	5.6	28	60	14	*7.7	15	7.7
22	6.1	6.1	4	4	3	6.7	28	59	14	7.3	12	8.8
23	5.4	4.0	3.5	3.5	3	6.4	31	60	13	7.7	12	7.0
24	5.4	5.1	4	3	3.5	6.1	34	60	12	9.9	11	6.1
25	5.1	7.0	4.5	3	4	6.1	34	*60	*12	7.7	10	5.8
26	5.1	4.8	4.5	3.5	4.5	6.1	29	72	11	8.0	9.9	5.8
27	4.8	5.4	4.5	4	*4	7.0	27	74	10	8.0	9.5	5.8
28	4.8	6.7	4.5	4	3.5	6.1	*27	*66	9.9	7.0	9.2	5.8
29	4.8	5.4	4	4	3	7.7	29	56	9.9	6.7	8.8	5.4
30	*5.4	5.4	3.5	*4	------	8.8	28	49	10	7.3	8.4	5.4
31	5.4	------	3.5	4	------	9.9	------	41	------	8.4	8.0	------
Total	152.2	163.6	125.5	105.0	105.5	173.1	621.8	1591	582.8	263.0	401.1	200.6
Mean	4.91	5.45	4.05	3.39	3.64	5.58	20.7	51.3	19.4	8.48	12.9	6.69
Ac-ft	302	324	249	208	209	343	1,230	3,160	1,160	522	796	398

Calendar year 1963 : Max 60 Min 3 Mean 11.8 Ac-ft 8,550
Water year 1963-64 : Max 74 Min 2 Mean 12.3 Ac-ft 8,900

Peak discharge (base, 70 cfs), --May 27 (0130) 82 cfs (1.54 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 1-2, Dec. 8-19, Dec. 26 to Feb. 26, Mar. 1-12. Stage-discharge relation affected by ice Dec. 3-7, 20, 22-25, Feb. 27-29.

8-2710. Rio Lucero near Arroyo Seco, N. Mex.

Location.--Lat 36°30'30", long 105°32'00", in NE¼ sec.10, T.26 N., R.13 E. (projected), on right bank in Antoine Leroux Grant, 200 ft upstream from diversion dam for Tenorio and Indian ditches, 2 miles southeast of Arroyo Seco, and 7½ miles northeast of Taos.

Drainage area.--16.6 sq mi.

Records available.--April to December 1910 (discharge measurements and occasional gage heights), January 1911 to September 1915, March to December 1916 (fragmentary), October 1933 to December 1951, May 1952 to November 1962 (annual maximum only), October 1962 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Published as "near Taos," 1910-1915. Fragmentary records for October 1915 to February 1916, published in WSP 438, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital); concrete control since Nov. 21, 1962. Datum of gage is 8,051.44 ft above mean sea level, datum of 1929. Prior to Dec. 17, 1910, staff gage, Dec. 17, 1910, to Dec. 31, 1916, pressure type water-stage recorder at site 50 ft downstream at different datum. Nov. 14, 1933, to Jan. 1, 1952, water-stage recorder and wooden control after Mar. 17, 1936, at different datum. May 7, 1952, to Nov. 21, 1962, crest-stage gage at different datum.

Average discharge.--25 years (1910-15, 1933-51, 1962-64), 23.3 cfs (16,870 acre-ft per year).

Extremes.--Maximum discharge during year, 75 cfs May 26 (gage height, 1.60 ft); maximum gage height, 1.94 ft Dec. 8 (backwater from ice); minimum discharge, about 2 cfs Jan. 13 or 14 (result of freezeup).
1911-15, 1933-64: Maximum discharge, 300 cfs May 13, 1941 (gage height, 3.12 ft); minimum daily (except 1952-62), 2.5 cfs Feb. 12, 1948, Feb. 1, 2, 1951.

Remarks.--Records good except those for Nov. 18 to Mar. 17, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 28		Apr. 28 to Sept. 30			
0.6	3.5	0.8	7.7	1.4	49
.7	5.2	1.0	16	1.6	75
.8	7.7	1.2	29		
1.0	16				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	7.9	7.7	6.0	5.5	4.0	3.5	7.4	19	38	15	14	14
2	7.9	7.7	*6.0	5.5	3.5	3.5	6.7	17	35	14	13	13
3	*7.9	8.0	6.0	5.5	3.5	3.5	5.9	16	32	14	12	13
4	7.9	8.0	6.0	5.0	3.5	3.5	5.6	17	30	13	13	14
5	7.7	7.7	6.0	4.5	3.5	3.5	5.4	18	30	13	12	14
6	7.7	7.4	6.0	4.0	3.5	3.5	5.4	18	31	13	12	13
7	7.8	7.4	5.5	4.5	3.5	3.5	5.2	18	33	14	12	12
8	7.7	7.2	5.0	3.5	3.5	3.5	*5.6	18	35	13	12	12
9	7.6	7.2	5.0	3.0	3.5	3.0	5.5	18	33	13	13	12
10	7.6	7.2	5.5	*3.0	4.0	3.5	6.3	19	32	13	13	12
11	7.6	7.2	5.5	3.5	4.0	3.5	7.7	19	31	15	14	11
12	7.6	7.4	4.0	3.0	4.0	3.5	8.7	23	31	14	29	11
13	7.5	7.4	4.0	2.5	4.0	4.0	8.4	27	30	13	36	10
14	7.5	7.4	4.0	2.5	4.0	4.0	9.4	30	29	12	35	10
15	*7.4	7.0	4.5	3.0	3.0	4.0	13	34	28	*14	37	12
16	7.4	6.7	4.5	3.5	3.0	4.0	17	39	27	12	33	*11
17	7.4	6.2	5.0	3.5	3.0	4.5	18	44	26	12	31	10
18	7.4	6.0	5.0	4.0	3.0	*4.9	16	48	25	12	28	10
19	8.2	6.0	5.0	4.5	3.0	4.7	16	44	23	12	*28	10
20	10	*6.4	*5.0	4.5	3.5	4.5	16	45	22	12	26	11
21	9.0	6.2	6.0	4.5	3.5	4.5	15	47	21	12	24	11
22	8.6	6.0	5.0	4.5	3.5	4.5	16	49	20	12	22	13
23	8.2	6.0	5.0	4.0	3.5	4.5	18	53	19	12	20	11
24	7.9	6.0	5.0	3.5	3.5	4.7	20	56	*18	12	19	10
25	7.7	6.0	5.0	3.5	3.5	4.7	20	*56	18	12	18	10
26	7.7	6.0	5.0	4.0	*3.5	4.5	17	66	17	12	18	10
27	7.5	6.0	5.0	4.0	3.0	4.5	14	69	16	12	17	10
28	7.5	6.0	5.5	4.0	3.0	4.7	*16	*63	16	11	16	9.7
29	7.6	6.0	5.0	4.0	3.0	5.2	18	58	16	11	16	9.7
30	*7.7	6.0	5.0	*4.0	------	6.2	17	51	16	13	15	9.4
31	8.0	------	5.0	4.0	------	7.2	------	44	------	13	14	------
TOTAL	243.1	203.4	160.0	122.5	100.5	131.3	360.2	1,143	778	395	622	338.8
MEAN	7.84	6.78	5.16	3.95	3.47	4.24	12.0	36.9	25.9	12.7	20.1	11.3
AC-FT	482	403	317	243	199	260	714	2,270	1,540	783	1,230	672

CALENDAR YEAR 1963	MAX	46	MIN	4.0	MEAN	12.0	AC-FT	8,701
WATER YEAR 1963-64	MAX	69	MIN	2.5	MEAN	12.6	AC-FT	9,113

Peak discharge (base, 70 cfs).--May 26 (2330) 75 cfs (1.60 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 12 (no gage-height record Dec. 13 to Mar. 17).

8-2750. Rio Fernando de Taos near Taos, N. Mex.

Location.--Lat 36°22'30", long 105°33'00", in NE¼ sec.28, T.25 N., R.13 E., on right bank 2 miles southeast of Taos.

Drainage area.--71.7 sq mi.

Records available.--April to September 1910, gage heights and discharge measurements only. October 1910 to June 1911, discharge measurements only; October 1912 to September 1917; October 1927 to December 1929; October 1962 to September 1964. Previously published figures of discharge for October 1917 to September 1927 appear unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,100 ft (from topographic map). Prior to July 21, 1921, and Aug. 23, 1921, to Dec. 31, 1928, staff gages at sites 125 ft and 425 ft upstream, respectively, at various datums.

Average discharge.--8 years (1912-17, 1927-28, 1962-64), 8.51 cfs (6,160 acre-ft per year).

Extremes.--Maximum discharge during year, 82 cfs Aug. 9 (gage height, 1.64 ft); minimum, 0.1 cfs many days, but may have been less during period of ice effect.
1962-64: Maximum discharge, that of Aug. 9, 1964; minimum, 0.06 cfs Aug. 23, 1963.
Peak discharge not determined prior to 1962; maximum daily discharge observed, 132 cfs May 2-6, 1914.
A flood of undetermined magnitude occurred July 21, 1921.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. A few very small diversions above station for irrigation. Randall's ditch diverts from left bank 175 ft downstream from gage for irrigation below station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.06	0.7	5.5
.4	.5	.8	9.0
.5	1.4	.9	14
.6	3.0	1.1	26

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	* 0.5	b 0.5	0.3	0.2	a 0.3	4.2	16	7.2	0.6	4.1	0.2
2	.3	.6	b .5	.3	.2	a .3	4.5	16	6.9	.5	6.6	.2
3	.3	.6	*b .5	.3	.2	a .3	4.2	16	6.6	.4	2.5	.2
4	.2	.6	b .5	.2	.2	a .3	4.2	15	5.8	.4	2.0	.2
5	.2	.5	b .5	.2	.2	a .3	4.0	16	5.0	.4	2.4	.4
6	.2	.6	b .5	b .2	.2	a .3	3.5	16	5.0	.3	1.4	.5
7	.2	.6	b .5	b .2	.2	a .3	3.5	15	4.0	.4	1.0	.4
8	.2	.6	b .3	b .2	.2	a .3	* 3.0	15	3.8	.5	1.3	.3
9	.2	.6	b .4	b .1	.2	a .3	3.5	15	3.8	.5	9.2	.4
10	.2	.6	b .5	b .1	.2	a .3	4.0	15	3.2	.5	7.6	.8
11	.2	.7	b .4	b .1	.2	a .2	5.0	15	3.2	.5	4.0	2.8
12	.3	.7	b .3	b .1	.1	a .2	6.2	15	3.0	.7	7.2	1.4
13	.2	.6	b .3	b .1	.1	a .2	6.2	15	2.8	.7	4.0	.8
14	.2	.6	b .1	b .1	b .1	a .2	6.9	15	2.7	.6	2.8	.6
15	.3	.6	b .2	b .1	b .1	a .2	9.9	15	2.5	.5	2.7	.7
16	*.3	a .7	*b .4	b .1	b .1	* .2	17	14	2.2	.4	2.2	* 1.3
17	.3	a .6	b .4	.1	b .1	.2	24	13	1.9	* .4	1.6	1.3
18	.3	b .5	b .4	.1	b .1	.3	23	13	1.7	.4	1.1	.8
19	.3	b .5	.4	.1	.2	.7	22	13	1.6	.3	1.1	.6
20	.4	b .6	.4	.1	.2	.9	21	12	1.4	.4	* 1.0	.7
21	.4	*b .6	.4	a .1	.3	1.1	16	12	1.1	.5	.9	1.0
22	.4	b .5	.3	a .1	.3	1.6	16	11	1.0	.7	.7	1.4
23	.4	b .5	.3	a .1	.3	1.7	16	9.9	* .8	1.4	.6	1.1
24	.4	b .5	.3	a .1	* .3	1.7	16	8.6	.7	1.3	.5	.8
25	.4	b .5	.3	a .2	a .3	2.0	16	* 8.0	.7	.9	.4	.7
26	.4	b .5	.2	a .2	a .3	1.7	15	11	.7	1.0	.4	.6
27	.5	b .5	.2	a .2	a .2	2.0	13	* 12	.6	1.0	.4	.6
28	.4	b .5	.3	a .2	a .2	1.7	*13	9.0	.6	.7	.4	.6
29	.4	b .5	.3	* a .2	a .3	2.2	14	8.0	.5	.4	.3	.6
30	.4	b .5	.3	.2	----------	2.5	14	7.6	.7	.4	.3	.6
31	.5	----------	.3	.2	----------	3.0	----------	7.6	----------	.4	.2	----------
Total	9.7	17.0	11.2	4.9	5.8	27.5	328.8	399.7	81.7	18.1	70.9	22.6
Mean	0.31	0.57	0.36	0.16	0.20	0.89	11.0	12.9	2.72	0.58	2.29	0.75
Ac-ft	19	34	22	9.7	12	55	652	793	162	36	141	45

Calendar year 1963 : Max 26 Min 0.1 Mean 2.60 Ac-ft 1,880
Water year 1963-64: Max 24 Min 0.1 Mean 2.73 Ac-ft 1,980

Peak discharge (base, not determined). --Aug. 1 (2100) 58 cfs (1.43 ft); Aug. 9 (1500) 82 cfs (1.64 ft).

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2753. Rio Pueblo de Taos near Ranchito, N. Mex.

Location.--Lat 36°23'30", long 105°37'30", on left bank 300 ft downstream from Rio Fernando de Taos and 2 miles southwest of Ranchito, Taos County.

Drainage area.--199 sq mi.

Records available.--March 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,730 ft (from topographic map).

Average discharge.--7 years, 28.4 cfs (20,560 acre-ft per year).

Extremes.--Maximum discharge during year, 72 cfs May 26 (gage height, 1.95 ft); maximum gage height, 3.01 ft Jan. 13 (ice jam); minimum discharge recorded, 0.8 cfs Aug. 6.
1957-64: Maximum discharge, 600 cfs May 13, 1957 (gage height, 3.72 ft); minimum, 0.8 cfs July 6, 1963, Aug. 6, 1964.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 9,000 acres above station. Anderson ditch diverts from right bank about 125 ft below gage.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 5, Dec. 7, 10, 11, 21, 22, 29. Jan. 3, 7. May 20-25, May 29 to June 20. June 26 to Sept. 30)

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.3	6.4	11	10	13	13	16	9.6	26	2.0	1.1	1.6
2	2.9	5.5	11	10	13	13	17	10	20	2.0	1.1	1.6
3	*3.3	5.5	10	8.7	13	15	17	10	18	1.6	1.1	*1.4
4	3.8	6.1	10	8	14	14	18	8.3	14	1.4	1.2	2.0
5	4.0	*6.8	9.1	8	12	12	19	7.8	11	1.6	1.1	2.7
6	4.0	6.8	*9	7	13	14	*20	8.3	9.1	1.4	1.2	2.2
7	3.5	7.8	9.1	7.1	12	14	20	9.6	7.8	1.3	*1.9	2.0
8	3.5	8.3	8	6.5	11	14	18	*7.8	6.1	1.4	2.2	1.9
9	3.5	8.3	10	6	12	12	16	7.8	*4.5	*1.9	2.4	2.0
10	3.5	8.3	13	6	13	15	17	8.7	4.5	1.4	5.8	2.0
11	3.5	8.7	14	7	13	13	18	9.6	4.2	1.4	3.1	1.9
12	4.0	8.3	12	5	14	13	20	8.3	3.3	3.5	7.4	1.7
13	4.0	8.3	9.5	5	15	15	18	9.6	2.9	3.5	4.8	1.9
14	4.0	8.7	8.5	*5	13	14	16	14	3.5	2.2	3.8	2.2
15	4.0	8.3	9.5	5.5	11	13	18	20	3.1	2.9	3.8	3.3
16	*4.0	12	*9.5	6.2	11	*14	25	23	2.7	2.4	3.8	*4.5
17	4.0	11	11	7	11	15	50	25	2.4	2.4	3.5	4.0
18	4.2	8.7	12	7	11	15	52	31	2.7	3.1	2.9	3.5
19	4.5	8.7	12	8	11	15	37	32	2.9	3.8	4.0	3.1
20	5.8	8.7	11	8	13	14	41	28	2.4	3.1	*3.5	3.8
21	5.2	*9.6	12	8	12	15	28	*29	2.0	2.4	3.1	4.0
22	4.5	10	12	8	11	15	23	29	1.9	2.4	3.1	4.2
23	4.2	10	10	8	13	15	18	26	*1.7	2.7	3.8	3.3
24	4.0	9.6	11	7	*13	15	19	25	1.7	2.2	3.1	3.3
25	4.2	11	11	9.5	13	16	18	28	1.9	2.2	3.1	3.8
26	4.0	11	11	12	14	15	15	56	2.4	2.2	3.9	4.2
27	4.2	10	10	13	13	15	*14	69	2.4	2.2	3.1	4.2
28	4.2	10	10	*13	12	15	11	55	2.2	1.7	3.1	4.2
29	4.8	11	10	13	11	15	11	42	2.2	1.9	3.1	4.5
30	5.5	10	8.5	13	----------	15	9.1	37	2.0	*2.2	2.9	4.5
31	6.1	----------	8.5	13	----------	15	----------	33	----------	1.4	2.0	----------
Total	128.2	263.4	323.2	258.5	361	443	639.1	717.4	171.5	67.8	93.0	89.5
Mean	4.14	8.78	10.4	8.34	12.4	14.3	21.3	23.1	5.72	2.19	3.0	2.98
Ac-ft	254	522	641	513	716	879	1,270	1,420	340	134	184	178

Calendar year 1963: Max 66 Min 0.9 Mean 12.1 Ac-ft 8,770
Water year 1963-64: Max 69 Min 1.1 Mean 9.71 Ac-ft 7,050

Peak discharge (base, 130 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 14, 19-26, Feb. 20-23. Stage-discharge relation affected by ice Dec. 6, 8, 9, 12-20, 23-28, Dec. 30 to Jan. 2, Jan. 4-6, Jan. 8-13, 15-18, Jan. 27 to Feb. 3, Feb. 5-11, 15-19, 24, 25, Feb. 27 to Mar. 2, Mar. 5, 9, 11, 12, 14, 15.

8-2755. Rio Grande de Ranchos near Talpa, N. Mex.

Location.--Lat 36°17'55", long 105°34'55", in Rancho del Rio Grande Grant, on right bank $1\frac{3}{4}$ miles downstream from Rito de la Olla (locally known as Pot Creek), 3.0 miles south of Talpa, and 3.5 miles upstream from Rio Chiquito.

Drainage area.--83 sq mi, approximately.

Records available.--October 1952 to September 1964. Prior to October 1955, published as Rio Grande del Rancho near Ranchos de Taos.

Gage.--Water-stage recorder. Altitude of gage is 7,250 ft (from topographic map). Prior to Nov. 11, 1952, staff gage at site 35 ft downstream at datum 0.39 ft lower.

Average discharge.--12 years, 19.0 cfs (13,760 acre-ft per year).

Extremes.--Maximum discharge during year, 435 cfs Sept. 10 (gage height, 4.01 ft); minimum discharge, about 1.5 cfs Jan. 13 (result of freezeup).
1952-64: Maximum discharge, that of Sept. 10, 1964; minimum, 0.2 cfs Jan. 5, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Minor diversions upstream for operation of sawmill and for irrigation.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	3.4	1.8	12	2.6	72
1.6	5.5	2.0	21	2.9	115
1.7	8.2	2.3	42	3.2	172

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.9	5.1	5	4	3.5	3.5	8.9	32	85	12	9.9	5.3
2	7.4	5.8	5	4	3.5	4	9.6	33	73	11	12	5.8
3	7.1	5.8	4.5	3.5	3	4.5	9.9	38	64	9.9	9.6	5.3
4	7.1	5.1	4.5	3	3.5	4.5	9.6	44	57	9.9	9.6	5.5
5	7.1	5.5	4.5	3	3.5	4.5	9.6	48	52	9.2	11	7.7
6	6.6	5.1	4.5	2.5	3.5	5	8.5	51	49	8.5	9.6	7.4
7	6.0	5.3	5	3.5	3	5	8.2	53	46	9.9	9.2	6.6
8	6.0	5.1	4	3	3	4.5	7.9	56	46	9.9	9.6	6.0
9	6.0	5.1	4.5	2.5	3.5	4.5	8.9	57	42	9.9	9.9	6.0
10	6.0	5.1	5	3	4	4.5	8.5	58	37	10	8.9	26
11	5.3	5.1	4	3.5	4	4.5	8.9	57	34	9.9	9.9	8.5
12	5.3	4.9	3.5	3	4	5	9.9	64	32	11	9.9	6.8
13	5.1	5.1	3	2	3.5	5	9.9	70	29	9.9	9.9	6.0
14	5.1	5.1	2.5	3	3	4.5	10	86	28	8.5	9.9	5.5
15	5.1	4.7	3	3.5	2.5	4	12	95	26	8.2	9.2	6.6
16	5.1	5.5	3.5	3.5	2.5	4	18	96	25	8.2	8.2	8.9
17	5.3	5.0	4	3.5	2.5	4.5	22	99	23	10	7.1	7.4
18	5.1	4.0	4.5	4	2.5	5	25	110	22	15	7.1	6.0
19	5.1	4.2	4.5	4	3	5	23	115	20	11	7.1	5.5
20	6.6	4.0	4.5	4	3.5	5	28	110	19	11	6.8	6.3
21	7.4	4.2	3.8	4	3	5.5	25	109	18	11	7.1	6.8
22	6.3	4.9	3.2	3.5	3	6.3	26	109	17	11	6.8	9.2
23	6.0	4.5	3.5	3	3	6.3	29	109	16	11	6.6	7.7
24	5.8	4.5	4	3	3.5	5.8	34	105	15	11	6.0	7.1
25	6.3	5.1	4.5	3	3.5	5.8	36	105	15	12	5.8	6.6
26	7.7	4.5	4.5	3.5	3.5	5.8	33	113	15	11	5.5	6.0
27	7.1	4.5	4.5	3.5	3.5	6.0	28	142	13	11	5.8	6.3
28	6.8	5	4	3.5	3.5	6.4	26	155	12	11	5.5	6.3
29	6.7	4.5	4	3.5	3.5	6.5	29	143	12	11	5.3	5.5
30	5.2	4.5	3.5	3.5	----------	6.6	28	124	13	12	5.3	4.7
31	5.3	----------	3.5	3.5	----------	7.4	----------	102	----------	11	5.3	----------
Total	190.9	146.8	126.5	103.5	95.0	159.4	550.3	2,688	955	325.9	249.4	215.3
Mean	6.16	4.89	4.08	3.34	3.28	5.14	18.3	86.7	31.8	10.5	8.05	7.18
Ac-ft	379	291	251	205	188	316	1,090	5,330	1,890	646	495	427

Calendar year 1963: Max 73 Min 2.5 Mean 13.7 Ac-ft 9,930
Water year 1963-64: Max 155 Min 2 Mean 15.9 Ac-ft 11,510

Peak discharge (base, 75 cfs).--May 28 (1045) 166 cfs (3.17 ft); Sept. 10 (1430) 435 cfs (4.01 ft).

Note.--No gage-height record Jan. 28 to Feb. 27. Stage-discharge relation affected by ice Nov. 17-20, 23, 24, Nov. 26 to Dec. 20, Dec. 22 to Jan. 27, Feb. 28 to Mar. 21, Mar. 25-29.

8-2756. Rio Chiquito near Talpa, N. Mex.

Location.--Lat 36°19'50", long 105°34'50", in Rancho del Rio Grande Grant, on right bank 1 mile southeast of Talpa, Taos County, and 1¼ miles upstream from mouth.

Drainage area. --37.0 sq mi.

Records available.--March 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,230 ft (from topographic map).

Average discharge. --7 years, 8.45 cfs (6,120 acre-ft per year).

Extremes.--Maximum discharge during year, 37 cfs May 27 (gage height, 1.90 ft); minimum, about 0.3 cfs Jan. 13 (result of freezeup). 1957-64: Maximum discharge, about 144 cfs May 13, 1958 (gage height, 2.24 ft), from rating curve extended above 50 cfs by logarithmic plotting; minimum, that of Jan. 13, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	0.6	1.5	7.6
1.2	1.4	1.6	12
1.3	2.7	1.7	18
1.4	4.8	1.9	36

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	3.3	2.4	2.2	1.4	2.5	5.1	20	28	7.3	4.4	2.4
2	*2.6	3.1	*2.2	2.2	1.4	2.6	5.4	21	26	6.5	5.1	2.6
3	2.6	3.3	2.2	2.0	1.6	2.6	5.1	24	24	6.2	4.4	2.3
4	2.6	3.3	2.0	2.0	2.0	2.6	4.6	26	21	5.9	4.8	2.7
5	2.4	3.1	2.0	1.6	1.5	2.0	4.8	27	19	5.9	5.4	4.2
6	2.4	2.9	1.6	1.2	2.0	2.6	4.4	27	18	5.6	4.2	3.5
7	2.4	2.9	2.0	1.6	1.5	2.6	4.2	28	17	5.9	4.2	3.3
8	2.3	3.1	1.0	1.3	1.0	2.6	*3.8	28	16	5.9	4.6	2.9
9	2.3	2.7	1.5	1.0	1.5	2.0	4.6	28	15	6.2	5.1	2.9
10	2.3	2.7	2.0	1.0	2.0	2.6	4.6	28	14	6.8	5.4	3.3
11	2.3	2.7	1.8	1.2	2.3	2.5	5.6	27	13	6.2	4.6	4.4
12	2.3	2.7	1.6	1.0	2.3	2.5	5.9	29	13	5.9	6.8	3.5
13	2.3	2.7	1.0	.5	2.3	2.7	5.9	31	12	5.9	5.6	3.1
14	2.3	2.6	1.0	*.8	2.0	2.5	6.5	34	12	5.4	5.4	3.1
15	2.3	2.6	1.5	1.2	1.5	2.4	8.5	35	11	5.1	5.1	3.5
16	*2.3	2.9	*2.0	1.4	1.0	2.6	11	35	10	5.4	4.4	*4.0
17	2.4	2.6	2.2	1.5	1.0	2.6	14	35	9.4	4.8	4.2	3.8
18	2.4	2.4	2.3	1.5	1.0	2.7	16	36	8.9	4.6	4.0	3.3
19	2.6	2.6	2.3	2.0	1.0	2.7	16	35	8.9	4.6	4.0	2.9
20	3.3	2.4	2.3	2.0	1.5	2.6	17	35	8.9	4.6	3.8	3.5
21	3.3	*2.7	2.0	2.0	1.2	*2.6	16	*35	8.0	5.6	*3.5	4.0
22	2.9	2.7	1.6	2.0	1.0	2.7	17	34	8.0	6.2	3.3	4.2
23	2.9	2.3	2.0	2.0	1.5	2.7	17	32	*8.0	5.4	3.1	3.3
24	2.9	2.6	2.2	1.0	*2.0	2.9	20	30	7.6	5.6	2.9	2.7
25	2.9	2.9	2.2	1.0	2.0	2.7	20	29	7.6	5.6	2.7	2.6
26	2.7	2.7	2.2	1.2	2.0	2.4	19	32	7.6	4.8	2.6	2.7
27	2.7	2.9	2.2	1.4	1.7	2.9	16	36	7.6	4.8	2.7	2.7
28	*2.7	2.7	2.2	1.4	1.7	2.9	*15	36	7.0	4.8	2.7	2.9
29	2.9	2.3	2.2	1.4	1.7	3.1	18	35	7.3	4.8	2.4	2.6
30	2.9	2.2	1.6	*1.4	----------	3.5	17	32	7.6	*4.6	2.4	2.6
31	2.9	----------	1.8	1.4	----------	4.2	----------	31	----------	4.6	2.3	----------
Total	80.7	82.6	59.1	45.4	46.6	83.1	328.0	951	381.4	171.5	126.1	95.5
Mean	2.60	2.75	1.91	1.46	1.61	2.68	10.9	30.7	12.7	5.53	4.07	3.18
Ac-ft	160	164	117	90	92	165	651	1,890	756	340	250	189

Calendar year 1963: Max 34 Min 1.0 Mean 5.48 Ac-ft 3,970
Water year 1963-64: Max 36 Min 0.5 Mean 6.70 Ac-ft 4,860

Peak discharge (base, 35 cfs). --May 27 (0600) 37 cfs (1.90 ft).

* Discharge measurement made on this day.

Note. --No gage-height record Jan. 11-29. Stage-discharge relation affected by ice Nov. 29 to Jan. 10, Jan. 30 to Mar. 1, Mar. 5, 9, 11, 12, 14, 15.

8-2760. Rio Pueblo de Taos at Los Cordovas, N. Mex.

Location.--Lat 36°23'20, long 105°38'00", in N½ sec.23, T.25 N., R.12 E. (projected), in Martinez Grant, on left bank 200 ft downstream from Rio Grande de Ranchos, 0.2 mile downstream from Arroyo Seco, half a mile northeast of Los Cordovas, and 3½ miles west of Taos.

Drainage area.--359 sq mi.

Records available.--April 1910 to January 1926, September 1926 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1955, published as Rio Taos at Los Cordovas. All records include flow of Rio Grande de Ranchos.

Gage.--Water-stage recorder. Datum of gage is 6,709.59 ft above mean sea level, datum of 1929. Prior to Oct. 4, 1921, staff gages at nearby sites at different datums. Oct. 4, 1921, to Sept. 30, 1934, water-stage recorder at site 200 ft upstream at datum about 1.26 ft higher and Oct. 1, 1934, to Apr. 30, 1957, at site 200 ft upstream at datum 1.00 ft higher.

Average discharge.--53 years (1910-25, 1926-64), 58.3 cfs (42,210 acre-ft per year).

Extremes.--Maximum discharge during year, 178 cfs May 28 (gage height, 2.82 ft); minimum, 2.9 cfs Sept. 2.
1915, 1922, 1924-25, 1927, 1929-64: Maximum discharge, 1,830 cfs May 14, 1941 (gage height, 5.81 ft, site and datum then in use), from rating curve extended above 1,300 cfs by logarithmic plotting; minimum, 0.8 cfs July 17, 1951.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation of about 12,000 acres, a small part of which is below station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 31, Aug. 4 to Sept. 9, Sept. 19-30)

Oct. 1 to May 6				May 7 to Sept. 30			
1.4	5.3	1.8	24	1.4	3.7	2.0	42
1.5	8.8	2.0	41	1.5	7.0	2.2	65
1.6	13	2.2	62	1.6	11	2.5	111
				1.8	24	2.8	173

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.0	11	16	22	23	24	22	17	86	5.0	4.0	4.4
2	6.7	9.6	16	22	23	24	24	18	68	5.4	4.4	4.0
3	*6.7	9.6	16	21	22	25	25	16	57	5.0	4.4	4.0
4	7.4	*10	17	21	23	23	26	15	46	4.7	4.4	* 5.4
5	7.8	11	18	19	23	23	27	15	34	4.7	4.7	6.0
6	7.8	11	* 18	18	22	24	27	17	25	4.0	4.4	5.7
7	7.4	12	19	b 19	b 21	25	26	*18	22	4.0	* 4.7	5.4
8	6.7	14	16	b 17	b 20	24	* 23	18	16	4.7	5.7	5.0
9	6.7	13	18	b 15	b 19	23	22	19	14	* 5.0	6.0	5.0
10	6.4	14	22	b 15	b 21	25	22	22	16	4.7	11	14
11	6.7	14	23	b 16	22	24	23	23	14	4.7	8.3	5.0
12	7.4	13	19	b 16	23	26	23	23	12	11	14	5.0
13	7.8	14	19	b 15	23	26	21	26	10	7.4	9.2	6.0
14	7.4	14	18	b 14	22	25	18	40	9.6	5.4	8.7	6.7
15	7.8	14	19	b 14	20	25	19	59	9.6	6.3	7.4	* 7.4
16	*7.8	19	19	*b 15	21	* 26	23	71	8.3	5.4	7.0	8.3
17	7.8	17	20	b 16	* 21	23	40	72	8.3	5.4	7.0	7.9
18	7.4	15	21	17	21	25	47	85	7.9	5.7	7.0	6.7
19	8.1	15	22	18	23	24	37	91	7.0	6.3	6.7	6.0
20	9.2	16	* 22	19	23	23	45	86	6.0	5.7	* 5.4	7.0
21	9.2	*18	23	18	22	23	36	*86	5.7	4.0	5.0	7.4
22	8.4	18	22	19	20	25	33	85	5.0	4.0	5.0	9.6
23	8.1	16	21	19	23	25	29	79	* 5.0	4.4	5.4	8.7
24	8.1	17	22	b 17	22	24	33	82	5.7	4.4	5.0	8.3
25	8.4	18	22	b 19	22	25	34	84	5.4	5.0	4.7	8.3
26	8.4	16	22	b 21	23	23	27	108	5.0	4.7	4.7	8.7
27	8.8	16	22	*b 22	22	23	* 25	145	5.0	5.0	4.7	7.9
28	8.4	16	22	23	b 21	22	20	171	4.7	4.7	5.4	7.9
29	9.2	16	22	24	b 22	22	17	155	4.7	4.7	5.4	8.3
30	9.6	16	19	22	----------	22	17	136	5.4	* 5.7	5.0	8.3
31	10	----------	20	23	----------	23	----------	111	----------	4.7	4.7	----------
Total	244.6	433.2	615	576	633	744	811	1993	528.3	161.8	189.4	208.3
Mean	7.89	14.4	19.8	18.6	21.8	24.0	27.0	64.3	17.6	5.22	6.11	6.94
Ac-ft	485	859	1,220	1,140	1,260	1,480	1,610	3,950	1,050	321	376	413

Calendar year 1963: Max 154 Min 2.6 Mean 23.3 Ac-ft 16,840
Water year 1963-64: Max 171 Min 4.0 Mean 19.5 Ac-ft 14,160

Peak discharge (base, 200 cfs). --No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2763. Rio Pueblo de Taos below Los Cordovas, N. Mex.

Location.--Lat 36°22'38", long 105°40'04", in Gijosa Grant, on left bank 2 miles southwest of Los Cordovas, 2½ miles downstream from Rio Grande de Ranchos, 4½ miles upstream from mouth, Taos County.

Drainage area.--380 sq mi.

Records available.--March 1957 to September 1964.

Gage.--Water-stage recorder (digital). Concrete control since July 16, 1963. Altitude of gage is 6,650 ft (from topographic map).

Average discharge.--7 years, 50.1 cfs (36,270 acre-ft per year).

Extremes.--Maximum discharge during year, 266 cfs July 12 (gage height, 3.26 ft); minimum, 4.2 cfs Sept. 2.
1957-64: Maximum discharge, 2,380 cfs Aug. 24, 1957 (gage height, 5.80 ft), from rating curve extended above 900 cfs on basis of logarithmic plotting; minimum, 3.0 cfs July 14, 17, 22, 23, 25, 1963.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 12,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	4.7	2.2	32
1.8	7.3	2.5	71
1.9	11	3.0	180
2.0	16		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	7.0	11	16	21	26	25	23	16	88	6.3	5.3	5.1
2	7.0	11	16	22	27	26	25	16	69	6.4	5.3	4.7
3	*7.0	11	16	22	25	26	27	15	61	6.2	5.2	4.7
4	7.0	*11	17	21	23	24	28	14	52	5.7	5.4	5.3
5	7.4	11	18	20	26	24	30	13	39	5.7	5.8	6.3
6	7.5	12	*18	18	25	25	30	16	30	5.2	5.2	5.9
7	7.4	12	18	19	22	26	29	*19	27	5.0	5.4	5.8
8	6.7	13	17	17	21	25	25	20	21	5.3	5.9	5.8
9	6.6	13	18	16	20	25	24	23	*21	6.0	5.7	5.8
10	6.6	13	20	15	22	26	23	24	19	5.8	10	13
11	6.6	14	21	16	24	25	25	25	17	5.5	9.2	6.5
12	6.9	13	20	16	26	26	26	27	14	20	20	5.6
13	7.0	14	19	15	26	27	23	30	12	8.4	9.5	5.7
14	7.5	14	18	14	25	26	17	40	12	6.5	8.9	6.3
15	7.5	14	18	14	22	25	19	58	12	7.3	8.1	6.8
16	*7.4	18	18	*15	22	26	*25	67	11	6.3	8.1	9.1
17	7.6	19	*20	16	*23	*25	41	69	9.6	7.0	7.7	8.4
18	7.6	15	21	17	22	25	50	83	9.2	7.3	7.9	7.8
19	8.1	15	21	18	24	24	40	90	8.6	7.0	8.0	7.6
20	9.1	15	21	19	26	23	44	85	7.5	7.0	*7.3	9.4
21	9.2	*16	21	20	25	23	36	*82	7.3	5.7	6.3	*9.1
22	8.7	17	21	19	22	24	32	82	6.4	5.5	6.2	11
23	8.4	16	21	19	24	24	29	78	*6.1	5.7	6.5	10
24	8.5	16	21	17	23	24	32	79	6.7	5.7	6.3	9.8
25	8.5	17	21	18	23	25	32	82	6.3	6.0	5.9	9.8
26	8.5	16	21	20	24	24	28	110	6.2	6.8	6.1	9.9
27	8.9	16	21	*21	22	24	*25	148	6.8	6.8	6.1	9.3
28	8.9	16	21	22	24	23	20	*179	6.1	6.3	6.2	9.4
29	9.5	16	21	25	25	22	16	164	6.0	8.7	5.8	9.4
30	9.8	15	20	24	------	22	16	139	6.7	*5.4	5.7	9.4
31	10	------	19	24	------	23	------	114	------	5.6	5.6	------
TOTAL	244.4	430	599	580	689	762	840	2,007	604.5	208.1	220.6	232.7
MEAN	7.88	14.3	19.3	18.7	23.8	24.6	28.0	64.7	20.2	6.71	7.12	7.76
AC-FT	485	853	1,190	1,150	1,370	1,510	1,670	3,980	1,200	413	438	462

CALENDAR YEAR 1963 MAX 165 MIN 3.7 MEAN 24.5 AC-FT 17,729
WATER YEAR 1963-64 MAX 179 MIN 4.7 MEAN 20.3 AC-FT 14,721

Peak discharge (base, 230 cfs).--July 12 (1435) 266 cfs (3.26 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 3-9, 12-19, 23-31, Jan. 1, 2, 4-21, 23-26, Feb. 8-11, 15-17.

8-2765. Rio Grande below Taos Junction Bridge, near Taos, N. Mex.

Location.--Lat 36°19'00", long 105°45'30", in N½ sec.15, T.24 N., R.11 E., on left bank 2 miles downstream from Rio Pueblo de Taos and bridge on State Highway 96 and 12 miles southwest of Taos.

Drainage area.--9,730 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--July 1925 to September 1964. Monthly discharge only July 1925 to September 1930, published in WSP 1312.

Gage.--Water-stage recorder (digital). Datum of gage is 6,050.3 ft above mean sea level (planetable survey). Prior to Apr. 14, 1934, at bridge 2 miles upstream at different datum.

Average discharge.--39 years, 737 cfs (533,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,200 cfs July 12 (gage height, 4.84 ft); minimum, 167 cfs Oct. 4, 5.
1926-64: Maximum discharge, 9,730 cfs June 7, 1948, June 22, 1949; maximum gage height, 10.7 ft July 3, 1927 (site and datum then in use), from graph based on recorder record ending at a gage height of 10.5 ft, 6 hours prior to peak; minimum daily discharge, 159 cfs Oct. 8-11, 1956.
Maximum flood known since at least 1888, about 14,000 cfs June 19, 1903, from records for Rio Grande at Embudo and estimated inflow. Other floods exceeding 10,000 cfs occurred June 9, 1905, May 28, 1920, and June 16, 1921, from comparison of records for stations near Lobatos and at Embudo.

Remarks.--Records good. Diversions for irrigation of about 650,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

3.3	135	4.0	500
3.5	220	4.5	875

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	180	215	225	337	310	351	423	* 240	435	* 198	183	200
2	176	216	222	334	315	357	411	235	381	192	180	194
3	175	218	217	* 336	314	350	410	235	370	191	177	189
4	171	216	219	329	* 319	354	401	225	348	189	181	188
5	170	216	228	326	296	354	382	225	315	187	* 183	202
6	171	217	231	323	303	* 367	365	235	* 300	185	193	239
7	171	222	231	328	306	364	351	240	290	184	183	200
8	174	* 231	217	316	310	369	332	240	285	190	180	* 193
9	174	235	214	309	316	370	319	250	275	193	184	189
10	174	235	231	301	323	375	317	255	265	189	207	194
11	177	238	240	309	310	364	313	255	275	184	208	191
12	183	536	229	308	310	383	309	250	275	283	291	182
13	183	524	216	291	313	395	298	260	260	208	355	183
14	* 184	352	211	270	320	394	280	275	255	189	273	180
15	186	285	218	280	318	397	280	305	245	192	261	208
16	187	263	227	284	323	399	* 294	342	240	194	254	195
17	187	258	* 233	285	335	419	308	364	235	197	241	191
18	190	237	245	289	336	* 439	324	393	225	189	228	191
19	197	233	248	292	* 336	443	316	405	220	187	242	190
20	205	225	250	* 301	342	457	299	417	216	183	240	195
21	208	225	252	301	343	446	274	461	206	180	233	202
22	207	244	253	302	325	457	257	405	198	178	216	223
23	208	234	245	306	348	452	251	370	193	205	210	208
24	209	232	253	298	347	396	255	353	193	179	209	212
25	207	228	258	298	350	474	250	353	193	180	225	209
26	205	* 235	272	309	352	405	243	574	193	187	220	202
27	205	225	280	306	346	424	242	640	193	180	216	198
28	205	228	287	306	341	462	235	619	188	177	213	195
29	206	231	293	307	353	445	232	570	188	207	229	192
30	210	228	299	307	------	* 436	239	535	202	196	219	191
31	210	------	327	311	------	439	------	494	------	200	209	------
TOTAL	5,895	7,682	7,571	9,499	9,460	12,537	9,210	11,020	7,657	5,973	6,843	5,926
MEAN	190	256	244	306	326	404	307	355	255	193	221	198
AC-FT	11,690	15,240	15,020	18,840	18,760	24,870	18,270	21,860	15,190	11,850	13,570	11,750

CALENDAR YEAR 1963	MAX 670	MIN 170	MEAN 301	AC-FT 218,270
WATER YEAR 1963-64	MAX 640	MIN 170	MEAN 271	AC-FT 196,910

Peak discharge (base, 1,600 cfs). --No peak above base.

* Discharge measurement made on this day.

8-2790. Embudo Creek at Dixon, N. Mex.

Location.--Lat 36°12'40", long 105°54'55", in NW¼SE¼ sec.19, T.23 N., R.10 E., at downstream end of bridge pier on U. S. Highway 64, 0.5 mile upstream from mouth, three-quarters of a mile east of Embudo Post Office, and 1.6 miles northwest of Dixon.

Drainage area.--305 sq mi.

Records available.--October 1923 to September 1955, April 1956 to September 1962 (annual maximum only). September 1962 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 5,849.54 ft above mean sea level, datum of 1929. Prior to Nov. 30, 1938, at site about 1 mile upstream at different datums. Nov. 30, 1938, to Aug. 1, 1941, at site about three-quarters of a mile upstream at datum about 69.0 ft higher. April 1956 to Sept. 21, 1962, crest-stage gage.

Average discharge.--33 years (1923-25, 1926-55, 1962-64), 80.4 cfs (58,210 acre-ft per year).

Extremes.--Maximum discharge during year, 904 cfs July 11 (gage height, 5.05 ft); minimum, 5.3 cfs July 9.
1923-64: Maximum discharge determined, 2,180 cfs Aug. 22, 1946 (gage height, 7.00 ft); minimum daily (except 1956-62), 0.2 cfs June 27, 1950, July 8, 22, Aug. 17, 1951.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 6,500 acres, a small part of which is below gage.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 4-6, June 9 to Sept. 30)

1.3	4.0	1.7	35	2.6	170
1.4	9.0	2.0	71	3.0	256
1.5	16	2.3	116	3.3	331

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	21	25	24	24	16	64	*102	192	*10	10	7.3
2	10	23	23	22	22	17	63	100	162	*7.8	9.6	7.8
3	10	23	25	*24	23	17	46	110	137	7.3	9.6	7.3
4	10	24	29	20	*25	16	43	119	126	7.3	7.3	9.0
5	10	26	29	13	18	18	44	126	102	7.8	*7.8	12
6	10	25	*29	12	17	*21	44	126	*91	6.7	8.4	11
7	10	27	25	12	15	22	39	126	86	6.7	11	12
8	10	*27	18	11	15	21	35	133	82	6.2	14	*12
9	10	27	19	10	16	18	46	121	75	8.4	15	14
10	10	25	21	12	18	20	47	123	68	14	23	13
11	9	24	18	10	20	22	54	123	62	39	19	13
12	9	22	16	9	20	24	57	128	58	47	20	11
13	9	20	17	9	17	26	50	144	52	18	21	9.0
14	*8.4	20	18	10	14	21	48	162	47	15	22	7.8
15	8.4	21	20	12	12	24	58	172	42	14	20	7.8
16	9.0	18	*22	15	12	30	*75	162	36	15	18	11
17	12	18	24	15	13	29	90	166	30	15	15	13
18	12	20	25	20	14	*35	94	205	27	14	12	13
19	14	25	25	23	*14	38	80	196	26	15	9.6	12
20	27	25	25	*22	13	32	97	198	20	20	8.4	13
21	26	25	25	23	12	36	88	190	18	16	8.4	17
22	22	20	21	24	12	41	91	203	16	14	8.4	20
23	21	20	18	24	12	40	94	207	15	18	7.8	19
24	22	20	20	15	13	43	111	203	15	16	7.8	17
25	20	25	25	15	14	35	118	224	14	18	8.4	17
26	21	22	25	20	14	32	108	288	13	15	7.8	14
27	20	25	25	24	13	40	94	315	11	15	7.3	13
28	17	25	20	25	12	42	78	288	9.6	15	6.7	14
29	17	25	17	25	14	48	*92	254	9.0	13	6.2	14
30	16	25	15	24	----------	*52	86	224	9.0	12	6.2	14
31	17	----------	16	24	----------	55	----------	215	----------	11	6.2	----------
Total	438.8	693	680	548	458	931	2134	5453	1650.6	457.2	361.9	375.0
Mean	14.2	23.1	21.9	17.7	15.8	30.0	71.1	176	55.0	14.7	11.7	12.5
Ac-ft	870	1,370	1,350	1,090	908	1,850	4,230	10,820	3,270	907	718	744

Calendar year 1963 : Max 256 Min 3.8 Mean 38.1 Ac-ft 27,560
Water year 1963-64: Max 315 Min 6.2 Mean 38.7 Ac-ft 28,130

Peak discharge (base, 800 cfs).--July 11 (1425) 904 cfs (5.05 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 3-13, Dec. 7-15, July 13-23. Stage-discharge relation affected by ice Nov. 16 to Dec. 3, Dec. 16-22, 24-30, Jan. 4, Jan. 6-18, 24-26, Feb. 5 to Mar. 10.

8-2795. Rio Grande at Embudo, N. Mex.

Location.--Lat 36°12'20", long 105°57'50", in SW¼SW¼ sec.23, T.23 N., R.9 E., on right bank a quarter of a mile downstream from bridge at Embudo and 2½ miles downstream from Embudo Creek.

Drainage area.--10,400 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--January 1889 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge published in WSP 358 for period Oct. 4 to Nov. 30, 1896, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder (digital). Datum of gage is 5,789.14 ft above mean sea level, datum of 1929. Jan. 1 to Feb. 28, 1889, staff gage 1¼ miles upstream at different datum. March 1889 to December 1903, staff gage 1,300 ft upstream at different datum. September 1912 to June 1914 on downstream end of bridge pier at site 200 ft upstream at present datum.

Average discharge.--75 years, 1,037 cfs (750,800 acre-ft per year).

Extremes.--Maximum discharge during year, 952 cfs May 27 (gage height, 3.65 ft); maximum gage height, 4.94 ft Jan. 15 (ice jam); minimum discharge, 186 cfs Aug. 3.

1889-1903, 1912-64: Maximum discharge, 16,200 cfs June 19, 1903 (gage height, about 15.9 ft); minimum daily, 130 cfs June 30, 1902.

A flood of about 14,000 cfs occurred between May 20 and June 10, 1905, from a comparison of records for Lobatos and Otowi Bridge. Another major flood occurred Sept. 29 or 30, 1904.

Remarks.--Records good. Diversions for irrigation of about 660,000 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	204	243	257	361	335	377	473	* 320	635	*218	204	209
2	202	243	257	354	338	381	459	320	550	*209	199	207
3	199	246	246	* 361	338	381	446	331	510	207	197	202
4	194	246	248	354	346	377	441	338	473	204	197	212
5	194	246	257	342	327	377	423	338	423	207	* 199	220
6	194	246	260	346	* 327	* 393	401	346	* 381	204	202	246
7	194	248	260	354	335	389	381	350	365	202	207	223
8	194	* 263	246	338	331	393	361	357	354	207	199	215
9	197	260	240	331	342	397	354	354	342	215	204	* 212
10	194	260	260	324	354	401	346	357	324	220	220	209
11	194	257	276	338	346	389	350	361	320	248	228	218
12	199	500	266	320	342	401	354	365	327	350	292	204
13	199	560	246	310	342	419	338	385	303	282	354	199
14	* 202	397	240	290	350	410	320	419	292	234	303	202
15	204	317	248	300	354	419	320	450	279	228	276	223
16	204	292	* 260	310	350	410	* 350	482	266	226	270	223
17	207	292	263	315	369	441	381	510	254	223	257	212
18	207	270	273	320	369	*468	410	575	246	215	243	209
19	218	263	276	315	* 365	468	393	590	240	209	243	209
20	234	260	276	* 317	369	477	393	590	231	204	248	212
21	237	263	282	324	373	482	361	635	226	204	243	223
22	234	273	279	327	354	477	338	600	218	199	231	243
23	234	270	270	331	369	477	338	565	212	207	220	234
24	237	260	276	320	369	450	361	540	212	228	215	231
25	231	273	286	317	373	464	361	560	215	207	228	231
26	231	* 263	289	335	381	446	342	789	212	220	228	223
27	228	260	299	335	369	428	324	927	212	209	223	215
28	228	257	306	331	361	477	303	896	209	202	220	215
29	228	263	313	331	377	477	310	806	207	207	231	212
30	228	260	310	331	------	*468	306	745	215	226	228	209
31	234	------	338	335	------	477	------	705	------	215	220	------
TOTAL	6,584	8,551	8,403	10,217	10,255	13,291	11,038	15,906	9,253	6,836	7,229	6,502
MEAN	212	285	271	330	354	429	368	513	308	221	233	217
AC-FT	13,060	16,960	16,670	20,270	20,340	26,360	21,890	31,550	18,350	13,560	14,340	12,900

CALENDAR YEAR	1963	MAX	932	MIN	177	MEAN	344	AC-FT	248,710
WATER YEAR	1963-64	MAX	927	MIN	194	MEAN	312	AC-FT	226,250

Peak discharge (base, 2,000 cfs).--No peak above base.

* Discharge measurement made on this day.

8-2801. San Juan lateral above San Juan Pueblo, N. Mex.

Location.--Lat 36°04'03", long 105°04'07", in SW¼NW¼ sec.11, T.21 N., R.8 E., on right bank upstream from second drop structure below division box, 0.9 mile north of San Juan Pueblo.

Records available.--April 1963 to September 1964.

Gage.--Water-stage recorder (digital after Apr. 17) and concrete control. Altitude of gage is 5,660 ft (from topographic map).

Extremes.--1963-64: Maximum daily discharge, 20 cfs June 9, 1963; no flow at times.

Remarks.--Records fair except those for periods of ice effect, which are poor. This is 1 of 3 ditch stations operated to gage flow bypassing "Rio Grande above San Juan Pueblo, N. Mex." Takeouts between division box and gage irrigate a few acres, but percentage of total acreage is small.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Discharge, in cubic feet per second			Diversion in acre-feet
	Maximum	Minimum	Mean	
October	4.7	0.2	1.85	114
November	1.8	0	0.72	43
December	2.0	0	.71	43
Calendar year 1963	-	-	-	-
January	0.6	0	.08	5.0
February	0	0	0	0
March	.2	0	.013	0.8
April	.1	0	.007	0.4
May	5.6	0	1.26	77
June	.9	0	.13	7.9
July	5.5	0	1.15	71
August	6.5	0	1.41	87
September	11	0	2.94	175
Water year 1963-64	11	0	0.86	624.1

Note.--Stage-discharge relation affected by ice Dec. 7-20, Jan. 8, 9.

8-2802. San Juan Pueblo ditch above San Juan Pueblo, N. Mex.

Location.--Lat 36°03'55", long 106°04'10", in NW¼SW¼ sec.11, T.21N., R.8 E., on right bank 1,000 ft downstream from Arroyo Chinguague, 0.7 mile north of San Juan Pueblo, and 5 miles north of Espanola.

Records available.--March 1963 to September 1964.

Gage.--Water-stage recorder (digital after April 17) and concrete control. Altitude of gage is 5,660 ft (from topographic map).

Extremes.--1963-64: Maximum daily discharge, 23 cfs June 30, 1963, June 13, 14, 1964; no flow at times.

Remarks.--Records good except those for periods of doubtful gage-height record, which are poor. This is 1 of 3 ditch stations operated to gage flow bypassing "Rio Grande above San Juan Pueblo, N. Mex." Takeouts for irrigation above and below gage.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Discharge, in cubic feet per second			Diversion in acre-feet
	Maximum	Minimum	Mean	
October	12	0.2	6.46	397
November	9.8	0	2.42	144
December	2.2	0	.14	8.5
Calendar year 1963	-	-	-	-
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	2.9	0	.21	12
May	15	0	3.71	228
June	23	.3	7.53	448
July	12	0	5.70	350
August	16	.6	7.36	453
September	15	.3	4.08	243
Water year 1963-64	23	0	3.15	2,283.5

Note.--Doubtful gage-height record July 21-29, Aug. 9, 10, 19-23, Sept. 3-7, 10-23.

8-2807. Guique ditch near San Juan Pueblo, N. Mex.

Location.--Lat 36°04'16", long 106°04'42", in NW¼NE¼ sec.10, T.21 N., R.8 E., on right bank above farm road culvert, 1,500 ft downstream from Pueblito, 1.1 miles south of Guique, and 1.1 miles northwest of San Juan Pueblo.

Records available.--April 1963 to September 1964.

Gage.--Water-stage recorder (digital since Apr. 16, 1964) and concrete control. Altitude of gage is 5,660 ft (from topographic map).

Extremes.--1963-64: Maximum daily discharge, 17 cfs June 1, 2, 1964; no flow at times.

Remarks.--Records good. This is one of three ditches gaged to determine flow bypassing station "Rio Grande above San Juan Pueblo, N. Mex." Takeouts from ditch irrigate land above and below gage, or waste back to Rio Grande.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Discharge, in cubic feet per second			Diversion in acre-feet
	Maximum	Minimum	Mean	
October	7.8	0	2.42	149
November	5.3	0.4	1.64	97
December	6.8	0	0.67	41
Calendar year 1963	-	-	-	-
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	8.0	0	1.18	70
May	16	2.8	9.33	573
June	17	0	5.29	315
July	15	0	2.44	150
August	2.2	0	0.48	29
September	10	0.1	3.80	226
Water year 1963-64	17	0	2.27	1,650

8-2811. Rio Grande above San Juan Pueblo, N. Mex.

Location.--Lat 36°04'00", long 106°04'30", in NE¼SE¼ sec.10, T.21 N., R.8 E., on left bank three-quarters of a mile upstream from bridge on State road 74, three-quarters of a mile north of San Juan Pueblo, 1.8 miles upstream from Rio Chama, and 5 miles north of Espanola.

Drainage area.--10,550 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--March 1963 to September 1964.

Gage.--Water-stage recorder (digital after May 27). Altitude of gage is 5,630 ft (from topographic map).

Extremes.--Maximum discharge during year, 960 cfs May 27 (gage height, 1.96 ft); minimum, 115 cfs June 29.
1963-64: Maximum discharge, that of May 27; minimum, 96 cfs Aug. 1, 1963.
For years of outstanding floods see records for station at Embudo.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation of about 619,000 acres in Colorado and 42,000 in New Mexico; bypass canals irrigate a few hundred acres below station. (see Nos. 2801, 2802, 2807).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	106	1.5	585
.8	175	2.0	1,000
1.0	270		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	193	224	255	384	354	396	488	260	644	* 164	171	164
2	179	229	255	384	360	396	474	255	572	164	193	164
3	175	234	250	* 384	360	403	462	255	527	156	171	152
4	171	234	244	372	360	396	462	276	488	164	160	160
5	*184	239	250	360	354	396	448	300	436	167	160	206
6	175	239	260	b 360	342	403	422	300	378	160	164	250
7	167	244	265	b 365	354	403	396	* 306	354	145	179	224
8	164	255	255	b 355	354	410	372	306	* 330	156	224	* 193
9	156	260	244	b 350	372	410	366	300	300	167	206	188
10	156	260	* 265	b 350	* 366	416	354	306	282	201	201	179
11	156	260	282	b 350	366	396	348	318	270	245	206	188
12	160	417	b 275	b 340	366	410	354	312	276	354	255	193
13	160	546	b 260	b 315	360	416	342	342	255	384	324	179
14	167	422	b 250	b 290	360	410	348	378	250	239	312	171
15	164	* 336	b 260	b 310	366	422	318	423	234	215	270	179
16	160	300	b 270	b 330	366	416	* 336	449	224	206	250	224
17	167	300	276	b 335	378	436	372	488	219	197	224	188
18	167	282	288	b 350	378	469	396	553	201	197	197	179
19	201	270	288	354	378	469	396	566	197	193	167	179
20	260	270	294	b 350	378	481	384	566	188	179	175	179
21	239	270	300	*b 355	384	488	354	598	179	164	171	193
22	224	276	300	342	366	488	330	592	167	156	152	224
23	219	270	300	348	372	481	312	546	* 156	148	148	* 224
24	*239	260	294	342	384	474	324	527	160	171	148	210
25	234	282	306	b 325	390	462	336	533	160	156	156	206
26	224	* 270	312	348	396	* 474	330	706	160	160	167	206
27	219	260	318	348	378	442	306	870	164	164	175	197
28	215	260	330	348	372	468	255	880	141	137	171	193
29	215	260	342	348	* 390	488	260	792	134	* 137	167	193
30	210	255	336	348	------	488	255	728	145	171	171	188
31	215	------	354	348	------	488	------	699	------	152	175	------
TOTAL	5,935	8,484	8,778	10,788	10,704	13,595	10,900	14,730	8,191	5,769	6,010	5,773
MEAN	191	283	283	348	369	439	363	475	273	186	194	192
AC-FT	11,770	16,830	17,410	21,400	21,230	26,970	21,620	29,220	16,250	11,440	11,920	11,450

WATER YEAR 1963-64 MAX 880 MIN 134 MEAN 300 AC-FT 217,510

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2841. Rio Chama near La Puente, N. Mex.

Location.--Lat 36°39'45", long 106°38'00", in Tierra Amarilla Grant, on right bank 0.7 mile downstream from Rito de Tierra Amarilla, 3 miles southwest of La Puente, and 6.7 miles upstream from flow line of El Vado Reservoir, Rio Arriba County.

Drainage area.--480 sq mi, approximately.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,083 ft (from river-profile map).

Average discharge.-- 9 years, 305 cfs (220,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,600 cfs May 16 (gage height, 4.62 ft); minimum daily, 12 cfs Oct. 3-8.
1955-64: Maximum discharge, 8,040 cfs June 7, 1957 (gage height, 6.07 ft), from rating curve extended above 3,000 cfs on basis of logarithmic plotting and an inflow-outflow study of El Vado Reservoir; minimum daily, 4.4 cfs Sept. 19, 1956.
A discharge of about 9,000 cfs occurred Apr. 16, 1937, based on flow of Rio Chama at Park View with allowance for tributary inflow. A peak on May 21 or 22, 1926, may have exceeded 10,000 cfs.

Remarks.--Records good except those for Nov. 24 to Mar. 21, which are poor. Diversions for irrigation of about 10,300 acres above station (1962 determination).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	10	1.7	56	2.6	270	3.8	1,160
1.3	20	2.0	102	3.0	461	4.1	1,550
1.5	36	2.3	168	3.4	765	4.5	2,230

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	32	34	25	22	40	136	727	434	18	123	31
2	14	31	*33	27	22	45	102	812	362	16	217	29
3	12	31	31	27	22	45	62	670	367	16	320	27
4	12	32	30	24	22	45	56	850	321	16	161	26
5	12	32	31	22	20	45	53	917	321	16	136	31
6	12	32	30	20	20	45	46	917	298	14	106	42
7	12	31	28	20	20	45	45	1,050	302	14	108	45
8	12	32	22	18	20	45	65	908	311	13	98	44
9	14	32	25	15	23	45	62	1,140	275	14	104	38
10	14	32	30	15	25	45	81	1,550	217	16	114	43
11	14	32	30	15	*25	45	102	1,710	194	16	*125	40
12	14	32	*25	15	25	*50	123	1,970	177	23	243	32
13	14	32	20	15	25	50	*125	2,100	146	32	194	27
14	14	*32	20	15	22	45	149	*1,980	121	29	171	28
15	*18	32	20	20	22	45	224	1,910	108	*23	197	40
16	23	33	22	*21	22	50	325	1,850	*102	21	136	*55
17	22	33	25	23	22	50	385	1,720	82	20	112	45
18	19	25	25	25	22	50	339	1,580	76	17	95	40
19	32	25	27	25	25	55	254	1,250	69	17	82	36
20	49	29	27	25	30	55	254	1,160	62	16	75	37
21	52	34	30	25	30	60	224	1,080	55	16	80	50
22	49	25	25	25	30	66	339	1,030	49	14	66	81
23	40	32	20	20	30	49	403	984	43	14	59	65
24	28	30	22	20	30	40	503	870	36	16	53	54
25	27	35	25	20	32	34	515	822	33	18	47	47
26	27	30	25	20	35	29	362	1,040	31	20	42	46
27	26	30	25	22	*40	30	316	*955	28	19	41	45
28	25	35	25	22	40	32	*450	718	25	20	*39	50
29	24	35	25	22	40	52	680	590	*20	*21	38	46
30	*25	35	*22	*22	----------	89	549	521	21	43	36	*43
31	26	----------	25	22	----------	*125	----------	521	----------	62	32	----------
Total	698	953	804	652	763	1,546	7,329	35,902	4,686	630	3,450	1,263
Mean	22.5	31.8	25.9	21.0	26.3	49.9	244	1,158	156	20.3	111	42.1
Ac-ft	1,380	1,890	1,590	1,290	1,510	3,070	14,540	71,210	9,290	1,250	6,840	2,510

Calendar year 1963 : Max 1,530 Min 7 Mean 162 Ac-ft 117,600
Water year 1963-64: Max 2,100 Min 12 Mean 160 Ac-ft 116,400

Peak discharge (base, 2,700 cfs). --No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 24 to Mar. 21 (no gage-height record Jan. 9 to Feb. 13)

8-2842. Willow Creek above Heron Reservoir, near Park View, N. Mex.

Location.--Lat 36°44'30", long 106°37'35", in Tierra Amarilla Grant, on right bank 3.6 miles west of Park View, 7½ miles upstream from Horse Lake Creek, Rio Arriba County.

Drainage area.--112 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,210 ft (from topographic map). Prior to June 6, 1963, at datum 2.74 ft lower, and natural control.

Extremes.--Maximum discharge during year, 618 cfs Aug. 2 (gage height, 3.36 ft); no flow at times.
1962-64: Maximum discharge, 1,300 cfs about Mar. 22, 1963 (gage height, 6.48 ft from floodmarks, former datum), from rating curve extended above 60 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records good except those below 0.5 cfs, which are fair, and those for periods of ice effect, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.32	0	1.0	15
.4	.1	1.2	26
.5	.6	1.4	43
.6	1.6	1.7	48
.7	3.5	2.1	110
.8	6.3		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.9	0.2	0.1	0.1	b0	*33	4.6	4.3	2.6	135	0
2	.4	.8	.2	.1	.1	.1	*22	3.8	4.6	2.9	137	0
3	.6	.8	*.2	.1	.1	.1	7.8	2.6	4.9	1.5	57	0
4	.6	.9	.2	.1	.1	.1	4.6	1.5	4.1	.8	29	0
5	.6	1.1	.2	b.1	.1	.1	4.6	1.2	3.5	.5	13	0
6	.7	1.0	.2	.1	.1	.1	4.6	.9	3.5	.8	3.8	.1
7	.8	.7	.2	.1	b0	.1	3.5	.7	3.8	2.2	11	.1
8	.8	.4	.2	b.1	b0	b.1	3.8	.6	4.1	2.6	18	1.1
9	.7	.3	.2	.1	.1	b.1	4.3	.6	3.5	2.9	4.1	.8
10	.8	.2	.2	.1	.1	b.2	6.3	.5	3.1	3.8	6.0	.4
11	.9	.2	.2	0	*.1	b.1	10	.4	2.6	5.2	*4.2	.2
12	1.1	.2	*.2	0	.1	b.1	20	.3	2.0	4.3	26	.1
13	1.1	.2	.2	0	.1	*.2	11	*.3	2.0	3.8	7.4	.7
14	1.0	.2	b.1	0	b.1	.2	*8.5	.3	1.4	4.9	10	.7
15	.8	.2	b.1	0	b0	.2	12	.2	2.2	*4.3	3.5	2.4
16	*.7	.2	b.1	0	b0	.4	23	1.0 .1	2.2	3.1	1.8	*4.3
17	.6	.2	.2	0	b0	1.1	25	.1	*2.0	2.7	1.1	3.1
18	.6	.2	.2	0	.1	3.8	20	.1	1.5	1.5	1.1	2.6
19	2.9	.2	.2	.2	.1	3.1	10	.1	1.4	1.1	.7	1.6
20	6.0	.2	.2	0	.1	3.4	14	.1	1.0	1.4	.3	1.5
21	4.9	.2	.2	.1	.1	5.2	10	.1	.5	1.5	.2	2.9
22	4.9	.4	.2	.1	.1	15	15	.1	.2	1.2	.1	5.2
23	4.3	.3	b.1	.1	.1	*9.3	13	.1	.1	.6	.1	4.9
24	3.8	.3	.1	b.1	.1	6.3	11	.2	.1	.5	.1	3.5
25	3.1	.4	.1	b0	.1	2.7	8.1	3.0	.5	1.2	0	2.2
26	2.4	.4	.2	b0	.1	1.5	5.5	7.4	1.1	2.0	0	.9
27	1.4	.3	.2	.1	b.1	1.5	3.1	*5.7	1.1	2.6	*0	.5
28	1.0	.3	.1	.1	*.1	2.6	*2.6	3.8	1.0	4.6	0	.4
29	.9	.3	.1	.1	b0	34	2.9	3.5	*1.1	4.3	0	*3
30	1.2	.3	.1	b.1	----------	52	4.1	4.3	1.8	*16	0	.2
31	*1.1	----------	.1	.1	----------	*34	----------		----------	7.4	0	----------
Total	50.9	12.3	5.2	2.1	2.3	177.7	323.3	48.2	65.2	94.8	470.5	40.7
Mean	1.64	0.41	0.17	0.07	0.08	5.73	10.8	1.55	2.17	3.06	15.2	1.36
Ac-ft	101	24	10	4.2	4.6	352	641	96	129	188	933	81

Calendar year 1963 : Max 300 Min 0 Mean 7.91 Ac-ft 5,720
Water year 1963-64 : Max 137 Min 0 Mean 3.53 Ac-ft 2,560

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2843. Horse Lake Creek above Heron Reservoir, near Park View, N. Mex.

Location.--Lat 36°42'30", long 106°44'50", in Tierra Amarilla Grant, on left bank 300 ft downstream from pond with open spillway, 5½ miles upstream from mouth, 8 miles downstream from Horse Lake, and 13 miles west of Park View, Rio Arriba County.

Drainage area.--45 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,220 ft (from topographic map). Prior to June 10, 1963, at datum 1.77 ft higher.

Extremes.--Maximum discharge during year, 440 cfs Aug. 1 (gage height, 3.20 ft), from rating curve extended above 9.0 cfs on basis of slope-area measurement of peak flow; no flow for long periods.
1962-64: Maximum discharge, that of Aug. 1, 1964; maximum gage height, 4.49 ft (datum then in use) Feb. 2, 1963; no flow for long periods.

Remarks.--Records good. Diversions above station for irrigation of meadows and for off-channel stock tanks. During the year there were 22 observations of no flow and 5 discharge measurements.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.23	0	0.8	2.7
.3	.003	.9	4.4
.4	.06	1.0	6.6
.5	.3	1.2	13
.6	.8	1.5	28
.7	1.6	1.8	51
		2.2	99

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										0	*98	
2										0	20	
3										0	8.0	
4										0	.2	
5										0	0	
6										0	0	
7										0	0	
8										0	0	
9										0	0	
10										0	*3.9	
11										0	*10	
12										0	*51	
13										0	.8	
14										0	7.4	
15										0	1.9	
16										0	.1	
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										8.4	0	
31										2.9	0	
Total	0	0	0	0	0	0	0	0	0	11.3	201.3	0
Mean	0	0	0	0	0	0	0	0	0	0.36	6.49	0
Ac-ft	0	0	0	0	0	0	0	0	0	22	399	0

Calendar year 1963: Max 31 Min 0 Mean 0.62 Ac-ft 448
Water year 1963-64: Max 98 Min 0 Mean 0.58 Ac-ft 421

Peak discharge (base, not determined)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-30	1800	2.49	154	8-11	2400	2.89	281
8-1	2000	3.20	440				

* Discharge measurement made on this day.

8-2845. Willow Creek near Park View, N. Mex.

Location.--Lat 36°40'20", long 106°42'10", in Tierra Amarilla Grant, on right bank 400 ft upstream from Willow Creek damsite, 0.3 mile downstream from Horse Lake Creek, and 8½ miles southwest of Park View, Rio Arriba County.

Drainage area.--193 sq mi.

Records available.--May 1936 to September 1964 (no winter records prior to 1943). Monthly or yearly discharges only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 6,944.99 ft (Bureau of Reclamation datum). Prior to Oct. 1, 1937, at datum 0.79 ft higher. Apr. 19, 1949, to Aug. 8, 1951, at different datums. Aug. 9, 1951, to Sept. 30, 1960, at datum 0.41 ft higher.

Average discharge.--27 years (1936-38, 1939-64), 21.4 cfs (15,490 acre-ft per year).

Extremes.--Maximum discharge during year, 1,190 cfs Aug. 2 (gage height, 5.64 ft, from recorded range in stage); no flow at times. 1936-64: Maximum discharge, 4,500 cfs Apr. 23, 1942 (gage height, 10.45 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 300 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 26-29)

0.3	0	0.8	2.0	1.6	31
.4	.1	.9	3.2	2.0	65
.5	.3	1.0	5.1	2.5	129
.6	.6	1.1	7.5	3.0	220
.7	1.1	1.3	15	3.6	367

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	7	4	0		0	43	4	5	6	100	1
2	2	6	*3	1		0	26	4	5	7	360	1
3	2	6	3	1		0	14	3	9	6	78	1
4	3	6	3	0		0	8	1	11	3	23	1
5	2	7	3	0		0	7	1	8	2	33	1
6	2	7	3	0		0	9	1	8	1	9	3
7	2	7	3	0		0	8	1	8	1	10	5
8	2	7	2	0		0	6	1	9	2	16	1
9	3	7	1	0		0	6	0	10	3	8	2
10	3	7	1	0		0	8	0	9	4	*10	2
11	2	7	1	0		0	11	0	8	5	29	1
12	3	7	1	0		0	20	0	7	8	153	1
13	3	7	*1	0		*0	15	*0	6	8	15	0
14	3	*7	0	0		1	*11	0	5	*9	23	5
15	*3	5	0	0		1	12	1	3	9	21	*3
16	3	7	1	0		2	19	1	*6	7	4	7
17	3	7	1	0		4	27	5	6	5	2	6
18	3	6	1	0		8	19	4	6	4	1	4
19	9	5	1	0		17	12	2	5	2	1	3
20	16	5	1	0		10	12	4	2	1	1	2
21	47	6	1	0		11	11	3	2	1	1	7
22	13	6	1	0		15	13	3	2	2	1	8
23	9	5	0	0		14	15	3	2	1	2	7
24	8	3	1	0		9	12	2	2	1	2	5
25	9	5	1	0		6	9	2	1	5	2	4
26	9	5	1	0		5	7	5	0	4	2	2
27	8	3	1	0		4	4	14	2	5	*4	2
28	8	3	1	0		4	3	*12	2	5	2	1
29	7	4	1	0		12	*2	8	*2	*10	1	*0
30	7	4	0	0	----------	*52	4	6	3	15	1	0
31	*7	----------	*0	0	----------	53	----------	6	----------	20	1	----------
Total	203	174	42	2	0	228	373	97	154	162	916	86
Mean	6.5	5.8	1.4	0.06	0	7.4	12.4	3.1	5.1	5.2	29.5	2.9
Ac-ft	403	345	83	4.0	0	452	740	192	305	321	1,820	171

Calendar year 1963: Max 350 Min 0 Mean 12.7 Ac-ft 9,180
Water year 1963-64: Max 360 Min 0 Mean 6.7 Ac-ft 4,840

Peak discharge (base, 800 cfs). --Aug. 2 (unknown) 1,190 cfs (5.64 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Mar. 1-17, July 29 to Aug. 2. Stage-discharge relation affected by ice Nov. 28 to Jan. 1, Jan. 4 to Feb. 29.

8-2855. Rio Chama below El Vado Dam, N. Mex.

Location.--Lat 36°34'50", long 106°43'30", in Tierra Amarilla Grant, on left bank 1.5 miles downstream from El Vado Dam, 2.7 miles upstream from Rio Nutrias, and 13 miles southwest of Tierra Amarilla.

Drainage area.--877 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--October 1913 to November 1915, April to November 1916, March, April 1920, September 1920 to August 1924, October 1935 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Published as "Chama River" prior to 1935, as near Tierra Amarilla 1913-14, 1935-47, as "near El Vado" 1915-17, and as "at El Vado" 1920-24.

Gage.--Water-stage recorder. Datum of gage is 6,696.12 ft above mean sea level, datum of 1929. Prior to October 1935, at site 1.5 miles upstream at different datum. October 1935 to September 1938 at site 1.1 miles upstream at datum 30.34 ft higher.

Average discharge.--5 year (1913-15, 1920-23), 448 cfs (324,300 acre-ft per year), prior to completion of El Vado Dam; 29 years (1935-64), 377 cfs (272,900 acre-ft per year), after completion of El Vado Dam.

Extremes.--Maximum discharge during year, 1,080 cfs May 19-22 (gage height, 3.54 ft); minimum daily, 7.6 cfs Oct. 13-15.
1913-16, 1920-22, 1923-24: Maximum discharge observed, 9,000 cfs May 22, 1920 (gage height, 12 ft, site and datum then in use. Minimum unknown.
1935-64: Maximum discharge, 6,010 cfs May 17, 1941 (gage height, 6.89 ft at present site and datum); no flow Mar. 25, 26, 31, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated since 1935 by El Vado Reservoir (see p 169). Diversions for irrigation of about 10,600 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	5.7	1.5	52	2.5	410
1.2	12	1.7	97	3.0	700
1.3	22	2.0	191	3.6	1,150

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	30	34	42	28	36	302	598	430	420	166	184
2	23	30	34	40	28	37	266	688	430	420	603	630
3	22	30	35	42	28	38	163	721	430	415	548	420
4	22	40	34	42	28	38	108	646	390	160	85	420
5	19	45	34	40	28	38	105	714	281	16	85	430
6	16	45	34	40	28	40	100	791	230	18	113	445
7	15	45	34	40	28	40	95	805	230	19	163	202
8	15	45	32	38	28	40	92	812	256	20	163	50
9	15	183	32	35	28	40	92	812	345	20	166	50
10	11	982	32	32	28	40	92	819	316	20	*163	50
11	9.5	968	34	29	*29	40	92	855	226	20	177	50
12	8.2	938	* 34	25	29	* 40	95	892	230	20	439	50
13	7.6	*908	34	27	29	40	* 95	938	214	20	840	49
14	7.6	878	34	28	29	40	201	*982	163	22	549	49
15	*7.6	840	32	30	29	40	264	998	129	* 25	218	*109
16	9.5	798	34	* 32	29	40	243	1,020	* 105	25	218	126
17	13	514	34	30	29	45	445	702	92	27	188	49
18	18	114	34	33	29	50	510	828	35	30	90	49
19	19	67	35	37	29	60	332	1,080	32	30	87	40
20	30	56	35	36	30	80	203	1,080	32	30	87	35
21	38	52	37	36	30	95	184	1,080	32	30	87	68
22	82	50	37	35	30	111	278	938	32	30	87	135
23	86	49	37	35	30	117	345	826	31	30	87	52
24	31	45	37	30	30	97	486	826	27	23	75	40
25	31	49	38	25	30	78	544	728	27	18	38	27
26	31	34	40	26	31	67	538	770	27	18	38	26
27	31	* 31	40	26	* 32	62	372	* 922	27	18	38	26
28	31	31	40	27	33	62	270	990	162	18	* 38	25
29	30	31	40	27	34	71	*348	773	* 617	20	40	25
30	* 30	32	* 40	*27	----------	137	511	504	* 410	* 27	40	* 22
31	30	----------	40	28	----------	* 254	----------	430	----------	65	40	----------
Total	764.0	7,960	1,101	1,020	851	2,013	7,771	25,568	5,988	2,074	5,756	3,933
Mean	24.6	265	35.5	32.9	29.3	64.9	259	825	200	66.9	186	131
Ac-ft	1,520	15,790	2,180	2,020	1,690	3,990	15,410	50,710	11,880	4,110	11,420	7,800

Calendar year 1963 : Max 982 Min 7.6 Mean 196 Ac-ft 141,600
Water year 1963-64: Max 1,080 Min 7.6 Mean 177 Ac-ft 128,500

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 6, 8-18, 20, 21, Jan. 24 to Mar. 15, 17-19. No gage-height record June 17-28.

8-2865. Rio Chama above Abiquiu Reservoir, N. Mex.

Location.--Lat 36°19'05", long 106°35'50", in NW¼ sec.14, T.24 N., R.3 E. (projected), on left bank 7.7 miles downstream from Rio Gallina, 10 miles northwest of Youngsville, 16 miles upstream from Abiquiu Dam and 30 miles downstream from El Vado Dam.

Drainage area.--1,600 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--August 1961 to September 1964.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,280 ft (from river-profile map).

Extremes.--Maximum discharge during year, 2,610 cfs Aug. 12 (gage height, 6.12 ft); minimum, 7.5 cfs Oct. 17, 18.
1961-64: Maximum discharge, that of Aug. 12, 1964; minimum, that of Oct. 17, 18, 1963.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are poor. Flow regulated by El Vado Reservoir (see No.2850). Diversions for irrigation of about 15,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 10)

0.5	6.0	1.3	60	3.0	445
.6	9.0	1.6	97	3.5	660
.8	18	2.0	166	4.0	920
1.0	31	2.5	285	4.5	1,220

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	24	32	35	45	33	43	280	553	415	404	136	33
2	20	32	37	*45	31	43	320	645	407	402	461	478
3	21	31	*40	45	31	42	240	738	*401	396	728	360
4	22	31	40	45	31	44	131	697	397	350	*328	368
5	22	42	37	44	*31	44	114	665	301	55	160	427
6	21	*49	34	43	31	45	114	825	237	21	108	391
7	18	75	36	43	30	44	113	835	217	18	157	354
8	17	72	36	43	30	42	108	*846	218	18	159	70
9	15	70	36	40	30	44	103	846	301	22	162	54
10	15	708	36	35	32	44	103	862	327	19	168	51
11	14	968	36	35	32	*44	102	897	235	19	175	51
12	13	944	37	32	32	44	101	937	210	23	*970	48
13	11	914	37	30	32	44	100	993	209	25	782	48
14	9.9	878	37	32	32	45	*100	1,040	171	*20	746	50
15	8.7	*845	37	*35	32	45	262	*1,060	*153	19	265	61
16	8.0	810	37	40	32	50	209	1,090	106	23	203	141
17	7.7	686	37	45	32	55	309	937	*100	25	198	90
18	7.6	243	37	40	32	69	479	658	84	23	128	*50
19	24	*103	37	37	32	82	396	1,130	54	26	88	50
20	73	75	37	35	32	80	75	1,130	47	24	83	43
21	43	69	39	37	33	100	127	1,130	57	24	81	66
22	*53	64	39	38	33	117	243	1,080	57	32	81	219
23	93	61	39	36	34	124	272	872	47	36	81	114
24	70	59	40	33	35	150	398	868	36	82	80	63
25	41	57	40	30	35	120	509	826	28	64	62	45
26	38	50	42	31	36	*90	510	768	28	55	38	33
27	36	44	43	32	*40	74	449	915	27	103	37	32
28	35	41	43	33	40	73	258	1,040	25	60	*35	30
29	34	41	43	33	41	73	272	923	*468	52	33	28
30	33	41	43	33	------	92	435	613	*402	126	34	*25
31	33	------	43	33	------	182	------	429	------	194	33	------
TOTAL	880.9	8,135	1,190	1,158	957	2,188	7,432	26,848	5,765	2,760	6,800	3,873
MEAN	28.4	271	38.4	37.4	33.0	70.6	248	866	192	89.0	219	129
AC-FT	1,750	16,140	2,360	2,300	1,900	4,340	14,740	53,250	11,430	5,470	13,490	7,680

CALENDAR YEAR 1963 MAX 986 MIN 7.6 MEAN 205 AC-FT 148,150
WATER YEAR 1963-64 MAX 1,130 MIN 7.6 MEAN 186 AC-FT 134,850

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8 to Feb. 29, Mar. 1-5, 9-12, 14, 15; doubtful gage-height record Nov. 11-13, Mar. 24-26, Apr. 1-3.

8-2870. Rio Chama below Abiquiu Dam, N. Mex.

Location.--Lat 36°14'10", long 106°25'00", in SE¼SE¼ sec.8, T.23 N., R.5 E., on right bank half a mile downstream from Abiquiu Dam and 6 miles northwest of Abiquiu.

Drainage area.--2,147 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--November 1961 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,040 ft (from river-profile map and topographic map).

Extremes.--Maximum discharge during year, 2,300 cfs Nov. 11 (gage height, 6.00 ft); minimum, 11 cfs July 11.
1961-64: Maximum discharge, that of Nov. 11, 1963; maximum gage height, 6.30 ft Jan. 7, 1962 (backwater from ice); minimum discharge, 5.6 cfs July 23, 1963.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation or no gage-height record, which are poor. Flow largely controlled by El Vado Reservoir about 46 miles uptream, and Abiquiu flood control Reservoir ½ mile upstream. Diversions for irrigation of about 17,600 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	41	45	40	38	44	238	452	539	444	212	31
2	27	41	45	*39	37	45	299	577	595	444	232	29
3	25	40	*44	40	36	45	289	595	*490	437	562	408
4	27	38	43	40	35	45	235	779	437	433	700	550
5	27	42	42	40	*35	47	123	759	380	270	471	471
6	27	*50	41	39	35	47	*83	739	268	38	166	474
7	24	52	40	39	32	47	122	830	235	20	148	455
8	27	54	40	39	32	47	95	*851	225	*17	174	267
9	27	56	40	39	34	47	122	862	245	32	210	68
10	29	40	36	39	37	47	109	873	314	105	192	60
11	26	492	45	38	37	*48	97	873	340	21	186	59
12	25	1,070	40	35	37	53	98	867	225	36	*679	54
13	22	1,120	40	32	35	57	104	939	204	126	800	52
14	21	984	38	30	35	53	104	1,040	202	42	920	51
15	19	*1,010	38	32	35	55	146	*1,060	*165	22	800	66
16	29	867	40	35	35	67	266	1,050	176	*24	400	120
17	27	851	40	40	35	70	277	1,050	104	31	215	134
18	28	640	40	40	35	80	440	911	88	32	204	*56
19	33	*342	40	40	35	104	535	878	74	44	83	52
20	55	97	40	*37	35	104	415	973	51	52	60	79
21	63	82	42	35	36	112	243	1,080	40	53	61	104
22	*57	76	40	37	37	131	159	1,110	38	62	97	192
23	63	70	38	37	37	139	230	1,060	36	80	89	183
24	74	67	40	35	38	159	434	894	35	120	86	172
25	71	64	40	32	38	137	522	830	35	136	77	82
26	48	57	42	33	40	*109	518	851	35	46	46	42
27	41	53	40	35	40	112	526	830	35	68	37	35
28	39	48	40	37	*42	105	455	944	35	*88	*37	*33
29	42	46	40	38	43	109	314	996	40	90	33	29
30	41	45	40	38	----------	110	311	825	*448	158	43	26
31	41	----------	40	38	----------	146	----------	530	----------	188	32	----------
Total	1,136	8,535	1,259	1,148	1,056	2,521	7,909	26,908	6,134	3,759	8,052	4,434
Mean	36.6	284	40.6	37.0	36.4	81.3	264	868	204	121	260	148
Ac-ft	2,250	16,930	2,500	2,280	2,090	5,000	15,690	53,370	12,170	7,460	15,970	8,790

Calendar year 1963: Max 1,120 Min 8.8 Mean 216 Ac-ft 156,500
Water year 1963-64: Max 1,120 Min 17 Mean 199 Ac-ft 144,500

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 25 to Dec. 7; Aug. 13-17. Stage-discharge relation affected by ice Dec. 8, 9, 12-26, 28, Dec. 30 to Jan. 1, Jan. 4-6, Jan. 8 to Mar. 10. Stage-discharge relation indefinite June 21-29.

8-2875. Rio Chama near Abiquiu, N. Mex.

Location.--Lat 36°13'00", long 106°15'00", in Juan Jose Lobato Grant, at downstream end of bridge pier on State Highway 96, 1¾ miles upstream from El Rito Creek, 5 miles downstream from Abiquiu, Rio Arriba County, and 13.5 miles downstream from Abiquiu Dam.

Drainage area.--2,284 sq mi, of which about 100 sq mi is probably noncontributing.

Records available.--October 1941 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,873.17 ft above mean sea level, datum of 1929.

Average discharge.--23 years, 396 cfs (286,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,150 cfs May 26 (gage height, 5.50 ft); minimum, 3.8 cfs June 30.
1941-64: Maximum discharge, 7,870 cfs July 28, 1952, from rating curve extended above 2,900 cfs; maximum gage height, 6.38 ft Aug. 5, 1959; minimum daily discharge, 1 cfs June 11, 1947.

Remarks.--Records good except those for periods of ice effect, which are poor. Flow regulated by El Vado Reservoir (see p169) and Abiquiu (flood-control and silt detention) Reservoir (see p 172). Diversions for irrigation of about 19,100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 26-30, Aug. 6-15)

1.8	4.1	2.7	137
1.9	8.6	3.0	245
2.0	16	3.3	400
2.2	38	3.7	700
2.4	70	4.1	1,120

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	38	46	55	51	50	170	385	531	*529	334	27
2	13	40	46	55	48	60	281	526	628	388	237	24
3	11	41	44	50	*41	65	281	556	505	382	574	295
4	11	43	41	45	52	60	268	690	*414	382	957	940
5	13	43	*40	45	51	57	148	738	400	313	*660	678
6	13	52	41	*55	54	64	113	668	254	46	285	684
7	14	64	40	50	46	62	*104	781	229	16	198	676
8	11	*64	34	48	44	72	131	820	201	10	241	482
9	6.0	64	44	45	49	57	94	840	229	11	245	84
10	7.6	60	50	45	49	67	135	840	263	77	209	68
11	7.6	285	48	45	52	62	95	*830	370	25	*210	60
12	11	1,010	45	44	51	*64	101	850	221	20	610	57
13	14	1,010	40	41	46	67	110	870	188	95	991	56
14	13	901	40	45	43	62	101	1,000	188	62	1,100	52
15	10	956	49	50	41	59	118	1,050	*174	17	1,000	56
16	8.6	840	49	55	41	67	238	1,050	160	*11	525	87
17	11	830	48	60	41	68	258	1,050	132	13	241	150
18	11	707	51	70	41	74	391	*890	86	17	229	*72
19	18	*429	57	50	43	86	526	800	74	23	118	54
20	32	*126	48	40	43	90	470	901	41	83	99	70
21	67	92	51	*40	47	90	276	1,020	34	52	86	123
22	*57	86	46	45	44	108	182	1,060	36	28	83	225
23	56	79	37	40	53	121	223	1,020	32	38	81	191
24	75	74	43	40	47	144	379	870	24	85	75	201
25	77	72	41	45	52	137	519	772	17	115	75	110
26	59	67	43	50	54	101	533	930	10	62	56	59
27	37	60	44	50	50	*88	540	901	5.6	35	40	46
28	38	52	41	50	*48	85	503	956	6.0	62	*36	*40
29	38	51	45	47	50	81	320	1,020	4.8	79	30	37
30	38	48	50	48	----------	83	290	820	273	126	28	34
31	38	----------	60	48	----------	97	----------	597	----------	174	30	----------
Total	831.8	8,284	1,402	1,496	1,372	2,448	7,898	26,101	5,730.4	3,376	9,683	5,738
Mean	26.8	276	45.2	48.3	47.3	79.0	263	842	191.0	109	312	191
Ac-ft	1,650	16,430	2,780	2,970	2,720	4,860	15,670	51,770	11,370	6,700	19,210	11,380

Calendar year 1963: Max 1,130 Min 1.2 Mean 218 Ac-ft 158,000
Water year 1963-64: Max 1,100 Min 4.8 Mean 203 Ac-ft 147,500

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7-14, 17-20, Dec. 22 to Feb. 11, Feb. 14-22, 24, 25, Feb. 27 to Mar. 1.

8-2890. Rio Ojo Caliente at La Madera, N. Mex.

Location.--Lat 36°20'59", long 106°02'38", in NW¼NE¼ sec.1, T.24 N., R.8 E., on left bank 400 ft upstream from bridge on State Highway 111, 2¼ miles south of La Madera, 2¾ miles downstream from confluence of Rio Vallecitos and Rio Tusas, and 3¼ miles north of Ojo Caliente.

Drainage area.--419 sq mi.

Records available.--April 1932 to September 1964.

Gage.--Water-stage recorder (digital). Datum of gage is 6,358.84 ft above mean sea level, datum of 1929. Prior to Apr. 23, 1934, at site about 2¾ miles upstream at different datum. Apr. 23, 1934, to June 22, 1936, at datum 12.58 ft lower and June 23, 1936, to Oct. 27, 1956, at datum 13.84 ft lower, both at site 1,400 ft downstream.

Average discharge.--32 years, 70.8 cfs (51,260 acre-ft per year).

Extremes.--Maximum discharge during year, 400 cfs May 10 (gage height, 4.50 ft); minimum, 3.2 cfs Aug. 26.
1932-64: Maximum discharge, 3,140 cfs Apr. 21, 1958, from rating curve extended above 1,300 cfs by logarithmic plotting; maximum gage height, 7.60 ft July 15, 1933, site and datum then in use; minimum daily discharge, 0.6 cfs Aug. 18, Sept. 17, 1956.
A flood which occurred in May 1920 may have exceeded 3,200 cfs, from information by local resident.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 3,500 acres (1962 determination).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 9-11, Nov. 13-18, Aug. 14 to Sept. 30)

2.5	3.3	3.1	35
2.6	5.7	3.4	72
2.7	9.1	3.8	152
2.9	19	4.2	280

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	5.4	9.0	10	13	11	15	39	193	36	* 4.7	5.0	6.1
2	4.5	8.4	10	13	11	15	39	251	30	4.5	4.7	6.1
3	4.4	8.4	10	13	b10	16	30	171	25	4.6	4.6	5.7
4	4.6	8.7	10	12	b10	*16	24	213	20	4.7	4.5	7.0
5	4.8	8.6	9.8	11	b10	15	27	223	*19	4.8	4.0	7.6
6	4.6	8.5	10	11	b9.0	16	27	190	17	5.1	* 3.9	6.9
7	5.1	9.0	11	12	b9.0	16	24	215	15	5.2	4.4	6.0
8	5.1	8.5	10	10	b11	17	23	154	14	4.5	5.4	5.7
9	4.5	7.8	11	9.7	12	17	24	162	12	4.3	5.4	* 5.5
10	* 4.4	7.8	12	9.3	*13	17	28	236	12	4.1	4.6	5.1
11	4.4	8.0	b11	9.2	13	17	35	214	10	4.1	5.2	5.0
12	5.1	7.8	b9.0	8.0	13	17	42	241	8.3	5.7	11	5.0
13	4.9	7.4	b9.0	* b 7.0	b12	18	39	232	7.8	4.8	34	5.0
14	5.7	7.7	b9.0	b 7.0	b12	18	39	210	8.2	4.7	15	5.2
15	6.6	*7.7	b10	7.1	b12	18	47	*175	7.5	4.7	12	5.7
16	6.6	7.9	*11	7.2	b12	19	67	166	6.9	9.6	11	6.0
17	6.4	7.9	12	7.6	b12	*19	88	124	6.6	12	9.1	5.8
18	6.8	7.6	12	7.5	*13	20	110	115	6.3	12	8.3	5.5
19	7.5	8.1	13	8.1	13	19	78	84	7.2	10	* 7.1	5.5
20	8.7	8.7	13	8.4	14	19	88	75	6.8	* 7.4	6.2	6.1
21	9.5	11	b13	* 9.6	14	19	* 72	71	6.2	11	6.4	6.8
22	9.5	11	b12	11	14	20	92	67	5.8	6.2	6.3	* 7.9
23	11	9.9	13	11	14	20	101	57	5.6	5.6	5.9	8.3
24	* 11	9.5	15	b 9.0	14	19	124	47	* 4.8	5.4	5.9	7.9
25	11	12	14	b10	15	18	130	48	4.4	7.6	4.9	7.9
26	11	10	*15	b10	16	17	100	53	4.7	5.4	3.9	7.6
27	10	9.7	15	11	14	17	90	67	5.0	5.3	4.3	6.9
28	9.5	11	15	12	14	*17	115	50	5.8	5.1	5.0	6.3
29	9.2	11	14	12	15	18	190	39	5.5	5.4	5.3	6.0
30	9.3	*10	12	12	------	20	148	34	5.2	5.5	5.7	6.5
31	9.4	------	13	12	------	23	------	41	------	5.2	6.2	------
TOTAL	220.5	268.6	363.8	310.7	362.0	552	2,080	4,218	328.6	189.2	225.2	188.6
MEAN	7.11	8.95	11.7	10.0	12.5	17.8	69.3	136	11.0	6.10	7.27	6.29
AC-FT	437	533	722	616	718	1,090	4,130	8,370	652	375	447	374

CALENDAR YEAR 1963 MAX 431 MIN 2.2 MEAN 30.5 AC-FT 22,084
WATER YEAR 1963-64 MAX 251 MIN 3.9 MEAN 25.4 AC-FT 18,464

Peak discharge (base, 600 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-2895. Chamita ditch near Chamita, N. Mex.

Location.--Lat 36°04'45", long 106°06'40", in NE¼SE¼ sec.5, T.21 N., R.8 E., on left bank at head of flume over Arroyo de la Presa, 1 mile downstream from heading from Rio Chama, 1 mile northwest of Chamita, 1 1/8 miles northeast of Hernandez, and 6½ miles north of Espanola.

Records available.--February 1963 to September 1964. Prior to April 1941 at site ½ mile upstream at different datum.

Gage.--Water-stage recorder (digital since April 1964) at head of half round metal flume control. Altitude of gage is 5,690 ft (from topographic map).

Extremes.--1936-41, 1963-64: Maximum daily discharge, 40 cfs Aug. 3, 1938; no flow at times.

Remarks.--Records fair. This is one of two ditches gaged to determine flow bypassing station "Rio Chama near Chamita, N. Mex." Turnouts from ditch irrigate land above and below gage or wastes back to Rio Chama.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Discharge, in cubic feet per second			Diversion in acre-feet
	Maximum	Minimum	Mean	
October	12	0.3	4.76	293
November	19	2.0	8.73	520
December	5	0	.94	58
Calendar year 1963	-	-	-	-
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	17	0	5.98	356
May	19	1.2	13.3	815
June	19	1.0	8.82	525
July	19	0	9.92	610
August	12	0	5.26	323
September	22	0	9.74	579
Water year 1963-64	22	0	5.62	4,080

8-2898. Hernandez ditch near Hernandez, N. Mex.

Location.--Lat 36°04'20", long 106°07'10", in NE¼NW¼ sec.8, T.21 N., R.8 E., on right bank 75 feet upstream from culvert under U. S. Highway 285, 0.6 mile north of Hernandez, 1 mile downstream from heading on Rio Chama, 3 miles northwest of San Juan Pueblo and 6 miles northwest of Espanola.

Records available.--March 1963 to September 1964.

Gage.--Water-stage recorder (digital since Apr. 17) and Parshall flume. Altitude of gage is 5,670 ft (from topographic map).

Extremes.--1963-64: Maximum daily discharge 46 cfs July 3, 1964; no flow at times.

Remarks.--Records good for winter shutoff and fair for August and September, others poor. This is one of the two ditches gaged to determine flow bypassing station "Rio Chama near Chamita, N. Mex." Takeouts from ditch irrigate land above and below gage, or waste back to Rio Chama.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Discharge, in cubic feet per second			Diversion in acre-feet
	Maximum	Minimum	Mean	
October	20	2.1	7.59	467
November	22	0	7.18	427
December	4.9	0	1.18	73
Calendar year 1963	-	-	-	-
January	0	0	0	0
February	0	0	0	0
March	12	0	1.64	101
April	35	0	15.8	940
May	38	7.5	22.8	1,400
June	41	.5	17.4	1,030
July	46	0	15.2	934
August	28	0	13.7	839
September	21	0	11.1	659
Water year 1963-64	46	0	9.47	6,870

Note.--Stage-discharge relation affected by ice Dec. 2-10.

8-2900. Rio Chama near Chamita, N. Mex.

Location.--Lat 36°04'25", long 106°06'39", in NE¼NE¼ sec.8, T.21 N., R.8 E., at downstream end of bridge pier nearest left bank, U.S. Highway 285, half a mile west of Chamita, 2½ miles northwest of San Juan Pueblo, and 3 miles upstream from mouth.

Drainage area.--3,144 sq mi, of which at least 100 sq mi is probably noncontributing.

Records available.--October 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,653.61 ft above mean sea level, datum of 1929. Prior to Oct. 4, 1933, at railroad bridge 2 miles downstream at different datums. Oct. 4, 1933, to Mar. 1, 1942, at site 50 ft downstream at datum 0.22 ft higher. March 2, 1942, to Dec. 31, 1963, at site 200 ft downstream, present datum.

Average discharge.--52 years, 551 cfs (398,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,390 cfs Aug. 14 (gage height, 5.47 ft); minimum, about 1 cfs July 16 or 17.
1912-64: Maximum discharge, 15,000 cfs May 22, 1920; maximum gage height, 10.45 ft Aug. 22, 1961; no flow at times.
The floods of Sept. 29, 1904, and Oct. 4 or 5, 1911, probably exceeded 15,000 cfs. Another major flood occurred in 1884, from newspaper accounts.

Remarks.--Records good except for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made 2 or 3 times a month. Diversions above station for irrigation of about 27,600 acres, a few hundred of which is below station. Flow partly regulated by El Vado Reservoir (see p 169), and Abiquiu (flood-control and desilting) Reservoir (see p 169) 75 and 29 miles upstream, respectively.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 31)

Jan. 1 to Sept. 30

2.7	2.5	3.7	68
2.8	4.3	3.9	126
3.0	9.8	4.1	235
3.2	19	4.5	610
3.5	40	5.0	1,310

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.9	31	62	b65	b60	73	169	480	500	469	365	5.4
2	7.3	24	59	b65	b44	85	288	670	588	288	223	5.6
3	6.4	22	52	b60	b45	87	302	682	522	295	351	29
4	5.4	22	52	b55	75	85	302	782	420	310	718	874
5	4.8	34	52	b60	b65	78	204	958	400	328	490	575
6	4.8	38	57	a58	b56	80	160	808	242	90	258	544
7	6.0	40	52	a56	b54	82	106	944	211	8.8	92	480
8	5.4	45	54	a54	b65	92	140	930	150	7.3	136	346
9	5.4	42	57	a50	b70	82	106	902	155	a6.0	180	109
10	5.7	44	b60	a50	b75	87	155	1,000	155	a4.4	150	70
11	5.7	109	b65	a50	73	82	112	986	265	40	155	46
12	6.0	914	b60	a50	80	85	123	1,000	186	26	445	41
13	6.4	970	b52	a45	70	85	140	1,060	140	6.7	944	49
14	7.0	888	b45	a50	b66	82	123	1,100	140	62	1,170	41
15	7.0	942	b47	a55	b60	82	123	1,140	131	21	930	39
16	6.4	820	b48	b65	b56	85	217	1,140	85	a2	589	46
17	6.4	820	b50	b75	b56	92	295	1,100	87	a2	217	90
18	6.0	747	b51	90	b53	95	400	1,000	45	59	174	68
19	10	494	b52	80	b58	109	566	834	32	31	112	46
20	20	187	b52	61	b60	119	555	916	20	14	70	48
21	25	116	b51	63	b62	119	355	1,030	12	62	54	72
22	39	102	b50	66	b60	131	265	1,080	10	21	44	177
23	34	92	b45	66	b55	145	223	1,080	8.2	6.9	39	160
24	44	87	b47	b50	66	150	382	930	7.5	24	33	160
25	50	82	b48	b50	68	174	544	769	6.2	66	24	109
26	52	76	b50	b55	78	131	610	927	3.9	75	29	68
27	43	70	b51	b60	60	109	566	860	2.6	30	16	49
28	34	62	b52	b66	b60	102	566	874	2.5	12	6.4	37
29	38	60	b50	b66	b65	106	470	972	2.8	32	14	26
30	42	62	b50	b55	----------	109	400	902	4.7	68	14	18
31	40	----------	b52	b63	----------	112	----------	646	----------	155	5.8	----------
Total	581.0	8042	1625	1854	1825	3135	8967	28502	4534.4	2622.1	8048.2	4428.0
Mean	18.7	268	52.4	59.8	62.9	101	299	919	151	84.6	260	148
Ac-ft	1,150	15,950	3,220	3,680	3,620	6,220	17,790	56,530	8,990	5,200	15,960	8,780

Calendar year 1963: Max 1,540 Min 2.6 Mean 234 Ac-ft 169,100
Water year 1963-64: Max 1,170 Min 2 Mean 203 Ac-ft 147,100

a No gage-height record.
b Stage-discharge relation affected by ice.

8-2910. Santa Cruz River at Cundiyo, N. Mex.

Location.--Lat 35°57'40", long 105°54'10", in SE¼NW¼ sec.17, T.20 N., R.10 E., on left bank 135 ft downstream from highway bridge at confluence of Rio Medio and Rio Frijoles, and 0.6 mile northwest of Cundiyo.

Drainage area.--86 sq mi, approximately.

Records available.--October 1930 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Jan. 3, 1954. Altitude of gage is 6,460 ft (from topographic map). Sept. 1, 1930, to Aug. 12, 1932, water-stage recorder at site about 1 mile downstream at different datum. Aug. 13, 1932, to Oct. 29, 1934, water-stage recorder at site 35 ft upstream at datum 0.42 ft higher. Oct. 30, 1934, to Jan. 2, 1954, water-stage recorder at present site at datum 0.64 ft lower.

Average discharge.--34 years, 29.4 cfs (21,280 acre-ft per year).

Extremes.--Maximum discharge during year, 158 cfs July 25 (gage height, 2.67 ft); minimum, about 1.5 cfs Feb. 28, Mar. 14 (result of freezeup).

1930-64: Maximum discharge, 2,420 cfs Sept. 24, 1931 (gage height, 7.8 ft), from rating curve extended above 170 cfs by logarithmic plotting; minimum daily, 1.1 cfs Dec. 3, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	2.7	2.0	36
1.5	5.1	2.2	60
1.6	8.5	2.4	94
1.8	19		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	12	b 8	b 8.0	7.6	b 5.7	34	40	60	15	13	11
2	13	11	b 7	b 8.0	7.3	b 6.0	33	36	57	15	12	9.8
3	14	12	b 7	b 7.7	6.6	b 6.3	22	36	54	13	9.4	7.3
4	14	12	b 8	b 7.5	6.3	* b 6.0	18	38	48	12	9.0	12
5	12	11	b 8	b 7.3	b 6.0	b 6.0	17	38	45	12	9.8	21
6	11	10	b 8	a 7.2	* b 6.0	b 6.5	16	37	44	11	7.3	17
7	11	10	b 7	a 7.0	b 5.5	b 6.5	15	39	43	13	* 8.0	12
8	12	10	b 6	a 6.6	b 5.5	b 7.0	16	39	* 40	13	15	11
9	12	* 9.8	b 8	a 6.3	b 6.0	b 6.0	20	39	38	15	20	* 12
10	* 12	9.8	9.8	a 6.7	7.0	b 6.2	27	38	35	17	20	11
11	11	9.8	9.8	a 6.5	7.0	b 6.4	39	39	34	16	12	11
12	11	9.8	* b 9	* a 6.0	6.3	b 6.6	47	44	33	15	13	10
13	10	9.4	b 8	b 5.8	b 6.0	b 7.0	42	44	30	15	16	10
14	10	9.4	b 8	b 5.8	b 6.0	b 6.5	44	50	30	12	21	11
15	10	9.0	b 8.5	b 6.0	b 6.0	b 7.0	55	52	28	12	23	12
16	9.8	9.0	a 9	b 6.2	b 6.0	8.0	63	54	28	9.8	18	15
17	10	5.7	b 9.5	b 6.4	6.2	* 9.0	57	62	26	11	15	13
18	10	4.3	a 10	b 6.6	* 6.4	11	54	68	25	11	14	11
19	12	9.0	a 10	b 7.0	6.5	9.8	54	65	21	9.4	15	10
20	14	7.6	a 10	* 7.0	6.4	b 8	56	* 65	21	11	15	12
21	12	9.8	a 9	6.6	6.3	b 8.5	* 46	65	18	13	13	16
22	12	9.0	a 8	6.3	6.0	b 10	47	63	19	13	11	19
23	11	b 5.5	b 8	6.3	6.0	b 10	47	62	18	12	11	14
24	* 11	b 8	b 8	b 6.0	6.0	9.4	47	60	19	12	12	12
25	11	11	a 9	b 6.3	6.0	b 7.0	44	65	21	17	11	15
26	11	b 6	* 8.5	b 6.5	6.0	7.6	39	78	19	14	11	15
27	10	b 7	b 8	6.6	5.7	8.5	33	73	17	14	10	17
28	10	b 8	b 8	7.0	5.5	* 8.0	33	70	14	12	11	15
29	10	b 7	b 7	6.6	b 5.5	11	38	65	14	12	10	13
30	10	* b 7	b 7	7.3	----------	15	33	63	* 17	11	9.4	12
31	11	----------	b 7.5	7.3	----------	21	----------	63	----------	12	9.4	----------
Total	351.8	268.9	256.6	208.4	179.6	257.5	1,136	1,650	916	400.2	404.3	387.1
Mean	11.3	8.96	8.28	6.72	6.19	8.31	37.9	53.2	30.5	12.9	13.0	12.9
Ac-ft	698	533	509	413	356	511	2,250	3,270	1,820	794	802	768

Calendar year 1963 : Max 80 Min 4.1 Mean 19.4 Ac-ft 14,000
Water year 1963-64: Max 78 Min 4.3 Mean 17.5 Ac-ft 12,720

Peak discharge (base, 200 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-2943. Rio Nambe at Nambe Falls, near Nambe, N. Mex.

Location.--Lat 35°51'15", long 105°54'30", in SW¼ sec.29, T.19 N., R.10 E., on left bank at Nambe Falls, 4.4 miles southeast of Nambe Pueblo, 5.1 miles southeast of Nambe, and 8.4 miles upstream from Rio Tesuque.

Drainage area.--25.1 sq mi.

Records available.--May to December 1911, miscellaneous discharge measurements only. March 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,550 ft (from topographic map).

Extremes.--Maximum discharge during year, 94 cfs Aug. 13 (gage height, 1.37 ft); minimum, 1.2 cfs Apr. 8.
1963-64: Maximum and minimum discharge, those of 1964 water year.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	3.4	0.8	17
.6	6.2	.9	26
.7	10	1.0	37

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.4	6.8	5.3	4.0	3.7	3.0	7.2	11	20	6.8	7	5
2	8.9	6.4	5.0	4.0	3.5	3.0	6.8	10	20	6.1	6	5
3	8.9	6.8	4.8	4.0	3.5	* 3.1	5.0	9.8	19	6.1	5	5
4	9.4	6.8	5.1	3.9	3.3	3.1	4.7	11	17	6.1	5	6
5	8.9	6.4	5.5	3.8	3.3	3.2	5.1	11	*17	5.8	7	8
6	8.4	6.1	5.0	3.6	* 3.2	3.4	5.1	11	16	5.4	6.5	7
7	8.4	6.1	4.7	3.5	3.0	3.4	3.8	11	16	6.4	5.5	6
8	7.6	5.8	4.2	3.3	3.2	3.0	3.5	11	16	8.0	6	5.5
9	7.6	* 5.8	4.5	3.3	3.5	2.5	4.0	11	16	6.1	7	* 5.8
10	* 7.6	5.8	4.7	3.7	3.6	2.7	5.4	11	14	6.1	* 7.6	* 4.8
11	7.6	5.8	4.5	3.5	3.8	2.8	6.8	*11	14	6.4	7.2	4.8
12	6.8	5.8	* 4.3	* 3.0	3.8	3.0	6.4	13	14	7.2	9.8	4.8
13	6.4	5.8	3.5	2.5	3.5	2.9	7.6	15	14	6.8	19	4.8
14	6.1	5.8	3.5	2.8	3.2	2.6	8.9	15	14	5.8	16	4.5
15	5.8	5.8	3.6	3.0	3.0	2.8	9.8	16	12	5.4	16	6.1
16	5.8	5.8	3.8	3.2	3.0	2.8	11	20	*11	5.4	14	6.1
17	6.1	4.0	4.0	3.5	3.0	* 2.8	13	21	11	5.8	12	* 5.8
18	6.1	4.2	4.0	3.5	* 3.0	2.8	12	23	11	5.4	11	5.1
19	7.2	4.5	4.0	3.5	3.2	2.8	13	21	10	5.1	11	5.1
20	8.0	4.8	4.0	* 3.5	3.5	2.6	13	23	10	5.1	9.8	6.4
21	6.8	4.5	3.7	3.6	3.5	2.8	11	26	9.4	5.8	8.4	6.8
22	5.8	4.0	3.5	3.6	3.1	3.2	11	* 28	8.9	*6.8	8.4	7.2
23	*6.1	3.6	3.7	3.3	3.2	3.2	12	27	8.4	6	13	6.4
24	6.8	4.2	4.0	3.0	3.2	3.2	12	27	8.9	6	6.8	6.4
25	6.8	5.0	4.0	3.2	3.2	3.0	11	26	10	7	*6.4	6.4
26	6.8	4.8	* 3.7	3.5	3.1	3.2	10	29	9.4	6.5	6	6.4
27	6.4	4.8	3.6	3.7	2.9	3.4	* 9.8	27	8.0	6	6	7.6
28	6.4	5.2	3.5	3.7	2.7	3.6	10	25	7.6	6	5.5	7.2
29	6.4	* 5.0	3.4	3.7	2.9	4.0	11	24	7.2	6	5.5	6.4
30	6.4	5.6	3.2	3.7	----------	* 4.8	11	23	* 6.8	8	5	6.4
31	6.4	----------	3.5	3.7	----------	5.8	----------	22	----------	8	5	----------
Total	222.1	161.8	127.8	107.8	94.6	98.5	260.9	569.8	376.6	193.4	264.4	178.8
Mean	7.16	5.39	4.12	3.48	3.26	3.18	8.70	18.4	12.6	6.24	8.53	5.96
Ac-ft	441	321	253	214	188	195	517	1,130	747	384	524	355

Calendar year : Max - Min - Mean - Ac-ft -
Water year 1963-64 : Max 29 Min 2.5 Mean 7.26 Ac-ft 5,270

* Discharge measurement made on this day.
Note.--No gage-height record Mar. 11-16, 18, May 17-19, July 23 to Aug. 9, Aug. 26 to Sept. 8. Stage-discharge relation affected by ice Nov. 17 to Feb. 6, Feb. 18 to Mar. 10, Mar. 17, 19-28, Apr. 3, 4, 7-9. Doubtful gage-height record Feb. 7-17.

8-2952. Rio En Medio near Santa Fe, N. Mex.

Location. --Lat 35°47'30", long 105°47'38", in Santa Fe National Forest, on right bank 300 ft east of Ski Basin parking area and 16½ miles northeast of Santa Fe.

Drainage area. --0.63 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 10,600 ft (from topographic map).

Extremes. --Maximum discharge during year, 11.7 cfs July 22 (gage height, 1.49 ft); minimum, about 0.28 cfs Feb. 28 (during freezeup).

Remarks. --Records good except those for periods of no gage-height record or uncertain stage-discharge relation, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.21	0.6	1.21
.4	.44	.7	1.78
.5	.77	.8	2.48

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.21	0.77	0.59	0.50	0.42	0.28	0.80	0.64	1.48	0.56	0.77	0.77
2	1.21	.80	.59	.50	.40	.32	.70	.64	1.42	.52	.69	.73
3	1.21	.80	.56	.50	.38	.33	.64	.63	1.31	.50	.62	.69
4	1.21	.84	.56	.48	.37	.33	.50	.65	1.21	.50	.69	.69
5	1.16	.77	.52	.46	*.38	*.35	.45	.69	1.21	.47	.62	.87
6	1.16	.77	.52	.45	.34	.36	.40	*.75	1.16	.50	.66	.77
7	1.11	.77	.50	.44	.32	.38	.37	.83	1.11	.79	.62	.69
8	1.06	.73	.50	.42	.33	.34	.35	*.93	1.11	.59	.70	.69
9	1.02	.73	.47	.40	.35	.33	.33	1.02	1.02	.56	1.05	.90
10	*.97	.73	.44	.38	.37	.33	*.32	1.02	.97	.56	.97	.77
11	.97	.69	.44	.37	.40	.33	.45	1.36	.93	.56	1.02	.73
12	.97	.69	*.47	.37	.39	.34	.43	1.71	.93	.62	1.27	.69
13	.93	.66	.50	.32	.35	.34	.60	1.84	.88	.56	1.71	.69
14	.93	.66	.50	.32	.32	.35	.90	1.78	.88	.50	1.71	.69
15	.93	.62	.50	.34	.30	.36	1.20	*1.78	.84	.50	1.59	*.77
16	.88	.59	.50	.36	.30	.37	1.50	1.84	.80	.47	1.53	.77
17	.88	.52	.50	.38	.30	.40	1.10	1.90	.77	.50	1.42	.73
18	.88	.52	.50	.40	.31	.38	1.00	1.84	.77	.50	1.31	.66
19	.88	.56	.50	.42	.32	.37	1.20	1.78	.73	.47	1.31	.66
20	.93	.52	.50	.43	.31	.35	1.05	1.65	.69	.50	1.21	.80
21	.93	.52	.50	.43	.28	.36	1.00	1.65	.66	*.56	1.11	.77
22	.88	.56	.50	.46	.27	.38	1.10	1.71	.66	.99	1.06	.73
23	.84	.52	.50	.40	.26	.40	1.20	1.71	.66	.85	.97	.83
24	.80	.52	.50	*.35	.25	.38	1.15	1.71	.81	.77	.93	.77
25	*.77	.52	.50	.37	*.25	.36	1.00	*1.78	.66	.69	.88	.83
26	.77	.56	.50	.37	.25	.38	.90	2.11	.62	.78	.84	.80
27	.77	.56	.50	.40	.25	.38	.70	1.97	.59	.69	.84	.84
28	.77	.59	.50	.42	.24	.40	.60	1.78	.59	.69	.80	.77
29	.73	.59	.50	.42	.26	.45	.64	1.65	.59	.66	.77	.77
30	.73	.59	.50	.42	----------	.70	.62	1.59	.59	.66	.77	.77
31	.73	----------	.47	.42	----------	.90	----------	1.48	----------	.71	.80	----------
Total	29.22	19.27	15.63	12.70	9.27	12.03	23.20	44.42	26.65	18.78	31.24	22.64
Mean	0.943	0.642	0.504	0.410	0.320	0.388	0.773	1.43	0.888	0.606	1.01	0.755
Ac-ft	58.0	38.2	31.0	25.2	18.4	23.9	46.0	88.1	52.9	37.2	62.0	44.9

Calendar year	: Max		Min	Mean	Ac-ft
Water year 1963-64:	Max	2.11	Min 0.24	Mean 0.724	Ac-ft 526

* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Jan. 1 to May 8 (no gage-height record Jan. 13-28).

8-3022. North Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°46'12", long 105°48'31", in Santa Fe National Forest, on left bank 75 ft upstream from culvert on State Highway No.475, 250 ft upstream from Middle Fork Tesuque Creek, and 13 miles northeast of Santa Fe.

Drainage area.--1.60 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,670 ft (from topographic map).

Extremes.--Maximum discharge during year, 6.69 cfs Apr. 16 (gage height, 1.99 ft); minimum, about 0.30 cfs Jan. 24.
1962-64: Maximum discharge, 7.72 cfs Aug. 25, 1963 (gage height, 1.26 ft); minimum determined, 0.09 cfs Nov. 16, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.21	0.7	1.78
.4	.44	.9	3.33
.5	.77	1.2	6.83
.6	1.21		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	1.93	0.90	0.67	0.52	0.44	0.44	1.52	2.29	4.25	1.25	0.99	0.90
2	1.89	.90	.66	.52	.44	.44	1.12	2.26	4.00	1.20	.90	.80
3	1.85	.91	.63	.52	*.43	.44	.96	2.35	3.74	1.19	.86	.80
4	1.79	.91	.66	.50	.43	.44	.83	2.42	3.50	1.16	.98	.81
5	1.71	.88	.66	.48	.44	.44	.77	2.45	3.32	1.12	.89	.92
6	1.65	.84	.66	.46	.41	.44	.67	2.49	3.20	1.10	.88	.80
7	1.53	.84	.64	.46	.40	.45	.61	2.51	3.10	1.17	.87	.70
8	1.48	.84	.63	.45	.42	.44	.61	2.51	3.00	1.14	.97	.76
9	*1.46	.81	.62	.44	.44	.44	.65	2.55	2.90	1.09	1.00	.94
10	1.40	.80	.59	.42	.46	.44	*.85	2.61	2.83	1.05	.90	.77
11	1.38	.80	.56	.40	.47	.44	1.26	2.81	2.75	1.08	.98	.75
12	1.33	.78	*.55	.40	.47	.44	1.24	3.20	2.66	1.13	1.08	.75
13	1.29	.77	.55	.38	.46	.44	1.26	3.67	2.62	1.01	1.34	.70
14	1.25	.77	.56	.38	.44	.44	1.88	4.01	2.54	.93	1.19	.70
15	1.23	.76	.56	.39	.44	.46	2.83	4.18	2.41	.84	1.17	*.73
16	1.19	.74	.57	.40	.44	.47	3.44	4.33	2.32	.88	1.16	.74
17	1.17	.63	.57	.42	.44	.52	2.59	4.53	2.23	.88	1.16	.69
18	1.14	.71	.57	.45	.44	.50	2.33	4.69	2.13	.85	1.16	.66
19	1.38	.70	.58	.47	.44	.48	2.79	4.78	2.02	.83	1.15	.65
20	1.18	.69	.58	.47	.45	.48	2.46	4.68	1.93	.81	1.15	.82
21	1.15	.68	.58	.47	.44	.52	2.39	4.62	1.85	*1.04	1.14	.75
22	1.11	.70	.57	.49	.44	.53	2.48	4.61	1.78	1.05	1.15	.70
23	1.09	.70	.57	.43	.44	.49	2.66	4.55	1.71	.95	1.13	.81
24	1.06	.70	.57	.35	.45	.47	2.77	4.64	*1.76	.86	1.12	.69
25	*.97	.70	.57	.38	.44	.45	2.69	4.72	1.63	.84	1.11	.77
26	.96	.65	.56	.38	.44	.46	2.55	4.88	1.56	1.06	1.08	.76
27	.95	.71	.56	.41	.44	.46	2.22	4.83	1.47	.89	1.07	.73
28	.93	.69	.56	.44	.45	.59	2.26	4.80	1.43	.93	1.01	.69
29	.92	.68	.52	.44	.44	1.00	2.25	4.75	1.42	.88	.95	.67
30	.90	.67	.57	.44	------	1.38	2.28	4.68	1.37	.84	.85	.67
31	.90	------	.55	.44	------	1.70	------	4.50	------	.95	.99	------
TOTAL	40.17	22.86	18.25	13.60	12.78	17.13	55.22	116.90	73.43	31.00	32.38	22.63
MEAN	1.30	.762	.589	.439	.441	.553	1.84	3.77	2.45	1.00	1.04	.754
AC-FT	80	45	36	27	25	34	110	232	146	61	64	45

CALENDAR YEAR 1963	MAX	5.57	MIN	.35	MEAN	1.44	AC-FT	1,038
WATER YEAR 1963-64	MAX	4.88	MIN	.35	MEAN	1.25	AC-FT	905

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 26, Dec. 3, 11-19, Jan. 4-24, Feb. 6-10, Apr. 13.

8-3023. Middle Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°46'03", long 105°48'26", in Santa Fe National Forest, on right bank 1,000 ft upstream from road culvert on State Highway No.475, 1, 100 ft upstream from mouth, 13 miles northeast of Santa Fe.

Drainage area.--0.43 sq mi.

Records available.--November 1961 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,800 ft (from topographic map).

Extremes.--Maximum discharge during year, 1.32 cfs Aug. 12 (gage height, 0.76 ft); minimum daily, 0.09 cfs many days.
1961-64: Maximum discharge, 2.84 cfs Aug. 13, 1963; minimum daily, 0.07 cfs at times in 1962-63.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are poor.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.05	0.5	0.46
.3	.13	.7	1.04
.4	.26		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	0.41	b0.18	0.15	a0.11	0.10	0.09	0.17	0.27	0.96	0.32	0.27	0.15
2	.41	b.19	.15	a.12	.10	.09	.15	.28	.94	.30	.24	.14
3	.41	b.22	.15	a.11	.10	.09	.12	.33	.90	.30	.22	.13
4	.40	.20	.15	a.10	.10	.09	.11	.33	.88	.29	.23	.14
5	.39	.20	.15	a.10	* .10	.09	.10	.33	.85	.28	.22	.15
6	.38	b.17	.15	a.10	.10	.09	.10	.34	.82	.28	.22	.14
7	.37	b.17	.14	a.10	.10	.09	.10	.35	.76	.30	.21	.13
8	.35	b.17	.14	a.10	.10	.09	.10	.34	.67	.30	.24	.14
9	* .34	.19	.14	a.10	.10	.09	.10	.35	.64	.29	.23	.21
10	.33	b.17	.14	a.10	.10	.09	* .12	.36	.61	.27	.21	.15
11	.32	b.17	.14	a.10	.10	.09	.16	.41	.59	.28	.21	.14
12	.31	b.16	*.14	a.10	.10	.09	.18	.46	.57	.29	.27	.14
13	.30	.18	.14	a.10	.10	.09	.17	.53	.52	.26	.31	.14
14	.30	.18	.14	a.10	.10	.09	.22	.57	.50	.24	.22	.14
15	.29	.18	.14	a.10	.10	.09	.31	.62	.48	.24	.21	.15
16	.28	b.15	.14	a.10	.10	.09	.34	.67	.46	.24	.20	* .15
17	.28	b.14	.14	a.11	.10	.09	.31	.73	.43	.23	.19	.14
18	.26	b.15	.14	a.11	.10	.09	.29	.73	.41	.23	.19	.13
19	.33	.16	.14	a.11	.10	.09	.32	.71	.39	.23	.17	.14
20	.27	.16	.14	a.11	.10	.09	.30	.69	.37	.22	.15	.19
21	.26	b.15	.14	a.11	.10	.09	.27	.70	.37	* .26	.15	.17
22	.25	.17	.13	a.11	.10	.09	.28	.69	.35	.26	.15	.15
23	.25	.16	.13	a.11	.10	.09	.31	.68	.35	.25	.15	.19
24	.24	.16	.13	.12	.10	.09	.33	.67	.37	.23	.14	.15
25	* .23	.16	.13	.12	.09	.09	.31	*.70	.35	.22	.14	.18
26	.23	.16	.13	.12	.09	.09	.27	.79	.36	.27	.15	.18
27	.23	.16	.13	.12	.09	.09	.25	.84	.34	.23	.15	.16
28	.22	.16	.13	.12	.09	.09	.29	.91	.34	.25	.14	.15
29	.22	.16	.13	.12	.09	.11	.26	.94	.34	.24	.14	.14
30	.22	.16	.13	.12	------	.14	.29	.95	.33	.23	.14	.14
31	b.20	------	a.11	.12	------	.17	------	.96	------	.27	.15	------
TOTAL	9.28	5.09	4.28	3.37	2.85	2.94	6.63	18.23	16.25	8.10	6.01	4.55
MEAN	.299	.170	.138	.109	.098	.094	.221	.588	.542	.261	.194	.152
AC-FT	18	10	8.5	6.7	5.7	5.8	13	36	32	16	12	9.0

CALENDAR YEAR 1963	MAX	1.12	MIN	.07	MEAN	.285	AC-FT	205	
WATER YEAR 1963-64	MAX	.96	MIN	.09	MEAN	.239	AC-FT	172	

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3024. South Fork Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°45'37", long 105°48'40", in Santa Fe National Forest, on left bank 150 ft upstream from road culvert on State Highway No. 475, 2,700 ft upstream from mouth, and 12 miles northeast of Santa Fe.

Drainage area.--0.47 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,740 ft (from topographic map).

Extremes.--Maximum discharge during year, 0.80 cfs June 2-4 (gage height, 0.63 ft); minimum discharge determined, 0.09 cfs Jan. 12-14, Feb. 21-23 (during winter freezeups).
1962-64: Maximum discharge, 1.32 cfs Aug. 13, 1963 (gage height, 0.77 ft); minimum, 0.07 cfs Nov. 16, 1962.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.05	0.5	0.46
.3	.13	.6	.71
.4	.26	.7	1.04

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	0.23	0.20	0.14	0.14	0.13	0.12	0.13	0.19	0.76	0.25	0.19	0.14
2	.25	.20	.14	.15	.12	.12	.13	.19	.78	.24	.19	.13
3	.25	.20	.14	.15	.11	.12	.13	.19	.80	.24	.17	.13
4	.25	.20	.14	.14	*.12	.12	.13	.20	.78	.23	.17	.13
5	.25	.19	.14	.14	.12	.12	.13	.20	.76	.23	.17	.14
6	.26	.19	.14	.13	.11	.11	.13	.20	.72	.22	.16	.14
7	.26	.19	.14	.12	.10	.11	.13	.21	.68	.22	.16	.13
8	.26	.19	.14	.12	.10	.11	.12	.20	.64	.24	.17	.13
9	*.26	.19	.14	.11	.11	.11	*.12	.21	.60	.22	.17	.16
10	.26	.19	.14	.11	.12	.11	.12	.21	.56	.21	.16	.14
11	.26	.19	.14	.10	.13	.11	.12	.22	.52	.22	.16	.13
12	.26	.19	.14	.09	.12	.11	.13	.24	.49	.23	.18	.13
13	.26	.19	*.14	.09	.11	.11	.13	.26	.47	.21	.21	.13
14	.26	.19	.13	.09	.10	.11	.14	.27	.45	.20	.17	.13
15	.25	.18	.13	.10	.10	.12	.17	.28	.42	.20	.16	*.13
16	.25	.18	.13	.11	.10	.13	.20	.31	.40	.19	.16	.13
17	.25	.15	.13	.12	.10	.13	.23	.35	.39	.19	.15	.13
18	.24	.15	.13	.12	.10	.13	.24	.37	.38	.19	.16	.13
19	.26	.15	.13	.13	.10	.13	.25	.38	.36	.18	.17	.12
20	.24	.15	.13	.14	.10	.13	.25	.39	.35	.18	.18	.16
21	.23	.15	.13	.14	.09	.13	.24	.40	.34	* .20	.19	.14
22	.23	.15	.13	.13	.09	.13	.23	.42	.32	.19	.19	.14
23	.22	.15	.13	.11	.09	.13	.23	.47	.31	.19	.22	.17
24	.22	.15	.14	.10	.10	.13	.23	.48	.31	.19	.22	.14
25	*.22	.15	.15	.10	*.11	.12	.23	.51	.30	.18	.22	.14
26	.22	.15	.15	.11	.12	.12	.22	.56	.29	.21	.23	.14
27	.22	.15	.15	.11	.12	.12	.20	.57	.28	.19	.23	.14
28	.21	.14	.15	.12	.12	.12	.20	* .62	.27	.23	.25	.13
29	.20	.14	.14	.12	.12	.12	.19	.66	.27	.19	.21	.13
30	.20	.14	.12	.12	------	.12	.19	.67	.26	.19	.13	.13
31	.20	------	.13	.12	------	.12	------	.70	------	.19	.14	------
TOTAL	7.43	5.13	4.25	3.68	3.16	3.72	5.29	11.13	14.26	6.44	5.64	4.09
MEAN	.240	.171	.137	.119	.109	.120	.176	.359	.475	.208	.182	.136
AC-FT	15	10	8.4	7.3	6.3	7.4	10	22	28	13	11	8.1

CALENDAR YEAR 1963	MAX	1.16	MIN	.09	MEAN	.233	AC-FT	169
WATER YEAR 1963-64	MAX	.80	MIN	.09	MEAN	.203	AC-FT	146

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17 to Feb. 25 (no gage-height record for undefined portions in this period).

8-3041. Little Tesuque Creek near Santa Fe, N. Mex.

Location.--Lat 35°44'42", long 105°49'39", in SW¼NE¼ sec.36, T.18 N., R.10 E., in Santa Fe National Forest, on right bank 1,200 ft upstream from East Boundary line of Hyde State park, 0.25 mile (by access road) east of State Highway 475, 9 miles northeast of Santa Fe.

Drainage area. --0.37 sq mi.

Records available.--June 1962 to September 1964.

Gage. --Water-stage recorder (digital) and V-notch sharp-crested weir. Altitude of gage is 9,220 ft (from topographic map).

Extremes.--Maximum discharge during year, 1.20 cfs July 11 (gage height, 0.75 ft); minimum, 0.03 cfs Aug. 30, Sept. 3.
1962-63: Maximum discharge, that of July 11, 1964; minimum, 0.03 cfs Aug. 29, 1962, Aug. 30, Sept. 3, 1964.

Remarks.--Records good except those for periods of doubtful gage-height record, which are fair.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.1	0.01	0.4	0.26
.2	.05	.5	.46
.3	.13	.6	.71

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	0.12	0.11	0.09	0.07	0.07	0.07	0.16	0.31	0.48	0.10	0.13	0.07
2	.12	.11	.09	.07	.07	.07	.16	.33	.46	.09	.11	.06
3	.12	.12	.08	.07	.06	.07	.13	.33	.35	.09	.09	.05
4	.12	.11	.08	.07	.06	.07	.12	.33	.28	.09	.09	.06
5	.12	.10	.08	.07	* .06	.07	.12	.33	.26	.09	.08	.07
6	.12	.10	.08	.06	.05	.07	.11	.31	.26	.09	.07	.06
7	.12	.10	.08	.06	.05	.07	.10	.31	.25	.09	.08	.05
8	* .12	.10	.08	.06	.05	.06	.10	.30	.23	.12	.09	.05
9	.11	.10	.08	.06	.06	.05	* .11	.30	.23	.10	.09	.14
10	.11	.10	.08	.06	.06	.06	.14	.28	.22	.09	.08	.08
11	.11	.10	.08	.05	.06	.06	.20	.30	.20	.25	.07	.07
12	.11	.10	.08	.04	.06	.07	.23	.31	.20	.17	.09	.07
13	.11	.10	.08	.04	.05	.07	.23	.35	.20	.12	.17	.07
14	.11	.10	.08	.04	.05	.07	.28	.35	.19	.10	.11	.06
15	.11	.10	.08	.05	.05	.08	.37	.35	.18	.09	.08	.07
16	.11	.09	* .08	.06	.05	.08	.46	.37	.16	.09	.07	* .08
17	.11	.08	.08	.06	.05	.09	.46	.41	.16	.09	.06	.07
18	.11	.08	.08	.07	.05	.09	.43	.41	.16	.08	.06	.06
19	.16	.09	.08	.08	.05	.09	.48	.39	.16	.08	.06	.06
20	.12	.09	.08	.08	.05	.08	.46	.37	.15	.08	.06	.12
21	.12	.09	.08	.08	.05	.07	.39	.37	.14	* .10	.06	.10
22	.11	.09	.08	.08	.05	.07	.39	.39	.14	.10	.06	.10
23	.11	.09	.08	.07	.05	.06	.41	.39	.13	.10	.06	.12
24	.11	.09	.08	.05	* .05	.06	.41	.39	.13	.09	.05	.09
25	* .11	.09	.08	.06	.05	.06	.39	.41	.13	.08	.05	.08
26	.11	.09	.08	.07	.05	.06	.37	.48	.12	.17	.06	.11
27	.11	.09	.08	.07	.05	.06	.33	.43	.12	.11	.06	.11
28	.10	.09	.07	.07	.06	.07	.33	* .43	.11	.16	.05	.08
29	.10	.09	.07	.07	.06	.10	.33	.46	.11	.13	.05	.07
30	.10	.09	.07	.07	------	.13	.31	.48	.11	.10	.04	.07
31	.12	------	.07	.07	------	.16	------	.48	------	.13	.06	------
TOTAL	3.54	2.88	2.46	1.98	1.58	2.34	8.51	11.45	6.02	3.37	2.34	2.35
MEAN	.114	.096	.079	.063	.054	.075	.284	.369	.201	.109	.075	.078
AC-FT	7.0	5.7	4.9	3.9	3.1	4.6	17	23	12	6.7	4.6	4.7

CALENDAR YEAR	1963	MAX	.84	MIN	.05	MEAN	.170	AC-FT 123
WATER YEAR	1963-64	MAX	.48	MIN	.04	MEAN	.133	AC-FT 97

* Discharge measurement made on this day.
Note.--Doubtful gage-height record Dec. 7, 8, 11-13, Jan. 6 to Mar. 27, June 2-4, 25.

8-3043. Little Tesuque Creek Tributary No.3 near Santa Fe, N. Mex.

Location.--Lat 35°43'35", long 105°50'01", in Santa Fe National Forest, on right bank 1,900 ft upstream from mouth, and 8 miles northeast of Santa Fe.

Drainage area.--0.65 sq mi.

Records available.--September 1963 to September 1964.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 8,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 0.63 cfs Apr. 20 (gage height, 0.57 ft); no flow for long periods.

Remarks.--Records good.

Discharges for September 1963 are: Sept. 1-20, 0 cfs; 21, 0.10; 22, 0.18; 23, 0.25; 24, 0.15; 25, 0.12; 26, 0.07; 27, 0.04; 28, 0.03; 29, 0.02; 30, 0.01.
Total cfs days, 0.97
Mean , 0.032
Acre-ft , 1.92

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0.01	0.25		(*)		
2	(*)						.03	.28				
3							.06	.28				
4							.09	.25				
5							.12	.23				
6							.15	* .22				
7					(*)		.17	.18				
8							.19	.15				
9							.22	.13				
10	(*)						* .35	.12				
11	(*)						.55	.1				
12			(*)				.52	.08				
13							.43	.07				
14							.41	.06				
15		(*)					.43	.05				
16							.48	.05				(*)
17							.52	.04				
18							.52	.03				
19							.58	.02				
20							.58	.02			(*)	
21							.48	.01		(*)		
22							.43	.01	(*)			
23				(*)			.41	0				
24							.39	0				
25							.37	0				
26					(*)		.35	0				
27							.30	0				
28							.26	* 0				
29							.26	0				
30					----------		.25	0				
31		----------			----------		----------	0	----------			----------
Total	0	0	0	0	0	0	9.91	2.63	0	0	0	0
Mean	0	0	0	0	0	0	0.330	0.085	0	0	0	0
Ac-ft	0	0	0	0	0	0	19.7	5.22	0	0	0	0

Calendar year 1963 : Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 0.58 Min 0 Mean 0.034 Ac-ft 24.9

* Discharge measurement or observation of no flow made on this day.

8-3044. Little Tesuque Creek Tributary No.2 near Santa Fe, N. Mex.

Location.--Lat 35°43'34", long 105°51'02", in SW¼SW¼ sec.2, T.17 N., R.10 E., on right bank in Santa Fe National Forest, 300 ft upstream from mouth and State Highway No.475, 6¼ miles northeast of Santa Fe, N. Mex.

Drainage area.--0.45 sq mi.

Records available.--June 1962 to September 1964.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 7,960 ft (from topographic map).

Extremes.--Maximum discharge during year, 0.091 cfs Apr. 19-20 (gage height, 0.26 ft); no flow for many days.
1962-64: Maximum discharge, 0.166 cfs Apr. 1-2, 1963, (gage height, 0.33 ft); no flow at times.

Remarks.--Records good except those for periods of doubtful gage-height record, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.03	0.0
.1	.007
.2	.041
.3	.125

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.006	0.004	0.006	0.006	0.006	0.007	0.016	0.049	0.016	0.001		
2	.006	.004	.006	.006	.006	.007	.024	.049	.014	0		
3	.006	.004	.006	.006	.006	.007	.020	.049	.014	0		
4	.004	.004	.006	.006	*.006	.007	.020	.049	.011	0		
5	.004	.004	.006	.006	.006	.007	.016	.041	.011	0		
6	.004	.004	.006	d.005	.006	.006	.020	.041	.011	0		
7	.004	.004	.006	d.005	.006	.006	.020	.041	.009	0		
8	.004	.004	.006	d.005	.006	.007	.020	.041	.009	0		
9	*.004	.004	.006	d.005	.006	.007	*.032	.041	.007	0		
10	.004	.004	.006	d.005	.006	.007	.041	.036	.007	0		
11	.004	.004	.006	d.005	.006	.009	.041	.036	.007	0		
12	.004	.004	.006	d.004	.006	.009	.041	.032	.007	.001		
13	.004	.004	.006	d.004	.006	.009	.032	.032	.007	0		
14	.004	.004	.006	d.004	.006	.007	.032	.032	.006	0		
15	.004	.004	.006	d.005	.007	.007	.036	.032	.006	0		
16	.004	*.004	.006	d.005	.007	.007	.049	.032	.004	0		
17	.004	.004	.006	d.005	.007	.009	.066	.027	.004	0		
18	.004	.004	.006	d.005	.007	.009	.066	.032	.004	0		
19	.004	.004	.006	d.005	.007	.009	.083	.027	.003	0		
20	.004	.004	.006	d.006	.007	.009	.091	.027	.003	0		
21	.004	.004	.006	d.006	.007	.009	.083	.027	.003	0		
22	.004	.004	.006	d.006	.007	.009	.075	.024	.003	0		
23	.004	.004	.006	d.006	.007	.009	.075	.024	*.003	0		
24	.004	.004	.006	.006	.007	.009	.075	.020	.002	0		
25	*.004	.004	.006	.006	*.007	.009	.066	.020	.002	0		
26	.004	.004	.006	.006	.007	.007	.058	.020	.002	0		
27	.004	.004	.006	.006	.007	.007	.058	.020	.002	0		
28	.004	.004	.006	.006	.007	.007	.049	.016	.001	0		
29	.004	.004	.006	.006	.007	.009	.041	.016	.001	0		
30	.004	.004	.006	.006	----------	.011	.041	.016	.001	0		
31	.004	----------	.006		----------	.014	----------	.016	----------	0		----------
Total	0.130	0.120	0.186	0.169	0.189	0.252	1.387	0.965	0.180	0.002	0	0
Mean	0.004	0.004	0.006	0.005	0.007	0.008	0.046	0.031	0.006	0.0001	0	0
Ac-ft	0.26	0.24	0.37	0.34	0.37	0.50	2.75	1.91	0.36	0.004	0	0

Calendar year 1963: Max 0.152 Min 0 Mean 0.015 Ac-ft 10.864
Water year 1963-64: Max 0.091 Min 0 Mean 0.010 Ac-ft 7.104

* Discharge measurement made on this day.
d Doubtful gage-height record.

8-3130. Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.

Location.--Lat 35°52'30", long 106°08'30", near right bank on downstream end of pier of former railway bridge, 400 ft downstream from bridge on State Highway 4, 1¾ miles southwest of San Ildefonso Pueblo, 2½ miles downstream from Pojoaque River, and 7 miles west of Pojoaque.

Drainage area.--14,300 sq mi, approximately (includes, 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--February 1895 to December 1905, June 1909 to September 1964. Monthly discharge only for some periods, published in WSP 1312. In early reports this record was published as Rio Grande at water tank, as "at Rio Grande", and as "near Buckman."

Gage.--Water-stage recorder. Datum of gage is 5,488.48 ft above mean sea level, datum of 1929. Prior to May 19, 1904, and July 25 to Oct. 1, 1904, staff gage at site 180 ft upstream at datum 2.02 ft lower. May 19 to July 24, 1904, Oct. 2, 1904, to Dec. 31, 1905, and June 23, 1909, to May 31, 1910, staff gage or chain gage at same site and datum.

Average discharge.--65 years (1895-1905, 1909-64), 1,554 cfs (1,125,000 acre-ft per year).

Extremes.--Maximum discharge during year, 2,720 cfs May 27 (gage height, 4.84 ft); minimum, 121 cfs June 30.
1895-1905, 1909-64: Maximum discharge, 24,400 cfs May 23, 1920; maximum gage height, 14.5 ft Sept. 29, 1904 (present site and datum); minimum daily discharge, 60 cfs July 4, 5, 1902.
The 1920 flood is greatest since at least 1884 and probably since 1741; information from H. W. Yeo's file on floods.

Remarks.--Records good. Discharge measurements generally made two or more times a month. Flow partly regulated by El Vado and Abiquiu Reservoirs (see p 169-72) on Rio Chama which contributes about 40 percent of total flow. Diversions above station for irrigation of about 619,000 acres in Colorado and 75,000 acres in New Mexico.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	239	300	310	482	448	487	679	734	1,210	516	451	171
2	222	317	310	482	448	496	780	974	1,250	439	482	168
3	214	320	306	482	422	509	815	966	1,150	435	417	159
4	210	313	297	482	460	509	808	1,030	958	443	958	844
5	210	310	300	448	460	491	722	1,280	885	478	760	1,000
6	198	306	313	422	422	491	613	1,100	685	325	560	748
7	192	313	323	448	422	500	540	1,240	585	257	344	728
8	188	334	313	422	406	504	555	1,240	518	164	378	625
9	188	337	297	386	422	514	500	1,190	491	257	460	386
10	181	334	327	382	448	509	514	1,270	465	212	382	272
11	190	327	341	418	452	500	504	1,300	527	284	370	250
12	188	1,150	337	374	465	496	504	1,320	509	348	563	250
13	186	1,600	330	348	452	522	504	1,420	414	499	1,230	232
14	190	1,430	297	344	448	518	482	1,530	394	348	1,430	230
15	190	1,310	327	378	443	514	474	1,640	390	297	1,180	280
16	181	1,230	337	418	439	518	540	1,610	341	270	921	284
17	183	1,170	363	431	452	545	722	1,580	334	250	514	300
18	188	1,130	382	439	465	575	836	1,600	266	280	410	297
19	210	801	394	474	465	601	997	1,380	247	285	334	247
20	281	491	398	431	474	637	958	1,460	232	312	288	244
21	278	359	406	431	465	643	794	1,580	198	266	261	306
22	297	348	402	456	469	643	643	1,730	186	214	217	402
23	281	344	378	465	460	679	555	1,600	171	247	194	422
24	310	334	363	418	478	667	661	1,500	166	201	190	427
25	334	344	398	402	478	673	928	1,380	166	242	188	390
26	320	337	402	435	496	667	951	1,680	157	272	205	317
27	297	334	402	435	474	595	928	2,010	157	242	196	261
28	291	320	414	435	460	613	920	1,940	143	241	188	252
29	284	323	418	439	482	643	780	1,940	131	205	183	244
30	294	310	402	443	----------	649	734	1,810	133	258	186	229
31	300	----------	418	456	----------	649	----------	1,520	----------	272	179	----------
Total	7,315	17,176	11,005	13,306	13,175	17,557	20,941	44,554	13,459	9,359	14,619	10,965
Mean	236	573	355	429	454	566	698	1,437	449	302	472	366
Ac-ft	14,510	34,070	21,830	26,390	26,130	34,820	41,540	88,370	26,700	18,560	29,000	21,750

Calendar year 1963: Max 2,420 Min 106 Mean 588 Ac-ft 425,500
Water year 1963-64: Max 2,010 Min 131 Mean 528 Ac-ft 383,700

Peak discharge (base, 5,200 cfs).--No peak above base.

8-3133.5 Rito de los Frijoles in Bandelier National Monument, N. Mex.

Location.--Lat 47°29'08", long 106°16'50", in Bandelier National Monument, 2,000 ft southeast of Ceremonial Cave, 3,600 ft upstream from Monument headquarters, 6 miles south of Los Alamos and 19 miles northwest of Santa Fe.

Drainage area.--17.5 sq mi.

Records available.--July 1963 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 6,140 ft (from topographic map).

Extremes.--Maximum discharge during year, 2.4 cfs July 26 (gage height, 1.26 ft); maximum gage height, 1.27 ft Jan. 26 (ice jam); minimum discharge, 0.1 cfs June 27.
1963-64: Maximum discharge and gage height, those of 1964; minimum discharge, 0.1 cfs July 27, 1963, June 27, 1964.

Remarks.--Records good prior to Jan. 15 and fair thereafter except those for periods of ice effect or no gage-height record, which are poor. Pipe line diversion upstream not presently in use.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 10 to Mar. 15)

Oct. 1 to Jan. 15				Jan. 16 to Sept. 30			
0.0	0	0.2	0.81	0.9	0.03	1.1	0.82
.1	.28	.3	1.53	1.0	.31	1.2	1.5

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	*0.8	0.8	0.7	0.9	1.1	1.2	1.3	1.0	0.6	1.0	0.4
2	.7	.7	.8	.8	.9	1.1	1.2	1.1	1.0	.5	1.1	.4
3	.7	.7	.5	.8	.9	1.1	1.2	1.1	1.1	.4	.8	.4
4	.6	.7	.6	.8	.9	1.1	1.2	1.1	.8	.4	.7	.4
5	.6	.7	.8	.8	.9	1.1	1.1	1.1	.7	.4	.6	.7
6	.5	.7	.8	.7	.8	1.0	1.1	1.1	.6	.3	.5	.7
7	*.5	.7	.8	.7	.8	1.0	1.2	1.1	.6	.3	.5	.6
8	.4	.7	.5	.7	.9	1.1	1.2	1.1	.6	.3	.5	.6
9	.4	.7	.8	.7	1.0	1.1	1.2	1.1	.5	.3	.6	*.6
10	.4	.7	.7	.7	1.1	*1.0	1.3	1.1	*.6	.4	.6	.7
11	.4	*.8	.6	.6	*1.1	1.0	1.3	1.1	.6	.5	.5	.7
12	.4	.8	.4	.6	1.1	1.1	1.3	1.1	.6	.7	.6	.8
13	.4	.8	*.4	.6	1.1	1.1	1.2	1.1	.5	.6	*.7	.9
14	.4	.8	.4	*.7	1.1	1.0	*1.2	1.1	.5	.5	.8	1.1
15	.4	.8	.6	*.7	1.1	1.0	1.3	1.1	.4	.6	.6	.9
16	.4	.8	.7	.7	1.1	1.0	1.3	1.1	.4	.5	.5	.9
17	.4	.8	.7	.8	1.1	1.0	1.3	1.1	.4	.8	.5	.8
18	.4	.9	.8	.8	1.1	1.1	1.4	1.1	.4	.6	.6	.8
19	1.4	.9	.8	.9	1.1	1.1	1.4	1.1	.4	.8	.8	.7
20	1.0	.9	.8	.9	1.1	1.0	1.5	*.9	.3	.6	.6	.8
21	.8	.9	.8	.8	1.1	.9	1.5	.9	.3	.6	*.6	.9
22	.7	.9	.8	*.8	*1.1	.9	1.4	.8	.3	.5	.6	1.1
23	*.7	.9	.8	.8	1.1	.9	1.3	.8	.3	.5	.7	.9
24	.7	.8	.8	.7	1.1	.9	1.3	.7	.3	.4	.6	.8
25	.7	.9	.8	.7	1.1	.9	1.3	.7	.3	.4	.6	.8
26	.7	.8	.8	.8	1.2	.9	1.3	.8	.2	.9	.6	.8
27	.7	.7	.8	.9	1.1	*1.1	1.3	.8	.2	1.1	.7	.8
28	.7	.8	.8	.9	1.1	1.1	1.3	.8	.2	1.1	.6	.7
29	.7	.8	.8	.9	1.1	1.1	1.3	.8	.2	1.1	.6	.6
30	.7	.8	.7	*.9	----------	1.1	1.3	.8	*.4	*1.2	.5	.6
31	.8	----------	.7	.9	----------	1.1	----------	1.0	----------	.9	.5	----------
Total	19.0	23.7	21.9	23.8	30.1	32.0	38.4	30.9	14.7	18.8	19.7	21.9
Mean	0.61	0.79	0.71	0.77	1.04	1.03	1.28	1.00	0.49	0.61	0.64	0.73
Ac-ft	38	47	43	47	60	63	76	61	29	37	39	43

Calendar year : Max Min Mean Ac-ft
Water year 1963-64: Max 1.5 Min 0.2 Mean 0.81 Ac-ft 580

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-6, 11-22, 25-31, Jan. 10-13, 19-21. Stage-discharge relation affected by ice Dec. 10 to Jan. 9, Jan. 22-29, Feb. 3-9.

8-3145. Rio Grande at Cochiti, N. Mex.

Location.--Lat 35°37'10", long 106°19'20", in SE¼NE¼ sec.17, T.16 N., R.6 E., on downstream end of concrete pier near left end of highway bridge, 1½ miles northeast of Cochiti, 3¾ miles north of Pena Blanca, and 8 miles upstream from Galisteo Creek.

Drainage area.--14,600 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1924 to September 1964. Published as "near Cochiti" prior to 1928. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder (digital). Datum of gage is 5,224.70 ft above mean sea level, datum of 1929. Prior to July 16, 1925, staff gage 1 mile upstream at different datum. July 16, 1925, to Jan. 28, 1947, at or near right abutment of bridge at same datum. Jan. 28 to May 15, 1947, 600 ft upstream at same datum.

Average discharge.--40 years, 1,317 cfs (953,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,490 cfs May 27 (gage height, 5.47 ft); minimum, 20 cfs June 30.
1924-64: Maximum discharge, 23,400 cfs May 15, 1941 (gage height, 10.93 ft); minimum daily, 1 cfs Aug. 10-12, 1934.
The flood of May 23, 1920, probably exceeded 23,400 cfs, and is likely the highest since 1905.

Remarks.--Records good. Discharge measurements generally made 2 to 3 times a month. Diversions above station for irrigation of about 700,000 acres, 6,000 of which are irrigated below by Cochiti eastside and Sili main canals which bypass station. Possible regulation by two reservoirs on Rio Chama.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 14-21, Dec. 2-7, 10, 11, Apr. 25 to May 29, July 27 to Aug. 3)

Oct. 1 to May 26				May 27 to Sept. 30			
3.0	44	4.0	520	2.9	18	4.3	770
3.1	70	4.5	920	3.2	90	4.9	1,620
3.5	195	5.0	1,420	3.5	195	5.3	2,360
3.7	295	5.2	1,690	3.8	350		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	124	275	334	464	432	504	520	608	1,220	143	325	71
2	109	308	334	488	424	512	608	744	1,060	325	617	66
3	100	295	340	480	416	528	672	840	967	308	436	62
4	97	308	328	472	432	536	672	864	796	311	730	254
5	112	314	328	416	450	488	656	1,050	702	360	803	901
6	204	a300	334	400	440	456	536	992	651	315	598	828
7	123	a310	340	440	420	448	464	1,040	584	123	385	703
8	70	a330	330	420	400	440	432	1,110	516	145	326	566
9	62	a350	320	400	410	416	424	1,090	454	69	516	385
10	62	a350	328	370	472	360	360	1,190	414	166	399	185
11	65	a340	354	400	464	376	392	1,200	354	190	226	141
12	99	a500	360	410	448	368	347	1,130	415	361	332	193
13	188	a1,450	350	370	464	392	354	1,210	381	322	836	260
14	118	1,450	330	350	448	400	347	1,300	434	233	1,450	158
15	82	1,270	340	370	456	400	328	1,420	351	192	1,290	125
16	73	1,240	370	400	424	416	347	1,480	254	152	1,200	172
17	62	1,100	380	420	424	416	488	1,580	219	148	540	154
18	65	1,050	400	430	472	456	640	1,580	208	190	a270	180
19	178	888	400	460	488	496	888	1,320	151	276	250	179
20	308	696	400	450	496	520	936	1,300	181	204	177	236
21	242	528	408	430	488	544	770	1,380	235	168	149	185
22	a190	464	408	450	488	536	560	1,590	123	129	168	234
23	a190	416	400	470	464	544	456	1,590	53	153	218	278
24	a190	360	384	450	464	552	472	1,580	51	131	133	264
25	a210	360	392	410	448	528	688	1,370	50	174	63	278
26	220	376	384	420	448	568	800	1,360	35	265	66	271
27	321	360	392	464	472	488	800	1,830	56	200	81	285
28	238	354	408	440	432	464	768	1,980	179	163	75	207
29	167	347	408	440	464	488	696	2,130	79	138	99	141
30	170	340	416	440	--------	488	656	1,940	22	127	205	123
31	174	--------	380	448	--------	488	--------	1,700	--------	179	139	--------
TOTAL	4,613	17,029	11,380	13,272	13,048	14,616	17,077	41,498	11,195	6,360	13,102	8,085
MEAN	149	568	367	428	450	471	569	1,339	373	205	423	270
AC-FT	9,150	33,780	22,570	26,320	25,880	28,990	33,870	82,310	22,200	12,610	25,990	16,040
(†)	5,690	0	0	0	0	5,400	7,170	7,010	6,050	7,150	5,140	5,690

CALENDAR YEAR 1963 MAX 2,330 MIN 34 MEAN 529 AC-FT 382,800
WATER YEAR 1963-64 MAX 2,130 MIN 22 MEAN 468 AC-FT 339,700

Peak discharge (base, 4,500 cfs).--No peak above base.

† Combined monthly diversion, in acre-ft, of Sili main and Cochiti eastside canals; records of this flow are furnished by Bureau of Reclamation.
a No gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 8, 9, 12-18,31, Jan. 6-26, Feb. 5, 7-9.

8-3160. Santa Fe River near Santa Fe, N. Mex.

Location.--Lat 35°41'10", long 105°50'35", in NE¼SE¼ sec.23, T.17 N., R.10 E., on left bank 0.4 mile downstream from McClure Dam and 5½ miles east of Santa Fe.

Drainage area.--18.2 sq mi.

Records available.--January 1913 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1953, published as Santa Fe Creek near Santa Fe.

Gage.--Water-stage recorder and concrete control. Datum of gage is 7,718 ft above mean sea level, datum of 1929. Prior to Nov. 4, 1930, at site 1.5 miles downstream and Apr. 11, 1931, to September 1947 at site 0.3 mile upstream, each at different datum.

Average discharge.--51 years, 8.27 cfs (5,990 acre-ft per year).

Extremes.--Maximum discharge during year, 12 cfs June 27-28 (gage height, 2.03 ft); minimum, 0.6 cfs May 15.
1913-64: Maximum discharge, 1,500 cfs Aug. 14, 1921 (gage height, 5.17 ft, site and datum then in use), from rating curve extended above 150 cfs by logarithmic plotting; minimum daily, 0.1 cfs Feb. 7-10, 20, 1927, Aug. 1-4, 1951.
Peaks which probably exceeded 1,000 cfs occurred Aug. 19, 1872, and Sept. 29 or 30, 1904. Without regulation the flood of Sept. 23, 1929, might have exceeded 1,500 cfs.

Remarks.--Records good. Flow regulated by McClure Reservoir (see p 169-72), completed in 1926, raised in 1935, and again in 1947.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.4	0.4	1.8	5.6
1.5	1.0	1.9	8.4
1.6	1.9	2.1	16
1.7	3.4		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.9	5.6	5.2	3.1	1.4	1.4	1.1	0.7	4.7	11	9.1	* 3.6
2	6.2	* 5.6	5.2	3.1	1.4	1.4	* .9	.7	4.7	11	9.1	5.7
3	* 6.2	5.6	5.2	3.1	1.5	1.4	.9	.7	4.7	11	* 9.1	8.1
4	6.4	5.6	5.2	3.1	1.5	1.4	.8	.7	*4.7	11	9.1	8.1
5	6.4	5.6	5.2	3.1	1.5	1.3	.8	* .7	4.7	11	8.8	8.1
6	6.4	5.6	5.0	* 3.1	1.5	* 1.3	.8	.7	5.7	11	5.9	8.1
7	6.4	5.6	5.0	3.1	1.5	1.4	.8	.7	6.4	11	3.9	7.8
8	6.4	5.6	5.0	3.1	1.5	1.4	.8	.7	6.4	11	3.6	7.6
9	6.4	5.6	* 4.7	3.1	1.5	1.4	.9	.7	6.4	11	3.4	7.6
10	8.0	5.6	4.7	3.1	* 1.5	1.4	.9	.7	6.4	11	3.4	7.6
11	9.4	5.6	4.7	3.0	1.5	1.4	.9	.7	6.2	11	3.3	7.6
12	9.4	5.6	4.7	3.0	1.5	1.4	.9	.7	7.0	11	3.3	7.3
13	9.4	5.2	4.7	3.0	1.5	1.4	.9	.7	8.1	10	3.3	7.0
14	9.1	5.2	4.7	3.1	1.5	1.4	.9	.7	8.1	10	3.1	7.0
15	9.1	5.2	4.7	3.1	1.5	1.4	.9	.7	7.8	10	3.0	7.0
16	9.1	5.2	5.0	3.3	1.5	1.4	.9	2.5	8.1	10	3.1	7.0
17	9.1	5.2	5.0	3.4	1.5	1.4	.9	4.1	8.1	10	3.1	6.7
18	8.8	5.2	5.0	3.4	1.5	1.4	.9	4.3	8.1	10	3.0	6.7
19	8.8	5.2	5.0	3.6	1.5	1.4	.9	4.3	7.8	10	3.0	6.4
20	8.8	5.2	5.0	3.6	1.5	1.4	.9	4.3	7.8	9.8	2.8	6.4
21	8.8	5.2	5.0	3.6	1.5	1.4	.9	4.5	7.8	9.8	2.8	6.2
22	7.3	5.2	5.0	3.6	1.5	1.4	.9	4.5	8.8	9.4	2.8	6.2
23	5.9	5.2	5.0	2.7	1.5	1.4	.9	4.5	9.8	9.4	2.8	6.2
24	5.9	5.2	4.7	1.5	1.4	1.3	.9	4.5	9.4	9.4	2.8	4.5
25	5.6	5.2	4.7	1.4	1.4	1.3	.9	4.5	9.4	9.4	2.8	1.6
26	5.6	5.2	4.7	1.4	1.4	1.3	.9	4.5	11	9.4	2.8	1.5
27	5.6	5.2	3.8	1.4	1.4	1.3	.8	4.5	12	9.4	2.8	1.5
28	5.6	5.2	3.1	1.4	1.4	1.3	.8	4.5	12	9.4	3.1	1.5
29	5.6	5.2	3.1	1.4	1.4	1.3	.7	4.5	11	9.4	3.1	1.5
30	5.6	5.2	3.1	1.4	----------	1.3	.7	4.7	*11	9.1	3.3	1.5
31	5.6	----------	3.1	1.4	----------	1.3	----------	4.7	----------	9.1	3.4	----------
Total	222.8	160.8	144.2	84.7	42.7	42.4	26.1	79.9	234.1	315.0	128.9	173.6
Mean	7.19	5.36	4.65	2.73	1.47	1.37	0.87	2.58	7.80	10.2	4.16	5.79
Ac-ft	442	319	286	168	85	84	52	158	464	625	256	344

Calendar year 1963: Max 22 Min 0.7 Mean 6.68 Ac-ft 4,840
Water year 1963-64: Max 12 Min 0.7 Mean 4.52 Ac-ft 3,280

* Discharge measurement made on this day.

8-3180. Galisteo Creek at Domingo, N. Mex.

Location.--Lat 35°30'45", long 106°19'00", in SW¼ sec.21, T.15 N., R.6 E., in Santo Domingo Pueblo Grant, 160 ft downstream from highway bridge, 0.3 mile northeast of Domingo, 2¾ miles east of Santo Domingo Pueblo, and 4 miles upstream from mouth.

Drainage area.--640 sq mi, approximately.

Records available.--October 1941 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 5,255.50 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to July 20, 1956, at site 160 ft upstream at same datum.

Average discharge.--23 years, 9.72 cfs (7,040 acre-ft per year).

Extremes.--Maximum discharge during year, 2,820 cfs Aug. 1 (gage height, 3.66 ft); no flow on many days.
1941-64: Maximum discharge, 19,600 cfs Sept. 25, 1955 (gage height, 12.1 ft, from floodmark), from rating curve extended above 11,000 cfs on basis of slope-area measurement of peak flow; no flow at times.
The floods of Sept. 23, 1929, and Aug. 20, 1935, probably exceeded 20,000 cfs. Discharge for the flood of Aug. 20, 1935, was estimated as 24,300 cfs by H. W. Yeo.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Diversions for irrigation of about 50 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0		0		0.8	0.6	0	0	0.2	0	249	0
2	0				1		0	0	.1	0	21	0
3	0				1		0	0	0	0	.4	0
4	0				1		0	0	0	0	121	0
5	0				1	.6	.3	0	0	0	53	0
6	0		.1		1			0	0	0	.1	11
7	0				1	0		0	0	0	1.9	3.0
8	0		1.1		1			0	0	0	.2	.1
9	0		1.0		.5		0	0	0	0	135	.1
10	0		.3		.2	.1	0	0	0	0	20	.8
11	0		.4		2	0	0	0	0	0	.6	104
12	0		1.1		2	0	0	0	0	8.8	0	4.4
13	0		1.7		0	.1	0	0	0	.9	53	.4
14	0		4.2		0	.1	0	0	0	42	8.8	0
15	0		6.3	1.5	0	0	0	0	0	0	27	0
16	0		5.0		1	0	0	0	0	0	3.5	0
17	0		6.0		1	0	0	0	0	13	.4	0
18	0		2.5		.4	0	0	0	0	20	.1	0
19	4.7		3.7		.2	0	0	0	0	5.2	0	0
20	.7		3.9		.2	.1	0	0	0	.5	0	0
21	0		2.9		.3	.1	0	0	0	24	0	0
22	0		4.0		.6	.1	0	0	0	16	0	0
23	0		.8		.9	0	0	0	0	19	0	0
24	0		.3		.6	0	0	0	0	56	0	0
25	0		5.5		.3	0	0	0	0	.2	0	0
26	0		11		.5	0	0	.4	0	0	0	0
27	0		6.2		.6	0	0	127	0	65	0	0
28	0		3.0		.9	0	0	2.6	0	.7	0	0
29	0		1.9		.6	0	0	.3	0	0	0	0
30	0		3.2		----------	0	0	.1	0	0	0	0
31	.4	----------	6.5		----------	0	----------	.7	----------	0	0	----------
Total	5.8	0	83.4	46.5	26.9	3.9	1.6	131.1	0.3	271.3	695.0	123.8
Mean	0.19	0	2.69	1.50	0.93	0.13	0.05	4.23	0.01	8.75	22.4	4.13
Ac-ft	12	0	165	92	53	7.7	3.2	260	.6	538	1,380	246

Calendar year 1963: Max 1,790 Min 0 Mean 14.4 Ac-ft 10,400
Water year 1963-64: Max 249 Min 0 Mean 3.80 Ac-ft 2,760

Peak discharge, (base, 3,000 cfs).--No peak above base.

Note.--No gage-height record Jan. 1 to Apr. 8, June 2, July 15, 26, 29, 30.

8-3190. Rio Grande at San Felipe, N. Mex.

Location.--Lat 35°26'40", long 106°26'20", in SW¼NW¼ sec.17, T.14 N., R.5 E., in San Felipe Grant, on right bank 200 ft downstream from Tonque Arroyo, 1,800 ft upstream from steel highway bridge, three-quarters of a mile upstream from San Felipe Pueblo, and 11 miles northeast of Bernalillo.

Drainage area.--16,100 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1925 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 5,115.73 ft above mean sea level, datum of 1929, adjustment of 1951. Prior to Sept. 27, 1957, at site 1,800 ft downstream at datum 5.35 ft lower, except period May 16, 1945 to Sept. 30, 1946 when it was 5.94 ft lower than present datum.

Average discharge.--39 years, 1,402 cfs (1,015,000 acre-ft per year).

Extremes.--Maximum discharge during year, 2,350 cfs Aug. 4 (gage height, 4.57 ft); minimum, 74 cfs July 1, 2.
1927-64: Maximum discharge, 27,300 cfs June 26, 1937 (gage height, 11.13 ft site and datum then in use), from rating curve extended above 15,000 cfs by logarithmic plotting; minimum daily, 34 cfs July 7, 1934.
Other major floods occurred in 1874, 1884 and 1904.

Remarks.--Records good. Discharge measurements generally made twice a month. Diversions for irrigation of about 705,000 acres above station, some of which are irrigated below by Cochiti eastside main canal and San Felipe eastside acequia, which bypass station. Possible regulation by two reservoirs on Rio Chama.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 31, Jan. 23 to Feb. 23, June 23 to Aug. 9)

2.7	65	3.5	550
2.8	94	3.7	770
3.0	175	4.1	1,340
3.3	370	4.5	2,050

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	163	268	330	421	464	493	560	610	1,420	80	395	119
2	159	298	318	474	455	493	610	686	1,220	360	600	105
3	151	304	311	474	464	502	734	900	1,190	347	404	101
4	159	304	304	474	438	531	783	887	1,040	340	642	94
5	146	304	304	464	474	512	770	1,060	874	370	928	767
6	214	304	324	421	474	484	630	1,120	783	378	686	809
7	176	298	330	430	438	484	550	1,100	662	230	540	640
8	131	324	318	464	446	512	484	1,220	590	185	412	580
9	124	344	304	404	438	512	502	1,200	512	157	464	455
10	127	344	311	404	474	474	446	1,300	493	175	575	282
11	120	337	344	387	502	446	464	1,300	412	208	332	235
12	127	443	350	396	512	464	446	1,190	464	370	332	264
13	209	1,410	344	370	502	474	446	1,220	430	387	728	282
14	176	1,430	324	b 360	484	474	430	1,340	455	412	1,240	219
15	134	1,190	337	b 350	474	455	404	1,500	412	310	1,190	170
16	142	1,200	365	b 380	484	474	396	1,530	302	230	1,120	230
17	138	1,050	372	b 400	493	464	502	1,600	250	219	727	230
18	142	1,030	395	b 420	512	502	600	1,570	250	208	a 420	236
19	190	900	395	b 450	512	540	848	1,440	197	276	332	230
20	292	a 680	402	b 420	502	540	984	1,360	162	318	282	282
21	256	a 510	402	464	502	560	861	1,450	262	230	219	243
22	234	a 430	410	502	502	560	620	1,600	214	219	202	295
23	239	a 400	388	550	493	580	512	1,620	119	180	243	378
24	228	a 360	365	493	502	600	474	1,600	a 100	230	202	370
25	251	a 360	372	455	502	600	650	1,420	a 95	175	126	370
26	268	380	388	464	502	610	848	1,360	91	288	116	347
27	304	365	388	484	522	590	874	1,850	91	310	123	332
28	256	344	395	484	493	531	822	1,870	161	305	119	262
29	209	337	410	474	484	550	809	2,010	192	a 220	112	208
30	209	330	418	464	----------	550	698	1,870	91	a 200	192	197
31	223	----------	380	464	----------	550	----------	1,780	----------	262	192	----------
Total	5,897	16,578	11,098	13,661	14,044	16,111	18,757	42,563	13,534	8,179	14,195	9,332
Mean	190	553	358	441	484	520	625	1,373	451	264	458	311
Ac-ft	11,700	32,880	22,010	27,100	27,860	31,960	37,200	84,420	26,840	16,220	28,160	18,510
(†)				0	0	1,610	2,020	1,930	1,250	1,820	1,170	1,620

Calendar year 1963: Max 2,250 Min 54 Mean 562 Ac-ft 406,600
Water year 1963-64: Max 2,010 Min 80 Mean 503 Ac-ft 364,900

Peak discharge, (base, 5,000 cfs).--No peak above base.

† Monthly diversion, in acre-ft, of Cochiti eastside canal; record of this flow is furnished by Bureau of Reclamation.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3215. Jemez River below East Fork, near Jemez Springs, N. Mex.

Location.--Lat 35°49'39", long 106°38'51", in NW¼ sec.5, T.18 N., R.3 E., on left bank 0.4 mile downstream from East Fork and boundary of Santa Fe National Forest and 5.3 miles northeast of Jemez Springs.

Drainage area.--173 sq mi.

Records available.--July 1949 to October 1950 (gaged separately above East Fork), May 1951 to September 1957 (irrigation seasons only), March 1958 to September 1964. Records for 1949-50 published as "near Jemez Springs" and "East Fork Jemez River near Jemez Springs".

Gage.--Water-stage recorder. Datum of gage is 6,702.7 ft above mean sea level (planetable survey). Prior to May 1951, at sites 3,000 ft upstream, at different datums and on separate channels.

Average discharge.--7 years (1949-50, 1958-64), 25.7 cfs (18,610 acre-ft per year).

Extremes.--Maximum discharge during year, 592 cfs Apr. 11 (gage height, 3.43 ft); minimum, 4.8 cfs Dec. 3.
1949-50, 1951-64: Maximum discharge recorded, 2,520 cfs Apr. 21, 1958 (gage height, 7.35 ft), from rating curve extended above 1,100 cfs on basis of slope-area and contracted-opening measurements of peak flow; minimum daily recorded, 6 cfs Jan. 5, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 29				Mar. 30 to Sept. 30					
0.8	7.4	1.0	15	0.9	6.0	1.2	23	2.0	140
.9	10	1.1	21	1.0	10	1.5	56	2.7	310

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*10	14	11	10	12	12	*250	22	15	9.1	21	11
2	10	13	10	10	11	12	124	21	13	8.2	22	10
3	10	14	9.8	11	11	12	43	18	*14	7.8	17	10
4	11	14	9.9	10	11	*12	25	17	14	7.3	14	*9.5
5	10	*13	10	10	*11	12	22	15	12	7.3	*14	11
6	10	12	10	11	12	11	*18	15	11	7.3	13	12
7	10	12	11	*b 11	b 10	10	15	14	10	7.8	15	12
8	10	12	b 9	b 10	b 10	12	15	14	9.5	9.1	16	10
9	10	12	10	b 9	b 11	13	20	14	9.5	9.5	21	11
10	10	12	10	b 10	12	13	23	13	9.1	11	20	11
11	10	12	11	b 9	11	13	213	13	8.6	11	20	11
12	10	12	b 10	b 8	12	13	218	*13	8.6	32	30	12
13	10	12	9	b 8	12	13	*92	12	8.2	21	24	12
14	10	12	8	b 7	12	10	98	12	8.2	15	19	12
15	10	12	9	b 8	b 11	11	131	12	7.8	15	18	12
16	10	13	10	9	b 12	13	107	11	7.8	13	15	12
17	10	12	11	10	b 12	*14	74	11	7.8	15	14	12
18	11	11	11	12	b 13	16	51	12	7.8	13	*13	10
19	18	12	11	11	b 12	15	41	12	7.8	14	13	10
20	19	11	11	11	12	14	*38	14	7.8	15	12	12
21	14	*13	10	11	12	16	28	15	7.8	15	11	13
22	13	12	9	11	b 11	16	27	14	7.8	13	10	17
23	12	9.2	9	11	13	16	25	13	7.8	*12	10	14
24	12	11	9	10	b 11	17	25	11	7.8	13	10	13
25	11	14	10	9	12	14	23	10	8.2	15	10	13
26	11	8.7	11	10	12	13	20	13	*8.2	19	10	14
27	11	10	11	12	b 11	16	*20	14	8.2	18	11	13
28	11	11	11	12	b 11	19	19	12	7.3	17	11	12
29	11	11	10	11	12	20	20	10	7.8	15	11	11
30	11	10	10	11	---	246	22	10	9.1	22	10	10
31	13	---	10	11	---	300	---	16	---	27	10	---
Total	349	356.9	311.7	314	335	944	1,847	423	277.5	434.4	465	352.5
Mean	11.3	11.9	10.1	10.1	11.6	30.5	61.6	13.6	9.25	14.0	15.0	11.8
Ac-ft	692	708	618	623	664	1,870	3,660	839	550	862	922	699

Calendar year 1963 Max 454 Min 8 Mean 19.6 Ac-ft 14,200
Water year 1963-64 Max 300 Min 7 Mean 17.5 Ac-ft 12,710

Peak discharge (base, 500 cfs).--Mar. 30 (2030) 568 cfs (3.37 ft); Apr. 11 (2130) 592 cfs (3.43 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Dec. 14 to Jan. 6, Jan. 16 to Feb. 4, Mar. 31, Apr. 1

8-3230. Rio Guadalupe at Box Canyon near Jemez, N. Mex.

Location.--Lat 35°43'55", long 106°45'45", in E½ sec.6, T.17 N., R.2 E. (projected), in Canon de San Diego Grant, on left bank at downstream end of Guadalupe Box Canyon, 4.8 miles upstream from mouth, 5 miles southwest of Jemez Springs, and 7 miles north of Jemez.

Drainage area.--235 sq mi.

Records available.--May 1951 to September 1957 (irrigation seasons only), May 1958 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,015.5 ft above mean sea level, datum of 1929 (planetable survey).

Average discharge.--6 years (1959-64), 30.3 cfs (21,940 acre-ft per year).

Extremes.--Maximum discharge during year, 298 cfs Aug. 1 (gage height, 4.95 ft); minimum, 2.9 cfs Dec. 8.
1951-64: Maximum discharge determined, 1,440 cfs Apr. 21, 1958 (gage height, 7.6 ft, from floodmarks), from rating curve extended above 750 cfs on basis of slope-area measurements of peak flow; minimum, 2 cfs Feb. 28, 1962.
Maximum discharge known probably occurred on May 13 or 14, 1941, when a discharge of 3,190 cfs was computed for a downstream station (drainage area, 239 sq mi) called Rio Guadalupe near Jemez Springs.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation by San Gregorio Reservoir on Clear Creek, tributary to Rio de Las Vacas, to Rio Guadalupe (constructed July to October 1958, capacity, 345 acre-ft), and by transmountain diversion into Rio Puerco Basin for irrigation of 200 to 300 acres in vicinity of Cuba.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.9	3.1	3.7	42
3.0	4.7	4.0	81
3.2	10	4.2	117
3.4	19		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 5.8	7.9	6.8	d 8	b 6.5	b 6.5	* 56	75	37	5.4	30	5.8
2	5.6	7.9	7.3	d 8	7.0	6.3	44	75	33	5.2	19	5.4
3	5.6	9.1	7.6	d 8	6.5	6.5	21	75	*26	4.9	16	5.2
4	5.6	8.8	8.2	d 8	6.5	6.8	18	84	23	4.7	12	* 5.4
5	5.4	* 8.5	8.2	d 8	*b 5.0	b 6.5	17	78	20	4.5	*10	6.3
6	5.4	8.5	7.3	b 8	b 6	6.5	*15	70	18	4.4	9.4	6.5
7	5.4	7.9	6.3	*b 8	b 5	b 6.5	12	80	16	4.4	9.1	6.5
8	5.4	7.9	b 7.0	a 7	b 6	7.3	13	75	14	4.5	10	6.3
9	5.2	7.9	b 7.5	b 6	b 7	7.0	15	81	13	5.4	17	6.1
10	5.2	7.9	b 8.0	b 6.5	b 7	7.0	19	95	12	5.6	12	6.1
11	5.2	7.9	6.5	a 6	6.5	6.5	34	93	11	6.3	13	5.6
12	5.2	7.9	*b 7	a 5	6.5	7.0	45	*100	10	27	30	5.8
13	4.9	7.9	b 6.5	a 5	6.5	7.6	34	86	9.7	22	25	5.6
14	4.9	7.9	b 6	*b 5	b 6	b 7	38	76	9.1	14	19	6.1
15	5.2	7.6	b 6	b 6	b 6	b 7	45	63	8.5	10	20	6.3
16	5.2	7.9	a 7	b 6	b 6	7.9	* 53	62	10	8.2	14	7.3
17	5.4	8.5	a 8	b 6.5	b 6	8.8	57	61	9.4	9.4	11	7.6
18	5.6	8.2	a 8	7.0	*b 6	13	53	61	7.6	7.3	*9.4	6.3
19	9.4	7.9	d 8	6.5	b 6	13	49	62	6.8	6.5	8.8	5.8
20	13	7.9	d 8	6.5	6.5	11	* 52	60	6.5	6.3	8.5	5.8
21	13	*7.9	d 7	6.3	6.5	14	44	63	6.3	6.8	8.2	6.5
22	10	7.9	d 7	6.3	b 6	16	49	52	6.1	7.6	7.3	8.2
23	9.1	7.3	b 7	5.8	b 7	16	50	45	5.8	* 8.2	6.8	12
24	8.2	7.6	d 7	5.8	b 6	12	58	38	5.8	11	6.3	8.5
25	7.6	8.2	d 8	b 5.5	b 7	11	60	37	5.8	10	6.1	*7.6
26	7.3	6.8	d 8	6.8	b 7	10	52	62	* 5.6	11	6.1	12
27	7.0	7.0	d 8	6.3	b 6.5	10	* 53	54	5.6	11	6.3	a 10
28	6.8	7.3	d 8	6.5	b 6.5	12	56	36	5.6	12	6.3	a 9
29	6.8	6.8	d 8	6.1	b 6.5	15	81	28	5.6	19	5.8	a 8
30	6.8	6.8	b 7	6.5	----------	29	70	25	5.6	13	5.8	a 8
31	7.3	----------	b 8	6.3	----------	43	----------	31	----------	19	5.8	----------
Total	208.5	235.5	228.2	203.2	183.5	343.7	1,263	1,983.	358.4	294.6	374.0	211.6
Mean	6.73	7.85	7.36	6.55	6.33	11.1	42.1	64.0	11.9	9.50	12.1	7.05
Ac-ft	414	467	453	403	364	682	2,500	3,930	711	584	742	420

Calendar year 1963: Max 191 Min 3.6 Mean 19.3 Ac-ft 13,930
Water year 1963-64: Max 100 Min 4.4 Mean 16.1 Ac-ft 11,670

Peak discharge (base, 400 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.
d Doubtful gage-height record.

8-3240. Jemez River near Jemez, N. Mex.

Location.--Lat 35°39'45", long 106°44'30", in NW¼ sec.33, T.17 N., R.2 E. (projected), in Canyon de San Diego Grant, on left bank 0.7 mile downstream from Rio Guadalupe and 3½ miles north of Jemez, Sandoval County.

Drainage area.--470 sq mi.

Records available.--June 1936 to May 1941 (published as Jemez Creek near Jemez), August 1949 to October 1950, May 1951 to September 1952 (irrigation seasons only), March 1953 to September 1954, May 1955 to September 1957 (irrigation seasons only), May 1958 to September 1964.

Gage.--Water-stage recorder (digital). Datum of gage is 5,622.3 ft above mean sea level, datum of 1929. June 22, 1936, to Mar. 11, 1937, at site 60 ft upstream at datum 0.50 ft higher. Mar. 12, 1937, to July 8, 1938, at present site at datum 0.70 ft higher. July 9, 1938, to May 6, 1941, at site 60 ft upstream at datum 0.70 ft higher.

Average discharge.--12 years (1936-40, 1949-50, 1953-54, 1958-64), 61.6 cfs (44,600 acre-ft per year).

Extremes.--Maximum discharge during year, 4,520 cfs Aug. 1 (gage height, 8.10 ft); minimum, 10 cfs July 6.
1936-41, 1949-64: Maximum discharge recorded, that of Aug. 1, 1964; minimum daily recorded, 5.8 cfs July 11, 12, 1951.
Maximum flood known since at least 1890 occurred between May 6 and 15, 1941, after gage was destroyed (discharge probably exceeded 6,000 cfs), from information by local residents. A peak of 5,900 cfs occurred Apr. 21, 1958 (gage height, 8.2 ft); from rating curve extended above 2,200 cfs on basis of contracted-opening measurement.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 300 acres above station.

Rating tables, except periods of ice effect (gage-height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 29 to Sept. 30)

Oct. 1 to Mar. 30				Mar. 31 to Sept. 30			
1.5	12	2.2	70	1.6	8.0	2.6	120
1.7	21	2.5	120	1.8	16	3.0	230
1.9	36	2.9	220	2.0	30	3.4	370
				2.3	64		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 16	27	25	22	25	21	* 341	83	50	14	204	14
2	16	28	25	22	23	21	203	84	44	13	43	14
3	17	29	23	23	23	21	87	84	*37	12	37	13
4	16	29	23	22	23	* 20	56	92	33	12	32	*14
5	17	*27	23	22	* b21	20	48	89	28	12	* 31	15
6	16	26	b 22	b 21	23	21	* 42	82	25	11	26	16
7	16	26	b 21	* b 22	b20	20	35	87	23	12	23	17
8	16	26	b 20	b 20	b18	21	36	83	21	13	25	17
9	16	26	22	b 18	b20	21	43	86	20	14	32	16
10	16	26	23	b 16	25	22	48	107	20	15	39	16
11	15	26	b 21	b 17	25	21	200	101	18	16	35	16
12	16	25	*b 17	b 15	24	22	294	*108	18	37	51	16
13	15	25	b 15	b 14	23	22	*128	98	17	43	43	16
14	16	26	b 15	b 13	22	21	117	88	16	27	40	16
15	17	26	b 18	b 15	b21	20	166	77	14	26	44	19
16	18	26	21	b 18	b22	23	162	71	13	20	35	20
17	17	27	22	b20	23	* 27	*136	71	13	28	31	20
18	17	25	22	b22	* 23	25	106	71	12	20	* 31	17
19	32	28	22	22	23	27	92	70	12	23	29	16
20	38	28	22	22	23	26	* 88	70	11	21	27	16
21	33	*31	22	22	22	26	74	75	12	21	25	22
22	30	29	b21	22	22	30	73	64	11	23	22	26
23	28	26	b 18	21	22	31	73	59	11	* 24	21	26
24	26	26	b20	b 19	22	28	76	50	12	21	18	22
25	26	32	22	b 16	22	27	72	47	13	24	18	* 21
26	25	26	22	b 19	21	24	67	66	*14	31	14	23
27	25	25	22	23	21	26	*66	63	12	38	16	25
28	24	28	22	22	21	27	63	49	13	29	18	20
29	24	27	21	22	22	32	81	40	13	105	16	19
30	25	26	22	22	----------	194	82	39	13	34	14	20
31	25	----------	22	23	----------	340	----------	44	----------	50	14	----------
Total	654	808	656	617	645	1,227	3,154	2,298	569	789	1,054	548
Mean	21.1	26.9	21.2	19.9	22.2	39.6	105	74.1	19.0	25.	34.0	18.3
Ac-ft	1,300	1,600	1,300	1,220	1,280	2,430	6,260	4,560	1,130	1,560	2,090	1,090

Calendar year 1963: Max 602 Min 9.6 Mean 42.3 Ac-ft 30,620
Water year 1963-64: Max 341 Min 11 Mean 35.6 Ac-ft 25,820

Peak discharge (base, 1,000 cfs).--July 29 (2000) 1,030 cfs (4.72 ft); Aug. 1 (1500) 4,520 cfs (8.10 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-3290. Jemez River below Jemez Canyon Dam, N. Mex.

Location.--Lat 35°23'10", long 106°31'45", in NE¼ sec.5, T.13 N., R.4 E., on right bank three-quarters of a mile downstream from Jemez Canyon Dam, 1½ miles upstream from mouth, and 6 miles north of Bernalillo.

Drainage area.--1,040 sq mi.

Records available.--March 1936 to January 1938, March 1943 to September 1964. Published as "Jemez Creek" prior to 1948, and as "near Bernalillo" prior to 1954.

Gage.--Water-stage recorder. Datum of gage is 5,095.60 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Apr. 24, 1951, at site three-quarters of a mile upstream at datum 24.51 ft higher. Apr. 24, 1951, to June 25, 1958, at site 37 ft upstream at datum 4.40 ft above present datum. Supplementary water-stage recorder at gates on Jemez Canyon Dam at datum 5,125.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark) used at times since January 1953.

Average discharge.--22 years (1936-37, 1943-64), 50.1 cfs (36,270 acre-ft per year).

Extremes.--Maximum discharge during year, 530 cfs Oct. 20 (gage height, 6.50 ft); no flow at times.
1936-38, 1943-64: Maximum discharge, 16,300 cfs Aug. 29, 1943 (gage height, 5.62 ft, site and datum then in use), from rating curve extended above 3,000 cfs by logarithmic plotting; no flow at times.
A flood in 1900 was probably less than 16,000, but highest known outside period of record.

Remarks.--Records fair except those for periods of ice effect, and those for June to September, which are poor. Discharge measurements generally made 2 to 8 times a month. Subsequent to October 1953, flow at this station can be completely regulated by Jemez Canyon Reservoir (see p.169). However, reservoir is designed essentially for desilting and flood control rather than storage. Diversions for irrigation of about 3,000 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	14	8.7	b14	14	14	192	32	14	0	12	0
2	0	14	7.5	b13	17	13	264	46	13	0	100	0
3	0	24	8.4	13	6.9	27	243	45	7.5	0	157	0
4	0	19	7.5	b12	12	24	205	44	6.3	0	123	0
5	0	17	6.9	b15	9.9	26	146	43	.8	0	53	28
6	0	16	6.6	a12	a 4	29	79	43	0	0	a10	.4
7	0	16	6.7	a10	a 0	23	58	43	0	0	1.8	0
8	0	14	4.8	b10	a 0	7.5	42	43	0	0	1.5	0
9	0	11	6.5	a10	a 2	2.2	26	43	0	0	2.3	0
10	0	12	9.0	a 8	b40	6.1	28	43	0	0	4.2	0
11	0	15	10	a12	b60	7.5	88	67	0	0	92	.2
12	0	14	b4	a 4	b80	16	91	60	0	0	20	0
13	0	14	b2	a 0	b100	19	88	58	0	0	27	0
14	0	16	a5	b 1	b30	14	85	58	0	0	18	0
15	0	14	a10	b 2	b15	16	82	78	0	0	26	0
16	0	14	a17	b 6	15	11	98	78	0	0	27	0
17	0	14	19	b10	9.3	17	110	58	0	0	18	0
18	0	13	18	b20	11	23	110	29	0	0	13	0
19	2.5	14	17	b30	15	24	110	18	0	0	58	0
20	313	15	18	b40	18	23	91	25	0	0	33	0
21	6.3	26	21	b50	17	13	57	37	0	0	a5	6.5
22	3.4	26	16	21	18	23	45	33	0	0	0	7.2
23	2.0	18	13	7.1	11	27	48	27	0	0	0	.6
24	3.3	18	8.4	.5	17	24	37	22	0	0	0	.2
25	3.4	15	9.6	1.2	20	19	29	14	0	0	0	.1
26	3.4	16	14	22	17	16	26	22	0	0	0	32
27	5.3	14	13	20	16	20	25	33	0	0	0	3.4
28	4.8	12	13	15	13	19	60	31	0	0	0	2.1
29	5.8	10	13	16	19	31	38	29	0	0	0	1.6
30	7.5	8.4	8.4	13	----------	42	34	25	0	15	0	0
31	13	----------	6.1	14	----------	124	----------	18	----------	2.1	0	----------
Total	373.7	463.4	328.1	421.8	607.1	700.3	2,635	1,245	41.6	17.1	801.8	82.3
Mean	12.1	15.4	10.6	13.6	20.9	22.6	87.8	40.2	1.39	0.55	25.9	2.74
Ac-ft	741	919	651	837	1,200	1,390	5,230	2,470	83	34	1,590	163

Calendar year 1963: Max 455 Min 0 Mean 26.5 Ac-ft 19,160
Water year 1963-64: Max 313 Min 0 Mean 21.1 Ac-ft 15,310

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3291. Bernalillo floodwater retarding reservoir No. 1 (Piedra Lisa Arroyo), near Bernalillo, N. Mex.

Location.--Lat 35°18'50", long 106°31'45", in NW¼ sec.33, T.13 N., R.4 E. (projected), in Bernalillo Grant, in reservoir 0.3 mile east of intersection of State Highways 44 and 422 and 1½ miles northeast of Bernalillo.

Drainage area.--4.1 sq mi, of which 2.0 sq mi has contouring, pitting and small dams to reduce runoff.

Records available.--September 1955 to September 1964.

Gage.--Water-stage recorder adjacent to outlet tower with fixed ports. Datum of gage is 5,169.98 ft above mean sea level (levels by Soil Conservation Service). Since July 21, 1958, supplementary outflow gage 390 ft below toe of dam, water-stage recorder and Parshall flume.

Average outflow.--9 years, 0.013 cfs (9.4 acre-ft per year).

Extremes.--Maximum outflow during year, 7.7 cfs July 8; no inflow or outflow except that of July 8 and Sept. 26.
1955-64: Maximum outflow, 55 cfs July 19, 1956 (gage height, 11.23 ft). Maximum inflow, 2,330 cfs, July 19, 1956 (average for 5-minute interval), computed from outflow and change in reservoir contents. No inflow or outflow for most of time.

Remarks.--Records good for July 8, fair for Sept. 26. No adjustments made for evaporation or seepage.

Reservoir is formed by earth-fill dam, completed in 1955. Capacity, 300 acre-ft (original survey, no dead storage). Elevation of spillway crest is 27 ft, crest of dam is 35 ft. Outlet tower has an inside opening 3 ft square and outlet pipe through dam is 2 ft in diameter. A total of 9 port openings are spaced at 5-ft vertical intervals on upstream and sides of tower. They are 2 ft wide by 1 ft high; sill of lowest upstream port is at gage-height 4.8 ft (modified in 1963) and lowest side ports at gage-heights 6.3 ft.

Outflow during water year October 1963 to September 1964, supplementary gage

Flow event	Date	Outflow (hours)	Maximum (cfs)	cfs-days	Runoff (acre-ft)
16	July 8	3	7.7	0.33	0.65
17	September 26	3	7.2	0.36	0.71
Totals		6	-	0.69	1.36

8-3295. Rio Grande near Bernalillo, N. Mex.

Location.--Lat 35°17'05", long 106°35'45", in SE¼NW¼ sec.11, T.12 N., R.3 E. (projected), on right bank 2 miles northwest of Sandia Pueblo, 3 miles southwest of Bernalillo, 3.5 miles downstream from State Highway 44, and 8.5 miles downstream from Jemez River.

Drainage area.--17,300 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--May 1941 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder at a datum of 5,030.57 ft above mean sea level, datum of 1929, adjustment of 1951. Supplemental water-stage recorder at a site 1,900 ft downstream used alternately 1953-58, 1961, at the same datum 1953-55, variable 1956-58 and 1.26 ft lower than primary gage in 1961.

Average discharge.--23 years, 1,069 cfs (773,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,450 cfs May 27 (gage height, 4.07 ft); no flow at times.
1941-64: Maximum discharge, 25,400 cfs May 16, 1941; maximum gage height, 6.83 ft Sept. 20, 1941; no flow at times.
Other major floods occurred as follows (based primarily on records for station at San Felipe): Sept. 23, 1929, about 23,000 cfs; Aug. 21, 1935, about 22,000 cfs; June 26, 1937, about 27,000 cfs.

Remarks.--Records good except those for periods of ice effect and those for July 19 to Sept. 30, which are poor. Discharge measurements generally made 3 or 4 times a month. Diversions above station for irrigation of about 710,000 acres, some of which is below station. Possible regulation by operation of two reservoirs on Rio Chama and flood-and-silt detention reservoir on Jemez River (see p.169).

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	54	328	350	490	316	203	190	890	0	5	0
2	0	174	321	370	442	310	377	182	586	0	70	0
3	0	182	307	390	380	251	433	370	670	0	113	0
4	0	182	270	400	260	228	405	363	530	0	221	0
5	0	182	246	420	300	224	402	410	402	0	384	109
6	0	210	240	360	300	85	314	658	363	0	178	183
7	0	225	230	340	328	79	182	490	314	0	25	57
8	0	235	230	320	307	92	123	622	182	0	5	10
9	0	246	270	300	276	95	96	598	120	0	2	0
10	0	246	264	300	349	98	73	646	90	0	62	0
11	0	246	294	140	450	85	56	768	65	0	70	0
12	0	240	340	140	480	65	110	684	40	0	40	0
13	0	928	320	140	500	44	141	684	56	0	120	1.0
14	0	1,290	225	140	442	59	96	754	34	0	966	0
15	0	1,230	186	160	402	67	86	874	10	0	992	0
16	0	1,190	220	180	410	61	92	970	0	0	940	0
17	0	1,150	300	200	402	49	113	1,080	0	0	354	0
18	0	1,150	360	240	405	53	178	1,020	0	0	30	0
19	0	1,060	335	280	440	61	356	874	0	3.1	13	0
20	0	826	314	340	440	199	574	698	0	0	16	0
21	0	500	321	380	412	246	500	826	0	0	0	0
22	0	356	300	400	405	290	282	1,080	0	0	0	1.0
23	0	335	288	420	398	364	166	1,170	0	0	0	3.5
24	0	335	300	440	384	340	103	1,170	0	0	0	4.6
25	1.0	307	300	400	412	154	129	922	0	0	0	117
26	5.0	307	335	450	398	119	288	684	0	0	0	27
27	8.5	288	335	500	405	140	378	1,430	0	0	0	10
28	7.5	300	342	550	370	75	370	1,380	0	0	0	2
29	2.0	314	363	530	305	79	328	1,600	0	0	0	0
30	7.2	328	349	622	----------	110	246	1,350	0	0	0	0
31	13	----------	335	540	----------	167	----------	1,330	----------	3	0	----------
Total	44.2	14,616	9,168	10,742	11,292	4,605	7,200	25,877	4,352	6.1	4,606	525.1
Mean	1.43	487	296	347	389	149	240	835	145	0.20	149	17.5
Ac-ft	88	28,990	18,180	21,310	22,400	9,130	14,280	51,330	8,630	12	9,140	1,040

Calendar year 1963: Max 2,170 Min 0 Mean 382 Ac-ft 276,900
Water year 1963-64: Max 1,600 Min 0 Mean 254 Ac-ft 184,500

Peak discharge (base, 5,000 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Dec. 12, 13, 16-18, Jan. 1-27, Feb. 3-6.

8-3300. Rio Grande at Albuquerque, N. Mex.

Location.--Lat 35°05'20", long 106°40'50", in SE¼ sec.13, T.10 N., R.2 E. (projected), in Atrisco Grant at downstream side of Old Town bridge on U.S. Highway 66 at Albuquerque.

Drainage area.--17,440 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--October 1941 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gages is 4,946.16 ft above mean sea level, datum of 1929. Prior to Sept. 18, 1947, at various sites at datum about 2.00 ft higher; Sept. 18, 1947, to Apr. 12, 1959, at site 550 ft to the left of present site; Apr. 13, 1959, to June 29, 1960, at site 150 ft to the right of present site. Supplemental water-stage recorder at a site 75 ft to right of present site used June 24 to Aug. 31, 1964, at same datum.

Average discharge.--23 years, 1,059 cfs (766,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,920 cfs May 28 (gage height, 5.94 ft); no flow for many days.
1941-64: Maximum discharge, 25,000 cfs Apr. 24, 1942, from rating curve extended above 13,900 cfs by logarithmic plotting; maximum gage height, 7.0 ft July 18, 1953; no flow at times.

Remarks.--Records good October to June 10, others poor. Discharge measurements generally made twice a week. Possible regulation by operation of reservoirs on Rio Chama and by flood-and-silt detention reservoir on Jemez River (see p.169). Diversions above station for irrigation of about 718,000 acres, several hundred of which are below station.

Cooperation.--Records for Albuquerque Riverside drain and Arenal, Armijo, and Atrisco canals furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	120	335	335	470	452	292	350	1,150	0	0	0
2	a.8	210	320	395	a 450	432	395	274	782	0	6.1	0
3	1.3	185	320	428	a 430	370	530	360	758	0	87	0
4	3.3	185	320	434	405	400	600	500	649	0	36	0
5	1.7	188	310	440	416	330	579	470	506	0	224	0
6	0	188	296	405	452	288	518	702	416	0	113	127
7	0	188	306	370	416	225	320	656	385	0	24	135
8	2.8	192	301	365	350	245	306	758	276	0	a10	31
9	0	195	225	365	355	237	233	774	172	0	a2	a7
10	0	210	218	345	385	253	221	782	110	.3	.2	a2
11	0	214	241	315	446	237	172	822	54	.2	9.2	.6
12	0	225	278	195	500	237	168	814	a30	.2	31	3.2
13	0	741	288	168	500	229	257	782	a25	1.2	10	4.4
14	0	1,070	278	180	524	210	229	854	a30	1.8	300	2.6
15	0	1,080	274	185	464	229	206	991	55	1.8	493	a1
16	0	1,170	278	221	446	225	206	1,120	82	3.9	390	a2
17	0	1,120	292	253	446	237	199	1,190	59	1.6	265	a2
18	0	1,160	306	301	422	206	265	1,190	34	0	85	a4
19	0	1,140	325	390	458	199	355	1,130	20	a1	a20	9.4
20	0	878	335	494	482	210	512	973	19	a2	a15	7.9
21	44	702	345	482	482	237	572	955	a16	0	a12	10
22	1.9	482	350	506	488	288	458	1,110	15	0	a10	7.9
23	.2	410	335	628	494	416	310	1,260	14	.8	a10	.8
24	.2	395	315	500	476	380	245	1,220	5.0	1.8	a10	5.0
25	0	370	a310	464	488	385	214	1,170	3.9	2.5	a3	11
26	0	355	a320	a440	488	283	335	1,010	a3.9	2.5	a1	35
27	1.2	370	340	a450	470	283	470	1,100	3.9	2.7	a.8	35
28	7.9	355	325	a460	524	265	482	1,530	2.9	0	a.4	11
29	1.5	345	310	530	418	218	440	1,440	1.8	2.6	0	10
30	0	340	325	572	----------	225	440	1,470	.8	0	0	10
31	0	----------	325	524	----------	206	----------	1,420	----------	0	0	----------
Total	67.4	14,783	9,446	12,140	13,145	8,637	10,529	29,177	5,679.2	26.9	2,167.7	474.8
Mean	2.17	493	305	392	453	279	351	941	189	.87	69.9	15.8
Ac-ft	134	29,320	18,740	24,080	26,070	17,130	20,880	57,870	11,260	53	4,300	942
(†)	10,350	613	2,540	1,910	716	12,810	14,810	17,520	15,140	11,460	15,830	13,850

Calendar year 1963: Max 2,160 Min 0 Mean 404 Ac-ft 292,800
Water year 1963-64: Max 1,530 Min 0 Mean 290 Ac-ft 210,800

Peak discharge (base, 4,000 cfs).--No peak above base.

† Combined flow, in acre-feet, of Albuquerque Riverside drain and Arenal, Armijo, and Atrisco canals. This flow, which bypasses river gage, can be added to river records to get entire surface flow in valley cross section.
a No gage-height record.

8-3320. Rio Grande near Bernardo, N. Mex.

Location.--Lat 34°25'00", long 106°48'00", in E½NE¼ sec.11, T.2 N., R.1 E. (projected), in Sevilleta or Belen Grant, at bridge on U.S. Highway 60, 2 miles east of Bernardo and 4½ miles upstream from Rio Puerco.

Drainage area.--19,230 sq mi, approximately (includes 2,940 sq mi in closed basin San Luis Valley, Colo.).

Records available.--June 1936 to January 1939, October 1941 to September 1964. Monthly discharge only October 1942 to June 1943 published in WSP 1312. Prior to October 1951, flow of Bernardo interior drain was included only when it carried river overflow; since that date entire flow is included.

Gage.--Water-stage recorders. There are 3 gages, 1 on a conveyance channel designed to carry 2,000 cfs, 5 miles downstream from heading, formerly San Francisco Riverside drain, 1 on the floodway (former river channel) which will now carry water when total flow exceeds about 1,700 cfs, and 1 on Bernardo interior drain. Datum of conveyance channel gage is 4,720.00 ft above mean sea level, datum of 1929, leveling of 1951. Prior to October 1952, main gage was on river channel (the present floodway gage, present datum) at datum 4,722.55 ft above mean sea level, datum of 1929, leveling of 1951. Datum of Bernardo interior drain supplementary recording gage is 4,713.99 ft above mean sea level, datum of 1929, leveling of 1951.

Average discharge.--25 years (1936-38, 1941-64), 1,017 cfs (736,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,720 cfs June 1; minimum, 3.0 cfs Sept. 4.
1936-39, 1941-64: Maximum discharge, 21,100 cfs Apr. 25, 1942 (gage height, 6.90 ft); no flow at times.

Remarks.--Records fair. Records represent total discharge of the river and are a summation of discharge in river channel (now called floodway), conveyance channel, and Bernardo interior drain. Flow in La Joya Eastside drain along left side of floodway is not included in the composite but monthly values shown below in table. Diversions for irrigation of about 740,000 acres above station.

Cooperation.--Records for La Joya Eastside drain are furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	22	285	383	518	493	90	165	1,680	17	12	6.1
2	4.7	19	289	383	488	342	156	174	1,210	18	12	5.3
3	4.4	16	294	388	488	343	190	153	947	21	11	4.5
4	5.4	14	298	413	478	302	221	137	692	21	10	4.2
5	9.7	14	302	444	473	286	397	143	626	23	8.7	5.8
6	8.9	14	298	443	443	269	388	176	433	20	7.5	6.1
7	8.9	13	294	478	448	278	381	167	256	18	6.7	7.5
8	9.7	20	298	438	448	277	367	318	206	17	9.9	5.3
9	16	40	290	398	413	260	301	274	137	17	8.1	8.4
10	20	47	282	428	398	264	207	276	80	17	6.1	11.0
11	18	53	270	432	407	253	176	500	63	18	4.8	6.9
12	18	62	286	397	488	257	105	368	57	21	4.5	7.5
13	12	66	278	372	543	249	119	368	54	22	5.0	10
14	17	121	274	302	523	266	130	383	50	21	6.9	15
15	12	468	286	252	523	246	107	386	45	18	15	10
16	8.6	459	286	214	473	224	80	511	36	21	55	10
17	7.5	510	286	223	468	207	69	660	36	19	62	8.1
18	8.3	637	294	266	453	208	67	729	32	17	36	5.8
19	17	710	310	302	463	188	68	621	30	13	28	5.6
20	23	729	330	343								6.4
21	26	575	347	402	468	145	78	642	30	14	29	6.4
22	30	485	352	457	473	104	90	652	28	16	24	6.4
23	40	350	352	463	483	211	87	741	28	16	20	5.6
24	28	320	357	513	478	211	85	761	26	12	15	7.8
25	22	308	362	478	483	200	70	927	25	15	14	9.3
26	17	300	362	462	483	167	79	918	26	15	10	15
27	16	301	353	427	488	208	88	931	25	12	9	21
28	22	297	363	432	483	192	105	840	24	12	8.7	34
29	20	289	363	502	483	132	135	1,140	21	8.7	12	36
30	21	273	363	513	----------	144	141	1,230	20	8.4	9.0	17
31	24	----------	373	518	----------	120	----------	1,360	----------	11	7.5	----------
Total	500.9	7,532	9,777	12,466	13,751	7,240	4,681	17,043	6,959	514.1	515.4	313.6
Mean	16.2	251	315	402	474	234	156	347	232	16.6	16.6	10.4
Ac-ft	994	14,940	19,390	24,730	27,270	14,360	9,280	33,800	13,800	1,020	1,020	622
(†)	1,270	938	1,730	1,950	2,060	5,450	4,930	5,490	3,210	1,360	1,550	1,280

Calendar year 1963: Max 1,980 Min 3.1 Mean 340 Ac-ft 246,300
Water year 1963-64: Max 1,680 Min 4.2 Mean 222 Ac-ft 161,200

† Monthly discharge, in acre-feet, of La Joya Eastside drain.

8-3340. Rio Puerco above Chico Arroyo, near Guadalupe, N. Mex.

Location.--Lat 35°36'05", long 107°09'55", in SW¼ sec.21, T.16 N., R.3 W., on right bank 1.6 miles upstream from Chico Arroyo and 5½ miles northeast of village of Guadalupe, Sandoval County.

Drainage area.--420 sq mi, approximately.

Records available.--July 1951 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 5,950 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 13.0 cfs (9,410 acre-ft per year).

Extremes.--Maximum discharge during year, 2,300 cfs Aug. 12 (gage height, 7.68 ft); no flow for many days.
1951-64: Maximum discharge, 4,540 cfs Aug. 18, 1961, from rating curve extended above 280 cfs on basis of slope-area measurements at gage heights 7.75 and 10.60 ft; maximum gage height, 13.2 ft Aug. 12, 1952 no flow for many days in each year.
Flood of June 29, 1943, probably exceeded 5,000 cfs (based on records for stations above and below).

Remarks.--Records fair except those below 10 cfs and those for periods of no gage-height record, which are poor. Diversions for irrigation of about 3,700 acres above station in past years, but present diversion negligible.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 5-7, 18-20)

0.18	0	0.6	4.5	1.5	70
.2	.02	.7	8.3	1.8	108
.3	.2	.8	13	2.2	167
.4	.7	1.0	25	2.7	265
.5	2.0	1.2	40	3.2	390

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0	0.1	0.1	0		(**)		0	10	0
2	0	9.8	0	.2	.1	0	(*)			0	40	0
3	*0	3	0	.2	.1	0				0	10	0
4	0	.5	0	.1	0	.1				0	30	0
5	0	.1	0	.1	0	*.1				0	*12	.3
6	0	.1	.1	.1	0	.2				0	1.0	.2
7	0	0	.1	.1	0	.2				0	.9	.1
8	0	0	.1	0	0	.1				0	.2	**.4
9	0	0	.1	0	0	.1				0	.1	.1
10	0	0	.1	0	*0	.1				0	21	0
11	0	0	.1	.1	.1	.2				0	2	0
12	0	0	.1	0	.1	.3				0	*372	0
13	0	0	0	0	.1	1				0	72	0
14	0	0	0	0	0	2	(**)			0	10	0
15	0	0	.1	0	0	4				0	1	4.1
16	0	0	.2	.1	0	7				0	.3	3.8
17	0	0	.3	.1	0	10				0	.1	6.2
18	0	0	.2	.1	0	*20				0	** 0	.5
19	18	*0	**	.2	0	21				0	0	.1
20	74	0	.2	.2	0	7				0	0	.2
21	6	0	.2	.2	0	2				90	0	6
22	2	0	.2	.2	0	1				10	0	19
23	.2	0	.2	.2	0	.5				1	0	*1.2
24	.1	0	.2	0	0	.4				.1	0	.1
25	*.1	0	.2	0	0	*.4				.1	0	5.7
26	.1	0	.2	.1	0	.2				.1	0	9.2
27	0	0	.2	.1	0	.1				15	0	1
28	0	0	.3	.1	.1	.1				2	0	.1
29	0	0	.3	.1	0	.1				1	0	0
30	0	0	.1	.1	----------	0				*8	0	0
31	.1	----------	.1	.1	----------	0	----------		----------	38	** 0	----------
Total	100.6	13.5	4.1	2.9	0.7	78.2	0	0	0	165.3	582.6	58.3
Mean	3.25	0.45	0.13	0.09	0.02	2.52	0	0	0	5.33	18.8	1.94
Ac-ft	200	27	8.1	5.8	1.4	155	0	0	0	328	1,160	116

Calendar year 1963: Max 247 Min 0 Mean 5.65 Ac-ft 4,100
Water year 1963-64: Max 372 Min 0 Mean 2.75 Ac-ft 2,000

Peak discharge (base, 1,800 cfs).--Aug. 12 (1630) 2,300 cfs (7.68 ft).

* Discharge measurement or observation of no flow made on this day.
** Field estimate made on this day.
Note.--No gage-height record Nov. 3-18, Dec. 15-18, Feb. 5-9, 20-25, Mar. 6-17, 20-24, July 21-29, Aug. 1-5, 8, 9, 11, 14-16, Sept. 6, 7, 18-21, 27-30. Stage-discharge relation affected by ice Dec. 8-14, Dec. 19 to Feb. 4, Feb. 10-19.

8-3405. Chico Arroyo near Guadalupe, N. Mex.

Location.--Lat 35°35'40", long 107°11'20", in NE¼ sec.30, T.16 N., R.3 W., on left bank a quarter of a mile upstream from mouth, 4½ miles northwest of Guadalupe, and 5½ miles southwest of Cabezon.

Drainage area.--1,390 sq mi, approximately.

Records available.--November 1943 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,923 ft above mean sea level, datum of 1929.

Average discharge.--21 years, 24.0 cfs (17,380 acre-ft per year).

Extremes.--Maximum discharge during year, 5,360 cfs Aug. 12 (gage height, 8.26 ft), from rating curve extended as explained below; no flow for many days.
1943-64: Maximum discharge, 12,200 cfs July 17, 1953 (gage height, 15.1 ft), from rating curve extended above 2,900 cfs on basis of slope-area measurements at gage heights 9.6 and 12.8 ft; no flow at times.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 100 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 31 to Sept. 5)

1.9	0	2.6	10	3.2	108
2.0	.3	2.7	14	3.4	200
2.1	.9	2.8	21	3.7	400
2.4	4.9	2.9	32	4.0	630
2.5	6.8	3.0	49	4.4	1,020

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 0	7.0	0.1	0.1	0.1	0	185	*0	1.0	*0	372	0.1
2	a 0	11	.1	.1	0	0	*62	0	a .2	0	643	.1
3	*0	410	.1	.1	0	.9	23	0	a .1	0	72	.1
4	0	21	.1	b0	0	b1.3	16	0	0	0	419	.1
5	0	9.7	.1	b0	0	*b2.0	9.0	0	0	0	*405	92
6	0	a 4	.1	b0	0	b2.5	a 4	0	0	0	25	13
7	0	a 2	*.1	.1	0	b2.5	a 2	0	0	0	7.1	10
8	0	a 1	.1	b0	0	b8.0	a 1	0	0	0	10	*4.2
9	0	a .8	.1	*b0	0	b4.0	a .5	0	0	125	26	1.4
10	0	a .6	.1	b0	*.1	b6.0	a .1	0	*0	26	837	18
11	0	a .4	.1	b0	0	4.5	a 0	0	0	4.2	59	6.8
12	0	a .3	b.1	b0	.1	5.1	3.2	0	0	32	*983	a 1.5
13	0	a .2	b0	b0	.1	b9.0	3.2	0	0	*.7	680	a .3
14	.1	a .1	b0	b0	.2	b5.0	*2.8	0	0	.4	101	a .1
15	.1	a .1	b0	b0	.1	b6.0	1.0	0	0	0	14	a 20
16	.1	a 0	.1	b0	0	23	.1	0	0	0	a 4	73
17	.1	a 0	.1	b0	0	13	* 0	.1	0	0	a 1	8.7
18	.1	a 0	.1	b0	.1	*28	.1	0	0	0	*.3	a .5
19	186	*0	*.1	.1	.1	12	0	0	0	0	0	a .1
20	106	0	.1	.1	0	4.8	0	.2	0	0	.6	11
21	5.1	.1	.2	.1	.1	2.6	0	25	0	*284	1.3	77
22	a 2	0	.2	.1	.1	2.2	0	*.3	0	106	a 0	378
23	a 1	0	.2	.1	.1	2.1	0	0	0	6.5	a 0	*49
24	a .2	0	.2	b0	.1	a1.5	0	0	0	a 1	a 0	9.7
25	*0	.1	.2	b0	0	*.7	0	0	0	117	a 0	36
26	0	.1	.2	b0	0	.8	0	0	0	178	a 0	236
27	0	.1	.2	.1	0	3.2	0	12	0	35	114	25
28	0	.1	.2	.1	0	2.2	0	1.0	0	50	18	5.5
29	0	.1	.1	.1	0	.5	0	0	0	32	4.5	a 2
30	0	.1	.1	.1	----------	93	0	0	0	*24	a .5	a .2
31	.1	----------	.1	0	----------	309	----------	.4	----------	167	*.1	----------
Total	300.9	468.9	3.6	1.3	1.3	555.4	313.0	39.0	1.3	1,188.8	4,797.4	1,079.4
Mean	9.71	15.6	0.12	0.04	0.04	17.9	10.4	1.26	0.04	38.3	155	36.0
Ac-ft	597	930	7.1	2.6	2.6	1,100	621	77	2.6	2,360	9,520	2,140

Calendar year 1963: Max 1,460 Min 0 Mean 24.3 Ac-ft 17,630
Water year 1963-64: Max 983 Min 0 Mean 23.9 Ac-ft 17,360

Peak discharge (base, 2,900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-21	2225	6.39	3,370	8-10	0040	6.76	3,810
8-4	2125	5.96	2,900	8-12	1840	8.26	5,360

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3420. Bluewater Creek near Bluewater, N. Mex.

Location.--Lat 35°17'50", long 108°01'40", in W½SW¼ sec.5, T.12 N., R.11 W., on left bank 3½ miles northwest of Bluewater Village and 8 miles downstream from Bluewater Dam.

Drainage area.--209 sq mi.

Records available.--July 1912 to August 1915, April 1916 to June 1919, January 1927 to September 1963. Figures of daily discharge for July 20-23, 1912, published in WSP 358, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 6,720 ft (by barometer). Prior to Mar. 4, 1918, at site 113 ft upstream at different datums. Mar. 4, 1918, to Mar. 17, 1939, at site 83 ft upstream; Mar. 4, 1918, to June 28, 1919 (destroyed by flood), at datum 1.92 ft higher, Apr. 6, 1921, to Mar. 17, 1939, at datum 1.57 ft higher.

Average discharge.--42 years (1912-15, 1916-18, 1927-64), 9.85 cfs (7,130 acre-ft per year).

Extremes.--Maximum discharge during year, 208 cfs Aug. 11 (gage height, 4.79 ft); minimum, 0.6 cfs Oct. 15.
1912-18, 1927-64: Maximum discharge observed, about 1,510 cfs Mar. 10, 1916 (gage height, 8.6 ft, site and datum then in use, from floodmarks), from rating curve extended above 4.4 ft by logarithmic plotting; no flow at times.
Maximum flood known occurred Sept. 6, 1909 when Bluewater Dam washed out; stage and discharge not determined. A major flood occurred during period July 12-19, 1919, discharge not determined (gage height, 13.5 ft, from floodmarks, site and datum in use Mar. 4, 1918 to June 28, 1919).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillways, 38,500 acre-ft).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.65	0.8	3.2	15
2.7	1.3	3.4	25
2.8	2.8	3.6	37
3.0	8.4		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 1.2	1.6	1.3	1.5	1.4	*1.1	1.2	2.8	30	*33	22	* 14
2	1.2	1.6	1.2	* 1.5	1.3	1.1	1.3	2.6	29	33	19	16
3	1.2	2.0	1.2	1.5	1.2	1.1	1.3	2.4	29	24	16	20
4	1.2	1.5	1.2	1.5	1.2	*1.1	1.4	2.4	32	23	14	20
5	1.1	1.4	1.3	1.5	1.1	1.2	1.4	2.4	33	22	13	17
6	1.1	1.3	1.2	b 1.3	1.2	1.2	1.6	2.4	33	21	13	13
7	1.2	1.4	1.2	b 1.5	1.1	1.2	1.4	2.4	32	25	15	12
8	1.1	1.3	1.4	b 1.4	1.2	1.1	1.4	2.4	32	27	16	11
9	1.1	1.2	1.3	b 1.3	1.3	1.0	1.3	2.4	32	32	16	10
10	1.2	1.3	1.3	b 1.4	1.4	1.1	1.3	2.4	33	27	20	10
11	1.1	1.2	1.3	b 1.3	1.3	1.1	1.3	2.4	34	27	30	10
12	1.1	1.3	b1.2	b 1.2	1.3	1.1	1.3	6.5	33	24	29	10
13	1.1	1.3	b1.2	b 1.1	1.2	1.1	1.3	10	33	12	21	14
14	1.2	1.2	1.4	b 1.0	1.2	1.1	1.5	10	32	11	14	15
15	1.1	1.2	b1.3	b 1.2	1.2	1.2	1.8	13	32	11	12	17
16	1.2	1.3	1.4	b 1.3	1.1	1.1	2.0	15	32	10	9.0	15
17	1.2	1.4	1.4	b 1.4	1.1	1.1	2.0	15	32	*9.7	8.4	14
18	1.3	1.3	1.4	b 1.3	1.1	1.1	2.2	15	33	10	17	14
19	1.5	1.2	1.3	b 1.2	1.2	1.1	2.4	15	33	9.7	9.4	12
20	1.4	1.2	1.2	b 1.3	1.1	1.1	2.4	19	34	16	* 8.7	12
21	1.3	1.3	1.4	b 1.4	1.1	1.2	2.4	20	32	19	8.4	12
22	1.2	1.3	1.4	1.5	1.1	1.1	2.6	22	32	20	8.4	14
23	1.2	1.2	b1.3	1.5	1.1	*1.1	2.4	24	32	20	8.4	11
24	1.2	1.2	b1.3	1.3	1.1	1.1	2.6	24	32	23	8.7	6.6
25	1.2	1.2	1.5	1.1	1.1	1.1	2.6	23	32	24	21	3.7
26	1.2	1.2	1.5	1.1	1.1	1.1	2.6	23	33	25	21	3.2
27	1.2	1.2	1.5	1.3	1.1	1.1	2.6	22	35	26	20	2.6
28	1.2	1.2	1.4	1.3	1.1	1.1	2.6	*21	34	*26	18	2.4
29	1.2	*1.2	1.5	1.3	1.1	1.2	3.0	23	33	25	18	2.4
30	1.2	1.3	b1.4	1.5	----------	1.2	*3.0	23	33	23	18	*4.0
31	* 1.8	----------	b1.4	1.4	----------	* 1.2	----------	29	----------	18	18	----------
Total	37.7	39.5	41.3	41.4	34.1	34.8	58.2	399.5	971	656.4	490.4	337.9
Mean	1.22	1.32	1.33	1.34	1.18	1.12	1.94	12.9	32.4	21.2	15.8	11.3
Ac-ft	75	78	82	82	68	69	115	792	1,930	1,300	973	670

Calendar year 1963: Max 28 Min 1 Mean 6.43 Ac-ft 4,650
Water year 1963-64: Max 35 Min 1.0 Mean 8.59 Ac-ft 6,230

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Jan. 30 to Mar. 22.

8-3430. Bluewater Creek at Grants, N. Mex.

Location.--Lat 35°09'20", long 107°52'10", in SW¼NW¼ sec.26, T.11 N., R.10 W., on right bank at bridge on State Highway 53 at Grants, 0.2 mile south of U.S. Highway 66.

Drainage area.--1,020 sq mi, approximately.

Records available.--October 1912 to February 1914, June 1914, October 1914 to February 1915, May 1915 to June 1921, September 1921 to June 1923, October 1923 to May 1926, September to December 1926, May 1949 to September 1964. Monthly discharge only for some periods published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 6,468.34 ft above mean sea level (levels by Corps of Engineers). Oct. 30, 1912, to Apr. 23, 1915, staff gage, Apr. 24, 1915, to Dec. 5, 1917, chain gage, and Dec. 6, 1917, to Dec. 31, 1926, staff gage, at nearby sites at different datums.

Average discharge.--25 years (1912-13, 1914-20, 1921-22, 1923-25, 1949-64), 4.74 cfs (3,430 acre-ft per year).

Extremes.--Maximum discharge during year, 98 cfs Aug. 14 (gage height, 2.85 ft); no flow for most of year.
1949-64: Maximum discharge recorded, 1,760 cfs Aug. 28, 1952 (gage height, 5.35 ft), from rating curve extended above 300 cfs on basis of velocity-area studies; no flow for long periods.
Maximum flood known occurred Sept. 6 or 7, 1909, when Bluewater Dam washed out.

Remarks.--Records fair. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillway, 38,500 acre-ft). Diversions and ground-water withdrawals for irrigation of about 4,500 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	(*)					(*)			0	*0.6	0	*0
2				(*)					0	.1	0	0
3									0	0	0	0
4									0	0	0	0
5									0	0	0	.4
6									0	0	0	.5
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									0	0	*18	0
14									0	0	45	0
15									0	0	26	0
16									0	0	7.2	0
17									0	0	2.6	0
18									0	0	.3	0
19									0	0	0	0
20									0	0	* 2.0	0
21									0	0	.2	0
22									0	0	0	0
23									0	0	.3	0
24									0	0	0	0
25									0	0	.1	0
26									0	0	.3	0
27									0	0	0	0
28								(*)	0	0	.1	0
29		(*)							.3	*0	.4	0
30				(*)	----------		(*)		.4	0	.1	*0
31	(*)	----------			----------	(*)	----------		----------	0	.2	----------
Total	0	0	0	0	0	0	0	0	0.7	0.7	102.8	0.9
Mean	0	0	0	0	0	0	0	0	0.02	0.02	3.32	0.03
Ac-ft	0	0	0	0	0	0	0	0	1.4	1.4	204	1.8

Calendar year 1963: Max 75 Min 0 Mean 0.46 Ac-ft 333
Water year 1963-64: Max 45 Min 0 Mean 0.29 Ac-ft 209

Peak discharge (base, 200 cfs).--No peak above base.

* Discharge measurement or observation of no flow made on this day.

8-3431. Grants Canyon at Grants, N. Mex.

Location.--Lat 35°09'40", long 107°50'15", in NE¼NE¼ sec.25, T.11 N., R.10 W., at Roosevelt Avenue, in the town of Grants, 0.2 mile east of intersection of Roosevelt and First Avenue and 1.1 mile upstream from confluence with Bluewater Creek (to form Rio San Jose).

Drainage area.--13.0 sq mi.

Records available.--December 1961 to September 1964.

Gage.--Water-stage recorder and control formed by four culvert barrels. Altitude of gage is 6,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 208 cfs Aug. 12 (gage height, 1.70 ft); no flow for most of time.
1962-64: Maximum discharge, 1,550 cfs Aug. 26, 1963 (gage height, 5.10 ft), from rating curve extended above 218 cfs on basis of slope-area measurements at gage heights 3.17 and 5.10 ft; no flow for most of time.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	(*)					(*)				*0	0.7	*0
2				(*)						0	.1	0
3										0	0	0
4										0	0	0
5										0	0	5.4
6										0	0	0
7										0	0	0
8										0	0	1
9										0	0	9
10										*5.3	0	0
11										0	.2	0
12										0	9.8	0
13										0	*.7	0
14										0	0	0
15										0	0	0
16										0	0	0
17										0	0	0
18										0	0	0
19										0	0	0
20										0	*0	0
21										0	0	0
22										0	0	1
23										0	0	0
24										0	0	0
25										0	0	0
26								(*)		0	9.1	0
27										0	0	0
28										0	0	0
29		(*)								0	0	0
30				(*)			(*)			0	0	*0
31	(*)					(*)				0	0	
Total	0	0	0	0	0	0	0	0	0	5.3	20.6	16.4
Mean	0	0	0	0	0	0	0	0	0	0.17	0.66	0.55
Ac-ft	0	0	0	0	0	0	0	0	0	11	41	33

Calendar year 1963: Max 56 Min 0 Mean 0.39 Ac-ft 285
Water year 1963-64: Max 9.8 Min 0 Mean 0.12 Ac-ft 85

Peak discharge (base, 100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-10	1510	1.57	195	9-5	1510	1.30	110
8-12	2050	1.70	208	9-9	1600	1.65	182
8-26	1440	1.37	124				

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Aug. 27-31, Sept. 6-8, 10-29.

8-3435. Rio San Jose near Grants, N. Mex.

Location.--Lat 35°04'30", long 107°45'00", in SE¼SE¼ sec.23, T.10 N., R.9 W., on right bank at west boundary of Acoma Pueblo Grant, 8½ miles southeast of Grants.

Drainage area.--2,300 sq mi, approximately, of which about 1,130 sq mi does not contribute directly to surface runoff.

Records available.--June 1936 to September 1964. Prior to October 1955, published as San Jose River near Grants.

Gage.--Water-stage recorder and concrete control. Datum of gage is 6,269.47 ft above mean sea level, datum of 1929.

Average discharge.--28 years, 6.73 cfs (4,870 acre-ft per year).

Extremes.--Maximum discharge during year, 32 cfs Aug. 27 (gage height, 1.78 ft); minimum, 4.0 cfs July 11.
1936-64: Maximum discharge, 1,400 cfs Sept. 20 (gage height, 4.87 ft), from rating curve extended above 438 cfs on basis of slope-area measurements at gage heights 3.19 and 4.87 ft; minimum daily, 3.7 cfs several times in 1943, 1946, 1958-59, 1961 and 1963.
Maximum flood known probably occurred Sept. 6 or 7, 1909, following destruction of Bluewater Dam. The peak of August 1947 may have been exceeded by those of August and September 1929, and August 1935.

Remarks.--Records good. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillway, 38,500 acre-ft). Diversions and ground-water withdrawal for irrigation of about 5,100 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 12 to July 1)

1.3	2.3	1.6	15
1.4	4.9	1.7	23

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*4.9	4.9	5.3	4.9	6.5	*5.7	4.9	4.9	4.9	*4.9	4.9	*4.9
2	5.3	5.3	5.3	*4.9	6.1	5.7	4.9	4.9	4.9	4.9	5.3	4.9
3	5.3	5.3	4.9	4.6	6.1	5.3	5.3	4.9	4.9	4.6	6.1	4.9
4	5.3	5.3	5.3	4.9	6.1	5.3	5.7	4.9	4.9	4.6	5.7	4.9
5	5.3	5.3	5.3	5.3	6.1	5.3	5.3	4.9	4.9	4.6	4.9	4.9
6	5.3	5.3	5.3	4.9	5.7	6.5	4.9	4.9	4.9	4.6	4.6	5.7
7	5.3	5.3	4.9	4.9	5.3	6.5	4.9	4.9	4.9	4.6	4.6	7.0
8	5.3	5.3	4.9	4.9	5.3	5.7	4.9	4.9	4.9	4.6	4.9	5.7
9	5.3	5.3	4.9	5.3	5.7	5.3	4.9	4.9	4.9	4.6	4.6	5.3
10	5.3	4.9	4.9	5.3	6.1	5.7	4.6	4.9	4.9	4.6	4.6	8.0
11	5.3	4.9	5.3	5.3	6.1	5.7	4.9	4.9	4.9	4.6	4.6	6.1
12	5.3	4.9	4.9	5.3	6.1	6.1	4.9	4.6	4.9	4.6	5.7	4.9
13	5.3	4.9	4.9	5.3	6.1	5.7	4.3	4.6	4.9	4.6	8.0	4.6
14	5.3	4.9	4.6	5.7	5.7	5.3	4.6	4.9	4.9	4.6	8.5	4.6
15	5.3	5.3	4.9	5.7	5.3	5.3	4.9	4.9	4.9	4.6	18	4.6
16	5.3	5.7	4.9	5.7	5.3	4.9	4.9	4.9	4.9	4.6	21	4.6
17	5.3	5.7	5.3	6.1	5.3	4.9	4.6	4.9	4.9	*4.9	19	4.6
18	5.3	5.3	4.9	6.5	5.3	4.9	4.6	4.9	4.9	5.7	11	4.6
19	5.7	5.3	4.9	6.5	5.7	4.6	4.6	4.9	4.9	4.6	7.5	4.6
20	5.3	5.7	4.9	6.5	5.7	4.6	4.6	4.9	4.9	4.3	*6.1	4.3
21	5.3	5.7	4.9	7.5	5.7	4.3	4.9	4.9	4.9	4.3	4.6	4.3
22	4.9	5.3	4.6	7.0	5.3	4.6	4.9	4.9	4.9	4.3	4.9	4.9
23	4.9	5.3	4.6	6.1	5.3	4.3	4.6	4.9	4.9	4.3	4.9	6.5
24	4.9	5.3	4.9	6.1	4.9	4.6	4.6	4.9	4.9	4.6	4.6	5.7
25	4.9	5.3	4.9	5.7	5.3	4.9	4.6	4.9	4.9	4.6	4.9	4.9
26	4.9	4.9	4.6	5.7	5.3	4.9	4.6	4.9	4.9	4.6	4.6	4.6
27	4.9	4.9	4.6	5.3	5.3	4.9	4.9	4.9	4.9	4.9	17	4.6
28	4.9	4.9	4.6	5.3	5.3	4.6	4.9	* 4.9	4.9	4.9	12	4.6
29	4.9	*5.3	4.6	5.3	5.3	4.6	4.9	4.9	5.3	*4.9	5.7	4.6
30	5.3	5.3	4.3	*5.7	----------	4.6	*4.9	4.9	4.9	4.9	4.9	*4.6
31	*5.3	----------	4.6	6.5	----------	* 4.6	----------	5.3	----------	4.9	4.9	----------
Total	161.1	157.0	151.7	174.7	163.3	159.9	145.0	151.7	147.4	144.9	232.6	153.0
Mean	5.20	5.23	4.89	5.64	5.63	5.16	4.83	4.89	4.91	4.67	7.50	5.10
Ac-ft	320	311	301	347	324	317	288	301	292	287	461	303

Calendar year 1963: Max 254 Min 4.0 Mean 6.95 Ac-ft 5,040
Water year 1963-64: Max 21 Min 4.3 Mean 5.31 Ac-ft 3,850

Peak discharge (base, 100 cfs).--No peak above base.

* Discharge measurement made on this day.

8-3515. Rio San Jose at Correo, N. Mex.

Location.--Lat 34°58'05", long 107°11'15", in NE¼ sec.31, T.9 N., R.3 W., on right bank 0.7 mile upstream from State Highway 6, 0.8 mile northwest of Correo, and 14 miles upstream from mouth.

Drainage area.--3,660 sq mi, approximately, of which about 1,130 sq mi does not contribute directly to surface runoff.

Records available.--April 1943 to September 1964. Prior to October 1955, published as San Jose River at Correo.

Gage.--Water-stage recorder. Datum of gage is 5,492.43 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1958, water-stage recorder and concrete control at site 1 mile downstream at datum 17.55 ft lower.

Average discharge.--21 years, 11.5 cfs (8,330 acre-ft per year).

Extremes.--Maximum discharge during year, 7,000 cfs July 12 (gage height, 6.8 ft, from floodmark inside well), from rating curve extended above 700 cfs on basis of 2 indirect measurements and discharge determined at former station downstream; no flow for many days.

1943-64: Maximum discharge, 7,150 cfs Aug. 11, 1955; maximum gage height, 20.7 ft Aug. 22, 1958, backwater from dam (site and datum then in use); no flow for long periods.

A flood which probably occurred Aug. 21, 1935, reached a stage of 15.4 ft, from floodmarks, former site and datum (discharge, about 11,000 cfs), but was probably exceeded by the flood of Sept. 23, 1929 (discharge not determined), based on study of records for Rio Puerco at Rio Puerco.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow partly regulated by Bluewater Lake (capacity at crest of uncontrolled siphon spillways, 38,500 acre-ft) and one small reservoir above station. Diversions and groundwater withdrawals for irrigation of about 7,800 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	0	1.6	9.6	2.7	361
1.3	.2	1.8	32	3.1	696
1.4	1.2	2.0	68	3.5	1,200
1.5	4.0	2.3	158	3.8	1,680

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	2.8	0	2	4	5.0	3.6	*0		0	29	
2	.8	*2.5	0	2	2	* 6.2	3.6	0		0	16	
3	.1	5.2	0	2	1	6.2	5.2	0		0	12	
4	0	14	0	*2	.1	5.0	6.2	0		0	36	
5	*0	2.2	0	3	.2	5.0	8.0	0		0	*70	
6	0	.7	0	1	1	6.8	6.2	0		0	4.4	
7	0	.4	*0	.2	1	6.0	4.8	0		0	.1	
8	0	.1	0	2	2	6.8	*4.0	0	(*)	*0	0	
9	0	0	0	1	5	5.0	4.0	0		0	2.8	
10	0	0	0	1	*8	5.5	3.6	0		0	2.8	
11	0	0	0	1	10	4.5	3.2	0		.4	4.6	
12	0	0	0	1	14	5.2	2.8	0		*1560	17	
13	0	0	0	1	12	5.2	2.5	0		*123	*234	
14	0	0	0	1	8	5.5	2.5	0		4.0	281	
15	0	0	0	1	7	4.8	2.5	0		1	55	(*)
16	0	0	0	1	7	4.4	.6	0		0	60	
17	0	0	0	1	*6	4.8	0	0		0	14	
18	0	0	0	2	6	4.8	0	0		3.4	2.8	
19	45	*0	0	3	6	*4.8	0	0		.9	7.4	
20	45	0	0	3	6	5.7	0	0		46	*14	
21	*16	0	0	3	5	4.0	0	0		2.8	.4	
22	3.2	0	0	3	5	4.0	0	0		0	0	
23	2.8	0	.1	3	5	4.0	0	0		0	0	
24	2.2	0	0	2	4	4.4	0	0		0	0	
25	2.8	0	.6	1	4	5.5	0	0		0	0	
26	2.5	0	2	2	5	5.0	0	.1		0	0	
27	2.5	0	2	2	3.5	*4.4	0	0		0	0	
28	2.0	0	2	3	4	4.0	0	0		0	0	
29	.7	0	2	4	4	3.6	0	0		0	0	
30	.9	0	2	4	----------	3.6	0	0		*0	0	(*)
31	1.5	----------	2	4	----------	3.6	----------	0	----------	0	*0	----------
Total	129.0	27.9	12.7	64	145.8	153.3	63.3	0.1	0	1741.5	863.3	0
Mean	4.16	0.93	0.41	2.1	5.03	4.95	2.11	0.003	0	56.2	27.8	0
Ac-ft	256	55	25	127	289	304	126	.2	0	3,450	1,710	0

Calendar year 1963: Max 680 Min 0 Mean 10.8 Ac-ft 7,800
Water year 1963-64: Max 1,560 Min 0 Mean 8.75 Ac-ft 6,340

Peak discharge (base, 800 cfs).--July 12 (0600) 7,000 cfs (6.80 ft, from floodmark); Aug. 13 (2400) 1,350 cfs (3.60 ft).

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Dec. 31 to Jan. 3, 6-31, Feb. 5-9, May 27, July 15, 22-29, Aug. 18; stage-discharge relation affected by ice Dec. 26-29, Jan. 4, 5, Feb. 1-4, Feb. 10 to Mar. 1, Mar. 4, 5, 7, 9-11, 14, 25, 26.

8-3525. Rio Puerco at Rio Puerco, N. Mex.

Location.--Lat 34°47'35", long 106°59'20", in SW¼ sec.31, T.7 N., R.1 W., in San Clemente Grant, on downstream end of pier nearest left abutment of The Atchison, Topeka and Santa Fe, Railway Co. bridge, 7 miles downstream from Rio San Jose.

Drainage area.--6,590 sq mi, approximately, of which at least 1,130 sq mi does not contribute directly to surface runoff.

Records available.--June 1909 to December 1912 (records fragmentary, gage heights only), March 1934 to September 1964. Records for January 1913 to December 1914 published in WSP 358, 388, and 408 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,008.59 ft above mean sea level, datum of 1929.

Average discharge.--30 years (1934-64), 60.6 cfs (43,870 acre-ft per year).

Extremes.--Maximum discharge during year, 5,040 cfs July 12 (gage height, 3.60 ft); no flow for many days.
1934-64: Maximum discharge, 28,000 cfs Aug. 21, 1935 (gage height, 7.24 ft), by computation of peak flow over dam; no flow at times.
The damaging flood of Sept. 23, 1929, is the greatest since about 1880; it reached a stage of 18 ft (conditions prior to destruction of railroad bridge. Discharge, 37,700 cfs, by weir formula, from reports of State engineer). The flood of Aug. 12, 1929, reached a stage of about 16 ft (discharge, 31,300 cfs, by weir formula, from reports of State engineer). A flood on Oct. 4, 1913, reached a stage of 9.5 ft (discharge not determined) prior to construction of the concrete control.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 11,500 acres above station (includes 3,700 acres irrigated wholly or partly from wells).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 5, 6, 11, 13, 14)

0.22	0	0.7	14	1.2	205
.3	.3	.8	29	1.5	415
.4	1.6	.9	56	1.9	865
.5	4.3	1.0	100	2.3	1,550
.6	7.7				

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	.6	0.3	0.8	b7.0	b 3.5	90		0.4	0	82	0.5
2	.9	1.8	.3	.7	b5.0	4.0	111		0	0	588	.2
3	.2	2.5	.1	.5	b.6	4.3	43		0	0	392	0
4	0	172	.1	1.9	b 2.0	b 4.0	25		0	0	108	0
5	0	46	.1	1.2	a 1.5	b 3.5	22		0	0	545	0
6	0	a20	0	.6	a 1.5	b 3.3	17		0	0	287	0
7	0	10	.2	.1	a 1	b 3.5	a10		0	0	49	7.0
8	0	8.6	0	1.0	a 1	b 4.0	7.3		0	0	16	9.7
9	0	4.9	0	a.3	a 1	b 2.8	4.9		0	52	4.0	.8
10	0	a 2	0	a 0	b 1.5	b 3.3	3.1		0	3.3	130	1.4
11	0	a.5	0	0	b 2.5	b 3.3	2.0		0	34	410	1.6
12	0	a .1	.7	0	8.6	b 3.4	1.8		0	1,470	105	2.5
13	0	a .5	0	0	18	b 3.4	1.4		0	352	1,120	.6
14	0	a .1	0	0	8.1	3.4	1.0		0	30	1,170	.4
15	0	a .1	0	0	b 3.5	3.4	.8		0	6.5	196	.3
16	0	a .1	0	0	b 4.0	2.8	1.0		0	.8	96	1.2
17	0	a .2	0	0	b 4.5	2.8	.8		0	0	29	8.4
18	0	a .2	0	0	b 5.0	2.8	.4		0	0	11	24
19	38	.4	0	0	4.9	2.8	.1		0	0	2.9	9.7
20	121	.2	0	.7	b 5.8	8.0	0		0	14	6.9	5.2
21	131	.3	.1	b 2.0	b2.0	14	0		0	27	7.3	2.8
22	37	.5	.4	b 1.5	b2.2	11	0		0	11	.6	19
23	14	.2	0	b 4.0	b4.0	5.5	0		0	117	0	197
24	8.6	.2	0	b 5.5	b3.5	2.8	0		0	12	0	60
25	5.2	.6	0	b 5.5	b4.0	3.1	0		0	3.6	0	18
26	3.1	.4	0	b 2.0	b4.5	2.5	0		0	20	0	121
27	2.0	.3	0	b 3.5	b3.0	2.0	0		0	107	0	183
28	2.0	.5	.1	4.9	b2.5	2.2	0		0	78	0	46
29	1.8	.3	.6	5.6	b3.5	2.0	0		0	30	0	a15
30	.9	.3	1.6	5.0	----------	1.8	0		0	28	1.4	6.1
31	.3	----------	.9	7.0	----------	1.6	----------		----------	78	1.8	----------
Total	367.6	274.4	5.5	54.3	116.2	120.8	342.6	0	0.4	2,474.2	5,358.9	741.4
Mean	11.9	9.15	0.18	1.75	4.01	3.90	11.4	0	0.01	79.8	173	24.7
Ac-ft	729	544	11	108	230	240	680	0	.8	4,910	10,630	1,470

Calendar year 1963: Max 823 Min 0 Mean 30.9 Ac-ft 22,360
Water year 1963-64: Max 1,470 Min 0 Mean 26.9 Ac-ft 19,550

Peak discharge (base, 6,000 cfs).--No peak above base.

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3530. Rio Puerco near Bernardo, N. Mex.

Location.--Lat 34°24'30", long 106°51'10", in SE¼ sec.8, T.2 N., R.1 E., on bridge on former U.S. Highway 85 and ¼ mile upstream from Interstate Highway 25, 1.2 miles southwest of Bernardo, 3 miles upstream from mouth, and 18 miles south of Belen.

Drainage area.--7,350 sq mi, approximately, of which at least 1,130 sq mi does not contribute directly to surface runoff.

Records available.--November 1939 to September 1964. Fragmentary gage-height record and footnotes concerning no flow for the period September 1910 to August 1914, published in WSP 358 and 388, have been found to be in error and should not be used.

Gage.--Water-stage recorder. Datum of gage is 4,725.44 ft above mean sea level, datum of 1929.

Average discharge.--24 years (1940-64), 51.1 cfs (36,990 acre-ft per year).

Extremes.--Maximum discharge during year, 2,640 cfs July 13 (gage height, 9.82 ft); no flow for extended periods.
1939-64: Maximum discharge, 18,800 cfs Sept. 23, 1941, from rating curve extended above 7,800 cfs by logarithmic plotting; maximum gage height, 13.8 ft Aug. 12, 1955; no flow for extended periods.
The greatest flood known since about 1880 occurred Sept. 23, 1929, from information by local residents (discharge, about 35,000 cfs, estimated on basis of peak at Rio Puerco). Another flood occurred Aug. 12, 1929 (discharge 30,600 cfs, by slope-area method, from reports of State engineer).

Remarks.--Records fair. Diversions for irrigation of about 11,500 acres above station (includes 3,700 acres irrigated wholly or partly from wells).

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	*0				0	0	(*)		0	120	0
2	.3	.1				0	47			*0	176	*0
3	0	.2				0	*78			0	505	0
4	*0	49				0	31			0	181	0
5	0	106	(*)			0	29			0	160	0
6	0	*33				0	17			0	*540	0
7	0	14				0	*11			0	94	0
8	0	5.8				0	9.0			0	35	0
9	0	2.4				0	5.4			0	101	*0
10	0	1.0				0	3.2			1.0	11	0
11	0	.4				0	1.5			20	*348	0
12	0	.2				0	.8			*272	148	110
13	0	*0				0	.5			*1,240	532	6.6
14	0	0				0	.2			108	*1,660	1.6
15	0	*0				0	0			102	804	0
16	0	0				0	0			1.5	147	*0
17	0	0				0	0			*.2	79	0
18	0	0				0	0			0	41	0
19	0	0				0	0			0	17	6.0
20	22	0			(*)	*0	0			*70	9.0	22
21	*224	0				0	0			6.9	2	15
22	97	0				0	0	(*)		16	0	11
23	29	0				.4	0			52	0	25
24	*13	0				1.4	0			50	*0	153
25	5.0	0				.4	0			2.8	0	*43
26	2.2	0				.2	0			.8	0	24
27	1.5	0	(*)			*0	0			36	0	153
28	1.0	0				0	0			*43	0	74
29	.5	0				0	0			49	0	36
30	.2	0			----------	0	0			16	0	*11
31	.1	----------		(*)	----------	0	----------		----------	*37	0	----------
Total	396.5	212.1	0	0	0	2.4	233.6	0	0	2,124.2	5,710.0	691.2
Mean	12.8	7.07	0	0	0	0.08	7.79	0	0	68.5	184	23.0
Ac-ft	786	421	0	0	0	4.8	463	0	0	4,210	11,330	1,370

Calendar year 1963: Max 900 Min 0 Mean 27.2 Ac-ft 19,670
Water year 1963-64: Max 1,660 Min 0 Mean **25.6** Ac-ft 18,580

Peak discharge (base, 3,000 cfs).--No peak above base.

* Discharge measurement or observation of no flow made on this day.

8-3540. Rio Salado near San Acacia, N. Mex.

Location.--Lat 34°16'55", long 106°52'50", in E½ sec.30, T.1 N., R.1 E., near right bank 1.0 mile downstream from bridge on Interstate Highway 25, 1.4 miles upstream from mouth, 2.0 miles northeast of San Acacia, and 15 miles north of Socorro.

Drainage area.--1,380 sq mi, approximately.

Records available.--October 1947 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,710.68 ft above mean sea level, datum of 1929.

Average discharge.--17 years, 13.3 cfs (9,630 acre-ft per year).

Extremes.--Maximum discharge during year, about 10,000 cfs Sept. 12 (gage height, 12.00 ft); no flow for most of time.
1947-64: Maximum discharge, 16,600 cfs Sept. 25, 1954 (gage height, 12.80 ft), from rating curve extended above 2,800 cfs on basis of slope-area measurements at gage heights 11.25 and 11.9 ft; no flow for most of time.
The greatest flood known occurred Aug. 12, 1929 (discharge, 27,400 cfs, by slope-area method), from reports of State engineer.

Remarks.--Records poor. Diversions for irrigation of about 100 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										0	*550	0
2										0	*240	*0
3										0	30	0
4	(*)									0	*30	0
5										0	4	140
6										0	4	50
7										0	a 1	a 5
8										0	a 1	50
9										0	95	*10
10										0	a 6	120
11										200	0	140
12										*690	2	800
13										*370	*100	a 20
14										a 2	200	a 2
15										0	a10	a 0
16	(*)									0	a 0	*0
17										*0	*0	0
18								(*)		7	40	0
19										56	0	0
20										a 2	0	0
21				(*)						a 0	0	0
22							(*)			a 10	0	a10
23										a 0	0	0
24									(*)	a 0	*0	0
25										a 0	0	0
26					(*)					a 0	0	0
27			(*)			(*)				*60	0	0
28										*165	0	*0
29										a10	0	0
30					----------					*2	0	0
31		----------			----------		----------		----------	*100	0	----------
Total	0	0	0	0	0	0	0	0	0	1,674	1,313	1,347
Mean	0	0	0	0	0	0	0	0	0	54.0	42.4	44.9
Ac-ft	0	0	0	0	0	0	0	0	0	3,320	2,600	2,670

Calendar year 1963: Max 1,130 Min 0 Mean 21.3 Ac-ft 15,400
Water year 1963-64: Max 800 Min 0 Mean 11.8 Ac-ft 8,590

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-12	1600	11.40	3,400	9-12	0130	12.00	about 10,000
8-1	1640	11.70	5,650				

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

8-3545. Socorro main canal north at San Acacia, N. Mex.

Location.--Lat 34°15'15", long 106°53'45", in SE¼NW¼ sec.1, T.1 S., R.1 W., on right bank at San Acacia, half a mile downstream from point of diversion.

Records available.--April 1936 to September 1964.

Gage.--Water-stage recorder (digital). Datum of gage is 4,660.16 ft above mean sea level, datum of 1929. Prior to Mar. 8, 1958, at site 300 ft upstream (in old channel) at datum 0.42 ft lower.

Extremes.--1936-64: Maximum daily discharge, 240 cfs June 29, 1960; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made once a week during periods of flow. Canal diverts water from right bank of Rio Grande for irrigation of about 8,000 acres. Alamillo Acequia and 3 other smaller ditches divert water from canal above station for irrigation of about 400 acres.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	102	0	17.1	1,050
November	3.8	0	.13	7.5
December	0	0	0	0
Calendar year 1963	213	0	53.8	38,930
January	0	0	0	0
February	0	0	0	0
March	169	0	148	9,080
April	179	125	152	9,020
May	193	162	182	11,210
June	200	22	106	6,310
July	95	.8	43.8	2,690
August	150	0	56.2	3,450
September	128	6.9	57.2	3,410
Water year 1963-64	200	0	63.7	46,230

Note.--No gage-height record Oct. 1, June 23, 24, Aug. 8-10, 14, 20-27, Sept. 12-15, 18-21.

8-3550. Rio Grande at San Acacia, N. Mex.

Location.--Lat 34°15'13", long 106°53'45", in NE¼ SW¼ sec.1, T.1 S., R.1 W., on right bank an eighth of mile southeast of San Acacia, 0.7 mile downstream from San Acacia diversion dam, and 2½ miles downstream from Rio Salado.

Drainage area.--26,770 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--April 1936 to September 1964.

Gage.--Water-stage recorders. There are two recorders here, one on the conveyance channel designed to carry 2,000 cfs, 0.8 mile below heading established February 1959 at elevation of 4,652.5 ft above mean sea level (from U.S.B.R. specifications). The other recorder is 0.7 mile downstream from heading on floodway or main channel at elevation of 4,658.10 ft above mean sea level, datum of 1929. Prior to Mar. 19, 1953 floodway gage at site 0.5 mile upstream, which from Apr. 16, 1936, to July 24, 1941, and Nov. 29 to Dec. 14, 1946, at datum 4.46 ft higher and July 25, 1941, to Nov. 28, 1946, and Dec. 15, 1946, to Mar. 18, 1953, was at datum 2.06 ft higher than present datum. Prior to about October 1958, all flow in floodway.

Average discharge.--28 years, 1,068 cfs (773,200 acre-ft per year).

Extremes.--Maximum discharge during year, 3,020 cfs July 13; no flow at times.
1936-64: Maximum discharge, 27,400 cfs Aug. 5, 1936 (gage height, 10.75 ft, site and datum then in use); no flow at times.

Remarks.--Records good except those below 5 cfs, which are poor. Record is composite of main stem and conveyance channel (constructed in 1958, headgates opened May 18, 1959). Discharge measurements generally made 1 to 3 times a week on each channel, less often during low flow periods. Diversions above station for irrigation of about 760,000 acres; this includes Socorro main canal north, which bypasses station and irrigates about 8,000 acres.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	32	271	378	582	483	29	24	1,340	0	473	0
2	8.0	43	266	372	540	320	21	50	1,100	0	358	0
3	9.4	24	263	363	535	284	138	57	794	0	484	0
4	7.8	19	283	369	528	236	195	51	635	0	254	0
5	7.3	137	286	387	514	221	260	23	515	0	42	21
6	5.4	58	283	378	481	222	334	22	364	0	474	63
7	8.0	41	278	420	481	190	270	27	203	.1	94	0
8	8.0	36	268	435	484	214	264	63	110	.1	7.7	26
9	6.0	30	262	399	478	227	229	176	85	.1	186	0
10	4.0	28	265	399	454	207	143	99	15	0	24	67
11	3.4	25	252	420	444	212	104	312	2.2	128	158	59
12	2.8	37	250	393	484	155	52	317	1.8	773	127	791
13	2.6	54	252	342	532	148	16	174	1.7	1,510	377	60
14	2.4	63	273	260	547	179	13	202	1.4	291	1,550	2.6
15	2.4	335	279	250	523	147	13	204	1.1	87	962	.7
16	2.2	436	289	240	526	125	7.8	244	.9	10	163	.3
17	2.2	444	275	260	493	127	7.0	247	.8	3.0	57	.1
18	2.2	547	275	280	472	134	6.6	483	.6	1.8	44	.1
19	2.2	586	285	321	472	118	7.0	609	.4	.3	38	.1
20	1.1	631	303	360	457	141	6.6	491	.4	6.2	.2	.1
21	102	553	318	399	463	96	6.4	503	.4	.4	0	.2
22	45	460	330	462	478	75	6.4	541	.4	0	0	.2
23	8.1	340	330	477	475	82	6.4	581	.4	0	0	.3
24	3.6	291	324	502	478	90	6.4	622	.4	12	0	85
25	3.4	280	348	520	498	111	6.2	780	.2	.2	0	8.7
26	3.6	269	348	475	477	81	5.6	784	.2	0	0	.4
27	3.6	269	336	474	483	121	5.8	784	.2	1.0	0	128
28	3.6	269	339	414	480	106	6.0	762	0	51	0	120
29	3.6	269	349	474	480	73	6.4	942	0	1.6	0	32
30	3.6	261	346	514	----------	64	7.4	1.010	0	.4	0	8.5
31	3.4	----------	361	561	----------	46	----------	1,140	----------	39	0	----------
Total	280.1	6,867	9,187	12,298	14,339	5,035	2,179.0	12,324	5,174.5	2,916.2	5,882.9	1,474.3
Mean	9.04	229	296	397	494	162	72.6	398	172	94.1	190	49.1
Ac-ft	556	13,620	18,220	24,390	28,440	9,990	4,320	24,440	10,260	5,780	11,670	2,920
(†)	439	13,570	18,200	24,380	27,580	9,380	4,090	24,090	10,240	4,530	11,020	2,450

Calendar year 1963: Max 1,780 Min 0 Mean 350 Ac-ft 253,300
Water year 1963-64: Max 1,550 Min 0 Mean 213 Ac-ft 154,600

† Flow, in acre-feet, in conveyance channel only; this flow is included in above totals for composite flow.

8-3560. Socorro main canal south near San Antonio, N. Mex.

Location.--Lat 33°53'30", long 106°52'00", in NW¼ sec.8, T.5 S., R.1 E., on right bank 1½ miles upstream from Bosque del Apache Grant and 1¾ miles south of San Antonio.

Records available.--April 1937 to July 1938 (published as "at end near San Antonio"), March 1948 to September 1964.

Gage.--Water-stage recorder (digital). Wooden control since Mar. 27, 1954. Datum of gage is 4,526.41 ft above mean sea level, datum of 1929. April 1937 to July 1938 at two different sites about 1½ miles downstream at different datums. March 1948 to November 1951 at site 30 ft upstream at datum 7.29 ft higher.

Extremes.--1937-38, 1948-64: Maximum daily discharge, 50 cfs Apr. 23, 1958, and Aug. 18, 1961; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made 2 to 3 times a month during irrigation season. Diversions made at San Acacia into Socorro main canal north are the main source of water but may be supplemented by diversions from the conveyance channel at 3 points and from San Antonio Riverside drain, 2 miles upstream. Some diversions occur between gage and north boundary of U.S. Fish and Wildlife Refuge (Bosque del Apache Grant). This is 1 of 3 stations gaging flow into refuge.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	31	0	4.01	247
November	.4	0	.01	.8
December	0	0	0	0
Calendar year 1963	42	0	8.03	5,820
January	0	0	0	0
February	0	0	0	0
March	33	0	18.3	1,120
April	24	1.0	10.5	627
May	41	7.8	22.8	1,400
June	30	0	5.73	341
July	21	0	3.46	213
August	31	0	6.55	403
September	35	0	8.18	487
Water year 1963-64	41	0	6.67	4,840

Note.--No gage-height record Oct. 1, 2, 24-28, Mar. 10, 11, Apr. 2, July 22, Aug. 4, 6-10, Sept. 12, 14, 15, 25-29.

8-3565. San Antonio Riverside drain near San Antonio, N. Mex.

Location.--Lat 33°53'00", long 106°51'05", in SW¼SW¼ sec.9, T.5 S., R.1 E., on left bank 1 mile east of old U.S. Highway 85, and 1.2 miles upstream from boundary of Bosque del Apache Grant (wildlife refuge), and 2 miles southeast of San Antonio.

Records available.--March 1948 to September 1964. May 1936 to February 1938, at site 50 ft downstream from Elmendorf interior drain; records not equivalent.

Gage.--Water-stage recorder. Datum of gage is 4,524.33 ft above mean sea level (levels by Bureau of Reclamation). Mar. 15, 1948, to Mar. 31, 1949, site 1.2 miles downstream at datum 1.14 ft lower.

Extremes.--1948-64: Maximum daily discharge, 161 cfs May 31, 1957; no flow at times since 1959.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made 3 to 4 times a month. Diversions from drain above station, canal wasteways and interior drains entering channel above station. Flow represents 1 of 3 channels entering north boundary of Bosque del Apache Grant. Reduction in flow occurred after conveyance channel was completed in about 1957.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	7.0	0	0.89	55
November	3.4	.9	2.22	132
December	3.4	2.6	3.03	186
Calendar year 1963	50	0	9.33	6,746
January	4.8	3.2	3.82	235
February	6.2	4.4	4.84	278
March	24	3.9	7.30	449
April	17	1.8	3.56	212
May	22	3.4	11.9	731
June	14	0	3.68	219
July	3.4	0	.62	38
August	25	0	2.02	124
September	37	0	2.11	125
Water year 1963-64	37	0	3.83	2,780

Note.--No gage-height record Oct. 27 to Nov. 3, Jan. 10-14, Apr. 18-22, May 18-20, July 7, 8, Aug. 15-19. Uncertain stage-discharge relation Aug. 3-14.

8-3570. Elmendorf interior drain near San Antonio, N. Mex.

Location.--Lat 33°51'50", long 106°51'25", in NE¼ sec.20, T.5 S., R.1 E. (projected), in Bosque del Apache Grant (wildlife refuge), on right bank 2,000 ft downstream from north boundary of refuge, 1.0 mile east of railroad, and 3.7 miles south of junction of U. S. Highways 85 and 380.

Records available.--July 1936 to January 1938 (Published as "at end", near San Antonio), March 1948 to September 1964.

Gage.--Water-stage recorder (digital) and metal control. Datum of gage is 4,518.9 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation). July 1936 to January 1938, staff gage at site half a mile upstream in former channel at datum of 4,519.24 ft, datum of 1929. Mar. 11, 1948, to Nov. 10, 1949, at site about 2,500 ft upstream (in old channel) at different datum. Nov. 11, 1949, to Feb. 7, 1956, at site 2,000 ft upstream (present channel) at datum about 0.26 ft lower than present datum.

Extremes.--1948-64: Maximum daily discharge, 51 cfs June 3, 1956, June 18, 1961, July 24, 1962 and Aug. 14, 1964; no flow at times in February and March 1961.

Remarks.--Records fair. Discharge measurements generally made 2 to 4 times a month. Flow past station represents 1 of 3 channels of inflow to wildlife refuge.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	18	0.8	5.64	347
November	15	.4	1.02	60
December	.5	.4	.47	29
Calendar year 1963	50	.4	10.9	7,880
January	1.1	.4	.50	31
February	4.9	.4	.80	46
March	30	.5	17.1	1,050
April	41	8.3	20.6	1,230
May	48	18	35.5	2,180
June	34	.9	9.96	592
July	30	1.1	6.99	430
August	51	.1	15.2	933
September	33	.5	9.82	585
Water year 1963-64	51	.1	10.4	7,513

8-3575. San Antonio Riverside drain near San Marcial, N. Mex.

Location.--Lat 33°44'45", long 106°55'15", in Bosque del Apache Grant (wildlife refuge), on left bank 1.0 mile upstream from outlet to Rio Grande conveyance channel, 5 miles northeast of San Marcial, and 12 miles south of San Antonio.

Records available.--March 1948 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,489.12 ft above mean sea level, datum of 1929. Mar. 19, 1948 to July 28, 1960, water-stage recorder at present site and datum. July 28, 1960, to May 14, 1962, water-stage recorder 0.4 mile downstream and at datum 3.42 ft lower.

Extremes.--1948-64: Maximum daily discharge, 226 cfs May 22, 1957; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made 2 to 4 times a month. Flow represents surface outflow from wildlife refuge. Diversion for irrigation of a few hundred acres above station.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	27	0.2	4.65	286
November	4.1	.2	1.66	99
December	1.6	.4	1.04	64
Calendar year 1963	92	.2	21.1	15,280
January	11	1.3	3.22	198
February	10	5.4	7.68	442
March	70	5.7	46.2	2,840
April	64	17	31.2	1,860
May	75	26	49.4	3,040
June	57	4.1	19.5	1,160
July	28	2.4	11.0	676
August	58	2.4	21.9	1,350
September	26	0	6.06	361
Water year 1963-64:	75	0	17.0	12,380

Note.--No gage-height record Nov. 12-20, Jan. 13, 14, 23-29, Aug. 16, 17, 19.

8-3585. Rio Grande at San Marcial, N. Mex.

Location.--Lat 33°40'50", long 106°59'30", in Pedro Armendaris Grant 33, on pier of the Atchison, Topeka and Santa Fe Railway Co. bridge, 1.1 miles downstream from former site of San Marcial, Socorro County, and 18½ miles southwest of San Antonio.

Drainage area.--27,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--January 1895 to September 1964.

Gage.--River channel (now called floodway); Water-stage recorder. Datum of gage is 4,455.19 ft above mean sea level, datum of 1929. Prior to June 25, 1943, floodway had water-stage recorder, inverted rod, inclined staff, and wire-weight gages at several sites within 2 miles of present site at various datums.
Conveyance channel: Water-stage recorder. Datum of gage is 4,454.00 ft above mean sea level (levels by Bureau of Reclamation). Prior to Apr. 29, 1958, at datum 4.19 ft higher. Apr. 14, 1950, to Feb. 28, 1954, bypass flow forming composite, measured at Tiffany Channel, 4 miles upstream; prior to 1950 all flow through floodway.

Average discharge.--68 years (1896-1964), 1,325 cfs (959,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,260 cfs July 13; no flow at times.
1895-1964: Maximum discharge, about 50,000 cfs Oct. 11, 1904; no flow at times.

Remarks.--Records fair. Record is composite of floodway and conveyance channel (flows below 2,000 cfs generally routed through conveyance channel). Discharge measurements generally made once a week on each channel. Diversions for irrigation of about 775,000 acres above station (includes about 13,800 acre-ft diverted from conveyance channel, as based on weekly measurements, data furnished by Bureau of Reclamation).

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	6.6	260	358	571	445	74	52	1,270	0	115	0.1
2	12	37	256	361	529	399	76	70	1,200	0	540	0
3	6.9	45	256	358	508	340	80	118	819	0	406	0
4	3.8	35	252	364	508	368	256	137	725	0	392	0
5	3.3	62	280	389	501	333	336	121	588	0	224	0
6	3.0	122	270	400	476	326	414	80	498	0	381	4.0
7	2.6	51	266	417	462	333	364	66	354	0	314	9.7
8	2.3	43	263	414	466	333	305	74	235	0	158	.3
9	2.2	39	260	389	466	298	270	140	182	0	172	0
10	2.2	37	256	414	448	277	200	235	148	0	175	0
11	2.2	37	260	428	431	277	144	162	96	0	60	8.3
12	2.0	36	238	392	452	274	158	392	58	944	248	476
13	1.8	43	249	350	515	252	121	186	36	1,350	308	247
14	1.8	52	270	300	540	266	100	238	30	676	840	71
15	1.8	140	277	270	515	277	78	263	25	154	1,230	36
16	1.8	389	280	260	515	232	84	302	21	96	350	29
17	2.1	368	270	250	476	214	77	322	17	77	86	20
18	2.2	445	270	260	456	263	76	420	14	55	55	15
19	3.4	543	274	290	459	249	68	557	12	40	64	10
20	3.2	602	305	330	445	277	71	512	9.8	35	41	7
21	2.7	546	322	302	445	252	64	487	7.8	76	41 18	3.5
22	71	466	336	378	466	148	55	532	5.8	45	13	3.2
23	56	375	336	406	466	148	48	532	3.8	30	10	2.9
24	49	305	333	428	480	178	44	602	2.6	25	8.2	2.6
25	37	277	344	476	403	165	46	680	2.0	24	6.6	56
26	30	266	344	438	342	196	53	760	.5	27	5.0	42
27	23	260	333	414	370	165	57	760	0	25	2.6	32
28	18	260	330	386	419	198	58	750	0	25	1.4	142
29	12	260	336	420	409	176	53	732	0	28	.5	60
30	7.2	260	350	487	----------	130	47	1,020	0	28	.3	60
31	6.9	----------	347	498	----------	127	----------	1,000	----------	30	.2	----------
Total	388.4	6,407.6	9,023	11,627	13,539	7,916	3,877	12,302	6,360.3	3,790	6,224.8	1,337.6
Mean	12.5	214	291	375	467	255	129	397	212	122	201	44.6
Ac-ft	770	12,710	17,900	23,060	26,850	15,700	7,690	24,400	12,620	7,520	12,350	2,650
(†)	768	12,710	17,900	23,060	26,850	15,700	7,690	24,400	12,620	5,160	12,300	2,610

Calendar year 1963: Max 1,620 Min 0 Mean 369 Ac-ft 267,000
Water year 1963-64: Max 1,350 Min 0 Mean 226 Ac-ft 164,200

† Flow, in acre-feet, in conveyance channel only; this flow is included in above totals for composite flow.

8-3600. Alamosa River near Monticello, N. Mex.

Location.--Lat 33°34'10", long 107°36'20", in SW¼ sec.31, T.8 S., R.7 W., on left bank at Alamosa damsite and below Old Fort Ojo Caliente, just downstream from Wildhorse Creek, 15 miles northwest of Monticello.

Drainage area.--403 sq mi.

Records available.--October to December 1929, May 1931 to April 1942, July 1956 to June 1958 (annual maximum only), July 1958 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and crest-stage gage. Datum of gage is 6,142.04 ft above mean sea level, datum of 1929. Prior to Aug. 17, 1930, at different datum. May 2, 1931, to Dec. 14, 1939, water-stage recorder at datum 0.20 ft lower and Dec. 15, 1939, to Apr. 17, 1942, at present datum. July 16, 1956, to July 27, 1958, crest-stage gage only at present site and datum.

Average discharge.--16 years (1931-41, 1958-64), 8.47 cfs (6,130 acre-ft per year).

Extremes.--Maximum discharge during year, 10,800 cfs Aug. 13 (gage height, 14.04 ft), from rating curve extended as explained below; minimum, 5.5 cfs June 8.

1931-42, 1956-64: Maximum discharge, that of Aug. 13, 1964, from rating curve extended above 400 cfs on basis of slope-area measurements at gage heights 6.66 and 12.0 ft; minimum daily recorded, 5.6 cfs Jan. 9, 1932, Aug. 28-30, Sept. 3, 1936.

Maximum flood known probably occurred in 1895, from information by local residents. A flood in August 1943 was highest since 1917.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station. Entire normal flow diverted below station for irrigation.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*6.7	7.1	7.4	7.7	7.7	7.4	7.7	8.0	7.1	8.0	62	8.4
2	6.7	7.4	7.4	7.7	7.4	7.4	7.7	8.0	7.1	8.0	17	8.4
3	6.4	7.1	7.4	7.7	7.7	7.1	7.7	8.0	7.1	8.4	9.7	8.4
4	6.4	7.1	*7.4	7.7	7.7	7.1	8.0	8.0	7.1	8.4	7.7	8.7
5	6.4	*7.1	7.7	7.7	7.7	6.7	7.7	8.0	7.1	8.4	7.7	13
6	6.4	7.4	8.4	7.7	7.7	7.4	7.4	7.7	6.7	8.4	7.7	9.4
7	6.4	7.7	8.4	7.7	7.7	7.4	7.4	7.7	6.4	13	7.7	9.4
8	6.4	7.4	7.7	7.7	7.7	7.4	7.4	7.7	6.4	16	28	9.7
9	6.4	7.1	7.7	7.7	7.7	7.4	7.4	7.7	6.4	12	8.4	53
10	6.4	7.1	7.7	7.7	7.7	7.4	7.4	7.7	6.4	12	8.0	38
11	6.4	7.1	7.7	7.7	8.0	7.4	7.4	7.7	6.4	9.4	13	34
12	6.4	7.1	7.7	7.7	7.7	7.4	7.4	7.7	6.7	9.0	8.4	44
13	6.4	7.1	7.7	7.7	7.7	7.4	7.7	7.7	7.1	8.7	1,000	41
14	6.4	7.1	7.7	7.7	7.7	7.4	7.7	7.4	7.1	20	a200	50
15	6.4	7.4	7.7	7.7	7.7	*7.1	7.7	7.4	7.1	22	a30	11
16	6.4	7.4	7.7	7.7	7.7	7.4	7.7	7.4	7.1	15	a15	11
17	6.7	7.4	7.7	7.7	7.7	7.4	7.7	7.4	7.1	207	a10	11
18	7.1	7.4	7.7	7.7	7.4	7.7	8.0	7.7	7.1	a43	a9	11
19	7.7	7.4	7.7	7.7	*7.4	7.7	8.0	7.7	a7.1	a16	a8.5	10
20	7.1	7.4	7.7	7.4	7.7	7.4	8.0	7.7	a7.1	a12	a8.5	10
21	7.1	7.4	7.7	7.4	8.0	7.4	8.0	21	a7.1	a9	a8.5	9.7
22	7.1	7.4	7.7	7.4	8.4	7.4	8.0	7.4	a7.1	*8.0	a8	9.4
23	7.1	7.4	7.7	*7.4	8.4	7.4	8.0	7.4	*7.1	7.7	a8	*15
24	7.1	7.4	7.7	7.7	8.4	7.4	8.0	7.4	7.1	7.7	a8	11
25	6.7	7.4	7.7	8.0	8.4	7.4	8.0	7.1	7.4	8.0	a15	11
26	7.1	7.4	7.7	8.0	8.0	7.4	8.0	7.1	7.4	17	*8.0	10
27	6.7	7.4	7.7	8.0	7.7	7.4	8.0	7.1	7.7	8.7	8.4	10
28	7.1	7.4	7.7	8.0	7.4	7.7	8.0	7.4	8.0	7.7	8.4	9.7
29	7.1	7.4	7.7	8.0	7.4	7.7	8.0	7.7	8.0	23	8.4	9.4
30	7.1	7.4	7.7	8.0	----------	7.7	8.0	7.7	8.0	9.7	8.4	8.7
31	7.1	----------	7.7	7.7	----------	7.7	----------	7.4	----------	7.4	8.4	----------
Total	208.9	219.3	238.9	239.3	225.5	229.6	233.1	249.0	212.6	578.6	1,563.8	503.3
Mean	6.74	7.31	7.71	7.72	7.78	7.41	7.77	8.03	7.09	18.7	50.4	16.8
Ac-ft	414	435	474	475	447	455	462	494	422	1,150	3,100	998

Calendar year 1963: Max 73 Min 5.8 Mean 8.22 Ac-ft 5,950
Water year 1963-64: Max 1,000 Min 6.4 Mean 12.8 Ac-ft 9,330

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-7	1500	7.70	3,540	8-13	1430	14.04	10,800
8-1	1240	5.60	1,510				

* Discharge measurement made on this day.
a No gage-height record.

8-3610. Rio Grande below Elephant Butte Dam, N. Mex.

Location.--Lat 33°08'45", long 107°12'20", in SW¼ sec.25, T.13 S., R.4 W. (projected), in Pedro Armendaris Grant, on left bank 1.0 mile downstream from dam and 1½ miles upstream from Cuchillo Negro River.

Drainage area.--29,450 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.)

Records available.--April 1915 to September 1964.

Gage.--Water-stage recorder (digital). Datum of gage is 4,242.09 ft above mean sea level, datum of 1929. Prior to Jan. 1, 1931, at one of three sites 0.1 to 1.0 mile upstream at different datums. Jan. 1, 1931 to Jan. 16, 1939, at site 400 ft downstream from dam at datum 12.80 ft higher than present datum. Jan. 17, 1939, to Dec. 31, 1940, at site 0.7 mile upstream at datums 0.06 ft lower and 1.36 ft lower Jan. 17 to Mar. 29, 1939, and Mar. 30, 1939, to Dec. 31, 1940, respectively. Jan. 1, 1941 to Apr. 23, 1942, at site 128 ft upstream from preceding gage at datum 0.91 ft lower than present gage.

Average discharge.--49 years, 1,033 cfs (747,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,940 cfs July 11 (gage height, 5.95 ft); minimum, 1.3 cfs Oct. 31 & Nov. 1.
1915-64: Maximum daily discharge, 8,220 cfs May 22, 1942; no flow at times prior to 1929.

Remarks.--Records good. Discharge measurements generally made 2 or 3 times a month. Flow regulated by Elephant Butte Reservoir (see p.170-2). Diversion for irrigation of about 800,000 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	3.1	1.3	2.8	6.1	6.2	5.4	728	18	14	726	732	1,100
2	3.1	1.6	2.8	5.6	6.2	6.0	723	16	14	718	408	1,180
3	3.5	1.8	2.5	5.0	5.8	6.9	725	15	14	714	726	1,180
4	3.1	1.6	2.5	5.0	5.8	5.8	715	14	14	714	719	1,280
5	2.5	2.1	2.5	5.0	5.4	5.5	396	16	14	386	705	1,380
6	2.8	2.1	2.5	5.0	5.4	5.9	706	13	15	714	628	1,370
7	2.8	2.1	2.1	5.8	5.0	7.0	710	15	16	720	627	1,240
8	3.1	2.5	2.1	5.0	5.0	5.8	705	13	16	713	627	635
9	2.8	3.5	2.1	5.0	5.0	11	712	12	15	713	268	10
10	2.5	3.5	2.5	4.7	5.4	149	711	12	15	716	632	9.0
11	2.5	3.5	2.1	4.4	5.8	13	714	12	15	758	633	8.2
12	2.5	3.5	2.1	4.4	6.2	13	390	12	15	385	633	7.8
13	2.5	3.5	1.8	4.4	5.8	13	705	12	13	705	627	7.4
14	2.5	3.1	1.8	4.4	5.8	11	718	12	14	695	625	7.0
15	3.1	2.8	1.8	4.4	5.4	11	720	12	14	709	279	6.6
16	3.1	3.1	1.8	4.1	5.4	701	719	12	14	702	278	6.2
17	3.1	3.1	1.8	3.5	5.8	715	719	12	15	726	278	5.8
18	3.1	3.1	1.8	3.5	5.4	716	722	12	13	699	279	5.4
19	3.1	3.5	1.8	3.5	5.4	717	399	12	782	383	279	5.0
20	2.8	2.8	1.8	3.5	4.7	716	723	12	793	696	637	5.0
21	2.8	3.1	1.8	3.6	4.7	718	722	12	428	708	754	4.7
22	2.5	2.8	2.1	4.1	4.7	406	725	13	780	702	853	4.4
23	2.5	2.8	6.2	4.1	4.4	718	727	13	782	725	852	4.1
24	2.1	2.8	7.1	4.1	5.4	726	734	13	725	705	845	4.7
25	2.5	2.8	7.1	5.8	6.2	708	728	14	717	705	848	5.0
26	2.5	2.8	4.7	5.8	5.0	723	407	14	720	392	1,040	4.7
27	2.5	2.8	3.5	6.2	7.0	728	735	14	719	711	1,040	4.7
28	2.1	2.8	5.6	6.6	8.4	718	736	14	391	713	1,040	4.4
29	2.5	2.8	5.2	7.8	5.4	391	740	14	716	721	1,080	4.4
30	2.1	2.8	6.6	7.4	--------	717	733	14	714	721	1,090	4.7
31	1.8	--------	6.6	6.2	--------	721	--------	13	--------	753	1,070	--------
TOTAL	83.5	82.4	99.5	154.0	162.1	11,108.3	20,347	412	8,527	20,848	21,132	9,494.2
MEAN	2.69	2.75	3.21	4.97	5.59	358	678	13.3	284	673	682	316
AC-FT	166	163	197	305	322	22,030	40,360	817	16,910	41,350	41,910	18,830

CALENDAR YEAR 1963 MAX 1,810 MIN 1.3 MEAN 703 AC-FT 509,300
WATER YEAR 1963-64 MAX 1,380 MIN 1.3 MEAN 253 AC-FT 183,400

8-3625. Rio Grande below Caballo Dam, N. Mex.

Location.--Lat 32°53'05", long 107°17'30", in NE¼SW¼ sec.30, T.16 S., R.4 W., on left bank 600 ft upstream from Bojarquez Bridge, 4,200 ft downstream from Caballo Dam, 1¼ miles downstream from Apache Canyon, 1 1/3 miles upstream from Percha diversion dam, 3 miles northeast of Arrey, and 5 miles south of Caballo.

Drainage area.--30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Records available.--January 1938 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,140.9 ft above mean sea level, datum of 1929. Prior to Oct. 7, 1938, at datum 7.0 ft higher, Oct. 7-12, 1938, at datum 6.0 ft higher, and Oct. 13, 1938, to Dec. 31, 1945, at datum 5.0 ft higher than present datum.

Average discharge.--26 years, 908 cfs (657,400 acre-ft per year).

Extremes.--Maximum daily discharge during year, 1,350 cfs Sept. 5; minimum daily, 1.3 cfs Dec. 17-24.
1938-64: Maximum daily discharge, 7,650 cfs May 20, 1942; minimum daily, 0.1 cfs Oct. 31 to Nov. 14, 1954, Nov. 7 to Dec. 31, 1955.

Remarks.--Records good. Flow regulated by Caballo Reservoir (capacity, 344,000 acre-ft, 1958 survey) and Elephant Butte Reservoir (capacity, 2,195,000 acre-ft, 1961 survey). Diversions for irrigation of about 800,000 acres above station. Figures of daily discharge do not include Bonita ditch which diverts from Caballo Dam and bypasses station for irrigation below. See monthly table below for record of ditch.

Cooperation.--Records furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	1.6	1.5	1.5	1.4	1.4	1,020	2	2	667	576	1,110
2	2.5	1.6	1.5	1.5	1.4	1.4	991	2	2	689	575	1,150
3	2.5	1.6	1.5	1.5	1.4	1.4	947	2	2	701	612	1,150
4	2.5	1.6	1.5	1.5	1.4	1.4	888	2	2	745	636	1,240
5	2.3	1.6	1.5	1.5	1.4	1.4	745	2	359	743	573	1,350
6	2.2	1.7	1.5	1.5	1.4	1.4	602	2	994	691	562	1,340
7	2.0	1.7	1.5	1.5	1.4	1.4	465	2	1,010	745	650	1,160
8	1.8	1.7	1.5	1.5	1.4	1.4	522	2	984	847	737	931
9	1.7	1.7	1.4	1.5	1.4	1.4	613	2	930	873	726	699
10	1.5	1.6	1.4	1.5	1.4	1.4	610	2	892	881	649	336
11	1.5	1.6	1.4	1.5	1.4	1.4	578	2	826	840	629	4.0
12	1.5	1.6	1.4	1.5	1.4	1.4	552	2	789	759	624	3.8
13	1.4	1.6	1.4	1.5	1.4	1.4	550	2	728	537	584	3.7
14	1.4	1.7	1.4	1.4	1.4	1.4	540	2	701	536	535	3.5
15	1.4	1.7	1.4	1.4	1.4	441	552	2	664	560	286	3.4
16	1.4	1.7	1.4	1.4	1.4	884	537	2	578	556	530	3.2
17	1.4	1.7	1.3	1.4	1.4	1,130	504	2	534	674	624	3.0
18	1.4	1.7	1.3	1.4	1.5	1,270	378	2	521	726	768	2.9
19	1.4	1.6	1.3	1.4	1.5	1,200	274	2	547	638	912	2.7
20	1.5	1.6	1.3	1.4	1.5	1,270	169	2	613	588	952	2.6
21	1.5	1.6	1.3	1.4	1.5	1,270	157	2	644	634	992	2.4
22	1.5	1.6	1.3	1.4	1.5	1,240	155	2	606	655	1,010	2.2
23	1.5	1.6	1.3	1.4	1.5	1,170	146	2	586	643	933	2.1
24	1.5	1.6	1.3	1.4	1.5	994	147	2	599	690	830	1.9
25	1.5	1.5	1.4	1.4	1.5	855	117	2	646	717	920	1.8
26	1.5	1.5	1.4	1.4	1.4	850	74	2	715	529	1,000	1.6
27	1.5	1.5	1.4	1.4	1.4	905	2	2	749	622	948	1.6
28	1.5	1.5	1.4	1.4	1.4	947	2	2	745	612	1,000	1.6
29	1.5	1.5	1.4	1.4	1.4	1,100	2	2	683	606	1,060	1.6
30	1.5	1.5	1.4	1.4	----------	1,070	2	2	634	561	1,050	1.6
31	1.5	----------	1.4	1.4	----------	1,040	----------	2	----------	548	1,060	----------
Total	52.3	48.3	43.4	44.7	41.4	17,655.6	12,841	62	18,285	20,813	23,543	10,517.2
Mean	1.69	1.61	1.40	1.44	1.43	570	428	2.0	610	671	759	351
Ac-ft	104	96	86	89	82	35,020	25,470	123	36,270	41,280	46,700	20,860
(†)	0	0	0	0	0	144	133	0	246	182	227	104

Calendar year 1963: Max 3,050 Min 1.3 Mean 714 Ac-ft 517,120
Water year 1963-64: Max 1,350 Min 1.3 Mean 284 Ac-ft 206,180

† Diversion, in acre-feet, by Bonita ditch. Bonita ditch diverts directly from Caballo Dam and this diversion is not included in the river records.

8-3636. Las Cruces Arroyo near Las Cruces, N. Mex.

Location.--Lat 32°18'55", long 106°45'00", in SW¼SW¼ sec.9, T.23 S., R.2 E. (projected), on left bank in Dona Ana Bend Colony Grant, 1½ miles northeast of Las Cruces City Hall, and 100 ft upstream from Interstate Highway 25.

Drainage area.--13.5 sq mi, approximately.

Records available.--May 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,035 ft (from topographic map). Prior to Aug. 17, 1960, at two sites about 670 ft upstream at datum 11.96 ft higher.

Average discharge.--6 years, 0.08 cfs (58.6 acre-ft per year).

Extremes.--Maximum discharge during water year, 160 cfs Sept. 12 (gage height, 1.20 ft); no flow for most of time.
1958-64: Maximum discharge, 1,060 cfs Aug. 23, 1959 (gage height, 4.05 ft, site and datum then in use), from rating curve extended above zero flow on basis of slope-area measurement at gage height 3.3 ft and logarithmic plotting; no flow for most of time.
Greatest flood since about 1934 occurred Sept. 21, 1941 (discharge, 2,630 cfs, as determined by Corps of Engineers from newspaper accounts and rainfall-runoff studies). Another flood of about 1,900 cfs occurred Aug. 30, 1935.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Sept. 12 13

	Cfs-days	Maximum	Minimum	Mean	Runoff in Acre-feet
Calendar year 1963	17.3	8.6	0	0.047	34
September.	13	13	0	0.43	26
Water year 1963-64	13	13	0	0.036	26

8-3637. Tortugas Arroyo near Las Cruces, N. Mex.

Location.--Lat 32°17'20", long 106°43'45", in SE¼SW¼ sec.22, T.23 S., R.2 E. (projected), in Dona Ana Bend Colony Grant, 30 ft downstream from flood detention dam, 1.2 miles northeast of New Mexico State University and 3.3 miles southeast of Las Cruces Post Office, Dona Ana County.

Drainage area.--20.7 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder and Parshall flume at downstream end of reservoir outlet pipe. Datum of gage is 4,071.62 ft above mean sea level (SCS bench mark).

Extremes.--Maximum discharge during year, 25 cfs Sept. 12 (gage height, 1.19 ft); no flow for most of time.
1963-64: Maximum discharge, that of Sept. 12, 1964; no flow for most of time.

Remarks.--Records fair. Records represent outflow from Tortugas Reservoir, completed in 1962.

Reservoir is designed to retard flood flows and detain silt. Dam is earth-fill, L-shaped, 3,400 ft long at crest and 44 ft high. Original capacity, 1,325 acre-ft at spillway crest. No dead storage, though deposition of silt is expected to reduce storage capacity. Outlet drop tower is 9'-2" x 4' -2" inside and 18'6" high. The tower has 9 rectangular outlet ports, each 8"x17", but 6 are presently closed. Tower is connected to downstream channel by a 30-inch diameter pipe. Records will be published in tabular form, as flow events.

Outflow during water year October 1963 to September 1964

Flow event	Date	Outflow (hours)	Maximum (cfs)	Cfs-days	Runoff (acre-ft)
4	June 24-25	20	12	3.3	6.5
5	Sept. 10	15	7.4	1.8	3.6
6	Sept. 11-14	72	25	26.3	52
Totals		107	-	31.4	62.1

8-3656. McKelligon Canyon at El Paso, Tex.

Location.--Lat 31°49'20", long 106°28'15", on left bank 120 ft south of McKelligon Canyon Drive, 0.5 mile south of crest of Sugarloaf Mountain, 0.2 mile west of Alabama Avenue, 1.6 miles west of U.S. Highway 54 and 4.5 miles north of El Paso post office.

Drainage area.--2.3 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and small earth-fill dam with uncontrolled concrete outlet tower. Altitude of gage is 4,257.33 ft above mean sea level (levels by City of El Paso).

Average discharge.--7 years (1957-64) 0.006 cfs (4.3 acre-ft per year).

Extremes.--No flow during year.
1958-64: Maximum discharge, 76 cfs Sept. 11, 1958 (on basis of culvert measurement of peak flow); no flow except Sept. 11, 12, 1958.

Remarks.--No flow since Sept. 12, 1958. Flood flow controlled by four small reservoirs upstream with a total capacity of about 95 acre-feet.

8-3658. Government ditch at El Paso, Tex.

Location.--Lat 31°47'02", long 106°26'04", at intersection of Montana and Houston Streets, 2 miles northeast of the business center of El Paso.

Drainage area.--6.4 sq mi, approximately.

Records available.--June 1958 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,740 ft (from topographic map).

Average discharge.--6 years, 0.12 cfs (87 acre-ft per year).

Extremes.--Maximum discharge during year, 338 cfs Sept. 11 (gage height, 2.06 ft); no flow for most of time.
1958-64: Maximum discharge, 550 cfs Sept. 11, 1958 (gage height, 2.64 ft), from rating curve extended above 148 cfs on basis of slope-area measurement of peak flow; no flow for most of time.

Remarks.--Records good.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Oct. 16	4.0	Mar. 18	7.5	Aug. 13	.2
18	.1	19	.1	14	.3
19	.5	July 27	.1	Sept. 11	22
Nov. 18	2.6	Aug. 1	4.4	19	.2
25	.2				

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	4.6	4.0	0	0.15	9.1
November	2.8	2.6	0	.09	5.6
December	0	0	0	0	0
Calendar year 1963	12.6	4.0	0	.04	25.1
March	7.6	7.5	0	.25	15
July	.1	.1	0	.003	.2
August	4.9	4.4	0	.16	9.7
September	22.2	22	0	.74	44
Water year 1963-64	42.2	22	0	.12	83.6

Peak discharge (base, 100 cfs).--Sept. 11 (1630) 338 cfs (2.06 ft).

Note.--Flow occurred only on days listed above.

8-3779. Rio Mora near Terrero, N. Mex.

Location.--Lat 35°46'38", long 105°39'26", in E½NE¼ sec.22,T.18 N., R.12 E., on left bank 450 ft upstream from bridge on State Highway 63, 600 ft upstream from mouth, and 3.1 miles by road north of Terrero.

Drainage area.--53.2 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,890 ft (from topographic map).

Extremes.--Maximum discharge during year, 125 cfs May 22 (gage height, 2.27 ft); minimum, 0.5 cfs Jan.8.
Greatest flood since 1886 probably occurred Sept. 29, 1904 (based on statement for Pecos River near Pecos and history of that flood period).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. This is a bench mark station established to define hydrologic trend of the contiguous area. About 90 percent of the drainage is in the Pecos Wilderness Area and not subject to development, watershed management, or the building of highways; there is limited cattle grazing by permit.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	1.0	1.2	17
.6	1.9	1.5	34
.8	5.0	1.8	60
1.0	10	2.3	130

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	11	8.0	2.5	2.5	2.7	13	25	54	12	12	7.0
2	18	11	6.8	3.0	2.5	2.7	14	27	53	10	11	6.8
3	17	12	8.0	3.0	2.5	2.7	8.8	32	50	10	9.4	6.1
4	16	11	8.0	2.5	2.3	2.5	7.0	36	46	9.1	9.1	11
5	16	10	9.0	2.0	2.1	*2.7	6.0	34	44	8.8	12	20
6	15	9.7	7.0	2.0	2.0	2.8	5.0	32	40	8.0	9.4	14
7	15	*10	*6.0	*2.0	1.6	2.9	5.0	35	40	9.4	10	11
8	15	10	4.5	1.5	1.8	2.6	5.5	34	37	13	18	9.7
9	14	9.7	5.0	1.3	2.2	*2.2	6.5	36	34	10	17	9.4
10	14	9.7	6.5	1.1	2.5	2.5	8.0	40	32	10	15	14
11	13	9.1	5.5	1.0	3.0	2.7	12	39	30	9.7	*14	12
12	13	8.8	5.5	.9	2.9	3.0	17	49	28	12	16	10
13	13	8.3	5.5	.9	2.7	3.0	20	57	26	11	21	9.1
14	13	8.3	6.0	.9	2.6	2.7	16	68	26	8.8	20	*8.6
15	13	8.3	6.5	1.0	2.5	2.8	*20	*68	*23	7.2	20	9.1
16	12	8.3	7.5	1.0	2.5	3.0	28	69	21	8.8	20	11
17	12	4.6	8.0	1.2	*2.5	3.5	31	75	20	*9.8	17	12
18	12	*4.0	8.0	1.4	2.5	3.5	28	96	18	8.8	16	8.3
19	13	7.0	8.0	1.5	2.7	*3.5	26	*87	18	9.1	16	7.8
20	14	6.5	7.0	1.5	2.7	3.0	28	84	17	11	14	11
21	12	7.8	6.0	1.5	2.5	3.3	24	86	16	*9.7	13	12
22	12	6.8	5.0	*1.5	2.3	3.5	24	100	15	9.7	12	14
23	12	5.8	*6.0	1.5	2.3	3.5	25	*100	14	12	11	12
24	11	7.0	6.3	1.0	2.5	3.3	27	97	14	12	10	11
25	11	8.0	6.1	1.5	2.7	3.0	25	94	14	11	9.4	12
26	*11	6.0	5.5	2.0	2.6	3.2	22	90	14	13	9.1	11
27	11	6.5	5.0	2.3	2.5	3.6	19	87	13	13	8.8	10
28	11	8.0	4.5	2.4	2.3	4.0	24	76	12	13	8.3	9.7
29	11	7.0	3.5	2.5	2.3	5.0	28	69	12	11	8.0	8.8
30	11	7.0	2.0	2.5	----------	7.0	*25	62	13	12	7.2	8.3
31	11	----------	2.0	2.5	----------	*9.0	----------	57	----------	13	7.0	----------
Total	410	247.2	188.2	53.4	70.6	105.4	547.8	1,941	794	325.9	400.7	316.7
Mean	13.2	8.24	6.07	1.72	2.43	3.40	18.3	62.6	26.5	10.5	12.9	10.6
Ac-ft	813	490	373	106	140	209	1,090	3,850	1,570	646	795	628

Calendar year	:	Max		Min		Mean	Ac-ft	
Water year 1963-64	:	Max	100	Min	0.9	Mean 14.8	Ac-ft	10,710

Peak discharge (base, 100 cfs). --May 22 (2230) 125 cfs (2.27 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18, 19, 24-28, Dec. 4-9, 11-23, Jan. 22 to Feb. 7, Mar. 31, Apr. 4-15 (no gage-height record Dec. 26-30, Jan. 1-21, Feb. 9 to Mar. 30). No gage-height record Oct. 4-6, 12, 13, 17, 20, 24.

8-3785. Pecos River near Pecos, N. Mex.

Location.--Lat 35°42'30", long 105°40'55", in NE¼NE¼ sec.17, T.17 N., R.12 E., on left bank at downstream side of bridge on private road, 600 ft upstream from Indian Creek, 2 miles downstream from Holy Ghost Creek, and 9 miles north of Pecos.

Drainage area.--189 sq mi (contributing area).

Records available.--August 1919 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Published as "near Cowles" 1919-25, "at Irvins Ranch" 1926-29, and as "at Irvins Ranch, near Pecos" 1930-39.

Gage.--Water-stage recorder. Datum of gage is 7,502.94 ft above mean sea level, datum of 1929.

Average discharge.--45 years, 99.2 cfs (71,820 acre-ft per year).

Extremes.--Maximum discharge during year, 320 cfs May 18 (gage height, 3.18 ft); maximum gage height, 3.25 ft Feb. 22 (backwater from ice), minimum daily discharge, 12 cfs Jan. 14.

1919-64: Maximum discharge, about 4,500 cfs Sept. 21 or 22, 1929 (gage height, 6.2 ft, from floodmark), from rating curve extended above 1,600 cfs by logarithmic plotting; minimum daily, 6 cfs Dec. 22, 23, 1956, Jan. 18, 22, 30, 1957.

Flood of Sept. 29, 1904, was greatest since 1886, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 75 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.8	8.0	2.5	109
1.9	16	2.8	184
2.2	54	3.2	320

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	35	24	27	20	21	39	77	165	47	50	*35
2	*62	34	23	27	20	21	39	77	170	43	44	32
3	59	36	24	27	17	20	28	94	157	40	37	30
4	57	32	25	25	17	*19	26	105	147	39	39	35
5	53	30	26	23	17	19	24	105	142	39	46	54
6	50	28	25	20	16	20	22	96	134	36	37	50
7	47	*28	*23	*20	15	22	20	105	132	40	44	40
8	47	28	17	20	16	21	25	107	127	53	54	36
9	44	28	22	17	18	18	25	109	116	47	62	39
10	43	28	25	17	20	19	32	116	111	47	60	51
11	*41	27	20	17	25	19	43	111	107	44	*56	51
12	41	26	18	15	23	20	51	137	101	48	59	40
13	40	27	18	13	22	20	50	160	94	50	75	36
14	37	26	18	12	21	20	50	184	94	40	84	*32
15	37	26	20	13	21	22	*64	*181	*84	36	96	35
16	36	26	22	14	21	22	83	193	81	36	79	36
17	37	19	24	14	*22	23	94	207	75	43	68	36
18	37	*17	25	15	22	24	90	262	72	39	64	35
19	50	23	25	15	22	*21	84	*235	68	41	60	31
20	53	25	25	16	20	18	103	223	64	56	56	35
21	43	24	25	16	20	19	86	229	62	*47	51	36
22	40	22	22	*16	20	19	92	262	57	44	50	44
23	39	21	*20	16	20	19	101	270	56	54	47	43
24	37	25	25	13	20	18	107	262	56	47	46	40
25	36	25	30	14	20	17	107	266	56	41	41	41
26	*35	23	30	16	20	18	92	284	54	46	40	43
27	36	25	30	18	19	19	74	270	50	46	40	40
28	35	26	28	20	18	19	72	239	48	44	39	40
29	34	26	25	20	19	22	92	201	48	40	37	37
30	34	26	22	20	----------	25	*77	204	53	46	36	36
31	34	----------	25	20	----------	*30	----------	190	----------	62	35	----------
Total	1338	792	731	556	571	634	1892	5561	2781	1381	1632	1169
Mean	43.2	26.4	23.6	17.9	19.7	20.5	63.1	179	92.7	44.5	52.6	39.0
Ac-ft	2,650	1,570	1,450	1,100	1,130	1,260	3,750	11,030	5,520	2,740	3,240	2,320

Calendar year 1963: Max 207 Min 10 Mean 58.4 Ac-ft 42,290
Water year 1963-64: Max 284 Min 12 Mean 52.0 Ac-ft 37,760

Peak discharge (base, 310 cfs).--May 18 (0300) 320 cfs (3.18 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Mar. 15, Mar. 17, 19-22, 25-27, 29, 30, Apr. 4, 5, 7-9 (no gage-height record Jan. 12-21, Feb. 10-17).

8-3792. Tecolote Creek near San Pablo, N. Mex.

Location.--Lat 35°33'10", long 105°22'10", in Las Vegas Grant, on left bank half a mile downstream from San Pablo Creek and 1¾ miles northeast of San Pablo, San Miguel County.

Drainage area.--83 sq mi, approximately.

Records available.--June 1960 to September 1964.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,730 ft (from topographic map).

Extremes.--Maximum discharge during year, 338 cfs Aug. 4 (gage height, 3.05 ft); no flow, Sept. 2-9, 30.
1960-64: Maximum discharge, 10,900 cfs Aug. 17, 1961 (gage height, 15.57 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 10.50 and 15.57 ft; no flow, Sept. 2-9, 30, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 250 acres (1960 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 5-16, Sept. 23, 24)

0.16	0	0.6	5.3
.3	.3	.8	12
.4	1.1	1.0	22
.5	2.9	1.3	40

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.3	2.5	2.1	1.6	2.1	2.5	3.8	7.9	4.8	.1	1.3	.1
2	4.8	2.5	*2.0	1.4	1.8	2.3	4.9	8.3	21	.2	1.0	.1
3	4.5	2.7	1.9	1.4	1.4	2.1	*5.0	8.3	8.7	.1	.8	0
4	4.2	2.6	1.8	1.4	1.4	2.1	4.7	7.8	4.7	.1	37	.1
5	3.9	2.5	1.7	1.4	1.8	2.2	4.9	7.5	3.6	.1	1.9	.1
6	3.7	2.4	1.6	*2.0	1.3	2.3	5.0	7.5	3.1	.1	.9	0
7	3.5	2.4	1.5	2.0	1.2	2.1	4.6	7.1	2.7	.1	.7	0
8	3.3	2.4	1.3	1.4	1.8	2.1	4.1	6.4	2.2	.1	2.7	.1
9	3.1	2.4	1.6	1.4	2.0	3.0	6.4	4.8	1.7	.1	1.1	.1
10	2.9	2.4	1.4	2.0	2.1	2.7	9.3	4.9	1.5	.8	1.0	*.1
11	2.9	2.4	1.0	1.6	2.2	2.4	12	4.5	1.3	.6	.9	.1
12	2.9	2.4	1.2	1.2	2.0	2.4	14	4.8	1.1	.3	.8	.1
13	2.8	*2.4	1.0	1.0	1.8	2.4	13	4.6	.8	.4	1.0	.1
14	2.7	2.4	1.2	1.2	2.0	3.0	12	*4.4	.8	6.1	1.9	.1
15	2.6	2.4	1.3	1.2	1.8	2.7	13	4.6	.6	1.6	1.9	.1
16	2.5	2.4	1.4	1.2	2.2	2.5	15	4.7	.6	* .9	1.4	.1
17	2.6	2.4	1.6	1.4	2.3	2.6	17	4.6	.5	.4	*1.1	.1
18	3.3	2.3	1.4	1.6	*2.3	* 2.6	16	4.6	.4	13	16	.1
19	3.6	2.3	1.6	1.4	2.5	2.7	16	5.7	.4	6.6	2.7	.1
20	4.1	2.3	1.6	*1.6	2.2	2.5	17	9.3	.3	1.6	1.0	.1
21	3.2	2.4	1.5	1.6	1.8	2.7	14	6.7	.2	.8	.7	15
22	2.9	2.4	1.0	1.6	2.1	2.6	13	6.0	.2	.7	.5	1.8
23	* 2.8	2.3	1.6	1.4	2.0	2.6	12	4.9	.2	1.1	.4	*.1
24	2.7	2.2	2.0	1.2	2.3	2.6	* 12	4.4	.2	.3	.3	.3
25	2.6	2.4	2.2	1.6	2.4	2.7	11	4.0	* .2	3.6	.2	.1
26	2.5	2.5	1.8	2.0	2.2	2.8	10	4.6	.2	20	.1	.1
27	2.5	2.4	2.0	2.0	2.2	2.5	9.8	6.4	.1	*1.7	.1	.1
28	2.5	2.2	1.8	2.0	2.2	2.4	8.2	4.9	.1	1.0	.1	.1
29	2.5	2.3	1.4	2.0	2.4	2.6	7.9	3.9	.1	.9	.1	.1
30	2.4	2.0	1.2	2.1	------	3.0	8.3	4.1	.1	2.3	.1	0
31	2.3	------	1.8	2.1	------	3.3	------	5.8	------	2.4	.1	------
Total	98.1	71.6	48.5	49.0	57.8	79.0	303.9	178.0	62.4	68.1	79.8	19.4
Mean	3.16	2.39	1.56	1.58	1.99	2.55	10.1	5.74	2.08	2.20	2.57	0.65
Ac-ft	195	142	96	97	115	157	603	353	124	135	158	38

Calendar year 1963: Max 118 Min 0.1 Mean 5.97 Ac-ft 4,320
Water year 1963-64: Max 37 Min 0 Mean 3.05 Ac-ft 2,210

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-26	1345	2.90	300	8-4	1530	3.05	338

* Discharge measurement made on this day.
Note.-Stage-discharge relation affected by ice Nov. 27, 29, 30, Dec. 2-9, 11-16, 18-20, Dec. 22 to Jan. 1, Jan. 3-20, Jan. 23 to Feb. 11, Feb. 13 to Mar. 2, Mar. 5, 9-11, 14.

8-3795. Pecos River near Anton Chico, N. Mex.

Location.--Lat 35°10'45", long 105°06'30", in Anton Chico Grant, on right bank 2 miles upstream from Canyon Blanco, 2½ miles southeast of Anton Chico, Guadalupe County, and 10 miles downstream from Tecolote Creek.
Drainage area.--1,050 sq mi, approximately (contributing area).
Records available.--April 1910 to May 1916, October 1916 to September 1924, August to December 1925, January 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1312.
Gage.--Water-stage recorder (digital). Altitude of gage is 5,130 ft (from river-profile map). Prior to July 2, 1937, at five different sites from one-sixth mile to 8½ miles upstream at various datums. July 2, 1937, to June 21, 1951, at site 345 ft upstream at datum 2.42 ft higher.
Average discharge.--51 years (1910-15, 1916-24, 1926-64), 138 cfs (99,910 acre-ft per year).
Extremes.--Maximum discharge during year, 660 cfs Sept. 10 (gage height, 5.08 ft); no flow at times.
1911-64: Maximum discharge, 40,300 cfs June 1, 1937 (gage height, 20.34 ft, from floodmarks, at site and datum then in use), by slope-area measurement; no flow at times.
The greatest flood since 1879 occurred Sept. 29, 1904 (discharge, about 73,000 cfs), from information by a local resident.
Remarks.--Records fair except those for periods of ice effect and those below 10 cfs, which are poor. Diversions above station for irrigation of about 4,900 acres (1959 determination) above and below station. Acequia del Bodo Juan Paiz (see table below) diverts water about 8 miles above gage and bypasses this station on left bank; ditch flow not included in record. Discharge measurements made at point opposite regular gage. A portion of this flow may be returned to the river about five miles downstream.

Discharge measurements, in cubic feet per second, of Acequia del Bodo Juan Paiz, water year October 1963 to September 1964

Date	Discharge	Date	Discharge	Date	Discharge
Oct. 31	20.0	Mar. 30	0	May 28	36.1
Nov. 20	13.6	Apr. 13	0	June 12	34.7
Dec. 5	15.8	20	0	July 7	2.64
31	1.65	27	17.9	28	4.22
Jan. 29	10.1	29	28.1	Aug. 17	16.1
Feb. 28	1.25	May 14	37.5	Sept. 14	4.23
Mar. 17	0				

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	8	11	11	9	2	13	53	184	1	7	4
2	75	9	11	14	5	0	21	39	176	3	8	4
3	68	11	11	11	b 3	0	34	30	167	5	5	4
4	59	11	10	14	b 3	0	59	31	141	6	4	4
5	55	11	* 10	b 8	b15	0	57	31	125	6	3	4
6	48	10	17	b 3	b10	0	37	41	104	2	4	4
7	44	10	20	b 2	b12	0	40	38	84	* 2	5	4
8	40	9	21	b 1	b25	0	38	43	47	2	5	3
9	25	9	18	1	b25	0	26	51	42	2	19	3
10	24	9	20	b10	21	0	22	45	37	3	16	79
11	20	9	b 20	b15	24	0	24	50	35	9	29	81
12	20	9	b 15	b15	31	0	30	46	*33	11	11	38
13	18	10	b 12	b15	29	0	*61	44	30	8	6	35
14	14	9	b 25	b15	18	0	82	*59	25	6	23	* 17
15	11	9	b 20	b10	14	1	81	98	21	8	63	20
16	11	12	20	* b10	12	13	88	113	20	8	55	16
17	12	11	22	b10	12	*11	115	113	11	73	*33	19
18	13	10	19	b 7	13	15	139	133	7	36	21	12
19	11	10	21	b 7	14	16	135	211	5	8	11	12
20	11	* 10	23	b15	13	17	* 122	213	2	3	11	11
21	16	11	20	5	b13	15	106	224	4	2	12	10
22	25	11	b 15	8	15	13	82	197	1	8	9	14
23	15	11	24	6	b13	8	77	220	1	4	8	20
24	13	11	17	b 6	14	6	89	223	1	4	5	14
25	12	11	16	b20	14	3	92	208	2	4	5	13
26	11	11	14	b15	14	7	88	216	7	18	5	12
27	11	11	14	5	b15	8	*68	241	3	4	4	12
28	11	11	13	b 9	*13	12	53	* 235	3	* 3	4	10
29	8	11	b 15	*b14	1	11	* 39	212	1	3	4	10
30	9	11	b10	8	----------	*10	46	182	1	24	4	11
31	*10	----------	* b 7	5	----------	7	----------	180	----------	3	4	----------
Total	799	306	511	295	420	175	1.964	3,820	1,320	279	403	500
Mean	25.8	10.2	16.5	9.5	14.5	5.6	65.5	123	44.0	9.0	13.0	16.7
Ac-ft	1,580	607	1,010	585	833	347	3,900	7,580	2,620	553	799	992

Calendar year 1963 : Max 2,320 Min 1 Mean 66.1 Ac-ft 47,870
Water year 1963-64: Max 241 Min 0 Mean 29.5 Ac-ft 21,410

Peak discharge (base, 3,000 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-3805. Gallinas River near Montezuma, N. Mex.

Location.--Lat 35°39'00", long 105°19'10", in Las Vegas Grant, on left bank 2 miles west of Montezuma, San Miguel County, and 6 miles northwest of Las Vegas.

Drainage area.--84 sq mi, approximately.

Records available.--March to September 1915, June 1916 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 6,950 ft (from topographic map).

Average discharge.--48 years (1916-64), 20.1 cfs (14,550 acre-ft per year).

Extremes.--Maximum discharge during year, 2,790 cfs July 18 (gage height, 5.98 ft); minimum, 1.0 cfs Mar. 1 & 5.
1915-64: Maximum discharge, 5,400 cfs Aug. 4, 1957 (gage height, 8.25 ft), from rating curve extended above 530 cfs on basis of computation of peak flow over dam; minimum daily determined, 0.2 cfs Oct. 6-9, 1922, Sept. 21, Oct. 9-14, 1956.
The greatest flood since about 1900 occurred the night of Sept. 29, 1904 (discharge not determined), from information by local residents and G. B. Monk's report on floods.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 80 acres (1959 determination) above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 18				July 19 to Sept. 30			
0.4	1.6	1.0	22	0.3	1.2	0.6	7.2
.5	3.1	1.5	62	.4	2.6	.7	11
.6	5.3	2.0	114	.5	4.5	.8	15
.7	8.4						

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	5.3	4.5	4.3	2.6	3.2	6.8	13	16	2.7	4.6	1.9
2	10	5.3	*4.5	4.5	2.4	3.2	7.8	14	18	*2.5	4.0	2.1
3	9.2	5.3	4.2	4.0	2.3	3.1	7.5	16	16	2.2	3.6	1.9
4	9.2	5.1	4.0	3.7	2.5	3.0	6.5	16	13	2.1	4.0	1.9
5	7.8	5.1	4.0	3.5	3.0	3.0	6.5	17	11	2.1	3.4	4.4
6	7.2	4.9	4.5	3.5	2.5	3.0	7.5	16	10	1.8	3.2	4.0
7	7.5	4.6	4.5	3.5	2.3	3.0	7.2	17	8.8	1.6	3.2	3.0
8	6.2	4.6	4.0	3.3	2.5	3.0	6.5	16	8.1	1.6	8.9	2.6
9	6.5	4.9	4.2	3.0	3.0	3.0	9.6	16	7.5	1.9	8.9	2.2
10	5.9	4.9	4.5	3.0	3.2	3.0	14	15	6	9.1	7.9	2.4
11	6.2	5.1	4.0	3.2	3.5	3.0	19	15	5	3.1	6.9	*3.0
12	5.9	4.9	3.7	3.0	3.5	3.1	22	16	*4.6	3.1	5.9	3.4
13	5.6	4.6	3.5	2.7	3.2	3.5	*20	*17	4.9	3.3	6.9	3.2
14	5.6	4.4	3.5	2.5	3.0	3.1	18	18	4.6	3.0	8.2	3.2
15	5.6	4.6	3.6	2.4	3.0	3.3	21	19	4.4	*4.4	7.5	3.0
16	5.6	4.6	3.8	2.3	*3.2	*4.0	27	19	4.2	3.0	6.7	3.0
17	5.9	4.6	*4.0	2.2	*3.2	3.5	32	21	4.0	3.0	7.3	3.4
18	5.3	4.2	4.4	2.5	3.2	4.4	30	24	3.5	110	* 12	3.0
19	6.5	*4.2	4.2	3.0	3.0	4.2	28	26	3.3	7.5	15	2.8
20	7.8	4.2	4.0	*3.2	3.0	4.0	32	24	3.1	5.9	9.2	3.2
21	6.8	4.6	3.8	3.3	3.0	4.2	26	23	3.0	4.4	6.4	4.2
22	*5.9	4.2	3.5	3.0	3.0	4.9	24	25	3.0	4.4	5.1	4.4
23	5.9	4.0	3.5	2.8	3.0	4.6	24	24	2.8	3.8	4.4	* 4.2
24	5.9	4.0	4.0	2.7	3.0	4.9	22	22	2.8	4.0	3.8	3.8
25	5.6	4.9	4.0	2.6	3.0	4.6	21	22	2.7	3.6	3.6	3.4
26	5.3	4.5	4.0	2.8	3.1	4.0	19	*24	2.7	3.8	3.2	2.8
27	5.3	4.2	4.0	3.0	3.1	* 4.9	*18	*22	2.2	*7.2	2.4	3.0
28	5.3	4.4	4.2	2.8	3.1	5.1	15	19	2.4	4.4	2.6	3.2
29	5.6	4.2	3.6	2.8	3.1	5.3	16	17	2.4	3.6	2.6	3.0
30	5.3	4.2	3.5	2.8	---	5.9	15	16	2.7	6.9	2.2	2.8
31	5.3	---	4.0	2.8	---	6.2	---	18	---	5.3	2.1	---
Total	202.7	138.6	123.7	94.7	85.4	121.2	528.9	587	182.7	225.3	175.7	92.4
Mean	6.54	4.62	3.99	3.05	2.94	3.91	17.6	18.9	6.09	7.27	5.67	3.08
Ac-ft	402	275	245	188	169	240	1050	1160	362	447	348	183

Calendar year 1963: Max 99 Min 1.0 Mean 9.02 Ac-ft 6,540
Water year 1963-64: Max 110 Min 1.6 Mean 6.99 Ac-ft 5,070

Peak discharge (base, 250 cfs).--July 18 (1400) 2,790 cfs (5.98 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 23, 24, 26, 27, Nov. 29 to Mar. 2, Mar. 9, 10.

8-3810. Gallinas River at Montezuma, N. Mex.

Location.--Lat 35°39'15", long 105°16'30", in Las Vegas Grant, at downstream end of middle pier of highway bridge, half a mile downstream from Montezuma, San Miguel County, and 5 miles northwest of Las Vegas.

Drainage area.--87 sq mi, approximately.

Records available.--August 1903 to September 1904 (gage heights only), October 1904 to May 1912, October 1912 to September 1964. Yearly estimate for water year 1912 (incomplete) and monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for the periods Oct. 8-22, 1904, and Jan. 1 to Feb. 20, 1906, published in WSP 177 and 213, respectively, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 6,675 ft (from topographic map). Prior to Mar. 24, 1926, staff gage at site a quarter of a mile upstream. Gages at various datums prior to Sept. 3, 1942.

Average discharge.--60 years (1904-64), 19.4 cfs (14,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,520 cfs July 18 (gage height, 7.2 ft); minimum, 0.7 cfs July 7.
1904-64: Maximum discharge, 9,140 cfs Aug. 4, 1957 (gage height, 11.8 ft, from floodmark), from rating curve extended above 450 cfs on basis of slope-area measurement of peak flow; no flow Oct. 4-7, 1934, July 27, 28, 29, 1956, several days in 1957, Aug. 4-8, 1963.
Flood of Sept. 30, 1904, is the highest since about 1900 (discharge, 11,600 cfs by slope-area method), from G. B. Monk's report on floods and WSP 147.

Remarks.--Records fair. Flow partly regulated at low flows by reservoirs owned by Public Service Co. of New Mexico. Diversions above station for irrigation of about 180 acres (1959 determination) and for Las Vegas city water supply.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 1 to July 18, July 29 to Sept. 30)

Oct. 1 to Apr. 30				May 1 to Sept. 30			
3.8	0.6	4.2	14	4.06	1.0	4.4	12
3.9	1.6	4.3	22	4.1	1.5	4.5	21
4.0	3.8	4.4	36	4.2	3.4	4.7	55
4.1	7.5			4.3	6.8	5.0	138

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2	3.5	2.1	2.1	1.3	a 1.6	2.5	10	12	1.4	3.0	2.2
2	5.8	3.5	2.0	2.0	1.2	a 1.6	2.7	11	13	1.4	2.4	2.2
3	5.4	4.0	*2.0	1.8	1.0	a 1.5	3.0	12	13	1.2	2.4	2.2
4	4.7	3.2	2.0	1.6	1.2	a 1.4	3.0	12	9.2	1.1	2.8	2.0
5	4.4	3.2	2.0	1.6	1.6	* 1.4	3.0	13	6.8	1.0	2.6	2.2
6	3.8	3.8	2.1	1.6	1.5	1.4	3.2	14	6.0	1.0	2.0	2.0
7	3.8	3.0	2.3	1.5	1.2	1.4	3.5	16	4.5	1.0	2.2	1.8
8	3.8	3.0	2.0	1.5	1.5	1.4	3.5	14	4.2	1.0	4.0	1.8
9	3.8	3.0	2.0	1.4	1.6	1.4	4.4	9.8	3.4	1.1	6.0	1.6
10	3.8	3.0	2.3	1.4	1.8	1.4	8.5	9.8	3.2	1.8	4.9	1.8
11	3.5	3.0	2.1	1.5	1.8	1.4	14	9.2	3.0	1.8	4.9	* 1.8
12	3.8	3.0	2.1	1.3	1.8	1.4	18	10	* 2.8	1.5	4.2	1.8
13	3.8	2.7	2.0	1.2	1.8	1.5	*16	*12	2.8	1.4	4.2	1.6
14	3.8	* 2.7	1.8	1.0	1.6	1.5	14	12	2.8	1.2	5.6	1.8
15	3.5	2.5	1.8	.9	1.6	1.5	16	12	2.6	* 6.5	5.2	1.8
16	3.8	3.0	2.0	.9	1.5	*1.8	22	13	2.6	2.6	4.5	2.0
17	4.0	2.7	2.3	1.0	1.6	2.0	27	14	2.6	2.2	* 6.6	2.0
18	4.0	2.3	2.1	1.0	*1.5	2.0	26	16	2.4	*109	5.9	1.8
19	4.7	2.3	2.1	1.3	1.4	2.1	25	20	2.2	7.6	10	1.8
20	4.0	2.3	2.1	* 1.3	a 1.5	2.0	26	23	2.2	3.0	5.6	2.2
21	3.8	2.3	2.1	1.3	a 1.5	2.0	22	20	2.2	2.4	3.7	5.4
22	* 3.8	2.1	2.0	1.4	a 1.5	2.1	20	20	2.4	2.4	3.0	2.8
23	3.5	2.1	1.6	1.4	a 1.5	2.3	20	19	2.4	2.4	2.6	* 2.4
24	3.2	2.1	1.8	1.2	a 1.5	2.3	19	17	2.6	2.4	2.2	2.2
25	3.5	2.5	1.8	1.2	a 1.5	2.5	17	17	2.2	2.4	1.8	2.0
26	3.2	2.1	1.8	1.3	a 1.5	*1.6	16	20	1.6	2.4	1.8	1.8
27	3.2	2	1.8	1.4	a 1.5	1.8	*14	*18	1.4	* 4.8	1.8	1.6
28	3.5	2	2.0	1.4	a 1.5	2.1	11	16	1.2	2.6	2.0	2.0
29	3.5	2.1	1.8	1.3	a 1.5	2.3	11	14	1.2	5.0	1.8	2.0
30	3.2	2.1	1.6	1.3	----------	2.0	12	12	1.6	4.2	2.0	1.6
31	3.2	----------	1.8	1.3	----------	2.1	----------	14	----------	3.7	2.0	----------
Total	122.0	81.1	61.3	42.4	43.5	54.8	403.3	449.8	120.1	183.5	113.7	62.2
Mean	3.94	2.70	1.98	1.37	1.50	1.77	13.4	14.5	4.00	5.92	3.67	2.07
Ac-ft	242	161	122	84	86	109	800	892	238	364	226	123

Calendar year 1963: Max 127 Min 0 Mean 6.53 Ac-ft 4,720
Water year 1963-64: Max 109 Min 0.9 Mean 4.75 Ac-ft 3,450

Peak discharge (base, 200 cfs).--July 18 (1430) 1,520 cfs (7.2 ft).

* Discharge measurement made on this day.
a No gage-height record.

8-3820. Gallinas River near Lourdes, N. Mex.

Location.--Lat 35°28'15", long 105°09'35", in Las Vegas Grant, on right bank 0.8 mile upstream from ford on Lourdes-Romeroville road, 1.2 miles northwest of Lourdes, San Miguel County, 2.8 miles downstream from Pagosa Canyon, and 9 miles south of Las Vegas.

Drainage area.--313 sq mi.

Records available.--June 1951 to January 1964 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 5,928 ft above mean sea level (levels from planetable bench mark).

Average discharge.--12 years (1951-63), 14.5 cfs (10,500 acre-ft per year).

Extremes.--Maximum discharge during period, 20 cfs Dec. 3 (gage height, 2.12 ft), result of release after freezeup; minimum, 1.7 cfs Nov. 29, result of freezeup.
1951-64: Maximum discharge, 6,680 cfs Aug. 17, 1961 (gage height 9.40 ft), from rating curve extended above 2,100 cfs on basis of slope-area measurement of peak flow; no flow June 17, July 2-10, 1957.
Flood of Sept. 30, 1904, is probably highest known. Other major floods occurred June 9, 1903 and June 1, 1937.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 6,600 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	3.6
1.7	5.6
1.9	12

Discharge, in cubic feet per second, period October 1963 to January 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2	9.9	5.2	6.5								
2	5.6	8.2	*5.4	b 5								
3	5.6	7.3	6.8	b 4.5								
4	5.4	6.5	7.6	b 4								
5	5.2	6.5	6.8	b 5								
6	5.0	6.2	7.0	* -								
7	5.0	6.2	5.9	-								
8	5.0	6.2	6.2	-								
9	5.0	5.9	6.5	-								
10	5.4	5.6	5.9	-								
11	5.2	5.4	b 5	-								
12	5.2	5.6	b 5.5	-								
13	5.6	5.6	b 5	-								
14	5.4	*5.9	b 6	-								
15	5.6	5.6	b 8	-								
16	5.9	5.4	b 9	-								
17	6.8	5.2	b10	-								
18	7.6	5.2	b 9	-								
19	8.5	5.6	9.9	-								
20	9.6	5.6	8.2	-								
21	7.9	5.6	6.5	-								
22	7.9	5.6	b5.5	-								
23	* 7.0	5.6	9.2	-								
24	6.8	5.4	10	-								
25	6.5	5.2	7.6	-								
26	6.2	5.2	7.3	-								
27	6.5	5.6	7.0	-								
28	6.8	5.4	6.8	-								
29	7.6	5.2	6.2	-								
30	7.0	5.4	6.8	-	----------							
31	7.3	----------	7.0	-	----------		----------		----------			----------
Total	196.3	177.8	218.8	-								
Mean	6.33	5.93	7.06	-								
Ac-ft	389	353	434	-								

Calendar year 1963: Max 400 Min 3.1 Mean 11.9 Ac-ft 8,590
Water year 1963-64: Max - Min - Mean - Ac-ft -

Peak discharge (base, 1,100 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

8-3825. Gallinas River near Colonias, N. Mex.

Location.--Lat 35°11'10", long 104°54'40", in Anton Chico Grant, on right bank 1½ miles upstream from mouth, 2 miles south of San Miguel - Guadalupe County line, and 6¼ miles northwest of Colonias, Guadalupe County.

Drainage area.--610 sq mi, approximately.

Records available.--January 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,940 ft (from river-profile map).

Average discharge.--13 years, 17.1 cfs (12,380 acre-ft per year).

Extremes.--Maximum discharge during year, 2,830 cfs Aug. 7 (gage height, 9.36 ft); no flow for many days.
1951-64: Maximum discharge, 9,360 cfs June 16, 1963 (gage height, 16.65 ft), from rating curve extended above 1,900 cfs on basis of slope-area measurements at gage heights 8.64, 12.74, 16.65, and 27.2 ft; no flow for many days.
Maximum flood known occurred about June 1, 1937, when a stage of about 27.2 ft was reached; discharge determined as 26,700 cfs by slope-area measurement made in 1951. A flood of about the same magnitude occurred Sept. 29-30, 1904.

Remarks.--Records poor. Diversion for irrigation of about 7,000 acres (1959 determination) above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 7				Aug. 8 to Sept. 30			
1.5	0	2.5	49	1.4	0	2.5	49
1.6	1	3.0	98	1.5	1	3.0	98
1.7	2	3.5	160	1.7	3	3.5	160
1.8	5	4.0	233	1.9	9	4.0	233
1.9	8	4.5	319	2.0	13		
2.1	19						

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1										0	0
2	0										0	0
3	0										0	0
4	0										0	0
5	0		(*)			(*)					0	5
6	0										1	3
7	0									(*)	261	1
8	0										87	0
9	0										3	0
10	0										1	0
11	0										0	0
12	0								(*)		0	7
13	0										0	3
14	0										0	* 1
15	0										4	0
16	0										2	0
17	0										*225	0
18	0										82	0
19	0										45	0
20	0										10	0
21	0						(*)				3	0
22	0							(*)			1	2
23	0										1	112
24	0										1	29
25	0										0	42
26	0										0	15
27	0										0	4
28	0									(*)	0	2
29	0			(*)							0	1
30	0				---------	(*)					0	0
31	* 0	----- ----	(*)		---------		----------		---------		0	----------
Total	1	0	0	0	0	0	0	0	0	0	727	227
Mean	0.03	0	0	0	0	0	0	0	0	0	23.5	7.6
Ac-ft	2	0	0	0	0	0	0	0	0	0	1,440	450

Calendar year 1963: Max 1,130 Min 0 Mean 14.6 Ac-ft 10,560
Water year 1963-64: Max 261 Min 0 Mean 2.61 Ac-ft 1,900

Peak discharge (base, 1,700 cfs).--Aug. 7 (1900) 2,830 cfs (9.36 ft); Aug. 17 (1900) 2,220 cfs (8.44 ft).

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Aug. 9-16, Aug. 20 to Sept. 13.

8-3830. Pecos River at Santa Rosa, N. Mex.

Location.-Lat 34°56'35", long 104°41'55", in NW¼SE¼ sec.3, T.8N., R.21 E., on left bank 0.6 mile upstream from bridge on U. S. Highway 66 in Santa Rosa and 1.9 miles upstream from Rio Agua Negra Chiquita.

Drainage area.--2,650 sq mi, approximately (contributing area).

Records available.--May 1903 to December 1905 (gage heights only), January to December 1906, February 1910 to July 1911, September 1912 to December 1925, March to May 1927, July 1927, January 1928 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for Apr. 5-20, May 4-7, 11, Aug. 13, 16-18, 24, Sept. 7-9, 11, 13, 19, 21, 23, 25, 27, Oct. 1-31, Nov. 3, 4, 9, 11, 20, 22, 1910, and Feb. 1 to Mar. 31, June 1 to July 31, 1911, published in WSP 358 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 4,537.56 ft above mean sea level, datum of 1929. May 5, 1903, to Dec. 31, 1906, staff gage at site 0.5 mile downstream at datum 6.68 ft lower. Feb. 2, 1910, to May 4, 1922, chain gage at site 0.6 mile downstream at different datum. May 5, 1922, to Sept. 30, 1936, water-stage recorder at site 800 ft downstream at datum 3.56 ft lower. Oct. 1, 1936, to June 1, 1937, water-stage recorder at site 800 ft downstream at datum 4.62 ft lower. June 2, 1937, to June 30, 1958, water-stage recorder at site 0.6 mile downstream at datum 7.79 ft lower. July 1, 1958, to Sept. 30, 1963, water-stage recorder at site 800 ft downstream at datum 4.16 ft lower.

Average discharge.--48 years (1912-24, 1928-64), 147 cfs (106,400 acre-ft per year).

Extremes.--Maximum discharge during year, 2,580 cfs Sept. 11 (gage height, 3.80 ft); minimum, 6.0 cfs Jan. 25, result of freezeup.
1930-64: Maximum discharge, 55,200 cfs June 2, 1937 (gage height, 25.7 ft, site and datum then in use), from rating curve extended above 32,000 cfs by logarithmic plotting; minimum, 3.0 cfs July 7, 1957.
The flood of June 2, 1937, is the greatest since about 1886. Flood of Sept. 30, 1904, reached a stage of 24.7 ft (site and datum then in use), discharge, 45,500 cfs, by Kutter's formula. Flood of June 9, 1903, reached a stage of 21.1 ft (same site and datum as in 1904), discharge, 34,000 cfs, by comparison with 1904 flood.

Remarks.--Records good except those for periods of ice effect or those below 10 cfs, which are fair. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 12,000 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.74	8.2	1.2	104
.8	13	1.4	194
.9	26	1.8	460
1.0	45	2.3	880

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	26	21	21	20	21	17	16	53	16	10	13
2	26	23	20	20	20	21	16	14	55	11	12	13
3	26	23	20	20	16	21	17	14	50	11	11	16
4	26	21	20	21	11	22	20	13	58	11	12	17
5	25	20	20	21	43	21	20	13	37	10	13	18
6	23	20	20	20	34	21	17	12	26	9.6	13	17
7	22	20	20	21	b22	20	17	13	16	9.6	13	18
8	23	21	21	21	23	20	17	13	12	9.6	291	18
9	23	21	22	b20	30	21	16	14	12	10	63	20
10	25	20	22	b21	25	21	17	14	13	10	22	95
11	25	21	21	23	21	18	17	14	14	12	18	806
12	23	21	26	b21	21	18	17	14	14	12	16	129
13	23	21	b20	b20	21	18	17	14	14	13	14	43
14	23	21	21	b20	20	17	20	14	16	10	13	30
15	23	20	26	b22	18	17	21	17	14	10	14	25
16	25	20	28	b25	18	17	23	17	13	10	12	22
17	26	21	28	25	18	18	25	23	12	9.6	16	20
18	26	21	23	b25	17	20	25	133	12	8.2	96	16
19	30	21	25	26	18	21	25	40	12	8.9	66	16
20	34	21	23	25	20	18	25	20	12	8.9	26	16
21	30	21	23	23	20	18	28	50	13	9.6	17	17
22	30	21	b22	22	21	18	34	66	12	10	14	17
23	28	22	b21	22	22	18	28	66	12	9.6	13	16
24	28	22	26	b20	20	17	23	66	14	9.6	13	34
25	30	22	23	b18	21	17	20	71	14	10	13	25
26	28	22	21	28	20	16	17	63	14	12	13	16
27	28	22	21	22	20	14	22	68	12	11	12	13
28	28	21	21	21	21	16	21	78	12	11	12	13
29	26	20	20	21	21	17	18	91	13	10	12	13
30	25	20	20	20	----------	17	18	81	13	12	12	14
31	25	----------	22	20	----------	17	----------	58	----------	10	12	----------
Total	809	636	687	675	622	576	618	1,200	594	325.2	894	1,546
Mean	26.1	21.2	22.2	21.8	21.4	18.6	20.6	38.7	19.8	10.5	28.8	51.5
Ac-ft	1,600	1,260	1,360	1,340	1,230	1,140	1,230	2,380	1,180	645	1,770	3,070

Calendar year 1963: Max 2,440 Min 15 Mean 71.7 Ac-ft 51,860
Water year 1963-64: Max 806 Min 8.2 Mean 25.1 Ac-ft 18,200

Peak discharge (base, 4,000 cfs).--No peak above base.

b Stage-discharge relation affected by ice.

8-3835. Pecos River near Puerto de Luna, N. Mex.

Location.--Lat 34°44'00", long 104°31'30", in SE¼NW¼ sec.20, T.6N., R.23 E., on left bank 9 miles southeast of Puerto de Luna and 17½ miles upstream from Alamogordo Dam.

Drainage area.--3,970 sq mi, approximately (contributing area).

Records available.--April 1938 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,315 ft (from river-profile map). Prior to Apr. 15, 1954, at datum 1 ft higher.

Average discharge.--26 years, 225 cfs (162,900 acre-ft per year).

Extremes.--Maximum discharge during year, 4,800 cfs Sept. 11 (gage height, 5.19 ft); minimum, 59 cfs Aug. 27.
1938-64: Maximum discharge, 48,600 cfs Sept. 1, 1942 (gage height, 17.00 ft), from rating curve extended above 7,400 cfs on basis of flow at Santa Rosa; minimum, 11 cfs Jan. 31, 1951.
Maximum flood known since at least 1886 occurred June 2, 1937, when peak at Santa Rosa was 55,200 cfs. Flood of July 24, 1895, was reported as "highest in 10 years." Other major floods occurred on June 9, 1903, Sept. 30, 1904, and May 1, 1914.

Remarks.--Records good. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 12,500 acres (1959 determination) above station. Discharge represents inflow to Alamogordo Reservoir (capacity, 122,100 acre-ft).

Rating table (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used June 7-10, Sept. 11)

1.1	57	2.0	356
1.4	118	2.6	800
1.7	215	3.3	1,660

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	106	99	106	90	101	101	84	152	76	72	64
2	84	104	99	101	94	99	104	78	152	76	71	66
3	80	111	101	101	96	104	101	78	162	78	69	69
4	78	104	99	108	113	108	104	80	135	78	67	67
5	78	99	101	104	108	106	111	72	135	72	64	69
6	78	101	104	108	121	106	108	76	113	72	64	67
7	80	104	101	94	111	104	104	74	96	72	72	71
8	78	101	98	96	104	104	106	76	86	67	201	78
9	78	104	101	106	104	106	99	78	82	64	196	74
10	80	106	106	111	111	104	90	78	88	66	104	139
11	78	106	108	101	111	101	90	82	84	71	80	1660
12	80	99	104	101	111	99	86	80	80	80	71	338
13	80	99	99	99	111	99	84	76	80	84	72	159
14	78	101	96	96	106	94	88	76	84	76	78	188
15	78	99	94	99	106	94	90	80	78	76	84	192
16	80	96	96	106	104	92	88	84	74	69	74	88
17	84	96	99	99	106	88	86	100	76	72	100	84
18	84	96	101	99	108	94	84	82	71	66	196	82
19	88	101	101	96	111	99	90	199	67	66	160	80
20	96	106	104	99	106	94	88	116	66	67	101	88
21	92	101	106	99	106	92	90	106	66	102	74	90
22	90	99	111	99	106	90	96	156	66	88	69	90
23	88	99	111	96	111	90	99	149	66	69	74	88
24	86	99	106	96	108	94	94	135	74	67	69	90
25	88	101	106	94	106	94	90	149	72	69	67	104
26	90	101	101	94	104	92	88	165	72	71	67	92
27	92	101	101	101	104	88	86	178	69	67	64	80
28	92	101	101	99	104	86	92	178	67	66	67	82
29	90	101	99	99	101	99	90	175	67	67	66	84
30	88	99	99	92	----------	104	86	175	71	159	64	82
31	94	----------	104	90	----------	106	----------	168	----------	101	67	----------
Total	2622	3041	3156	3089	3082	3031	2813	3483	2651	2374	2744	4605
Mean	84.6	101	102	99.6	106	97.8	93.8	112	88.4	76.6	88.5	154
Ac-ft	5200	6030	6260	6130	6110	6010	5580	6910	5260	4710	5440	9130

Calendar year 1963 : Max 2,630 Min 70 Mean 148 Ac-ft 107,200
Water year 1963-64 : Max 1,660 Min 64 Mean 100 Ac-ft 72,770

Peak discharge (base, 5,500 cfs).--No peak above base.

8-3845. Pecos River below Alamogordo Dam, N. Mex.

Location.--Lat 34°36'20", long 104°23'10", in lot 1, sec.2, T.4 N., R.24 E., on left bank 1,200 ft downstream from Alamogordo Dam, 1½ miles downstream from Alamogordo Creek, and 4½ miles northeast of Guadalupe.

Drainage area.--4,390 sq mi, approximately (contributing area).

Records available.--October 1912 to April 1926, August 1926 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1944, published as "near Guadalupe."

Gage.--Water-stage recorder (digital subsequent to Jan. 1) and Parshall flume, with concrete control above top of flume. Datum of gage is 4,142.67 ft above mean sea level (Bureau of Reclamation datum). Prior to Sept. 10, 1936, at site 1½ miles upstream at different datum. Sept. 14, 1936, to Mar. 8, 1941, and June 11 to Sept. 21, 1941, at site a quarter of a mile downstream at different datums.

Average discharge.--23 years (1912-25, 1926-36), 236 cfs (170,900 acre-ft per year), prior to completion of Alamogordo Dam; 27 years (1936-64), 223 cfs (161,400 acre-ft per year).

Extremes.--Maximum daily discharge during year, 1,110 cfs Apr. 9-15 (gage height, 3.27 ft); minimum, 0.1 cfs Nov. 17.
1912-64: Maximum discharge, 42,800 cfs Sept. 1, 1942, by computation of flow over spillway and through outlet gates of Alamogordo Dam by Bureau of Reclamation; maximum gage height, 15.5 ft May 1, 1914, site and datum then in use; no flow at times.

Remarks.--Records good. Diversion for irrigation of about 12,500 acres (1959 determination) above station. Flow regulated by Alamogordo Reservoir (see p. 170-3).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 10-15)

0.08	0.3	0.7	24	2.4	215
.1	.6	1.0	44	2.6	330
.2	3.0	1.5	86	3.0	725
.3	5.8	2.0	142	3.3	1,160
.4	9.3				

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	0.6	0.6	0.5	0.8	100	62	80	86	1,080	70	*80
2	89	.3	.6	.5	.7	100	62	81	87	1,080	70	80
3	89	.3	.6	.5	.6	102	62	82	84	1,090	70	80
4	94	.3	.6	.5	.6	103	62	83	84	1,090	69	80
5	97	.3	.6	.5	.6	103	63	83	91	1,090	70	80
6	93	.3	*.6	.5	.6	87	760	83	96	*1,080	70	80
7	79	.3	.6	.5	.7	73	1,100	83	97	1,080	70	80
8	67	.3	.8	.6	.7	75	1,100	76	*98	170	70	80
9	*80	.3	.8	.5	.8	75	1,110	73	99	68	71	80
10	92	.3	.8	.6	.8	71	1,110	72	99	69	*71	80
11	83	.3	.8	.6	.8	70	1,110	71	98	70	71	69
12	81	.3	.8	.6	.8	71	1,110	69	98	70	71	64
13	76	.3	.8	.5	.8	72	1,110	77	98	70	71	69
14	75	.3	.8	.5	.7	65	*1,110	77	98	70	76	71
15	77	.3	.8	.6	.6	56	1,110	*76	82	70	78	68
16	76	.3	.8	*.6	.7	58	1,100	76	90	71	78	69
17	77	.3	.6	.6	.8	*59	1,100	74	84	71	78	68
18	79	.4	.6	.6	.8	60	1,020	74	95	71	78	63
19	80	*.4	.6	.6	.8	60	95	76	85	71	78	68
20	80	.4	*.6	.6	.7	60	99	79	88	71	79	69
21	80	.4	.6	.6	.7	61	101	79	95	71	79	69
22	80	.6	.6	.6	.9	61	94	80	85	*71	79	69
23	71	.6	.6	.6	.8	61	96	81	*82	71	79	70
24	66	.8	.6	.6	.8	61	91	81	79	71	81	70
25	66	.6	.6	.7	.8	61	90	81	78	70	81	85
26	58	.6	.6	.6	.9	61	91	81	80	70	81	90
27	53	.6	.6	.6	*1.0	51	92	81	725	70	80	91
28	61	.6	.6	.7	61	51	90	82	1,080	70	80	91
29	*67	.6	.6	.8	99	60	89	82	1,080	70	80	84
30	57	.6	.6	*.8	----------	61	*84	83	1,080	70	80	66
31	47	----------	.6	.7	----------	*62	----------	85	----------	70	80	----------
Total	2,361	12.6	20.4	18.3	180.3	2171	15,373	2,441	6,301	9,376	2,339	2,263
Mean	76.2	0.42	0.66	0.59	6.22	70.0	512	78.7	210	302	75.5	75.4
Ac-ft	4,680	25	40	36	358	4,310	30,490	4,840	12,500	18,600	4,640	4,490

Calendar year 1963: Max 1,190 Min 0.1 Mean 177 Ac-ft 128,200
Water year 1963-64: Max 1,110 Min 0.3 Mean 117 Ac-ft 85,010

* Discharge measurement made on this day.

8-3850. Fort Sumner main canal near Fort Sumner, N. Mex.

Location.--Lat 34°30'10", long 104°16'40", in NW¼ sec.12, T.3N., R.25 E., on right bank 160 ft downstream from bridge, 0.45 mile downstream from diversion dam on Pecos River, and 2¾ miles northwest of Fort Sumner.

Records available.--March 1939 to November 1943 (gage heights only March to November 1943), April 1954 to September 1964. Monthly discharge only for some periods, published in WSP 1732. Published as "Fort Sumner Irrigation District canal" 1939-40.

Gage.--Water-stage recorder. Altitude of gage is 4,033 ft (from Bureau of Reclamation profile map of canal).

Extremes.--1939-43, 1954-64: Maximum daily discharge, 174 cfs July 22, 1941; no flow at times.

Remarks.--Records fair. Discharge measurements generally made one or more times a month during periods of flow. Canal diverts water from Pecos River for irrigation of about 6,600 acres (1961 determination) by the Fort Sumner Irrigation District.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	98	58	81.9	5,040
November	28	0	.9	56
December	0	0	0	0
Calendar year 1963	103	0	49.2	35,660
January	0	0	0	0
February	67	0	2.3	133
March	103	48	72.7	4,470
April	94	66	79.8	4,750
May	90	62	76.5	4,710
June	101	72	89.6	5,330
July	94	69	76.9	4,730
August	80	68	75.5	4,650
September	91	62	79.2	4,710
Water year 1963-64	103	0	53.1	38,580

8-3860. Pecos River near Acme, N. Mex.

Location.--Lat 33°32'10", long 104°22'40", in NW¼ sec.14, T.9 S., R.25 E., on right bank 1 mile southeast of Melena railroad station, 2½ miles south of U. S. Highway 70, 3½ miles downstream from Salt Creek, 5 miles southwest of Acme, and 13 miles northeast of Roswell.

Drainage area.--11,380 sq mi, approximately (contributing area).

Records available.--September 1921 to June 1923, July 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from river-profile map). Prior to Nov. 1, 1938, at site on highway bridge 2 miles upstream at various datums. Auxiliary water-stage recorder since Oct. 25, 1963, at site opposite base gage at same datum.

Average discharge.--27 years (1937-64), 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 922 cfs April 12 (gage height, 5.18 ft); no flow for many days.
1937-64: Maximum discharge, 45,000 cfs Sept. 23, 1941 (gage height, 13.71 ft), from rating curve extended above 26,000 cfs by logarithmic plotting; no flow at times.
The flood of May 28, 1937, reached a discharge of 53,000 cfs (gage height, 14.82 ft, from floodmarks, site and datum then in use), by slope-area method, but may have been exceeded by the flood of Oct. 1, 1904. For other peaks prior to 1937, see Pecos River below Alamogordo Dam.

Remarks.--Records fair except those subsequent to Aug. 7 and those for periods of ice effect or no gage-height record, which are poor. Discharge measurements or observations of no flow generally made two or more times a month. Flow regulated by Alamogordo Reservior (see p. 170-3). Diversions for irrigation of about 20,000 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-24, April 8-11, July 5-8)

2.9	0	4.0	84
3.1	3	4.3	160
3.3	10	4.6	296
3.5	22	4.9	520
3.7	39	5.3	960

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	24	9	10	8	6	10	26	0	577	0	0
2	11	30	9	10	8	5	7	24	0	636	0	0
3	8	37	9	10	8	6	7	24	0	699	0	0
4	11	34	9	8	10	7	10	21	1	720	0	0
5	11	32	10	8	12	8	8	17	2	754	0	0
6	8	26	10	8	16	14	8	15	0	743	0	0
7	8	20	10	7	18	10	8	13	0	710	0	0
8	8	18	9	8	13	12	287	13	0	754	0	0
9	10	16	8	6	22	18	668	13	0	743	0	0
10	10	16	11	b 6	20	19	789	16	0	247	58	0
11	12	15	8	b 6	20	20	835	13	0	118	35	0
12	11	14	8	b 5	20	18	848	12	0	66	12	0
13	10	14	9	b 4	20	a 17	860	11	0	49	4	0
14	10	14	9	a 3	18	a 15	835	10	0	32	0	0
15	10	13	9	a 3	13	13	835	10	1	34	0	0
16	10	12	11	a 3	12	a 12	848	10	1	17	0	0
17	10	11	13	a 3	10	a 13	860	8	0	12	0	0
18	12	11	14	b 3	8	14	860	7	0	8	0	0
19	17	11	13	6	8	13	812	5	0	44	1	0
20	15	10	13	12	8	a 11	668	6	0	31	0	0
21	14	11	13	21	10	a 10	233	4	0	9	0	1
22	22	10	11	20	11	10	133	2	0	2	0	19
23	27	10	10	16	11	12	88	2	0	0	0	0
24	27	9	10	11	9	11	71	2	0	0	0	0
25	24	9	11	9	9	12	57	1	0	0	0	0
26	21	9	11	9	10	9	43	1	0	0	0	7
27	19	9	13	8	9	8	35	16	0	0	0	10
28	18	9	13	8	7	9	30	8	0	0	0	6
29	18	8	12	8	6	8	28	3	0	0	0	0
30	18	8	10	10	----------	11	27	0	301	0	0	0
31	22	----------	9	10	----------	11	----------	0	----------	0	0	----------
Total	446	470	324	259	354	362	10,808	313	306	7,005	110	43
Mean	14.4	15.7	10.5	8.4	12.2	11.7	360	10.1	10.2	226	3.5	1.4
Ac-ft	885	932	643	514	702	718	21,440	621	607	13,890	218	85

Calendar year 1963: Max 7,110 Min 0 Mean 163 Ac-ft 118,200
Water year 1963-64: Max 860 Min 0 Mean 56.8 Ac-ft 41,260

Peak discharge (base 2,500 cfs).--No peak above base.

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3870. Rio Ruidoso at Hollywood, N. Mex.

Location.--Lat 33°19'50", long 105°36'25", in NE¼ sec.30, T.11 S., R.14 E., on right upstream end of bridge on road leading to Ruidoso Downs, 0.9 mile east of Hollywood, 2⅝ miles downstream from Carrizo Creek, and 2½ miles east of Ruidoso.

Drainage area.--120 sq mi, approximately.

Records available.--March 1953 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 6,366.42 ft above mean sea level, datum of 1929. Prior to October 14, 1961, at datum 0.70 ft lower. Oct. 14, 1961, to Mar. 8, 1962, at datum 0.40 ft lower.

Average discharge.--11 years, 10.0 cfs (7,240 acre-ft per year).

Extremes.--Maximum discharge during year, 146 cfs Sept. 10 (gage height, 2.34 ft); minimum, 0.3 cfs May 8-9.
1953-64: Maximum discharge, 1,070 cfs July 26, 1957 (gage height, 7.80 ft), from rating curve extended above 130 cfs on basis of slope-area measurement of peak flow; minimum, 0.3 cfs Jan. 1, 1962, May 8-9, 1964.
The flood of Sept. 29, 1941, is probably the highest since at least 1904 (discharge not determined).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Figures of discharge do not include F. Herrera ditch-S., which diverts from right bank 1½ miles upstream and bypasses station for irrigation of 75 acres (1959 determination) below. See monthly table below for record of ditch. Village of Ruidoso diverts from right bank 7 miles upstream for municipal use and returns a portion of this to river as effluent from sewage disposal plant 1¼ miles upstream from station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.48	0.4	0.8	6.6
.5	.5	.9	11
.6	1.6	1.0	16
.7	3.6	1.2	28

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	6.3	3.6	b4.2	2.4	3.6	9.8	3.1	4.5	1.9	4.5	1.0
2	7.8	5.7	3.1	4.2	2.7	3.6	10	2.7	3.9	.8	3.9	.9
3	7.4	6.6	b2.9	*3.9	2.9	4.2	9.4	2.2	2.9	.9	3.9	1.0
4	7.0	5.7	b3.1	b3.4	b2.5	3.9	9.4	2.2	1.9	.8	4.2	1.0
5	7.0	5.7	b2.9	b3.6	b2.8	3.9	8.2	1.9	1.7	.7	3.6	.9
6	6.6	5.7	3.6	b4.2	b2.9	3.6	7.8	1.4	1.6	.6	*3.1	1.1
7	6.6	5.7	3.1	b4.5	b2.0	3.9	7.8	.6	1.6	*4.3	3.6	.9
8	6.3	6.0	2.9	b4.5	b2.5	3.9	7.4	.4	1.1	3.1	14	*1.0
9	6.3	5.7	3.1	b4.0	b2.6	b3.6	7.0	.4	1.3	3.4	5.4	1.0
10	6.0	5.4	3.1	b4.5	b2.7	3.9	7.4	.8	*1.3	1.7	5.1	23
11	6.0	5.4	3.1	b4.5	2.9	3.6	7.8	1.0	1.3	2.7	4.8	a10
12	5.7	5.4	2.9	b2.5	*6.0	4.2	8.2	.7	1.1	2.4	7.0	a 8
13	5.7	5.4	b2.4	b2.5	3.9	4.5	*8.6	*.4	1.1	3.1	7.0	a10
14	5.7	5.1	b2.2	b2.6	3.6	4.8	8.6	.6	1.0	2.7	10	a 7
15	6.0	4.8	b2.7	b2.6	b3.1	4.5	8.6	.7	1.0	1.7	8.2	a 8
16	6.6	4.5	b2.9	b2.8	b3.1	4.8	9.0	.9	1.0	1.6	6.6	a 7
17	5.4	4.5	*b3.9	b2.9	3.4	4.8	9.0	1.1	.9	1.7	6.0	a 6
18	*5.1	4.5	b4.2	2.9	3.4	5.7	9.0	1.6	.9	3.6	6.3	a 5
19	7.8	4.5	4.6	b3.4	b3.4	5.4	9.0	3.6	1.0	1.9	*7.0	a 5
20	9.4	4.5	4.2	3.4	3.9	4.8	8.6	4.5	1.0	1.7	6.6	a 5
21	7.4	4.8	4.5	*2.9	b3.4	4.8	7.4	3.4	1.0	1.6	5.7	a 4.5
22	6.6	*4.8	4.2	2.7	b3.1	5.1	5.7	1.9	.9	1.6	5.1	a 4.5
23	6.6	4.8	b3.4	2.7	b3.6	5.1	5.1	1.7	1.6	1.4	4.8	a 4.5
24	6.6	4.8	b4.2	b2.5	b4.2	*5.1	4.2	1.7	1.4	1.4	4.2	a 4.5
25	6.6	4.8	b4.2	b2.5	3.9	5.4	3.6	1.7	1.1	1.9	4.2	a 5
26	6.3	4.5	4.5	b3.0	3.9	5.4	3.6	7.0	1.1	1.9	3.9	a 5
27	6.3	3.9	4.2	b3.1	*3.6	5.7	3.6	6.6	2.4	2.4	2.9	a 4.5
28	5.7	4.5	4.2	b3.2	b3.9	6.0	3.6	4.5	2.7	4.5	1.7	a 4.5
29	5.7	3.6	4.2	3.6	3.9	6.3	3.4	4.2	2.7	3.4	1.6	* 4.5
30	5.7	3.9	b3.4	3.6	-------	7.4	*3.4	4.2	2.4	4.5	1.1	4.2
31	6.0	-------	b3.4	2.9	-------	8.6	-------	4.8	-------	5.7	1.0	-------
Total	201.7	151.5	108.8	103.8	96.2	150.1	214.2	72.5	49.4	71.6	157.0	148.5
Mean	6.51	5.05	3.51	3.35	3.32	4.84	7.14	2.34	1.65	2.31	5.06	4.95
Ac-ft	400	300	216	206	191	298	425	144	98	142	311	295
(†)	9.3	6.0	6.1	4.0	0	0	44	141	102	137	63	168

Calendar year 1963: Max 101 Min 0.9 Mean 10.6 Ac-ft 7,700
Water year 1963-64: Max 23 Min 0.4 Mean 4.17 Ac-ft 3,030

Peak discharge (base, 100 cfs).--Sept. 10 (1520) 146 cfs (2.34 ft).

* Discharge measurement made on this day.
† Diversion, in acre-feet, by F. Herrera ditch-S.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-3905. Rio Hondo at Diamond A Ranch, near Roswell, N. Mex.

Location.--Lat 33°20'55", long 104°51'05", in NE¼NE¼ sec.20, T.11 S., R.21 E., on left bank on downstream side of road bridge at Diamond A Ranch, 18 miles upstream from Rocky Arroyo and 18 miles west of Roswell.

Drainage area.--947 sq mi (contributing area).

Records available.--May 1939 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,185 ft (from topographic map).

Average discharge.--25 years, 25.2 cfs (18,240 acre-ft per year).

Extremes.--Maximum discharge during year, 645 cfs June 13 (gage height, 9.00 ft); no flow for most of year.
1939-64: Maximum discharge, 27,000 cfs Sept. 22, 1941 (gage height, 28.78 ft), from rating curve extended above 4,400 cfs on basis of slope-area measurement of peak flow; no flow at times in each year.
The flood in 1941 is greatest since about 1900. A flood on June 1, 1937, reached a discharge of 24,900 cfs at Riverside about 13 miles upstream. Other major floods occurred Oct. 31, 1901, Sept. 29, 30, 1904, and July 25, 1905.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions and ground-water withdrawals above station for irrigation of about 6,500 acres (1959 determination) above and below station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

4.1	0	4.7	16
4.3	2	5.1	47
4.5	6	5.5	91

Discharge, in cubic feet per second, water year October 1963 to September 1964

June 13	55	Aug. 14	*50
14	a90	15	75
15	a10	16	a20
24	a 4	17	a 2
July 11	22	Sept. 11	* 6
Aug. 8	50	12	a 2
9	a75	22	6
10	a10		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1964	159	90	0	5.3	315
July	22	22	0	.7	44
August	282	75	0	9.1	559
September	14	6	0	.5	28
Calendar year 1963	-	111	0	1.8	1,280
Water year 1963-64	-	90	0	1.3	946

Peak discharge (base, 1,000 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record.
Note.-Flow occurred only on days listed above. Observations of no flow made at least once a month.

8-3908. Rio Hondo below Diamond A Dam, near Roswell, N. Mex.

Location.--Lat 33°18'05", long 104°43'10", in NE¼SE¼NE¼ sec.4, T.12 S., R.22 E., on left bank, 500 ft downstream from outlet conduit of Diamond A Dam (Two Rivers Reservoir) and 13 miles southwest of Roswell.

Drainage area.--963 sq mi (contributing area).

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,949.68 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Extremes.--1963-64: Maximum discharge during water year, 388 cfs June 13 (gage height, 4.18 ft); no flow for most of year.
The flood of Oct. 7, 1954, reached a discharge of 7,250 cfs, by slope-area method, at site about ½ mile upstream. This same flood produced a peak of 23,000 cfs at Rio Hondo at Diamond A Ranch, near Roswell (see No. 3905), 11 miles upstream. A portion of this peak overflowed into Rocky Arroyo at a point about one mile upstream and contributed to a peak of 6,620 cfs, by slope-area measurement, at a point about three miles downstream from the present site of Rocky Dam.

Remarks.--Records fair. Diversions and ground-water withdrawals for irrigation of about 6,500 acres (1959 determination) above station. This record represents the outflow from Two Rivers Reservoir through Diamond A Dam.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.0	0	2.0	25
1.3	1	2.4	52
1.5	4	2.8	94
1.7	11		

Discharge, in cubic feet per second, water year October 1963 to September 1964

May 14	5	Aug. 10	1
June 13	49	14	*7
14	85	15	52
15	*2	16	8
July 12	6	Sept. 26	16
Aug. 9	56	27	1

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1964	5	5	0	0.2	9.9
June	136	85	0	4.5	270
July	6	6	0	.2	12
August	124	56	0	4.0	246
September	17	16	0	.6	34
Water year 1963-64	-	85	0	.8	572

* Discharge measurement made on this day.
Note.-Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-3911. Rocky Arroyo below Rocky Dam, near Roswell, N. Mex.

Location.--Lat 33°15'55", long 104°42'05", in SE¼NE¼SE¼ sec.15, T.12 S., R.22 E., on left bank, 1½ miles downstream from Rocky Dam (Two Rivers Reservoir) and 13 miles southwest of Roswell.

Drainage area.--65 sq mi.

Records available.--May 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,906.90 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Extremes.--1963: Maximum discharge during period May to September, 139 cfs Aug. 31 (gage height, 3.29 ft); no flow for most of period.

1963-64: Maximum discharge during water year, 383 cfs Sept. 26 (gage height, 3.89 ft), from rating curve extended above 115 cfs by logarithmic plotting; no flow for most of year.

The flood of Oct. 7, 1954, reached a discharge of 6,620 cfs by slope-area measurement at site about 2 miles downstream near Lambert's Well. At the same site the flood of 1941 (probably September) was estimated at 9,000 cfs from old drift marks.

Remarks.--Records fair. No diversions above station. This record represents the outflow from Two Rivers Reservoir through Rocky Dam plus any runoff in the 1½ miles of intervening area between the dam and the gage.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.94	0	2.8	40
2.2	1	3.0	72
2.4	6	3.3	142
2.6	19		

Discharge, in cubic feet per second, period May 1963 to September 1964

June	2, 1963	94	Sept.	6	3
	3	46	Sept.	26, 1964	71
	4	1		27	*124
Aug.	31	21		28	*24
Sept.	1	9		29	*2
	5	*15			

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1963	141	94	0	4.7	280
August	21	21	0	.7	42
September	27	15	0	.9	54
September 1964	221	124	0	7.4	438
Water year 1963-64	-	124	0	.6	438

* Discharge measurement made on this day

Note.-Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-3936. North Spring River at Roswell, N. Mex.

Location.--Lat 33°23'45", long 104°32'55", in NW¼SW¼SE¼ sec.31, T.10 S., R.24 E., in Roswell Municipal Golf Course, on left bank 2,400 ft upstream from Montana Avenue, in Roswell.

Drainage area.--19.5 sq mi.

Records available.--May 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 3,570 ft (from topographic map).

Average discharge.--6 years, 0.04 cfs (29 acre-ft per year).

Extremes.--Maximum discharge during year, 387 cfs June 13 (gage height, 4.65 ft), from rating curve extended above 9 cfs on basis of slope-area measurement of peak flow; no flow for most of year.
1958-64: Maximum discharge, that of June 13, 1964; no flow for most of time.

Remarks.--Records poor. No diversions above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

June 15..... *a50
16..... a 5

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1964	55	50	0	1.8	109
Calendar year 1963	-	4.7	0	.01	9.3
Water year 1963-64	-	50	0	.2	109

* Discharge measurement made on this day.
a No gage-height record.
Note.-Flow occurred only on days listed above. Observations of no flow generally made once a month.

8-3945. Rio Felix at old highway bridge, near Hagerman, N. Mex.

Location.--Lat 33°07'30", long 104°20'40", in SW¼ sec.4, T.14 S., R.26 E., near left bank on downstream side of abandoned bridge pier, 0.6 mile upstream from U. S. Highway 285, 1¼ miles northwest of Hagerman, and 2½ miles upstream from mouth.

Drainage area.--932 sq mi (contributing area).

Records available.--April 1939 to September 1964. March 1932 to April 1939 at site 1 mile downstream; records for periods of low flow not equivalent.

Gage.--Water-stage recorder. Datum of gage is 3,403.40 ft above mean sea level, datum of 1929.

Average discharge.--25 years, 16.6 cfs (12,020 acre-ft per year).

Extremes.--No flow during year.
1939-64: Maximum discharge, 74,000 cfs Oct. 7, 1954 (gage height, 27.5 ft, from floodmarks), from rating curve extended above 12,000 cfs on basis of slope-area measurement at point 5½ miles upstream from gage (adjusted for channel storage); no flow for many periods.
Flood in 1954 is the highest since 1894, from information by local residents. Flood of Oct. 1, 1904, is probably second highest. Another major flood occurred in April 1915.

Remarks.--No flow since June 4, 1963. Calendar year figures for 1963 are as follows: Maximum daily discharge, 1,670 cfs; minimum daily, zero flow; mean, 9.0 cfs; runoff, 6,510 acre-ft. Observations of no flow generally made once a month. Diversions for irrigation of about 350 acres (1959 determination) above station.

8-3955. Pecos River near Lake Arthur, N. Mex.

Location.--Lat 32°59'18", long 104°19'20", in SW¼NE¼ sec.27, T.15 S., R.26 E., on left bank 400 ft upstream from county bridge, 2½ miles east of Lake Arthur, 7 miles upstream from Cottonwood Creek, and 11 miles northeast of Artesia.

Drainage area.--14,760 sq mi, approximately (contributing area).

Records available.--August 1938 to September 1964.

Gage.--Water-stage recorder and rock control. Datum of gage is 3,327.07 ft above mean sea level, datum of 1929.

Average discharge.--26 years, 283 cfs (204,900 acre-ft per year).

Extremes.--Maximum discharge during year, 974 cfs June 13 (gage height, 4.22 ft); no flow Sept. 1.
1938-64: Maximum discharge, 49,600 cfs Sept. 24, 1941 (gage height, 21.90 ft), from rating curve extended above 16,100 cfs on basis of slope-area measurement at gage height 21.77 ft and logarithmic plotting; no flow at times in 1947, 1953-4, 1962, 1964.
Flood of May 30, 1937, reached a stage of 21.77 ft (discharge, 51,500 cfs, on basis of slope-area measurement of peak flow), but may have been exceeded by floods in 1904 and 1919.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made two or more times a month. Flow partly regulated by Alamogordo Reservoir (see p. 170-3). Diversions and ground-water withdrawals for irrigation of about 124,000 acres (1959 determination) above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 15		Jan. 16 to Sept. 30			
1.4	8.7	1.02	0.1	1.7	28
1.6	19	1.1	.5	2.0	65
1.8	36	1.2	1.7	2.4	141
2.1	79	1.3	4.2	2.8	249
		1.4	8.0	3.3	438
		1.5	13	3.9	760

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	34	50	49	43	32	5.3	34	2.7	37	1.0	0.1
2	9.7	34	49	46	46	32	4.2	30	3.0	379	.9	.1
3	16	36	46	48	47	32	5.3	35	2.7	456	.9	.1
4	20	43	46	48	50	28	3.9	35	4.6	508	.9	.1
5	17	56	49	49	50	27	4.2	23	2.1	523	.9	.1
6	15	56	49	49	46	19	6.5	23	1.5	585	.4	.1
7	19	57	48	44	44	18	6.1	15	1.2	612	.2	.1
8	20	59	48	43	40	23	5.7	17	1.1	612	.8	.1
9	19	49	50	39	43	28	191	19	1.4	652	.2	.1
10	19	50	50	38	44	19	569	20	1.5	612	.2	.1
11	21	52	49	40	41	19	646	24	2.1	252	.2	.2
12	22	48	49	40	57	27	688	22	1.7	123	.1	.2
13	20	49	56	38	49	28	694	17	155	51	.1	.2
14	25	a 50	57	b38	47	34	724	17	95	20	.2	.2
15	23	a 49	56	b45	50	28	706	17	8.0	5.0	.2	.5
16	22	a 48	59	b50	43	27	730	12	3.0	1.1	.2	.3
17	20	a 48	59	b55	50	25	748	16	1.7	.9	.2	.2
18	18	a 50	59	51	49	34	748	20	1.2	5.3	.3	.1
19	18	a 50	69	39	45	31	760	23	1.1	3.6	1.5	.1
20	22	a 46	71	39	47	30	712	15	1.1	4.6	.2	.2
21	24	45	59	36	46	31	488	17	1.1	3.9	1.0	.2
22	26	46	56	37	46	30	211	17	1.4	2.3	.5	.9
23	25	44	52	43	45	31	141	8.0	1.4	1.7	.5	.9
24	24	45	49	52	45	22	97	4.6	1.4	.9	.4	1.2
25	26	50	48	46	44	23	64	4.6	1.5	1.2	.1	10
26	28	50	49	40	40	18	52	2.7	1.7	1.2	.2	1.9
27	30	49	49	38	44	22	68	2.7	1.7	1.2	.2	7.1
28	32	50	49	37	38	26	52	5.3	1.5	1.5	.2	9.1
29	32	50	50	34	36	21	43	6.5	1.4	1.2	.1	2.1
30	34	50	49	35	----------	22	39	11	1.2	1.2	.1	2.5
31	34	----------	50	35	----------	8.5	----------	8.0	----------	1.1	.1	----------
Total	692.7	1443	1629	1321	1315	795.5	9,212.2	521.4	306.0	5459.9	13.0	39.1
Mean	22.3	48.1	52.5	42.6	45.3	25.7	307	16.8	10.2	176	0.42	1.30
Ac-ft	1370	2860	3230	2620	2610	1580	18,270	1030	607	10,830	26	78

Calendar year 1963: Max 4,620 Min 2 Mean 164 Ac-ft 118,600
Water year 1963-64: Max 760 Min 0.1 Mean 62.2 Ac-ft 45,110

Peak discharge (base, 2,500 cfs).--No peak above base.

a No gage-height record.
b Stage-discharge relation affected by ice.

8-3960. Cottonwood Creek near Lake Arthur, N. Mex.

Location.--Lat 32°54'55", long 104°22'00", in SW¼SE¼ sec.15, T.16 S., R.26 E., on right bank 75 ft upstream from road bridge, 1½ miles upstream from mouth, and 6 miles south of town of Lake Arthur.

Drainage area.--199 sq mi (contributing area).

Records available.--March 1932 to September 1964. All figures of discharge above 150 cfs prior to June 1937 and daily discharges Sept. 24-30, 1932, June 13, 14, Sept. 5, 1935, and May 29, 1937, as published in previous Water Supply Papers have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,316.3 ft above mean sea level (river-profile survey). At site 75 ft downstream at different datum Mar. 7, 1932, to Mar. 28, 1935, and at datum 1.36 ft and 2.10 ft lower than present datum Mar. 29, 1935, to Sept. 30, 1936, and Oct. 1, 1936, to Aug. 29, 1938, respectively. Aug. 30, 1938, to May 22, 1948, at present site at datum 1.54 ft lower.

Average discharge.--30 years (1932-34, 1935-36, 1937-64), 5.61 cfs (4,060 acre-ft per year).

Extremes.--Maximum discharge during year, 113 cfs June 14 (gage height, 8.47 ft) from rating curve extended above 59 cfs on basis of logarithmic plotting; minimum, 0.1 cfs many days.
1932-64: Maximum discharge not determined, occurred June 13, 1935; maximum gage height, 12.0 ft May 30, 1937, present datum, from floodmarks (backwater from Pecos River); no flow at times.

Remarks.--Records good except those above 10 cfs, which are poor. Diversions and ground-water withdrawals for irrigation of about 4,500 acres (1959 determination) above station. Capacity of original excavated channel at and above gage has been progressively reduced by salt-cedar growth, blow sand, and bank erosion. Since 1957 a compacted earth plug in channel (forms pond for pump diversion) 1 mile above gage has reduced low-flow record to leakage through or under plug, ground-water inflow, and irrigation return entering channel in the 1-mile reach above gage. Higher sustained discharges originating above plug (moderate rises can originate below) will overflow banks and levees into swamps, farm areas, and Pecos River flood plain, most of over-bank flow remaining ponded or bypassing gage. Low-flow record represents contribution to Pecos River, based on comparative discharge measurements of March 1961.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.2	0.2	0.2	0.3	0.5	0.4	0.2	0.2	1.5	0.1	0.1
2	.1	.2	.2	*.2	.3	.5	.3	.2	.2	1.4	.1	.1
3	.1	.2	.2	.2	.3	.5	.3	.2	.2	1.3	.1	.1
4	*.1	.2	.2	.2	.3	.6	.4	.2	.2	1.1	.1	.1
5	.1	.2	.2	.3	.3	.6	.3	.2	.2	1.0	*.1	.1
6	.1	.2	.2	.3	.3	.6	.3	.2	.2	1.0	.1	.1
7	.1	.2	.2	.3	.3	.6	*.4	.2	.2	1.0	.1	.1
8	.1	.2	.2	.3	.3	.5	.3	.2	.2	.9	.1	.1
9	.1	.2	.2	.2	.3	.6	.3	.2	.2	.9	.1	*.1
10	.1	.2	.2	.2	.3	.6	.3	.2	.2	.8	.1	.1
11	.1	.2	.2	.2	*.3	.6	.3	.2	.2	.6	.1	.1
12	.1	.2	*	.2	.3	.5	.3	.2	.1	.6	.1	.1
13	.1	.2	.2	.2	.3	.5	.3	.2	7.5	.5	.1	.1
14	.1	.2	.2	.2	.3	.5	.3	.2	e101	.4	.1	.1
15	.1	.2	.2	*.2	.3	.5	.3	*.2	*e54	.4	.1	.1
16	.1	.2	.2	.2	.3	.7	.2	.2	*13	*.3	.1	.1
17	.1	.2	.2	.2	*.3	.5	.2	.2	7.3	.2	.1	.1
18	.1	.2	.2	.3	.3	.6	.2	.2	4.8	.2	.1	.1
19	.2	.2	.2	.2	.3	.8	.2	.2	3.7	.2	.1	.1
20	.2	.2	.2	.2	.4	.7	.2	.2	3.1	.2	*.1	.1
21	*.2	*.2	.2	.2	.4	.6	.2	.2	2.7	.2	.1	.1
22	.2	.2	.2	*.3	.4	.5	.2	.2	2.5	.2	.1	.1
23	.2	.2	.2	.2	.4	.5	.2	.2	2.3	.2	.1	.1
24	.2	.2	.2	.2	.5	.5	.2	.2	2.0	.2	.1	.1
25	.2	.2	.2	.2	.5	*.6	.2	.2	2.0	.2	.1	.1
26	.2	.2	.2	.3	*.5	.5	.2	.2	*1.9	.2	.1	.1
27	.2	.2	.2	.3	.7	.4	.2	.2	2.1	.2	.1	.1
28	.2	.2	.2	.3	.5	.5	*.2	.2	1.9	.2	.1	.2
29	.2	.2	.2	.3	.5	.5	.2	.2	1.6	.2	.1	*.2
30	.2	.2	.2	.3	----------	.5	* .2	.2	1.6	.2	.1	.1
31	.2	----------	.2	.2	----------	.5	----------	.2	----------	*.1	.1	----------
Total	4.4	6.0	6.2	7.3	10.5	17.1	7.8	6.2	217.3	16.6	3.1	3.2
Mean	0.14	0.20	0.20	0.24	0.36	0.55	0.26	0.20	7.24	0.54	0.10	0.11
Ac-ft	8.7	12	12	14	21	34	15	12	431	33	6.1	6.3

Calendar year 1963: Max 2 Min 0 Mean 0.28 Ac-ft 199
Water year 1963-64: Max 101 Min 0.1 Mean 0.84 Ac-ft 605

* Discharge measurement made on this day.
e Indeterminate over-bank flow bypassed gage.

8-3965. Pecos River near Artesia, N. Mex.

Location.--Lat 32°50'25", long 104°19'25", in NW¼NW¼ sec.18, T.17 S., R.27 E., near left bank on downstream end of bridge pier on State Highway 83, 4.3 miles east of Artesia, 7.0 miles north of mouth of Rio Penasco, and 17 miles north of McMillan Dam.

Drainage area.--15,300 sq mi, approximately (contributing area).

Records available.--September 1905 to June 1909, August 1909 to September 1936, May 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Records for Aug. 22-31, 1934, and October 1936 to April 1937, published in WSP 763 and 828, respectively, have been found to be unreliable and monthly figures only should be used. Prior to February 1936, published as "near Dayton."

Gage.--Water-stage recorder. Datum of gage is 3,291.05 ft (Bureau of Reclamation bench mark). Prior to Aug. 27, 1914, staff gage and Aug. 27, 1914, to Feb. 20, 1936, water-stage recorder at site 6½ miles downstream at different datum. Feb. 21, 1936, to Apr. 4, 1941, water-stage recorder at site 600 ft downstream at different datum.

Average discharge.--30 years (1905-8, 1909-36), 365 cfs (264,200 acre-ft per year), prior to completion of Alamogordo Reservoir; 28 years (1936-64), 305 cfs (220,800 acre-ft per year).

Extremes.--Maximum discharge during year, about 5,200 cfs June 14 (gage height, 6.80 ft, flow bypassing gage); no flow July 30 to Aug. 7, Aug. 10 to Sept. 23.

1905-64: Maximum discharge probably occurred May 30, 1937, when a discharge of 51,500 cfs was measured by slope-area method at a point 15 miles upstream (gage height, 14.7 ft, site and datum then in use); maximum gage height,17.4 ft Sept. 30, 1932, site and datum then in use (discharge, 19,000 cfs); no flow at times in 1934, 1946-47, 1953-54, 1957, 1964.

Greatest flood known since at least 1893 occurred Oct. 2, 1904 (discharge not determined). (The peak inflow to Lake McMillan, which includes Rio Penasco and Four Mile Draw, was estimated as 82,000 cfs). The second highest flood occurred July 25, 1905 (discharge below Rio Penasco, 50,300 cfs, based on gain in storage and spill from Lake McMillan). The floods in August 1893 and October 1904 damaged McMillan Dam and washed out Avalon Dam.

Remarks.--Records fair except those for period of bypass flow, which are poor. Discharge measurements or observations of no flow generally made two or more times a month. Flow partly regulated by Alamogordo Reservoir (see p. 170-3) since August 1937. Diversions and ground-water withdrawals for irrigation of about 154,000 acres (1959 determination) above station. Discharge represents inflow to Lake McMillan which is part of the storage system for the irrigation of about 25,000 acres of the Carlsbad project.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	30	51	51	31	40	11	43	15	3	0	0
2	14	33	49	50	41	36	8	36	6	168	0	0
3	8	36	50	49	42	36	6	32	5	380	0	0
4	13	39	49	49	51	37	8	36	5	468	0	0
5	18	45	50	49	54	34	8	29	3	482	0	0
6	15	50	51	49	53	31	7	20	3	532	0	0
7	12	51	49	48	51	24	9	20	2	572	0	0
8	18	53	49	44	51	24	9	12	1	585	1	0
9	19	56	52	40	46	29	8	17	1	605	1	0
10	18	48	54	38	49	33	430	18	1	615	0	0
11	18	50	54	44	48	24	588	19	1	355	0	0
12	20	49	53	42	43	26	660	24	120	146	0	0
13	20	50	54	36	51	34	680	22	240	74	0	0
14	18	51	57	35	51	36	698	18	1,000	31	0	0
15	24	50	57	38	50	39	710	18	200	16	0	0
16	21	48	56	40	50	34	710	18	46	8	0	0
17	20	45	58	43	49	31	740	15	13	5	0	0
18	19	48	58	60	43	34	740	17	7	4	0	0
19	19	50	60	53	41	43	752	20	5	4	0	0
20	18	46	68	45	41	34	734	20	5	4	0	0
21	20	46	65	43	41	36	618	14	5	4	0	0
22	26	43	58	41	43	33	278	15	5	4	0	0
23	27	44	54	42	43	33	146	15	4	4	0	0
24	22	44	53	44	48	35	102	11	4	3	0	1
25	24	45	51	51	50	26	69	7	4	2	0	1
26	30	46	50	46	50	23	40	5	8	2	0	1
27	29	45	50	44	49	21	52	8	5	1	0	1
28	32	46	50	40	45	22	60	7	4	1	0	1
29	32	49	50	41	39	23	50	7	5	1	0	1
30	35	49	48	37	----------	21	46	7	4	0	0	2
31	32	----------	52	36	----------	20	----------	10	----------	0	0	----------
Total	656	1385	1660	1368	1344	952	8977	560	1727	5079	2	8
Mean	21.2	46.2	53.5	44.1	46.3	30.7	299	18.1	57.6	164	0.1	0.3
Ac-ft	1300	2750	3290	2710	2670	1890	17,810	1110	3430	10,070	4.0	16

Calendar year 1963: Max 3,470 Min 5 Mean 161 Ac-ft 116,800
Water year 1963-64: Max 1,000 Min 0 Mean 64.8 Ac-ft 47,050

Peak discharge (base 2,000 cfs).--June 14 (about 0230) about 5,200 cfs.

Note.--Discharge includes bypass flow June 12-15.

8-3985. Rio Penasco at Dayton, N. Mex.

Location.--Lat 32°44'30", long 104°22'30", in SW¼SW¼ sec.15, T.18 S., R.26 E., on right bank 3 ft upstream from crest of abandoned diversion dam, 1 mile northeast of old Dayton railway station, 3½ miles upstream from mouth, and 7 miles southeast of Artesia.

Drainage area.--1,070 sq mi, approximately.

Records available.--April 1951 to September 1964. Prior to October 1953, published as "near Dayton."

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,340.89 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 4.7 cfs (3,400 acre-ft per year).

Extremes.--Maximum discharge during year, 2,520 cfs June 13 (gage height, 2.88 ft); no flow for extended periods.
1951-64: Maximum discharge, 23,700 cfs Oct. 7, 1954 (gage height, 6.82 ft), from rating curve extended above 6,000 cfs on basis of slope-area measurement of peak flow; no flow for extended periods.
The greatest flood known occurred about Sept. 22, 1941, when a stage of about 9 ft (from old logs) was reached, and peak discharge for station near Dunken (about 50 miles upstream) was 70,000 cfs (as determined for that station in 1956, from floodmarks and rating curve extended above 36,300 cfs).

Remarks.--Records good. Diversions and ground-water withdrawals for irrigation of about 3,200 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.4	0	0.8	58
.5	4	.9	91
.6	15	1.1	184
.7	33		

Discharge, in cubic feet per second, water year October 1963 to September 1964

June 12	*2
13	*114
14	*157
July 12	99
Sept.15	*104

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1964	273	157	0	9.1	541
July	99	99	0	3.2	196
September	104	104	0	3.5	206
Calendar year 1963	-	184	0	.6	426
Water year 1963-64	-	157	0	1.3	943

Peak discharge (base, 750 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-13	2315	2.88	2,520	9-15	0100	1.87	833
7-12	0445	1.92	905				

* Discharge measurement made on this day.
Note.--Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-3995. Pecos River (Kaiser Channel) near Lakewood, N. Mex.

Location.--Lat 32°41'22", long 104°17'53", in NW¼SE¼ sec.5, T.19 S., R.27 E., on left bank 3 miles upstream from high-water line of Lake McMillan, 6 miles northeast of Lakewood, 7 miles northeast of gates in McMillan Dam, and 12 miles southeast of Artesia.

Records available.--May 1950 to September 1964. Prior to October 1954, published as Kaiser Lake-McMillan Channel near Lakewood.

Gage.--Water-stage recorder. Datum of gage is 3,268.53 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Mar. 23, 1955, at site 3 miles downstream at datum 7.83 ft lower. Mar. 23, 1955, to Sept. 30, 1963, at present site at datum 2.00 ft higher.

Average discharge.--14 years, 161 cfs (116,600 acre-ft per year).

Extremes.--Maximum daily discharge during year, 754 cfs Apr. 19, 20; no flow June 6-11, July 20 to Sept. 30.
1950-64: Maximum daily discharge, 2,920 cfs July 12, 1960; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow partly regulated by Alamogordo Reservoir (see p. 170-3). Diversions and ground-water withdrawals for irrigation of about 170,000 acres (1959 determination) above station. Above about 1,500 cfs flow will begin bypassing station and, depending on the magnitude and duration of flow, may reach Lake McMillan.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 4-16, 20)

1.4	0	2.0	22
1.5	1	2.3	64
1.6	2	3.0	215
1.7	3	4.0	480
1.8	7	5.0	795

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*10	28	51	50	33	37	*14	42	6	*1		(*)
2	12	29	50	48	34	*38	9	34	6	71		
3	7	33	* 50	48	41	33	7	31	2	349		
4	6	35	47	48	45	32	6	32	2	440		
5	11	41	48	48	*51	33	7	*37	1	474		
6	14	48	51	48	51	32	*6	21	0	512		
7	10	51	51	48	47	26	7	16	0	*560		
8	10	53	50	45	47	22	9	15	0	584		
9	15	54	51	41	44	26	8	13	0	594		
10	15	48	54	*b 40	45	29	345	14	0	619		
11	14	44	54	a 38	*47	28	560	13	0	*434		
12	14	50	53	a 36	40	21	622	21	109	175		
13	16	* 44	53	a 30	50	*28	666	21	341	*88		
14	*16	48	56	*b 30	50	32	*689	15	704	41		
15	18	47	58	b 35	48	37	702	*15	273	17	(*)	
16	20	44	58	b 45	53	34	705	14	*138	*10		
17	18	42	59	b 50	48	31	731	21	82	a 6		
18	16	42	59	59	45	32	744	13	62	a 3		
19	16	48	59	54	*42	38	754	14	48	a 1		
20	16	45	68	45	42	37	754	16	38	*0		
21	17	44	69	42	42	31	*689	13	31	0		
22	20	44	59	40	42	33	325	9	22	0		
23	22	45	56	38	45	31	*170	10	16	0		
24	20	44	53	41	48	32	123	8	12	0		
25	19	45	51	48	51	*27	90	4	10	0		
26	22	47	50	48	51	24	58	2	6	0		
27	25	47	50	44	48	21	45	1	6	0		
28	24	45	50	41	45	22	*59	*3	a 5	0		
29	28	48	51	38	38	22	53	2	a 3	0		
30	28	50	50	*34	----------	21	*42	2	a 2	0		
31	*31	----------	* 50	34	----------	20	----------	2	----------	*0		----------
Total	530	1333	1669	1334	1313	910	8999	474	1925	4979	0	0
Mean	17.1	44.4	53.8	43.0	45.3	29.4	300	15.3	64.2	161	0	0
Ac-ft	1050	2640	3310	2650	2600	1800	17850	940	3820	9880	0	0

Calendar year 1963: Max 1,720 Min 1 Mean 154 Ac-ft 111,700
Water year 1963-64: Max 754 Min 0 Mean 64.1 Ac-ft 46,540

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

8-4000. Four Mile Draw near Lakewood, N. Mex.

Location.--Lat 32°40'22", long 104°22'10" in SE¼NE¼SW¼ sec.10, T.19 S., R.26 E., on right bank 50 ft upstream from ford on Lakewood - Dayton road, 1.8 miles downstream from U. S. Highway 285, 2.8 miles north of Lakewood, 3¾ miles upstream from mouth, and 11½ miles south of Artesia.

Drainage area.--265 sq mi, approximately.

Records available.--October 1951 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 3,305.22 ft above mean sea level, datum of 1929. Prior to June 19, 1962, at site 1.8 miles upstream at datum 24.53 ft higher.

Average discharge.--13 years, 1.3 cfs (941 acre-ft per year).

Extremes.--Maximum discharge during year, 624 cfs June 12 (gage height, 4.38 ft); no flow for most of time.
1951-64: Maximum discharge, 7,650 cfs Oct. 7, 1954 (gage height, 13.30 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurement of peak flow; no flow for most days.

Remarks.--Records fair. No known diversions above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

June	12	*46
	13	*42
Sept.	15	* 8
	16	1
	27	1

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1964	88	46	0	2.9	175
September	10	8	0	.3	20
Calendar year 1963	-	1	0	.003	2.0
Water year 1963-64	-	46	0	.3	195

Peak discharge (base, 200 cfs).--June 12 (2240) 624 cfs (4.38 ft).

* Discharge measurement made on this day.
Note.-Flow occurred only on days listed above. Observations of no flow generally made at least once a month.

8-4010. Pecos River below McMillan Dam, N. Mex.

Location.--Lat 32°35'40", long 104°21'00", in NE¼ sec.11, T.20 S., R.26 E., on left bank 700 ft downstream from gates in McMillan Dam and 3 miles southeast of Lakewood.

Drainage area.--16,990 sq mi, approximately (contributing area).

Records available.--January 1906 to March 1908, January 1909 to December 1911, August 1939 to December 1940, December 1946 to September 1964 (January 1906 and January 1910 to December 1911, gage heights and discharge measurements only). Published as "near Lakewood" 1906-11, and as "below McMillan Dam, near Lakewood" 1939-40.

Gage.--Water-stage recorder and rock control. Datum of gage is 3,238.21 ft above mean sea level, datum of 1929. January 1906 to December 1911 staff gage at three different sites within half a mile of present gage at different datums. August 1939 to December 1940 water-stage recorder at site 30 ft downstream at datum 0.10 ft higher; December 1946 to Mar. 11, 1957, at present site at datum 1.09 ft higher. Supplemental water-stage recorders on McMillan Dam spillways, Nos. 1 and 2, since July 9, 1960, and Apr. 6, 1960, respectively.

Average discharge.--19 years (1906-7, 1939-40, 1947-64), 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, 770 cfs Aug. 8 (gage height, 4.52 ft); no flow for many days.
1939-40, 1947-64: Maximum discharge, 16,100 cfs Oct. 11, 1954, includes flow of two spillways; no flow for many periods.
Flood of Oct. 2, 1904, may have reached 60,000 cfs; figure of 82,000 cfs previously published has been found to be "inflow to McMillan Reservoir," and is considered too high. This station may have had a higher discharge in August 1893 when part of McMillan Dam was blasted to prevent total destruction of the dam (that flood was described as "highest in 50 years" and it also destroyed Avalon Dam).

Remarks.--Records good. Flow regulated by Alamogordo Reservoir and Lake McMillan (see p. 170-3). No flow over McMillan Dam spillways during year. Diversions and ground-water withdrawals for irrigation of about 171,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.4	0	2.0	24	3.0	190
1.5	1	2.3	56	3.5	340
1.6	2	2.6	104	4.0	540
1.8	11				

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							*0	102	93	*109	61	*0
2			(*)			(*)	*70	102	93	109	107	0
3							395	102	91	125	*170	0
4							391	102	30	154	168	0
5							438	38	0	156	166	0
6							*467	0	0	159	160	0
7							438	0	0	*161	**40	0
8							372	0	44	161	6	0
9							365	0	159	175	0	0
10							362	0	102	222	0	0
11							362	68	100	195	0	0
12							365	159	*66	0	4	0
13						(*)	369	185	0	0	1	0
14							369	185	0	0	0	1
15							369	183	0	0	0	0
16							*313	107	0	0	0	0
17							216	1	98	0	0	0
18							156	*0	139	0	0	0
19							100	0	111	0	0	0
20							100	0	96	0	0	0
21							100	32	96	0	1	0
22							102	154	96	0	0	0
23							*102	178	96	63	0	0
24							102	95	152	122	0	0
25						(*)	102	95	163	135	0	0
26							102	95	135	135	0	0
27							102	95	104	135	0	0
28							102	* 95	90	135	0	0
29							*102	93	90	109	0	0
30				(*)	----------		102	95	88	66	0	0
31		----------	(*)		----------		----------	95	----------	52	0	----------
Total	0	0	0	0	0	0	7,035	2,456	2,332	2,678	884	1
Mean	0	0	0	0	0	0	23.4	79.2	77.7	86.4	28.5	0.03
Ac-ft	0	0	0	0	0	0	13,950	4,870	4,630	5,310	1,750	2.0

Calendar year 1963: Max 1,180 Min 0 Mean 77.1 Ac-ft 55,840
Water year 1963-64: Max 467 Min 0 Mean 42.0 Ac-ft 30,510

* Discharge measurement or observation of no flow made on this day.
** Field estimate made on this day.

8-4012. South Seven Rivers near Lakewood, N. Mex.

Location.--Lat 32°35'20", long 104°25'20", in SE¼SE¼NW¼ sec.7, T.20 S., R.26 E., on left bank 400 ft upstream from bridge on U. S. Highway 285, 0.4 mile south of Seven Rivers, 3 miles upstream from mouth, and 4 miles southwest of Lakewood.

Drainage area.--220 sq mi, approximately.

Records available.--October 1963 to September 1964

Gage.--Water-stage recorder. Altitude of gage is 3,277 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,050 cfs July 12 (gage height, 7.98 ft); no flow for most of year.
Maximum stage during recent years, about 18 ft, from debris deposited along left bank; discharge not determined. Peak probably occurred Oct. 7, 1954.

Remarks.--Records good except those below 10 cfs, which are fair. No known diversions above gage.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

2.0	0	3.2	35
2.2	1	3.6	56
2.4	4	4.0	102
2.6	9	4.4	150
2.9	20		

Discharge, in cubic feet per second, water year October 1963 to September 1964

May	17	1
July	11	*79
	12	*150
Sept.	14	*38

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1964	1	1	0	0.03	2.0
July	229	150	0	7.4	454
September	38	38	0	1.3	75
Water year 1963-64	-	150	0	.7	531

Peak discharge (base, 450 cfs).--July 12 (0020) 1,050 cfs (7.98 ft); Sept. 14 (1630) 475 cfs (6.10 ft).

* Discharge measurement made on this day.
Note.-Flow occurred only on days listed above. Observations of no flow made once a month.

8-4020. Pecos River at damsite 3, near Carlsbad, N. Mex.

Location.--Lat 32°30'40", long 104°20'00", in lot 14, sec.6, T.21 S., R.26 E., on right bank at damsite 3 of Carlsbad project of Bureau of Reclamation, about 1 mile upstream from flow line of Lake Avalon, 1.3 miles downstream from Rocky Arroyo, and 8 miles northwest of Carlsbad.

Drainage area.--17,980 sq mi, approximately (contributing area).

Records available.--August 1939 to December 1940, August 1944 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 3,172.31 ft above mean sea level (Bureau of Reclamation datum). Prior to Aug. 10, 1944, at site 1,000 ft downstream at same datum.

Average discharge.--21 years, 176 cfs (127,400 acre-ft per year).

Extremes.--Maximum discharge during year, 12,300 cfs July 11 (gage height, 11.37 ft); minimum, 6.8 cfs Sept. 5, 7.
1939-40, 1944-64: Maximum discharge, 53,000 cfs Oct. 7, 1954 (gage height, 18.53 ft), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; minimum, 4.3 cfs Aug. 5, 1954.
Peaks which probably exceeded 40,000 cfs occurred in August 1893, Oct. 2, 1904, July 25, 1905, Apr. 17, 1915, Aug. 7, 1916, and May 30, 1937, based primarily on records for station at Carlsbad. Floods of 1893 and 1904 originated above McMillan Dam and contributed to the two failures of Avalon Dam. The flood of Oct. 2, 1904, probably did not exceed 60,000 cfs; the estimate of 82,000 cfs erroneously published as flow over McMillan Dam was actually inflow to Lake McMillan, and is thought to be high.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by Alamogordo Reservoir and Lake McMillan (see p. 170-3). Diversions and ground-water withdrawals for irrigation of about 173,000 acres (1959 determination) above station. Discharge represents inflow to Lake Avalon.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

-0.3	5.0	0.1	26	2.0	555
-.2	8.5	.3	49	3.0	1,100
-.1	13	.6	102	4.0	1,820
0.0	18	1.0	200		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*56	*41	40	40	36	35	*30	138	*115	*102	64	9.0
2	55	41	40	39	36	*35	28	136	*115	143	96	8.5
3	54	40	* 39	40	36	34	329	136	113	113	*166	8.2
4	52	40	39	40	36	34	393	*136	93	160	173	7.8
5	52	40	39	40	35	*34	427	114	32	160	173	7.4
6	52	40	39	40	36	33	*463	40	27	163	200	7.4
7	52	40	39	*37	36	34	451	36	25	166	78	*7.1
8	50	41	39	39	36	34	386	36	a23	166	29	7.4
9	50	41	39	40	36	33	378	36	152	168	22	7.4
10	49	41	40	40	36	33	375	35	124	212	*19	7.4
11	49	41	39	40	36	33	375	44	117	1630	21	7.4
12	49	41	39	40	36	33	378	153	*115	461	19	8.2
13	49	40	40	39	36	33	378	206	42	29	17	9.4
14	49	41	39	40	36	33	382	206	25	*24	17	*61
15	49	*40	40	40	36	33	386	206	a24	a24	17	48
16	48	40	39	39	37	34	*353	181	a24	a23	16	10
17	*48	40	40	37	37	33	272	70	43	*a23	*16	8.5
18	46	40	39	37	36	35	214	* 146	141	a22	20	8.5
19	46	41	39	36	35	33	a145	36	131	a22	25	9.0
20	45	40	39	37	37	33	a140	33	109	a21	16	10
21	45	39	40	37	36	33	a140	33	109	20	14	* 10
22	45	39	40	36	36	33	a140	154	109	*18	14	10
23	45	40	39	36	36	32	a140	214	109	27	13	10
24	44	41	39	36	*35	30	a140	129	141	115	*13	11
25	44	41	39	35	34	*32	a140	117	178	141	13	12
26	44	40	39	36	36	31	a140	120	148	141	12	11
27	44	40	39	*36	37	31	a140	120	126	141	11	14
28	42	40	39	36	35	31	a140	117	102	141	10	11
29	42	40	40	36	35	31	*141	115	102	129	9.8	11
30	42	40	37	36	----------	31	138	115	102	94	9.8	* 11
31	42	----------	*39	*36	----------	31	----------	115	----------	64	*9.4	----------
Total	1479	1209	1216	1176	1041	1018	7682	3473	2816	4863	1333.0	368.6
Mean	47.7	40.3	39.2	37.9	35.9	32.8	256	112	93.9	157	43.0	12.3
Ac-ft	2930	2400	2410	2330	2060	2020	15240	6890	5590	9650	2640	731

Calendar year 1963: Max 3,470 Min 34 Mean 130 Ac-ft 94,450
Water year 1963-64: Max 1,630 Min 7.1 Mean 75.6 Ac-ft 54,890

Peak discharge (base, 1,700 cfs).--July 11 (2115) 12,300 cfs (11.37 ft).

* Discharge measurement made on this day.
a No gage-height record.

8-4035. Carlsbad main canal at head, near Carlsbad, N. Mex.

Location.--Lat 32°29'28", long 104°15'08", in N½SW¼SW¼ sec.12, T.21 S., R.26 E., on right bank 220 ft downstream from headgates in Avalon Dam and 5.0 miles north of Carlsbad.

Records available.--July 1939 to December 1940 (published as Carlsbad project main canal near Carlsbad), April 1951 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,156.50 ft above mean sea level (Bureau of Reclamation datum). July 1939 to December 1940 at site 20 ft upstream at datum 0.9 ft higher.

Extremes.--1939-40, 1951-64: Maximum daily discharge, 490 cfs July 13, 1940; no flow at times.

Remarks.--Records good. Discharge measurements made at least twice a month during irrigation season. Carlsbad main canal diverts water from Lake Avalon for irrigation of about 25,000 acres of Carlsbad Irrigation District. About 1,600 acres is irrigated on left bank of the Pecos River, most of it above gaging station on Pecos River at Carlsbad. The remaining acreage is on right bank, most of it downstream from Pecos River at Carlsbad gage.

Monthly discharge, in cubic feet per second, water year October 1963 to September 1964

Month	Maximum	Minimum	Mean	Runoff in acre-feet
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
Calendar year 1963	439	0	99.0	71,670
January	0	0	0	0
February	0	0	0	0
March	270	0	11.1	680
April	423	48	266	15,810
May	142	41	93.2	5,730
June	157	9	82.4	4,900
July	200	86	133	8,190
August	270	0	37.0	2,280
September	0	0	0	0
Water year 1963-64	423	0	51.8	37,590

8-4040. Pecos River below Avalon Dam, N. Mex.

Location.--Lat 32°28'53", long 104°15'43", in SW¼SW¼NE¼ sec.14, T.21 S., R.26 E., on right bank 5,200 ft below Avalon Dam and 4.5 miles northwest of Carlsbad.

Drainage area.--18,080 sq mi, approximately (contributing area).

Records available.--January 1906 to March 1907 (published as "at Avalon"), June 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 3,130 ft (from topographic map). January 1906 to March 1907 staff gage at site half a mile upstream at different datum.

Average discharge.--13 years (1951-64), 35.2 cfs (25,480 acre-ft per year).

Extremes.--No flow during year.
1951-64: Maximum discharge, 41,000 cfs Oct. 7, 1954 (gage height, 23.3 ft, from floodmarks); no flow for many days.
Flood of Oct. 2, 1904, caused, in part, by failure of Avalon Dam, was described at that time as the greatest flood known. Flood in August 1893 is probably second highest, and was described as "greatest in 50 years"; it damaged McMillan Dam and washed out the original Avalon Dam.

Remarks.--No flow since Aug. 19, 1963. Calendar year figures for 1963 are as follows: Maximum daily discharge, 1,600 cfs; minimum daily, zero flow; mean, 4.8 cfs; runoff, 3,480 acre-ft. Observations of no flow generally made once a month. Flow regulated by Alamogordo Reservoir, Lake McMillan and Lake Avalon (see p. 170-3). Diversions and ground-water withdrawals above station for irrigation of about 198,000 acres (1959 determination). Station bypassed by Carlsbad main canal (see 8-4035).

8-4050. Pecos River at Carlsbad, N. Mex.

Location.--Lat 32°25'05", long 104°13'25", in NW¼SE¼ sec.6, T.22 S., R.27 E., in downstream end of pier near center of Greene Street Bridge in Carlsbad, half a mile upstream from Dark Canyon.

Drainage area.--18,100 sq mi, approximately (contributing area).

Records available.--May 1903 to March 1908 (January 1907 to March 1908, gage heights and discharge measurements only), May 1914 to September 1915, and April 1920 to September 1964 in reports of Geological Survey. Monthly discharges only for some periods, published in WSP 1312. Records (except maximum discharges) for October 1915 to March 1920, published in WSP 438, 458, 478, and 508, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 3,080.28 ft above mean sea level, datum of 1929. Prior to June 1, 1920, staff gages in immediate vicinity of present site, and at different datums prior to Jan. 6, 1938.

Average discharge.--19 years (1903-4, 1905-6, 1914-15, 1920-36), 255 cfs (184,600 acre-feet per year), prior to completion of Alamogordo Dam; 28 years (1936-64), 190 cfs (137,600 acre-ft per year).

Extremes.--Maximum discharge during year, 184 cfs July 8 (gage height, 2.10 ft); minimum, 0.6 cfs July 11, 24, 25.
1903-6, 1914-15, 1920-64: Maximum discharge probably exceeded 90,000 cfs Oct. 2, 1904 (gage height, 23.44 ft, from floodmarks); minimum, 0.1 cfs June 19, 1954.
Flood of Oct. 2, 1904, caused in part by failure of Avalon Dam, was described at that time as "greatest flood known at Carlsbad." Flood in August 1893 is probably second highest, and was described as "greatest in 50 years"; it damaged McMillan Dam and washed out the original Avalon Dam.

Remarks.--Records good. Discharge measurements made two or more times a month. Flow regulated by Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see p. 170-3), and at low stages by powerplant above station. Gage is bypassed on left bank by Carlsbad main canal east which irrigates several hundred acres adjacent to and below gage site, and on right bank by Carlsbad main canal south which with supplemental groundwater withdrawals irrigates about 23,000 acres below. This bypass flow is not presently gaged. Diversions and ground-water withdrawals above station for irrigation of about 198,000 acres (1959 determination).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 5 to Feb. 10)

Oct. 1 to Mar. 12		Mar. 13 to July 8				July 8 to Sept. 30			
0.5	1.8	0.3	0.5	0.7	8.8	0.26	0.7	0.6	12
.6	3.9	.4	1.3	.9	18	.3	1.2	.9	32
.7	7.3	.5	3.0	1.1	30	.4	3.5	1.2	60
.9	18	.6	5.5	1.4	56	.5	7.2	1.6	110
1.1	30								
1.3	46								

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	12	30	12	22	24	21	14	12	1.9	26	13
2	21	19	18	22	24	23	11	1.8	12	1.0	26	13
3	20	20	30	27	23	24	25	11	11	1.0	26	13
4	20	19	24	20	24	22	12	24	12	.9	26	14
5	19	19	22	16	23	22	17	17	10	1.0	26	13
6	6.5	19	24	22	24	22	25	17	11	2.2	29	13
7	28	19	17	25	21	21	19	17	20	5.7	26	13
8	25	19	23	24	22	22	19	16	3.2	50	26	13
9	17	19	29	22	22	20	13	3.8	21	103	25	12
10	5.4	19	26	24	22	21	28	13	21	1.2	24	12
11	21	19	24	24	21	20	15	22	1.2	.8	13	12
12	20	19	22	24	23	22	21	16	3.6	33	15	12
13	13	19	24	23	22	29	20	15	7.9	41	17	12
14	18	20	17	24	23	16	28	13	10	32	19	14
15	18	20	23	24	21	21	21	4.3	9.1	26	18	13
16	24	20	23	23	22	23	22	11	6.5	19	18	16
17	21	20	23	25	23	31	25	12	6.5	.8	18	15
18	18	19	28	25	22	12	16	12	17	.7	21	14
19	20	20	22	25	22	21	7.1	28	1.6	.7	24	15
20	12	20	18	26	24	18	23	24	11	.8	19	15
21	19	21	26	25	22	20	24	2.1	4.9	.7	16	14
22	19	20	19	45	23	21	10	15	16	.8	17	16
23	20	20	22	29	24	21	23	16	2.0	.8	18	16
24	19	20	22	2.1	23	21	18	2.9	1.1	.7	18	14
25	19	24	24	19	24	20	8.3	18	1.1	.7	17	16
26	19	21	23	21	23	19	13	17	1.1	.7	17	16
27	20	18	23	22	24	24	20	16	1.3	14	16	16
28	19	14	23	21	22	14	21	2.2	1.5	26	18	14
29	27	27	27	23	24	20	22	10	1.6	26	17	16
30	20	17	28	24	----------	21	14	14	22	26	17	16
31	22	----------	33	23	----------	28	----------	10	----------	26	14	----------
Total	587.9	582	737	711.1	659	663	561.4	415.1	260.2	445.1	627	421
Mean	19.0	19.4	23.8	22.9	22.7	21.4	18.7	13.4	8.67	14.4	20.2	14.0
Ac-ft	1,170	1,150	1,460	1,410	1,310	1,320	1,110	823	516	883	1,240	835

Calendar year 1963: Max 1,110 Min 0.9 Mean 24.8 Ac-ft 17,960
Water year 1963-64: Max 103 Min 0.7 Mean 18.2 Ac-ft 13,230

8-4055. Black River above Malaga, N. Mex.

Location.--Lat 32°13'40", long 104°09'05", in SW¼ sec.12, T.24 S., R.27 E., on right bank 0.6 mile upstream from Black River diversion dam, 4.8 miles west of Malaga, and 7 miles upstream from mouth.

Drainage area.--343 sq mi.

Records available.--March to December 1940, December 1946 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 3,070 ft (from topographic map). March to December 1940 water-stage recorder and Cippoletti weir at site 0.3 mile downstream at different datum.

Average discharge.--17 years (1947-64), 12.2 cfs (8,830 acre-ft per year).

Extremes.--Maximum discharge during year, 2,240 cfs June 14 (gage height, 5.63 ft); minimum, 1.6 cfs Mar. 13.
1946-64: Maximum discharge, 20,500 cfs Sept. 23, 1955 (gage height, 14.70 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurements at gage heights 8.41 and 12.60 ft; minimum, that of Mar. 13.
Maximum flood known since 1908 (from information by local resident), 33,000 cfs Sept. 20 or 21, 1941 (gage height, 19.0 ft, determined in 1947 from well-defined floodmarks), from rating curve extended above 1,400 cfs as explained above. Flood of Apr. 17, 1915, reached a stage of 11 ft at bridge on Loving - Malaga road.

Remarks.--Records excellent except those above 100 cfs, which are good. Diversions and ground-water withdrawals for irrigation of about 1,000 acres (1959 determination) above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.63	1.9	1.3	34
.7	3.2	1.6	73
.8	6.2	1.9	129
.9	10	2.3	227
1.1	19	2.7	355

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 4.6	5.8	6.8	*2.6	3.0	5.8	4.6	6.5	5.4	4.6	*5.2	*4.2
2	4.6	5.8	*6.8	2.6	5.4	5.2	5.4	6.2	5.4	4.6	4.6	3.8
3	4.2	5.4	6.5	2.6	8.8	4.6	5.8	6.2	*5.4	4.2	4.2	3.8
4	4.2	5.2	6.5	2.6	9.6	4.0	6.5	5.8	5.4	4.0	4.2	3.8
5	4.6	5.2	6.5	2.6	9.6	3.8	6.5	5.4	5.2	4.2	4.2	3.5
6	4.6	5.4	6.2	2.6	9.6	3.5	6.8	5.4	5.2	4.2	4.2	3.5
7	4.6	5.4	6.2	2.6	9.6	3.5	6.8	5.4	4.8	4.2	4.2	3.5
8	4.6	5.8	5.2	2.8	7.6	3.5	6.8	5.4	4.6	4.6	4.2	3.8
9	4.8	6.2	3.8	2.8	8.8	3.0	7.2	5.4	4.6	4.6	4.8	3.5
10	4.8	6.2	3.2	2.8	9.6	2.8	6.8	6.2	4.6	4.6	4.8	3.5
11	*4.8	6.2	2.8	2.8	9.6	2.8	6.8	6.5	4.6	4.2	4.6	3.8
12	5.2	6.2	2.6	2.8	9.6	2.6	6.8	5.4	5.2	8.9	4.2	4.0
13	5.4	5.8	2.8	2.8	10	1.9	6.8	5.4	*5.8	14	4.2	4.6
14	5.4	*6.2	2.8	2.8	9.6	2.3	7.2	5.8	*338	7.6	4.2	220
15	5.4	6.2	2.8	2.8	9.2	2.5	6.8	6.2	28	6.2	*4.2	*46
16	5.8	6.2	2.8	3.0	10	2.6	6.8	6.5	13	5.4	4.8	*14
17	5.8	5.8	2.8	3.0	10	2.5	6.8	6.8	7.6	4.8	4.8	7.2
18	5.8	6.2	3.0	3.0	10	2.8	6.8	6.2	*5.8	*4.8	4.6	5.2
19	5.8	6.5	3.0	3.0	11	3.0	6.8	5.8	5.4	4.6	5.8	4.6
20	5.8	6.5	3.0	3.0	11	2.6	6.8	5.8	5.4	4.8	5.2	29
21	5.8	6.2	3.0	2.8	11	2.6	6.5	5.8	5.2	4.8	4.2	23
22	5.8	5.8	3.0	2.8	11	2.8	6.8	*6.2	4.8	4.8	4.0	11
23	5.8	5.8	3.0	2.8	11	2.8	6.8	14	4.6	4.6	4.2	9.0
24	5.4	6.2	2.8	2.8	11	2.6	6.8	6.5	*11	4.6	4.6	6.8
25	5.4	5.8	2.8	2.8	*11	2.5	6.8	5.8	5.8	5.4	4.2	6.5
26	5.4	6.2	2.8	2.8	10	2.5	6.5	5.4	5.4	5.2	4.2	6.2
27	5.4	6.5	2.8	3.0	10	2.5	6.2	5.4	4.8	4.8	4.0	5.8
28	5.4	6.5	2.8	3.0	9.6	2.5	6.5	5.4	4.6	4.8	4.0	5.4
29	5.8	6.5	2.8	3.0	7.6	2.5	6.5	5.4	*4.2	4.6	4.0	5.4
30	*5.8	6.5	2.8	*3.0	------	2.3	*6.5	5.2	4.2	4.8	4.0	5.2
31	5.8	------	2.8	3.0	------	* 2.5	------	6.2	------	4.8	4.0	------
Total	162.6	180.2	117.5	87.4	273.8	93.4	197.5	189.6	524.0	162.3	136.6	459.6
Mean	5.25	6.01	3.79	2.82	9.44	3.01	6.58	6.12	17.5	5.24	4.41	15.3
Ac-ft	323	357	233	173	543	185	392	376	1040	322	271	912

Calendar year 1963: Max 1,540 Min 2.3 Mean 10.9 Ac-ft 7,870
Water year 1963-64: Max 338 Min 1.9 Mean 7.06 Ac-ft 5,130

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-14	0120	5.63	2,240	9-14	1740	5.33	1,970

* Discharge measurement made on this day.

8-4065. Pecos River near Malaga, N. Mex.

Location.--Lat 32°12'30", long 104°01'20", in N½ sec.19, T.24 S., R.29 E., on right bank 3 miles southeast of Malaga and 4 miles downstream from Black River.

Drainage area.--19,190 sq mi, approximately (contributing area).

Records available.--May 1920 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder (digital). Datum of gage is 2,895.64 ft above mean sea level, datum of 1929. Prior to Mar. 25, 1949, at datum 3 ft higher.

Average discharge.--16 years (1920-36), 274 cfs (198,400 acre-ft per year), prior to completion of Alamogordo Reservoir; 28 years (1936-64), 234 cfs (169,400 acre-ft per year).

Extremes.--Maximum discharge during year, 780 cfs June 14 (gage height, 5.40 ft); minimum, 6.2 cfs Aug. 27.
1920-64: Maximum discharge, 63,700 cfs Sept. 21, 1941, from rating curve extended above 22,500 cfs by logarithmic plotting; maximum gage height, 35.1 ft May 22, 1941, present datum, from floodmarks; minimum discharge, 5.1 cfs Aug. 18, 1954.
Flood in 1941 is believed to be the highest since 1904 when a flood of about the same magnitude occurred. Flood of Aug. 7, 1916, was revised to 70,000 cfs at Carlsbad, 27 miles upstream. Flood in September 1919 reached a stage of 29.4 ft, present datum (discharge, 40,400 cfs).

Remarks.--Records good. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see p. 170-3), and by several small diversion dams that divert for power or irrigation. Diversions and ground-water withdrawals above station for irrigation of about 202,000 acres (1959 determination). Harroun canal bypasses gage on left bank and irrigates approximately 1,000 acres adjacent to and below gage. This bypass is not gaged.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.5	5.8	3.0	141
1.7	14	3.5	217
2.0	32	4.0	317
2.5	80		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*44	35	34	58	18	30	16	*15	14	12	9.2	*6.9
2	28	40	*34	60	19	29	15	15	14	12	8.3	7.1
3	25	41	41	50	19	*25	16	16	*14	12	8.0	8.8
4	26	41	46	49	19	24	22	18	14	11	7.9	7.9
5	27	44	48	56	19	25	19	14	13	11	7.8	7.3
6	25	41	49	53	*24	23	19	13	12	11	7.9	7.1
7	24	42	48	45	*25	22	19	15	12	11	8.1	7.0
8	24	46	47	54	26	21	*18	15	10	11	9.8	7.1
9	23	49	43	51	25	19	18	16	11	11	10	6.9
10	*22	48	44	51	26	18	20	15	11	10	9.5	7.0
11	24	47	55	52	27	21	19	15	12	11	9.4	7.1
12	24	43	56	53	28	27	18	15	12	11	8.6	7.9
13	23	38	58	53	28	27	17	15	*12	11	*7.9	8.6
14	23	*37	58	53	33	29	17	15	*266	11	7.5	64
15	23	37	56	52	46	28	17	15	50	10	7.4	180
16	23	37	51	*53	50	23	17	19	21	11	8.8	24
17	23	38	54	52	49	19	17	16	15	10	8.8	12
18	22	36	54	53	51	20	18	15	13	*10	11	10
19	22	37	55	52	50	20	17	*14	*13	9.9	12	11
20	22	37	58	54	44	18	17	14	12	9.9	9.2	27
21	22	38	56	38	38	18	17	15	13	10	8.6	12
22	22	39	52	25	44	17	18	14	13	10	8.2	10
23	22	39	52	22	47	*16	17	13	13	9.7	7.7	15
24	22	34	51	21	39	15	19	13	14	9.3	7.6	13
25	22	31	54	26	39	16	18	13	14	9.2	7.8	12
26	21	29	53	24	42	16	17	14	13	9.4	7.7	11
27	21	33	50	21	40	16	16	14	13	*11	7.0	11
28	22	37	51	19	*31	17	16	14	13	*10	7.2	14
29	*21	36	55	*19	28	17	16	13	*12	9.5	7.2	12
30	22	33	*52	19	----------	*17	16	14	12	8.9	7.1	11
31	23	----------	54	19	----------	17	----------	15	----------	8.7	7.2	----------
Total	737	1163	1569	1307	974	650	526	457	681	322.5	260.4	545.7
Mean	23.8	38.8	50.6	42.2	33.6	21.0	17.5	14.7	22.7	10.4	8.40	18.2
Ac-ft	1460	2310	3110	2590	1930	1290	1040	906	1350	640	516	1080

Calendar year 1963: Max 1,500 Min 16 Mean 42.2 Ac-ft 30,540
Water year 1963-64: Max 266 Min 6.9 Mean 25.1 Ac-ft 18,220

Peak discharge (base, 1,800 cfs).--No peak above base.

* Discharge measurement made on this day.

8-4070. Pecos River at Pierce Canyon Crossing, near Malaga, N. Mex.

Location.--Lat 32°11'20", long 103°58'45", in W½ sec.27, T.24 S., R.29 E., on right bank a quarter of a mile upstream from Pierce Canyon Crossing and 6 miles southeast of Malaga.

Drainage area.--19,260 sq mi, approximately (contributing area).

Records available.--July 1938 to September 1941, August 1951 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 2,889.18 ft above mean sea level, datum of 1929. July 1938 to September 1941 at datum 1.19 ft higher.

Average discharge.--16 years, 196 cfs (141,900 acre-ft per year).

Extremes.--Maximum discharge during year, 636 cfs June 14 (gage height, 2.85 ft), from rating curve extended above 330 cfs by logarithmic plotting and correlation of peaks with associated stations; minimum, 2.8 cfs July 31.
1938-41, 1951-64: Maximum gage height, 24.8 ft May 22, 1941 (datum then in use), from floodmarks (discharge not determined); minimum discharge, that of July 31, 1964.

Remarks.--Records good except those for the period Feb. 13 to June 23, which are fair. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan, and Lake Avalon (see p. 170-3), and by several small diversion dams that divert for power or irrigation. Diversions and groundwater withdrawals above station for irrigation of about 202,000 acres (1959 determination).

Rating tables (gage-height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 31		Jan. 1 to Sept. 30			
0.9	20	0.63	3.7	1.3	71
1.1	40	.7	6.8	1.6	136
1.3	71	.8	12	2.0	262
		1.0	28		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 59	29	34	61	20	26	17	*16	9.6	11	5.3	* 4.8
2	39	45	* 36	66	19	26	17	15	* 10	11	4.8	4.4
3	32	45	36	59	20	*23	*16	15	11	11	4.0	4.4
4	31	43	45	51	21	21	19	18	15	9.1	3.7	5.3
5	34	46	46	59	20	20	20	12	15	10	3.7	6.8
6	34	42	49	59	20	17	17	* 7.9	14	9.1	5.8	5.8
7	34	38	46	51	* 26	19	17	9.1	11	8.5	6.3	7.4
8	31	40	49	56	28	20	15	9.6	11	7.9	5.8	5.3
9	31	45	46	57	28	16	9.6	11	10	6.8	5.3	4.8
10	* 28	45	43	54	27	16	14	10	11	5.8	6.3	4.4
11	29	46	50	56	33	17	12	10	11	6.3	*6.3	4.0
12	30	43	56	54	34	23	11	12	12	7.9	6.8	4.8
13	30	38	59	54	32	26	11	11	14	7.9	6.8	7.9
14	28	* 37	61	54	35	27	11	10	259	7.9	6.3	7.4
15	29	35	61	54	41	28	11	12	81	6.3	5.8	230
16	30	36	58	*53	53	24	11	15	25	4.8	5.8	38
17	32	36	58	53	51	20	11	17	12	5.3	6.8	16
18	25	36	56	54	51	20	11	15	9.6	* 4.8	7.4	* 9.6
19	25	38	56	57	51	23	11	*14	*8.5	4.4	11	7.9
20	25	36	63	56	50	18	11	14	7.9	4.0	10	40
21	24	37	63	51	43	17	15	15	8.5	4.4	7.9	21
22	24	36	59	32	43	18	16	15	7.4	5.3	6.8	9.6
23	24	40	58	27	48	*19	16	15	*6.8	8.5	5.8	9.1
24	24	37	56	24	43	17	18	14	*9.6	5.8	5.3	15
25	23	29	58	25	37	17	19	14	14	5.3	6.3	16
26	25	30	58	28	38	16	17	13	14	7.9	5.8	15
27	26	32	56	24	38	16	15	11	12	9.1	5.3	14
28	28	36	56	20	* 31	16	15	8.5	11	*9.6	5.3	17
29	* 27	37	58	*22	26	17	15	9.1	* 11	6.8	5.3	17
30	25	36	* 59	19	----------	17	15	9.1	11	4.8	7.4	15
31	26	----------	59	18	----------	*17	----------	12	----------	4.8	6.3	----------
Total	912	1,149	1,648	1,408	1,007	617	433.6	389.3	662.9	222.1	191.5	567.7
Mean	29.4	38.3	53.2	45.4	34.7	19.9	14.5	12.6	22.1	7.16	6.18	18.9
Ac-ft	1,810	2,280	3,270	2,790	2,000	1,220	860	772	1,310	441	380	1,130

Calendar year 1963: Max 1,380 Min 12 Mean 44.9 Ac-ft 32,520
Water year 1963-64: Max 259 Min 3.7 Mean 25.2 Ac-ft 18,260

* Discharge measurement made on this day.

8-4075. Pecos River at Red Bluff, N. Mex.

Location.--Lat 32°04'30", long 104°02'20", in sec. 1, T.26 S., R.28 E., on right bank at Red Bluff, 0.2 mile downstream from Red Bluff Draw and 5.5 miles upstream from Delaware River.

Drainage area.--19,540 sq mi, approximately (contributing area).

Records available.--October 1937 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 2,850.05 ft above mean sea level, datum of 1929.

Average discharge.--27 years (1937-64), 221 cfs (160,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,790 cfs Sept. 14 (gage height, 7.09 ft); minimum, 1.4 cfs July 23.
1937-64: Maximum discharge, 52,600 cfs May 24, 1941 (gage height, 28.3 ft), from rating curve extended above 30,000 cfs on basis of slope-area measurement of peak flow; minimum, 1.4 cfs Aug. 21, 1954, and July 23, 1964.
Maximum stage known, that of May 24, 1941. Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co.

Remarks.--Records good except those below 10 cfs, which are fair. Flow regulated by storage in Alamogordo Reservoir, Lake McMillan and Lake Avalon (see p. 170-3), and by several small diversion dams that divert for power or irrigation. Diversions and groundwater withdrawals above station for irrigation of about 202,000 acres (1959 determination).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 3-11, July 13 to Aug. 18, Aug. 20 to Sept. 13)

2.5	1.4	3.1	39
2.6	3.5	3.5	98
2.7	8.0	4.0	209
2.9	21	4.7	435

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*67	25	35	55	20	27	18	*13	9.2	9.8	3.3	*3.3
2	47	33	*35	61	21	27	18	12	*8.6	8.6	3.5	3.1
3	34	39	36	61	21	27	18	13	8.6	8.0	3.3	2.7
4	29	39	43	50	21	26	17	11	9.2	8.0	3.1	2.2
5	29	39	45	51	21	24	20	15	13	7.6	2.7	2.0
6	30	41	51	57	21	23	20	11	12	5.8	2.4	2.4
7	31	39	50	52	*22	19	19	7.1	10	6.2	2.4	2.7
8	30	38	50	49	26	20	18	7.6	7.6	*5.3	5.3	2.9
9	29	40	50	55	26	23	17	8.0	7.6	4.8	4.8	3.3
10	28	43	45	52	26	22	13	9.8	8.0	4.0	4.4	2.9
11	*27	45	44	54	26	21	15	9.2	69	3.3	4.4	2.7
12	28	43	54	54	29	21	14	8.6	21	44	4.4	4.5
13	28	39	58	55	29	27	13	10	*31	8.0	4.4	4.0
14	28	*36	58	55	28	28	13	9.8	88	5.3	4.4	406
15	27	34	58	55	33	28	13	17	*186	4.4	*9.2	297
16	28	33	55	55	44	29	12	13	42	3.5	4.4	83
17	29	34	51	*55	46	24	12	17	20	2.9	4.0	29
18	29	33	52	55	46	25	12	16	*13	*1.8	3.5	*17
19	27	35	51	55	46	25	11	*15	8.0	1.8	35	13
20	26	35	54	55	46	23	12	14	6.6	1.8	6.2	186
21	26	35	57	55	40	20	12	13	6.2	1.8	6.6	44
22	26	36	57	39	37	20	15	13	6.2	1.8	5.8	19
23	27	37	52	27	43	20	15	13	*6.6	1.6	4.4	10
24	25	40	52	25	44	20	16	13	*37	3.3	4.0	15
25	25	35	52	23	37	20	18	12	7.6	4.4	3.5	16
26	24	32	55	26	36	18	18	12	9.8	5.0	3.1	16
27	26	33	54	26	38	18	17	12	10	4.5	3.1	15
28	27	35	51	*23	*36	18	16	8.6	10	*5.8	3.1	13
29	*27	36	54	22	30	18	15	5.8	*10	6.6	3.1	18
30	27	36	*54	23	----------	*18	15	6.2	10	5.8	2.9	17
31	26	----------	54	21	----------	18	----------	6.2	----------	3.5	2.9	----------
Total	917	1098	1567	1401	939	697	62	351.9	691.8	189.0	157.6	1252.7
Mean	29.6	36.6	50.5	45.2	32.4	22.5	15.4	11.4	23.1	6.10	5.08	41.8
Ac-ft	1820	2180	3110	2780	1860	1380	916	698	1370	375	313	2480

Calendar year 1963: Max 1,080 Min 7 Mean 44.0 Ac-ft 31,840
Water year 1963-64: Max 406 Min 1.6 Mean 26.6 Ac-ft 19,280

Peak discharge (base 1,800 cfs).--No peak above base.

* Discharge measurement made on this day.

8-4085. Delaware River near Red Bluff, N. Mex.

Location.--Lat 32°01'25", long 104°03'15", in SE¼ sec.23, T.26 S., R.28 E., near center of channel on downstream side of pier of bridge on U. S. Highway 285, 3.5 miles upstream from mouth, 4 miles south of Red Bluff, and 14 miles south of Malaga.

Drainage area.--689 sq mi.

Records available.--April 1912 to September 1913, May 1914 to June 1915, October 1937 to September 1964. Published as "near Malaga, N. Mex." 1912-13, and as "near Angeles, Tex." 1914-15.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2,900.66 ft above mean sea level, datum of 1929. Prior to May 1914, at site 3 miles upstream at different datum. May 1914 to June 1915 at site 2½ miles downstream at different datum.

Average discharge.--27 years (1937-64), 13.9 cfs (10,060 acre-ft per year).

Extremes.--Maximum discharge during year, 1,030 cfs Aug. 19 (gage height, 4.08 ft); no flow for many days.
1912-13, 1914-15, 1937-64: Maximum discharge, 81,400 cfs Oct. 2, 1955 (gage height, 27.0 ft, from floodmark), from rating curve extended above 1,500 cfs on basis of slope-area measurements at gage heights 8.65, 12.84, 18.00, and 27.0 ft; no flow at times.
Maximum stage known since at least 1911, that of Oct. 2, 1955. Flood of June 27, 1938, reached a stage of 18.00 ft, from floodmark.

Remarks.--Records good. No diversions above station.

Rating table (gage height, in feet, and discharge in cubic feet per second)
(Shifting-control method used Aug. 19, 20, Sept. 14, 15)

0.1	0	0.9	3.7	1.7	20
.3	.2	1.1	6.5	1.9	26
.5	.7	1.3	10	2.1	38
.7	1.8	1.5	14	2.3	64
				2.5	106

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1.0	1.0	1.8	1.7	1.8	1.7	1.5	* 0.2	0	0	0	0
2	1.0	1.1	*1.8	1.7	1.8	1.7	1.4	.1	*0	*0	0	0
3	1.0	1.0	1.8	1.8	1.8	*1.7	1.2	.1	0	0	0	0
4	.9	1.1	1.8	1.8	1.8	1.6	1.2	.1	0	0	0	0
5	.9	1.0	1.9	1.8	1.8	1.6	1.2	.1	0	0	0	0
6	.9	.9	1.9	1.8	1.8	1.6	1.2	.1	0	0	0	0
7	.8	1.0	1.9	1.8	1.8	1.5	1.1	.1	0	0	0	0
8	.8	1.1	1.8	1.8	1.8	1.5	1.2	0	0	*0	0	0
9	.8	1.2	1.5	1.7	1.8	1.5	1.2	0	0	0	0	0
10	.8	1.4	1.9	1.8	1.8	1.5	1.2	0	0	0	0	0
11	* .8	1.4	1.9	1.8	1.8	1.5	1.2	0	20	0	0	0
12	.8	1.2	1.9	1.8	1.9	1.5	1.0	0	5.6	6.8	0	0
13	.8	1.2	2.0	1.8	1.9	1.5	.9	0	*48	.8	0	0
14	.8	*1.2	2.0	1.8	1.9	1.5	.9	0	*57	*0	0	32
15	.8	1.2	2.0	1.8	1.7	1.5	.8	.4	17	0	*0	*.6
16	.8	1.2	1.9	1.8	1.7	1.5	.9	.1	4.7	0	0	0
17	33	1.1	1.9	*1.8	1.8	1.5	.8	0	1.8	0	0	0
18	15	1.1	1.9	1.8	1.8	2.2	.8	.1	*.6	*0	0	0
19	5.3	1.3	1.9	1.7	1.8	2.4	.8	0	.3	0	96	0
20	2.8	1.4	1.9	1.7	1.8	2.0	.6	.2	.1	0	3.4	0
21	1.9	1.5	1.9	1.7	1.9	1.7	.6	.5	0	0	0	0
22	1.5	1.4	1.9	1.7	2.0	1.6	.5	25	0	0	0	0
23	5.0	1.5	1.9	1.7	2.0	1.5	.5	6.6	*0	*0	0	0
24	3.1	1.5	1.9	1.7	2.0	1.5	.4	.8	11	0	0	0
25	1.5	1.6	1.9	1.7	2.0	1.4	.4	.1	0	0	0	0
26	1.3	1.7	1.9	1.7	1.9	1.4	.3	11	0	0	0	0
27	1.2	1.7	1.8	1.7	1.9	1.4	.3	2.3	0	0	0	0
28	1.2	1.7	1.8	*1.7	*1.7	1.4	.2	.1	0	*0	*0	0
29	*1.2	1.7	1.8	1.7	1.7	1.4	.2	.3	*0	0	0	0
30	1.2	1.8	*1.7	1.7	----------	*1.4	.2	.1	0	0	0	0
31	1.2	----------	1.7	1.8	----------	1.5	----------	0	----------	0	0	----------
Total	90.1	39.2	57.6	54.3	53.2	49.2	24.7	48.4	166.1	7.6	99.4	32.6
Mean	2.91	1.31	1.86	1.75	1.83	1.59	0.82	1.56	5.54	0.25	3.21	1.09
Ac-ft	179	78	114	108	106	98	49	96	329	15	197	65

Calendar year 1963: Max 2,990 Min 0 Mean 18.6 Ac-ft 13,420
Water year 1963-64: Max 96 Min 0 Mean 1.97 Ac-ft 1,430

Peak discharge (base 1,700 cfs).--No peak above base.

* Discharge measurement or observation of no flow made on this day.

Reservoirs in Rio Grande basin

8-2539. Costilla Lake near Costilla, N. Mex.--Lat 36°52'35", long 105°16'45", on face of Costilla Dam on Costilla Creek in Sangre de Cristo Grant, 16 miles southeast of Costilla, Taos County, N. Mex. Drainage area, 55 sq mi, approximately. Records available, May 1922 to September 1964. Inclined staff gage (taut cable, graduated). Datum of gage is at mean sea level (from original survey). Maximum contents observed during year, 3,590 acre-ft May 18 (elevation, 9,471.8 ft); minimum, 137 acre-ft Sept. 30 (elevation, 9,423.4 ft). Maximum contents during period 1922-64, 15,100 acre-ft June 30, 1940 (elevation, 9,511.4 ft); no contents October 1925 to February 1926, September 1956.

Lake is formed by earth-fill dam. Storage began in 1920 Capacity, 15,700 acre-ft between elevation 9,405.0 ft (bottom of lower intake), and 9,513.0 ft (crest of ungated spillway cut in natural rock). By order of New Mexico State Engineer (first issued in 1942) storage was limited to 14,540 acre-ft maximum, and 10,880 for not to exceed 45 days (revised to 60 days in 1949). Diversions for irrigation of about 1,300 acres above Lake. Contents computed from intermittent gage readings and capacity table (based on original survey) furnished by New Mexico State Engineer.

8-2850. El Vado Reservoir.--Lat 36°35'45", long 106°43'55", in Tierra Amarilla Grant, at left end of dam on Rio Chama, at Village of El Vado, 13 miles southwest of Tierra Amarilla, N. Mex. Drainage area, 873 sq mi. Records available, January 1935 to September 1964. Water-stage recorder (records stages above spillway floor only) and inclined staff gage. Datum of gage is 8.21 ft above mean sea level, datum of 1929, leveling of 1953. Maximum contents at 0800 during year, 28,040 acre-ft May 27 to June 28 (gage height, 6,815.5 ft); minimum, 2,430 acre-ft Nov. 27 to Mar. 18 (gage height, 6,775.0 ft). Maximum contents during period 1935-64, 204,900 acre-ft June 4, 5, 1948 (gage height, 6,904.2 ft); no contents at times.

Reservoir is formed by rock-fill dam, steel faced. Storage began in January 1935. Capacity, 194,500 acre-ft between gage heights 6,758.5 (stoplog seat) and 6,902.0 ft (top of spillway gate). No dead storage. Prior to Jan. 1, 1947, figures represent usable contents computed from capacity table furnished by Middle Rio Grande Conservancy District in 1940; Jan. 1, 1947, to Sept. 30, 1954, figures represent usable contents, computed from capacity table based on survey of 1944 by Corps of Engineers; after Oct. 1, 1954, used revised table based on partial survey (below gage height, 6,770 ft) by Bureau of Reclamation. Water is used for irrigation by Middle Rio Grande Conservancy District. Gage readings and contents given herein are generally those at 0800. Continuous recorder registers gage heights above 6,879.3 ft (floor of spillway). Staff-gage readings furnished by Middle Rio Grande Conservancy District.

8-2869. Abiquiu Reservoir.--Lat 36°14'15", long 106°25'35", in SW¼ sec.8, T.23 N., R.5 E., in Abiquiu Dam on Rio Chama, 6½ miles northwest of Abiquiu. Drainage area, 2,146 sq mi, of which about 100 sq mi is probably noncontributing. Records available, February 1963 to September 1964. Datum of gage is at mean sea level, datum of 1929 (levels by Corps of Engineers). Maximum contents during year, 2,410 acre-ft Nov. 11 (elevation, 6,090.12 ft); no contents on several days. Maximum contents during period 1963-64, 2,410 acre-feet Nov. 11, 1963 (elevation, 6,090.12 ft).

Reservoir is formed by earth-fill dam, completed Feb. 5, 1963. Capacity, 1,225,400 acre-ft between gage heights 6,060 (invert of outlet tunnel) and 6,350 ft (crest of spillway). No dead storage. Original plan for reservoir was to hold water for one day to desilt before releasing to Rio Grande, and for possible flood stage detention. A new capacity table was adopted Oct. 1, 1963; accounts for material borrowed from reservoir area during construction.

Records furnished by Corps of Engineers. Contents figures given here represent contents at 2400, from recorded elevations.

8-3155. McClure Reservoir.--Lat 35°41'20", long 105°50'10", in NE¼SW¼ sec.24, T.17 N., R.10 E., on outlet tower at McClure Dam on Santa Fe River, 2½ miles upstream from Nichols Reservoir, and 6 miles east of Santa Fe, N. Mex. Drainage area, 17.4 sq mi. Records available, October 1947 to September 1964. Water-stage recorder. Datum of gage is 7,768.12 ft above mean sea level, datum of 1929, and 165.9 ft above Public Service Co. of New Mexico assumed datum. Maximum contents at 2400 during year, 2,560 acre-ft June 4-11 (gage height 95.8 ft); minimum, 1,480 acre-ft Mar. 29-31. Maximum contents during period 1947-64, 3,140 acre-ft June 25, 1960 (gage height, 103.7 ft); no contents Jan. 25 to May 8, 1951.

Reservoir is formed by earth-fill dam, completed in 1926 (capacity, 503 acre-ft), raised 5 ft in 1935 (capacity, 650 acre-ft), raised 36.5 ft in 1947. Capacities and changes in height of dam are for effective height of spillway which includes 1 foot of flashboards above concrete crest 1926 to July 1935, 2 ft August 1935 to September 1947, and varying heights of sandbag bulkheads from October 1947 to May 1953 when spillway was equipped with radial gates which open automatically at gage height about 103.1 ft (some adjustment possible). Capacity, 3,090 acre-ft between gage heights -0.2 (bottom of lowest outlet tube), and 103.1 ft. No dead storage. Figures given here represent contents at 2400. Water is used for municipal consumption of city of Santa Fe. Capacity table computed from area-capacity table furnished by Public Service Co. of New Mexico.

8-3165. Nichols Reservoir.--Lat 35°41'20", long 105°52'40", in E½NE¼ sec.21, T.17 N., R.10 E., on outlet tower at dam on Santa Fe River, three-quarters of a mile upstream from Two Mile Reservoir, 2½ miles downstream from McClure Dam, and 3½ miles east of Santa Fe, N. Mex. Drainage area, 22.8 sq mi. Records available, December 1942 to September 1964. Water-stage recorder. Datum of gage is 7,313.2 ft above mean sea level, datum of 1929. Maximum contents at 2400 during year, 534 acre-ft Apr. 19 (gage height, 161.6 ft); minimum, 245 acre-ft June 22 (gage height, 147.8 ft). Maximum contents during period 1943-64, 836 acre-ft June 8, 1952 (gage height, 171.8 ft); minimum, 16 acre-ft Feb. 11 to Mar. 10, 1944, Feb. 1-19, 1948.

Reservoir is formed by earth-fill dam. Storage began Mar. 16, 1943. Capacity, 796 acre-ft between gage heights 121.2 (bottom of lower operational gate) and 171.0 ft (top of flashboards in spillway). Dead storage, 14 acre-ft. Figures given herein represent total contents at 2400. Water is used for municipal consumption of city of Santa Fe. Capacity table computed from survey furnished in 1943 by Public Service Co. of New Mexico.

8-3285. Jemez Canyon Reservoir.--Lat 35°23'40", long 106°32'45", in SW¼SW¼ sec.32, T.14 N., R.4 E., at corner of outlet works control tower of Jemez Canyon Dam, about 2½ miles upstream from mouth and 6 miles north of Bernalillo, N. Mex. Drainage area, 1,034 sq mi. Records available, October 1953 to September 1964. Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers). Maximum contents during year, 733 acre-ft Aug. 2 (elevation, 5,148.15 ft); no contents for most of year. Maximum contents during period 1953-64, 71,220 acre-ft June 8, 1958 (elevation, 5,213.36 ft); no storage for most of time.

Reservoirs in Rio Grande basin--Continued

8-3285. Jemez Canyon Reservoir. --Continued

Reservoir is formed by earth-fill dam, completed Oct. 19, 1953. Maximum capacity, 183,200 acre-ft (from capacity table adopted July 1, 1963) between elevations 5,125.0 (sill of outlet gates) and 5,252.3 ft (operating deck of spillway). Maximum controllable capacity, 114,000 acre-ft (at crest of spillway) at elevation 5,232.3 ft; spillway is located about three-quarters of a mile south of dam and flows directly to Rio Grande. Original plan for reservoir operation was to desilt all flow above 30 cfs by storage for one day before releasing to Rio Grande, and for possible detention during flood stage on Rio Grande. Records furnished by Corps of Engineers.

8-3414. Bluewater Lake. --Lat 35°17'40", long 108°06'40", in SE¼ sec.4, T.12 N., R.12 W., on left end of dam and 9.5 miles west of Bluewater, N. Mex. Drainage area, 201 sq mi. Records available, June 1927 to December 1950 in Water Bulletins (Nos. 10-20) of International Boundary and Water Commission. January 1951 to June 1958 in files of Bluewater-Toltec Irrigation Co. July 1958 to January 1961, inclined staff and supplemental vertical staff sections, and since January 1961, water-stage recorder. Datum of gage is 7,345.57 ft above mean sea level, datum of 1929. Gage heights have been reduced to elevations above sea level. Maximum contents observed during year, 10,260 acre-ft Apr. 30 (elevation, 7,379.1 ft); minimum observed, 3,980 acre-ft Feb. 29 (elevation, 7,367.3 ft). Maximum contents determined during period 1927-50, 1958-64, 47,100 acre-ft in April 1941 (date and elevation not available), from table then in use; no storage at times prior to 1947.

Reservoir is formed by concrete arch dam. Storage began in 1927. Capacity, 38,500 acre-ft at elevation 7,402.6 ft (crest of uncontrolled siphon spillway which is vented to avoid drawdown below crest), and 44,200 acre-ft at elevation 7,405.6 ft (crest of ungated spillway over dam). Dead storage, 3.4 acre-ft at elevation 7,345.4 ft (sill of lower outlet tube). Lake not usually drawn below conservation pool level (elevation, 7,365.36 ft), below which ownership is by State Game and Fish Department. Above this level, water is owned and used by Bluewater-Toltec Irrigation Co. Figures given herein represent total contents, based on table derived from 10-foot contour survey made in 1945 by Bureau of Reclamation. Contents figures are from daily gage readings at about 0800 prior to Jan. 27, 1961, from recorded gage heights at 2400 to Sept. 30, 1963, and monthly staff readings thereafter (Recording installation out of order).

8-3605. Elephant Butte Reservoir. --Lat 33°09'15", long 107°11'30", in NW¼ sec.30, T.13 S., R.3 W (survey by Bureau of Reclamation), at dam on Rio Grande, 1 mile west of Elephant Butte and 4 miles northeast of Truth or Consequences (Hot Springs), N. Mex. Drainage area, 29,445 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.). Records available, March 1915 to September 1964. Water-stage recorder. Datum of gage is 43.3 ft above mean sea level, datum of 1929. Maximum daily contents during year, 168,600 acre-ft Mar. 15-16 (gage height, 4,299.93 ft); minimum daily, 42,100 acre-ft Sept. 9 (gage height, 4,275.51 ft). Maximum daily contents during period 1915-64, 2,302,800 acre-ft June 16-18, 1942 (gage height, 4,409.19 ft); minimum daily after initial filling, 9,900 acre-ft Aug. 6, 1954 (gage height, 4,258.03 ft).

Reservoir is formed by concrete dam. Storage began Jan. 6, 1915. Dam completed May 13, 1916. Capacity, 2,195,000 acre-ft (survey of 1961) between gage heights 4,231.5 (sill of outlet gate) and 4,407.0 ft (spillway crest). Capacity by original survey was 2,638,900 acre-ft. No dead storage, surveys of 1957 and 1961. No storage allocated to flood control. Figures given herein represent usable contents. Water is used for power development and irrigation on Rio Grande project of Bureau of Reclamation. Lake is major recreational area. Contents given herein are computed from mean daily gage heights. Records furnished by Bureau of Reclamation.

8-3620. Caballo Reservoir. --Lat 32°53'45", long 107°17'30", in SE¼SW¼ sec.19, T.16 S., R.4 W., at dam on Rio Grande, 0.5 mile downstream from mouth of Apache Canyon, 0.9 mile upstream from Bojarquez Bridge, 2 miles upstream from Percha diversion dam, 3.5 miles northeast of Arrey, and 5½ miles south of Caballo, N. Mex. Drainage area, 30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.). Records available, February 1938 to September 1964. Water-stage recorder. Datum of gage is 43.3 ft above mean sea level, datum of 1929. Maximum daily contents during year, 34,850 acre-ft Mar. 14 (gage height, 4,138.22 ft); minimum daily, 3,720 acre-ft Sept. 20 (gage height, 4,122.32 ft). Maximum daily contents during period 1938-64, 347,000 acre-ft Mar. 4, 1942 (gage height, 4,182.06 ft); minimum daily, 118 acre-ft Oct. 14, 1938 (gage height, 4,108.1 ft).

Reservoir is formed by earth-fill dam, completed Sept. 19, 1938. Storage began Feb. 8, 1938. Capacity (1958 survey), 344,000 acre-ft between gage heights 4,104 (bottom of tunnel entrance to gates) and 4,182 ft (gage height above which spillway gates operate automatically). No dead storage. Storage held for flood control, 100,000 acre-ft. Figures given herein represent usable contents. Water released from Elephant Butte Reservoir for power development is stored in Caballo Reservoir and released for irrigation on Rio Grande project of Bureau of Reclamation. Contents given herein are computed from mean daily gage heights. Records furnished by Bureau of Reclamation.

8-3840. Alamogordo Reservoir. --Lat 34°36'30", long 104°23'10", in SW¼ sec.34, T.5 N., R.24 E., at dam on Pecos River, 5 miles northeast of Guadalupe and 12 miles northwest of Fort Sumner, N. Mex. Drainage area, 4,390 sq mi (contributing area). Records available, January 1939 to September 1964. Staff gage. Datum of gage is a mean sea level, Bureau of Reclamation datum. Maximum contents at 0800 during year, 57,800 acre-ft Feb. 28, 29, Mar. 1, 2, Mar. 23 to Apr. 6 (elevation, 4,257.15 ft); minimum, 4,240 acre-ft July 8-11 (elevation, 4,220.00 ft). Maximum contents observed during period 1939-64, 138,300 acre-ft May 23-30, June 1-10, July 21, Sept. 22, 23, 30, Oct. 12, Nov. 4, 5, 30, 1941 (elevation 4,275.00 ft); maximum elevation, 4,276.10 ft June 3, Sept. 8, 1958; no storage July 28 to Aug. 2, 1951 (elevation 4,200.70 ft).

Reservoir is formed by Alamogordo Dam; completed and storage began in August 1937. Total capacity, 122,100 acre-ft at elevation 4,275.0 ft (top of spillway gates). No dead storage. No storage allocated for flood control. Figures given herein represent total contents and are computed from elevations at 0800. Elevation record furnished by Bureau of Reclamation and Carlsbad Irrigation District. Capacity table based on data furnished by Bureau of Reclamation, Corps of Engineers, and Carlsbad Irrigation District.

Reservoirs in Rio Grande basin--Continued

8-3906. Two Rivers Reservoir. --Lat 33°17'55", long 104°43'20", in SW¼SE¼NE¼ sec.4, T.12 S., R.22 E., near center of Diamond A Dam on Rio Hondo, 13 miles southwest of Roswell, N. Mex., and lat 33°16'20", long 104°43'20", in NW¼SE¼NE¼ sec.16, T.12, S., R.22 E., at left end of Rocky Dam on Rocky Arroyo, 14 miles southwest of Roswell, N. Mex. Drainage area, 1,030 sq mi (Rio Hondo, 963 sq mi; Rocky Arroyo, 64 sq mi). Records available, July 1963 to September 1964. Water-stage recorders. Datum of gages is at mean sea level, datum of 1929. Maximum contents of Rio Hondo Reservoir during period, 42 acre-ft June 19 (elevation, 3,969 ft); no contents most of period. Maximum contents of Rocky Arroyo Reservoir during period, 466 acre-ft Sept. 27, 1964 (elevation, 3,953.1 ft); no contents most of period. No monthly table published; month-end contents zero during entire period.

Two Rivers Reservoir, completed July 16, 1963, is formed by earth-fill dams on Rio Hondo, which forms Rio Hondo Reservoir, and Rocky Arroyo, which forms Rocky Arroyo Reservoir. Above elevation 3,980.0 ft the pools of Rio Hondo Reservoir and Rocky Arroyo Reservoir combine to form Two Rivers Reservoir, total capacity, 167,900 acre-ft at elevation 4,032.0 ft (ungated spillway crest). Capacity of Rio Hondo Reservoir, 550 acre-ft between elevation 3,957.0 ft (sill of outlet gate) and 3,980.0 ft. Capacity of Rocky Arroyo Reservoir, 14,240 acre-ft between elevation, 3,945.0 ft (sill of outlet gate) and 3,980.0 ft. No appreciable dead storage in Rio Hondo Reservoir. Dead storage, 39 acre-ft, in Rocky Arroyo Reservoir. Reservoir built for flood control. Outlet conduits in Rocky Dam remain open. Figures given herein represent total contents. Capacity table furnished by Corps of Engineers.

8-4005. Lake McMillan.--Lat 32°35'45", long 104°20'55", in SE¼ sec.2, T.20 S., R.26 E., near gates at dam on Pecos River, 3 miles southeast of Lakewood, N. Mex. Drainage area, 16,990 sq mi (contributing area). Records available, January 1939 to September 1964. Gage heights since January 1918 published in reports of Pecos River Commission. Float-tape gage. Datum of gage is 3,241.6 ft above mean sea level, Bureau of Reclamation datum. Maximum contents at 0800 during year, 19,560 acre-ft Oct. 1 (gage height, 21.95 ft); no storage Aug. 8 to Sept. 30. Maximum contents observed 1939-64, 68,500 acre-ft Sept. 26, 1941 (gage height, 29.95 ft); no storage at times in 1944-54, 1957, 1964.

Lake is formed by McMillan Dam; completed and storage began in 1893. The floods of October 1893 and Oct. 2, 1904 caused some structural damage. Capacity, 32,920 acre-ft between gage heights 0.0 ft (sill of outlet gate) and 24.9 ft (crest of spillway 2). Flashboards may increase this capacity to a maximum of 39,430 acre-ft at gage height 26.1 ft (crest of spillway No. 1). No dead storage. No storage allocated to flood control. Figures given herein represent usuable contents and are computed from daily gage readings at 0800. Gage heights may be affected by variable drawdown due to flow through gates. Water is used for irrigation by Carlsbad Irrigation District. Gage-height record and capacity table furnished respectively, by Carlsbad Irrigation District and Bureau of Reclamation.

8-4038. Lake Avalon. --Lat 32°29'25", long 104°15'00", in SW¼ sec.12, T.21 S., R.26 E., on headwall at outlet gate of dam on Pecos River, 5 miles north of Carlsbad, N. Mex. Drainage area, 18,070 sq mi (contributing area). Records available, January 1939 to September 1964. Gage heights since January 1919 published in reports of Pecos River Commission. Staff gage. Datum of gage is 3,157.0 ft above mean sea level, Bureau of Reclamation datum. Maximum contents at 0800 during year, 3,960 acre-ft Jan. 17 to Mar. 3 (gage height, 19.15 ft); minimum, 180 acre-ft Aug. 8. Maximum contents observed during period 1939-64, 11,000 acre-ft May 22, 1941 (gage height, 25.0 ft); no storage at times when natural flow was passing through reservoir.

Lake is formed by Avalon Dam. The original Eddy (Avalon) dam was completed and storage began in 1893. The dam was destroyed by flood of October 1893 (date of reconstruction not available), was destroyed again by flood of Oct. 2, 1904; present dam rebuilt in 1905-6. Capacity, 4,970 acre-ft (revised on basis of survey made August 1964) between gage heights 0.0 (sill of outlet gates) and 20.4 ft (crest of spillway 2). No dead storage. No storage allocated to flood control. Figures given herein represent usable contents and are computed from daily gage readings at 0800. Water is used for irrigation by Carlsbad Irrigation District. Capacity tables based on data furnished by Bureau of Reclamation and Carlsbad Irrigation District.

8-4100. Red Bluff Reservoir. --Lat 31° 54'05", long 103°54'40", at right end of Red Bluff Dam on Pecos River, 3 miles upstream from Salt (Screwbean) Draw, and 4.5 miles north of Orla, Reeves County. Drainage area, 20,720 sq mi, approximately (contributing area). Records available, February 1937 to September 1964. Monthly contents only for some periods, published in WSP 1312. Staff gage read at irregular intervals. Datum of gage is 0.30 ft below mean sea level, datum of 1929. Maximum contents observed during year, 35,720 acre-ft Feb. 19 (gage height, 2,798.6 ft); minimum observed, 14,000 acre-ft Sept. 6-14 (gage height, 2.784.8 ft). Maximum contents observed during period 1937-64, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft, observed on staff gage at service spillway, affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

Reservoir is formed by a rock-faced earth-fill dam 9,200 ft long. Dam completed and storage began in September 1936. The concrete service spillway is equipped with 12 tainter gates 25 ft wide by 15 ft high. The emergency spillway, located on the right bank, is 790 ft long. Water is used for power development and irrigation from Mentone to Grandfalls. Contents computed from intermittent gage readings and figures given herein represent total contents. Data regarding dam and reservoir are given in the following table: Gage-height records and capacity curve furnished by Red Bluff Water Power and Control District. Capacity curve based on Geological Survey topographic map surveyed in 1925.

	Gage height (feet)	Capacity (acre-feet)
Crest of emergency spillway	2,845.0	340,000
Top of tainter gates	2,842.0	310,000
Crest of service spillway	2,827.0	166,500
Bottom of two 7.0- by 9.0-foot conduits	2,764.0	3,000

Reservoirs in Rio Grande basin--Continued

Month-end elevations and contents, water year October 1963 to September 1964

Date	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	Costilla Lake			El Vado Reservoir			Abiquiu Reservoir		
Sept. 30....	-	a490	-	6,803.7	18,040	-	0	0	0
Oct. 31....	-	a860	+370	6,803.7	18,040	0	0	0	0
Nov. 30....	-	a1,100	+240	6,775.0	2,430	-15,610	0	0	0
Dec. 31....	-	a1,250	+150	6,775.0	2,430	0	0	0	0
Calendar year 1963	-	-	-4,340	-	-	-9,380	-	-	-
Jan. 31....	-	a1,340	+90	6,775.0	2,430	0	0	0	0
Feb. 29....	-	a1,540	+200	6,775.0	2,430	0	0	0	0
Mar. 31....	-	a2,030	+490	6,777.2	3,110	+680	6,075.00	645	+645
Apr. 30....	-	a3,090	+1,060	6,778.2	3,450	+340	6,079.26	1,010	+365
May 31....	-	a3,300	+210	6,815.5	28,040	+24,590	6,083.18	1,430	+420
June 30....	9,453.0	1,130	-2,170	6,813.6	26,290	-1,750	6,080.20	1,100	-330
July 31....	-	a481	-649	6,809.9	23,040	-3,250	6,074.15	580	-520
Aug. 31....	9,427.5	215	-266	6,809.9	23,040	0	0	0	-580
Sept. 30....	9,423.4	137	-78	6,803.7	18,040	-5,000	0	0	0
Water year 1963-64	-	-	-353	-	-	0	-	-	-
	McClure Reservoir			Nichols Reservoir			Jemez Canyon Reservoir		
Sept. 30....	89.8	2,150	-	158.2	449	-	0	0	0
Oct. 31....	86.7	1,950	-200	156.8	417	-32	0	0	0
Nov. 30....	83.5	1,750	-200	157.3	428	+11	0	0	0
Dec. 31....	80.3	1,570	-180	157.6	435	+7	0	0	0
Calendar year 1963	-	-	-290	-	-	+110	-	-	-
Jan. 31....	79.7	1,540	-30	158.2	449	+14	0	0	0
Feb. 29....	79.7	1,540	0	158.6	458	+9	0	0	0
Mar. 31....	78.7	1,480	-60	160.5	504	+46	5,145.4	337	+337
Apr. 30....	86.3	1,920	+440	156.4	407	-97	5,141.6	52	-285
May 31....	95.3	2,520	+600	149.7	274	-133	5,138.0	8	-44
June 30....	92.1	2,300	-220	148.3	253	-21	0	0	-8
July 31....	85.0	1,840	-460	158.0	444	+191	0	0	0
Aug. 31....	84.4	1,810	-30	155.7	391	-53	0	0	0
Sept. 30....	80.4	1,580	-230	160.2	496	+105	0	0	0
Water year 1963-64	-	-	-570	-	-	+47	-	-	-
	Bluewater Lake			Elephant Butte Reservoir			Caballo Reservoir		
Sept. 30....	7,368.5	4,420	-	4,284.80	78,800	-	4,135.61	27,600	-
Oct. 31....	7,368.1	4,270	-150	4,285.10	80,200	+1,400	4,136.23	29,240	+1,640
Nov. 30....	7,367.9	4,200	-70	4,287.81	93,500	+13,300	4,136.67	30,440	+1,200
Dec. 31....	7,367.6	4,090	-110	4,291.18	112,000	+18,500	4,137.14	31,740	+1,300
Calendar year 1963	-	-	-2,560	-	-	-278,300	-	-	-5,820
Jan. 31....	7,367.4	4,020	-70	4,294.91	134,500	+22,500	4,137.60	33,050	+1,310
Feb. 29....	7,367.3	3,980	-40	4,298.80	160,600	+26,100	4,138.00	34,190	+1,140
Mar. 31....	7,368.1	4,270	+290	4,297.76	153,300	-7,300	4,132.39	19,770	-14,420
Apr. 30....	7,379.1	10,260	+5,990	4,292.51	119,700	-33,600	4,137.13	31,710	+11,940
May 31....	7,377.5	9,120	-1,140	4,295.04	135,400	+15,700	4,137.72	33,390	+1,680
June 30....	7,373.4	6,600	-2,520	4,293.70	126,900	-8,500	4,127.95	10,980	-22,410
July 31....	7,370.5	5,210	-1,390	4,287.99	94,500	-32,400	4,128.54	12,000	+1,020
Aug. 31....	7,370.1	5,040	-170	4,281.27	63,300	-31,200	4,123.66	5,100	-6,900
Sept. 30....	7,368.4	4,380	-660	4,277.42	48,600	-14,700	4,125.48	7,310	+2,210
Water year 1963-64	-	-	-40	-	-	-30,200	-	-	-20,290

Reservoirs in Rio Grande basin--Continued

Month-end elevations and contents, water year October 1963 to September 1964

Date	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation or gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	Alamogordo Reservoir			Lake McMillan			Lake Avalon		
Sept. 30....	4,247.80	35,360	-	21.95	19,560	-	14.25	842	-
Oct. 31....	4,247.45	34,680	-680	21.15	16,520	-3,040	17.15	2,460	+1,618
Nov. 30....	4,250.05	39,980	+5,300	21.00	15,970	- 550	18.20	3,200	+740
Dec. 31....	4,252.80	46,280	+6,300	21.15	16,520	+ 550	18.95	3,790	+590
Calendar year 1963	-	-	-27,120	-	-	+1,090	-	-	+630
Jan. 31....	4,255.10	52,140	+5,860	21.10	16,330	-190	19.15	3,960	+170
Feb. 29....	4,257.15*	57,800	+5,660	21.05	16,150	-180	19.15	3,960	0
Mar. 31....	4,257.15	57,800	0	20.55	14,360	-1,790	18.60	3,510	-450
Apr. 30....	4,244.50	29,290	-28,510	20.60	14,540	+180	15.00	1,200	-2,310
May 31....	4,245.00	30,160	+870	17.80	6,010	-8,530	14.70	1,040	-160
June 30....	4,239.80	21,890	-8,270	15.95	2,040	-3,970	14.30	865	-175
July 31....	4,220.20	4,350	-17,540	16.90	3,880	+1,840	14.80	1,100	+235
Aug. 31....	4,222.00	5,380	+1,030	-	0	-3,880	14.00	406*	-385
Sept. 30....	4,229.80	11,100	+5,720	-	0	0	14.40	587	+181
Water year 1963-64	-	-	-24,260	-	-	-19,560	-	-	† +54

	Red Bluff Reservoir		
Sept. 30....	2,796.4	31,100	-
Oct. 31....	2,796.1	30,500	-600
Nov. 30....	2,796.5	31,300	+800
Dec. 31....	2,797.5	33,350	+2,050
Calendar year 1963	-	-	+10,050
Jan. 31....	(a)	35,280	+1,930
Feb. 29....	2,797.8	33,980	-1,300
Mar. 31....	2,797.0	32,300	-1,680
Apr. 30....	2,796.5	31,300	-1,000
May 31....	2,793.1	25,070	-6,230
June 30....	2,789.8	20,140	-4,930
July 31....	2,788.7	18,710	-1,430
Aug. 31....	2,786.9	16,380	-2,330
Sept. 30....	2,788.7	18,710	+2,330
Water year 1963-64	-	-	-12,390

a No gage-height record; contents estimated or interpolated.
* Contents from capacity table effective Aug. 1, 1964; contents July 31, 1964, from capacity table used since Aug. 1, 1964, is 791 acre-feet.
† Obtained by summation of change in contents only.

8-4763. Mimbres River at McKnight damsite near Mimbres, N. Mex.

Location.--Lat 32°55'15", long 108°00'55", in SW¼SE¼ sec.6, T.16 S., R.11 W., on right bank 0.3 mile upstream from Mimbres Ranger station, 0.4 mile downstream from Cottonwood Canyon and 8 miles northwest of Mimbres.

Drainage area.--

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,236.73 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during period, 641 cfs Aug. 18 (gage height, 3.76 ft); no flow for many days.

Remarks.--Records good except those above 5 cfs, which are poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—	0.2								0	38	0
2	—	.1								0	12	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	2.6
11	—	0								.7	.3	18
12	—	0								0	0	11
13	—	0								* 0	0	0
14	—	*0								0	0	.2
15	—	0								0	0	0
16	—	0								0	0	0
17	—	0								0	0	0
18	—	0								.5	*35	0
19	—	0								3.8	.1	0
20	—	0					(*)			.7	0	0
21	—	0								.5	0	0
22	—	0							(*)	*.6	*0	0
23	—	0								.2	0	86
24	—	0								.2	0	65
25	—	0								0	0	18
26	—	0								.1	0	9.2
27	—	0			(*)					*.2	0	4.1
28	—	0								.1	0	*2.1
29	—	0								0	0	1.5
30	*0.5	0								5.0	0	1.4
31	.4									9.0	0	
Total	—	0.3	0	0	0	0	0	0	0	21.6	85.4	219.1
Mean	—	0.01	0	0	0	0	0	0	0	0.70	2.75	7.30
Ac-ft	—	0.6	0	0	0	0	0	0	0	43	169	435

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-1	1700	3.10	260	9-12	1545	3.30	345
8-18	1400	3.76	641	9-23	1445	3.19	296
9-11	1400	3.39	394				

* Discharge measurement or observation of no flow made on this day.

8-4770. Mimbres River near Mimbres, N. Mex.

Location.--Lat 32°52'30", long 107°59'00", in SE¼NW¼ sec.33, T.16 S., R.11 W., on left bank, 0.7 mile downstream from Bear Canyon and 1½ miles northwest of Mimbres.

Drainage area.--152 sq mi.

Records available.--June 1921 to September 1930 (fragmentary), October 1930 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Concrete control since Mar. 26, 1938. Datum of gage is 5,972 ft above mean sea level, datum of 1929. Prior to Sept. 12, 1923, at site 10 ft downstream at datum 0.3 ft higher. Sept. 12, 1923, to Jan. 17, 1934, at datum of 0.1 ft lower.

Average discharge.--34 years, 9.78 cfs (7,080 acre-ft per year).

Extremes.--Maximum discharge during year, 374 cfs Aug. 18 (gage height, 4.78 ft); minimum, 1.1 cfs Aug. 8.
1930-64: Maximum discharge determined, 1,560 cfs Aug. 2, 1952 (gage height, 6.22 ft), from rating curve extended above 230 cfs by logarithmic plotting; minimum daily, 0.9 cfs July 22, 1947, Aug. 10, 1951.

Remarks.--Records fair below 10 cfs and poor above. Some regulation by Bear Canyon Reservoir (capacity, 700 acre-ft). Diversions for irrigation of about 300 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 20 to Nov. 1, July 27 to Aug. 18, Sept. 12-21, 28-30)

2.2	0.07	3.0	12
2.6	4.2	3.2	36
2.7	5.2	3.4	70
2.8	6.8	3.6	115

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	6.0	8.8	6.3	4.5	3.8	1.3	3.0	2.7	2.0	46	3.3
2	7.7	8.6	a8.5	6.3	4.5	3.8	1.3	2.9	2.7	1.9	8.4	3.3
3	a 8	10	a8.5	6.2	4.5	4.0	*1.3	3.5	* 2.7	1.9	3.4	*3.2
4	a 9	9.9	a8	6.2	4.6	4.1	1.3	3.4	2.6	2.0	2.9	3.1
5	* 9.6	9.9	a8	6.3	4.7	4.4	1.2	2.6	2.8	2.2	2.5	a3
6	11	9.9	8.1	6.2	4.5	5.4	1.2	2.8	2.9	2.4	2.3	a 3
7	16	10	8.1	6.2	4.5	4.9	1.3	2.8	2.5	2.4	1.5	a 3
8	16	10	a8	6.2	4.7	4.5	1.3	4.4	2.4	2.5	*1.3	a 3
9	16	9.9	a8	6.2	4.7	4.7	1.3	7.9	2.7	3.4	1.4	a 3
10	15	9.6	a8	6.2	4.7	4.7	1.3	14	2.4	3.6	1.4	a 5
11	12	9.6	a7.5	6.0	4.7	4.7	1.4	16	1.9	3.4	1.7	a 18
12	12	9.6	*7.5	5.7	4.1	4.9	1.4	16	2.0	4.2	2.3	22
13	15	9.3	7.5	5.8	3.5	4.9	1.5	*16	2.0	* 4.1	2.1	4.5
14	13	* 9.3	7.2	5.7	3.1	4.7	1.6	16	2.1	3.8	2.0	4.3
15	14	9.3	7.2	5.4	3.2	4.6	1.9	5.0	2.0	3.8	2.1	3.9
16	15	9.6	7.2	5.7	3.4	4.5	2.0	5.5	1.9	3.7	2.1	3.8
17	*14	9.9	7.0	5.7	3.5	4.5	2.4	5.2	1.8	3.1	2.0	3.8
18	13	9.9	6.8	5.5	3.5	4.5	2.8	5.4	1.8	3.6	47	3.6
19	12	9.9	6.8	5.4	3.5	4.5	2.6	4.9	1.9	11	*6.5	3.5
20	7.5	9.6	6.5	5.4	3.7	4.4	* 3.0	3.8	1.8	7.2	2.9	3.5
21	7.2	9.6	6.5	5.5	3.8	4.3	3.4	2.2	1.7	3.9	3.1	3.5
22	6.8	9.3	6.3	5.7	3.8	4.2	3.4	2.3	* 1.7	2.3	3.4	3.5
23	6.8	9.0	6.5	5.7	4.0	4.2	3.2	2.1	1.7	2.4	3.2	112
24	6.8	9.0	6.2	5.5	4.2	4.2	3.3	1.9	2.0	2.3	3.0	a70
25	6.8	9.0	5.4	5.5	4.3	3.8	3.2	1.9	2.0	3.1	3.0	a20
26	6.6	9.0	6.2	5.4	4.3	2.0	3.0	2.0	2.1	15	3.0	a10
27	6.5	9.0	6.6	5.4	* 4.1	1.8	2.9	2.8	2.0	5.2	* 3.1	a 8
28	6.3	9.0	6.6	5.2	3.9	1.7	2.9	2.7	2.2	3.7	3.2	* 7.2
29	*6.2	9.0	6.5	*5.2	3.9	1.7	3.1	2.6	2.0	3.7	3.5	7.2
30	6.2	9.0	6.5	5.1	----------	1.8	2.9	2.6	2.0	5.2	3.5	7.0
31	6.0	----------	6.3	4.9	----------	1.7	----------	2.7	----------	17	3.3	----------
Total	315.7	280.7	222.8	177.7	118.4	121.9	64.7	166.9	65.0	136.0	177.1	352.2
Mean	10.2	9.36	7.19	5.73	4.08	3.93	2.16	5.38	2.17	4.39	5.71	11.7
Ac-ft	626	557	442	352	235	242	128	331	129	270	351	699

Calendar year 1963: Max 94 Min 2.6 Mean 9.64 Ac-ft 6,980
Water year 1963-64: Max 112 Min 1.2 Mean 6.01 Ac-ft 4,360

Peak discharge (base, 290 cfs).--Aug. 18 (1600) 374 cfs (4.78 ft); Sept. 12 (1730) 329 cfs (4.53 ft).

* Discharge measurement made on this day.
a No gage-height record.

8-4775. Mimbres River near Faywood, N. Mex.

Location.--Lat 32°35'10", long 107°55'10", in NW¼ sec.7, T.20 S., R.10 W., on right bank 6 miles northeast of Faywood Hot Springs, 10 miles northeast of Faywood, and 12 miles upstream from San Vicente Arroyo.

Drainage area.--460 sq mi.

Records available.--January 1909 to May 1941, January 1916 to December 1917, October 1920 to May 1921, October 1927 to September 1930, all fragmentary. October 1930 to September 1955. Monthly discharge only for some periods, published in WSP 1312. Records for August and September 1934, published in WSP 763, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 5,030 ft (from topographic map). Prior to Aug. 16, 1909, chain gage 300 ft upstream at different datums. Aug. 16, 1909, to Sept. 25, 1920, water-stage recorder at site 500 ft upstream at different datums (datum lowered 0.5 ft Jan. 21, 1915, and 1.0 ft Jan. 1, 1916). Water-stage recorder at present site since Sept. 26, 1920, at datums 2.0 ft higher Sept. 26, 1920, to Sept. 30, 1942, and 1 ft higher Oct. 1, 1942, to Sept. 30, 1949.

Average discharge.--26 years (1912-13, 1930-33, 1934-55, 1963-64), 12.9 cfs (9,340 acre-ft per year).

Extremes.--Maximum discharge during year, 960 cfs July 25 (gage height, 5.00 ft); minimum, 0.6 cfs Sept. 5, 6 and 7.
1930-54, 1963-64: Maximum discharge, 20,000 cfs Aug. 4, 1939 (gage height, 12 ft, present site and datum), from rating curve extended above 600 cfs on basis of slope-area measurements at gage heights 7.80 and 11.7 ft; no flow at times.

Remarks.--Records fair Oct. 1 to July 25, others poor. Diversions for irrigation of about 3,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 24 to Nov. 10, Aug. 2 to Sept. 30)

2.0	0.7	2.3	8.3	3.0	105
2.1	2.0	2.5	21	3.4	210
2.2	4.7	2.7	45	3.8	340

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	3.4	2.3	5.8	3.9	7.2	3.9	3.4	3.1	1.9	74	0.8
2	3.9	3.4	2.3	5.4	4.2	7.2	4.2	3.4	3.1	1.9	23	.8
3	3.6	3.1	2.3	5.8	4.2	6.5	* 3.9	3.4	* 3.1	1.9	3.1	.7
4	3.4	3.1	2.5	4.4	4.4	5.8	3.9	3.4	2.8	1.9	2.5	.7
5	3.1	3.1	2.5	5.1	4.7	4.7	4.2	3.6	2.8	1.7	1.9	.6
6	2.8	3.4	2.3	5.4	4.7	4.2	4.4	3.6	2.8	1.7	1.6	.7
7	2.8	3.4	2.3	5.4	4.7	3.9	4.2	3.4	2.8	1.7	1.2	.7
8	2.8	3.6	2.5	5.4	4.7	3.6	4.7	3.4	2.8	3.9	*1.4	.8
9	3.1	4.7	2.5	5.4	4.7	3.6	4.4	3.4	2.8	2.0	10	.8
10	3.4	3.6	2.8	7.2	4.4	3.6	4.2	3.4	2.8	1.7	1.2	28
11	3.4	3.6	7.2	7.9	4.4	3.4	4.2	3.1	2.8	25	1.2	2
12	3.4	3.9	* 7.6	7.9	4.4	3.6	4.4	2.8	2.8	9.7	1.2	7
13	3.1	3.9	8.3	8.9	4.7	3.9	3.9	* 2.8	2.8	*2.5	1.0	11
14	3.1	* 3.9	7.9	8.9	5.1	4.2	3.9	2.5	2.5	2.0	14	a 2
15	3.1	4.2	7.6	9.4	5.1	4.2	3.6	2.5	2.5	1.7	1.2	a 1
16	2.8	4.7	7.2	9.4	5.1	3.9	3.6	2.5	2.3	1.7	1.1	a 1
17	* 3.1	4.2	7.6	8.9	5.1	3.6	3.6	2.5	2.0	1.7	1.0	a .8
18	3.1	4.2	7.2	8.3	5.1	4.2	3.9	2.3	2.3	1.9	5.2	a .7
19	22	3.6	6.5	5.8	5.1	4.4	3.9	2.3	2.3	1.7	11	a .7
20	26	3.6	6.9	5.4	5.1	4.2	* 3.9	2.5	2.3	1.6	1.1	a .6
21	14	3.9	6.9	6.5	6.1	4.2	3.6	2.5	2.3	1.5	1.1	* .6
22	9.4	3.9	6.5	6.1	8.3	4.2	3.6	2.5	2.3	*1.5	* 1.1	.6
23	8.3	3.1	7.6	4.4	9.4	4.2	3.4	2.5	2.3	1.5	1.1	* 318
24	5.1	3.1	8.9	4.2	8.3	4.2	3.4	2.5	2.3	1.5	1.0	341
25	4.7	2.8	8.9	4.4	7.9	4.2	3.4	2.5	2.3	19	.8	115
26	4.4	2.8	8.3	3.9	* 8.3	4.2	3.6	2.5	2.3	51	.8	70
27	4.2	2.8	7.9	3.6	* 8.3	4.2	3.6	2.8	2.0	1.6	.8	30
28	3.9	2.5	8.3	3.6	8.3	4.2	3.6	2.5	2.3	1.4	.8	12
29	3.9	2.5	6.5	* 3.6	7.6	4.2	3.4	2.8	* 2.3	2.4	.8	5.1
30	* 4.2	2.3	5.4	4.2		3.9	3.6	2.8	1.9	5.2	.8	2.8
31	3.9		5.8	3.9		3.9		3.1		81	.8	
Total	172.2	104.3	179.3	184.5	166.3	135.5	116.1	89.2	75.8	237.4	167.8	956.5
Mean	5.55	3.48	5.78	5.95	5.73	4.37	3.87	2.88	2.53	7.66	5.41	31.9
Ac-ft	342	207	356	366	330	269	230	177	150	471	333	1,900

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 341 Min 0.6 Mean 7.06 Ac-ft 5,130

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2330	5.00	960	9-23	1315	4.90	900
7-31	about 2000	4.8	840				

* Discharge measurement made on this day.
a No gage-height record.

8-4775.3 Mimbres River near Spalding, N. Mex.

Location.--Lat 32°26'55", long 107°56'50", in S½ sec.23, T.21 S., R.11 W., on right bank 360 ft downstream from U.S. Highway 180, 3 miles upstream from San Vicente Arroyo and 17 miles northwest of Deming.

Drainage area.--

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,749.8 ft above mean sea level (levels by New Mexico State engineer).

Extremes.--Maximum discharge during year, 1,420 cfs Sept. 23 (gage height, 4.20 ft); no flow for most of time.

Remarks.--Records fair.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	(*)	(*)	0	0						0	46	0
2			0	0						0	4.8	0
3			0	0					(*)	0	.6	0
4			0	0						0	0	0
5			0	0						0	0	0
6			*0	0						0	0	0
7			0	0						0	0	0
8			0	0						*0	*0	0
9			0	0						0	0	0
10			0	0						0	0	20
11			0	0						.1	0	1.0
12			0	0						0	0	.8
13			0	0				(*)		*0	0	* .5
14			0	0						0	0	0
15		(*)	0	0						0	0	0
16			.1	.5						0	0	0
17			*.1	.4						0	0	0
18			0	0						0	0	0
19			0	.4						0	* 7.8	0
20			0	0						0	0	0
21			0	0						0	0	0
22			0	0						*0	0	0
23			0	0						0	0	*191
24			0	0						0	0	159
25			0	0						0	0	*62
26			0	0						21	0	42
27			0	0	(*)					0	* 0	6.9
28			0	0						0	0	0
29			0	*0					(*)	0	0	0
30			0	0		(*)				0	0	0
31	(*)		0	0						0	0	
Total	0	0	0.2	1.3	0	0	0	0	0	21.1	59.2	483.2
Mean	0	0	0.01	0.04	0	0	0	0	0	0.68	1.91	16.1
Ac-ft	0	0	0.4	2.6	0	0	0	0	0	42	118	958

Calendar year : Max Min Mean Ac-ft
Water year 1963-64: Max 191 Min 0 Mean 1.54 Ac-ft 1,120

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-26	0330	3.58	322	9-10	0330	3.72	478
8-1	0040	3.60	340	9-23	1510	4.20	1,420

* Discharge measurement or observation of no flow made on this day.

8-4776. San Vicente Arroyo at Silver City, N. Mex.

Location.--Lat 32°46'15", long 108°16'30", in NW¼SE¼ sec.3, T.18 S., R.14 W. (projected), on left bank in Silver City, 800 ft upstream from bridge at Broadway Street and 1,300 ft downstream from confluence of Silva Creek and Pinos Altos Creek.

Drainage area.--26.5 sq mi.

Records available.--August 1953 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,862.58 ft above mean sea level, datum of 1929. Prior to May 25, 1958, at site 500 ft downstream at datum 17.99 ft lower.

Average discharge.--11 years, 0.81 cfs (586 acre-ft per year).

Extremes.--Maximum discharge during year, 2,050 cfs July 14 (gage height, 5.46 ft); no flow for many days.
1953-64: Maximum discharge, 4,680 cfs Aug. 16, 1963 (gage height, 8.30 ft in gage well, 10.0 ft from outside gage); no flow for many days in most years.
Maximum flood known occurred July 21, 1895 (discharge probably exceeded 10,000 cfs), from newspaper accounts. A peak of 6,800 cfs was measured by slope-area method from old floodmarks found in 1956 (probably occurred Sept. 9, 1938).

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0	30	0
2	.1	.3	.1	.1	.1	.1	.1	.1		0	.2	.1
3	.1	.1	.1	.1	.1	.4	.1	.1		0	.1	0
4	.1	.1	.1	.1	.1	.1	1.2	.1		0	.1	0
5	*.1	.1	.1	.1	.1	.1	*.1	.1		0	.1	0
6	.1	.1	.1	.1	.1	.1	.1	0		0	.1	2
7	.1	.5	.1	.1	.1	.1	.1	0		0	.1	.2
8	.1	.2	.1	.1	.1	.1	.1	0		1.3	.1	0
9	.1	.1	.1	.1	.1	.1	.1	*0	(*)	.2	4.0	3
10	.1	.1	.1	.1	.1	.1	.1	.1		*0	*0	2
11	.1	.1	.1	.1	.1	.1	.1	0		0	.1	3
12	.1	.1	.1	.1	.1	.1	.1	0		0	0	.2
13	.1	.1	.1	.1	.1	.1	.2	0		*0	0	0
14	.1	.1	.1	.1	.1	.1	.2	0		70	.8	0
15	.1	.1	.1	.1	.1	.2	.1	0	(*)	*2.4	.1	0
16	.1	.1	.1	.1	.1	.2	.1	0		0	0	0
17	.2	.1	*.1	.1	.1	.1	.1	0		0	0	0
18	.5	.1	.1	.1	*.1	.3	.1	0		0	1.0	0
19	*1.5	.1	.1	.1	.1	.2	.1	.1		0	*0	0
20	.2	.1	.1	.1	.1	.1	.1	.1		0	0	0
21	.1	.1	.1	.1	.1	.1	.1	.2		0	0	0
22	.1	.1	.1	.1	.1	.1	.1	.1		0	0	20
23	.1	.1	.1	.1	.1	.1	.1	.1		0	0	*44
24	.1	.1	.1	.1	.1	.1	.1	.1		0	0	2
25	.1	.1	.1	.1	.1	.1	.1	.1		0	0	0
26	.1	.1	.1	.1	.1	.1	.1	.1		8.2	0	0
27	.1	.1	.1	.1	.1	.1	.1	0		0	0	0
28	.1	.1	.1	.1	.1	.1	.1	0		0	0	0
29	.1	.1	.1	.1	.1	.1	.1	0		0	0	0
30	.1	.1	.1	*.1	----------	.1	.1	0		0	0	*0
31	.1	----------	.1	.1	----------	.1	---------	0	----------	51	0	----------
Total	5.1	3.7	3.1	3.1	2.9	3.9	4.3	1.5	0	133.1	36.8	76.5
Mean	0.16	0.12	0.10	0.10	0.10	0.13	0.14	0.05	0	4.29	1.19	2.55
Ac-ft	10	7.3	6.1	6.1	5.8	7.7	8.5	3.0	0	264	73	152

Calendar year 1963 : Max 119 Min 0.1 Mean 0.86 Ac-ft 620
Water year 1963-64 : Max 70 Min 0 Mean 0.75 Ac-ft 544

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-14	2230	5.46	2,050	7-31	1900	3.27	538
7-31	1500	3.20	500	8-1	1200	3.70	795

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Oct. 23-29, Nov. 2 to Dec. 16, Aug. 2, 3, 20-23, Sept. 2-22, 24, 25.

8-4783. Wamel Canal at head near Deming, N. Mex.

Location.--Lat 32°18'05", long 107°53'45", in NW¼SE¼ sec.17, T.23 S., R.10 W., on left bank 110 ft downstream from heading gates and the Mimbres River and 8½ miles west of Deming.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,468.5 ft above mean sea level (levels by New Mexico State Engineer).

Extremes.--1963-64: Maximum daily discharge, 264 cfs Sept. 24, 1964; no flow for most of time.

Remarks.--Records good above 50 cfs and fair below.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Aug.	1	50
	2	10
Sept.	10	.3
	23	80
	24	264
	25	35
	27	3.5

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
Calendar year 1963	-	-	-	-	-
August	60	50	0	1.94	119
September	382.8	264	0	12.8	759
Water year 1963-64	442.8	264	0	1.21	878

Note.--No gage-height record Aug. 3-6.

8-4784. Mimbres River below Wamel heading, near Deming, N. Mex.

Location.--Lat 32°18'05", long 107°53'45", in NW¼SE¼ sec.17, T.23 S., R.10 W., on right bank 200 ft downstream from Wamel Canal heading and 8½ miles west of Deming, N. Mex.

Drainage area.--

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4,468.9 ft above mean sea level (levels by New Mexico State Engineer).

Extremes.--Maximum discharge during year, 365 cfs Sept. 24 (gage height, 2.75 ft); no flow for most of time.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	(*)		(*)								a 7	0
2											a 1	* 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	12
24											0	* 126
25											0	* 2.6
26											* 0	0
27					(*)					(*)	0	0
28											0	0
29				(*)					(*)		0	0
30					---	(*)					0	0
31	(*)	---			---		---		---		0	---
Total	0	0	0	0	0	0	0	0	0	0	8	140.6
Mean	0	0	0	0	0	0	0	0	0	0	0.26	4.69
Ac-ft	0	0	0	0	0	0	0	0	0	0	16	279

Calendar year 1963 Max - Min - Mean - Ac-ft -
Water year 1963-64 Max 126 Min 0 Mean 0.41 Ac-ft 295

Peak discharge (base, 300 cfs).--Sept. 24 (0640) 365 cfs (2.75 ft).

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

8-4815. Rio Tularosa near Bent, N. Mex.

Location.--Lat 33°08'40", long 105°53'50", in SE¼NW¼ sec.32, T.13 S., R.11 E., on right bank 50 ft downstream from bridge on U. S. Highway 70, 2.6 miles west of Bent, and 8.5 miles northeast of Tularosa.

Drainage area.--120 sq mi, approximately.

Records available.--December 1947 to September 1964.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,450 ft (from topographic map).

Average discharge.--16 years (1948-64), 9.61 cfs (6,960 acre-ft per year).

Extremes.--Maximum discharge during year, 873 cfs May 26 (gage height, 3.31 ft), from rating curve extended above 160 cfs on basis of slope-area measurement at gage height 3.74 ft; minimum, 0.6 cfs June 30.

1947-64: Maximum discharge, 2,360 cfs July 12, 1950 (gage height, 5.3 ft), from rating curve extended above 33 cfs on basis of logarithmic plotting and slope-area measurement at gage height 5.3 ft; no flow May 14, 1955, result of unusual regulation.

A major flood probably occurred Sept. 3, 1938, when a peak of 9,640 cfs was computed for station near Tularosa. Another high peak may have occurred July 2, 1914.

Remarks.--Records poor. Diversion for irrigation of about 1,000 acres (1959 determination) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.25	2.4	2.4	13
2.3	4.4	2.5	30

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.4	8.2	10	9.1	9.1	10	9.7	8.1	6.1	7.1	9.7	4.5
2	6.0	8.2	10	8.8	9.0	11	11	10	5.8	7.0	7.7	7.0
3	6.4	8.2	11	*9.3	7.6	12	11	5.7	11	6.9	6.2	7.8
4	6.5	8.2	10	9.2	7.2	11	12	6.9	12	5.9	4.5	7.5
5	6.7	9.1	9.7	11	7.1	11	7.1	7.4	12	5.3	6.9	6.8
6	7.2	9.1	9.3	11	6.6	11	7.4	12	12	4.2	*6.2	5.0
7	6.7	9.5	9.2	11	b7.5	11	7.5	12	11	*5.8	9.8	5.0
8	6.4	9.2	9.2	11	b9.0	11	13	11	8.1	5.9	8.2	*6.1
9	8.9	9.1	9.2	11	9.1	9.5	13	11	5.8	5.6	5.6	6.4
10	7.5	9.1	9.1	12	8.9	12	12	11	*6.5	5.4	5.9	9.4
11	11	9.4	8.8	12	9.1	12	11	8.0	7.1	5.6	6.3	13
12	9.4	10	8.3	b9	*9.0	12	10	7.8	7.2	4.7	10	14
13	9.1	10	8.2	b9	7.5	11	*8.5	*8.0	7.2	4.9	11	8.4
14	10	10	8.2	b10	9.0	11	7.9	11	5.2	4.0	11	14
15	9.3	10	8.2	b11	7.9	12	9.1	11	4.3	7.7	12	8.6
16	8.3	9.7	*8.3	b12	9.0	13	8.1	10	4.6	7.3	9.5	8.0
17	7.1	10	8.6	b12	9.1	13	7.6	7.7	8.8	8.9	6.7	8.2
18	*9.3	10	9.1	b12	9.1	14	7.4	7.4	8.9	8.5	*5.4	7.5
19	7.1	9.9	8.8	9.1	8.4	12	5.6	6.8	8.7	8.3	7.1	7.9
20	6.4	9.5	8.2	9.1	9.6	11	5.3	12	7.9	5.4	7.7	6.6
21	6.5	10	8.9	*9.9	9.8	9.2	5.4	12	5.4	7.4	9.5	6.3
22	6.5	*10	8.2	9.7	10	9.7	12	12	3.7	5.2	9.2	7.3
23	6.5	9.4	8.1	9.3	9.7	*9.1	12	12	3.8	6.1	5.4	6.8
24	7.1	9.3	8.2	10	11	8.6	13	12	4.6	6.7	5.3	7.2
25	7.3	9.1	8.1	9.6	11	7.8	12	9.5	5.1	10	5.3	7.5
26	7.4	9.0	8.2	9.1	8.8	9.0	13	27	4.2	6.1	9.2	7.7
27	7.9	9.5	8.1	9.3	*8.0	11	9.5	10	4.6	5.8	8.8	7.4
28	7.8	10	8.1	9.1	8.5	15	9.4	10	2.6	8.7	8.8	7.1
29	8.0	10	8.2	9.8	6.8	13	9.8	9.6	3.4	20	8.8	*7.2
30	8.2	10	9.1	9.6	-------	10	*9.3	9.8	3.0	17	7.9	7.5
31	8.2	-------	9.1	9.1	-------	8.3	-------	5.8	-------	13	6.0	-------
Total	237.1	282.7	273.7	313.1	252.4	341.2	289.6	314.5	200.6	230.4	241.6	233.7
Mean	7.65	9.42	8.83	10.1	8.70	11.0	9.65	10.1	6.69	7.43	7.79	7.79
Ac-ft	470	561	543	621	501	677	574	624	398	457	479	464

Calendar year 1963: Max 60 Min 2.1 Mean 8.52 Ac-ft 6,170
Water year 1963-64: Max 27 Min 2.6 Mean 8.77 Ac-ft 6,370

Peak discharge (base, 125 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	1415	3.31	873	9-10	2315	2.92	266
7-21	1515	2.81	181	9-14	1900	2.75	143

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

9-3464. San Juan River near Carracas, Colo.

Location.--Lat 37°00'47", long 107°18'39", in SE¼SW¼ sec.17, T.32 N., R.4 W., on right bank at river mile 178.8 just above flow line of Navajo Reservoir and 3 miles northwest of Carracas, Colo., 7.2 miles upstream from Piedra River.

Drainage area.--1,230 sq mi, approximately.

Records available.--October 1961 to September 1964.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,090 ft (from river-profile map).

Extremes.--Maximum discharge during year, 3,650 cfs May 24 (gage height 5.4 ft); minimum, 31 cfs Dec. 8.
1961-64: Maximum discharge, 3,920 cfs Apr. 20, 1962 (gage height, 5.55 ft); maximum gage height, 6.58 ft Feb. 19, 1962 (ice jam); minimum discharge, about 5 cfs Dec. 10, 1961 (result of freezeup).
Maximum flood known occurred Oct. 5, 1911. Major floods occurred Sept. 5 or 6, 1909 and June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 11,000 acres above station.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 6-8, May 20, 21)

1.2	32	2.5	360
1.3	45	3.0	670
1.6	94	4.0	1,560
1.9	156	5.0	2,970
2.2	235		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	121	123	90	90	70	80	a650	774	a1,300	260	790	139
2	116	122	87	90	70	90	540	727	a1,100	226	1,300	139
3	111	127	80	95	70	90	301	603	a1,100	211	1,400	132
4	100	126	62	80	65	80	232	581	a1,150	200	815	125
5	95	131	70	90	65	75	247	606	1,360	182	652	124
6	90	131	71	75	65	90	243	564	1,460	177	475	158
7	90	134	80	80	60	90	214	564	1,560	154	434	175
8	93	133	54	80	60	80	219	540	1,640	139	447	167
9	89	127	40	75	60	75	224	558	1,240	154	536	143
10	87	124	65	70	65	80	278	802	1,180	172	479	165
11	85	122	80	75	70	70	325	884	a1,150	267	518	160
12	78	120	75	80	70	80	438	1,170	a1,100	366	1,200	130
13	80	116	80	80	70	90	390	1,560	a1,050	468	2,060	114
14	76	112	55	75	70	100	441	1,870	a950	564	1,470	114
15	82	110	50	70	55	90	591	1,840	a900	420	1,160	228
16	84	112	50	65	65	120	827	2,320	964	306	819	253
17	85	116	65	60	70	140	965	2,460	852	423	630	215
18	85	90	80	60	70	180	708	2,730	719	294	522	175
19	175	87	85	65	65	300	587	2,200	628	260	437	159
20	356	100	85	70	70	230	568	2,190	588	235	425	159
21	271	104	90	70	65	220	452	2,190	528	208	437	197
22	211	118	80	75	65	300	604	2,620	468	192	327	366
23	175	104	75	75	65	230	753	2,810	420	192	282	268
24	156	83	90	70	65	180	903	2,910	360	277	245	226
25	144	114	90	65	70	150	900	2,970	340	249	214	235
26	133	104	90	70	70	135	600	2,890	306	205	193	301
27	122	83	90	70	70	150	516	a2,900	278	197	183	306
28	125	98	85	70	70	212	522	a2,500	260	205	176	335
29	118	108	95	70	70	a400	954	a2,000	246	211	163	272
30	120	94	80	70	-------	a550	720	a1,700	263	217	157	250
31	119	-------	80	70	-------	a650	-------	a1,400	-------	366	145	-------
TOTAL	3,872	3,373	2,349	2,300	1,945	5,407	15,912	52,433	25,460	7,997	19,091	5,930
MEAN	125	112	75.8	74.2	67.1	174	530	1,691	849	258	616	198
AC-FT	7,680	6,690	4,660	4,560	3,860	10,720	31,560	104,000	50,500	15,860	37,870	11,760

CALENDAR YEAR 1963 MAX 2,050 MIN 40 MEAN 392 AC-FT 283,900
WATER YEAR 1963-64 MAX 2,970 MIN 40 MEAN 399 AC-FT 289,700

Peak discharge (base, 2,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-24	0500	5.40	3,650	8-13	1340	5.20	3,310
8-3	0730	4.80	2,630				

a No gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 9 to Mar. 24.

9-3498. Piedra River near Arboles, Colo.

Location.--Lat 37°05'17", long 107°23'52", in NE¼SW¼ sec.21, T.33 N., R.5 W., on left bank 3 miles downstream from Ignacio Creek, 5.2 miles northeast of Arboles Post Office, 8 miles upstream from mouth.

Drainage area.--629 sq mi.

Records available.--August 1962 to September 1964. Gage operated 1895-1899, 1910-1927 at a site 7½ miles downstream at altitude 6,000 ft. Low flow records probably not equivalent.

Gage.--Water-stage recorder (digital). Datum of gage is 6,147.52 ft above mean sea level (from Colorado State Highway Department bench mark).

Extremes.--Maximum discharge during year, 1,650 cfs May 24 (gage height, 4.03 ft); minimum, 11 cfs Dec. 9.
1962-64: Maximum discharge, that of May 24, 1964; minimum, that of Dec. 9, 1964.
Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for period of ice effect, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 2,800 acres above station.

Rating table, except period of ice effect (gage-height, in feet, and discharge, in cubic feet per second)

1.4	18	2.8	540
1.6	49	3.3	920
1.9	120	3.7	1,270
2.3	260	3.9	1,460

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1963 TO SEPTEMBER 1964

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	110	61	40	38	34	36	252	313	540	111	155	68
2	106	61	44	40	34	37	328	340	530	100	499	73
3	98	61	40	40	33	37	190	298	509	89	590	65
4	98	61	39	36	32	36	138	305	471	79	407	60
5	91	63	39	36	30	39	119	300	568	70	396	60
6	88	63	34	35	29	37	131	287	598	67	291	75
7	81	62	30	35	27	36	111	274	660	59	268	72
8	81	61	26	34	26	36	110	248	687	59	259	70
9	76	59	20	32	30	35	100	240	518	59	232	68
10	74	59	34	30	32	35	122	274	496	124	219	119
11	74	56	36	30	35	34	168	350	522	129	233	99
12	71	55	35	30	37	35	316	505	478	114	282	75
13	66	54	34	28	35	39	324	680	436	113	441	67
14	65	55	25	27	34	34	449	848	386	152	370	76
15	63	54	22	25	33	32	678	884	376	151	290	171
16	60	53	25	24	35	37	736	1,120	355	126	241	170
17	59	52	30	27	35	38	623	1,250	321	131	210	137
18	57	39	35	29	35	47	408	1,320	282	142	183	115
19	85	38	37	30	37	57	346	1,150	245	123	162	105
20	150	43	40	33	40	53	338	1,240	223	112	169	110
21	124	51	40	35	38	51	249	1,190	202	97	171	118
22	103	46	40	37	39	57	267	1,230	179	88	141	156
23	95	46	34	36	40	51	307	1,360	163	85	124	160
24	89	39	37	33	40	49	355	1,410	146	86	114	140
25	81	53	40	32	38	45	351	1,420	134	88	103	140
26	75	47	40	36	38	41	271	1,390	125	79	95	170
27	71	37	40	37	37	43	259	1,310	120	74	99	174
28	71	44	38	36	36	47	268	1,120	112	74	101	172
29	69	44	37	35	36	74	384	950	102	66	89	152
30	66	42	36	35	----------	111	319	728	104	65	83	149
31	63	----------	34	35	----------	129	----------	632	----------	124	76	----------
TOTAL	2,560	1,559	1,081	1,026	1,005	1,468	9,017	24,966	10,588	3,036	7,093	3,386
MEAN	82.6	52.0	34.9	33.1	34.7	47.4	301	805	353	97.9	229	113
AC-FT	5,080	3,090	2,140	2,040	1,990	2,910	17,880	49,520	21,000	6,020	14,070	6,720

CALENDAR YEAR 1963 MAX 1,200 MIN 20 MEAN 202 AC-FT 146,400
WATER YEAR 1963-64 MAX 1,420 MIN 20 MEAN 182 AC-FT 132,460

Peak discharge (base, 1,500 cfs).--May 24 (0430) 1,650 cfs (4.03 ft)

Note.--Stage-discharge relation affected by ice Dec. 6 to Mar. 10.

9-3505. San Juan River at Rosa, N. Mex.

Location.--Lat 37°00'20", long 107°24'10", in SW¼ sec.21, T.32 N., R.5 W., on right bank a quarter of a mile downstream from Piedra River and 0.9 mile upstream from Colorado-New Mexico State Line.

Drainage area.--1,990 sq mi, approximately.

Records available.--July to November 1895, May 1896 to December 1897, April to December 1898, May to September 1899, September 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1920, published as two stations, Piedra and San Juan Rivers at Arboles, Colo., sum of which is equivalent.

Gage.--Water-stage recorder. Datum of gage is 5,972 ft above mean sea level (National Park Service bench mark). Prior to Oct. 1, 1920, at sites on Piedra and San Juan Rivers at Arboles, Colo. (see WSP 1313 for descriptions). Oct. 1, 1920, to Apr. 12, 1922, chain gage at site 75 ft downstream at different datum. Apr. 13, 1922, to Sept. 18, 1930, water-stage recorder at site 550 ft upstream at datum 0.7 ft higher. Sept. 19, 1930, to Aug. 31, 1938, water-stage recorder at sites 330 and 430 ft upstream at datum 1.0 ft higher. Sept. 1, 1938, to Dec. 19, 1949, water-stage recorder at present site at datum 1.0 ft higher.

Average discharge.--55 years (1896-97, 1910-64), 1,193 cfs (863,700 acre-ft per year).

Extremes.--Maximum discharge during year, 5,330 cfs May 25 (gage height, 6.23 ft); minimum, about 12 cfs Dec. 9.
1920-64: Maximum discharge, about 25,000 cfs June 29, 1927 (gage height, 13.5 ft, from estimated graph, site and datum then in use), from rating curve extended above 8,000 cfs by logarithmic plotting; minimum daily, 39 cfs Oct. 8, 1956.
Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions for irrigation of about 14,000 acres above station.

Discharge, in cubic feet per second, water year October to September

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*235	185	131	130	105	120	913	1,070	1,820	390	840	196
2	215	185	140	130	105	134	845	1,110	1,670	344	1,730	201
3	208	190	120	135	105	134	*520	914	1,660	302	1,900	195
4	194	190	113	125	100	130	418	893	1,630	278	1,210	190
5	187	195	110	120	95	120	406	914	1,910	263	1,030	185
6	178	200	105	120	95	138	414	865	2,090	245	*770	215
7	172	200	100	120	90	135	344	858	2,240	225	722	240
8	174	200	81	115	90	138	341	*830	2,320	201	716	232
9	169	190	66	110	90	120	332	824	1,850	*215	764	*205
10	161	190	98	105	*95	120	418	1,090	1,700	298	695	260
11	157	180	122	105	105	110	510	1,250	1,710	402	722	260
12	148	180	*111	110	110	120	740	1,620	1,600	506	1,500	196
13	146	175	111	110	105	140	740	2,210	1,500	590	2,460	165
14	144	170	71	105	105	140	851	2,720	1,360	664	1,900	174
15	142	165	68	100	100	130	1,240	2,720	1,260	600	1,450	361
16	142	165	67	*85	100	160	1,540	3,360	*1,230	470	1,050	430
17	146	170	90	90	105	174	1,590	3,660	1,130	550	830	354
18	148	130	120	90	105	235	1,160	4,120	970	482	710	278
19	257	125	125	95	105	374	970	3,480	879	414	600	252
20	525	140	130	100	110	284	949	*3,600	800	370	*570	258
21	430	146	130	110	105	290	758	3,460	728	317	615	311
22	332	161	125	110	105	350	858	3,880	660	287	482	506
23	278	161	115	110	105	287	1,010	4,200	585	*278	430	442
24	248	127	130	105	105	222	1,210	4,240	510	346	378	*386
25	225	165	130	100	110	189	1,260	4,460	*466	347	314	362
26	212	169	130	*105	110	176	921	4,360	446	296	287	474
27	203	131	130	110	110	194	806	4,260	418	278	278	478
28	*198	146	125	110	105	250	812	3,600	378	284	272	510
29	190	161	130	105	120	458	1,270	3,020	358	278	248	434
30	190	142	120	105	----------	674	1,090	2,450	370	293	230	402
31	185	----------	115	105	----------	770	----------	2,090	----------	460	208	----------
Total	6,539	5,034	3,459	3,375	2,995	7,016	25,236	78,128	36,248	11,273	25,911	9,152
Mean	211	168	112	109	103	226	841	2,520	1,208	364	836	305
Ac-ft	12,970	9,980	6,860	6,690	5,940	13,920	50,060	155,000	71,900	22,360	51,390	18,150

Calendar year 1963: Max 3,040 Min 66 Mean 604 Ac-ft 437,400
Water year 1963-64: Max 4,460 Min 66 Mean 586 Ac-ft 425,200

Peak discharge (base, 4,000 cfs).--May 25 (0700) 5,330 cfs (6.23 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 29 to Nov. 19, Sept. 3-5. Stage-discharge relation affected by ice Dec. 17 to Mar. 1, Mar. 4, 5, 7, 9-16.

9-3545. Los Pinos River at La Boca, Colo.
(Locally known as Pine River)

Location.--Lat 37°00'40", long 107°35'55", in S½ sec.15, T.32 N., R.7 W., on downstream end of right abutment of The Denver & Rio Grande Western Railroad Co. bridge at southeast edge of La Boca, 0.1 mile upstream from Spring Creek and 13 miles upstream from mouth.

Drainage area.--510 sq mi, approximately.

Records available.--October 1950 to September 1964. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Datum of gage is 6,143.58 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 182 cfs (131,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,810 cfs Aug. 12 (gage height, 6.05 ft); minimum daily discharge, 25 cfs Dec. 14 (minimum probably occurred on Dec. 14, 30 or Jan. 6 during freezeup).
1950-64: Maximum discharge, 6,400 cfs July 27, 1957 (gage height, 8.95 ft); minimum daily, 14 cfs Apr. 23, 24, 26, 1951. Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made twice a month. Flow regulated by Vallecito Reservoir (capacity, 126,280 acre-ft). Diversions for irrigation of about 33,000 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	50	35	37	50	45	126	61	137	115	241	62
2	60	48	34	40	45	45	115	58	143	118	287	62
3	48	48	34	40	47	50	90	54	129	123	240	56
4	49	49	33	35	40	43	82	49	120	112	250	58
5	58	49	34	37	40	48	107	55	107	118	268	66
6	62	49	34	32	40	50	100	62	104	120	120	78
7	69	48	35	35	28	45	92	56	102	104	102	78
8	69	45	36	33	30	45	110	50	118	107	87	71
9	66	45	37	30	35	45	97	50	110	126	87	100
10	66	45	41	30	40	50	85	56	85	146	87	126
11	76	45	41	30	45	50	78	64	87	167	82	104
12	76	45	36	30	45	55	87	73	92	243	682	94
13	78	44	35	29	42	55	82	71	100	191	513	87
14	80	44	25	28	40	50	80	71	97	170	198	132
15	85	38	27	30	35	55	87	71	104	158	152	177
16	87	35	30	35	37	61	102	73	97	146	134	155
17	85	36	31	40	40	111	107	92	94	143	123	137
18	80	35	32	35	40	120	94	97	94	134	118	104
19	215	35	33	35	40	123	110	80	94	129	82	94
20	312	36	35	38	46	69	97	87	94	115	97	92
21	212	36	35	40	40	66	85	78	94	115	97	137
22	146	38	32	45	40	73	78	69	90	120	97	184
23	112	39	30	45	40	64	87	66	92	110	104	134
24	112	39	32	40	40	64	78	73	94	104	97	120
25	118	39	35	40	40	54	49	76	102	110	118	97
26	104	41	35	42	40	52	40	100	112	100	97	97
27	90	40	35	45	40	55	39	92	126	100	80	94
28	87	39	35	47	35	60	41	90	129	94	66	94
29	85	37	35	50	45	76	54	90	123	100	54	87
30	71	36	30	50	----------	92	66	97	115	94	49	80
31	55	----------	35	50	----------	115	----------	143	----------	140	55	----------
Total	2,982	1,253	1,047	1,173	1,165	1,986	2,545	2,304	3,185	3,972	4,864	3,057
Mean	96.2	41.8	33.8	37.8	40.2	64.1	84.8	74.3	106	128	157	102
Ac-ft	5,910	2,490	2,080	2,330	2,310	3,940	5,050	4,570	6,320	7,880	9,650	6,060

Calendar year 1963: Max 350 Min 25 Mean 103 Ac-ft 74,360
Water year 1963-64: Max 682 Min 25 Mean 80.7 Ac-ft 58,590

Note.--Stage-discharge relation affected by ice Dec. 12 to Mar. 15.

9-3550. Spring Creek at La Boca, Colo.

Location.--Lat 37°00'50", long 107°35'40", in S½ sec.15, T.32 N., R.7 W., on right bank in an excavated channel, a quarter of a mile upstream from mouth and a quarter of a mile east of La Boca.

Drainage area.--58 sq mi, approximately.

Records available.--October 1950 to September 1964. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Altitude of gage is 6,160 ft (from topographic map).

Average discharge.--14 years, 27.4 cfs (19,840 acre-ft per year).

Extremes.--Maximum discharge during year, 580 cfs Aug. 12 (gage height, 4.35 ft); minimum, 1.8 cfs Apr. 14, 23, 24, 28, 29.
1951-64: Maximum discharge, that of Aug. 12, 1964; maximum gage height, 5.98 ft Mar. 9, 1960 (ice jam); minimum daily discharge determined, 1 cfs Feb. 25, 26, 1951, for several days during periods of ice effect in 1960-62.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Part of flow is return waste from irrigation.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 14-18)

Oct. 1 to Aug. 2						Aug. 3 to Sept. 30			
0.6	1.3	1.0	12	2.0	98	0.6	4.5	1.5	51
.7	2.6	1.2	22	2.2	125	.8	10	2.0	100
.8	4.6	1.6	54			1.1	24	2.6	191

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	9.6	5	5	3.5	2.5	3.4	8.4	43	42	43	37
2	27	9.6	5	5	3.5	2.5	5.2	7.0	43	39	70	38
3	26	9.6	5	5	3	2.5	6.1	5.5	44	36	183	39
4	29	9.9	5	4	3	2.5	5.8	4.6	46	37	a 30	35
5	35	9.6	5	4	3	3	4.4	4.4	41	45	a 15	38
6	39	9.2	5	4	3	3	12	4.6	36	44	a 10	41
7	34	8.4	5	4	2.6	3	15	4.6	36	35	a 8	46
8	34	8.4	4	4	2.5	3	12	4.9	36	35	a 7.5	45
9	31	7.9	4.5	3	3	2.5	5.8	6.1	31	44	a 7.5	52
10	32	7.9	4.6	3	3.5	3	5.8	5.5	32	51	a 7	56
11	31	9.2	4.9	2.5	3.5	3	5.2	7.6	32	70	a 7	49
12	32	8.4	4	2	3.5	4	5.5	6.7	33	72	156	46
13	34	8.4	3.5	2	3	3.5	3.2	17	39	56	52	47
14	35	8.8	3	2	3	4.2	2.3	21	39	49	a 20	58
15	35	8.8	3	2	2.5	4.6	2.6	19	35	54	a 12	65
16	38	11	3	a 2	2.5	5.5	3.6	17	33	48	a 8	49
17	45	11	3	a 2	2.5	7	3.6	17	34	47	7.1	42
18	40	10	3	a 2	2.6	10	4.6	16	36	44	6.8	38
19	112	8.8	3.2	a 2	2.8	10	7.0	16	38	42	13	41
20	122	5.2	3.8	2	3.0	8	4.2	20	35	42	15	43
21	35	5.5	4.0	2.5	2.5	6	3.2	21	30	36	19	56
22	20	7.0	3.8	3	2.3	5	2.3	21	33	35	19	53
23	a10	7.9	3.6	2.5	2.5	4.2	2.2	21	34	40	22	38
24	12	7.0	3.2	2	2.5	3.8	2.0	26	32	26	29	35
25	16	7.3	4.0	2	2.5	4.0	9.9	25	31	33	31	35
26	a12	8.4	4.2	2.5	2.5	5.5	3.8	28	32	31	31	34
27	a 8	6.7	4.6	2.7	2.5	4.4	3.4	28	34	31	36	31
28	a 5	6.1	4.2	3	2.5	4.2	2.2	26	39	28	35	31
29	a 4	5.2	4.6	3.5	2.5	3.6	3.4	28	37	25	34	29
30	4.0	5	5	3.5	----------	3.6	6.4	31	39	26	33	28
31	4.6	----------	5	3.5	----------	3.4	----------	43	----------	37	40	----------
Total	969.6	245.8	128.7	92.2	81.8	135.0	156.1	510.9	1,083	1,280	1,006.9	1,275
Mean	31.3	8.19	4.15	2.97	2.82	4.35	5.20	16.5	36.1	41.3	32.5	42.5
Ac-ft	1,920	488	255	183	162	268	310	1,010	2,150	2,540	2,000	2,530

Calendar year 1963: Max 122 Min 1.7 Mean 25.0 Ac-ft 18,100
Water year 1963-64: Max 183 Min 2 Mean 19.0 Ac-ft 13,820

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10-20	0300	2.70	200	8-12	0300	4.35	580
8-3	0430	3.65	410				

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 30 to Dec. 9, Dec. 12-18, Dec. 30 to Jan. 15, Jan. 20 to Feb. 17, Feb. 23 to Mar. 13, Mar. 17-22

9-3551. Navajo Reservoir near Archuleta, N. Mex.

Location.--Lat 36°48'35", long 107°36'35", in SW¼SE¼ sec.18, T.30 N., R.7 W., in gate shaft of outlet works structure near right abutment of Navajo Dam on San Juan River, 5½ miles east of Archuleta and 33 miles east of Farmington.

Drainage area.--3,230 sq mi, approximately.

Records available.--June 1962 to September 1964.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Extremes.--Maximum contents during water year, 510,400 acre-ft June 11 (elevation, 5,965.6); minimum, 325,500 acre-ft Mar. 9 (elevation, 5,927.7)
1962-64: Maximum contents, that of June 11, 1964; minimum, 12,400 acre-ft June 30, 1962.

Remarks.--Reservoir is formed by earth-rock-fill dam, completed in June 1963; storage began June 27, 1962. Capacity, 1,709,000 acre-ft between elevations 5,720 ft (upstream toe of dam) and 6,085 ft (crest of spillway). Usable capacity, 1,036,000 acre-ft above elevation 5,990.0 ft (minimum operating level). Reservoir will not usually be drawn below elevation 5,882.5 ft (sill of intake structure), leaving a minimum pool or dead storage of 175,200 acre-ft. Figures given herein are total contents and are based on daily elevations at 0700. Reservoir is used for irrigation storage, river regulation, desilting, flood control, and recreation.

Cooperation.--Records furnished by Bureau of Reclamation.

Capacity table (elevation, in feet, and contents, in acre-feet)

5,925	314,700	5,950	425,700
5,930	334,900	5,955	451,400
5,935	356,000	5,960	478,500
5,940	378,200	5,965	507,100
5,945	401,300	5,970	537,100

Contents, in thousands of acre-feet, during water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	379.4	376.2	362.1	343.1	332.0	326.6	331.9	373.0	489.2	477.6	408.4	425.4
2	379.5	375.7	361.3	342.5	331.8	326.4	333.9	374.3	491.6	475.2	409.2	425.1
3	379.5	375.4	360.7	341.8	331.6	326.3	335.5	375.5	493.8	473.0	411.1	424.8
4	379.4	374.9	360.1	341.2	331.5	326.2	336.1	376.5	496.3	470.4	411.3	424.6
5	379.2	374.4	359.5	340.6	331.3	326.2	336.7	377.3	499.2	468.6	412.3	424.3
6	379.1	374.0	358.9	340.1	331.1	325.8	337.4	378.3	502.5	465.7	410.5	424.1
7	378.9	373.6	358.1	339.4	330.9	325.6	337.9	379.4	504.9	463.1	409.9	424.1
8	378.8	373.2	357.4	338.7	330.6	325.6	338.4	380.2	507.3	460.8	409.8	424.0
9	378.7	372.7	356.9	338.0	330.4	325.5	338.7	381.1	509.3	457.9	410.8	423.9
10	378.7	372.2	356.1	337.7	330.2	325.5	339.3	381.8	509.8	455.6	411.4	424.5
11	378.4	371.8	355.7	337.3	330.0	325.7	339.8	383.3	510.4	453.9	412.8	424.6
12	377.8	371.3	355.0	337.0	329.8	325.8	340.5	385.0	510.4	452.3	417.3	424.5
13	377.6	370.8	354.4	336.6	329.8	325.9	341.7	387.7	510.2	450.6	422.1	424.1
14	377.2	370.4	353.8	336.4	329.6	325.9	342.9	391.1	509.7	448.9	425.2	424.2
15	376.8	369.9	353.1	336.1	329.4	325.9	344.6	395.8	509.2	447.0	427.1	424.6
16	376.4	369.6	352.3	335.8	329.2	325.8	347.0	400.8	507.9	444.8	427.5	424.9
17	376.1	368.8	351.7	335.4	329.0	325.7	349.8	406.9	506.1	442.9	429.1	425.2
18	375.9	368.4	351.1	335.1	328.7	325.8	352.4	413.5	504.3	440.8	429.8	425.2
19	375.7	367.8	350.6	334.8	328.5	326.0	354.5	420.2	502.8	438.5	430.1	425.1
20	377.1	367.1	350.1	334.7	328.4	326.4	356.0	425.8	500.8	436.0	430.4	425.0
21	378.1	366.6	349.4	334.3	328.3	326.7	357.5	431.9	499.4	433.3	430.2	425.7
22	378.3	366.3	348.9	334.1	328.0	326.9	358.6	437.9	497.4	430.7	429.1	426.0
23	378.5	365.9	348.4	333.9	327.8	327.4	360.0	444.7	495.4	428.2	428.7	426.4
24	378.5	365.3	347.8	333.7	327.7	327.6	361.7	450.6	493.2	425.8	428.3	426.7
25	378.4	364.9	347.1	333.4	327.5	327.7	363.7	457.2	491.0	423.4	427.8	426.9
26	378.3	364.5	346.4	333.2	327.4	327.8	365.7	463.1	488.9	421.1	426.8	427.2
27	378.2	364.0	346.0	333.0	327.1	327.8	366.8	469.2	486.5	418.6	426.4	427.4
28	377.8	363.4	345.3	332.7	327.0	327.8	368.0	473.9	484.2	415.9	426.3	427.9
29	377.4	362.9	344.7	332.6	326.8	328.0	369.2	478.4	482.1	412.9	426.2	428.1
30	377.1	362.4	344.2	332.4	----------	328.8	371.7	483.1	479.7	410.9	426.0	428.1
31	376.6	----------	343.5	332.2	----------	330.3	----------	486.1	----------	408.9	425.7	----------
(†)	5,939.6	5,936.5	5,932.1	5,929.4	5,928.0	5,928.9	5,938.6	5,961.4	5,960.2	5,946.6	5,950.0	5,950.5
(‡)	-2.7	-14.2	-18.9	-11.3	-5.4	+3.5	+41.4	+114.4	-6.4	-70.8	+16.8	+2.4

† Elevations, in feet, at 0700 on last day of month.
‡ Change in contents, in thousands of acre-feet.

9-3555. San Juan River near Archuleta, N. Mex.

Location.--Lat 36°48'30", long 107°42'00", in SW¼ sec.17, T.30 N., R.8 W., on right bank half a mile upstream from Gobernador Canyon, 1 mile north of Archuleta, and 6.8 miles downstream from Navajo Dam. Prior to Dec. 29, 1959, at site 4.6 miles upstream.

Drainage area.--3,260 sq mi, approximately.

Records available.--December 1954 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,655 ft (from river-profile survey). Prior to Dec. 29, 1959, at site 4.6 miles upstream at datum 50 ft higher.

Average discharge.--9 years, 1,111 cfs (804,330 acre-ft per year).

Extremes.--Maximum discharge during year, 2,080 cfs June 19 (gage height, 5.52 ft); minimum, 21 cfs Aug. 5.
1954-64: Maximum discharge, 18,900 cfs July 27, 1957 (gage height, 11.00 ft, site and datum then in use); minimum, 8 cfs, Feb. 28, 1963.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are fair and those below 150 cfs, which are poor. Discharge measurements generally made 2 to 4 times a month. Flow completely regulated at Navajo Dam (see preceding page) except for minor inflow from 30 sq mi intervening drainage area. Diversions above station for irrigation of about 47,000 acres. Archuleta ditch bypasses gage on left bank for irrigation below, but part or all of flow may be wasted back to River. No flow was observed during the water year.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 8 to Sept. 30)

3.1	25	4.0	375
3.2	40	4.5	800
3.4	85	5.0	1,340
3.6	150	5.6	2,150

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	349	a 410	389	403	239	228	239	424	970	1,670	1,780	424
2	349	a 410	389	403	239	228	239	417	555	1,670	1,750	431
3	349	a 410	389	403	239	228	239	417	323	1,630	1,760	431
4	356	a 410	389	396	244	228	239	410	316	1,640	1,470	431
5	356	a 410	389	396	228	228	239	410	316	1,660	449	438
6	362	a 410	389	396	228	228	239	410	323	1,640	1,720	438
7	362	a 410	389	396	234	228	239	410	697	1,640	1,380	445
8	356	a 410	389	396	239	228	239	410	1,240	1,670	706	461
9	d360	a 410	389	331	228	217	239	410	960	1,800	445	485
10	d370	a 400	382	228	228	34	239	410	1,150	1,800	445	431
11	d380	a 400	382	228	228	31	239	410	1,520	1,800	461	438
12	d380	a 400	382	228	228	30	239	410	1,630	1,800	507	438
13	d400	396	382	234	228	109	239	410	1,640	1,790	438	438
14	d400	396	389	239	228	195	244	410	1,670	1,790	438	438
15	403	396	389	239	228	234	244	410	1,660	1,790	438	438
16	396	396	389	244	228	234	244	410	1,890	1,790	438	438
17	396	396	389	244	228	234	244	410	2,030	1,790	445	438
18	403	396	389	244	234	234	250	410	2,020	1,780	453	438
19	d400	396	389	244	228	234	250	410	1,830	1,780	438	438
20	d410	396	396	239	228	234	244	410	1,670	1,790	431	438
21	d410	396	389	244	228	234	244	417	1,680	1,790	756	461
22	d410	396	389	244	228	234	244	469	1,690	1,790	1,200	438
23	d410	396	389	244	228	234	244	665	1,690	1,750	860	431
24	d410	396	389	239	222	234	244	840	1,730	1,790	773	438
25	d410	396	389	239	222	234	244	850	1,730	1,760	726	445
26	d410	389	396	239	222	234	244	960	1,690	1,760	1,060	424
27	d410	389	396	239	222	234	244	1,190	1,640	1,780	731	431
28	d410	389	396	239	222	234	244	1,320	1,680	1,800	424	431
29	d410	389	396	234	222	234	244	498	1,680	1,830	424	445
30	d410	389	396	234	----------	239	304	356	1,670	1,830	424	445
31	417	----------	396	239	----------	239	----------	1,280	----------	1,790	424	----------
Total	12,054	11,983	12,080	8,765	6,648	6,428	7,327	17,073	41,290	54,390	24,194	13,184
Mean	389	399	390	283	229	207	244	550	1,376	1,755	780	439
Ac-ft	23,910	23,770	23,960	17,390	13,190	12,750	14,530	33,860	81,900	107,900	48,000	26,150

Calendar year 1963: Max 1,290 Min 33 Mean 320 Ac-ft 231,900
Water year 1963-64: Max 2,030 Min 30 Mean 589 Ac-ft 427,300

a No gage-height record.
d Doubtful gage-height record.

9-3570. San Juan River at Bloomfield, N. Mex.

Location.--Lat 36°42'00", long 107°59'10", in NW¼ sec.27, T.29 N., R.11 W., on downstream end of bridge pier on State Highway 44 three-quarters of a mile south of Bloomfield, 3 miles upstream from Kutz Canyon, and 10 miles downstream from Canyon Largo.

Drainage area.--5,410 sq mi, approximately.

Records available.--January 1910 to September 1911, August 1927 to December 1931, November 1955 to January 1964 (discontinued). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,405 ft (from river-profile map). Prior to Apr. 3, 1910, staff gage and Apr. 3, 1910, to Oct. 3, 1911, water-stage recorder, at same site at different datum. July 27, 1927, to Dec. 19, 1931, water-stage recorder at same site at different datum.

Average dicharge.--12 years (1910-11, 1927-31, 1956-63), 1,440 cfs (1,043,000 acre-ft per year).

Extremes.--Maximum discharge during period October to January, 2,190 cfs Oct. 19 (gage height, 5.35 ft); minimum, 220 cfs Oct. 1, 7. 1910-11, 1927-31, 1955-64: Maximum discharge determined, 20,500 cfs July 27, 1957; maximum gage height, 11.50 ft Aug. 11, 1929, site and datum then in use (discharge not determined); minimum daily discharge determined, 50 cfs Sept. 15, 1956.
Maximum flood known reached a stage of 12 ft Oct. 6, 1911, datum then in use (discharge, 80,000 cfs, estimated). Another major flood occurred Sept. 6, 1909.

Remarks.--Records poor. Since June 1962 flow can be substantially controlled by operation of Navajo Reservoir. Diversions above station for irrigation of about 52,000 acres, 2,000 of which is below station. Citizens ditch bypasses gage on right bank, observed discharges, in cfs, for period are as follows: Oct. 15, 31 cfs; Nov. 13, 24 cfs. Hammond Main Canal bypasses gage on left bank, observed discharge, in cfs, for period is as follows: Oct. 15, 7.4 cfs. The bypass flow is not included in the record. Land formerly irrigated by Kutz Canyon diversion is now irrigated by Hammond Main Canal.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	260	402	360	402								
2	260	402	370	402								
3	280	402	380	402								
4	280	390	380	402								
5	280	380	380	390								
6	280	380	370	400								
7	280	380	370	414								
8	280	380	370	410								
9	280	370	370	350								
10	*300	360	370	-								
11	324	360	*379	-								
12	324	357	370	--								
13	324	368	370	-								
14	346	379	370	-								
15	*357	368	370	-								
16	357	368	370	-								
17	313	370	370	-								
18	346	370	370	-								
19	790	379	370	-								
20	770	370	370	-								
21	510	370	370	-								
22	474	370	370	-								
23	426	370	380	-								
24	402	370	390	-								
25	380	370	390	-								
26	380	370	390	-								
27	380	360	402	-								
28	380	350	402	-								
29	*380	350	402	-								
30	379	350	402	-	----------							
31	379	----------	390	-	----------		----------		----------			----------
Total	11,501	11,165	11,717	-								
Mean	371	372	380	-								
Ac-ft	22,810	22,150	23,240	-								

Calendar year 1963: Max 1,240 Min 60 Mean 274 Ac-ft 198,400
Water year 1963-64: Max - Min - Mean - Ac-ft -

Peak discharge (base, 6,000 cfs).--Flow regulated since June 1962.

* Discharge measurement made on this day.
Note.--Doubtful gage-height record, Oct. 25-29, Nov. 5-10, 20, 21; stage-discharge relation indefinite Nov. 17, 18, Nov. 22 to Dec.10, Dec. 12-23.

9-3635. Animas River near Cedar Hill, N. Mex.

Location.--Lat 37°02'15", long 107°52'25", in Sec.7, T.32 N., R.9 W., on right bank three-quarters of a mile downstream from Florida River, 2.5 miles upstream from Colorado-New Mexico State line, and 8.5 miles north of Cedar Hill.

Drainage area.--1,090 sq mi, approximately.

Records available.--October 1933 to September 1964. Monthly discharge only for October and November 1933, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,960 ft (from topographic map). Prior to Sept. 14, 1937, at datum between 1.52 and 1.36 ft higher. Sept. 15, 1937, to Sept. 30, 1946, at datum 1.36 ft higher.

Average discharge.--31 years, 890 cfs (644,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,500 cfs May 24 (gage height, 7.16 ft); minimum, 70 cfs Feb. 21.
1933-64: Maximum discharge, 13,100 cfs June 19, 1949 (gage height, 11.45 ft); minimum daily, 90 cfs Jan. 21, 1935.
Maximum flood known occurred Oct. 5 or 6, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions for irrigation of about 20,000 acres above station. During water years 1944-49, Twin Rocks Canal diverted above station for irrigation below. Possible regulation by Lemon Dam on Florida River (capacity, approx. 20,000 acre-ft), storing started in November 1963.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-6, May 13-16)

Oct. 1 to Feb. 24		Feb. 25 to May 27				May 28 to Sept. 30			
3.5	126	3.3	118	5.0	1,200	3.3	210	4.8	1,160
3.6	150	3.5	173	6.0	2,500	3.5	285	5.5	1,900
3.8	213	3.9	330	6.9	3,980	3.9	490	6.2	2,840
4.2	415	4.5	760			4.3	750		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	290	247	178	180	160	147	280	565	1,320	785	755	265
2	255	226	182	185	160	144	325	688	1,260	778	1,020	245
3	234	226	178	192	150	150	268	616	1,310	715	750	238
4	234	230	182	185	160	139	233	530	1,290	687	790	220
5	242	226	178	172	160	131	230	495	1,660	652	757	220
6	230	210	178	150	160	139	252	481	1,660	610	666	217
7	234	182	180	160	150	136	230	439	2,080	562	631	220
8	230	210	165	a140	150	136	219	390	2,280	526	586	228
9	217	206	170	a130	150	118	a210	372	1,640	514	550	242
10	213	206	167	a140	150	141	a200	404	1,790	502	532	265
11	210	199	175	a150	150	136	a200	640	2,010	514	567	277
12	206	196	170	a150	160	131	a210	896	2,060	592	952	249
13	210	192	160	a130	150	139	a240	1,160	1,980	550	1,280	242
14	217	196	130	a130	150	141	a270	1,530	1,720	538	1,340	285
15	217	217	150	a150	130	134	a350	1,800	1,800	526	932	380
16	199	305	160	a160	140	139	a450	2,220	1,950	514	828	405
17	196	315	170	170	140	164	624	2,500	1,720	538	778	395
18	196	260	170	180	150	179	586	2,770	1,410	526	687	370
19	362	238	170	200	160	192	474	2,820	1,260	484	586	350
20	441	226	170	190	160	164	390	3,360	1,320	415	562	345
21	355	210	180	200	150	167	360	3,660	1,330	385	586	390
22	340	217	175	210	150	170	372	3,620	1,260	360	496	454
23	320	210	170	220	150	161	523	3,800	1,130	365	430	430
24	290	196	170	170	145	173	640	3,870	1,120	365	390	436
25	270	202	170	160	139	158	586	3,800	1,080	380	345	410
26	255	206	170	180	141	158	481	3,840	989	375	321	415
27	251	196	170	190	147	150	397	3,760	900	326	303	466
28	242	202	175	200	150	153	360	2,740	884	345	340	466
29	242	199	178	160	156	170	572	2,240	868	335	308	448
30	251	188	180	150	----	205	632	1,770	820	365	269	420
31	255	----	180	160	----	240	----	1,500	----	538	257	----
Total	7,904	6,539	5,301	5,244	4,368	4,805	11,164	59,276	43,901	15,667	19,594	9,993
Mean	255	218	171	169	151	155	372	1,912	1,463	505	632	333
Ac-ft	15,680	12,970	10,510	10,400	8,660	9,530	22,140	117,600	87,080	31,080	38,860	19,820

Calendar year 1963: Max 3,440 Min 120 Mean 600 Ac-ft 434,100
Water year 1963-64: Max 3,870 Min 118 Mean 529 Ac-ft 384,300

Peak discharge (base, 4,000 cfs).--May 24 (1100) 4,500 cfs (7.16 ft).

a No gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 7-9, 12-28, Dec. 30 to Jan. 1, Jan. 6, 7, Jan. 17 to Feb. 20, Feb. 22-24, 28.

9-3645. Animas River at Farmington, N. Mex.

Location.--Lat 36°43'20", long 108°12'00", in SE¼ sec.16, T.29 N., R.13 W., on left bank at bridge on former State Highway 17, 0.6 mile southeast of Farmington and 1.3 miles upstream from mouth.

Drainage area.--1,360 sq mi, approximately.

Records available.--June 1904 to October 1905 (published as "near Farmington"). September 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,278 ft (from bridge-profile plans). Prior to Nov. 1, 1905, chain gage at old bridge a quarter of a mile upstream at different datum. Sept. 17, 1912, to Oct. 4, 1938, water-stage recorder at site 0.6 mile downstream at lower datums (datum lowered 2.0 ft Aug. 15, 1927, and raised 0.2 ft Dec. 16, 1929).

Average discharge.--53 years, 941 cfs (681,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,230 cfs May 24 (gage height, 5.50 ft); minimum, 57 cfs Sept. 8.
1904-5, 1912-64: Maximum discharge, about 25,000 cfs June 29, 1927 (gage height, 8.5 ft, site and datum then in use), from rating curve extended above 10,000 cfs by logarithmic plotting; minimum daily, 2.4 cfs Sept. 5, 1956.
Maximum flood known occurred Oct. 6, 1911, when a stage of about 16.5 ft was reached (present site and datum). Flood of Sept. 6, 1909, reached a stage of 11.1 ft, 1904-5 site and datum (discharge, about 19,000 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made 2 to 3 times a month. Diversions for irrigation of about 30,000 acres above station.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 29 to Aug. 31, Sept. 16-30)

2.7	43	4.0	880
2.9	88	4.5	1,680
3.1	155	5.0	2,800
3.5	380	5.4	3,900

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	191	285	186	168	160	164	222	309	1,160	498	700	80
2	155	279	173	168	168	164	244	334	1,000	466	858	76
3	140	261	168	164	168	173	250	388	980	466	700	80
4	118	255	168	168	151	164	211	303	1,020	389	562	73
5	103	255	168	168	160	148	200	291	1,190	389	642	63
6	106	228	168	136	164	164	233	250	1,400	354	474	61
7	106	244	164	140	155	155	228	191	1,620	340	442	61
8	103	191	160	148	151	151	206	168	1,980	303	354	59
9	106	222	178	115	155	151	191	144	1,530	274	347	66
10	94	222	211	118	173	144	173	115	1,330	237	334	76
11	97	216	186	160	160	144	168	144	1,680	227	258	109
12	106	211	182	140	182	148	173	334	1,750	291	909	112
13	122	200	164	120	178	148	173	570	1,600	340	1,000	100
14	125	191	160	110	178	151	196	964	1,400	274	1,300	112
15	133	196	140	130	155	151	216	1,250	1,500	274	968	200
16	140	250	164	140	148	144	238	1,550	1,600	269	680	261
17	144	303	186	150	160	155	380	1,930	1,400	274	570	273
18	136	291	182	170	151	178	478	2,380	1,200	310	458	261
19	253	255	182	190	178	196	420	2,500	950	274	347	233
20	580	233	178	180	191	186	315	2,880	1,000	218	285	216
21	444	228	182	200	168	182	285	3,250	1,000	182	297	250
22	396	228	173	211	151	186	238	3,280	900	167	269	354
23	360	216	178	228	164	182	291	3,330	850	144	218	348
24	322	211	173	200	155	196	374	3,640	800	152	174	341
25	303	211	178	155	160	200	436	3,610	760	163	138	328
26	291	211	178	178	155	173	367	3,670	730	222	128	309
27	279	196	173	206	144	168	279	3,900	660	171	122	341
28	285	196	178	211	151	164	222	2,800	588	125	118	348
29	279	200	173	173	168	155	238	2,080	597	138	128	334
30	273	191	168	151	----------	178	404	1,680	579	152	112	309
31	279	----------	173	155	----------	206	----------	1,330	----------	182	99	----------
Total	6,569	6,876	5,395	5,051	4,702	5,169	8,049	49,565	34,754	8,265	13,991	5,834
Mean	212	229	174	163	162	167	268	1,599	1,158	267	451	194
Ac-ft	13,030	13,640	10,700	10,020	9,330	10,250	15,960	98,310	68,930	16,390	27,750	11,570

Calendar year 1963: Max 2,990 Min 31 Mean 487 Ac-ft 352,800
Water year 1963-64: Max 3,900 Min 59 Mean 421 Ac-ft 305,900

Peak discharge (base, 4,000 cfs).--May 24 (1800) 4,230 cfs (5.50 ft).

Note.--No gage-height record June 12-25; stage-discharge relation affected by ice Jan. 11-24.

9-3650. San Juan River at Farmington, N. Mex.

Location.--Lat 36°43'25", long 108°13'30", in SE¼ sec.17, T.29 N., R.13 W., on left bank 360 ft downstream from highway bridge, 4,000 ft downstream from Animas River and 1 mile west of Farmington.

Drainage area.--7,240 sq mi, approximately.

Records available.--June to December 1904, January 1905 to September 1906 (gage heights and discharge measurements only; discharge records for January to December 1905, published in WSP 175, have been found to be unreliable and should not be used), September 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,230.37 ft above mean sea level, datum of 1929. June 19, 1904, to May 10, 1906, wire-weight gage at site 1½ miles downstream at different datum. May 11 to Sept. 22, 1906, chain gage and Sept. 19, 1912, to July 2, 1918, staff gage, at site half a mile upstream at different datums. Nov. 1, 1921, to Nov. 18, 1933, water-stage recorder at site 360 ft upstream at datum 1.04 ft higher prior to October 1932, and 0.53 ft higher thereafter.

Average discharge.--52 years (1912-64), 2,497 cfs (1,805,000 acre-ft per year).

Extremes.--Maximum discharge during year, 13,700 cfs Aug. 12 (gage height, 5.70 ft); minimum 200 cfs Mar. 11.
1912-64: Maximum discharge, about 68,000 cfs June 29, 1927 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 37,000 cfs; minimum daily, 27 cfs Aug. 22, 1939.
Maximum flood known occurred Oct. 6, 1911. Flood of Sept. 6, 1909, reached a stage of about 12.3 ft, site and datum then in use.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Since June 1962 flow is partly controlled by operation of Navajo Reservoir. Discharge measurements generally made 2 to 3 times a month. Diversions above station for irrigation of about 86,000 acres, 4,000 of which is irrigated by Farmers Mutual ditch (see table below) which diverts entirely by diversion from San Juan River below this station.

Discharge in cubic feet per second, of Farmers Mutual ditch, water year October 1963 to September 1964

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
Oct. 14	103	Jan. 31	0	Mar. 31	0	Apr. 30	159	June 26	138	Aug. 26	112
31	106	Feb. 18	0	Apr. 6	0	May 15	163	30	123	31	83
Dec. 2	94	28	103	15	*114	June 1	122	July 13	146	Sept. 14	*112
31	0	Mar. 10	0	24	167	15	*154	Aug. 14	160	30	38

* Result of discharge measurement.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	424	623	497	600	396	300	454	448	1,980	1,900	4,170	350
2	380	654	497	600	396	300	478	602	1,640	1,820	4,140	344
3	374	654	497	600	402	308	490	630	1,210	1,850	4,350	344
4	353	646	497	590	358	308	454	560	1,210	1,680	2,400	362
5	327	630	497	590	369	295	424	518	1,410	1,620	1,630	368
6	322	602	484	560	380	295	478	472	1,620	1,720	a1,800	386
7	327	602	484	560	380	300	402	413	1,820	1,700	2,180	410
8	308	567	466	550	380	300	374	402	2,960	1,650	1,620	404
9	308	567	472	500	396	353	369	385	2,390	1,730	1,150	461
10	348	560	484	400	436	332	343	358	2,070	1,700	930	454
11	408	560	484	350	436	218	332	358	2,960	1,720	870	422
12	413	553	466	400	442	215	318	478	3,400	1,790	6,820	428
13	424	574	435	380	413	215	295	742	3,340	2,500	2,290	440
14	454	546	455	370	413	265	300	1,170	3,180	1,870	1,900	447
15	436	553	445	380	385	348	295	1,560	3,080	1,930	1,820	545
16	436	560	450	400	374	374	308	1,980	3,300	1,840	1,260	612
17	430	638	450	430	380	408	402	2,530	3,360	1,780	a1,000	620
18	430	654	460	478	385	436	560	2,880	3,060	1,780	a900	596
19	777	595	466	478	413	442	525	2,920	2,740	1,760	a800	588
20	1,480	581	497	497	424	424	419	3,200	2,450	1,730	a700	566
21	906	567	532	490	385	408	374	3,700	2,520	1,760	612	761
22	838	595	539	504	348	419	332	3,680	2,530	1,720	1,020	840
23	758	588	560	490	343	385	348	3,790	2,380	1,760	1,030	767
24	670	546	560	472	322	408	419	4,380	2,290	2,180	880	716
25	638	567	567	460	318	430	478	4,350	2,230	2,220	422	816
26	630	595	574	436	308	396	419	4,400	2,180	1,890	758	724
27	623	581	574	442	295	385	338	4,880	2,040	2,080	803	732
28	630	539	560	460	286	374	282	4,000	1,850	2,070	380	724
29	630	539	560	454	295	369	300	2,830	1,920	1,740	332	758
30	623	511	550	419	----------	385	419	1,810	1,960	1,880	386	692
31	623	----------	560	402	----------	424	----------	1,720	----------	2,400	374	----------
Total	16,728	17,547	15,619	14,742	10,858	10,819	11,729	62,146	71,080	57,770	49,727	16,677
Mean	540	585	504	476	374	349	391	2,005	2,369	1,864	1,604	556
Ac-ft	33,180	34,800	30,980	29,240	21,540	21,460	23,260	123,300	141,000	114,600	98,630	33,080

Calendar year 1963: Max 3,140 Min 150 Mean 720 Ac-ft 521,200
Water year 1963-64: Max 6,820 Min 215 Mean 971 Ac-ft 705,100

Peak discharge (base, 8,000 cfs).--Aug. 1 (0200) 9,000 cfs (4.90 ft); Aug. 12 (0900) 13,700 cfs (5.70 ft).

a No gage-height record.
Note.--Stage-discharge relation affected by ice Dec. 13-17, Dec. 30 to Jan. 17.

9-3675. La Plata River near Farmington, N. Mex.

Location.--Lat 36°44'30", long 108°14'45", in SW¼ sec.7, T.29 N., R.13 W., on right bank at downstream end of old bridge abutment, 40 ft upstream from former highway bridge, 1,300 ft upstream from bridge on U. S. Highway 550, 1,800 ft upstream from mouth, and 2½ miles northwest of Farmington.

Drainage area.--583 sq mi.

Records available.--March 1938 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,215 ft (from river-profile map).

Average discharge.--26 years, 24.9 cfs (18,030 acre-ft per year).

Extremes.--Maximum discharge during year, 1,140 cfs Aug. 5 (gage height, 4.95 ft); no flow July 2-6, 18.
1938-64: Maximum gage height, 6.03 ft Sept. 10, 1939 (discharge not determined); no flow for long periods.
Major floods occurred Sept. 5 or 6, 1909, and Oct. 5 or 6, 1911.

Remarks.--Records poor. Discharge measurements or field estimates generally made 2 to 3 times a month. Diversions for irrigation of about 24,000 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.4	0.2	1.5	3	1.8	0.7	1	0.2	0.1	146	0.3
2	.1	.6	.2	2	3.5	1.7	1.0	1	.2	0	122	.3
3	.2	.8	.2	2	4	1.4	.8	1	.2	0	5	.3
4	.2	1	.2	1.5	3	1.4	.7	.7	.4	0	3	.4
5	.2	1.4	.2	1.5	2	1.7	1.6	.4	.3	0	205	.4
6	.2	1.4	.2	1	2	.9	7.5	.2	.3	0	21	.4
7	.1	1.4	.4	1	1	1.3	3.8	.2	.4	.1	6	.4
8	.2	1.2	.4	.8	.4	1.5	2	.4	.3	.1	4	.4
9	.2	1.2	.5	.8	.4	1.1	1	.2	.1	.1	2	.7
10	.2	1.2	.4	.6	.6	1.3	.8	.1	.1	.1	45	.5
11	.2	1	.2	.6	.8	1.0	.7	.2	.3	.2	6.2	.4
12	.1	1	.1	.4	2.2	1.2	.6	.2	.3	2.7	147	.4
13	.1	1	.1	.4	4.0	1.0	.6	.2	.3	.2	32	.6
14	.2	1	.1	.2	2.8	1.0	.5	.2	.2	9.7	116	1.8
15	.2	1.3	.2	.2	3.2	1.0	.5	.2	.2	.4	13	5.2
16	.2	1.5	.2	.2	4.2	.8	.8	1.1	.2	.2	5.9	3.0
17	.2	1.2	.2	2.5	3.8	.8	.8	.3	.2	.2	4.0	.8
18	.3	1.0	.2	2.5	3.3	.7	6.0	.3	.3	0	2.5	.6
19	50	1.5	.3	3	3.0	.7	2	.3	.3	.2	1	.6
20	25	.6	.3	2.5	2.4	.7	1	.2	.3	.2	.8	.7
21	5	.9	.3	3	2.1	.7	.7	.2	.3	.2	.8	25
22	3	.6	.2	3.5	2.1	.6	.5	.3	.2	.1	.6	11
23	2	.4	.2	4	2.1	.7	.3	.5	.2	.1	.6	1.4
24	1	.5	.4	3	2.0	1.5	.3	.6	.1	.3	.4	.6
25	1	.6	.6	2.5	2.1	1.0	.3	.4	.1	.2	.4	.6
26	.8	.6	.6	3	2.1	1.0	.4	.4	.1	.2	.4	.6
27	.6	.6	.8	3	2.0	.8	.3	.2	.1	.2	.4	.6
28	.4	.4	1	2.5	1.5	.7	.4	.2	.1	.4	.4	.5
29	.4	.3	1	2	1.7	.7	5.8	.2	.1	.2	.4	.6
30	.4	.2	1	2	----------	.7	1	.2	.1	.2	.3	.7
31	.4	----------	1	2.5	----------	.6	----------	.2	----------	2.3	.3	----------
Total	93.2	26.8	11.9	56.2	67.3	32.0	43.4	11.8	6.5	18.9	892.4	59.8
Mean	3.01	0.89	0.38	1.81	2.32	1.03	1.45	0.38	0.22	0.61	28.8	1.99
Ac-ft	185	53	24	111	133	63	86	23	13	37	1,770	119

Calendar year 1963: Max 125 Min 0 Mean 5.14 Ac-ft 3,730
Water year 1963-64: Max 205 Min 0 Mean 3.61 Ac-ft 2,620

Note.--No gage-height record Oct. 1, Oct. 21 to Nov. 14, Dec. 4-8, Apr. 8-14, 19-23, Apr. 30 to May 3, July 29, 30, Aug. 3, 4, 7-9, 19-25. Stage-discharge relation affected by ice Dec. 15 to Feb. 11.

9-3680. San Juan River at Shiprock, N. Mex.

Location.--Lat 36°47'35", long 108°43'55", in SW¼ sec.22, T.30 N., R.18 W., on left bank 3 miles west of Shiprock and 6 miles downstream from Chaco River.

Drainage area.--12,900 sq mi, approximately.

Records available.--January to October 1911, February 1927 to September 1964. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,848.68 ft above mean sea level (river-profile survey). Prior to Apr. 6, 1922, chain gage and Apr. 7, 1922, to Oct. 25, 1933, water-stage recorder, at site 3 miles upstream at different datum. Oct. 26, 1933, to Sept. 30, 1936, water-stage recorder at present site at datum 3.31 ft higher and Oct. 1, 1936, to Sept. 30, 1952, at datum 1.77 ft higher. Supplementary water-stage recorders all at gage datum, 400 ft downstream since Oct. 26, 1938 (at datum 1.00 ft higher prior to July 24, 1939); 400 ft upstream since Dec. 19, 1942 (at datum 1.77 ft higher prior to Dec. 30, 1953). Records compiled from either of 2 gages.

Average discharge.--38 years (1926-64) 2,289 cfs (1,657,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,000 cfs Aug. 12 (gage height, 6.80 ft); minimum, 155 cfs Aug. 31.
1927-64: Maximum discharge, about 80,000 cfs Aug. 11, 1929 (gage height, 5.7 ft, site and datum then in use); minimum daily, 3 cfs Aug. 25, 26, 1939.
Maximum flood known occurred Oct. 6, 1911, and reached a stage of 22 ft, site and datum then in use.

Remarks.--Records fair. Discharge measurements generally made 4 times a month except during extreme winter period. Since 1962 flow partly regulated by Navajo Reservoir (see No. 3551). Diversions for irrigation of about 118,000 acres above station. Ungaged canals bypass station on both right and left bank, though some of bypass flow is returned to river below gage.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	420	607	600	600	431	344	455	315	2,000	1,680	6,200	a 230
2	293	614	588	600	431	340	486	364	1,650	1,620	7,000	a 220
3	248	628	576	607	431	350	540	510	1,290	1,600	5,420	a 200
4	262	614	a 560	600	415	333	515	478	1,070	1,620	3,280	a 200
5	218	600	a 560	594	399	322	478	391	1,020	1,620	2,550	a 200
6	176	594	a 540	580	431	322	505	354	1,350	1,600	1,610	a 210
7	169	570	a 540	580	391	336	555	322	1,360	1,570	1,900	a 210
8	172	546	a 540	575	379	347	435	284	2,400	1,480	1,240	213
9	176	552	546	550	387	368	406	255	2,850	1,520	900	224
10	186	564	558	515	403	368	280	203	1,810	1,700	719	308
11	214	552	576	375	407	305	291	153	2,200	1,690	621	252
12	270	540	558	431	403	270	280	171	3,000	1,820	6,540	277
13	280	540	522	415	407	255	291	386	3,250	2,620	3,290	284
14	293	528	522	415	411	218	280	606	3,120	2,020	2,450	316
15	320	504	540	407	399	274	270	946	2,800	1,880	1,760	1,020
16	330	540	528	455	419	344	243	1,240	2,900	1,800	1,310	780
17	316	600	558	500	391	340	213	1,920	3,300	1,700	1,120	719
18	316	691	576	510	391	340	396	2,360	3,080	1,710	900	663
19	486	640	576	550	391	358	515	2,600	2,800	1,700	691	649
20	1,500	620	588	525	411	379	402	2,680	2,320	1,600	598	642
21	940	600	594	550	419	368	274	3,050	2,360	1,570	534	712
22	852	600	614	550	375	361	a 240	3,280	2,340	1,550	740	2,190
23	820	580	628	545	387	368	a 220	3,500	2,250	1,510	1,000	1,380
24	719	580	621	482	387	451	a 240	3,800	2,140	1,580	684	1,090
25	670	600	614	460	395	478	291	4,010	2,120	2,400	576	1,040
26	642	600	614	455	354	460	a 350	4,220	2,000	1,880	417	1,320
27	642	600	607	478	340	427	a 250	4,700	1,870	2,760	588	1,120
28	642	a 600	607	491	336	439	a 210	4,220	1,800	2,090	444	836
29	642	621	607	486	347	415	a 200	3,370	1,740	1,760	218	804
30	614	614	600	447	---	415	240	2,230	1,720	1,800	206	740
31	614	---	600	431	---	427	---	1,640	---	2,770	224	---
Total	14,442	17,639	17,858	15,759	11,468	11,122	10,351	54,558	65,910	56,220	55,730	19,049
Mean	466	588	576	508	395	359	345	1,760	2,197	1,814	1,798	635
Ac-ft	28,640	34,990	35,420	31,260	22,750	22,060	20,530	108,200	130,700	111,500	110,500	37,780

Calendar year 1963: Max 2,920 Min 51 Mean 665 Ac-ft 481,600
Water year 1963-64: Max 7,000 Min 153 Mean 957 Ac-ft 694,300

Peak discharge (base, 8,500 cfs).--Aug. 1 (0900) 13,500 cfs (6.70 ft); Aug. 12 (1600) 14,000 cfs (6.80 ft).

a No gage-height record.

9-3860.5 Largo Creek near Mangas, N. Mex.

Location.--Lat 34°08'30", long 108°30'05", in SW¼ sec.10, T.2 S., R.16 W., on right bank at El Caso Ranch, half a mile upstream from Sawmill Canyon, 10½ miles southwest of Mangas, and 14 miles south of Quemado.

Drainage area.--63 sq mi, approximately.

Records available.--September 1959 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,600 ft (from topographic map).

Average discharge.--5 years, 1.08 cfs (783 acre-ft per year).

Extremes.--Maximum discharge during year, 36 cfs Mar. 19 (gage height, 1.25 ft); minimum, 0.07 cfs for many days.
1959-64: Maximum discharge, 258 cfs Feb. 1, 1963 (gage height, 2.65 ft); minimum daily, 0.02 cfs July 25-27, 1961.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.1	0.01	0.5	3.5
.2	.2	.6	5.5
.3	.9	.7	8.2
.4	2.0	.8	12

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.07	0.2	0.2	0.2	0.2	0.1	1.2	0.3	0.4	0.3	1.3	0.09
2	.07	.2	.2	.2	.2	.1	1.0	.2	.4	.3	.2	.09
3	*.07	.2	.2	.2	.1	.2	1.0	.2	.4	.3	.2	.07
4	.07	.2	.2	.2	.1	.1	1.0	.2	.4	.3	.2	.09
5	.07	.2	.2	.2	*.09	.1	1.0	.2	.4	.3	.2	.09
6	.07	.2	.2	.2	.08	.2	1.1	.2	.4	.3	.2	.09
7	.07	.2	.2	.2	.07	.3	1.2	.2	.4	.3	.2	.09
8	.07	.2	.2	.3	.08	.3	.8	.2	.4	.3	.2	.09
9	.07	.2	.2	.2	.1	.2	.6	.2	.4	.5	.2	.1
10	.07	.2	.2	.2	.1	.2	.8	.2	.3	.5	.1	.1
11	.07	.2	*	.1	.2	.2	2.2	.2	.3	.4	.2	* .1
12	.09	.2	.2	.1	.2	.2	2.0	.3	.3	.5	.2	.1
13	.09	.2	.2	.1	.2	*.4	1.2	.3	.3	.5	.2	.1
14	.1	.2	.2	.1	.2	.3	.8	.2	.3	.5	.1	.1
15	.1	.2	.2	.1	.2	.5	.6	.3	.3	.5	.1	.2
16	.1	.2	.2	.1	.1	.6	.6	.3	.3	.3	.1	.1
17	.1	.2	.2	.2	.1	*.5	.4	.3	.3	.3	.1	.1
18	.1	.2	.2	.2	.1	1.2	.4	.3	* .3	.3	.4	.09
19	.2	.2	.2	.2	.1	8.4	.3	.3	.3	.2	.2	.07
20	.2	.2	.2	.2	.1	9.1	.3	.4	.3	*.2	.2	.07
21	.2	.2	.2	.2	.1	7.9	.3	.4	.3	.4	* .1	.07
22	.1	.2	.2	.2	.1	7.2	.3	.4	.3	.2	.1	.2
23	.1	.2	.2	* .2	.1	2.7	.2	.3	.3	.3	.1	.08
24	.1	.2	.2	.2	.1	1.8	.2	.3	.3	.9	.1	* .3
25	.1	.2	.2	.2	.1	1.4	.2	.3	.3	.6	.1	.1
26	.1	.2	.2	.2	.2	.9	.3	.4	.3	.2	.2	.5
27	.1	.2	.2	.2	.1	.8	.2	.4	.3	.2	.2	.7
28	* .1	.2	.2	.2	.1	1.7	.2	.4	.3	.7	.1	.2
29	.1	.2	.2	.2	.1	2.8	.3	.3	.3	2.7	.1	.2
30	.2	.2	.2	.2	----------	2.4	.3	.3	.3	.5	.1	.1
31	.2	----------	.2	.2	----------	1.7	----------	.4	----------	.2	.09	----------
Total	3.25	6.0	6.2	5.6	3.62	54.5	21.0	8.9	9.9	14.0	6.19	5.10
Mean	0.10	0.20	0.20	0.18	0.12	1.76	0.70	0.29	0.33	0.45	0.20	0.17
Ac-ft	6.4	12	12	11	7.2	108	42	18	20	28	12	10

Calendar year 1963: Max 79 Min 0.05 Mean 0.68 Ac-ft 490
Water year 1963-64: Max 9.1 Min 0.07 Mean 0.39 Ac-ft 290

Peak discharge (base, 30 cfs).--Mar. 19 (1100) 36 cfs (1.25 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 9-22, Jan. 24 to Feb. 4, Feb. 6 to Mar. 13.

9-3957. Whitewater Arroyo near Cheechilgeetho, N. Mex.

Location.--Lat 35°15'35", long 108°55'15", in sec.24, T.12 N., R.20 W., on left bank in Navajo Indian Reservation, at highway bridge, 1¼ miles northwest of Cheechilgeetho and 14 miles north of Zuni.

Drainage area.--78.5 sq mi.

Records available.--June to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,670 ft (from topographic map).

Extremes.--Maximum discharge during period, 2,480 cfs July 30 (gage height, 7.80 ft), from rating curve extended above 35 cfs on basis of slope-area measurement at gage height 6.48 ft; no flow for many days.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1									—	0	1.2	0
2									—	0	3.0	0
3									—	0	1.0	0
4									—	0	24	0
5									—	0	4.5	0
6									—	0	.8	0
7									—	0	a .1	0
8									—	0	a 0	0
9									—	*0	a 0	0
10									—	0	a 0	0
11									—	0	.3	*0
12									—	*0	19	0
13									—	a 1	6.9	0
14									—	1.6	*25	0
15									—	1.5	*2.8	0
16									—	0	0	0
17									0	0	0	0
18									0	0	0	0
19									0	0	.1	.1
20									0	.1	0	0
21									0	20	0	0
22									0	0	0	0
23									0	*70	0	0
24									0	*2.4	0	0
25									0	.1	0	1.2
26									*0	.9	.2	.1
27									0	.2	0	.2
28									0	*0	0	a 0
29									0	10	0	a 0
30					----------				0	102	0	a 0
31		----------			----------		----------		----------	39	0	----------
Total									—	248.8	88.9	1.6
Mean									—	8.03	2.87	0.05
Ac-ft									—	493	176	3.2

Calendar year : Max Min Mean Ac-ft
Water year : Max Min Mean Ac-ft

Peak discharge (base, unknown cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-21	1915	4.48	652	7-31	1650	5.43	1,100
7-23	1900	6.38	1,560	8-4	1520	4.67	768
7-30	1730	7.80	2,480	8-12	1930	3.65	365

* Discharge measurement made on this day.
a No gage-height record.

9-4305. Gila River near Gila, N. Mex.

Location.--Lat 33°03'45", long 108°32'20", in NW¼ sec.30, T.14 S., R.16 W., on left bank at Hooker damsite, 1 mile upstream from Mogollon Creek, and 7 miles northeast of Gila.

Drainage area.--1,864 sq mi.

Records available.--April to December 1914, December 1927 to September 1964. Monthly discharge only December 1927 to September 1930, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,655.8 ft above mean sea level (river-profile survey). Prior to Dec. 31, 1928, at site 5 miles upstream at different datum. Dec. 31, 1928, to Jan. 7, 1942, at site 200 ft upstream at same datum.

Average discharge.--37 years (1927-64), 124 cfs (89,770 acre-ft per year).

Extremes.--Maximum discharge during year, 5,160 cfs Sept. 24 (gage height, 8.13 ft); minimum, 18 cfs July 26.
1929-64: Maximum discharge, 25,400 cfs Sept. 29, 1941 (gage height, 17.2 ft, from floodmark), from rating curve extended above 3,900 cfs on basis of velocity-area studies and logarithmic plotting; minimum daily, 17 cfs July 6, 7, 1956.

Remarks.--Records good except those for period of ice effect and those for Sept. 23-30, which are fair. Discharge measurements generally made twice a month. Diversions for irrigation of about 500 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	18	3.5	315	6.0	1,950
2.5	46	4.0	550	7.0	3,100
2.7	84	4.5	800	7.5	3,930
3.0	153	5.0	1,120		

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105	86	74	62	59	57	60	72	42	22	316	28
2	97	88	74	64	59	59	60	72	42	22	164	27
3	88	92	72	64	60	64	70	68	40	22	128	26
4	84	92	72	64	62	64	80	68	37	21	101	28
5	82	88	72	64	60	64	88	68	36	21	86	43
6	80	86	72	62	60	62	84	66	34	19	76	38
7	76	88	70	62	59	62	78	64	32	21	66	37
8	74	97	68	64	59	62	74	62	31	23	62	37
9	72	97	68	b 62	59	62	74	62	31	28	84	51
10	72	92	70	b 59	59	62	78	62	31	27	78	60
11	72	88	74	b 57	60	60	80	62	30	24	62	80
12	70	86	72	b 60	64	60	84	60	28	26	62	86
13	68	86	68	b 59	64	59	86	55	27	30	59	140
14	64	82	66	b 54	64	59	88	53	27	31	53	146
15	62	80	62	b 47	62	59	86	55	26	32	57	201
16	64	78	62	b 47	60	59	86	53	26	30	51	128
17	68	78	62	b 47	59	60	88	51	24	28	51	112
18	72	78	62	b 53	59	62	90	51	24	31	64	99
19	86	76	62	57	59	64	94	50	24	34	62	94
20	103	76	66	59	59	60	94	53	23	48	57	88
21	126	84	66	59	59	60	94	53	23	44	50	80
22	128	86	66	59	59	59	94	53	23	44	48	76
23	119	82	64	60	57	59	90	51	22	40	43	999
24	107	78	64	62	59	59	86	46	23	42	43	3,790
25	103	76	64	60	59	60	84	43	24	40	43	1,720
26	99	76	64	57	59	60	82	43	24	42	40	906
27	94	76	66	59	59	60	80	46	22	38	38	447
28	90	76	66	59	57	59	76	44	22	38	40	283
29	88	74	64	59	57	59	74	43	23	38	37	234
30	88	74	64	59	----------	59	74	43	22	40	36	210
31	86	----------	64	59	----------	59	----------	42	----------	59	31	----------
Total	2,687	2,496	2,080	1,819	1,731	1,873	2,456	1,714	843	1,005	2,188	10,294
Mean	867	832	671	587	597	604	819	553	281	324	706	343
Ac-ft	5,330	4,950	4,130	3,610	3,430	3,720	4,870	3,400	1,670	1,990	4,340	20,420

Calendar year 1963: Max 806 Min 19 Mean 130 Ac-ft 93,780
Water year 1963-64: Max 3,790 Min 19 Mean 85.2 Ac-ft 61,860

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-1	0110	5.07	1,180	9-24	0530	8.13	5,160
9-13	2220	4.50	830				

b Stage-discharge relation affected by ice.

9-4315. Gila River near Redrock, N. Mex.

Location.--Lat 32°43'30", long 108°40'30", in W½ sec.23 T.18 S., R.18 W., on left bank 0.2 mile downstream from Copper Canyon, a quarter of a mile upstream from lower end of box canyon, 4.7 miles northeast of Redrock, and 14 miles downstream from Mangas Creek.

Drainage area.--2,829 sq mi.

Records available.--September 1904 to May 1927, fragmentary (see WSP 1313), July 1927 to September 1955, October 1962 to September 1964. Published as "near Cliff" 1904-7.

Gage.--Water-stage recorder. Altitude of gage is 4,090 ft (planetable survey). Prior to Dec. 31, 1907, staff gage at site 13½ miles upstream at different datum. May 14, 1908, to July 16, 1909, staff gage at site a quarter of a mile downstream at different datum.

Average discharge.--48 years (1905-6, 1908-10, 1912-55, 1962-64), 192 cfs (139,000 acre-ft per year).

Extremes.--Maximum discharge during year, 3,360 cfs Sept. 24 (gage height, 14.03 ft), from rating curve extended above 900 cfs on basis of slope-area measurement at gage height 14.3 ft; minimum, 5.5 cfs Aug. 23.
1905-55, 1962-64: Maximum discharge, 40,000 cfs Sept. 29, 1941 (gage height, 31 ft, from floodmark), computed on basis of known peak flow for station below Blue Creek; minimum daily, 3 cfs Aug. 2-7, 1947.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions for irrigation of about 5,000 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a110	95	84	80	76	68	59	68	34	24	619	15
2	a100	97	88	77	84	70	56	66	42	23	a270	14
3	a90	106	82	74	92	84	57	63	40	22	a130	16
4	*77	106	85	77	85	77	66	67	40	20	*241	18
5	63	101	85	90	85	66	70	64	38	22	133	15
6	46	99	80	87	*84	54	79	60	36	*23	82	15
7	57	a100	82	85	80	60	*77	59	34	24	74	15
8	55	a110	94	90	80	54	63	47	32	23	61	14
9	51	a120	87	90	82	59	63	43	*22	17	85	26
10	54	a120	79	88	80	68	57	45	21	13	87	*126
11	66	a120	79	87	74	59	59	45	16	8.7	92	121
12	63	a115	79	87	77	61	59	45	15	15	*158	149
13	47	*112	*79	87	76	*67	59	45	17	27	76	92
14	45	110	84	84	74	57	66	45	22	*19	58	473
15	54	103	85	87	74	64	63	46	17	*314	61	*242
16	56	103	87	82	76	73	63	47	12	137	45	177
17	66	110	84	*71	76	73	64	51	10	80	40	143
18	*55	104	79	71	*70	74	70	48	*12	74	82	128
19	79	94	84	79	71	70	63	36	*11	79	72	124
20	224	85	85	84	77	60	51	42	11	100	*63	108
21	187	94	90	80	76	44	*50	*38	13	31	49	103
22	162	106	92	80	79	52	50	39	15	31	12	87
23	148	99	88	80	80	68	47	39	13	31	5.8	208
24	130	99	82	76	79	64	50	48	12	42	6.5	2,870
25	112	97	82	73	73	56	57	52	12	54	8.6	1,660
26	106	87	84	79	76	57	63	46	12	80	12	*1,020
27	108	84	71	84	*73	56	74	52	21	139	22	575
28	108	87	64	77	71	54	66	51	22	*54	24	454
29	99	87	68	76	67	54	68	42	24	46	18	364
30	101	84	90	76	----------	63	64	37	28	34	17	308
31	103	----------	80	76	----------	67	----------	36	----------	34	18	----------
Total	2,822	3,034	2,562	2,514	2,247	1,953	1,853	1,512	654	1,640.7	2,721.9	9,680
Mean	91.0	101	82.6	81.1	77.5	63.0	61.8	48.8	21.8	52.9	87.8	323
Ac-ft	5,600	6,020	5,080	4,990	4,460	3,870	3,680	3,000	1,300	3,250	5,400	19,200

Calendar year 1963: Max 950 Min 12 Mean 174 Ac-ft 126,000
Water year 1963-64: Max 2,870 Min 5.8 Mean 90.7 Ac-ft 65,850

Peak discharge (base, 3,000 cfs).--Sept. 24 (1430) 3,360 cfs (14.03 ft).

* Discharge measurement made on this day.
a No gage-height record.

9-4320. Gila River below Blue Creek, near Virden, N. Mex.

Location.--Lat 32°38'55", long 108°50'45", in SE¼SW¼ sec.18, T.19 S., R.19 W., on left bank at head of canyon, 1¼ miles downstream from Blue Creek, 10 miles east of Virden, and 16 miles upstream from New Mexico-Arizona State line.

Drainage area.--3,203 sq mi, excluding Animas River basin.

Records available.--May to November 1914, March to September 1915, July 1927 to September 1964. July 1927 to May 1931 monthly discharge only, published in WSP 1313, computed as sum of flow at Virden Bridge, 8½ miles downstream, and in Sunset Canal. Published as Gila River near Duncan, Ariz., 1914-15 and as Gila River at Fuller's Ranch, near Duncan, Ariz. 1931-38.

Gage.--Water-stage recorder at present site and datum since July 8, 1931. Altitude of gage is 3,875 ft (from river-profile map). May 11, 1914, to Sept. 30, 1915, at side 6 miles downstream, 1,000 ft upstream from intake of Sunset Canal. June 1 to July 7, 1931, staff gage at present site and datum.

Average discharge.--37 years (1927-64), 162 cfs (117,300 acre-ft per year); median of yearly mean discharges, 130 cfs (94,100 acre-ft per year).

Extremes.--Maximum discharge during year, 4,480 cfs July 25 (gage height, 11.90 ft); minimum, 2.8 cfs July 4, 5.
1927-64: Maximum discharge, 41,700 cfs Sept. 29, 1941 (gage height, 25.78 ft); minimum, 1 cfs July 14, 1934.

Remarks.--Records good except for those periods of no gage-height record, which are poor. Station is above all Duncan Valley diversions. Diversions for irrigation of about 6,200 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	94	95	85	79	71	65	66	26	a5	764	*6.6
2	110	91	100	83	83	72	58	64	24	*3.3	a150	6.6
3	*107	96	94	80	89	81	60	62	26	3.3	a100	6.6
4	95	98	96	82	87	82	68	58	*26	3.2	a200	6.6
5	76	*93	*93	93	84	80	68	56	25	3.3	a 90	12
6	60	91	88	*94	83	68	74	54	25	3.7	*66	12
7	61	96	89	91	81	69	80	50	22	3.3	62	*12
8	61	113	94	93	82	68	72	46	23	3.7	53	12
9	55	111	95	91	82	67	71	40	21	4.6	55	11
10	55	120	89	91	83	72	65	39	16	3.5	61	71
11	57	120	87	90	73	69	64	40	13	3.3	203	86
12	57	120	87	88	78	66	61	37	12	4.2	249	208
13	51	114	83	89	80	69	60	a35	12	4.4	88	109
14	46	113	84	83	75	69	58	a35	11	5.8	*81	407
15	44	100	88	85	74	69	57	a35	12	219	69	187
16	52	99	85	84	80	79	56	a35	11	107	64	*170
17	*52	104	80	74	78	82	56	a35	a10	69	45	140
18	51	106	79	73	75	82	60	a30	a10	56	62	124
19	60	98	81	80	75	75	60	a30	a10	42	86	123
20	222	90	84	83	78	73	54	30		65	67	116
21	239	94	85	83	76	60	50	32		29	58	106
22	189	104	85	82	75	60	48	27	a10	20	35	98
23	170	104	88	82	75	67	48	26		20	18	145
24	155	103	82	81	76	70	46	26		21	12	2,530
25	140	109	79	81	74	65	49	29		379	12	2,380
26	113	100	90	81	75	64	53	26		88	12	1,280
27	111	96	85	87	75	62	65	29		96	12	722
28	113	96	79	84	*75	58	67	31	a 5	46	13	*482
29	102	95	75	82	75	60	67	31		*40	a11	413
30	99	93	87	82	------	64	*64	27		36	a 9	365
31	99	------	88	*80	------	*69	------	25	------	186	a8	------
Total	3,018	3,061	2,694	2,617	2,275	2,162	1,824	1,186	420	1,573.6	2,815	10,347.4
Mean	97.4	102	86.9	84.4	78.4	69.7	60.8	38.3	14.0	50.8	90.8	345
Ac-ft	5,990	6,070	5,340	5,190	4,510	4,290	3,620	2,350	833	3,120	5,580	20,520

Calendar year 1963: Max 1,650 Min 4.2 Mean 180 Ac-ft 130,500
Water year 1963-64: Max 2,530 Min 3.2 Mean 93.1 Ac-ft 67,410

Peak discharge (base, 1,900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2000	11.90	4,480	8-11	2230	8.42	2,060
8- 1	1500	10.02	3,070	9-25	0100	10.60	3,480

* Discharge measurement made on this day.
a No gage-height record.

9-4330. Sunset Canal near Virden, N. Mex.

Location.--Lat 32°39'20", long 108°56'00", in NW¼ sec.17, T.19 S., R.20 W., on left bank 1.7 miles downstream from intake and 4.5 miles southeast of Virden.

Records available.--October 1914 to September 1915, July 1922 to September 1931, January 1936 to September 1964. Monthly discharge only January 1936 to December 1938, published in WSP 1313. Prior to 1939, published as "near Duncan, Ariz."

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 3,790 ft (from topographic map). Oct. 1, 1914, to Sept. 30, 1915, staff gage at site 0.4 mile upstream and July 15, 1922, to Sept. 30, 1931, staff gage at site 0.5 mile downstream at different datums. Mar. 9, 1936, to Feb. 20, 1942, water-stage recorder and submerged rectangular weir at site 300 ft downstream at different datum.

Extremes.--1914-15, 1922-31, 1936-64: Maximum daily discharge, 62 cfs Sept. 21, 22, 1929; no flow at times.

Remarks.--Records good. Canal diverts from right bank of Gila River in SW¼NW¼ sec.21, T.19 S., R.20 W., for irrigation of about 2,750 acres in Virden-Duncan Valley. No diversion between intake and station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.0	0.02	0.5	8.2
.1	.4	.8	18
.2	1.7	1.1	30
.3	3.5	1.4	43

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	16	21			0	12	13	22	0.1	20	3.1
2	19	14	21			6.7	12	13	20	0	.4	2.4
3	19	12	21			17	12	12	21	0	11	2.2
4	* 16	12	21			18	14	12	21	0	*35	3.1
5	15	12	20			16	14	12	21	0	33	6.2
6	20	12	21		(*)	15	14	12	22	* 0	35	9.6
7	21	12	21			16	12	12	19	0	33	10
8	15	13	20			17	12	12	19	0	31	8.8
9	12	13	20			16	12	12	* 19	0	20	6.9
10	14	12	20			17	12	12	13	.3	17	* 9.6
11	14	12	20			16	12	15	11	0	13	17
12	14	12	20			14	12	15	7.6	0	20	14
13	13	* 13	* 20			* 14	12	17	7.2	0	31	18
14	13	15	20			14	12	16	6.6	.6	33	20
15	13	14	20			14	12	16	7.9	21	30	17
16	14	15	20			14	12	16	6.6	34	27	17
17	14	15	20	(*)		15	12	17	4.5	34	19	25
18	14	15	20			15	12	17	* 1.4	35	19	30
19	14	15	20			14	12	17	.5	31	18	29
20	15	15	20			13	12	17	.3	34	* 17	27
21	14	18	19			13	* 11	*19	1.1	30	18	24
22	15	21	18			16	11	18	1.5	22	14	20
23	14	22	16			15	13	19	.8	* 20	11	18
24	16	22	14			12	14	23	.4	20	9.4	0
25	16	22	13			13	16	25	.6	21	6.2	0
26	16	22	13			13	16	23	.2	16	3.5	0
27	16	22	13			14	17	24	0	27	4.5	0
28	16	22	12		(*)	14	17	25	0	28	8.5	15
29	16	21	12			14	16	25	.1	24	5.7	27
30	16	21	12		----------	14	13	25	0	19	2.0	28
31	16	----------	7.4		----------	15	----------	21	----------	18	2.2	----------
Total	479	482	555.4	0	0	434.7	390	532	255.3	435.0	547.4	407.9
Mean	15.5	16.1	17.9	0	0	14.0	13.0	17.2	8.51	14.0	17.7	13.6
Ac-ft	950	956	1,100	0	0	862	774	1060	506	863	1,090	809

Calendar year 1963: Max 39 Min 0 Mean 14.2 Ac-ft 10,290
Water year 1963-64: Max 35 Min 0 Mean 12.3 Ac-ft 8,970

* Discharge measurement or observation of no flow made on this day.

9-4360. New Model Canal near Virden, N. Mex.

Location.--Lat 32°40'30", long 108°59'30", in NE¼ sec.10, T.19 S., R.21 W., 1 mile downstream from intake, 1 mile southeast of Virden, and 3¼ miles east of State line.

Records available.--October 1914 to September 1915, July 1922 to September 1931, January 1936 to September 1964. Monthly discharge only January 1936 to December 1938, published in WSP 1313. Published as Model Canal near Duncan, Ariz., 1914-15, as Moddle Canal near Duncan, Ariz., 1922-31, and as Moddle Canal near Virden, N. Mex., 1936-51.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 3,745 ft (from topographic map). Prior to Nov. 25, 1926, staff gage and Nov. 25, 1926, to Feb. 21, 1942, water-stage recorder, at several sites within half a mile upstream at different datums.

Extremes.--1914-15, 1922-31, 1936-64: Maximum daily discharge, 74 cfs Sept. 9, 1930; no flow at times.

Remarks.--Records good. Canal diverts from left bank of Gila River in NE¼SE¼ sec.11, T.19 S., R.21 W., for irrigation of about 2,450 acres in Virden-Duncan Valley. For additional history and gage data, see page 599 of WSP 1313.

Rating table (gage height, in feet, and discharge.
in cubic feet per second)
(Shifting-control method used Aug. 11)

0.0	0.0	0.6	13
.1	.8	.8	20
.2	2.3	1.0	30
.4	6.6	1.2	40

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	1.7	7.1	0	3.4	3.0	0	0		0	38	0
2	20	6.4	7.7	0	4.0	2.1	0	0		0	5.2	0
3	14	6.1	8.8	0	4.5	0	0	0		0	10	0
4	*3.6	3.5	6.4	0	4.3	0	0	0		0	* 16	0
5	0	1.6	7.9	0	4.9	0	0	0		0	19	0
6	0	.9	6.6	0	* 6.9	0	0	0		* 0	18	0
7	0	.7	5.2	0	6.6	0	0	0		0	16	0
8	0	.1	5.4	0	6.9	0	0	0		0	8.2	0
9	0	0	5.9	0	7.1	0	0	0	(*)	0	0	0
10	0	0	2.6	0	7.4	0	0	0		0	0	* 0
11	0	2.2	3.8	0	8.5	0	0	1.2		0	5.6	0
12	0	1.6	* 6.6	0	11	0	0	2.6		0	0	0
13	0	*1.0	* 7.4	0	8.1	* 0	0	2.5		0	0	0
14	0	.7	9.4	0	2.8	0	0	5.9		0	0	0
15	0	.7	8.0	0	4.3	0	0	6.4		0	0	0
16	0	1.0	8.4	0	3.0	0	0	5.4		0	0	4.7
17	0	.8	18	* 0	2.0	0	0	6.9		0	0	20
18	0	.8	18	0	2.0	0	0	9.4	(*)	4.6	0	15
19	0	.5	11	0	2.1	0	0	7.9		8.5	4.8	15
20	0	.1	12	1.2	2.5	0	0	5.2		16	* 8.4	19
21	0	.2	3.6	0	2.5	0	* 0	* 6.9		11	2.8	24
22	3.8	1.2	6.6	1.2	2.3	0	0	4.4		1.3	2.0	25
23	5.9	3.8	3.5	4.7	3.0	0	0	2.1		* 4.7	1.7	25
24	3.8	3.0	2.0	3.6	3.0	0	.5	0		3.0	0	0
25	8.0	.4	2.0	3.4	2.8	0	4.0	0		8.0	0	0
26	10	.4	3.6	0	3.0	0	4.0	0		2.4	0	0
27	9.4	.1	3.6	3.3	3.2	0	3.4	0		7.1	0	0
28	4.1	0	2.5	5.2	* 3.2	0	2.3	0		17	0	0
29	.1	3.3	3.0	4.9	3.2	0	2.2	0		11	0	0
30	0	7.1	4.5	4.5	----------	0	1.8	0		12	0	13
31	0	----------	3.4	3.4	----------	0	----------	0	----------	8.6	0	----------
Total	108.7	49.9	204.5	35.4	128.5	5.1	18.2	66.8	0	115.2	155.7	160.7
Mean	3.51	1.66	6.60	1.14	4.43	0.16	0.61	2.15	0	3.72	5.02	5.36
Ac-ft	216	99	406	70	255	10	36	132	0	228	309	319

Calendar year 1963 : Max 37 Min 0 Mean 7.48 Ac-ft 5,410
Water year 1963-64 : Max 38 Min 0 Mean 2.87 Ac-ft 2,080

* Discharge measurement or observation of no flow made on this day.

9-4426.8 San Francisco River near Reserve, N. Mex.

Location.--Lat 33°44'30", long 108°46'15", in SW¼NE¼ sec.35, T.6 S., R.19 W., on left bank 500 ft upstream from mouth of Rainbow Bridge Canyon and 2 miles northwest of Reserve.

Drainage area.--350 sq mi, approximately.

Records available.--March 1959 to September 1964.

Gage.--Water-stage recorder (digital) and concrete control. Altitude of gage is 5,850 ft above mean sea level (from topographic map).

Average discharge.--5 years, 16.0 cfs (11,610 acre-ft per year).

Extremes.--Maximum discharge during year, 624 cfs July 25 (gage height, 2.66 ft); minimum, 1.6 cfs many days in June.
1959-64: Maximum discharge recorded, 806 cfs Sept. 9, 1963 (gage height, 3.05 ft in gage well, 4.0 ft from floodmarks outside gage), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 2.92 and 3.05 ft; minimum daily, 1.4 cfs June 11, 12, 28, 1959.
Maximum stage known, about 15 ft, as determined in 1962 from old floodmarks. Major floods of Nov. 26, 1905 and Dec. 3, 1906, exceeded 20,000 cfs at Alma (downstream). See WSP 1313.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Slight regulation at times by one small reservoir. Diversion for irrigation of about 500 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.4	1.0	0.6	7.2	0.8	22	1.2	80	1.6	200
.5	2.9	.7	14	1.0	43	1.4	135	1.9	320

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	6.8	8.4	7.0	5.4	4.6	5.2	4.5	2.8	2.2	a50	7.5
2	5.6	13	8.0	7.2	5.5	4.9	6.1	4.3	2.8	2.1	a30	6.8
3	*5.3	9.7	7.7	7.2	5.5	5.1	7.3	4.0	2.7	2.1	a60	6.4
4	5.2	11	7.5	6.0	*4.4	5.0	8.0	3.9	2.6	2.0	a40	7.1
5	5.1	10	7.3	6.6	5.1	5.3	8.9	3.8	2.6	2.0	a25	11
6	5.0	9.1	7.4	4.6	5.0	5.5	* 9.2	4.3	2.5	1.9	a20	12
7	4.8	11	7.0	6.0	4.7	5.3	8.6	4.2	2.2	*1.9	a15	8.3
8	4.8	10	6.3	6.6	5.4	5.0	8.3	4.0	* 2.1	5.8	a10	7.9
9	4.8	9.7	7.5	4.6	6.0	4.5	8.6	4.0	2.0	20	*a45	11
10	4.9	9.8	8.7	5.0	6.1	4.8	8.7	3.9	2.0	5.4	41	72
11	4.9	9.3	6.2	5.6	6.1	4.6	7.8	3.8	2.0	6.3	120	*82
12	5.0	9.0	6.2	5.0	6.0	*4.9	7.7	3.5	2.0	5.0	60	45
13	5.0	* 8.5	5.6	4.5	5.2	4.8	8.0	3.4	2.0	5.4	70	29
14	4.8	8.4	4.9	4.0	4.8	4.5	7.5	3.6	2.0	4.7	a30	34
15	4.9	7.8	5.6	4.5	4.3	4.4	7.1	3.6	1.9	20	a15	30
16	5.2	7.7	5.9	* 5.6	5.5	4.7	7.0	3.4	1.9	8.0	a10	23
17	5.9	7.5	6.2	6.0	5.7	5.0	6.5	3.3	1.9	13	80	16
18	9.2	7.9	6.2	6.6	4.9	5.8	6.1	*3.3	1.9	10	*28	12
19	45	8.1	6.4	7.8	5.0	5.0	6.0	3.3	1.9	6.0	43	11
20	48	7.7	6.8	6.6	5.2	4.8	5.6	3.4	1.8	6.5	19	11
21	26	9.5	7.5	7.2	4.2	4.8	5.3	3.7	1.7	*a4.8	15	9.8
22	22	8.8	8.1	8.5	5.0	5.0	* 5.0	3.5	1.7	4.8	12	11
23	20	8.1	5.5	8.5	5.1	4.8	4.7	3.2	1.7	16	10	268
24	16	8.1	7.0	5.0	4.5	4.6	4.4	3.0	2.0	16	9.1	314
25	14	8.6	7.8	4.6	5.1	4.8	4.3	2.9	2.0	72	8.5	165
26	11	7.9	7.2	6.4	4.9	4.5	4.3	2.8	1.9	82	15	a100
27	9.4	8.3	7.2	7.5	4.7	4.5	4.5	2.8	1.9	a20	15	a75
28	*7.6	8.4	7.2	7.5	4.8	4.5	4.4	2.8	1.9	60	14	a60
29	6.6	8.5	6.6	6.2	4.9	4.5	4.7	2.6	2.1	45	8.7	*52
30	6.3	8.4	5.6	6.0	----------	4.6	4.7	2.6	2.2	a60	7.9	41
31	6.5	----------	5.5	5.7	----------	4.4	----------	2.7	----------	a70	7.6	----------
Total	334.8	266.6	211.0	190.1	149.0	149.5	194.5	108.1	62.7	580.9	933.8	1,538.8
Mean	10.8	8.89	6.81	6.13	5.14	4.82	6.48	3.49	2.09	18.7	30.1	51.3
Ac-ft	664	529	419	377	296	297	386	214	124	1,150	1,850	3,050

Calendar year 1963: Max 125 Min 1.8 Mean 9.99 Ac-ft 7,240
Water year 1963-64: Max 314 Min 1.7 Mean 12.9 Ac-ft 9,360

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2230	2.66	624	8-26	1400	1.76	276
7-28	2030	2.15	440	9-10	1430	2.61	624
8-10	2400	2.19	456	9-11	1630	2.56	592
8-13	1130	2.25	480	9-14	1430	1.81	296
8-17	1900	2.11	420	9-23	1500	2.25	480

* Discharge measurement made on this day.
Note.--No gage-height record July 27, July 30 to Aug. 9, Aug. 14-16, Sept. 26-28.

9-4430. San Francisco River near Alma, N. Mex.

Location.--Lat 33°21'50", long 108°54'50", in SE¼SW¼ sec.4, T.11 S., R.20 W., on right bank 1¼ miles downstream from Alma, 4 miles northwest of Glenwood and 6 miles upstream from Whitewater Creek.

Drainage area.--1,546 sq mi.

Records available.--September 1904 to January 1914, fragmentary (see WSP 1313), January to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,800 ft (from topographic map). Prior to Aug. 11, 1912, staff gages at various sites, within 500 ft of each other, three-quarters of a mile upstream, at different datums. Aug. 11, 1912, to Feb. 2, 1914, staff gage at approximately present site and datum.

Extremes.--Maximum discharge during period, 3,030 cfs July 18 (gage height, 5.45 ft); no flow for many days.
1904-14, 1964: Maximum stage or discharge not determined; no flow at times.
Discharges of 25,000 cfs, Nov. 26, 1905 and 21,000 cfs Dec. 3, 1906 (gage heights, 14 ft and 13.4 ft, respectively, datum then in use), were measured by float-area method. Major floods probably occurred Jan. 19 and Oct. 14, 1916, when discharges of 90,000 cfs (or greater) were computed at Clifton, Ariz.

Remarks.--Records fair. Diversions for irrigation of about 1,500 acres above station.

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				-	7.0	3.4	3.0			0	106	5.4
2				-	6.6	2.6	2.9			0	61	1.8
3				-	6.6	3.8	0			0	153	0
4				-	*6.6	*4.6	.3			0	71	*0
5				-	b 6	4.2	2.3			0	36	56
6				-	b 5.5	2.3	*2.0			0	30	30
7				-	b 5.5	1.1	1.2			*0	18	13
8				-	b 6	4.6	1.9		(*)	.2	102	4.6
9				-	b 6.5	4.2	0			0	*133	2.8
10				*b20	7.0	2.4	0			0	174	20
11				9.6	7.5	4.1	0			0	a900	70
12				9.8	8.6	*0	0			0	a180	*140
13				a10	7.5	1.0	0			0	*170	105
14				a 8	7.0	.9	0			.7	64	104
15				a 7	b 6	0	0			1.9	20	163
16				8.1	b 6	0	0			.8	11	173
17				9.2	*6.6	1.5	0			4.2	25	85
18				b 8	6.6	1.2	0	(*)		*230	*123	60
19				7.5	5.8	1.1	0			31	36	46
20				11	6.2	4.2	0			68	46	43
21				10	b 5.5	3.8	0			*21	26	38
22				10	b 5.5	.8	*0			31	16	36
23				12	b 6	4.4	0			197	11	281
24				9.2	6.6	0	0			91	10	a1,100
25				b 7	5.0	0	0			22	9.2	a400
26				b 7	.8	0	0			180	*14	a300
27				7.5	3.8	0	0			33	32	a200
28				9.2	3.1	0	0			12	43	a150
29				9.2	3.8	0	0			54	23	*111
30				9.2	----------	.2	0			70	12	91
31		----------		8.6	----------	.3	----------		----------	108	7.0	----------
Total				-	171.2	56.7	13.6	0	0	1,155.8	2,662.2	3,829.6
Mean				-	5.90	1.83	0.45	0	0	37.3	85.9	128
Ac-ft				-	340	112	27	0	0	2,290	5,280	7,600

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max - Min - Mean - Ac-ft -

Peak discharge (base, 750 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-18	1650	5.45	3,030	8-8	2240	2.90	970
7-23	1950	3.17	1,160	8-10	2115	3.90	1,740
7-26	1845	2.88	956	8-13	1530	3.00	1,040
7-30	1730	2.65	795	9-24	0230	about 4.00	1,820
7-31	1930	2.75	865				

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.
b Stage-discharge relation affected by ice.

9-4440. San Francisco River near Glenwood, N. Mex.

Location.--Lat 33°15'05", long 108°52'40", in NE¼NW¼ sec.23, T.12 S., R.20 W., on left bank a quarter of a mile upstream from hot springs, 5 miles south of Glenwood, and 6 miles downstream from Whitewater Creek.

Drainage area.--1,653 sq mi.

Records available.--October 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 4,552.06 ft above mean sea level, datum of 1929. Prior to Feb. 15, 1934, at site 4½ miles upstream at datum 98.82 ft higher.

Average discharge.--37 years, 61.9 cfs (44,810 acre-ft per year).

Extremes.--Maximum discharge during year, 3,450 cfs Sept. 24 (gage height, 7.45 ft); minimum, 5.1 cfs Mar. 24.
1927-64: Maximum discharge, 7,800 cfs Jan. 13, 1949 (gage height, 10.74 ft), from rating curve extended above 2,800 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.5 cfs June 25, 1956.
Major floods probably occurred Jan. 19 and Oct. 14, 1916 when discharges of 90,000 cfs (or greater) were computed for station at Clifton, Ariz. On Nov. 26, 1905, a peak of 25,000 cfs was measured (by float-area method) at station at Alma (about 12 miles upstream, drainage area, 1,560 sq mi); a similar measurement of 21,000 cfs was made at the Alma station for peak of Dec. 3, 1906.

Remarks.--Records fair except those for periods of no gage height record, which are poor. Diversions for irrigation of about 2,000 acres above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.8	6.6	2.1	30	2.7	160	3.4	460	5.0	1,350
1.9	11	2.4	80	3.0	280	4.0	750	5.8	1,960

Discharge, in cubic feet per second, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	33	36	28	24	16	8.5	14	11	13	130	16
2	*19	34	36	29	24	11	10	12	12	14	78	15
3	18	34	36	29	23	21	13	11	12	14	118	14
4	18	38	34	28	22	*18	14	12	14	13	92	18
5	18	36	36	28	22	16	15	14	14	10	71	19
6	15	36	34	25	23	14	*13	15	14	9.5	54	59
7	15	38	36	26	22	16	13	14	14	*9.0	44	29
8	15	39	34	26	23	15	11	11	*19	70	52	23
9	15	38	33	25	21	17	11	14	18	15	*132	22
10	18	34	*33	23	22	20	8.5	13	14	15	106	91
11	18	33	34	24	22	19	8.0	11	14	14	655	122
12	16	34	34	25	24	16	9.5	11	19	14	200	124
13	14	* 33	32	24	20	17	8.0	14	17	14	150	108
14	15	32	30	22	22	18	10	18	11	14	100	130
15	20	32	29	22	21	13	14	15	15	14	60	131
16	19	32	28	23	22	9.0	14	*18	*17	14	40	*130
17	25	32	29	24	*22	9.0	*14	18	14	19	35	80
18	45	30	30	25	19	11	11	18	13	202	150	60
19	313	33	30	26	16	12	14	17	11	67	70	50
20	229	33	30	28	17	11	9.5	16	16	59	60	45
21	112	36	32	28	20	10	7.2	15	14	*44	50	40
22	76	39	33	28	17	8.5	7.2	13	8.5	39	40	38
23	57	38	30	29	16	9.0	11	12	11	81	30	143
24	51	38	30	27	16	6.9	12	12	9.0	134	25	1,910
25	45	38	30	24	16	8.0	14	19	10	61	20	605
26	40	36	30	25	16	8.5	13	22	9.5	155	*25	325
27	38	36	29	25	16	8.0	11	15	9.5	78	45	227
28	36	38	29	*26	16	7.2	9.0	14	12	45	46	154
29	* 34	36	29	28	17	11	9.5	11	14	48	34	*118
30	33	36	28	27	----------	11	14.0	12	14	157	25	90
31	32	----------	27	26	----------	9.0	----------	13	----------	251	24	----------
Total	1,438	1,055	981	803	581	396.1	336.9	444	400.5	1,706.5	2,761	4,936
Mean	46.4	35.2	31.6	25.9	20.0	12.8	11.2	14.3	13.4	55.0	89.1	165
Ac-ft	2,850	2,090	1,950	1,590	1,150	786	668	881	794	3,380	5,480	9,790

Calendar year 1963: Max 437 Min 6.9 Mean 45.5 Ac-ft 32,930
Water year 1963-64: Max 1,910 Min 6.9 Mean 43.3 Ac-ft 31,410

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-8	1420	5.10	1,420	8-11	0320	4.85	1,240
7-18	1900	6.10	2,200	9-11	1720	4.42	1,000
7-30	1710	4.83	1,230	9-24	0630	7.45	3,450
7-31	1720	4.85	1,360				

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 9-18, May 19-22, Aug. 12-25.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analysis, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the state at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a general picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1964

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Rio Grande basin				
8-3865	Rio Ruidoso near Ruidoso, N. Mex.	SW¼ sec.19, T.11 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 3 miles west of Ruidoso.	17.2	1953-64	12-16-63 3-24-64 7-16-64 9- 8-64	2.38 2.60 1.33 1.12
8-3866	Carrizo Creek at Ruidoso, N. Mex.	SW¼ sec.26, T.11 S., R.13 E., at mouth at Ruidoso.	24.2	1953-64	12-17-63 3-24-64 7-16-64 9- 8-64	2.41 2.18 2.12 2.30
		Gila River basin				
9-4299*	Snow Creek near Mogollon, N. Mex.	Lat 33°24'50", long 108°29'40", about 1,000 ft below Gila Wilderness boundary, 17.5 miles east of Mogollon.	89.6	1958-64	8- 7-64	0.04

* Also a crest-stage station.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual Maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Arkansas River basin					
7-1544	Carrizozo Creek near Kenton, Okla.	NE¼ sec.31, T.31 N., R.37 E., under bridge on New Mexico State Highway 18, 4 miles southwest of Kenton.	111	1953-64	1964	(c)	< 100
7-2010	Raton Creek at Raton, N. Mex.	Lat 36°54', long 104°26', 60 ft above bridge on State Highway 72 at Raton.	14.4	1953-64	9-28-62	b2.10	(†)
					8- 4-63	b1.58	116
					8- 9-64	1.88	(†)
7-2115	Canadian River near Taylor Springs, N. Mex.	NW¼ sec.27, T.24 N., R.23 E., 1 mile above Chico Creek, 2½ miles below Cimarron Creek, and 2½ miles south of Taylor Springs.	2,853	1940-58‡ 1959-63d			
7-2137	Canadian River tributary near Mills, N. Mex.	NE¼ sec.3, T.22 N., R.25 E., on downstream end of left bridge abutment on State Highway 39, 6 miles north of Mills.	a4.2	1954-64	1964	(c)	(†)
7-2209	Dog Creek near Shoemaker, N. Mex.	Lat 35°49'32", long 104°53'28", 0.5 mile above Valmora-Shoemaker road, and 1.8 miles northwest of Shoemaker.	11.2	1954-64	8-24-54	9.25	b1,490
					9-25-55	e10.54	b2,150
					7-23-56	8.21	b790
					7-13-57	8.21	b790
					7-25-58	9.26	b1,500
					5-24-59	5.13	b9
					6- 6-60	7.21	b352
					8- 2-61	e8.8	b850
					7-25-62	9.91	2,150
					5-22-63	7.91	640
					9-11-64	e11.06	1,850
7-2216	Lagartija Creek tributary near Sanchez, N. Mex.	SW¼SE¼ sec.5, T.16 N., R.24 E., at bridge on State Highway 65, 0.9 miles northeast of Sanchez.	a1	1961-64	1964	(c)	(†)
7-2223	Trementina Creek at Trementina, N. Mex.	NW¼ sec.8, T.14 N., R.24 E., at bridge on State Highway 65 at Trementina.	a65	1959-64	7- 6-62	e8.00	(†)
					8- 9-63	3.55	(†)
					9-23-64	ae6.16	(†)
7-2250	Pajarito Creek at Newkirk, N. Mex.	SW¼SW¼ sec.24, T.10 N., R.25 E., on downstream side of bridge on U. S. Highway 66, 1 mile east of Newkirk.	a35	1954-64	5-18-64	.59	6
7-2255	Ute Creek near Gladstone, N. Mex.	On line os secs. 14 and 23, T.24 N., R.28 E., on bridge on State Highway 58, 3 miles east of Gladstone.	256	1953-64	1964	(c)	(†)
7-2262	Bueyeros Creek at Bueyeros, N. Mex.	E½ sec.7, T.20 N., R.31 E., on downstream end of right abutment of bridge on State Highway 57 at Bueyeros.	a34	1957-64	9-22-64	6.34	3,700
7-2263	Carrizo Creek near Roy, N. Mex.	NW¼SE¼ sec.16, T.21 N., R.28 E., 800 ft below State Highway 120, and 15 miles northeast of Roy.	a68	1954-64	8- 4-64	2.89	(†)
7-2270.5	Plaza Larga Creek tributary near Ragland, N. Mex.	NE¼ sec.15, T.7 N., R.30 E., at culvert on State Highway 18, 1.2 miles northwest of Ragland.	a.5	1952-64	10-19-63	5.57	71
7-2271.5	Arroyo del Puerto near Endee, N. Mex.	SW¼SW¼ sec.26, T.10 N., R.36 E., at bridge on State Highway 93, 5.4 miles south of Endee.	a25	1961-64	9-19-64	1.58	(†)

Explanation of symbols used with partial-record crest-stage station listings are given at end of the tables.

Annual maximum discharge at crest-stage partial record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Arkansas River basin--Continued					
7-2272.95	Sandy Arroyo tributary near Clayton, N. Mex.	NW¼ sec.21, T.25 N., R.34 E., above culvert on State Highway 58, 8 miles southwest of Clayton.	-	1952-64	7-18-53	6.28	283
					7-23-54	.30	17
					9-24-55	.68	32
					9-16-56	e7.33	388
					8- 4-57	.61	29
					7- 5-58	2.38	90
					8- 6-59	5.27	225
					9- 9-60	2.47	92
					8-11-61	.50	25
					7- 8-62	.70	32
					7-12-63	.78	35
					8- 7-64	1.09	46
7-2273	Sandy Arroyo near Clayton, N. Mex.	At center of boundary of secs. 2 and 3, T.24N., R.35 E., on downstream side of bridge on State Highway 18, 7.5 miles south of Clayton.	a42	1953-64	8- 7-64	3.37	(†)
		Brazos River basin					
8-0793	Blackwater Draw tributary near Floyd, N. Mex.	NW¼SW¼ sec.13, T.1 S., R.30 E., 0.5 mile below section road and 10 miles west of Floyd.	a10	1963-64	1964	-	0
		Colorado River basin					
8-1236.1	Seminole Draw tributary near Lovington, N. Mex.	NW¼NE¼ sec.4, T.17 S., R.35 E., ¼ mile above culvert on State Highway 483, and 5.1 miles south of Lovington.	a2	1963-64	1964	-	0
		Rio Grande basin					
8-2774	Rio Grande tributary at Rinconada, N. Mex.	SW¼NW¼ sec.21, T.23 N., R.10 E., at culvert on U. S. Highway 64, 0.6 mile west of Rinconada.	.021	1952-64	1964	-	0
8-2812	Wolf Creek near Chama, N. Mex.	Lat 36°57'20", long 106°32'10", at bridge on Stage Highway 19, and 4½ miles northeast of Chama.	27.7	1959-64	5-13-64	3.07	(†)
8-2840	Rito de Tierra Amarilla at Tierra Amarilla, N. Mex.	Lat 36°41'55", long 106°33'25", 400 ft below culvert on U. S. Highway 84, at Tierra Amarilla.	49.7	1957-64	3-17-64	3.15	292
8-2867	Arroyo Seco near Abiquiu, N. Mex.	Lat 36°16'55", long 106°28'15", 1,000 ft below bridge 3.5 miles southeast of Ghost Ranch Museum on abandoned section of highway and 10 miles northwest of Abiquiu.	162	1953-64	8-12-64	3.52	(†)
8-2880	El Rito near El Rito, N. Mex.	Sec.19, T.25 N., R.7 E., 3 miles northwest of El Rito.	49.8	1932-51‡ 1952-64	5-10-64	3.01	214
8-2920	Santa Clara Creek near Espanola, N. Mex.	SW¼SW¼ sec.11, T.20 N., R.7 E., 5½ miles southwest of Espanola.	34.5	1936-41‡ 1949-50‡ 1952-64	7-13-64	3.18	117
8-2950	Rio Nambe near Nambe, N. Mex.	SE¼ sec.24, T.19 N., R.9 E., in Nambe Pueblo Grant, 2½ miles southeast of Nambe Pueblo and 3½ miles southeast of Nambe.	38.2	1931-51‡ 1952-64	7-18-62	5.15	368
					7- 6-63	f3.00	f20
					9-21-64	e6.1	550
8-3025	Tesuque Creek above diversions, near Santa Fe, N. Mex.	NW¼ sec.5, T.17 N., R.10 E., 500 ft above point of diversion of Cajon Grande ditch, 1 mile above Little Tesuque Creek, and 4 miles northeast of Santa Fe.	11.7	1936-51‡ 1953-64	1964	(c)	<50

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Rio Grande basin--Continued					
8-3131	Canada Ancha tributary near Santa Fe, N. Mex.	Lat 35°44'05", long 106°07'00", in Caja del Rio Grant, 9 miles northwest of Santa Fe.	1.23	1940-48g 1952-64	7-30-64	3.89	20
8-3134	Bland Canyon near Cochiti, N. Mex.	Lat 35°42'11", long 106°24'56", 200 ft south of Forest Service road, 0.3 mile inside Santa Fe National Forest, 7.5 miles north of Cochiti.	a9	1962-64	1964	.44	(†)
8-3171	Arroyo Yupa tributary near Cerrillos, N. Mex.	S½NE¼ sec.13, T.15 N., R.7 E., 300 ft above culvert on U. S. Highway 85, 1.4 miles southwest of Turquoise Trading Post, and 6.5 miles north of Cerrillos.	47	1957-64	7-10-64	.58	(†)
8-3175	Galisteo Creek at Canoncito, N. Mex.	NW¼NW¼ sec.7, T.15 N., R.11 E., above railroad bridge, 0.2 mile above Apache Canyon at Canoncito.	11.3	1955-56 1959-64	7-15-59 7-15-60 8-28-61 7-25-62 9-21-63 7-11-64	3.03 2.42 2.81 2.79 3.78 3.04	1,120 565 899 880 2,200 1,130
8-3176	San Cristobal Arroyo near Galisteo, N. Mex.	Lat 35°22'55", long 105°51'05", at bridge on U. S. Highway 285, 5½ miles east of Galisteo.	116	1955-64	8-17-61 7-24-62 9-21-63 7-16-64	13.34 9.86 6.47 3.39	11,300 5,000 b1,690 230
8-3177	Jaspe Arroyo tributary near Galisteo, N. Mex.	Lat 35°21'55", long 105°50'40", at culvert on U. S. Highway 285, 6 miles southeast of Galisteo.	a1.5	1952-64	8-12-52 7-18-53 7-24-54 9-24-55 7-19-56 7-25-57 6-15-58 7-16-59 7- 6-60 7- 7-61 9- 1-62 9-26-63 9- 1-64	e28.3 13.96 17.81 17.05 e22.6 15.99 14.11 13.82 13.27 13.90 13.28 15.49 13.44	b2,440 b153 b805 b650 b1,750 b450 b170 b137 b84 b145 b86 b368 100
8-3178	Canada de las Minas tributary near Santa Fe, N. Mex.	Lat 35°36'27", long 105°54'42", at culvert on U. S. Highway 84, 85, and 285, 1.3 miles northeast of Seton Village, and 5.7 miles south of Santa Fe.	0.56	1952-64	7-10-63 1964	2.75 (c)	56 (†)
8-3189	San Pedro Creek near Golden, N. Mex.	Lat 36°13'45", long 106°18'00", 1 mile below bridge on State Highway 10 and 5½ miles southwest of Golden.	45.2	1953-64	8-15-64	.78	550
8-3219	Rio de las Vacas near Senorita, N. Mex.	Lat 35°59'35", long 106°47'45", at bridge on side road, 0.1 mile south of State Highway 126 and 6.5 miles east of Senorita.	26.8	1957-64	5-26-64	3.31	(†)
8-3219.2	Rock Creek near Cuba, N. Mex.	W½ sec.6, T.20 N., R.2 E., 1 mile east of State Highway 126, 8 miles east of village of Senorita, and 11 miles east of Cuba.	a3.7	1960-64	4-16-64	1.73	(†)
8-3278	Arroyo Ojito at Zia Pueblo, N. Mex.	SE¼SE¼ sec.21, T.15 N., R.2 E., 100 ft upstream from culvert on State Highway 44, in Zia Pueblo Grant, 0.7 mile south of Zia Pueblo.	17.7	1961-64	8- 2-64	e2.15	(†)
8-3304	Juan Toro Canyon near Miera, N. Mex.	W½SE¼ sec.7, T.9 N., R.6 E., 150 ft east of State Highway 10, 1 mile southeast of Cedro, and 4½ miles northwest of Miera.	1.57	1959-64	9- 4-64	1.03	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Rio Grande basin--Continued					
8-3305	Tijeras Arroyo at Albuquerque, N. Mex.	Lat 35°03'40", long 106°28'40", 300 ft south of U. S. Highway 66 and 0.4 mile southeast of city limits of Albuquerque.	75.3	1943-48‡ 1958-64	9- 4-64	2.70	(†)
8-3306	Tijeras Arroyo near Albuquerque, N. Mex.	SE¼SW¼ sec.17, T.9 N., R.3 E., at culvert on State Highway 47, 5.7 miles south of Central Avenue (U. S. Highway 66) in Albuquerque.	133	1952-64	9- 4-64	1.46	(†)
8-3311	Belen Highline Canal tributary near Los Lunas, N. Mex.	Lat 34°49'20", long 106°49'10", above culvert on State Highway 6, 5.0 miles west of Los Lunas.	.16	1952-53 1955-64	8-13-64	3.88	(†)
8-3316.5	Canada Montoso near Scholle, N. Mex.	SW¼SW¼ sec.12, T.2 N., R.4 E., 130 ft upstream from dip on abandoned highway, 700 ft upstream from bridge on U. S. Highway 60, 3.6 miles southwest of Scholle.	a35	1961-64	7-11-64	2.02	(†)
8-3317	Abo Arroyo tributary near Scholle, N. Mex.	Lat 34°24'10", long 106°30'35", at culvert on U. S. Highway 60, 2.5 miles southeast of junction of U. S. Highway 60 and State Highway 6, and 5.5 miles southwest of Scholle.	a.2	1954-64	 1963	4.18 4.30	 (†)
8-3413	Bluewater Creek above Bluewater Dam, near Bluewater, N. Mex.	NE¼ sec.20, T.12 N., R.12 W., 2.3 miles south of Bluewater Dam, and 8 miles west of Bluewater.	a75	1953-64	3- 9-60 9- 4-63 4-16-64	2.53 3.15 3.38	163 232 260
8-3485	Encinal Creek near Casa Blanca, N. Mex.	NW¼NW¼ sec.34, T.11 N., R.6 W., 1.8 miles north of Village of Encinal and 6.8 miles north of Casa Blanca.	6.19	1937-39‡ 1959-64	8-12-64	4.82	240
8-3535	La Jencia Creek near Magdalena, N. Mex.	S½ sec.1, T.2 S., R.4 W., 3½ miles northeast of Magdalena.	195	1957-64	9-12-64	3.13	1,510
8-3536	La Jencia Creek tributary near Magdalena, N. Mex.	NE¼SE¼ sec.13, T.2 S., R.4 W., at Santa Fe Railroad bridge, 2.7 miles northeast of Magdalena.	5.67	1957-64	1964	(c)	(†)
8-3586	Chupadera Wash tributary at Bingham, N. Mex.	NE¼SW¼ sec.12, T.5 S., R.5 E., 75 ft upstream from culvert on U. S. Highway 380, 0.1 mile west of Bingham.	a1	1961-64	7-11-64	1.78	(†)
8-3593	San Jose Arroyo near Monticello, N. Mex.	NW¼SW¼ sec.3, T.10 S., R.4 W., at head of box canyon just below major tributary, 800 ft below culvert on U. S. Highway 85, 13 miles northeast of Monticello.	a27	1959-64	8-15-64	1.32	(†)
8-3594	Lumber Canyon tributary near Monticello, N. Mex.	N½NE¼ sec.5, T.11 S., R.4 W., at culvert on U. S. Highway 85, 0.2 mile north of road to Red Rock ranger station, and 10.5 miles east of Monticello.	a.9	1952-64	9-11-64	.79	(†)
8-3616.5	Percha Creek near Kingston, N. Mex.	NE¼NE¼ sec.15, T.16 S., R.8 W., at bridge on State Highway 180, 3.3 miles east of Kingston.	21.5	1953-64	7-26-64	3.75	(†)
8-3616.6	Percha Creek tributary near Kingston, N. Mex.	NW¼SW¼ sec.14, T.16 S., R.8 W., 500 ft above culvert on State Highway 180, and 3.5 miles east of Kingston.	.58	1957-64	1964	-	0
8-3617	Percha Creek near Hillsboro, N. Mex.	SE¼NW¼ sec.18, T.16 S., R.7 W., 150 ft south of State Highway 180, and 2 miles west of Hillsboro.	35.4	1957-64	7-26-64	3.61	710
8-3618	Percha Creek at Caballo Dam near Arrey, N. Mex.	SW¼ sec.24, T.16 S., R.5 W., at bridge on U. S. Highway 85, 0.5 mile above mouth and Caballo Reservoir, and 3.5 miles north of Arrey.	119	1953-64	9-21-63 9-13-64	b1.71 1.00	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Rio Grande basin--Continued					
8-3630.5	Arroyo Angostura (formerly Rio Grande tributary) near Rincon, N. Mex.	SE¼ sec.13, T.19 S., R.3 W., 140 ft below dip on U. S. Highway 85, and 2.2 miles southwest of Rincon.	a8.5	1959-64	8- 1-63	1.77	258
					9-11-64	.83	(†)
8-3631	Rio Grande tributary near Radium Springs, N. Mex.	N½NW¼ sec.9, T.21 S., R.1 W., above culvert on U. S. Highway 85, 120 ft above mouth, and 1.4 miles west of Radium Springs.	.40	1955-64	8-13-55	7.15	260
					1956	(c)	<10
					7-26-57	4.75	92
					9-13-58	7.48	280
					8-24-59	8.20	332
					8-10-60	3.99	40
					6-15-61	5.59	151
					8- 1-62	5.82	168
					7- 4-63	5.65	155
					8-14-64	4.71	90
8-3632	Aleman Draw at Aleman, N. Mex.	SW¼ sec.13, T.15 S., R.2 W., on Santa Fe Railroad bridge, 140 ft above dip on Engle-Rincon road, and ¼ mile west of Aleman.	a27	1959-64	8-19-59	4.45	h620
					8- 3-60	e8.5	4,560
					10-16-60	7.60	3,100
					7- 5-62	5.58	1,130
					7- 9-63	6.00	1,390
					9-12-64	8.91	5,500
8-3793	Tecolote Creek at Tecolote, N. Mex.	Lat 35°27'20", long 105°16'55", on bridge on U. S. Highway 85 at Tecolote.	122	1954-64	1964	(c)	(†)
8-3796	Pecos River tributary near Dilia, N. Mex.	Lat 35°12'50", long 105°04'50", above culvert on U. S. Highway 84, and 1.7 miles northwest of Dilia.	.16	1952-64	8-11-52	2.73	74
					8- 6-53	.93	13
					9-26-54	e7.00	184
					8-12-55	1.03	16
					8- 6-56	.23	2
					8-31-57	2.71	73
					9- 6-58	.74	9
					5- 8-59	.56	6
					7-13-60	.29	2
					9-15-61	1.02	16
					9- 2-62	.78	10
					8-17-63	3.35	94
					9-10-64	e4.66	129
8-3803	Sandoval Canyon (formerly Gallinas tributary) at Gallinas, N. Mex.	Lat 35°41'19", long 105°21'22", about 500 ft upstream from culvert on State Highway 65, at north edge of Gallinas.	a8	1957	8- 4-57	j5.2	2,250
				1961-64	8-22-61	2.00	180
					7-16-62	1.04	21
					8-12-63	1.72	125
					8- 7-64	.76	7
8-3829	Pecos River tributary near Pintada, N. Mex.	Lat 34°58'06", long 105°05'38", in Anton Chico Grant, 1,500 ft south of U. S. Highway 66, 6.8 miles north of Pintada.	a10	1961-64	6- 3-64	2.51	(†)
8-3832	Pintada Arroyo tributary near Clines Corners, N. Mex.	Lat 34°50'40", long 105°35'05", above culvert on U. S. Highway 285, 12.2 miles south of Clines Corners.	-	1952-64	7-17-64	1.83	(†)
8-3832.1	Pintada Arroyo tributary near Encino, N. Mex.	Lat 34°48'40", long 105°34'00", above culvert on U. S. Highway 285, 0.1 mile south of ranch road, and 12½ miles northwest of Encino.	a1	1959-64	1964	-	0
8-3833	Pintada Arroyo near Santa Rosa, N.Mex.	NE¼ sec.29, T.8 N., R.21 E., 300 ft above culvert on U. S. Highway 54, and 4½ miles southwest of Santa Rosa.	896	1959-64	7-24-60	e4.86	b2,460
					7-12-61	e5.82	b2,850
					7-19-62	e6.4	3,000
					8-25-63	2.40	1,250
					9-11-64	e6.0	2,800
8-3833.7	Pecos River tributary near Puerto de Luna, N. Mex.	NE¼SW¼ sec.32, T.8 N., R.22 E., 25 ft upstream from culvert on State Highway 91, 3.1 miles north of Puerto de Luna.	a2	1961-64	6- 3-64	5.87	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Rio Grande basin--Continued					
8-3855.3	Alamosa Creek tributary near Jordan, N. Mex.	SW¼SW¼ sec.27, T.7 N., R.28 E., 500 ft upstream from dip on State Highway 156, 6.9 miles west of Jordan.	a10	1962-64	9-19-62 5-27-63 1964	2.47 1.99 -	54 22 0
8-3856	Yeso Arroyo near Fort Sumner, N. Mex.	SE¼ sec.35, T.1 N., R.25 E., at abandoned bridge 1 mile below State Highway 20, and 14.5 miles south of Fort Sumner.	242	1937 1952-64	9-20-64	1.95	(†)
8-3856.7	Aragon Creek tributary near Encinoso, N. Mex.	NE¼NE¼ sec.22, T.7 S., R.14 E., 0.3 mile upstream from wooden bridge on dirt road, 1.2 miles north of State Highway 48, 4.3 miles west of Encinoso.	6.07	1961-64	7-21-62 7- 7-63 9-21-64	2.91 3.51 3.13	149 333 200
8-3856.9	Bonita Canyon tributary near Corona, N. Mex.	S½ sec.7, T.1 S., R.13 E., above culvert on U. S. Highway 54, and 1.8 miles southwest of Corona.	-	1959-64	1964	-	0
8-3857	Cloud Canyon near Gallinas, N. Mex.	SW¼ sec.15, T.2 S., R.12 E., above culvert on U. S. Highway 54, and 2.0 miles southwest of Gallinas.	a10	1957-64	9-12-64	2.89	(†)
8-3859	Salt Creek tributary near Roswell, N. Mex.	NE¼NE¼ sec.17, T.9 S., R.24 E., at culvert on U. S. Highway 285, 4.7 miles north of junction of U. S. Highways 70 and 285, and 10 miles north of Roswell.	.045	1952-64	9-21-64	2.19	(†)
8-3880	Rio Ruidoso at Hondo, N. Mex.	NE¼SW¼ sec.4, T.11 S., R.17 E., ¼ mile above confluence with Rio Bonito, and ½ mile southwest of Hondo.	290	1931-55‡ 1956-64	8-10-63 8-15-64	e3.20 5.77	69 833
8-3890	Rio Bonito near Fort Stanton, N. Mex.	SW¼ sec.16, T.9 S., R.15 E., at bridge on U. S. Highway 380, 2.5 miles northeast of Fort Stanton.	a85	1955-64	7-12-64	e4.89	(†)
8-3890.6	Rio Bonito tributary near Fort Stanton, N. Mex.	SW¼SW¼ sec.15, T.9 S., R.15 E., at culvert on U. S. Highway 380, 150 ft above mouth, and 3.5 miles northeast of Fort Stanton.	.72	1955-64	8-15-64	2.85	(†)
8-3895.	Rio Bonito at Hondo, N. Mex.	NE¼NW¼ sec.4, T.11 S., R.17 E., at bridge on U. S. Highway 70, at Hondo.	k295	1931-55‡ 1956-64	8- 8-64	2.46	463
8-3901	Rio Hondo at Picacho, N. Mex.	W½W¼ sec.15, T.11 S., R.18 E., by road bridge just off U. S. Highway 70, 1.3 miles northwest of Picacho.	715	1956-62‡ 1963-64	8-14-64	8.93	636
8-3901.5	Gallo Canyon (formerly Casey Canyon tributary) near Picacho, N. Mex.	NE¼NE¼ sec.8, T.12 S., R.18 E., 500 ft east of road, 5 miles south of Picacho.	a2	1962-64	6-13-64	>2.24	(†)
8-3920	Pancho Canyon near Arabella, N. Mex.	SE¼SE¼ sec.19, T.9 S., R.18 E., 200 ft downstream from dip on State Highway 368, 5.6 miles south of Arabella.	a16	1962-64	9-13-64	2.11	(†)
8-3934	Eight Mile Draw near Roswell, N. Mex.	SW¼NE¼ sec.32, T.10 S., R.23 E., and 6.5 miles west of Roswell.	397	1941 1952-64	9-22-41 8-11-52 8-16-53 10- 6-54 9-25-55 1956 1957 8-23-58 1959 1963 9-21-64	e20.1 17.2 14.41 18.09 13.58 - (c) 13.99 (c) - 14.83	22,200 4,730 420 10,200 80 0 j1 292 j5 0 (†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Rio Grande basin--Continued					
8-3973.9	Curtis Canyon near Mayhill, N. Mex.	E½NE¼ sec.4, T.17 S., R.14 E., ¼ mile above SCS dam, 0.4 mile west of State Highway 130, and 2.5 miles southwest of Mayhill.	10.3	1959-64	9-12-64	1.49	<1
8-3974	Hyatt Canyon near Cloudcroft, N. Mex.	NW¼NW¼ sec.9, T.16 S., R.13 E., ½ mile south of State Highway 83, and 7 miles east of Cloudcroft.	3.08	1953-64	9-12-64	(c)	(†)
8-3976	Rio Penasco near Dunken, N. Mex.	SW¼NW¼ sec.27, T.16 S., R.17 E., 1.5 miles above junction of State Highways 24 and 83, and 5½ miles north of Dunken.	a580	1952-61 1962-64	7-11-64	2.92	j500
8-3978	Bluewater Creek near Dunken, N. Mex.	SE¼NE¼ sec.33, T.17 S., R.17 E., 300 ft above dip on State Highway 24, and 1.3 miles south of Dunken.	143	1958-64	8-15-64	.58	(†)
8-4018	Rocky Arroyo near Carlsbad, N. Mex.	SW¼ sec.23, T.21 S., R.24 E., 0.1 mile north of State Highway 137, 0.7 mile above dip on State Highway 137, and 14 miles west of Carlsbad.	254	1953-64	1959 7- 6-60 1961 9- 3-62 8-13-63 7-11-64	40.25 e42.2 39.11 43.20 e45.1 39.20	1,580 b4,300 540 b6,000 9,800 595
8-4050.5	Last Chance Canyon tributary near Carlsbad Caverns, N. Mex.	E½NW¼ sec.21, T.23 S., R.23 E., above culvert on State Highway 137, 0.1 mile north of road to Sitting Bull Falls, and 12½ miles northwest of Carlsbad Caverns.	a.2	1959-64	9-22-64	2.79	(†)
8-4051	Mosely Canyon near White City, N. Mex.	SE¼ sec.34, T.23 S., R.25 E., 600 ft below dip on Dark Canyon road, and 5½ miles north of White City.	14.6	1959-64	5-15-64	4.43	(†)
8-4360	San Simon Swale tributary near Jal, N. Mex.	NE¼NE¼ sec.4, T.25 S., R.35 E., 0.4 mile south of State Highway 128 and 10.7 miles west of Jal.	a20	1963-64	1964	(c)	(†)
		Mimbres River basin					
8-4772	Iron Creek near Kingston, N. Mex.	Lat 32°54'50", long 107°46'35", 50 ft east of State Highway 180, 1.6 road miles west of Emory Pass, and 4.5 miles west of Kingston.	.74	1955-64	7-11-55 6-29-56 8-30-57 8-22-58 8- 9-59 8- 6-60 8-16-60 9-26-62 8-21-63 4- 4-64	3.45 3.58 3.61 3.89 3.66 (c) 3.93 4.12 4.27 4.13	0.6 1.1 1.5 10 2.5 <.5 13 41 100 43
8-4775.6	Little Walnut Creek near Silver City, N. Mex.	NW¼NE¼ sec.28, T.17 S., R.14 W., 85 ft above dip on Bear Mountain Road, and 2 miles north of Silver City.	5.10	1959-64	8-14-59 8-11-60 6-15-61 b7-29-62 8-16-63 7-15-64	b1.86 e2.67 e2.40 2.23 2.40 2.07	391 b700 600 538 600 475
8-4775.7	Silva Creek tributary at Silver City, N. Mex.	SE¼SW¼ sec.27, T.17 S., R.14 W., 350 ft above dip on Little Walnut Road, and 0.7 mile north of boundary of Silver City.	2.12	1958-64	8- 1-64	3.91	700
8-4775.8	Silva Creek at Silver City, N. Mex.	Lat 32°46'41", long 108°16'41", 190 ft above Twelfth Street Bridge at Silver City.	10.0	1958-64	8- 1-64	3.27	890
8-4775.9	Pinos Altos Creek at Silver City, N. Mex.	Lat 32°46'52", long 108°16'04", 2 blocks below U. S. Highway 260 at Silver City.	4.63	1958-64	8-16-63 7-15-64	e9.0 3.43	3,140 (†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Mimbres River basin--Continued					
8-4780	Cameron Creek at Central, N. Mex.	SW¼NE¼ sec.36, T.17 S., R.13 W., 2,500 ft above culvert on U. S. Highway 260, at north edge of Central.	18.8	1954-64	7-15-64	3.51	702
8-4782	Mimbres River tributary near Spalding, N. Mex.	S½ sec.5, T.22 S., R.10 W., at culvert on U. S. Highway 260, 0.7 mile northeast of junction with State Highway 61, 4.5 miles southeast of Spalding.	1.17	1952-64	8-13-64	.28	(†)
8-4785	Mimbres River at Deming, N. Mex.	On section line 22 and 27, T.23 S., R.9 W., at bridge on U. S. Highway 260, at north end of Deming.	1,370	1954-64	9-24-64	1.50	395
8-4786.	Mimbres basin tributary near Florida, N. Mex.	Near boundary of sec.25 and 36, T.22 S., R.8 W., above culvert on State Highway 26, and 5 miles southwest of Florida.	a.4	1959-64	8- 1-64	2.09	137
8-4790.	Hermanas Draw tributary at Hermanas, N. Mex.	SW¼ sec.22, T.28 S., R.11 W., at Southern Pacific Railroad bridge, 110 ft above State Highway 9, 0.3 mile west of Hermanas.	10.8	1959-64	9-12-64	4.00	(†)
8-4793	Deer Creek tributary near Antelope Wells, N. Mex.	Sec.6, T.34 S., R.18 W., 0.1 mile below dip on State Highway 79, 2½ miles east of San Luis Pass, and 12 miles west of Antelope Wells.	a4.3	1959-64	8-21-59 8- 5-60 8-14-61 7-18-62 7- 7-63 9-12-64	2.55 4.59 .79 .54 2.12 2.12	470 1,680 94 65 334 334
		Tularosa Valley					
8-4801	White Oaks Canyon at White Oaks, N. Mex.	SW¼SW¼ sec.19, T.6 S., R.13 E., 40 ft upstream from culvert on State Highway 349, 1 mile northeast of White Oaks.	a3	1961-64	9-13-64	1.80	(†)
8-4801.5	White Oaks Canyon near Carrizozo, N. Mex.	NW¼SE¼ sec.6, T.7 S., R.11 E., 100 ft upstream from culvert on U. S. Highway 54, 6 miles north of Carrizozo.	31	1959 1961-64	9- 3-63 9-13-64	8.17 5.98	(†) (†)
8-4802	Taylor Canyon tributary near Bingham, N. Mex.	SE¼NE¼ sec.15, T.6 S., R.7 E., 200 ft north of U. S. Highway 380, 12 miles southeast of Bingham.	2.66	1961-64	1964	-	0
8-4805.9	Tularosa basin tributary near Oscura, N. Mex.	SW¼NW¼ sec.25, T.10 S., R.8 E., 50 ft below culvert on U. S. Highway 54, and 5.2 miles south of Oscura.	3.22	1958-64	9-13-64	2.72	(†)
8-4806.5	Minnie Hall Draw near Three Rivers, N. Mex.	NE¼SE¼ sec.35, T.10 S., R.9 E., 8 miles northeast of Three Rivers.	9.70	1956-64	1964	(c)	(†)
8-4807	Indian Creek near Three Rivers, N. Mex.	SW¼NE¼ sec.10, T.11 S., R.10 E., 150 ft above diversion dam, and 1½ miles east of Three Rivers.	a6.8	1956-58‡ 1959-64	9-12-64	2.95	42
8-4809	Indian Creek at mouth near Three Rivers, N. Mex.	Lat 33°22'45", long 105°57'25", 75 ft above diversion dam, 0.35 mile above mouth, and 5½ miles east of Three Rivers.	10.9	1956-58‡ 1959-64	8- 8-64	3.19	102
8-4810	Three Rivers at Three Rivers, N. Mex.	NE¼SW¼ sec.3, T.12 S., R.9 E., 150 ft below Southern Pacific Railroad bridge, 400 ft above bridge on U. S. Highway 54, and 1.3 miles south of Three Rivers.	96.0	1956-64	7-31-56 7-26-57 b9-26-58 8-22-59 7- 5-60 7- 4-61 7-21-62 b8- 3-63 8-17-64	2.40 5.53 1.20 4.88 3.30 5.67 e2.6 4.80 1.38	b900 6,600 b260 b4,800 b1,850 6,850 b1,080 4,600 320

Annual maximum discharge at crest-stage partial-record staions--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Tularosa Valley--Continued					
8-4811	Tularosa basin tributary near Three Rivers, N. Mex.	SW¼SE¼ sec.3, T.12 S., R.9 E., at culvert on U. S. Highway 54, 1.6 miles south of Three Rivers.	13.8	1952-64	9-12-64	0.65	1,050
8-4862	Black Prince Canyon tributary near Organ, N. Mex.	NE¼SE¼ sec.33, T.21 S., R.4 E., above culvert on U. S. Highway 70, 2.3 miles east of San Augustin Pass, and 4.0 miles east of Organ.	.73	1959-64	8-18-64	.88	(†)
8-4864	Tularosa basin tributary near Orogrande, N. Mex.	S½SE¼ sec.1, T.22 S., R.8 E., at bridge on U. S. Highway 54, and 2.7 miles northeast of Orogrande.	2.53	1959-64	8-14-64	1.76	138
		Estancia Valley					
8-4880	Estancia Valley tributary at Cedar Grove, N. Mex.	NE¼NE¼ sec.21, T.11 N., R.7 E., 50 ft upstream from culvert on State Highway 344, 0.1 mile south of Cedar Grove.	1.21	1955 1961-64	7-29-64	9.16	(†)
8-4881	Juan Thomas Canyon near Edgewood, N. Mex.	SE¼NE¼ sec.19, T.10 N., R.7 E., 140 ft upstream from culvert on U. S. Highway 66, 2.5 miles northwest of Edgewood.	a20	1962-64	1964	(c)	(†)
8-4882	Osita Draw (formerly Estancia Valley tributary) near Clines Corners, N. Mex.	SW¼NW¼ sec.17, T.9 N., R.11 E., 100 ft upstream from culvert on U. S. Highway 66, 7.5 miles west of Clines Corners.	a10	1961-64	9-21-63 7-17-64	b2.67 2.88	(†) (†)
8-4885.	Canon de Torreon at Torreon, N. Mex.	Lat 34°43'20", long 106°17'50", at culvert on State Highway 19, in Torreon.	18.2	1954-64	8-21-54 10- 6-54 8-24-56 8-18-57 9- 7-58 5- 7-59 6-11-60 8-11-61 7-20-62 9-21-63 7-29-64	1.99 1.24 1.65 1.75 2.28 1.08 1.59 2.44 1.22 2.29 1.73	b705 b35 b290 395 b1,200 5 235 b1,500 29 1,210 375
8-4890	Canada del Leon near Mountainair, N. Mex.	SE¼ sec.10, T.2 N., R.7 E., ¼ mile above culvert on State Highway 10, and 8.4 miles southeast of Mountainair.	-	1953-64	7-13-53 9-25-54 10- 6-54 1956 7-24-57 6-20-58 8-23-59 6-10-60 8-12-61 1962 8- 3-63 1964	4.30 8.68 4.88 (f) 5.00 3.81 3.26 3.62 3.29 4.06 (c)	80 1,710 b275 0 330 17 <5 10 <5 0 36 <5
		Salt basin					
8-4925	Cornucopia Canyon near Pinon, N. Mex.	NE¼ sec.6, T.21 S., R.16 E., 0.2 mile above dip in ranch road, and 7.5 miles south of Pinon.	17.2	1959-64	8-14-64	5.12	1,220
		San Juan River basin					
9-3462	Rio Amargo at Dulce, N. Mex.	NW¼ sec.1, T.31 N., R.2 W., under bridge on State Highway 17, at Dulce.	168	1956-64	8- 1-64	e8.1	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		San Juan River basin--Continued					
9-3510	Vaqueros Canyon near Gobernador, N. Mex.	SW¼ sec.17, T.29 N., R.4 W., 100 ft east of State Highway 17 and 4.2 miles east of Gobernador.	a60	1956-64	8-16-56	b6.21	b820
					7-27-57	b7.89	1,740
					9-13-58	b1.02	16
					8- 3-59	be5.80	b570
					4-12-60	b5.18	b500
					b9-22-61	2.12	b71
					8-27-63	b4.50	361
					8-13-64	4.25	317
9-3557	Gobernador Canyon near Gobernador, N. Mex.	NW¼ sec.36, T.29 N., R.6 W., 0.2 mile south of State Highway 17, and 4 miles southwest of Gobernador.	a22	1956-64	8-13-64	5.83	660
9-3564	Manzanares Canyon near Turley, N. Mex.	W½SW¼ sec.8, T.29 N., R.8 W., 600 ft above culvert on State Highway 17 and 4.2 miles east of Turley.	a3.1	1956-64	7-30-64	4.19	(†)
9-3567.5	Valdez Draw near Bloomfield, N. Mex.	NE¼SW¼ sec.20, T.29 N., R.10 W., above culvert on State Highway 17, 4 miles east of Bloomfield.	a1.3	1956-64	8- 6-63	n7.28	367
					8-13-64	7.28	(†)
9-3572	Gallegos Canyon tributary near Nageezi, N. Mex.	E½ sec.11, T.25 N., R.10 W., at culvert on State Highway 44, 1.1 miles northwest of Huerfano Trading Post and 12.5 miles northwest of Nageezi.	.20	1952-64	8-15-61	e2.39	143
					10-17-62	j3.8	253
					9-14-63	3.32	b215
					7-12-64	7.63	630
9-3675.3	San Juan River tributary near Kirtland, N. Mex.	NW¼NE¼ sec.15, T.29 N., R.14 W., on upstream side of abandoned culvert, 200 ft above U.S. Highway 550, 0.4 mile above mouth, and 3.3 miles east of Kirtland.	a3.0	1951-64	7-13-64	2.30	(†)
9-3678.4	Yazzie Wash near Mexican Springs, N. Mex.	Lat 35°50'40", long 108°53'00", 5.0 miles northwest of Mexican Springs and 23 miles north of Gallup.	a2.1	1953-54 1956-64	9-24-64	4.65	480
9-3678.6	Chusca Wash near Mexican Springs, N. Mex.	Lat 35°48'40", long 108°50'50", 1.8 miles northwest of Mexican Springs and 20 miles north of Gallup.	a8.7	1953-64	7-25-64	e5.39	1,430
9-3678.8	Catron Wash near Mexican Springs, N. Mex.	Lat 35°46'15", long 108°49'40", 1.5 miles south of Mexican Springs and 18 miles north of Gallup.	26.9	1954 1956-64	8-16-56	4.18	b2,000
					7-21-57	3.19	1,080
					8-19-58	4.82	b2,790
					8-24-59	4.74	b2,650
					8- 2-60	1.24	61
					8-24-61	5.25	b3,300
					9-25-62	3.02	960
					b7-23-63	3.50	1,350
					9-24-64	4.50	2,390
9-3679	Black Springs Wash near Mexican Springs, N. Mex.	Lat 35°45'40", long 108°49'00", 2.5 miles south of Mexican Springs and 17 miles north of Gallup.	7.05	1954-64	9-11-54	.90	b535
					8-18-55	2.76	b2,200
					8-16-56	.68	b415
					7-21-57	.56	b355
					8-19-58	2.43	b1,800
					7-21-59	.39	b285
					10- 3-59	.03	b152
					8- 3-61	.35	b265
					9-25-62	-0.10	b115
					9-13-62	.99	585
					8-12-64	2.68	2,000
9-3679.5	Chaco River near Waterflow, N. Mex.	NE¼ sec.19, T.29 N., R.16 W., at Stanolind, 7 miles southwest of Waterflow, and 8 miles southeast of Shiprock.	4,350	1959-64	8- 1-64	7.93	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Little Colorado River basin					
9-3861	Largo Creek near Quemado, N. Mex.	NE¼SE¼ sec.8, T.1 N., R.16 W., on downstream side of bridge on ranch road 2½ miles southwest of Quemado.	151	1954-64	8- 1-64	1.70	(†)
9-3861.5	Mangas Creek tributary near Pietown, N. Mex.	About at corner common to secs. 13, 14, 23 and 24, T.1 N., R.13 W., above culvert on U. S. Highway 60, 1.3 miles west of Pietown Post Office.	-	1952-64	9-22-64	1.23	(†)
9-3862	Carrizo Creek near Salt Lake, N. Mex.	SE¼ sec.3, T.3 N., R.21 W., on downstream side of bridge, 1.3 miles east of New Mexico-Arizona State line and 15 miles west of Salt Lake.	k560	1957-64	9-24-64	.76	(†)
9-3870.5	Galestena Canyon tributary near Black Rock, N. Mex.	SE¼ sec.30, T.9 N., R.17 W., 100 ft below bridge on State Highway 32 and 10.5 miles southeast of Black Rock.	a19	1957-64	8- 5-57 9- 8-58 8- 5-59 7- 8-60 8-15-61 7-22-62 9- 4-63 8- 1-64	4.97 4.18 (p) 3.02 3.10 1.51 6.09 3.83	410 295 368 160 165 43 593 250
9-3954	Puerco River tributary near Fort Wingate, N. Mex.	Lat 35°25'55", long 108°33'30", 0.5 mile below culvert on secondary road between Fort Wingate and McGaffey and 3 miles south of Fort Wingate.	14.5	1949 1953-64	4- 5-64	.51	76
9-3955	Puerco River at Gallup, N. Mex.	SW¼NW¼ sec.15, T.15 N., R.18 W., on right bank north of the Santa Fe RR. freight depot, 1,500 ft above Second Street Bridge at Gallup.	558	1940-46‡ 1956-64	7-26-64	6.72	3,100
9-3956	Puerco River tributary near Gamerco, N. Mex.	SE¼NE¼ sec.7, T.16 N., R.18 W., above abandoned culvert on former U. S. Highway 666, 0.5 mile north of junction of U. S. Highway 666 and State Highway 68, 4.5 miles north of Gamerco.	.42	1951-64	9-24-64	-.1	5
		Gila River basin					
9-4298	Diamond Creek near Beaverhead, N. Mex.	E½ sec.7, T.12 S., R.12 W., 3.5 miles west of State Highway 61, 4 miles above Gila River, and 13 miles south of Beaverhead.	106	1957-64	9- 4-64	e6.69	(†)
*9-4299	Snow Creek near Mogollon, N. Mex.	Lat 33°24'50", long 108°29'40", 1,000 ft below Gila Wilderness boundary and 17.5 miles east of Mogollon.	89.6	1958-64	8-15-64	e11.4	(g)
9-4303	Copperas Canyon near Pinos Altos, N. Mex.	NE¼SW¼ sec.17, T.14 S., R.13 W., on east side of Copperas Canyon road and 15 miles north of Pinos Altos.	4	1963-64	8- 4-63 9-23-64	3.38 1.47	289 (†)
9-4309	Duck Creek at Cliff, N. Mex.	SW¼SW¼ sec.28, T.15 S., R.17 W., at Cliff below bridge on State Highway 211, and 0.6 mile above mouth.	228	1957-64	7- 7-64	4.17	(†)
9-4310	Gila River near Cliff, N. Mex.	S½ sec.4, T.16 S., R. 17 W., on downstream end of pier of bridge on U. S. Highway 260, 1½ miles downstream from Bear Creek, 1½ miles south of Cliff, and 2½ miles southwest of Gila.	2,438	1942-51‡ 1952-64	9-24-64	9.42	7,000
9-4426.5	Trout Creek near New Mexico-Arizona State line near Luna, N. Mex.	W½ sec.34, T.4 S., R.21 W., at culvert on Luna-Underwood Lake road, about 1 mile east of N. Mex.-Ariz. State line, and 8 miles northwest of Luna.	a9.9	1958-64	4- 8-64	9.18	(†)

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Gila River basin--Continued					
9-4426.6	Trout Creek near Luna, N. Mex.	NW¼ sec.29, T.5 S., R.20 W., 500 ft downstream from bridge on Luna-Red Hill road and 2.6 miles north of Luna.	a32	1954-64	9-23-64	2.05	205
9-4426.9	Tularosa River near Aragon, N. Mex.	NW¼ sec.3, T.5 S., R.16 W., about 100 ft to the left of State Highway 12 and 12 miles northeast of Aragon.	a89	1955-64	10-19-63	3.56	12
9-4426.95	Rito Negrito at Aragon, N. Mex.	NW¼NW¼ sec.18, T.5 S., R.16 W., above culvert on State Highway 12, at west edge of Aragon.	9.46	1958-64	9-10-64	1.51	10
9-4427	Apache Creek near Apache Creek, N. Mex.	E½ sec.25, T.4 S., R.18 W., 7 miles north of Apache Creek.	94.6	1957-64	8-10-58	.91	116
					7-28-59	e7.27	b2,480
					10-30-59	1.37	182
					1961	(c)	<100
					1962	(c)	<100
					9-16-63	1.29	169
					8-11-64	e7.88	2,900
9-4427.4	Tularosa River near Reserve, N. Mex.	SE¼ sec.33, T.6 S., R.18 W., 150 ft west of Eagle Peak Lookout road and 3.3 miles northeast of Reserve.	426	1956-64	8-15-64	e7.01	1,580
9-4439.5	Colt Canyon at Pleasanton, N. Mex.	E½NE¼ sec.14, T.12 S., R.20 W., 175 ft above abandoned dip, 350 ft above culvert on U. S. Highway 260, about 1 mile south of Pleasanton.	3.1	1959-64	7-31-64	2.25	(†)
9-4558	Steins Creek at Steins, N. Mex.	S½SE¼ sec.9, T.24 S., R.21 W., at culvert on State Highway 14, 0.9 mile west of Steins.	-	1959-64	9-10-64	3.39	(†)
		Animas Valley					
9-5390	Animas Creek near Cloverdale, N. Mex.	NE¼ sec.33, T.31 S., R.20 W., near head of small box canyon, 0.1 mile west of State Highway 338, and 11 miles north of Cloverdale.	157	1959-64	9-12-64	6.44	1,950

† Discharge not determined.
‡ Operated as a continuous-record gaging station.
* Also low-flow station.
a Approximately.
b Revised.
c Peak did not reach bottom of gage.
d Converted to continuous-record gaging station.
e From floodmark.
f Doubtful.
g Operated as a continuous-record gaging station by SCS.
h May not have been peak for year.
j Estimated.
k Contributing area.
m Unreviewed measurement.
n Gage height affected by backwater.
p Gage height unreliable.
g Measurement computations not complete.
< Less than.

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (*); measurements of peak flow by a dagger (†). Listings are in downstream order, by basins, streams, and individual measuring points. The order of major basins in this report will be: LOWER MISSISSIPPI BASIN, WESTERN GULF OF MEXICO BASINS, COLORADO RIVER BASIN.

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Arkansas River basin						
Barranca Creek	Plaza Larga Creek	S½SW¼ sec.19, T.11 N., R.33., at mouth ½ mile above U. S. Highway 66, 14 miles east of Tucumcari, N. Mex.		1958-60	7- 2-64	0
					8- 7-64	0
					9- 4-64	0
Plaza Larga Creek	Revuelto Creek	SE¼SW¼ sec. 19, T. 11 N., R. 33 E., below Barranca Creek, ½ mile above U. S. Highway 66, 14 miles east of Tucumcari, N. Mex.		-	7- 2-64	2.37
					8- 7-64	.58
					9- 4-64	14.2
Plaza Larga Creek	do	N½SE¼ sec. 19, T. 11 N., R. 33 E., at bridge on U. S. Highway 66, 14 miles east of Tucumcari, N. Mex.		1958-60	9- 4-64	11.0
Canadian River	Arkansas River	SW¼NW¼ sec. 2, T. 13 N., R. 35 E., at Dunes damsite, 17 miles northwest of Glenrio, N. Mex.		-	3-20-64	4.32
Rana Canyon	Canadian River	SW¼NW¼ sec. 15, T. 13 N., R. 36 E., at mouth 13 miles north of Glenrio, N. Mex.		-	5- 5-64	*0.09
Canadian River	Arkansas River	Lat 35°21', long 103°06', in NW¼ sec. 15, T. 13 N., R. 36 E., 300 ft below Martin Draw, 0.5 mile below Rana Canyon, about 6 miles upstream from New Mexico-Texas State line, and 13 miles north of Glenrio, N. Mex.	-	-	3-20-64	5.34
					5- 5-64	3.70
					5-13-64	4.63
					5-20-64	15.8
					5-27-64	49.4
					6- 3-64	5.70
					6-11-64	2.89
					6-18-64	0
					6-25-64	0
					7- 2-64	0
					7- 8-64	0
					7-15-64	0
					7-23-64	.11
					7-31-64	0
					8- 7-64	0
					8-14-64	2.59
					8-21-64	23.8
					8-28-64	2.68
					9- 4-64	.11
					9-11-64	1.41
					9-18-64	19.8
					9-25-64	10.9
Rio Grande basin						
Right bank tributary	Rio Chama	Lat 32°12'10", long 106°16'44", 1 mile above mouth, 2.2 miles east of Abiquiu, N. Mex.	5.35	-	5-26-64	†2,670
Arroyo Cuyamungue	Rio Tesuque	NE¼NE¼ sec. 17, T. 19 N., R. 9 E., 0.2 mile above U. S. Highway 84, 64, 285, and 1.4 miles southeast of Pojoaque, N. Mex.	3.86	-	8-22-61	†b4,770
Santa Fe River	Rio Grande	NE¼SE¼ sec. 24, T. 17 N., R. 10 E., at head of McClure Reservoir, 6½ miles east of Santa Fe, N. Mex.	a15	1931-59 1962,1963	10- 3-64	*8.29
Sandia Wash	Canals, drains, Rio Grande	Lat 35°16'04", long 106°34'07", in NW¼SW¼ sec. 18, T. 12 N., R. 4 E., 800 ft above Atchison, Topeka, and Santa Fe Railway Co. Bridge, ¾ mile northeast of Sandia Pueblo, and 2½ miles southwest of Bernalillo, N. Mex.	15.0	-	8- 3-63	†7,550

Note. --Symbols and footnotes are at end of list.

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Rio Grande basin--Continued				
Tributary	Hahn Arroyo	SE¼NW¼ sec.6, T.10 N., R.4 E., between Stardust Drive and Louisiana Blvd., NE, within the city limits of Albuquerque, N. Mex.	0.50	-	8-10-63	†1,420
Hahn Arroyo	Drains, Canals, Rio Grande	Lat 35°07'55", long 106°37'45", about 600 ft above Edith Blvd., NE, within the city limits of Albuquerque, N. Mex.	8.5	1961	8-10-63	†c4,100
Arroyo del Embudo	Drains, Canals Rio Grande	SW¼NE¼ sec.18, T.10 N., R.4 E., between Pennsylvania Street and Hendola Drive, NE, within the city limits of Albuquerque, N. Mex.	14.6	-	8-10-63	†1,470
do	do	SW¼NW¼ sec.10, T.10 N., R.3 E., just east of Princeton Avenue, NE, 1 block north of Menaul Blvd., within the city limits of Albuquerque, N. Mex.	34.1	1961	8-10-63	†8,840
Campus Wash	Drains, Canals, Rio Grande	Lat 35°06'10", long 106°38'10", in Mount Calvary Cemetary, about 800 ft above Edith Blvd., NE, within the city limits of Albuquerque, N. Mex.	7.3	-	8-10-63	†640
Alamosa River	Rio Grande	SE¼SE¼ sec.26, T.9 S., R.7 W., above San Mateo Canyon, 8 miles northwest of Monticello, N. Mex.	-	1961-63	10-15-63 12- 5-63 1-22-64 2-11-64 3-16-64 4- 8-64	*3.65 *.92 *3.17 *4.06 *4.42 *4.83
Alamosa River	do	E½ sec.1, T.10 S., R.7 W., below Shipman Canyon, 6 miles northwest of Monticello, N. Mex.	-	1961-63	10-15-63 12- 5-63 1-22-64 2-11-64 3-16-64 4- 8-64	*5.82 *3.78 *5.92 *4.50 *6.37 *6.74
Cuchillo Negro Creek	do	N½ sec.20, T.12 S., R.6 W., ½ mile above diversion, 7 miles west of Cuchillo, N. Mex.	-	1961-63	10-15-63 12- 5-63 1-23-64 2-10-64 3-15-64 4- 8-64	*3.31 *2.50 *1.67 *1.39 *1.84 *2.19
Palomas River	do	Sec. 4, T.13 S., R.6 W., at box canyon, above diversion, about 13 miles northwest of Truth or Consequences, N. Mex.	-	1961-63	10-14-63 12- 5-63 1-23-64 2-10-64 3-15-64 4- 9-64	*2.19 *2.96 *3.18 *3.31 *2.66 *2.51
do	do	SW¼ sec.5, T.14 S., R.5 W., above Palomas Community ditch, about 7 miles west of Truth or Consequences, N. Mex.	-	1961-63	10-14-63 12- 5-63 1-23-64 2-10-64 3-15-64 4- 9-64	*1.50 *2.16 *2.31 *2.00 *2.14 *2.07
Inlet to Fort Bliss sumparea	do	Lat 31°50'30", long 106°25'30", 0.6 mile northeast of former gaging station and within the city limits of El Paso, Tex.	-		9-2-62	†755
Jesuit Draw	do	Lat 31°44'26", long 106°19'41", about 750 ft above Interstate Highway 10 and within the city limits of El Paso, Tex.	1.49		8-18-63	†1,630

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Rio Grande basin--Continued				
Pendall Draw	Rio Grande	Lat 31°43'25", long 106°19'05", about 3,000 ft below Interstate Highway and within city limits of El Paso, Tex.	1.71		8-18-63	838
Cow Creek	Pecos River	SE¼ sec.13, T.14 N., R.13 E., 1 mile above mouth, 3.5 miles northwest of San Jose, N. Mex.	130		6- 1-63	†1,420
Right bank tributary	do	SW¼ sec.30, T.14 N., R.14 E., at culvert on U. S. Highway 84-85, 1.7 miles northwest of San Jose, N. Mex.	< 2		6- 1-63	†208
El Rito	do	SW¼NW¼ sec.28, T.14 N., R.14 E., 1.2 miles north of San Jose, N. Mex.	37.2		6-1-63	†8,070
Pecos River	Rio Grande	NW¼NE¼ sec.32, T.14 N., R.14 E., at bridge No. 1818 on U. S. Highway 84-85, 0.4 mile north of San Jose, N. Mex.	579		6- 1-63	†11,400
Pecos River	do	Lat 35°06'45", long 104°50'40", at old ford at Colonias, N. Mex. River mile 288.6.	-	1912, 1961 1963	4-20-64 4-27-64 4-29-64 5- 7-64 5-14-64 5-22-64 5-28-64 6- 5-64 6-12-64	51.1 24.8 5.65 1.41 0 0 93.7 127 35.5 0
Carrizo Creek	Rio Ruidoso	SW¼ sec.33, T.11 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 2 miles above mouth and 1½ miles south of Ruidoso, N. Mex.	-	1961-63	12-17-63 3-24-64 7-16-64 9- 8-64	*1.14 *1.16 *1.00 *1.06
Lincoln Canyon	Rio Felix, to Pecos River	NE¼SW¼ sec.12, T.15 S., R.17 E., about 7.5 miles northeast of Elk, N. Mex.	216		7-31-62	†11,500
Hart Canyon	Pecos River	SW¼NE¼ sec.9, T.17 S., R.27 E., 1.8 miles above mouth and 6.2 miles east of Artesia, N. Mex.	25.0		6-13-64	†10,900
Eagle Draw	Pecos River	SW¼NW¼ sec.21, T.17 S., R.25 E., 6 miles west of Artesia, N. Mex.	174		6-13-64	†7,170
Silver Springs Canyon	Elk Canyon	SE¼SE¼ sec.15, T.15 S., R.13 E., at Mescalero Apache Indian Reservation boundary, 6.2 miles northeast of Cloudcroft, N. Mex.	-	1958-63	12-16-63 3-23-64 7-16-64 9- 8-64	*.10 1.00 *.13 .19
do	do	SE¼NE¼ sec.14, T.15 S., R.13 E., at Parshall flume 1 mile downstream from Mescalero Apache Indian Reservation boundary, 7.2 miles northeast of Cloudcroft, N. Mex.	-	1961-63	12-16-63 3-23-64 7-16-64 9- 8-64	*.31 1.21 .32 .45
Pecos River	Rio Grande	SW¼SW¼NW¼ sec.27, T.20 S., R.26 E., below Willow Draw, 12 miles northwest of Carlsbad, N. Mex.	-		8-17-64 8-24-64 8-31-64 9- 7-64 9-14-64 9-21-64 9-30-64 1-27-64 1-31-64	*16.2 *14.2 *10.6 *9.34 *9.23 *11.6 *12.5 *38.2 *35.8
do	do	NW¼SE¼NW¼ sec.5, T.21 S., R.26 E., below Soapberry Draw, 8 miles northwest of Carlsbad, N. Mex.	-	1960	8-17-64 8-24-64 8-31-64 9- 7-64 9-14-64 9-21-64 9-30-64	*16.3 *12.2 *9.19 *7.06 *7.82 *10.4 *11.3

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Rio Grande basin--Continued				
Release from Carlsbad main canal	Pecos River	NE¼SE¼SE¼ sec.26, T.21 S., R.26 E., at Parshall flume just downstream from Carlsbad main canal flume across Pecos River.	-	-	7- 8-64	2.60
					7-10-64	3.59
					8- 4-64	2.80
					8- 5-64	3.84
Country Club springs	do	SW¼SW¼SW¼ sec.25 T.21 S., R.26 E., from north bank upstream from Riverside Country Club at Carlsbad, N. Mex.	-	-	7-10-64	d3.42
					7-15-64	d3.16
					7-17-64	d2.74
					8- 4-64	d2.82
					8- 7-64	d2.24
					8-10-64	d2.24
					8-17-64	d1.77
					8-24-64	d1.90
					8-31-64	d1.17
					9- 7-64	d1.09
					9-14-64	d2.02
					9-21-64	d2.70
					9-30-64	d3.20
Pecos River	Rio Grande	SE¼NW¼NE¼ sec.36, T.21 S., R.26 E., at lower end of island opposite N. Richard St., Carlsbad, N. Mex.	-	1955	8- 7-64	d10.1
Harroun canal	Pecos River	NW¼SW¼SE¼ sec.11, T.23 S., R.28 E., at head at State Engineer gage.	-	1954-55	2- 6-64	40.2
				1961-62	7-27-64	8.53
					8- 1-64	24.1
Black River	do	NE¼SE¼ sec.3, T.26 S., R.24 E., below Mayes Ranch, 10 miles southwest of White City, N. Mex.	-	1953-63	10-28-63	d.45
					12- 9-63	d.54
					1- 1-64	d.82
					1-31-64	d.55
					2-25-64	d.52
					3-20-64	d.52
					4-30-64	d.40
					5-22-64	d.45
					6-29-64	d.61
					8- 1-64	d.33
					9-2-64	d.37
Rattlesnake Springs	Black River	SE¼SW¼ sec.23, T.25 S., R.24 E., 5 miles south of Carlsbad Caverns, 7.2 miles southwest of White City, and 25 miles southwest of Carlsbad, N. Mex.	-	1952-63	10-28-63	d2.24
					12- 9-63	d2.24
					1- 1-64	d2.28
					1-30-64	d2.34
					2-25-64	d2.69
					3-27-64	d2.82
					4-30-64	e.69
					6-29-64	f1.55
					8- 1-64	d.71
					9-2-64	d.01
Walnut Canyon	do	SW¼NE¼ sec.28, T.24 S., R.25 E., 1.6 miles northwest of White City, N. Mex.	12.1		8-31-63	†10,700
Blue Springs	do	SW¼ sec.27, T.24 S., R.26 E., above all diversions 5½ miles east of White City, N. Mex.	-	1907	10-28-63	b9.84
				1952-63	12- 9-63	b10.6
					1- 1-64	b10.0
					1-31-64	b10.8
					2-25-64	b9.41
					3-20-64	b10.0
					4-30-64	b9.99
					5-22-64	b9.70
					6-29-64	b8.84
					8- 1-64	b9.56
					9- 2-64	b9.05

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Rio Grande basin--Continued				
Pecos River	Rio Grande	SE¼SW¼NE¼ sec.17, T.24 S., R.29 E., at Fishing Rock Crossing, 4 mi east of Malaga, N. Mex.	-	1953-54 1962-63	11- 1-63 12- 6-63 1-16-64 2- 7-64 3-23-64 4- 3-63 5- 6-64 6-19-64 7-28-64 8-11-64 8-12-64 8-13-64 8-21-64 9-18-64	35.7 52.0 56.0 27.4 19.6 17.0 12.7 12.1 10.3 10.2 9.21 9.95 9.00 9.22 11.9
do	do	NE¼NE¼NE¼ sec.20, T.24 S., R.29 E., at old ford near well USGS 11, 4½ mi southeast of Malaga, N. Mex.	-	1962-63	11- 1-63 12- 6-63 1-16-64 2- 7-64 3-23-64 4- 3-64 4- 8-64 5- 6-64 6-19-64 7-28-64 8-11-64 8-12-64 8-13-64 8-21-64 9-18-64	e27.9 e45.6 54.4 26.1 19.0 19.9 19.6 e6.94 e7.16 e8.59 e6.11 e5.27 e4.92 e5.38 e5.52 e7.51
		Tularosa Valley				
Tularosa basin tributary No.1	Tularosa Valley	SW¼NE¼ sec.15, T.12 S., R.9 E., above bridge No. 1409.75 on Southern Pacific Railroad and culvert No. 5422 on U. S. Highway 54, 3.1 miles south of Three Rivers, N. Mex.	7.03		7- 6-63	†2,370
		San Juan River basin				
San Juan River	Colorado River	SE¼ sec.21, T.29 N., R.13 W., at river mile 99, above Animas River, 1 mile south of Farmington, N. Mex.	a5,880	1962-63	4-28-63 9-15-63	168 439
Fruitland Indian ditch (Formerly published as two sites: "Main Canal South" and "1st Indian ditch south.")	San Juan River	E½ sec.8, T.29 N., R.16 W., about River mile 75, on left bank side of San Juan river, opposite Hogback Diversion Dam, 7½ miles east of Shiprock, N. Mex. Note.--This site is above division of ditch as explained at left.	-	1963	10- 2-63 10-29-63 2-17-64 2-25-64 3- 3-64 3- 9-64 3-30-64 4-13-64 4-21-64 9-15-64	0 0 0 0 0 0 0 17.3 7.36 0
Hogback Indian Canal	do	E½ sec.8, T.29 N., R.16 W., at river mile 75, below Hogback diversion, 7½ miles east of Shiprock, N. Mex.		1963	10- 2-63 2-17-64 2-25-64 3- 2-64 3- 9-64 3-30-64 4-13-64 4-21-64 9-15-64	208 0 0 0 0 0 133 207 132

Measurements at miscellaneous sites

Discharge measurements made at miscellaneous sites during water year 1964

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
San Juan River basin--Continued						
San Juan River	Colorado River	E½ sec.8, T.29 N., R.16 W., at river mile 75, below Hogback diversion, 72 miles east of Shiprock, N. Mex.	-	1963	10- 2-63	177
						g385
					2-17-64	g416
					2-24-64	g441
					3- 3-64	g404
					3- 9-64	g397
					3-30-64	g448
					4-13-64	273
						g423
					4-21-64	210
						g424
					9-15-64	475
						g507
Gila River basin						
Sapillo Creek	Gila River	SW¼ sec.33, T.14 S., R.13 W., in Gila National Forest, above Heart Bar Ranch, 0.7 mile downstream from Meadow Creek, 2 miles downstream from Lake Roberts Dam and 18 miles north of Silver City, N. Mex.	a105	-	5- 4-64	.25
					5-25-64	0
					6-22-64	0
					7-13-64	0
					7-22-64	0
					8- 8-64	1.98
					8-22-64	2.41
					9- 3-64	1.13
					9-27-64	19.9
					9-30-64	9.56
do	do	SE¼ sec.32, T.14 S., R.13 W., 0.5 mile above bridge on State Highway 25, and 12 miles north of Pinos Altos, N. Mex.	111	-	8- 1-62	†2,180
New Model Canal	Gila River	NE¼SW¼ sec.6, T.19 S., R.21 W., 500 ft above New Mexico-Arizona State line and 2¾ miles west of Virden, N. Mex.	-	1939-53	10- 4-63	0
				1953-64	11-13-63	0
					12-13-63	1.22
					1-17-64	0
					2- 6-64	2.06
					2-28-64	3.23
					3-13-64	0
					4-21-64	0
					5-21-64	3.28
					6- 9-64	0
					6-18-64	0
					7- 6-64	0
					7-23-64	0
					8-4-64	18.7
					8-20-64	12.8
					9-10-64	0

* Base flow
† Peak flow
a Approximately
b Revised; published in 1963 State Report as 5,770 cfs.
c Not reviewed.
d Spring flow.
e No discharge from springs; all flow from supplemental well.
f Discharge affected by pumpage for Carlsbad Caverns water supply.
g Total surface flow in valley cross section, all canal channels included.
< Less than.

SEEPAGE INVESTIGATIONS

See paragraph under SUPPLEMENTAL DATA, page 7 . A seepage or low-flow investigation along a watercourse involves discharge measurements or observations of no flow at selected sites in a given reach of the channel, plus measurements of inflow and diversions, field commentary relative to observations, water samples and temperatures, and any other relevant data. Measuring sites are described to the extent that they may be used in subsequent investigations. Sometimes temporary recording installations are used to supplement records at regular gaging stations in the study of flow trends.

Field work proceeds from the most upstream measuring site. Hydrographers may alternate measurements, or the main reach may be subdivided and hydrographers assigned to each sub-reach, with overlap measurements to be made at joining points (these are listed together, the discharge above the line representing last measurement of hydrographer working the upper reach).

Processed data are tabulated and published in the appropriate WSP, or "Surface Water Records of New Mexico" beginning with 1961. Observations of no flow of tributary streams are omitted from the tabulation. Indicated gains or losses may sometimes appear incompatible because of diurnal or other flow variations, or because of small inaccuracies in open-channel measurements. Trends in a given reach may vary with the seasons, or because of regulation. Successive investigations can serve to delineate a progressive change.

Results of water samples taken are published in the appropriate WSP, or "Quality of Waters in New Mexico."

Pecos River - Anton Chico to Walker Ranch (River Ranch), above Santa Rosa, N. Mex.

Reach.--From regular gage "near Anton Chico" (river mile 316.5) to Walker Ranch (river mile 277.8), a distance of 38.7 river miles. The streambed is sandy throughout the reach, with broken rock and boulder riffles. Banks range from gently sloping to rock cliffs and are generally covered with sparse vegetation. Large channel losses occur from below the irrigated area at Dilia (river mile 310) to below Colonias (river mile 285). There are no surface diversions in this reach. Acequia del Bodo Juan Paiz diverts from the Pecos at river mile 324.5; a portion of this diversion was returned to the river at mile 311.4. Used U. S. G. S. Plan and Profile of the Pecos River, Lake McMillan to Pecos, N. Mex., maps for river mile and U. S. G. S. topographic maps for land location.

Previous Investigations.--December 1954, May 1955, April 1961, April 1963.

Date.--April 29, 1964.

Summary.--Weather was somewhat unfavorable with strong gusty winds; scattered light showers with no appreciable precipitation. Snow melt in the headwaters caused moderate diurnal fluctuation. River discharge at "near Anton Chico" gage decreased from 59 cfs at 0900 Apr. 28 to 32 cfs at 1600 Apr. 29. Discharge at Colonias (temporary gage, river mile 288.6) decreased from about 8 cfs at 0100 Apr. 29 to zero at 1700 Apr. 29. Discharge at Walker Ranch ranged from 12 to 14 cfs during the period of the investigation. Overall results are considered fair. Indicated losses may be low since flow throughout much of the reach was decreasing.

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cubic ft per second: Main stream	Tributary	Indicated gain or loss
316.5	Pecos River	Lat 35°10'45", long 105°06'30", 2½ mi southeast of Anton Chico (regular gaging station)	0830	55	38.8	-	-
-	Acequia del Bodo Juan Paiz†	Lat 35°11'15", long 105°06'20", opposite Pecos River gaging station	0945	52	-	(28.1)	-
314.0	Pecos River	Lat 35°10'05", long 105°05'05", ½ mi below Canyon Blanco...	1050	56	41.9	-	+3.1
311.4 (mouth)	Acequia del Bodo Juan Paiz wasteway†	Lat 35°10'30", long 105°02'20", 0.3 mi above mouth.....	1230	56	-	11.1	-
310.5	Pecos River	Lat 35°10'20", long 105°02'00", below all irrigation at Dilia	1315	57	50.1	-	-2.9
308.3	do.	Lat 35°11'40", long 105°01'15", below arroyo from left.....	1425	57	51.1	-	+1.0
307.0	Spring Creek†	Lat 35°11'25", long 105°00'05", at mouth.....	1540	-	-	.2	-
307.0	Pecos River	Lat 35°11'25", long 105°00'05", below Spring Creek.....	1540 0820	55 48	a46.5 57.0	- -	-4.8 -
305.1	do.	Lat 35°11'35", long 104°58'20", at ford at La Cueva ruins..	0915	51	52.8	-	-4.2
303.3	do.	Lat 35°11'10", long 104°57'25", below arroyo from left.....	1030	56	46.0	-	-6.8
302.0	do.	Lat 35°10'35", long 104°56'55".....	1200	59	46.8	-	+.8
298.8	do.	Lat 35°10'15", long 104°56'05",1.2 mi above Gallinas River.	1310	59	35.5	-	-11.3
296.9	do.	Lat 35°09'35", long 104°55'40", 0.7 mi below Gallinas River	1410 0910	58 52	b27.8 19.6	- -	-7.7 -
295.0	do.	Lat 35°08'55", long 104°55'20", at ford.....	1015	55	14.9	-	-4.7
293.2	do.	Lat 35°08'30", long 104°53'35".....	1120	57	11.7	-	-3.2
291.3	do.	Lat 35°07'45", long 104°52'35", at abandoned diversion dam.	1220	61	9.40	-	-2.3

Note.-Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.

† Left bank.

a Stage fell 0.12 ft from 0820.

b Stage rose 0.10 ft from 0910.

Pecos River - Anton Chico to Walker Ranch (River Ranch), above Santa Rosa, N. Mex.--Continued

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cubic ft per second: Main stream	Tributary	Indicated gain or loss
288.6	Pecos River	Lat 35°06'45", long 104°50'40", at ford at Colonias (temporary recorder)	1330	61	c1.41	-	-7.99
			0810	-	5.65	-	-
287.1	do.	Lat 35°06'00", long 104°49'50"	0900	-	d.04	-	-5.61
285.4	do.	Lat 35°05'20", long 104°49'00"	0940	-	0	-	-.04
284.4	do.	Lat 35°05'30", long 104°48'00"	1030	-	0	-	-
283.2	do.	Lat 35°05'05", long 104°47'20"	1150	-	e2.16	-	+2.16
277.8	do.	NW¼NW¼ sec.32, T.10 N., R.21 E., at ford at Walker Ranch (River Ranch) (temporary recorder)	1510	62	12.3	-	+10.1

c Stage fell 0.15 ft from 0810.
d River dry 100 ft downstream.
e Surface flow reappears at river mile 283.8.

Pecos River - below Colonias to Alamogordo Reservoir, N. Mex.

Reach.--From a point about 1¾ miles southeast of Colonias (river mile 286.0), where water reappeared in the channel to the head of Alamogordo Reservoir (river mile 223.8), a distance of 62.2 river miles. The streambed is sandy throughout the reach, with broken rock, gravel, or sand riffles. Banks range from gently sloping in the Santa Rosa to Puerto de Luna area to rock cliffs in the Colonias to Santa Rosa area. Channel gains occur throughout most of the reach, the greatest being in the Santa Rosa to Puerto de Luna area. Puerto de Luna east ditch at river mile 251.8; is the only direct surface diversion from the Pecos River in this reach. Puerto de Luna west ditch diverts from Rio Agua Negra, a tributary to the Pecos River at mile 249.7. Baca ditch, Casaus ditch, Labandie ditch, and Ortega ditch are all fed by springs. Used U.S.G.S. Plan and Profile of the Pecos River, Lake McMillan to Pecos, N. Mex., maps for river mile and U.S.G.S. topographic maps where available, for land location.

Previous investigations.--March 1961, October 1961.

Date.--Oct. 8-9, 1963.

Summary.--Weather was favorable; no precipitation. River discharge at Walker Ranch (temporary gage, river mile 277.8) fluctuated between 19.5 cfs and 21 cfs from 1200 Oct. 7 to 2400 Oct. 8. Discharge at the "at Santa Rosa" regular gage (river mile 257.1) fluctuated between 22 cfs and 24 cfs during the same period. Discharge at Puerto de Luna (temporary gage, river mile 245.4) held at 95 cfs from 0400 to 1800 on Oct. 8 and then decreased to 86 cfs by 0200 Oct. 9. At 0600 the discharge began to increase and reached 98 cfs by 1000. This fluctuation was probably caused by changes in irrigation diversions or returns. Discharge at the "near Puerto de Luna" regular gage (river mile 228.1) fluctuated between 74 cfs and 81 cfs during the period of the investigation. Overall results are considered good to excellent.

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cubic ft per second: Main stream	Tributary or Diversion	Indicated gain or loss
		Oct. 8, 1963					
286.0	Pecos River	Lat 35°05'40", long 104°49'10"	0800	-	0	-	-
284.4	do.	Lat 35°05'30", long 104°48'00"	0855	65	4.74	-	+4.74
283.2	do.	Lat 35°05'05", long 104°47'20"	1005	68	14.0	-	+9.3
281.8	do.	NW¼ sec.24, T.10 N., R.20 E.	1050	69	14.2	-	+.2
281.0	do.	SE¼ sec.24, T.10 N., R.20 E.	1200	74	16.8	-	+2.6
279.7	do.	NE¼ sec.25, T.10 N., R.20 E.	1255	76	17.1	-	+.3
277.8	do.	NW¼ sec.32, T.10 N., R.21 E., at Walker Ranch (River Ranch) (temporary recorder)	1440	79	a20.9	-	+3.8
			0945	80	19.8	-	-
276.4	do.	NW¼ sec.33, T.10 N., R.21 E., below irrigated field	1055	78	18.8	-	-1.0
271.8	do.	Lat 35°03'45", long 104°40'15", above mouth of Esteros Creek	1230	80	22.7	-	+3.9
267.7	do.	Lat 35°02'30", long 104°40'55", above unnamed arroyo from left, west of Asphalt pit.	1420	75	b21.8	-	-.9
			0750	53	18.8	-	-
262.4	do.	Lat 34°59'30", long 104°41'50", 4.0 mi below Los Esteros damsite.	0915	59	17.2	-	-1.6
260.6	do.	SW¼ sec.26, T.9 N., R.21 E., below Rattlesnake Canyon	1115	70	17.3	-	+.1

a No change in stage from 0945.
b Stage rose 0.03 ft from 0750.

Pecos River - below Colonias to Alamogordo Reservoir, N. Mex.--Continued

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cubic ft per second: Main stream	Tributary or Diversion	Indicated gain or loss
		Oct. 8, 1963--Continued					
259.5	Cottonwood Springs*	NE¼ sec.34, T.9 N., R.21 E. at mouth	1240	63	-	+0.65	-
259.4	Pecos River	SE¼ sec.34, T.9 N., R.21 E.	1220	74	19.6	-	+1.6
258.2	do.	NW¼ sec.3, T.8 N., R.21 E.	1400	77	19.4	-	-.2
257.1	do.	SE¼ sec.3, T.8 N., R.21 E., at Santa Rosa (regular gaging station)	1500 0740	77 54	c23.7 22.4	- -	+4.3 -
256.0	Baca ditch*	SW¼ sec.11, T.8 N., R.21 E., at mouth	0720	60	-	+.16	-
255.7	Unnamed Trib.*	SW¼ sec.11, T.8 N., R.21 E., at mouth	0740	61	-	+1.09	-
255.6† (mouth)	Casaus ditch*	SW¼ sec.11, T.8 N., R.21 E., at road crossing at Gallegos Ranch	0820	58	-	+1.58	-
-	Sewage effluent*	SE¼ sec.11, T.8 N., R.21 E., at entrance to El Rito Creek	0850	71	-	(.32)	-
255.4	El Rito Creek†	SW¼ sec.11, T.8 N., R.21 E., at mouth	0920	63	-	+29.6	-
255.0	Pecos River	NE¼ sec.14, T.8 N., R.21 E., below El Rito Creek	1045	65	65.9	-	+11.1
255.0	Spring†	NE¼ sec.14, T.8 N., R.21 E., at mouth	1120	64	-	+.16	-
254.5† (mouth)	Spill from Casaus ditch*	SE¼ sec.14, T.8 N., R.21 E., at road crossing 0.1 mi from river.	0905	48	-	+.17	-
254.3	Spill from Page Springs ditch†	SW¼ sec.13, T.8 N., R.21 E., at mouth	1215	68	-	+.21	-
254.2	Spill from Labandie ditch†	SW¼ sec.13, T.8 N., R.21 E., at mouth	0940	63	-	+1.28	-
253.9† (mouth)	Spill from Ortega ditch*	SW¼ sec.13, T.8 N., R.21 E., below road crossing	1025	65	-	+4.53	-
-	Ortega ditch*	SW¼ sec.13, T.8 N., R.21 E., below spill to river	1110	65	-	(2.09)	-
-	Ortega ditch*	NE¼ sec.24, T.8 N., R.21 E., adjacent to river mi 253.4	1330	67	-	(2.30)	(+.21)
-	Labandie ditch†	NE¼ sec.24, T.8 N., R.21 E., adjacent to river mi 253.4	1410	66	-	(3.33)	-
253.4	Pecos River	NE¼ sec.24, T.8 N., R.21 E.	1255	73	78.8	-	+6.6
252.6	Spill from end of Labandie ditch†	SE¼ sec.19, T.8 N., R.22 E., at mouth	1245	70	-	+.28	(-3.05)
251.8	Puerto de Luna east ditch†	NE¼ sec.30, T.8 N., R.22 E., at head (diversion from Pecos River)	1410	72	-	-8.08	-
249.7	Rio Agua Negra*	NE¼ sec.31, T.8 N., R.22 E., at mouth	1500	78	-	+5.11	-
-	Puerto de Luna east ditch†	NE¼ sec.31, T.8 N., R.22 E., adjacent to river mi 249.7	1700	72	-	(8.11)	(+.03)
-	Puerto de Luna west ditch*	SE¼ sec.31, T.8 N., R.22 E., adjacent to river mi 249.7	1530	74	-	(6.97)	-
249.7	Pecos River	SE¼ sec.31, T.8 N., R.22 E., below Rio Agua Negra	1600	74	81.2	-	+5.1
		Oct. 9, 1963					
-	Puerto de Luna east ditch†	NE¼ sec.31, T.8 N., R.22 E., adjacent to river mi 249.7	0840	56	-	(8.19)	-
-	Puerto de Luna west ditch*	SE¼ sec.31, T.8 N., R.22 E., adjacent to river mi 249.7	0810	54	-	(6.59)	-
249.7	Pecos River	SE¼ sec.31, T.8 N., R.22 E., below Rio Agua Negra	0820	78	d80.8	-	-
-	Puerto de Luna east ditch†	SE¼ sec.17, T.7 N., R.22 E., adjacent to river mi 245.4	0935	59	-	(4.78)	(-3.41)

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.
† Left bank.
c Stage rose 0.01 ft from 0740.
d Stage rose 0.02 ft from 1600 Oct. 8.

Pecos River - below Colonias to Alamogordo Reservoir, N. Mex.--Continued

Pecos River mile	Stream	Location	Time	Water temp °F	Discharge, in cubic ft per second: Main stream	Tributary or Diversion	Indicated gain or loss
		Oct. 9, 1963--Continued					
-	Puerto de Luna west ditch*	SE¼ sec.17, T.7 N.,R.22 E., adjacent to river mi 245.4.....	1000	60	-	(2.44)	-
245.4	Pecos River	SE¼ sec.17, T.7 N., R.22 E., at Puerto de Luna (temporary recorder)	0955	62	98.3	-	+17.5
242.6	do.	SE¼ sec.29, T.7 N., R.22 E., below mouth Puerto Creek.....	1115	64	94.5	-	-3.8
236.2	do.	SW¼ sec.36, T.7 N., R.22 E.....	1330	73	91.3	-	-3.2
230.4	do.	SW¼ sec.8, T.6 N., R.23 E., above mouth of Arroyo San Juan de Dios	1500 0850	73 58	e87.4 80.8	- -	-3.9 -
228.1	do.	NW¼ sec.20, T.6 N., R.23 E., 9 mi southeast of Puerto de Luna (regular gaging station)	1020	65	78.4	-	-2.4
223.8	do.	SE¼ sec.33, T.6 N., R.23 E., above head of Alamogordo Lake	1140	66	84.3	-	+5.9

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.
e No change in stage from 0850.

Pecos River - below Fort Sumner to Acme, N. Mex.

Reach.--From the gage "below Fort Sumner"(river mile 176.6)to the regular gage "near Acme" (river mile 94.0), a distance of 82.6 river miles. The streambed is sandy throughout the reach with long pools and mild riffles. Banks are relatively low and generally covered with salt cedars. The only surface diversion in this reach is a pump at Benedict's Ranch at river mile 128.5. This was not operating during either investigation. Inflow to head of reach is essentially drain water from Fort Sumner Irrigation Project. Used U.S.G.S. Plan and Profile of the Pecos River, Lake McMillan to Pecos, N. Mex., maps for river mile and U.S.G.S. topographic maps where available, for land location.
Previous investigations.--January 1959, June 1960, November 1960, May 1962.
Date.--Oct. 10, 1963.
Summary.--Weather was favorable; no precipitation. River discharge "below Fort Sumner" fluctuated between 38 cfs and 46 cfs during the twelve hours preceding the start of the investigation. This fluctuation was the result of variable discharge from drains of the Fort Sumner Project. Discharge at Benedict's pump (temporary gage, river mile 128.5) showed a slight diurnal fluctuation ranging from 24 cfs to 28 cfs, during the period 24 hours before to 16 hours after the measurement. Discharge "near Acme" was practically constant from 12 hours before to 12 hours after the measurement. Overall results are considered fair above Benedict's pump and good below.

Date.--June 9, 1964.
Summary.--Weather was clear with high temperatures; no precipitation. Discharge "below Fort Sumner" fluctuated between 24 cfs and 27 cfs during the twelve hours preceding the start of the investigation. Discharge at Benedict's pump was constant at 3.0 cfs from 1700 June 8 to 1200 June 9, then decreased uniformly to 1.7 cfs at 0200 June 10 and then increased uniformly to 2.0 cfs at 1000 June 10. No flow "near Acme." Overall results, good to fair. Channel dry at and below river mile 111.0.

Pecos River mile	Stream	Location	Oct. 10, 1963: Time	Water temp. °F	Discharge, in cfs: Main Stream	Tributary	Indicated gain or loss	June 9, 1964: Time	Water temp. °F	Discharge, in cfs: Main Stream	Tributary	Indicated gain or loss
176.6	Pecos River	SW¼ sec.36, T.2 N., R.26 E., below Ft.Sumner (gaging station)	0810	54	41.8	-	-	0710	62	26.5	-	-
175.7	do.	SW¼ sec.1, T.1 N., R.26 E., below Taiban Creek	0905	58	41.2	-	-0.6	0820	63	27.6	-	+1.1
165.8	do.	NE¼ sec.8, T.1 S., R.26 E., above Arroyo Yeso	1030	64	35.4	-	-5.8	0945	76	20.8	-	-6.8
163.0	do.	NE¼ sec.17, T.1 S., R.26 E., below Arroyo Yeso	1120	67	36.8	-	+1.4	1040	76	20.6	-	-.2
156.2	do.	SE¼ sec.3, T.2 S., R.25 E., above Conejos Creek	0920	59	37.2	-	+.4	0800	62	18.0	-	-2.6
156.1	Conejos Cr.*	SW¼ sec.3, T.2 S., R.25 E., at mouth	0915	-	-	0.07	-	0810	64	-	0.003	-

* Right bank.

Pecos River - below Fort Sumner to Acme, N. Mex.--Continued

Pecos River mile	Stream	Location	Oct. 10, 1963--Cont'd					June 9, 1964--Cont'd				
			Time	Water temp. °F	Discharge, in cfs			Time	Water temp. °F	Discharge, in cfs		
					Main Stream	Tributary	Indicated gain or loss			Main Stream	Tributary	Indicated gain or loss
155.9	Pecos River	SE¼ sec.3, T.2 S., R.25 E., below Conejos Cr.	1020	63	35.6	-	-1.7	0840	66	17.6	-	-0.4
152.8	do.	NE¼ sec.22, T.2 S., R.25 E., below Cedar Cr.	1235	73	33.5	-	-2.1	1200	84	15.1	-	-2.5
146.8	do.	NW¼ sec.10, T.3 S., R.25 E., above Arroyo de la Mora	1340	73	33.9	-	+.4	1310	88	10.2	-	-4.9
144.7 (mouth)	Arroyo de la Mora*	SE¼ sec.3, T.3 S., R.24 E., at road crossing 6 mi above mouth	1145	68	-	(0.04)	-	0955	73	-	(0.02)	-
143.0	Pecos River	NE¼ sec.28, T.3 S., R.25 E., above Wylie Draw	1300	73	33.5	-	-.4	1100	80	7.57	-	-2.6
135.0	do.	NE¼ sec.14, T.4 S., R.25 E., above Hernandez Draw	1440	75	25.0	-	-8.5	1240	87	4.37	-	-3.20
128.5	do.	SW¼ sec.36, T.4 S., R.25 E., at Benedict's pump (temporary recorder)	1600	70	25.1	-	+.1	1450	90	2.31	-	-2.06
124.4	do.	NE¼ sec.14, T.5 S., R.25 E., below Huggins Creek	1710	75	26.2	-	+1.1	1550	89	1.60	-	-.71
117.7	do.	NE¼ sec.9, T.6 S., R.26 E., below Crockett Draw	-	-	-	-	-	0940	81	.82	-	-.78
116.8	do.	SE¼ sec.9, T.6 S., R.26 E., below Crockett Draw	0800	54	22.3	-	-3.9	-	-	-	-	-
113.0	do.	NW¼ sec.33, T.6 S., R.26 E., below Bosque Draw	0930	59	20.7	-	-1.6	1135	84	.01	-	-.81
111.0	do.	NE¼ sec.5, T.7 S., R.26 E., above Five Mile Draw	1050	66	20.4	-	-.3	1200	-	0	-	-.01
106.8	do.	NE¼ sec.29, T.7 S., R.26 E., at Transwestern pipeline crossing	1200	72	16.9	-	-3.5	-	-	-	-	-
102.7	do.	SW¼ sec.1, T.8 S., R.25 E., at El Paso pipeline crossing	1340	76	13.6	-	-3.3	-	-	-	-	-
97.5	do.	NW¼ sec.35, T.8 S., R.25 E., above Salt Creek	1515	76	11.5	-	-2.1	-	-	-	-	-
94.0	do.	NW¼ sec.14, T.9 S., R.25 E., near Acme (regular gaging station)	1630	75	10.1	-	-1.4	-	-	-	-	-

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.

Pecos River - Acme to Lake McMillan, N. Mex.

Reach.--From the regular gage "near Acme" (river mile 94.0) to the head of Lake McMillan, a distance of about 100 river miles. The streambed is generally sandy throughout the reach with long pools and mild riffles. Banks are relatively low and generally covered with salt cedars. The river channel from near Artesia to the head of Kaiser Channel has been realigned during recent years and many of the former elbows have been eliminated. Two river pumps, at river mile 47.1 and 27.7, were in operation during this investigation. The effect of these pumps has been included in the tabulation. Used U.S.G.S. Plan and Profile of the Pecos River, Lake McMillan to Pecos, N. Mex., maps for river mile and U.S.G.S. topographic maps for land location.

Previous investigations.--At least once a year, 1953-60, 1962-63.

Date.--Feb. 18-19, 1964.

Summary.--Weather was clear with light winds; no precipitation. Slight ice effect was noted during several early morning measurements on Feb. 18, but this probably had little or no effect on the results. River discharge at various regular and temporary gages was as follows:

"Near Acme" (No.8-3860), mile 94.0 - dropped from 8.9 to 7.7 cfs during the 12 hours prior to the measurement.

Below Rio Hondo, temporary gage, mile 74.5 - remained nearly constant at 25 cfs from 1500 to 2400 Feb. 17, and then started a near uniform decline to 22 cfs at 2400 Feb. 18.

At Dexter bridge, temporary gage, mile 58.1 - nearly constant at 37 cfs for 16 hours prior to the start of the investigation and then started a gradual rise, reaching 39 cfs by 1800 Feb. 18, and then gradually receded to 38 cfs by 0600 Feb. 19.

At Hagerman bridge, temporary gage, mile 46.7 - fluctuated between 45 cfs and 47 cfs from 1800 Feb. 17 to 0900 Feb. 18, and then declined to 41 cfs because of diversion by river pump at mile 47.1 - remained at 41 cfs until 1730 Feb. 18, and then rose to 45 cfs and remained constant until 1000 Feb. 19.

"Near Lake Arthur" (No. 8-3955), mile 30.6 - fluctuated between 44 cfs and 47 cfs on Feb. 19.

"Near Artesia" (No. 8-3965), mile 12.4 - fluctuated between 40 cfs and 44 cfs on Feb. 19 (fluctuation based on measurements).

"(Kaiser Channel) near Lakewood" (No. 8-3995) - constant at 41 cfs from 1000 to 2200 on Feb. 19.

Overall results are considered good.

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cfs		
					Main stream	Tributary or Diversion	Indicated gain or loss
		Feb. 18, 1964					
94.0	Pecos River	NE¼SW¼NW¼ sec.14, T.9 S., R.25 E., near Acme (regular gaging station)	0800	32	7.74	-	-
91.7	do.	W½SW¼NE¼ sec.22, T.9 S., R.25 E., at pipeline crossing.	0910	34	9.19	-	+1.45
89.1	do.	SE¼SW¼SE¼ sec.27, T.9 S., R.25 E., above Bitter Lakes	1050	43	9.03	-	- .16
84.9	do.	NE¼SW¼SW¼ sec.11, T.10 S., R.25 E., at Bitter Lakes above inflow	1200	47	10.8	-	+1.8
84.9	Inflow*	NE¼SW¼SW¼ sec.11, T.10 S., R.25 E., from old river channel at Bitter Lakes	1220	47	-	0.22	-
78.4	Pecos River	NE¼NE¼NE¼ sec.33, T.10 S., R.25 E., above mouth of Bitter Creek	1425	53	12.5	-	+1.5
-	Bitter Creek*	NW¼NE¼SW¼ sec.28, T.10 S., R.25 E., 0.9 mi above mouth	0830	38	-	(3.53)	-
78.4	do.	NE¼NE¼NE¼ sec.33, T.10 S., R.25 E., at mouth.....	1450	55	-	4.71	-
77.3	Pecos River	SE¼SW¼SW¼ sec.34, T.10 S., R.25 E., below Tatum bridge	1605	52	17.5	-	+.3
74.7	do.	SE¼SE¼NE¼ sec.9, T.11 S., R.25 E., above Rio Hondo...	1705 0800	50 34	a18.1 16.6	- -	+.6 -
-	Hagerman Irrig. Co. well "b"	NE¼NE¼NE¼ sec.35, T.10 S., R.24 E.....	0955	70	-	(3.30)	-
-	Hagerman Irrig. Co. well "a"	NE¼NE¼NE¼ sec.35, T.10 S., R.24 E.....	0950	70	-	(6.21)	-
-	Hagerman Canal	NW¼SW¼NE¼ sec.31, T.10 S., R.25 E., at head.....	0750	51	-	(20.6)	-
-	Roswell Drainage District "Y" line*	NW¼SW¼SE¼ sec.5, T.11 S., R.25 E., at entrance to Hagerman Canal	-	-	-	(b.1)	-
-	South Spring Creek*	SE¼SE¼SE¼ sec.8, T.11 S., R.25 E., at entrance to Hagerman Canal	1200	47	-	(2.25)	-
-	Pamona Drain*	NW¼NW¼SE¼ sec.22, T.11 S., R.25 E., at entrance to Hagerman Canal	1430	56	-	(3.24)	-

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.

* Right bank.

a Stage rose 0.01 ft from 0800.

b. Estimated.

Pecos River - Acme to Lake McMillan, N. Mex.--Continued

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cfs		
					Main stream	Tributary or Diversion	Indicated gain or loss
		Feb. 18, 1964--Continued					
-	Rio Hondo	NE¼SW¼SE¼ sec.32, T.10 S., R.25 E., at U. S. Hwy. 380 bridge	-	44	-	(1.44)	-
-	South Spring Drain*	SE¼NW¼SE¼ sec.9, T.11 S., R.25 E., at road crossing (tributary to Rio Hondo)	0735	49	-	(.10)	-
74.6	Rio Hondo*	NE¼NE¼SE¼ sec.9, T.11 S., R.25 E., at mouth.....	0850	46	-	6.74	(+5.20)
74.5	Pecos River	SE¼NE¼SE¼ sec.9, T.11 S., R.25 E., below Rio Hondo (temporary recorder)	0920	36	24.0	-	+.7
74.1	East Grand Plains Drainage District "D" line*	SE¼SW¼SW¼ sec.10, T.11 S., R.25 E., at mouth.....	0810	55	-	1.03	-
73.6	East Grand Plains Drainage District "A-B-C" line*	NW¼SW¼NE¼ sec.15 T.11 S., R.25 E., at mouth.....	0800	47	-	.76	-
72.7	Gravel Pit Drain*	SE¼SE¼NW¼ sec.14, T.11 S., R.25 E., at mouth.....	1350	51	-	1.39	-
71.4	Pecos River	NW¼SE¼SW¼ sec.13, T.11 S., R.25 E.....	1050	44	28.3	-	+1.1
67.6	do.	SE¼SW¼NW¼ sec.36, T.11 S., R.25 E., above Oasis-Miller drain	1220	48	29.6	-	+1.3
64.5	do.	S½NE¼NE¼ sec.17, T.12 S., R.26 E., at Transwestern pipeline crossing	1335	50	31.3	-	+1.7
61.7	do.	SE¼NE¼SE¼ sec.29, T.12 S., R.26 E.....	1445	52	32.0	-	+.7
61.4	Nine Mile Draw*	SW¼SE¼SE¼ sec.29, T.12 S., R.26 E., at mouth.....	0930	51	-	.62	-
60.9	Pecos River	NW¼SW¼NW¼ sec.33, T.12 S., R.26 E.....	1550	52	34.4	-	+1.8
58.4	Zuber Hollow wasteway*	SE¼SE¼SE¼ sec.4, T.13 S., R.26 E., at mouth.....	1045	49	-	1.93	-
58.1	Pecos River	SW¼NW¼NW¼ sec.10, T.13 S., R.26 E., at Dexter bridge (temporary recorder)	1710 0725	50 36	c38.8 37.3	- -	+2.5 -
55.5	Berry drain*	NW¼NW¼SW¼ sec.14, T.13 S., R.26 E., at mouth.....	1120	45	-	.65	-
55.4	Pecos River	NE¼NW¼SW¼ sec.14, T.13 S., R.26 E.....	0820	34	37.9	-	0
53.0	do.	SW¼SW¼SE¼ sec.23, T.13 S., R.26 E.....	0910	40	37.8	-	-.1
51.8	Dexter-Greenfield drain, "D" line*	SE¼NE¼SE¼ sec.27, T.13 S., R.26 E., at mouth.....	0945	-	-	.92	-
50.7	Pecos River	NW¼SW¼NW¼ sec.35, T.13 S., R.26 E.....	1010	40	40.8	-	+2.1
-	Rio Felix*	SW¼SE¼SE¼ sec.34, T.13 S., R.26 E., ¾ mi above mouth.	1050	47	-	(1.32)	-
50.0	do.	NW¼SW¼SE¼ sec.35, T.13 S., R.26 E., at mouth.....	1120	46	-	1.81	(+.49)
49.2	Pecos River	SW¼SE¼NW¼ sec.2, T.14 S., R.26 E.....	1200	47	43.4	-	+.8
47.4	Hagerman Drainage District "D" line*	SE¼NW¼NW¼ sec.12, T.14 S., R.26 E., at mouth.....	0900	58	-	.10	-
47.1	Charles Green pump*	NW¼SW¼NE¼ sec.12, T.14 S., R.26 E.....	0500 to 1500	-	-	-4.01	-
46.7	Pecos River	SE¼NE¼NE¼ sec.12, T.14 S., R.26 E., at Hagerman bridge (temporary recorder)	1330	51	41.0	-	+1.5

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.
* Right bank.
c Stage rose 0.01 ft from 0725.

Pecos River - Acme to Lake McMillan, N. Mex.--Continued

Pecos River mile	Stream	Location	Time	Water temp. °F	Discharge, in cfs		
					Main stream	Tributary or Diversion	Indicated gain or loss
		Feb. 18, 1964--Continued					
44.2	Pecos River	SW¼SW¼SE¼ sec.13, T.14 S., R.26 E.....	1430	52	40.9	-	-0.1
42.8	do.	NW¼NW¼NE¼ sec.25, T.14 S., R.26 E.....	1515	52	41.1	-	+.2
41.9	do.	NE¼SW¼SW¼ sec.25, T.14 S., R.26 E.....	1605	50	43.7	-	+2.6
		Feb. 19, 1964					
41.9	Pecos River	NE¼SW¼SW¼ sec.25, T.14 S., R.26 E.....	0810	36	d44.6	-	-
39.8	do.	SE¼SE¼SW¼ sec.31, T.14 S., R.27 E., above Buffalo Valley pump	0900	37	44.2	-	-.4
35.1	Steve Mason drain†	NE¼NW¼SW¼ sec.18, T.15 S., R.27 E., at mouth.....	1000	44	-	0.05	-
34.5	Pecos River	NW¼SW¼SE¼ sec.13, T.15 S., R.26 E.....	1010	41	46.0	-	+1.8
30.6	do.	NE¼SW¼NE¼ sec.27, T.15 S., R.26 E., near Lake Arthur (regular gaging station)	1110	41	44.4	-	-1.6
27.7	Lake Arthur Farm pump*	NE¼NW¼NE¼ sec.32, T.15 S., R.26 E.....	0001 to 2400	-	-	-4.84	-
26.5	Pecos River	SE¼SE¼SE¼ sec.32, T.15 S., R.26 E.....	1210 0820	46 37	e34.9 35.0	- -	-4.7 -
20.6	Cottonwood Cr.*	NE¼SE¼NW¼ sec.26, T.16 S., R.26 E., at mouth.....	0925	34	-	.37	-
20.5	Pecos River	NE¼SE¼NW¼ sec.26, T.16 S., R.26 E.....	1000	38	39.8	-	+4.4
16.0	do.	NW¼NW¼NW¼ sec.12, T.17 S., R.26 E.....	1130	44	40.9	-	+1.1
16.0	Artesia sewage effluent*	NW¼NW¼NW¼ sec.12, T.17 S., R.26 E., at mouth.....	1200	50	-	.42	-
12.4	Pecos River	SE¼NW¼NW¼ sec.18, T.17 S., R.27 E., near Artesia (regular gaging station)	1320 0910	48 39	f40.4 43.9	- -	-.9 -
3.4	do.	NW¼NW¼SE¼ sec.7, T.18 S., R.27 E.....	1055	40	40.2	-	-3.7
-	do.	NE¼NW¼SE¼ sec.5, T.19 S., R.27 E., (Kaiser Channel) near Lakewood (regular gaging station)	1240	45	40.9	-	+.7
-	do.	SE¼NE¼SE¼ sec.18, T.19 S., R.27 E.....	1410	50	41.7	-	+.8

* Right bank.
† Left bank.
d Stage rose 0.03 ft from 1605 Feb. 18.
e Stage fell 0.01 ft from 0820.
f No change in stage from 0910.

Pecos River - below Major Johnson Springs to Soapberry Draw, near Carlsbad, N. Mex.

Reach.--From below all known springs at Major Johnson Springs near Seven Rivers to the mouth of Soapberry Draw near Carlsbad, a distance of six river miles. No release from Lake McMillan. No tributary inflow or diversions through the reach. The streambed is composed of conglomerate rock overlain with small boulders and gravel. Banks vary from low and sloping to vertical rock and gravel outcrops. There is dense salt cedar growth in areas where silt has been deposited adjacent to the channel. Used U.S.G.S. topographic maps for locations.

Previous investigations.--At least once a year, 1952, 1954, 1957, 1958, 1960, 1961 (published as "Discharge measurements at points other than gaging stations," prior to 1960). Additional series of measurements were made at sites 271.7 (0.4 mile downstream from site 271.5), 275, and 275.9 during 1964. Those made at sites 271.7 and 275.9 are published under "Measurements at miscellaneous sites." Measurements at site 275, "Pecos River at damsite 3, near Carlsbad, N. Mex." regular gage, are not published.

Date.--Jan. 27, 31, 1964.

Summary.--Weather was clear with light winds and moderate temperatures; no precipitation. River discharge "at damsite 3, near Carlsbad" regular gage (No. 8-4020) remained practically constant at 36 to 37 cfs for the period Jan. 27-31. On the basis of measuring conditions, overall results considered fair to poor to site No. 274, good below this site. Site numbers included in the tabulation are used to establish the downstream order of the measurements and are used only for filing purposes; they have no relation to river mile.

Site No.	Location	Jan. 27, 1964				Jan. 31, 1964			
		Time	Water temp. °F	Discharge, in cfs		Time	Water temp. °F	Discharge, in cfs	
				Main stream	Indicated gain or loss			Main stream	Indicated gain or loss
271.5	SW¼NE¼NE¼ sec.28, T.20 S., R.26 E., below all known springs	0840	49	a37.6	-	-	-	-	-
272	NE¼NW¼SE¼ sec.27, T.20 S., R.26 E., at Hardesty's Ranch	0950	49	37.5	-0.1	-	-	-	-
274	SE¼SW¼SE¼ sec.35,T.20 S., R.26 E., at mouth of Rocky Arroyo	1100	49	a38.9	+1.4	-	-	-	-
275	NE¼NW¼SW¼ sec.6, T.21 S., R.26 E., at damsite 3 (regular gaging station) measuring site	1200	49	36.5	-2.4	0850	47	36.9	-
275.9	NW¼SE¼NW¼ sec.5, T.21 S., R.26 E., at mouth of Soapberry Draw	1325	52	38.2	+1.7	0950	48	35.8	-1.1

a Average of two discharge measurements.

Pecos River - Carlsbad to Red Bluff, N. Mex.

Reach.--From the regular gage "at Carlsbad" to the regular gage "at Red Bluff," a distance of about 45 river miles. The streambed above the "near Malaga" regular gage is mostly conglomerate rock overlain with small boulders, gravel, and silt. Below this site the streambed is mostly sand overlying gravel and rock. Pools are quite long. Banks are generally quite low and sloping with dense salt cedar growth. Used U.S.G.S. topographic maps or U.S.G.S. Plan and Profile of Malaga Bend map for locations.

Previous investigations.--February 1955, March 1959, January 1961, October 1961, March 1962, July 1963. A series of measurements made Aug. 11-13, 1964, included the reach from site 333.5 to site 338.2. Results of these measurements are listed in this report as a subsequent investigation.

Date.--Feb. 6-7, 1964.

Summary.--Weather was cloudy Feb. 6, clear Feb. 7. Temperatures were seasonal with no precipitation. River discharge, as recorded at various regular gages, was as follows:

"At Carlsbad" (No. 8-4050) - discharge fluctuated between 22 cfs and 24 cfs for the 14 hours preceding the start of the investigation Feb. 6.

"Near Malaga" (No. 8-4065) - discharge fluctuated between 25 cfs and 27 cfs from 1400 Feb. 6 to 2400 Feb. 7.

"At Pierce Canyon Crossing, near Malaga" (No. 8-4070) -discharge increased at a uniform rate from 17 cfs at 1000 Feb. 6 to 28 cfs at 1200 Feb. 7 and then fell gradually to 27 cfs at 2400 Feb. 7.

"At Red Bluff" (No. 8-4075) - discharge increased from 22 cfs at 1200 to 26 cfs at 2400 Feb. 7.

Overall results considered good on Feb. 6, fair on Feb. 7.

Date.--July 27-28, 1964.

Summary.--Weather was clear with seasonal temperatures and no precipitation. River discharge, as recorded at various regular gages, was as follows:

"At Carlsbad" (No. 8-4050) - discharge fluctuated between 0.6 cfs and 0.7 cfs for the 12 hours preceding the start of the investigation July 27.

"Near Malaga" (No. 8-4065) - discharge fluctuated between 11 cfs and 12 cfs from 1200 July 27 to 1000 July 28.

"At Pierce Canyon Crossing, near Malaga" (No. 8-4070)-discharge increased from 7.4 cfs at 1800 July 27 to 11 cfs at 0600 July 28 and then decreased to 7.4 cfs at 1800 July 28.

"At Red Bluff" (No. 8-4075) - discharge fluctuated between 5.3 cfs and 6.2 cfs from 1200 July 28 to 0700 July 29 and then increased uniformly to 7.6 cfs at 1200 July 29.

Overall results considered good to fair. Site numbers included in the tabulation are used to establish the downstream order of the measurements and are used only for filing purposes; they have no relation to river mile.

Site No.	Stream	Location	Feb. 6, 1964					July 27, 1964				
			Time	Water temp. °F	Discharge, in cfs: Main stream	Tributary or Diversion	Indicated gain or loss	Time	Water temp. °F	Discharge, in cfs: Main stream	Tributary or Diversion	Indicated gain or loss
308	Pecos River	NW¼SE¼ sec.6, T.22 S., R.27 E., at Greene St. Bridge (regular gage)	0750	50	23.0	-	-	0640	78	0.72	-	-
309.2	do.	NW¼NW¼ sec.8, T.22 S., R.27 E., at mouth of Dark Canyon	0900	46	23.7	-	+0.7	0720	78	.20	-	-0.52
310	do.	NW¼SW¼ sec.9, T.22 S., R.27 E., above Carlsbad sewage inflow	1010	46	23.8	-	+.1	0745	79	a.1	-	-.1
310.5	Carlsbad sewage†	SE¼NW¼ sec.10, T.22 S., R.27 E.	1030	-	-	a4.90	-	0800	-	-	a3.56	-
311	Pecos River	NW¼SE¼ sec.10, T.22 S., R.27 E., below sewage inflow	1120	46	28.5	-	-.2	0820	82	3.40	-	-.26
311.7	O'Cheskey pump†	NW¼NW¼ sec.14 T.22 S., R.27 E.	-	-	-	-	-	0940	84	-	-3.11	-
311.9	O'Cheskey well spill to C.I.D. drain "A"*	SW¼NW¼ sec.14 T.22 S., R.27 E.	-	-	-	-	-	1035	69	-	(7.10)	-
312	C.I.D. drain "A"*	NW¼NW¼ sec.14, T.22 S., R.27 E., at mouth	1150	55	-	.05	-	0910	69	-	4.24	(-2.86)
312.2	C.I.D. drain "B"*	SE¼SE¼ sec.14, T.22 S., R.27 E., at mouth	-	-	-	-	-	1120	-	-	b.04	-
313	Pecos River	NW¼NE¼ sec.24, T.22 S., R.27 E., below Six Mile Dam	1300	45	29.2	-	+.6	1155	86	5.40	-	+.83
313.4	Brantley drain "A"*	SW¼NE¼ sec.30, T.22S., R.28 E., at mouth	-	-	-	-	-	1235	-	-	b.002	-
314.4	Pecos River	NW¼SW¼ sec.29, T.22 S., R.28 E., below Dickson Crossing	1415	48	29.6	-	+.4	1310	88	4.79	-	-.61

Note.--Measurements not involved in the computation of gains or losses of the Pecos River are enclosed in parentheses.

* Right bank.

† Left bank.

a Discharge furnished by city of Carlsbad.

b Estimate.

Pecos River - Carlsbad to Red Bluff, N. Mex.--Continued

Site No.	Stream	Location	Feb. 6, 1964 --Cont'd					July 27, 1964--Cont'd				
			Time	Water temp. °F	Discharge, in cfs: Main stream	Tributary or Diversion	Indicated gain or loss	Time	Water temp. °F	Discharge, in cfs: Main stream	Tributary or Diversion	Indicated gain or loss
315	Cass Draw	SE¼NW¼ sec.5, T.23 S., R.28 E., at mouth	1520	59	-	0.99	-	1400	86	-	0.04	-
315.2	Pecos River	NE¼SW¼ sec.5, T.23 S., R.28 E., below Cass Draw	1555 0810	43 42	c33.0 34.8	- -	+2.4 -	1430 0750	89 77	d6.15 7.15	- -	+1.32 -
315.6	do.	NE¼NW¼ sec.9, T.23 S., R.28 E., above Harroun Dam	0925	45	38.5	-	+3.7	0850	83	8.32	-	+1.17
316	Harroun canal†	SW¼SE¼ sec.11, T.23S., R.28 E., at State Engineer gage	1015	44	-	-40.2	-	0950	83	-	-8.53	-
318	Pecos River	SE¼SW¼ sec.11, T.23S., R.22 E., below Harroun Dam	-	-	-	-	-	1045	87	.34	-	+.55
318.3	do.	NE¼NW¼ sec.24, T.23S., R.28 E., at slab crossing	1110	47	2.83	-	+4.5	1120	83	e.68	-	+.68
318.4	do.	NE¼SE¼ sec.30, T.23S., R.29 E., east of Loving	1150	46	5.68	-	+2.85	1200	86	1.86	-	+1.18
332	Black River*	SW¼SE¼ sec.2, T.24 S., R.28 E., ½ mi above mouth	1345	46	-	11.7	-	1415	88	-	3.14	-
333	Pecos River	SW¼SW¼ sec.1, T.24 S., R.28 E., at Harroun's Crossing	1300	49	21.7	-	+4.3	1330	88	8.69	-	+3.69
333.5	do.	NE¼NW¼ sec.19, T.24S., R.29 E., near Malaga (regular gage)	1430	48	26.6	-	+4.9	1445	88	12.2	-	+3.5
			Feb. 7, 1964					July 28, 1964				
333.5	Pecos River	NE¼NW¼ sec.19, T.24S., R.29 E., near Malaga (regular gage)	0850	43	f25.6	-	-	0745	81	g10.7	-	-
334	do.	SE¼NE¼ sec.17, T.24S., R.29 E., at Fishing Rock Crossing	0950	41	27.4	-	+1.8	0910	82	10.3	-	-.4
335	do.	SE¼NE¼ sec.16, T.24S., R.29 E., above Dogtown drain	1030	42	27.3	-	-.1	0950	88	12.0	-	+1.7
337	Moutray pump†	NW¼NW¼ sec.21, T.24S., R.29 E.	-	-	-	-	-	1140	84	-	-4.46	-
337.2	Pecos River	NE¼NE¼ sec.20, T.24S., R.29 E., near well USGS 11	1120	41	26.1	-	-1.2	1055	84	8.59	-	+1.0
338.2	do.	NW¼SW¼ sec.27, T.24S., R.29 E., at Pierce Canyon Crossing (regular gage)	1220	43	28.4	-	+2.3	1240	86	9.39	-	+.80
338.3	do.	SE¼SW¼ sec.27, T.24S., R.29 E., at dry wash	1320 0910	47 38	h27.5 25.7	- -	-.9 -	1340 0750	91 78	i10.4 11.7	- -	+1.0 -
338.5	do.	SE¼NW¼ sec.33, T.24S., R.29 E., at 1st ford	1010	40	26.8	-	+1.1	0905	79	11.3	-	-.4
339.5	do.	SE¼SW¼ sec.32, T.24S., R.29 E., at 2nd ford	1120	40	27.6	-	+.8	-	-	-	-	-
340	do.	NW¼SE¼ sec.6, T.25 S., R.29 E., above Reed's pump	1300	42	26.8	-	-.8	1110	86	9.31	-	-2.0
341	do.	SE¼SW¼ sec.13, T.25S., R.28 E., above Salt Draw	1430	44	26.0	-	-.8	1250	90	6.42	-	-2.89
342	do.	NW¼NE¼ sec.1, T.26 S., R.28 E., at Red Bluff (regular gage)	1545	45	24.3	-	-1.7	1440	90	5.85	-	-.57

* Right bank.
† Left bank.
c No change in stage from 0810.
d Stage fell 0.02 ft from 0750.
e River dry ½ mile upstream.
f Stage fell 0.02 ft from 1430 Feb. 6.
g Stage fell 0.02 ft from 1445 July 27.
h Stage rose 0.01 ft from 0910.
i Stage fell 0.04 ft from 0750.

Pecos River - Malaga to Pierce Canyon Crossing, near Malaga, N. Mex.

Reach.--From the regular gage "near Malaga" to the regular gage "at Pierce Canyon Crossing, near Malaga," a distance of about seven miles. The streambed, mostly conglomerate rock overlain with small boulders, gravel, and sand, is a series of long pools with mild riffles. Both banks are generally quite low and sloping with dense salt cedar growth. The only diversion in this reach is Moutray's pump. Used U.S.G.S. Plan and Profile of Malaga Bend map for locations.

Previous investigations.--July 1954, September 1954 (both unpublished), October 1961, March 1962, July 1963, February 1964.

Date.--Aug. 11-13, 1964.

Summary.--Scattered light thunder showers Aug. 11. Weather clear Aug. 12-13. Seasonal temperatures. River discharge, as recorded by regular and temporary gages, was as follows:

"Near Malaga" (No. 8-4065) - discharge fluctuated between 7.7 cfs and 10 cfs from 2400 Aug. 10 to 1200 Aug. 13.

At Fishing Rock Crossing, temporary gage - discharge fluctuated between 9.0 cfs and 12 cfs from 2400 Aug. 10 to 1200 Aug. 13. Some of fluctuation apparently caused by return irrigation water.

"At Pierce Canyon Crossing, near Malaga" (No. 8-4070) - discharge fluctuated between 5.8 cfs and 8.5 cfs from 2400 Aug. 10 to 2000 Aug. 13. Some of the fluctuation probably caused by Moutray's pump.

Overall results considered good to fair. This investigation was made in conjunction with an intensive water sampling program for the Malaga Bend Experimental Salinity Alleviation Project. Site numbers included in the tabulation are used to establish the downstream order of the measurements and are used only for filing purposes; they have no relation to river mile.

Site No.	Stream	Location	Date	Time	Water temp. °F	Gage height	Discharge, in cfs		
							Main stream	Diversion	Indicated gain or loss
333.5	Pecos River	NE¼NW¼ sec.19, T.24 S., R.29 E., near Malaga (regular gage)	Aug. 13	1310	88	-	8.16	-	-
334	do.	SE¼NE¼ sec.17, T.24 S., R.29 E., at Fishing Rock Crossing	Aug. 11	1110	86	1.81	10.2	-	-
			12	0730	78	1.80	9.21	-	-
				1440	86	1.81	9.95	-	-
			13	0745	79	1.80	9.00	-	+0.84
335	do.	SE¼NE¼ sec.16, T.24 S., R.29 E., above Dogtown drain	Aug. 11	1220	85	.90	10.6	-	+.4
			12	0830	76	.87	9.81	-	+.60
				1530	91	.89	10.5	-	+.55
			13	0845	78	.88	9.43	-	+.43
337	Moutray's pump†	NW¼NW¼ sec.21, T.24 S., R.29 E., from left bank	Aug. 11	-	-	-	-	a	-
			12	0935	77	.69	-	5.91	-
				1620	88	.65	-	5.63	-
			13	1000	79	.62	-	5.15	-
337.2	Pecos River	NE¼NE¼ sec.20, T.24 S., R.29 E., near well USGS 11	Aug. 11	1410	90	-	6.11	-	-
			12	1110	84	-	5.27	-	+1.37
				1725	95	-	4.92	-	0
			13	1130	87	-	5.30	-	+1.02
338.2	do.	NW¼SW¼ sec.27, T.24 S., R.29 E., at Pierce Canyon Crossing (regular gage)	Aug. 11	1510	88	-	6.21	-	+.10

† Left bank.
a Pump operating; no measurement.

GPO 850-784